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## US Public Perspectives on Security

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# US Public Perspectives on Security

## **Nuclear Weapons, Terrorism, Energy and the Environment: 2011**

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### **Abstract**

We report findings from a national Internet survey and a subset of questions administered by telephone in mid-2011 on public assessments of contemporary and emerging interstate nuclear threats, support for strategic arms control, and preferences for responding to limited nuclear attacks on the United States. Additionally, we analyze public views of the threat of terrorism, including cyber attacks, assessments of progress in the struggle against terrorism, and preferences for responding to an act of radiological terrorism against the United States.

Also, we report findings from an Internet survey and a subset of questions administered by telephone among the American public in mid-2011 on US energy and environmental security. Key areas of investigation include public views on energy requirements, preferences for energy sources, energy conservation versus development, energy independence, implications of events at Fukushima, Japan, for US public support of nuclear generation, preferences for managing used nuclear fuel, and trust in nuclear risk assessments from government and other public sources.

Where possible, findings from each survey are compared with previous surveys in this series for analyses of trends.

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# ***Executive Summary***

## **Chapter One: Introduction and Overview**

This report summarizes findings from an Internet survey of 2,610 respondents conducted May 9–10, 2011, measuring US general public views on selected nuclear security and terrorism issues, and a comparative telephone survey of a subset of those questions collected April 11–May 12, 2011, from 648 participants. We also report findings from an Internet survey of 2,005 members of the US general public conducted June 1–2, 2011, in which we investigate energy and environmental security, and a telephone survey of a subset of those questions administered to 593 participants between May 17 and June 12, 2011. Each of the surveys builds on previous foundational studies in this series to show opinion change over time.

## **Chapter Two: Nuclear Security**

### **Q: How do respondents view contemporary and emerging interstate nuclear threats to the United States? (pg. 29)**

While mean risks of US nuclear conflict with Russia and China are judged well below midscale and declining, average risks of US nuclear conflict with North Korea and Iran are rated well above midscale and growing, with Iran seen as posing a significantly higher risk of nuclear war than North Korea. Mean risks of nuclear proliferation to additional countries are perceived to be high in absolute terms (near a value of seven on a zero-to-ten scale), but have declined about nine percent since 2005. Iran is perceived to pose a higher risk of providing nuclear weapons or nuclear materials to terrorists than is North Korea. Public support is increasing for using US military forces as part of a United Nations coalition to deny nuclear weapons to Iran and to force North Korea to abandon its nuclear weapons. Public support is substantially lower and largely undecided about using US military forces unilaterally to prevent either country from obtaining a nuclear arsenal.

**Q: How are prospects for arms control and eventual nuclear abolition viewed relative to the importance of retaining US nuclear weapons today? (pg. 35)**

Our data show strong public support for the New START agreement and potential support for further reductions approaching 1,000 ready-to-use, long-range US nuclear weapons *if* mutual reductions by Russia are verified. There is little public support at this time for reducing US strategic nuclear weapons substantially below 1,000, even if cuts are matched by Russia. We find sustained public support for the existing Nuclear Nonproliferation Treaty, a prospective treaty to ban all nuclear test explosions, and a treaty that would ban the production of fissile materials that could be used to make additional nuclear weapons. The risks of nuclear proliferation are viewed with deep concern—especially the potential for nuclear weapons or materials to be acquired by or transferred to terror groups. While many of our respondents think the elimination of nuclear weapons worldwide is desirable, most do not think it is a feasible policy goal. Accordingly, two decades into the post-Cold War era, we find that public valuations of the importance of retaining US nuclear weapons have significantly *increased*.

### **Chapter Three: Responding to Limited Nuclear Attacks**

**Q: How do ordinary Americans view response options to limited nuclear attacks against the US or its military forces? (pg. 44)**

Hypothetical limited nuclear attacks by North Korea against the United States or limited nuclear attacks against US military forces at sea described in comparative multistage scenarios are seen similarly, with US nuclear retaliation being preferred by about one in three respondents. Preferences for nuclear responses are almost surely more moderate in scenario exercises than would be expected in the actual event of such attacks because of affective influences that cannot be simulated. Assumptions of majority public support for nuclear retaliation prevalent during the Cold War when the adversaries were peer nuclear weapons powers may not apply in a multi-level post-Cold War security environment in which some states or nonstate groups can pose nuclear threats to the US that are not existential. Potential reasons (suppositions) for reluctance of our respondents to choose nuclear retaliation include: (a) appreciation of the risks of potential nuclear escala-

tion involving peer nuclear powers Russia and/or China; (b) decoupling of responsibility between the attacking government and its people; (c) confidence in advanced US conventional military capabilities to defeat a limited nuclear weapons power without resorting to US nuclear weapons; (d) moral reluctance to justify the use of US nuclear weapons when the survival of the United States is not at risk; and (e) fear of lowering the barrier against the use of nuclear weapons by others.

## **Chapter Four: Security from Terrorism**

**Q: How are public perspectives evolving regarding the threat of terrorism, progress in the struggle against terrorism, and prospects for eventually prevailing? (pg. 68)**

Mean assessments of the overall threat of terrorism of all kinds in the US peaked immediately after 9/11 and since have declined about 18 percent, but they remain well above pre-9/11 assessments. The threat of terrorism world-wide is judged to be higher than in the US, but the threat of terrorism in the US is expected to grow. Nevertheless, the perceived effectiveness of the war on terror increased significantly in 2011. Though reasons were not measured, it seems likely that these results may derive partially from the death of Osama bin Laden and other al-Qaeda leaders, troop withdrawals from Iraq, and pending reductions in troop levels in Afghanistan. Mean judgments of prospects for eventually prevailing in the struggle against terrorism increased, but only to slightly above midscale. Respondents consider the remaining threat of terrorism to be substantial, but are cautiously optimistic about the future.

**Q: How is the threat of cyber war viewed; how confident is the public in our abilities to defend critical US infrastructures from cyber attacks; and how do people think the US should respond to cyber attacks? (pg. 74)**

Cyber war is an emerging issue about which most respondents do not feel well informed, but it is perceived as posing a serious threat to the US. The Department of Defense is trusted more than the Department of Homeland Security or private industry to protect critical US infrastructures from cyber attack (even if none are formally tasked with doing so). Participants differ-

entiate response preferences depending on the nature and capabilities of the attacker. About six in ten respondents support various levels of retaliation against cyber attacks from Iran, with one in four supporting forced regime change. About half of respondents support retaliation for cyber attacks from China, with the other half favoring diplomatic actions only.

**Q: How should we respond to the use of a dirty bomb against the US? (pg. 80)**

Assuming that attribution for the terror attack is established to a high degree of certainty, more than two out of three participants (about 69 percent) prefer to respond to an act of radiological terrorism against the US with military force, while about 31 percent favor pursuing diplomatic resolutions. These percentages are expected to shift to greater levels of support for forceful responses should the hypothesized events actually take place, because directionally predictable affective influences would almost surely be present. The clear preference among our respondents in the given scenario is to apply military force using conventional armaments, with only about 23 percent supporting nuclear retaliation. Clear distinctions are reported between preferences for responding to radiological terrorism versus responding to limited attacks in which nuclear weapons are used against the US or its military forces.

**Q: How do demographics, ideology, and Cold War experience relate to public preferences for responding to limited nuclear attacks? (pg. 88)**

In the two hypothetical scenarios described in Chapter Three (limited nuclear attacks by North Korea against the US and against US military forces at sea) and the hypothetical dirty bomb scenario described in Chapter Four, willingness to respond to limited nuclear attacks on the US or its military forces using US nuclear weapons increases systematically with age and political conservatism and is higher among men. Most respondents who prefer nuclear retaliation also are significantly more confident that nuclear weapons provide the best possible option than are most who choose other responses. Willingness to use US nuclear weapons to respond to limited nuclear attacks in the described scenarios does not vary systematically with education, race/ethnicity, income, or Cold War experience.

## Chapter Five: Energy and Environmental Security

**Q: How are US public views on energy requirements, comparative energy sources, energy conservation vs. development, and energy independence evolving? (pg. 92)**

Since a low point in 2008, public confidence in future energy sufficiency has increased significantly to above midscale, while mean satisfaction with US energy policies also has grown, but remains below midscale. In 2011, the average preferred US energy mix in the next two decades is to (a) increase renewable sources of energy from today's approximately six percent of overall US energy production to 47 percent; (b) increase nuclear energy generation from today's approximately eight percent to 18 percent; and to decrease energy produced by burning fossil fuels from today's approximately 85 percent of overall energy to 35 percent. However, public preferences also show a clear trend over the past three years in which the gap between preferences for energy produced from fossil fuels and energy produced by renewable sources has narrowed significantly, while the gap between preferences for fossil energy and that produced by nuclear generation has widened significantly. At the same time, mean perceptions of risks deriving from burning fossil fuels are declining, and support for exploring and developing US oil and gas deposits is growing. While recognizing the need for both energy development and conservation, most participants consistently prefer to emphasize energy development, and a large majority considers it important to reduce US dependence on foreign sources of energy.

**Q: How do public beliefs about global climate change and environmental security relate to preferences for the energy future, and how are they differentiated? (pg. 100)**

Views of climate change risks and the importance of reducing greenhouse gas emissions are clearly differentiated among those who do and do not believe greenhouse gases cause global warming. But beliefs that greenhouse gases cause global warming decline from about three out of four respondents in 2006 to about two out of three participants in 2011, and levels of certainty with which beliefs about greenhouse gases and climate change are held are declining most rapidly among those who believe greenhouse gases are causal. Beliefs about greenhouse gases causing global warming are

stronger among women and younger respondents, but they are most clearly differentiated by political ideology, with perceptions of strong causal linkages increasing with liberalism and decreasing with conservatism. Preferences for the future US energy mix are clearly differentiated by beliefs about whether greenhouse gases cause warming. Those who doubt a causal relationship favor fossil fuels, and those who believe the causal linkage is strong favor renewable energy sources. These findings show robust linkages between public beliefs about energy security and environmental security.

## **Chapter Six: Nuclear Dimensions of Energy Security**

**Q: How do public views of risks, benefits, and support for US nuclear generation following the Japanese experience at Fukushima compare to pre-event views, and how do the implications of Fukushima compare to those following the nuclear accidents at Three Mile Island (1979) and Chernobyl (1986)? (pg. 107)**

The nuclear events of March 2011 at the Fukushima Daiichi Nuclear Power Station in Japan led to a substantial increase in US public attention to nuclear energy issues, and they have had a modestly negative impact on public support for nuclear energy in the United States to date. The nuclear accident at Three Mile Island was the first of its kind in the world, and resulted in retrenchment in US nuclear energy development. Perhaps because of its distant location, Chernobyl had less direct impact on US attitudes. Fukushima is the world's third major nuclear energy adverse event, but like Three Mile Island, it resulted in no direct fatalities, and like Chernobyl, it occurred far from US shores. Following Fukushima, public assessments of nuclear energy risks have not increased significantly, but public beliefs in the benefits of nuclear energy have declined (at least temporarily). The overall balance of risks and benefits of US nuclear power shifts about four percent away from benefits and toward risks compared to 2010, but benefits are still considered to outweigh associated risks, on average. Support for additional US nuclear generation capacities at existing or new sites declines about 10–11 percent compared to 2010, but mean views remain near midscale, indicating neither strong support nor strong opposition to expanding nuclear power in the US. However, the implications of the nuclear events at Fukushima are still evolving and can be expected to figure prominently in continuing US policy debates on nuclear energy.

**Q: How aware are members of the public about current practices for managing used nuclear fuels in the US, and how do concept, design, and policy process considerations affect public support for used nuclear fuel repositories? (pg. 117)**

Public awareness of current practices of temporarily storing used nuclear fuel at or near the sites of US nuclear power plants has doubled since 2006 to about 40 percent, but most members of the public remain uninformed about UNF management policies. When told of current practices, mean support for on-site storage is below midscale and declining. When examining key design variables for UNF repository siting, we find that: (a) regional sites are preferred over two centralized national repositories; (b) designs allowing the future retrieval of UNF are strongly favored over once-through permanent disposal designs; and (c) mine-like facilities are preferred over surface facilities or deep boreholes. Experimental results suggest that public support for a geologic repository base design increases independently with: (a) co-located research facilities (+13.5 percent); (b) reprocessing (+9.0 percent); and (c) financial compensation (+5.4 percent).

**Q: How is trust in technical information about used nuclear fuel distributed among public agencies and non-profit organizations, and what predispositions about institutional biases are held by the US public? (pg. 129)**

As mass opinion about UNF disposition evolves, members of the public necessarily will depend on experts for technical information and advice when considering alternative policy options. Nuclear expertise is therefore an important national resource, but public trust in nuclear experts is not evenly distributed. Experts from the National Academy of Sciences are seen as most trustworthy and least likely to bias assessments of risks associated with UNF management options. Nuclear experts from the US national laboratories also are trusted highly, followed by those from responsible government agencies (EPA, NRC, and DOE). In what may be a legacy of prior national repository siting efforts, experts from the national labs, DOE, and the NRC all are perceived to have a tendency to downplay risks, while the EPA is expected to exaggerate risks. Experts representing “public interest” and industry groups are less trusted and are seen as carrying greater institutional biases. As the debate over UNF management continues, it will be important

both to recognize public expectations of trust and bias among experts and to engage the public in a manner that builds confidence.

## Chapter One

### Introduction and Overview

This report presents findings from four surveys conducted in mid-2011: (a) an Internet survey on nuclear security and terrorism was collected May 9–10; (b) a subset of questions from that survey were administered by phone interviews for control purposes between April 11 and May 12; (c) an Internet survey on energy and environmental security was fielded June 1–2; and (d) a subset of questions from that survey were administered for control purposes by telephone between May 17 and June 12. Each of the four surveys builds on comparative baselines established in 2005 (nuclear security and terrorism), 2006 (energy and environmental security), and continuing surveys in 2007, 2008, 2009, and 2010. We also build on prior foundational research conducted between 1993 and 2005.<sup>1</sup> Financial and institutional support for this study was provided by Sandia National Laboratories and the University of Oklahoma.

#### Section 1.1: Research Goals and Objectives

Research goals are organized along two research tracks involving four dimensions of security. All are designed to provide coordinated research and are intended to measure and analyze evolving public understandings of four interrelated dimensions of security: nuclear security, security from terrorism, energy security, and environmental security.

#### Nuclear Security and Terrorism

For this track, our primary research goals are to analyze public views about the evolving nature of nuclear security and terrorism and to identify trends in public perceptions and preferences relevant to the evolution of related US security policies. Specific research objectives for 2011 include the following:

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<sup>1</sup> For the baseline study on nuclear security and terrorism, see Herron and Jenkins-Smith 2006a; for the baseline study on energy and environmental security, see Jenkins-Smith and Herron 2007. Each is available on-line at: <http://crcm.ou.edu/projects/nuclear/>, as are all other reports relating to this ongoing research project. Findings from previous surveys on related issues published between 1994 and 2004 also are summarized in Herron and Jenkins-Smith 2006b.

- Employ a split survey design that employs an Internet data collection and a subset of questions applied in telephone interviews to meet two methodological objectives.
  - Where appropriate, map backward to selected baseline questions asked in previous surveys in this series between 1993 and 2010 for continued trend analyses and develop new questions intended for repeated application in future surveys.
  - Compare responses from a self-administered Internet survey with a subset of companion questions collected by telephone interviews to monitor the evolving comparability of Internet and telephone survey methods.
- Identify emerging trends in public perceptions of US nuclear weapons policies and selected national and international security issues. Examine evolving US public assessments of risks, benefits, policy preferences, and research and investment priorities associated with nuclear weapons and strategic security.
- Identify and analyze trends in public concerns about homeland security, including public assessments of the threat of terrorism and US policies to prevent and respond to terrorism.
- Investigate concepts of multidimensional security, to include public understandings of how security and liberty should be balanced and under what conditions threats to national security warrant varying levels of potentially intrusive domestic measures to enhance public safety.
- Analyze belief systems among members of the US general public and their relationships to views on nuclear security and terrorism.

## **Energy and Environmental Security**

Our primary research goals for this track are to analyze public views about contemporary energy security and associated environmental issues and to identify trends in public perceptions and preferences relevant to the evolution of related US policies. Specific research objectives for 2011 include the following:

- Employ a split survey design that employs an Internet data collection and a subset of questions applied in telephone interviews to meet two methodological objectives.
  - Where appropriate, map backward to selected baseline questions asked in previous surveys in this series between 2002 and 2010 for continued

trend analyses and develop new questions intended for repeated application in future surveys.

- Compare responses from a self-administered Internet survey with a subset of companion questions collected by telephone interviews to monitor the evolving comparability of Internet and telephone survey methods.
- Identify and analyze public perceptions of US energy security, to include: (a) energy supply and reliability; (b) energy vulnerabilities and threats; (c) relative risks and benefits of fossil fuels, nuclear energy, and renewable sources; and (d) relationships among security, costs, energy dependence, and alternative sources.
- Investigate environmental issues as they relate to energy security, to include public knowledge and expected implications of global climate change, support for energy research and development and reducing greenhouse gas emissions, and relationships among environmental issues and potential policy options.
- Analyze emerging changes and trends in public views on nuclear energy, to include risks, benefits, policy preferences, research and investment priorities, and public trust. Specifically investigate understandings and preferences regarding nuclear materials management and fuel cycle issues.
- Analyze belief systems among members of the US general public and their relationships to views on energy and environmental security.

## Section 1.2: Conceptual and Methodological Considerations

### Popular Polling vs. Opinion Survey Research

There are important conceptual and methodological differences between polling done to support such venues as advertising, marketing, mass media, and political campaigning—which we term popular polling—and academic quality opinion survey research done to advance general knowledge and inform policy processes.

*Popular polling* usually prioritizes responsiveness, which is enhanced by shorter, simpler designs using questions whose responses are categorical: yes–no; for–against; support–oppose. These kinds of response categories simplify analysis and make it easier to report poll results. Because such polls

represent snapshots in time, findings usually are considered highly perishable, and the emphasis is on reporting results quickly and in simple formats that lend themselves to easy interpretation. Replication of findings usually is not of great concern, since competing polls tend to provide support or challenge results, and findings are perishable. The objectives usually are to address “what,” “who,” “when,” and “where.” Such polls are ill-suited for understanding “how” or “why.” They are well suited for application via any form of data collection, including wireless phones. The objective is a snapshot in time of findings that can be reported simply and quickly.

*Academic quality opinion survey research* prioritizes quantitative analysis, reliability, and replicability. Question formats more often use continuous scales that support relational analytical techniques providing statistical inference. This kind of investigation is better suited to complex issues that are not easily reduced to categorical preferences. Such surveys typically employ longer and more complex question wordings, allow more subtle response variations (often including verbatim responses in the participant’s own words), and can require much more attention and thought from respondents than do many popular polls. These kinds of surveys are better suited to exploring complex issues of public policy that require addressing the “how” and “why” of policy preferences, and the findings they yield are less perishable. Such surveys are not well suited to data collection via wireless phones because of their length and complexity.

This project employs academic quality opinion survey research methods to yield data that can help explain not only which policy options are preferred, but how and why policy preferences are formed and evolve over time. We not only seek to understand policy preferences at a given point in time, we also attempt to better understand belief structures that underlie opinion formation and maintenance. To do that, we design all phases of this ongoing research project to support multidimensional analyses, including quantitative methods such as descriptive, relational, and trend analyses.

## **Trends in Survey Collection Methods**

In terms of operational methodologies, there are two major trends in opinion survey research that seem especially relevant to our long-term goals in this project. First, the representativeness of and access to mass publics in the de-

veloped world via wired telephony is declining as more households take advantage of wireless communications and depend less on wired landlines. The number of US households with wired phone connections is declining even while our population continues to grow. The second trend is growing access to the Internet. The downward trend in public accessibility via wired phones and the upward trend in public accessibility via the Internet will cross (or have crossed), creating growing opportunities for Internet surveys and declining opportunities for surveys of wired phone users. Because of factors noted below, applying lengthy, complex surveys by wireless telephony presents many hurdles. This means that even as cell phones become ubiquitous, conducting these types of complex surveys by phone is becoming increasingly difficult and impractical, while their application by Internet is becoming increasingly more functional and valuable. To help bridge this transitional period in telecommunications, mixed survey methods can provide effective cross coverage.

In 2005, 2006, 2007 and 2008, we employed split survey designs providing complete parallel Internet and telephone surveys for comparing collection methods. In 2009, Internet-only surveys were administered. In 2010 and 2011, subsets of questions from the nuclear security and terrorism Internet survey and the energy and environmental security Internet survey were collected in two separate telephone surveys for control purposes. As noted in previous reports in this series, the central tendencies among Internet and phone responses to some survey questions are statistically significantly different at the 95 percent confidence level (partly a function of large sample sizes). But after weighting for demographic representativeness, we have found few substantive differences in aggregate responses between collection modes, and none that are directionally different or of sufficient nominal size to be policy relevant.

However, continuing developments in demographic and communication trends suggest that phone survey collections increasingly are varying from cross-sectional demographic patterns in the US—especially regarding respondent ages and socio-economic indices. This largely is because of the declining numbers of households with wired phone services and the substantial difficulties in sampling the population of wireless-only phone users. As increasing numbers of Americans shift to wireless-only phone services, differences between potential respondents who can be reached by wired phone vs. those who can be reached by wireless-only services are growing. The latest available data from the National Center for Health Statistics regarding demographic differences between adults in the US who have access

to wired vs. wireless phone services include the following distinctions (Blumberg and Luke 2011).

- Approximately 2.0% of US households (about four million adults) have no telephone service of any type.
- Approximately 27 million adults (27.8%) live in households having wireless-only phone service. About three of every ten households do not have a landline phone but do have at least one wireless phone.
- The proportion of adults living in households having wireless-only phones decreases with age beyond 35 years: ages 35–44 = 30.9%; ages 45–64 = 18.8%; ages 65 and above = 7.7%.
- The percentage of wireless-only and wireless-mostly adults in every age category is increasing, meaning that the proportion of the national population that can be interviewed by landline only is declining across all demographic categories. But because wireless technologies are being adapted by different demographic groups at different rates, the portion of the population that can be interviewed by landline is becoming less demographically representative each year.
- More than two in three adults living with unrelated adult roommates (69.4%) live in households having wireless-only phone services, and those who rent are more likely to have only wireless services (50.3%) than those who own homes (17.7%).
- Men (29.0%) are more likely than women (26.8%) to have wireless-only service. Adults living in the South (31.1%), Midwest (30.0%), and West (28.7%) are more likely than adults living the Northeast (17.2%) to have wireless-only services. And Hispanic adults (38.4%) are more likely to have wireless-only services than are non-Hispanic white adults (25.0%) or non-Hispanic black adults (31.1%).
- Adults living in poverty (42.8%) or near poverty (35.2%) are more likely than higher income adults (24.1%) to be residing in household having wireless-only phones.

Given the length and complexity of our surveys (averaging 25 minutes or more), interviewing via cellular phones is impractical because of costs, safety, and other location issues (Brick, et al. 2007). Interviewing respondents while they are at work also is impractical for similar reasons. This means that when collected by phone, our types of in-depth inquiries are limited to respondents having home access to wired telephony. Given the

trends in telecommunication patterns and differences in important demographic dimensions, phone collections are becoming increasingly less demographically representative.<sup>2</sup>

At the same time that wired telephony is declining, access to Internet services continues to grow. Between 1995 and 1997, the proportion of adults having access to online services tripled from nine percent to 30 percent. By 2000, it had more than doubled again to 63 percent. Though the rate of growth in Internet access has slowed, it was 73 percent by 2004, 81 percent in October 2008, and remained at about the same level (80%) in 2009 (HarrisInteractive 2009). Only about two percent of computer users do not go online (HarrisInteractive 2008). The number of adults who have access to the Internet from home increased to 76% in 2009 (HarrisInteractive 2009), and two out of three adults (66%) in the US access the Internet via broadband connections at home (Smith 2010). Overall, including home and work, 78% of American adults had access to the Internet at the time of our surveys in May 2011 (Pew Internet and American Life Project 2011). Not surprisingly, with increased access, the demographics of the online population are becoming more representative of the US population as a whole. Internet use among those over 65 years of age, those who have not attended college, and those having annual household incomes of less than \$25,000 continue to be somewhat underrepresented, but large majorities of even these demographic categories now have access to the Internet (HarrisInteractive 2008). Broadband adoption continues to expand—but unevenly. While income and education are positively associated with broadband Internet use, patterns also are differentiated by race and geographic location. White households have higher access rates than Hispanic and African American households, and urban residents are more likely to acquire broadband access than are rural households, even after accounting for socioeconomic differences (U.S. Department of Commerce 2010).

While we intend periodically to collect subsets of our Internet surveys by phone in future cycles (for control purposes), our previous comparative findings, combined with the trends noted above, suggest that the phone comparisons have declining utility unless extensive weighting is used to correct for growing imbalances in demographic representativeness. Because Internet

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<sup>2</sup> Blumberg and Luke (2011) also note important behavioral differences relating to health issues (binge drinking, health status, insurance coverage, access to health care, and certain other access and behavior issues) between those having wireless-only services vs. those with wired phones or combinations of wired and wireless services.

surveys can be conducted to control for demographic and regional representativeness (reflecting national population data), weighting is not required for carefully executed Internet surveys. As our findings show, central tendencies suggest a high degree of continuity in response patterns, and a high level of confidence in comparisons with previous surveys seems warranted.<sup>3</sup> Collection methods and demographic representativeness are further described in Appendix 1.

## Conceptualizing Multiple Dimensions of Security

The term “security” is associated with contextual meanings that are so broad and variable that some scholars consider it to be an “essentially contested concept” (Buzan 1991, Freedman 1992, Gallie 1962, Rothschild 1995). Like other complex ideas such as power, justice, peace, and freedom, the concept of security includes an ideological dimension that reduces the utility of empiricism for resolving differences in definitional and conceptual explanations (Buzan 1991; Little 1981). Even those who specialize in security studies cannot agree on the boundaries of the concept or of the field of study. To some who take a more classically narrow approach, security relates to matters of the state and its military capabilities—particularly the use of force (Buzan, Waever, and de Wilde 1998). But since the end of the Cold War, the concept of security has broadened to include conventions associated with many aspects of globalization and humanitarian concerns, such as hunger, health, human rights, economics and trade, global climate change, and international system stability (Fierke 2007). Some, such as Buzan (1991) and Fierke (2007) caution that the proliferating conceptual application of the term “security” to new fields and new concerns may locate agency in states rather than in institutional or individual actors in specific fields, and some issues may become militarized even though a political solution may be more appropriate.

While a detailed examination of the concept of security is beyond the scope of this brief discussion, it is useful to note a few key points. Essentially, perceived security is about *feeling* safe from harm or danger, and actual security is about *being* safe. When measuring and analyzing public opinion, we are dealing with perceptions and beliefs, and thus at the individual level of

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<sup>3</sup> Throughout this report, graphics show combined phone and Internet results where applicable.

analysis, security is a *feeling* that is inherently subjective to individual contexts and beliefs. At a social level, security is a normative political construct. It is assessed by governmental agencies and political leaders, and it is partially a function of policy processes. While some empiricism may be applied, there remain large areas of subjective interpretation of public security that become the bases for official judgments and policies. These areas of subjectivity are the focus of intense public debate in which the views of experts and those of the general public must be considered by policy makers.

One of the most critical aspects of defining and understanding the meaning of security is to recognize that it is heavily dependent on risk or threat. Theoretically, in the absence of some real or imagined risk or threat, security would be maximized, but actually, under such a theoretical construct (which is not realistically plausible), security would have no meaning at all. Edkins (2003) contends that the human desire for perfect security from all threats to our existence is illusory, and some degree of insecurity is inherent to all life—including human existence. Fierke (2007, 8) argues that: “The search for perfect security is not merely illusory, but becomes part and parcel of the problem, that is, it contributes to the production of insecurity and the construction of threats.”

If it is the imagined and real sources of risks and threats that give the concept of security meaning, it follows that one of the most useful ways of conceiving security is in relation to perceived and actual risks and threats. Following the insightful conceptualization of security by Arnold Wolfers (1952), perhaps security can be best understood as the inverse of risk/threat. Because there are some risks and threats over which no individual or government has control (such as the threat of eventual death), comprehensive and enduring security is impossible. Because the meaning of security derives from the absence of risk/threat, and because it is impossible to prove why something did *not* occur, attributing the sources and causes of security is problematic. We may presume the reasons a threatening event, such as nuclear war involving two or more states having nuclear weapons, has yet to occur relate to deterrence based on mutually assured destruction, but we cannot know that is the sole or even primary reason. Similarly, we cannot know with certainty why large-scale acts of terrorism have not occurred in the United States from September 11, 2001 to the time of this writing. We can make assumptions about the effectiveness of preventive measures and about terrorist capabilities and motivations, but we cannot *prove* why another act of the scale of 9/11 has not yet occurred. From this line of reasoning,

we conclude that the concept of security is based on individual feelings and political assumptions and assessments of risks and threats. This becomes key when considering how to measure and track security.

Because of the essentially contested nature of the concept of security, because our understanding of it is based on assumptions about risks and threats, and because of the growing application of the concept of security to more fields and policy domains, we need to carefully delineate those dimensions being studied in this project. As previously noted, we are limiting our investigation and analysis to public understandings of four interrelated dimensions of security.

- Nuclear security encompasses nuclear weapons and their development, management, modernization, and uses; nuclear materials and their production, applications, and safeguards; nuclear proliferation and associated implications; and public perceptions of and support for policies relating to each of these aspects of nuclear security.
- Terrorism and its implications for all levels of security includes public understandings of the various threats posed by terrorism, assessments of ongoing efforts to prevent and combat terrorism, and the effects of terrorism on key societal values such as freedom and civil liberties.
- Energy security includes energy dependence, adequacy of energy sources and supplies, threats and vulnerabilities to energy access, nuclear energy risks and benefits, nuclear materials management and disposition, alternative energy sources, and research and development into future energy requirements and options, including willingness to pay for energy research and development.
- Another dimension of security is the growing importance of environmental issues as they relate to traditional concepts of physical security, economic security, and energy management. Of particular interest in this dimension is global climate change (another contested concept) and how public assessments of its dynamics are evolving.

### ***Interrelationships***

We consider these four dimensions of security to be closely related and interactive, and one of our long-term goals is to better understand how members of the US public relate concepts and beliefs associated with multiple

dimensions of security. Given the baselines established in each of our two research tracks investigating four dimensions of security, we are now able both to probe more deeply into their perceived connectedness and to monitor trends in relative public views. Some areas seem obviously to be closely related, such as nuclear weapons and the potential for their use in terrorism. Others may be somewhat less clear, such as the relationships among energy independence, fossil fuels, and global warming. Still others are much more subtle, such as the relationships of porous borders and illegal immigration with security from terrorism and with the social and economic implications of the associated labor pool. Through repeated and refined measurements, we pursue more detailed examination of how Americans relate these four dimensions, the degree to which they see crosscutting security implications, and how long-term trends evolve.

### **Section 1.3: Organization of the Report**

Chapter Two analyzes issues relating to nuclear security by addressing the following two lines of inquiry:

- *Interstate Nuclear Threats:* How do respondents view contemporary and emerging interstate nuclear threats to the United States?
- *Nuclear Abolition:* How are prospects for arms control and eventual nuclear abolition viewed relative to the importance of retaining US nuclear weapons today?

In Chapter Three, we report results of experimental scenarios that investigate public preferences for responding to limited nuclear attacks on the US or its military forces by states having nuclear weapons but not having the capabilities to pose existential threats to the survival of the US. Specifically, we address the following research question:

- *Nuclear Response:* How do ordinary Americans view response options to limited nuclear attacks against the US or its military forces?

Our focus in Chapter Four is on security from terrorism, and we address the following four research questions:

- *Perspectives on Terrorism:* How are public perspectives evolving regarding the threat of terrorism, progress in the struggle against terrorism, and prospects for eventually prevailing?
- *Cyber War:* How is the threat of cyber war viewed; how confident is the public in our abilities to defend critical US infrastructures from cyber attacks; and how do people think the US should respond to cyber attacks?
- *Radiological Terrorism:* How should we respond to the use of a dirty bomb against the US?
- *Nuclear Divides:* How do demographics, ideology, and Cold War experience affect public preferences for responding to limited nuclear attacks?

Chapter Five analyzes multiple dimensions of energy and environmental security by addressing the following inquiries:

- *Energy Security:* How are US public views on energy requirements, comparative energy sources, energy conservation versus development, and energy independence evolving?
- *Environmental Security:* How do public beliefs about global climate change and environmental security relate to preferences for the energy future, and how are they differentiated?

In Chapter Six we narrow our focus to issues associated with the nuclear dimensions of energy security by addressing the following analytical inquiries.

- *Nuclear Energy Outlook:* How do public views of risks, benefits, and support for US nuclear generation following the Japanese experience at Fukushima compare to pre-event views, and how do the implications of Fukushima compare to those following the nuclear accidents at Three Mile Island (1979) and Chernobyl (1986)?
- *Managing Used Nuclear Fuels:* How aware are members of the public about current practices for managing used nuclear fuels in the US, and how do concept, design, and policy process considerations affect public support for used nuclear fuel repositories?
- *Public Trust:* How is trust in technical information about used nuclear fuel distributed among public agencies and non-profit organizations, and what predispositions about institutional biases are held by the US public?

Appendix One describes sampling, data collection, and associated research methods. We also provide illustrations of the demographic representativeness of respondents compared to US national population parameters.

Because there are many more survey questions than can be discussed in this report, we provide two appendices listing all the questions contained in our latest surveys. In Appendix Two, we provide a comprehensive listing of questions asked in the Internet and phone surveys in 2011 on nuclear security and terrorism. Response frequencies and central tendencies are displayed.

Appendix Three provides a comprehensive listing of questions asked in 2011 in our Internet and phone surveys on energy and environmental security. Here too, we describe distributions of responses and central tendencies.

## Chapter Two

### Nuclear Security

Two decades into the post-Cold War era, the United States faces three levels of nuclear security threats.

- Level-I nuclear threats are posed by peer nuclear weapons states Russia and China—the only two states in the world (that are not US allies) currently possessing combinations of nuclear weapons and delivery systems sufficient to threaten the existence of the United States.
- Level-II nuclear threats are posed by states having limited nuclear arsenals and no formal mutual security agreements with the US, such as India, Pakistan, and North Korea and states assumed to be pursuing nuclear weapons programs such as Iran. Among these states, only North Korea and Iran are openly antagonistic to US security objectives, refuse to conform to numerous international security norms, and lack international legitimacy because of high levels of domestic repression. These states can threaten US regional security objectives and hold nearby US military forces and allies at risk, but neither has yet acquired nuclear arsenals that pose existential threats to the United States.
- Level-III nuclear threats stem from the potential for non-state terror groups to acquire nuclear weapons or materials that could be used against the US or its allies in acts of nuclear or radiological terrorism.

In this chapter we investigate how Level-I and Level-II nuclear threats are perceived by ordinary Americans, and we assess public support of ongoing nuclear arms control efforts and prospects for eventual nuclear abolition versus the perceived importance of retaining US nuclear weapons. In the following Chapter, we investigate public preferences for responses to limited nuclear attacks from Level-II threats on the US or its military forces. In Chapter Four, we probe public perceptions of Level-III nuclear threats.

We begin with the following two lines of investigation:

- *Interstate Nuclear Threats:* How do respondents view contemporary and emerging interstate nuclear threats to the United States?

- *Nuclear Abolition*: How are prospects for arms control and eventual nuclear abolition viewed relative to the importance of retaining US nuclear weapons today?

## Section 2.1: Perceptions of the Security Environment and Interstate Nuclear Threats

To provide a broad impression of today’s security environment relative to the Cold War security environment, we juxtapose the following randomly ordered contrasting assertions and ask participants to identify the statement with which they most agree.<sup>1</sup>

- S37: Today the world is a *less* dangerous place for the US than it was during the Cold War.
- S37: Today the world is a *more* dangerous place for the US than it was during the Cold War.

We first posed these assertions in 1999, well before the terror attacks of September 11, 2001 (9/11) and then immediately following those events in a survey that began on September 12, 2001. Subsequently we included the assertions in our surveys in 2010, and 2011. We show responses in Table 2.1.

**Table 2.1: Contrasting Today’s Security Environment with the Cold War**  
(random order)

%	1999	2001	2010	2011
Today the world is a <i>less</i> dangerous place for the US than it was during the Cold War.	36	24	23	22
Today the world is a <i>more</i> dangerous place for the US than it was during the Cold War.	64	76	77	78

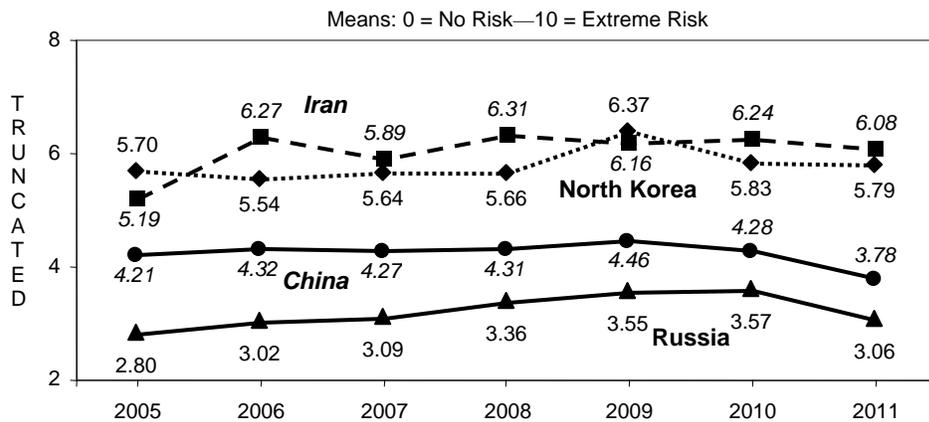
A clear trend is apparent in which the contemporary security environment is judged increasingly to be more dangerous for the United States than that existing during the Cold War era.

<sup>1</sup> Respondents are advised that it is not necessary that they agree fully with either statement, only that they identify the statement with which they *most* agree.

To provide a more specific relative context for public perceptions of nuclear threats posed by other states, we ask the following four questions answered using the same comparative scale from zero (no threat) to ten (extreme threat). Each participant is asked to consider both the *likelihood* and the potential *consequences* of associated risks. We compare trends in mean risk assessments in Figure 2.1.

- S7: How do you rate the risk of the US being involved in a nuclear war with China in the next ten years?
- S8: How do you rate the risk of the US being involved in a nuclear war with Russia in the next ten years?
- S10: For this question, assume that North Korea possesses nuclear weapons. How do you rate the risk of the US being involved in a nuclear war with North Korea?
- S14: For this question, assume that Iran possesses nuclear weapons. How do you rate the risk of the US being involved in a nuclear war with Iran within the next ten years?

**Figure 2.1: Trend in Mean Risks of Interstate Nuclear War with the US**



Notice that the vertical axis representing the risk scale from zero to ten is truncated to show only values between two and eight for easier display. All mean assessments of the risks of nuclear war between the United States and Russia or China are below a value of 5.0 (midscale), and assessments of both

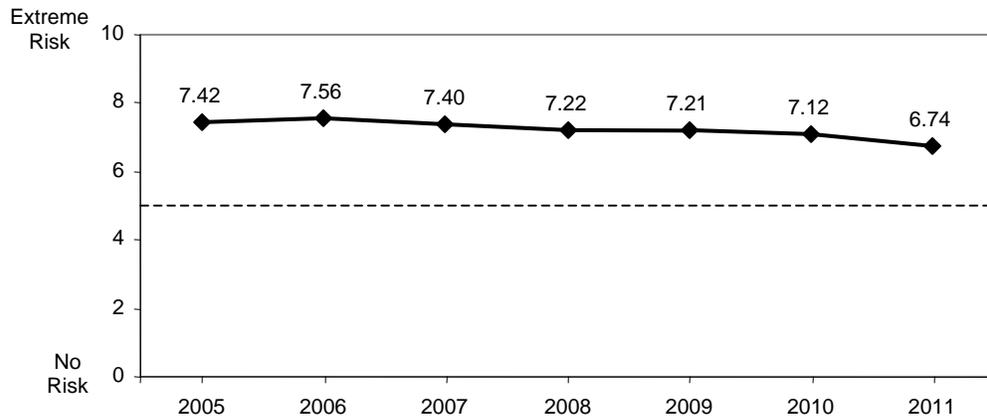
declined in 2011 ( $p < .0001$  for each).<sup>2</sup> Note that public perceptions of mean risks of nuclear conflict with China are statistically significantly higher than those for Russia in each measurement period. In comparison, mean perceived risks of nuclear conflict with Iran (dashed line) and North Korea (dotted line) are all well above midscale, with Iran judged to present the highest risk in all measurement periods except 2009, which was the year in which North Korea conducted its second underground nuclear test explosion and launched multiple missile tests shortly before the beginning of our survey collection. Though Iran is not known to have yet conducted a nuclear test explosion, when told to assume that Iran successfully acquires nuclear weapons, most respondents consider that country to pose the highest risk of interstate nuclear war with the United States.

As shown in Figure 2.2, when asked to rate on the same zero-to-ten scale the risk of nuclear weapons or materials spreading to other countries during the next ten years, respondents consistently judge mean risks to be high in absolute terms (near a value of seven), but with an overall decline of about nine percent since 2005 and a statistically significant decrease in our most recent measurement period ( $p < .0001$ ).

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<sup>2</sup> Throughout this study, we report the results of analyses of variance (ANOVAs) in terms of  $p$ -value, which is a measure of the probability that differences in means would have occurred by chance. In two-tailed tests (relevant to circumstances in which the direction of change is not hypothesized), statistical significance is attributed to those differences that would have occurred by chance fewer than five times in 100 (equivalent to a 95 percent confidence level). However, statistical significance does not always equate to policy relevance. The importance of statistically significant differences in means must be judged in the context of the variables being measured and the groups or samples being compared.

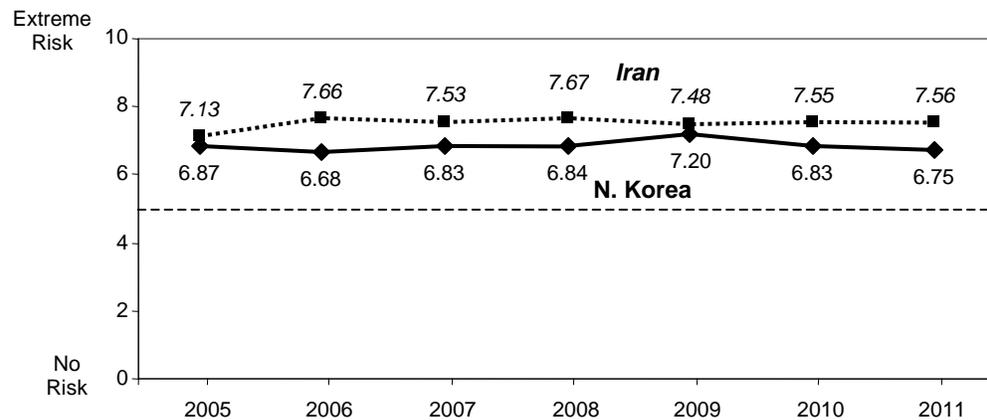
**Figure 2.2: Trend in Mean Risks of Nuclear Proliferation to Other Countries**



To investigate perceived risks of North Korea or Iran providing nuclear weapons or materials to terrorists, we ask the following two questions and chart trends in mean responses in Figure 2.3.

- S11: Assuming that North Korea possesses nuclear weapons and using the scale from zero to ten, where zero means *no risk* and ten means *extreme risk*, how do you rate the risk of North Korea providing nuclear weapons or nuclear materials to terrorists?
- S15: Again, assuming that Iran possesses nuclear weapons and using the same scale from zero to ten, how do you rate the risk of Iran providing nuclear weapons or nuclear materials to terrorists?

**Figure 2.3: Trends in Mean Risks of North Korea or Iran Providing Nuclear Weapons or Materials to Terrorists**



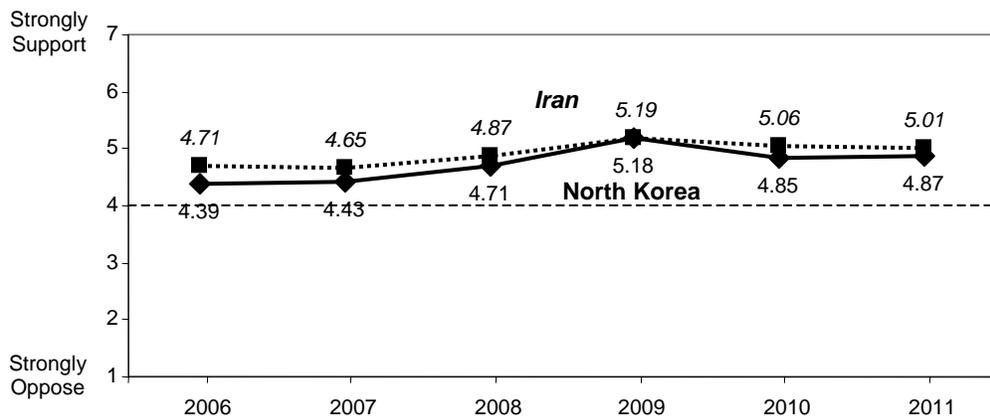
In each measurement period, respondents rate the mean risks of North Korea or Iran providing nuclear weapons or nuclear materials to terrorist groups well above midscale, with the risks associated with Iran judged statistically significantly higher ( $p < .0001$ ) in each period than those assessed for North Korea.

Using the following questions, we then ask participants to register their support for or opposition to using US military forces either acting cooperatively as a member of a United Nations coalition or acting unilaterally to deny nuclear weapons to North Korea and Iran (separate questions).

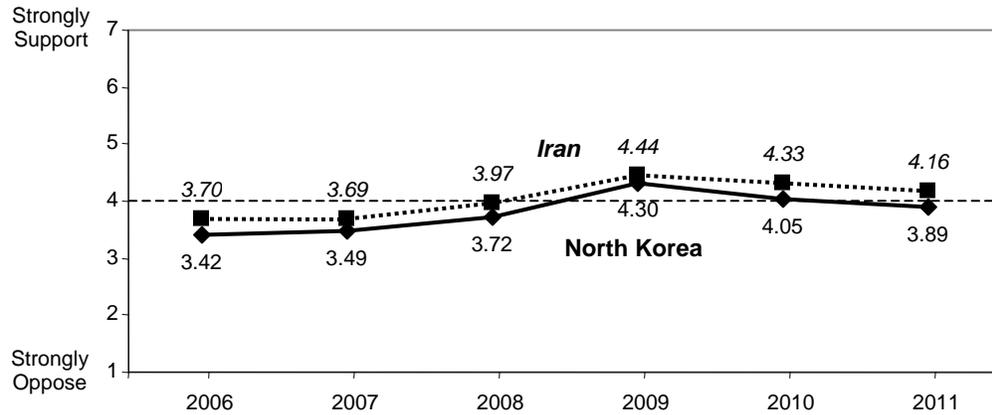
- S12, S16: On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how would you feel about using US military forces as part of a United Nations military coalition, to compel North Korea (Iran) to abandon its nuclear weapons program if diplomacy and economic sanctions fail to achieve this goal?
- S13, S17: Again on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how would you feel about using US military forces, acting alone if necessary, to compel North Korea (Iran) to abandon its nuclear weapons program if diplomatic efforts fail and the United Nations declines to take such action?

We chart trends in mean responses to the two questions of acting as part of a UN military coalition in Figure 2.4, and trends in mean responses to the two questions about acting alone to force each country to abandon its nuclear weapons programs in Figure 2.5.

**Figure 2.4: Trends in Mean Support for Using US Military Forces as Part of a UN Coalition to Deny North Korea / Iran Nuclear Weapons**



**Figure 2.5: Trends in Mean Support for Using US Military Forces Unilaterally to Deny North Korea / Iran Nuclear Weapons**



Three policy relevant points are apparent from Figures 2.4 and 2.5. First, mean support for acting as part of a UN military coalition to force North Korea or Iran to abandon nuclear weapons programs is above midscale in each survey period and is statistically significantly higher than acting unilaterally ( $p < .0001$ ) in each survey. Second, public support for using US military forces unilaterally to deny nuclear weapons to either country varies from slightly below to slightly above midscale, indicating that most respondents neither strongly support nor strongly oppose unilateral US military actions for these purposes. These trends indicate that the policy space for taking military action against either country to prevent them developing nuclear arsenals is relatively open, and that public support likely would depend on specific circumstances and how the political and military justifications for such actions are presented. The third point is that for all four questions in each survey sample, mean support is higher for acting to prevent Iran from acquiring nuclear weapons than is support for denying nuclear weapons to North Korea.

## Short Answer

**Q: How do respondents view contemporary and emerging interstate nuclear threats to the United States?**

While mean risks of US nuclear conflict with Russia and China are judged well below midscale and declining, average risks of US nuclear conflict

with North Korea and Iran are rated well above midscale and growing, with Iran seen as posing a significantly higher risk of nuclear war than North Korea. Mean risks of nuclear proliferation to additional countries are perceived to be high in absolute terms (near a value of seven on a zero-to-ten scale), but have declined about nine percent since 2005. Iran is perceived to pose a higher risk of providing nuclear weapons or nuclear materials to terrorists than is North Korea. Public support is increasing for using US military forces as part of a United Nations coalition to deny nuclear weapons to Iran and to force North Korea to abandon its nuclear weapons. Public support is substantially lower and largely undecided about using US military forces unilaterally to prevent either country from obtaining a nuclear arsenal.

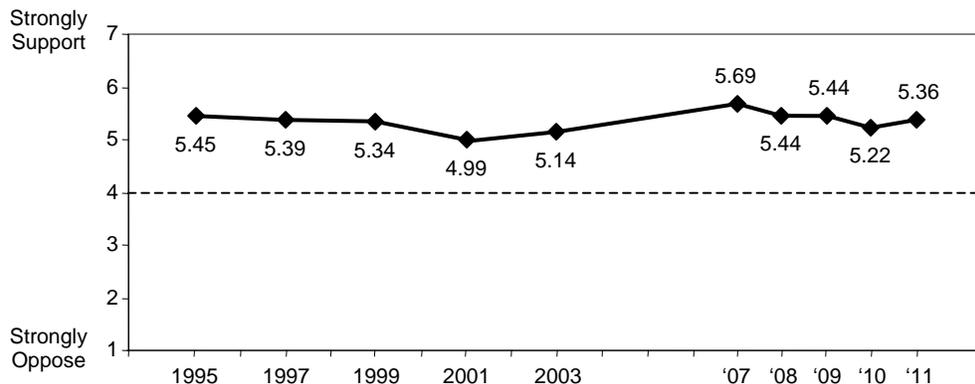
## Section 2.2: Nuclear Arms Control, Nuclear Abolition, and Retaining US Nuclear Weapons

In this section, we report public views on contemporary nuclear arms control initiatives, the outlook for eventual worldwide nuclear abolition, and the importance of retaining US nuclear weapons today.

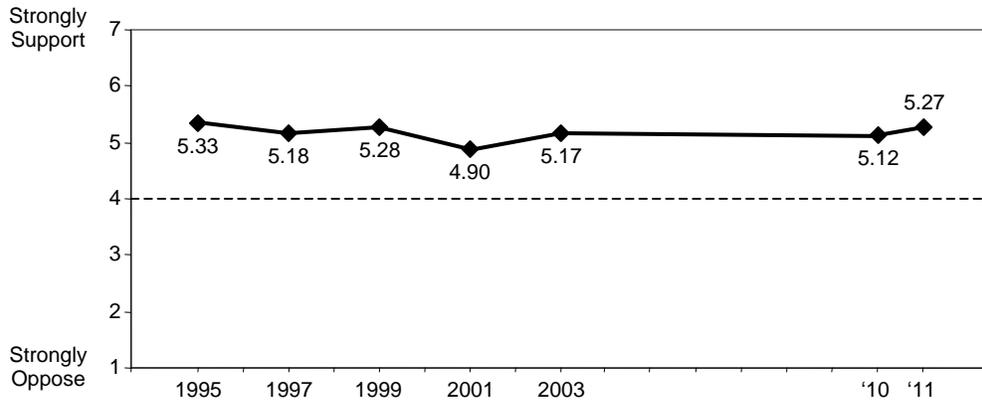
### Nuclear Arms Control Initiatives

In 1995 we first asked questions about support for a treaty to ban all nuclear test explosions and a treaty to ban production of fissile materials that could be used to produce nuclear weapons, and we have tracked patterns of public support in multiple subsequent surveys (though not annually) as charted in Figures 2.6 and 2.7.

**Figure 2.6: Mean Support for a Treaty Banning All Nuclear Test Explosions**



**Figure 2.7: Mean Support for a Fissile Material Cutoff Treaty**



These data show that mean US public support for a nuclear test ban treaty and for a treaty to limit the production of fissile materials that could be used to make nuclear weapons has been sustained at high absolute levels since first measured in 1995.

After the New START treaty with Russia had been signed and submitted for legislative ratification in the US and Russia, we asked respondents to our 2010 survey the following question:

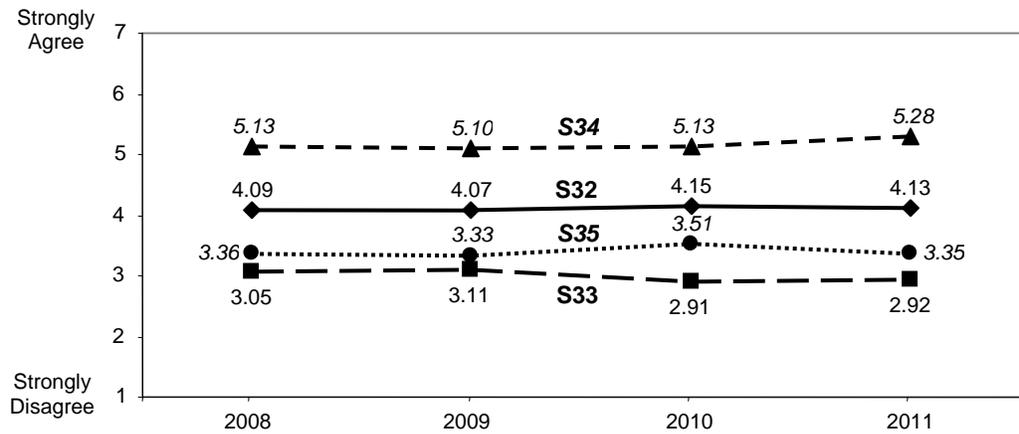
(2010: S31a): The new arms control treaty recently signed by the Presidents of the US and Russia that agrees to reduce each country's number of ready-to-use, long-range nuclear weapons to 1,550 does not go into effect until it is ratified by the US Senate and Russia's legislature. How do you want your senator to vote?

As previously reported (Jenkins-Smith, Herron, and Silva, 2011), 76 percent of respondents wanted their Senators to vote for treaty ratification.

In our 2011 survey we stated that the United States and Russia have more nuclear weapons than any other countries, and informed each respondent that the US and Russia have agreed to reduce their numbers of ready-to-use, long-range nuclear weapons to 1,550 each. We then posed the following series of statements about nuclear disarmament and asked participants to respond to each on a scale from one to seven where one means strongly disagree and seven means strongly agree. The symbol following each statement identifies the corresponding plot line in Figure 2.8.

- S32: The United States should decrease the numbers of ready-to-use, long-range nuclear weapons below the planned minimum level of 1,550 if Russia agrees to similar reductions that are verifiable. ( —◆— )
- S33: The United States should continue to reduce the numbers of ready-to-use, long-range nuclear weapons below 1,550, even if Russia does not. ( —■— )
- S34: The United States should not reduce the size of its nuclear stockpile below the level of any other country. ( —▲— )
- S35: Having large numbers of US nuclear weapons is no longer necessary. As long as we have a few dozen nuclear weapons, we can prevent others from using nuclear weapons against us and our key allies. ( .....●..... )

**Figure 2.8: Mean Views on Reducing Below New START Levels**



Mean reactions to each assertion are remarkably stable across the four surveys. While small majorities indicate they are open to reducing below the current limit of 1,550 if Russia matches US reductions (S32), most are opposed to continuing reductions if Russia does not agree to matching cuts (S33). Most participants do not want the United States to have fewer nuclear weapons than any other country (S34), and mean reactions to the assertion that only a few dozen US nuclear weapons are sufficient to defend the US and its key allies are below midscale (indicating disagreement) in each survey (S35).

To investigate public sensitivities to further reducing the numbers of US nuclear weapons, we present the following two arguments in random order:

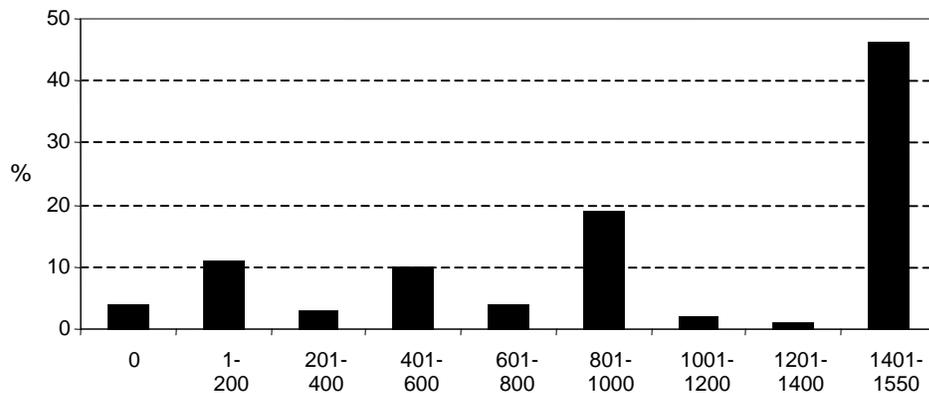
Some people argue that since the end of the Cold War, US nuclear weapons have become much less important for our security and that of our allies. They argue that the US needs only a few hundred strategic nuclear weapons to prevent other countries or terrorist groups from using nuclear weapons against us or our key allies that do not have nuclear weapons such as Germany, Japan, and South Korea. They think money spent on maintaining a large US nuclear arsenal should be substantially reduced.

Some people argue that because nuclear weapons have spread to other countries such as India, Pakistan, and possibly North Korea, and because Iran and some terrorist groups may be seeking nuclear weapons, it would be unwise for the US to reduce below 1,550 ready-to-use, long-range nuclear weapons currently agreed to with Russia. They think money spent on the US nuclear arsenal must be sustained to prevent others from using nuclear weapons against us, and to reduce the need for our key allies to develop nuclear weapons of their own.

We then pose the following question for which responses are recorded verbatim and grouped into increments of 200 for display in Figure 2.9.

S31: Assuming zero is the minimum number and 1,550 is the maximum number, how many ready-to-use, long-range nuclear weapons do you think the United States needs to prevent other countries or terrorist groups from using nuclear weapons against us and our key allies?

**Figure 2.9: Preferred Number of Ready-to-Use, Long-Range US Nuclear Weapons: 2011**



Notice that almost half (46%) of respondents choose a value between 1,401 and the maximum allowable limit of 1,550, and only four percent choose zero. The modal distribution at the highest values suggests that some respondents would choose levels above the maximum of 1,550 if the survey allowed higher levels. The median response is 1,000, and the mean is 1,032,

suggesting potential public resistance to reductions to very low numbers. For example, only about 18 percent of respondents are willing to reduce below 500 ready-to-use, long-range nuclear weapons.

## Perspectives on Eventual Nuclear Abolition

We investigate public beliefs about eventually eliminating all nuclear weapons worldwide using two complementary techniques that appear in different locations in the survey. In one, we pose contrasting statements about whether a world free of nuclear weapons would present a safer or more dangerous security environment and also pose contrasting statements about the possibility of eventual nuclear abolition. These kinds of required choices force participants to select the assertion they believe to be most accurate, but they do not allow respondents to shade or qualify their responses. In that sense, they force choices of either/or that reflect basic instincts or beliefs. In the alternative technique, we investigate participants' beliefs about nuclear abolition using continuous scales that allow responses to be qualified between absolute values. This allows more nuanced expressions of doubt to be measured while also serving as a validating check against responses to the more categorical opposing statements. We begin with the two pairs of contrasting statements tested in 2010 and 2011 and corresponding response summaries in Table 2.2. The order of statements within each pair is randomized.

**Table 2.2: Juxtaposing Beliefs About Nuclear Abolition**

%	2010	2011
A world without nuclear weapons would be <i>safer</i> than today because the destructive power of nuclear weapons would no longer be a threat.	54	58
A world without nuclear weapons would be <i>more dangerous</i> than today because countries could again conduct large-scale wars like World Wars I and II to settle disputes.	46	42
<i>It is possible</i> to abolish all nuclear weapons worldwide if the US carefully negotiates with other countries to gradually reduce the numbers of nuclear weapons to zero.	20	16
While gradual reductions in the numbers of nuclear weapons may be beneficial, <i>it will not be possible</i> to convince all countries to abolish all nuclear weapons.	80	84

For the first pair of contrasting statements (both in 2010 and 2011), a modest majority of participants agree more with the assertion that a world without nuclear weapons would provide a safer security environment, but note that more than forty percent of participants disagree, believing that a nuclear weapons-free world would actually present a more dangerous security environment. This suggests that a substantial difference of opinion exists on the issue of the implications of nuclear abolition.

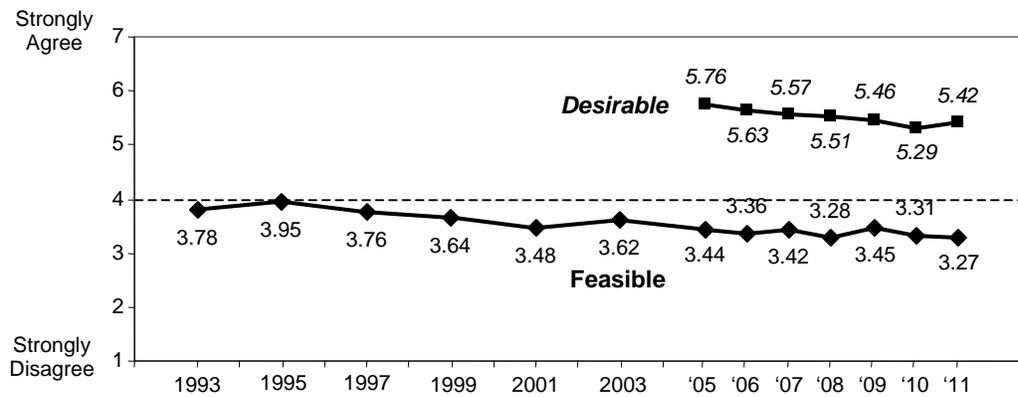
Responses to the second pair of contrasting statements about the possibility of nuclear abolition present a very different kind of opinion split, with very large majorities in both measurement periods agreeing more with the assertion that nuclear abolition is not possible. Majority opinions of 80 percent or more approach public consensus on an issue. Clearly, most of our respondents do not think all nuclear weapons worldwide can be eliminated.

Our remaining two questions on nuclear abolition (shown below) address the desirability and feasibility dimensions of nuclear abolition within a specified future time period by allowing participants to express their beliefs about related statements using a scale from one to seven where one means strongly disagree and seven means strongly agree. Again, they appear in the survey in random order.

- S25: It is *feasible* to eliminate all nuclear weapons worldwide in the next 25 years.
- S26: It is *desirable* to eliminate all nuclear weapons worldwide in the next 25 years.

We began asking the feasibility question in 1993 and have asked it in each subsequent survey; we began the desirability question in 2005 and have asked it in annual surveys since that time. Trends in mean responses to each assertion are compared in Figure 2.10.

**Figure 2.10: Trends in Mean Desirability / Feasibility of Nuclear Abolition**



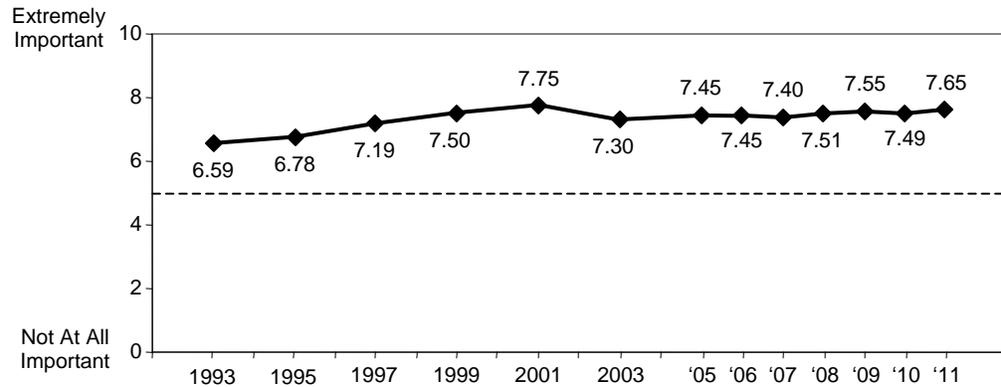
In each of the seven survey periods in which the desirability of nuclear abolition has been measured, all mean responses are well above midscale. Though mean desirability in 2011 is statistically higher than that recorded in the prior year ( $p = .0009$ ), the overall trend since 2005 is downward about six percent. In the 13 survey periods in which the feasibility statement has been posed, all means are below midscale and trending downward about 13 percent. When combined with our two sets of contrasting statements previously described, it is clear from multiple national samples of the US general public taken over an 18 year period encompassing most of the post-Cold War era to date, the US public thinks the eventual abolition of all nuclear weapons worldwide would be desirable and might produce a safer world, but large majorities do not think nuclear abolition is feasible from a US policy standpoint or that such a goal is even possible when considering the need to convince all other countries to abandon nuclear weapons.

## Importance of Retaining US Nuclear Weapons

Given the above descriptions of public support for various nuclear arms control initiatives, beliefs about the minimum numbers of nuclear weapons necessary to defend the US and its key allies, and the outlook for the eventual elimination of all nuclear weapons worldwide, we conclude this chapter with assessments of the importance of retaining US nuclear weapons today. We have been tracking public responses to the following question since 1993, and we display the trend in mean responses in Figure 2.11.

S27: Using a scale from zero to ten, where zero means not at all important and ten means extremely important, how important is it for the US to retain nuclear weapons today?

**Figure 2.11: Trend in Mean Importance of Retaining US Nuclear Weapons**



When we first measured the importance of retaining US nuclear weapons in 1993—only 18 months after the demise of the USSR—we expected to track a decline in the relevance of US nuclear weapons as we proceeded into the post-Cold War era. We expected this measurement—as well as others such as the importance of US nuclear weapons for deterring other countries (S18), deterring terrorist groups (S21), maintaining US international status and influence (S23), and for the US remaining a military superpower (S24)—all to decline over time.<sup>3</sup> Instead, we find most such trends to be upward. For example, in Figure 2.11, note that the lowest mean importance of retaining US nuclear weapons (6.59) was recorded in 1993, after which mean assessments steadily increased to a peak (7.75) occurring in our 2001 survey that began the day following 9/11. After a significant decline in 2003, mean assessments gradually have increased to a point in 2011 that is but one-tenth of a point (7.65) below the 2001 peak. Throughout the post-Cold War era to date, and concurrent with deep reductions in the size of the US and Russian nuclear arsenals, US public perceptions of the importance of retaining some form of a US nuclear arsenal has *increased* about 16 percent. This suggests that while the American people support reciprocal reductions in the numbers of US and Russian nuclear weapons, and though

<sup>3</sup> Responses to the associated questions identified above are found in Appendix 2. See Chapter Four in Jenkins-Smith, Herron, and Silva (2011) for detailed analyses of trends in public assessments of the contemporary relevance of US nuclear weapons.

they favor continued nuclear arms control, they judge the value of retaining a US nuclear arsenal as increasingly important, and most do not yet believe nuclear abolition is a feasible policy goal.

## Short Answer

**Q: How are prospects for arms control and eventual nuclear abolition viewed relative to the importance of retaining US nuclear weapons today?**

Our data show strong public support for the New START agreement and potential support for further reductions approaching 1,000 ready-to-use, long-range US nuclear weapons *if* mutual reductions by Russia are verified. There is little public support at this time for reducing US strategic nuclear weapons substantially below 1,000, even if cuts are matched by Russia. We find sustained public support for the existing Nuclear Nonproliferation Treaty, a prospective treaty to ban all nuclear test explosions, and a treaty that would ban the production of fissile materials that could be used to make additional nuclear weapons. The risks of nuclear proliferation are viewed with deep concern—especially the potential for nuclear weapons or materials to be acquired by or transferred to terror groups. While many of our respondents think the elimination of nuclear weapons worldwide is desirable, most do not think it is a feasible policy goal. Accordingly, two decades into the post-Cold War era, we find that public valuations of the importance of retaining US nuclear weapons have significantly *increased*.

## **Chapter Three**

### **Responding to Limited Nuclear Attacks**

**T**he essence of strategic nuclear deterrence among peer nuclear weapons states is that each has the ability to absorb a surprise nuclear attack while retaining the capabilities to assure unacceptable damage to the attacker with nuclear forces that cannot be destroyed with a high degree of certainty. Of course the Cold War term for such capabilities was “mutual assured destruction.” The end of the Cold War did not terminate strategic nuclear relationships among peer nuclear powers, and it did not invalidate conceptual theories underlying mutually assured destruction. Contemporary relationships among the United States, Russia, and China may be more cordial and cooperative than during the Cold War, and political, economic, and social ties among the three may have become more interdependent, but each continues to share a mutual ability to destroy the others—even following a surprise nuclear attack.

While the first two decades of the post-Cold War era have not fundamentally changed the mutual assured destruction that is characteristic of peer nuclear relationships, they have produced a more complex nuclear security environment. India conducted the first confirmed nuclear test explosion outside the five permanent members of the United Nations Security Council on May 18, 1974, in the midst of the Cold War, but the three tiered nuclear security environment briefly described in the previous chapter did not fully emerge until after the Cold War. To review, Level-I is comprised of the three peer nuclear states, each of which continues to maintain the capabilities necessary to respond to a surprise nuclear attack with sufficient nuclear retaliatory force to pose an unavoidable existential threat to the attacking state. Level-II consists of states that have acquired or are vigorously pursuing nuclear weapons but have not yet developed the capabilities to threaten the existence of the United States. Level-III results from non-state groups that seek to acquire and use nuclear weapons or nuclear materials in acts of nuclear or radiological terrorism. The relationship between Level-II and Level-III nuclear threats is particularly worrisome, as some Level-II states may be more likely to become sources of the nuclear capabilities sought by Level-III threats. But our focus here is on the potential for a Level-II nuclear

threat to employ one or more nuclear weapons against the United States—whether by accident, irrational misjudgment, or design—that, while damaging to American civilians or military forces, does not threaten US survival. Risks associated with such attacks can be conceived as limited nuclear threats, and responses to such attacks may (but not necessarily) involve nuclear retaliation. To better understand whether our respondents see utility for US nuclear weapons should nuclear deterrence fail, we have posed the following two contrasting assertions in four surveys beginning in 1999 that provide public perspectives on the utility of US nuclear weapons for winning wars. After informing participants that they need not agree completely with either statement, respondents are asked to identify with which of the two assertions they *most* agree.

**Table 3.1: Trends in Mean Perceptions of the Utilities of US Nuclear Weapons**  
(random order)

%	1999	2001	2010	2011
US nuclear weapons have no use except for deterring others from using their nuclear weapons against us.	42	40	37	35
US nuclear weapons are useful both for deterring others from using their nuclear weapons against us and for winning wars if necessary.	58	60	63	65

A clear trend is apparent in which the post-Cold War era increasingly is perceived as one in which US nuclear weapons provide utility for war fighting should nuclear deterrence fail.

In the previous chapter, we report public perceptions of Level-II threats. In this chapter we investigate public sensibilities for how the US should respond to limited nuclear attacks from such states. Doing so requires providing specific assumptions and circumstances, and for mass publics it requires innovative survey techniques that we will describe in detail. Using two separate scenarios, we investigate how participants consider differential force levels for responding to limited nuclear attacks against the US and its civilian population versus limited nuclear attacks against US military forces overseas. Specifically, we seek insight into the following research question.

*Nuclear Response:* How do ordinary Americans view response options to limited nuclear attacks against the US or its military forces?

### Section 3.1: Introduction to Scenario Metrics

Judgments about how best to respond to limited nuclear attacks require contextual specifics such as who attacked, using what kinds of nuclear weapons, to what effect, against whom. It also requires weighing potential response options that afford differential levels of force, risks, and costs. Providing these kinds of details for the training and preparation of military leaders and civilian policymakers is sometimes accomplished using scenarios in which hypothetical information is revealed in stages that force participants to formulate and choose policy responses.<sup>1</sup> Historically, because of limitations of survey collection methods for mass publics, theoretical scenario exercises have not been feasible for studying mass opinions and measuring nuclear response tolerances and preferences of ordinary citizens.<sup>2</sup> As a result, training of civilian and military leaders has had to rely on assumptions about how the American people would want their officials to respond. Estimates of public beliefs and expected reactions to these kinds of security issues largely have been limited to elite opinion about potential public opinion—opinions about opinions—rather than being informed by empirical data.

The maturation of survey collection methods via the Internet now affords new opportunities for measuring public opinions about nuclear response options. Internet survey methods allow researchers to apply scenario experiments using contexts tailored to specific lines of investigation, sequential information flows, and differential progression paths (if—then) much like those employed

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<sup>1</sup> Another key objective of most such exercises is the practice of procedures for implementing those policy choices. The procedural dimension of scenario exercises is not applicable to public participation.

<sup>2</sup> Many questions about willingness to employ US nuclear weapons under varying circumstances have been posed in numerous surveys of the American public, and we discuss some of those findings later in this chapter. But the amounts of contextual information and the range of potential response options involved in nuclear scenarios are sufficiently extensive as to prohibit application by telephone surveys; printed surveys are impractical because respondents can page ahead to see what choices lead to what consequences in progressive scenarios; and face-to-face surveys are prohibitively expensive and operationally impractical because of the amounts of information that need to be conveyed verbally (much as with phone surveys).

in military and civilian training exercises for policymakers. We explore the application of such methods in our latest survey described below.

In scenario-driven exercises or surveys, the range of possible policies for responding to limited nuclear attacks is larger than can be fully addressed in detail, but an array of policies can be grouped and simplified along a spectrum of force. At one end of the range of response options might be diplomacy and negotiations that include the threat of military force, but do not yet involve the actual application of military force. These kinds of responses might be coupled with political measures (removing ambassadors; expelling diplomats, etc.), economic sanctions, trade tariffs and restrictions, and other policies that constitute punitive reactions short of military force. At the opposite end of the response spectrum might be full nuclear retaliation intended to destroy the government and severely punish the country responsible for the initial nuclear attack. Between response spectrum extremes are a wide variety of intermediate conventional (and limited nuclear) force options that may be applied unilaterally or in coalitional arrangements.

For the purposes of surveying mass opinions, it is necessary to bundle various response options into a manageable number of alternative policies affording access to the full range of choices without accounting for every possible combination of options. In the scenarios described below, we provide four initial response options arranged in escalatory order as follows: (a) diplomacy and negotiations that may include threats of force but do not yet include actual applications of military force; (b) airstrikes using conventional armaments for the purposes of destroying nuclear capabilities or punishing the attacker; (c) military invasion using conventional forces for the purpose of regime change; and (d) nuclear retaliation.

Scenario-driven exercises with elites typically include multiple sequential stages affording differential progression paths. If one policy option is chosen, different theoretical results are provided than if another option is chosen. Subsequent stages of scenarios follow in which additional information is provided sequentially and new policy options are formulated. The iteration of complex scenarios in military exercises can be quite detailed and can extend over days or weeks. For our initial experiments with public surveys, we limit scenario development to two stages as will be described.

But regardless of the information provided, or how response options are packaged, or collection methodologies employed, one limitation is shared by all exercises whether conducted with policy elites and specialists or ordinary citizens. The limitation is that scenario-driven exercises are *ex-ante*. Because they are before the fact, they cannot simulate the emotional dimensions of *ex-post* decision making. The kinds of complex decisions that will be required in the aftermath of any kind of nuclear attack necessarily will involve both cognitive and affective dimensions. The cognitive dimension of decision making incorporates rational weighing of costs and benefits associated with alternative responses and calculations of expected consequences. The affective dimension involves processing the emotional trauma that is sure to accompany any nuclear attack, such as anger, desire for retribution, heightened patriotism, and increased sense of sociotropic and individual threats. These and other unavoidable emotive and affective implications that will be exacerbated and prolonged by modern commercial and social media and instant worldwide communications will interact with, motivate, and impede the purely cognitive dimensions of decision making.

*Ex-ante* scenarios of any type, conducted with any group, are limited to exercising primarily the cognitive dimensions of decision processes. That limitation affords both advantages and disadvantages. Perhaps the key advantage is that when cognitive aspects of decision making are debated and measured in isolation from affective influences, valuable insights can be gained into the most unadulterated aspects of policy rationalization and choice. Of course that same feature also is a disadvantage because actual decision making in the aftermath of such events will unavoidably be influenced by emotions that cannot be simulated; they can be experienced only after the fact. Accordingly, scenario-driven exercises are experimental by nature; they can only approximate policy processes and choices. Results must be interpreted with expectations of affective directional influence, and it is reasonable to hypothesize that nuclear attack scenarios conducted without affective influences are likely to produce response preferences that initially are more moderate than would be the case if the full range of emotional effects were present.<sup>3</sup>

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<sup>3</sup> Affective influences of the nature expected in nuclear events will vary temporally. Some may be ephemeral, others may persist and only slowly decline, while still others may become permanent. As an example, public judgments of the threat to the US of all forms of terrorism, both foreign and domestic, declined about eight percent over the first 54 days following 9/11, and had declined by about 12 percent one year later, while enhanced security screening at US airports apparently has become permanent (Jenkins-Smith and Herron 2002; Herron and Jenkins-Smith 2003).

That limitation does not make scenario results valueless; it makes them directionally predictable and expectedly inaccurate while providing insights into beliefs and unadulterated cognitive processes underlying decision making. As we describe the limited nuclear attack scenarios employed in our most recent survey, it will be important to recognize the potential utility of measuring public support in hypothetical nuclear contexts *ex-ante*, while remembering that response preferences in theoretical scenarios can be expected to be more moderate than might be the case when *ex-post* affective influences are present.

Upon entry to the on-line survey, each prospective participant is randomly and anonymously assigned to one of three scenarios appearing later in the survey; no respondent participates in more than one scenario. This makes the sample size for each scenario approximately 800. Because the identity of the attacker is a fundamental requirement for considering response options, we provide unambiguous attribution for the initiating attack in each scenario. Also, each scenario is set in the near future (the year 2015), and each provides for two stages of participation, depending on initial response choices. Scenario One involves limited nuclear attacks by North Korea on US civilians, and Scenario Two involves a North Korean limited nuclear attack on US and allied naval forces at sea. Both are described in this chapter. Scenario Three involves radiological terror attacks on the US by Iran and Hezbollah that are described in Chapter Four.

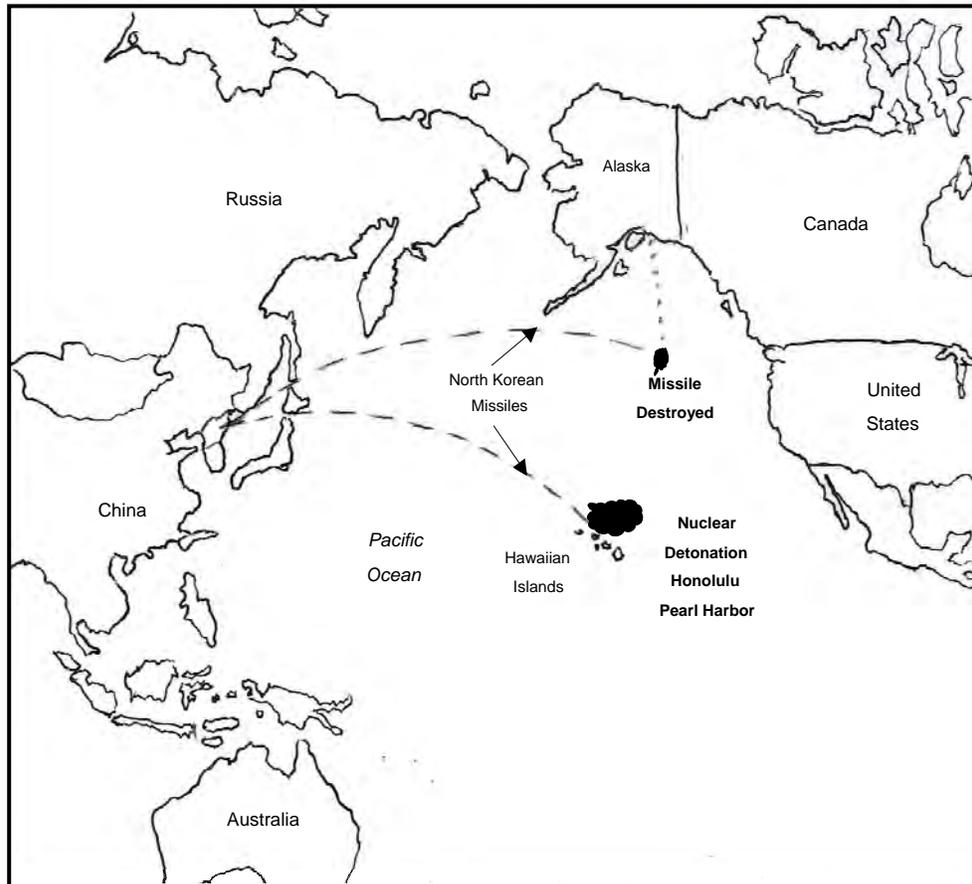
### **Section 3.2: Scenario One: Limited Nuclear Attacks on the US by North Korea**

Each participant in the first stage of Scenario One receives the following situational description and views the graphic shown in Figure 3.1.

**SITUATION:** The year is 2015. A military faction takes control in North Korea and begins shelling Seoul (the capital of South Korea), bombing South Korean air bases, and invading South Korea. US and South Korean forces slow the invasion and conduct airstrikes on military targets in North Korea using conventional munitions. Within a week, the North Korean invasion is reversed, and US and South Korean ground forces regain South Korean territory and prepare to invade North Korea.

Without warning, two advanced models of the Taepodong-2 missile are launched from North Korea. One strikes Honolulu, Hawaii with a nuclear explosion producing at least 40,000 dead and unknown numbers of injured and missing persons. US naval facilities at Pearl Harbor are heavily damaged. The second North Korean missile is intercepted off the coast of Alaska and destroyed by US missile defenses before it reaches its intended target of Seattle, Washington. Chinese and Russian nuclear forces are brought to their highest levels of alert, and both countries call on all parties to cease hostilities. North Korea warns that if American and South Korean forces invade North Korea, it will launch additional nuclear missile strikes against cities in the United States and South Korea.

**Figure 3.1: Scenario One Illustration**



Each respondent then receives the following instruction and is presented with the four response options shown in Table 3.2, only one of which can be chosen. We also show distributions of responses in that table.

Though it is not possible to outline a full range of policy choices, and more information would be wanted, we are presenting a limited number of response options that we ask you to consider. It is OK if you do not agree completely with any of the choices, we just need to know which one of the following options you favor the *most*.

**Table 3.2: Scenario One Response Options (Stage-1)**

	<b>2011 (%)</b>
<i>Diplomacy and Negotiations:</i> Demand a cease-fire and warn that further nuclear attacks from North Korea will result in full-scale US nuclear retaliation. Assure China and Russia that the US will not attack either country. Demand that UN coalition forces be assembled to force North Korea to negotiate a settlement. The primary objectives are to stop further nuclear attacks, to discourage China and Russia from entering the conflict, and to avoid nuclear escalation.	<b>26</b>
<i>Airstrikes Using Conventional Armaments:</i> While pursuing diplomatic measures at the United Nations, conduct air attacks using precision guided conventional munitions against known and suspected nuclear facilities and missile launch sites in North Korea. Reinforce US forces in South Korea but do not invade North Korea. Do not use US nuclear weapons unless North Korea uses another nuclear weapon.	<b>28</b>
<i>Invasion Using Conventional Armaments:</i> Conduct US and South Korean air, land, and sea attacks against North Korea using conventional armaments, with the objectives of invading and militarily defeating North Korea and reuniting the Korean peninsula under a single government. Do not use US nuclear weapons unless North Korea uses another nuclear weapon. Vigorously pursue coalition support from other countries through the United Nations.	<b>17</b>
<i>Retaliation Using Nuclear Weapons:</i> Conduct nuclear strikes against North Korea using US intercontinental ballistic and cruise missiles to destroy North Korean nuclear weapons and facilities before more North Korean nuclear weapons are used. The objectives are to completely defeat North Korea and unify the Korean peninsula under a single government. Advise China and Russia that the US does not intend to use nuclear weapons against either nation, but warn both countries not to interfere with the military defeat of North Korea. Assure China and Russia that US forces will withdraw from a unified Korea when recovery is complete.	<b>29</b>

After each participant chooses their preferred response option, paths diverge. Respondents who prefer diplomacy and negotiations are presented with a restatement of their preferred option (as shown below) and asked the following single question before exiting the scenario.

- ***You chose diplomacy and negotiations as follows:*** Demand a cease-fire and warn that further nuclear attacks from North Korea will result in full-scale US nuclear retaliation. Assure China and Russia that the US will not attack either country. Demand that UN coalition forces be assembled to force North Korea to negotiate a settlement. The primary objectives are to stop further nuclear attacks, to discourage China and Russia from entering the conflict, and to avoid nuclear escalation.
- On a scale from zero to ten where zero means not at all confident and ten means completely confident, how confident are you that this is the best possible course of action under these circumstances?

Similarly, those who choose retaliation using nuclear weapons receive a repeat description of that option and are asked the same confidence question before exiting the scenario. We summarize confidence levels later in the chapter.

Because the first response option (no force) and the last response option (nuclear retaliation) represent the ends of the response spectrum for this scenario, participants choosing those options do not participate in stage two of the scenario.<sup>4</sup> The 28 percent of respondents who choose airstrikes using conventional armaments and the 17 percent who choose invasion using conventional armaments in stage one of the scenario advance to stage two where they receive additional information and are presented with three subsequent policy options. In each case, one policy option provides an opportunity to de-escalate from force to diplomacy and negotiations; a second option provides for continuing or escalating conventional force applications; and a third option allows escalation to nuclear weapons. Each is described below.

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<sup>4</sup> Participants who are willing to absorb two attempted nuclear strikes against the US homeland resulting in 40,000 American deaths and are not willing to respond initially with military force are unlikely to choose force in a subsequent stage of this scenario, and participants who prefer immediate nuclear retaliation have already selected the most forceful response.

## Stage Two: Airstrikes Using Conventional Armaments

Respondents selecting initially to respond with airstrikes employing conventional armaments are provided a recap of their policy choice and the following new information, after which they are asked to choose one of the three policy options shown in Table 3.3.

RESULT: In response to US and South Korean conventional air and missile strikes, North Korea continues to shell Seoul, the capital of South Korea, with conventional artillery, but does not use another nuclear weapon and does not attempt another invasion of South Korea.

**Table 3.3: Scenario One Response Options (Stage-2) if Conventional Airstrikes Chosen Initially**

	<b>2011 (%)</b>
<i>Option-1:</i> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, stop US and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Demand that United Nations coalition forces be assembled to force North Korea to negotiate a settlement and surrender its nuclear weapons and materials to UN representatives.	<b>50</b>
<i>Option-2:</i> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, invade North Korea using conventional forces with the objective of overthrowing the North Korean regime and unifying the Korean peninsula under a single government. Do not use US nuclear weapons unless North Korea uses another nuclear weapon.	<b>41</b>
<i>Option-3:</i> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, use US nuclear weapons to destroy North Korean military forces and nuclear weapons capabilities, overthrow the North Korean regime, and reunite the Korean peninsula under a single government.	<b>9</b>

After choosing a stage two response option, participants are asked the same question previously shown about how confident they are that their choice is the best possible response option.

## Stage Two: Invasion Using Conventional Armaments

Participants initially selecting to respond with an invasion of North Korea using conventional forces and armaments are provided a recap of their policy choice, the following new information, and stage two policy choices shown in Table 3.4.

**RESULT:** In response to US and South Korean conventional military attacks and invasion, North Korea continues to shell Seoul, the capital of South Korea, and launches air strikes against US and South Korean military forces and bases in South Korea. North Korea appeals to China for assistance and evacuates North Korean military and political leaders to bunkers and command centers located deep within mountains that cannot be destroyed by precision guided conventional munitions. North Korea declares that if US and South Korean forces do not stop attacking and withdraw, the North will have no choice but to attack South Korea with Nuclear weapons.

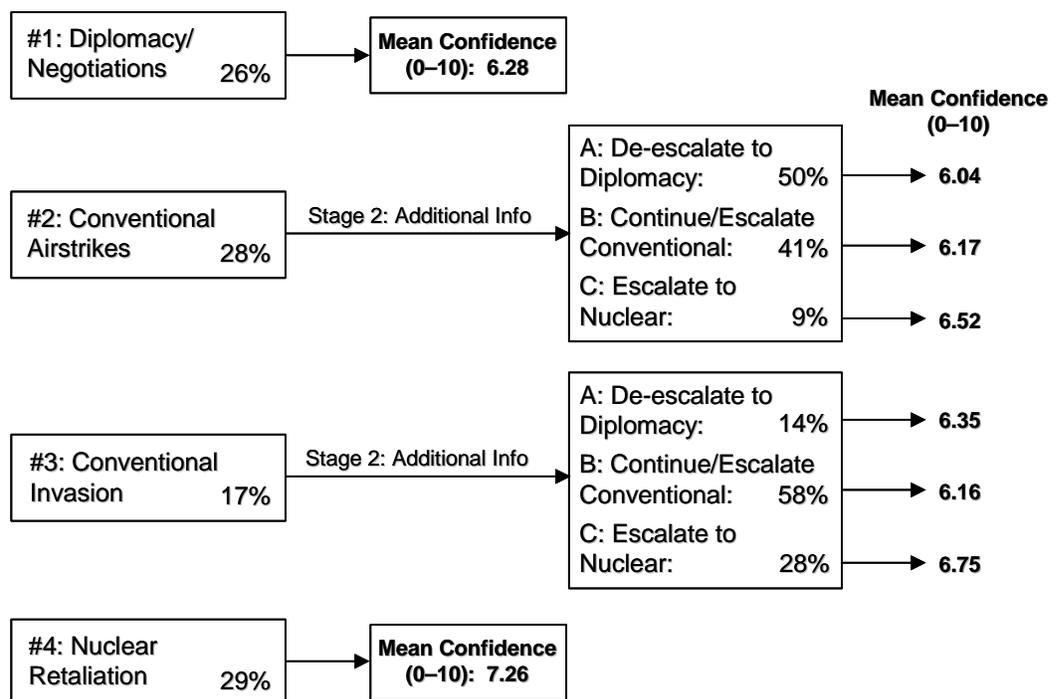
**Table 3.4: Scenario One Response Options (Stage-2) if Invasion Using Conventional Armaments Initially Chosen**

	<b>2011 (%)</b>
<i>Option-1:</i> If invading forces do not quickly compel North Korea to cease hostilities, stop US and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Take the matter to the United Nations Security Council and open negotiations with North Korea. Withdraw US and South Korean forces from North Korean territory if North Korea agrees to surrender its nuclear weapons and materials to UN representatives.	<b>14</b>
<i>Option-2:</i> Continue the invasion and conventional attacks on North Korea with the objectives of destroying North Korean nuclear weapons and facilities, overthrowing the North Korean regime, and reuniting the Korean peninsula under a single government. Do not use US nuclear weapons unless North Korea again uses a nuclear weapon.	<b>58</b>
<i>Option-3:</i> In support of US and South Korean invading forces, use US nuclear weapons to destroy North Korean underground command centers, nuclear weapons and facilities, and missile launch sites. Do not stop until North Korea is defeated and the Korean peninsula is reunited under a single government.	<b>28</b>

Again, following a response choice, participants are asked to express on a scale from zero to ten their confidence that the preferred policy is the best possible response option.

After completing stage two, all respondents exit the scenario. We map response choices and confidence levels for Scenario One in Figure 3.2.

**Figure 3.2: Mapping Scenario One Response Preferences and Confidence Levels**



Half of those participants who initially choose conventional airstrikes subsequently opt to de-escalate in stage two, suggesting that they are reluctant and unsure about using any military force. Note that the initial response option in stage one that receives the lowest preference is conventional invasion of North Korea, which suggests the possibility of contemporary public fatigue and impatience with the long involvement of US forces in Iraq and Afghanistan. But of those initially choosing conventional invasion, only 14 percent subsequently choose to de-escalate, while 28 percent prefer to escalate to nuclear weapons in stage two. These results suggest that the American public is substantially more receptive to the use of military force that does not involve significant numbers of ground troops, but if ground forces

are committed, most are willing to sustain efforts to the intended conclusion. Note that mean confidence levels for those respondents who choose nuclear retaliation in either stage one or stage two are statistically significantly higher ( $p < .0001$ ) than mean confidence levels for all other respondents. Because these results involve two choices for some respondents (requiring computing percentages of percentages to summarize results), we collapse and summarize response preferences into the three categories shown in Table 3.5: those choosing to use no force; those preferring to use conventional forces in one or both stages of the scenario, and those who can justify the use of nuclear retaliation in either stage.

**Table 3.5: Scenario One Response Options Summary**

Combined Stages 1 & 2	Diplomacy / Negotiations Only	Conventional Forces Only	Nuclear Weapons
Scenario One	26.4%	37.4%	36.2%

We defer further interpretation of summary results to follow descriptions and findings from Scenario Two in the following section.

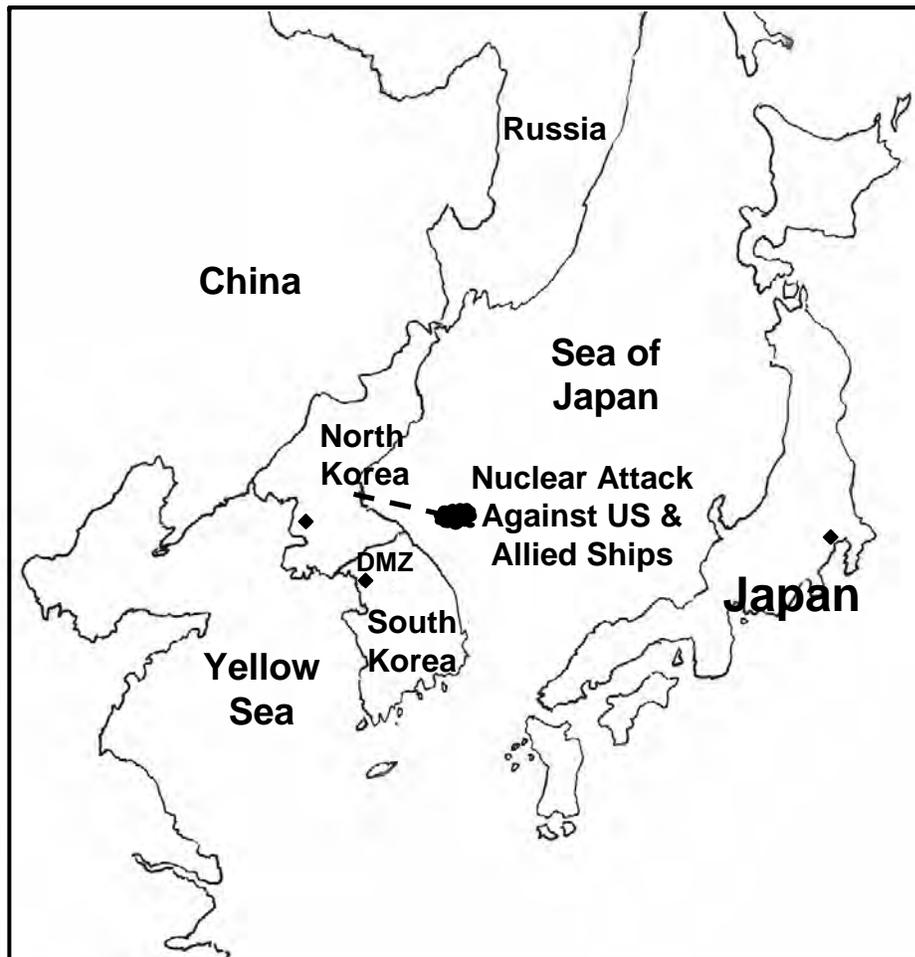
### Section 3.3: Scenario Two: Limited Nuclear Attacks on US and Allied Naval Forces at Sea by North Korea

Our primary objective in the second scenario is comparative with Scenario One. We seek to examine whether systematic differences exist in US public willingness to respond with nuclear weapons to nuclear attacks against US military forces that do not involve civilian casualties. Each participant in the first stage of Scenario Two receives the following situational description and views the illustration shown in Figure 3.3.

**SITUATION:** The year is 2015. North and South Korea exchange artillery fire near the demilitarized zone (DMZ) separating the two Koreas, and North Korea threatens nuclear war if the United States, South Korea, and Japan conduct planned joint naval exercises in international waters in the Sea of Japan. When those maneuvers proceed, an anti-ship missile is launched from North Korea carrying a nuclear warhead that explodes above the American aircraft carrier *U.S.S. George Washington*, sinking it along with a US destroyer and a Japanese support ship. A US cruiser and two South Korean de-

stroyers are badly damaged. The immediate loss in lives is estimated to be in excess of 8,000 military personnel, with additional numbers of wounded and irradiated sailors, but no civilian casualties are caused by the nuclear attack. North Korean troops are massed near the demilitarized zone, and artillery fire from North Korea is striking Seoul, the capital of South Korea, but no land invasion has yet been launched by either side.

**Figure 3.3: Scenario Two Illustration**



As previously described, each respondent then receives the following instruction and is presented with the four response options shown in Table 3.6 (which also displays distributions of responses).

Though it is not possible to outline a full range of policy choices, and more information would be wanted, we are presenting a limited number of response options that we ask you to consider. It is OK if you do not agree completely with any of the choices, we just need to know which one of the following options you favor the *most*.

**Table 3.6: Scenario Two Response Options (Stage-1)**

	<b>2011 (%)</b>
<i>Diplomacy and Negotiations:</i> Demand a cease-fire and warn that further nuclear attacks from North Korea will result in full-scale US nuclear retaliation. Assure China and Russia that the US will not attack either country. Demand that UN coalition forces be assembled to force North Korea to negotiate a settlement. The primary objectives are to stop further nuclear attacks, to discourage China and Russia from entering the conflict, and to avoid nuclear escalation.	<b>23</b>
<i>Airstrikes Using Conventional Armaments:</i> While pursuing diplomatic measures at the United Nations, conduct air attacks using precision guided conventional munitions against known and suspected nuclear facilities and missile launch sites in North Korea. Reinforce US forces in South Korea but do not invade North Korea. Do not use US nuclear weapons unless North Korea uses another nuclear weapon.	<b>36</b>
<i>Invasion Using Conventional Armaments:</i> Conduct US and South Korean air, land, and sea attacks against North Korea using conventional armaments, with the objectives of invading and militarily defeating North Korea and reuniting the Korean peninsula under a single government. Do not use US nuclear weapons unless North Korea uses another nuclear weapon. Vigorously pursue coalition support from other countries through the United Nations.	<b>17</b>
<i>Retaliation Using Nuclear Weapons:</i> Conduct nuclear strikes against North Korea using US intercontinental ballistic and cruise missiles to destroy North Korean nuclear weapons and facilities before more North Korean nuclear weapons are used. The objectives are to completely defeat North Korea and unify the Korean peninsula under a single government. Advise China and Russia that the US does not intend to use nuclear weapons against either nation, but warn both countries not to interfere with the military defeat of North Korea. Assure China and Russia that US forces will withdraw from a unified Korea when recovery is complete.	<b>24</b>

As in the prior scenario, response preferences direct participants into different subsequent paths. Respondents who prefer diplomacy and negotiations and participants who choose nuclear retaliation are presented with a re-

statement of their preferred option and asked the following single question before exiting the scenario.

On a scale from zero to ten where zero means not at all confident and ten means completely confident, how confident are you that this is the best possible course of action under these circumstances?

The 36 percent of respondents who choose airstrikes using conventional armaments and the 17 percent who choose invasion using conventional armaments in stage one of the scenario advance to stage two where they receive additional information and are presented with three subsequent policy options. Following the same pattern used in Scenario One, participants are given a policy option providing an opportunity to de-escalate from force to diplomacy and negotiations; a second option providing for continuing or escalating conventional force applications; and a third option allowing escalation to nuclear weapons.

## **Stage Two: Airstrikes Using Conventional Armaments**

Those participants preferring initially to respond with airstrikes using conventional munitions are provided a recap of their policy choice and the following new information, after which they are asked to choose one of the three policy options shown in Table 3.7.

**RESULT:** In response to US and South Korean conventional air and missile strikes, North Korea continues to shell Seoul, the capital of South Korea, and South Korean military bases near the demilitarized zone with conventional artillery munitions, but North Korea does not use another nuclear weapon and does not invade South Korea.

**Table 3.7: Scenario Two Response Options (Stage-2) if Conventional Airstrikes Chosen Initially**

	2011 (%)
<i>Option-1:</i> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, stop US and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Demand that United Nations coalition forces be assembled to force North Korea to negotiate a settlement and surrender its nuclear weapons and materials to UN representatives.	51
<i>Option-2:</i> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, invade North Korea using conventional forces with the objective of overthrowing the North Korean regime and unifying the Korean peninsula under a single government. Do not use US nuclear weapons unless North Korea uses another nuclear weapon.	40
<i>Option-3:</i> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, use US nuclear weapons to destroy North Korean military forces and nuclear weapons capabilities, overthrow the North Korean regime, and reunite the Korean peninsula under a single government.	9

Following their choice of a stage two response option, participants are asked the previously shown question about how confident they are that their choice is the best possible response option.

## **Stage Two: Invasion Using Conventional Armaments**

Those participants who prefer initially to respond with an invasion of North Korea using conventional forces and munitions are shown a recap of their policy choice, given the following new information, and presented with the stage two policy choices shown in Table 3.8.

**RESULT:** In response to US and South Korean conventional military attacks and invasion, North Korea continues to shell Seoul, the capital of South Korea, and launches air strikes against US and South Korean military forces and bases in South Korea. North Korea appeals to China for assistance and evacuates North Korean military and political leaders to bunkers and command centers located deep within mountains that cannot be destroyed by precision guided conventional munitions. North Korea declares that if US and South

Korean forces do not cease their attacks and withdraw, the North will have no choice but to attack South Korea with nuclear weapons.

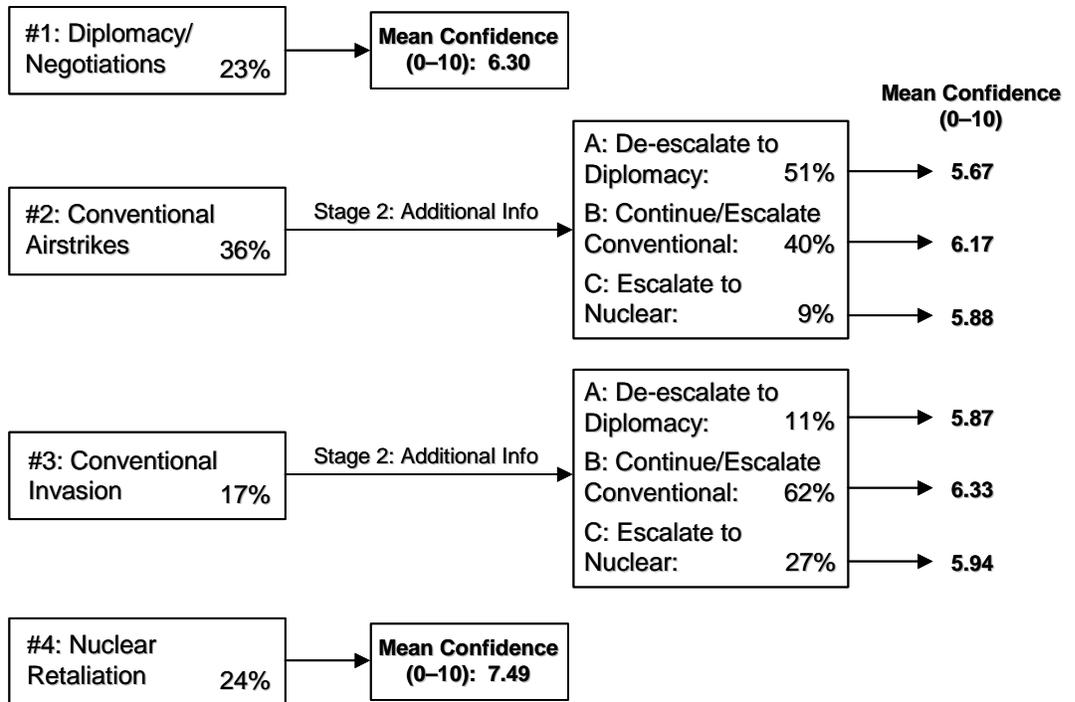
**Table 3.8: Scenario Two Response Options (Stage-2) if Invasion Using Conventional Armaments Initially Chosen**

	<b>2011 (%)</b>
<i>Option-1:</i> If invading forces do not quickly compel North Korea to cease hostilities, stop US and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Take the matter to the United Nations Security Council and open negotiations with North Korea. Withdraw US and South Korean forces from North Korean territory if North Korea agrees to surrender its nuclear weapons and materials to UN representatives.	<b>11</b>
<i>Option-2:</i> Continue the invasion and conventional attacks on North Korea with the objectives of destroying North Korean nuclear weapons and facilities, overthrowing the North Korean regime, and reuniting the Korean peninsula under a single government. Do not use US nuclear weapons unless North Korea again uses a nuclear weapon.	<b>62</b>
<i>Option-3:</i> In support of US and South Korean invading forces, use US nuclear weapons to destroy North Korean underground command centers, nuclear weapons and facilities, and missile launch sites. Do not stop until North Korea is defeated and the Korean peninsula is reunited under a single government.	<b>27</b>

Following the same progression used in Scenario One, after participants make their choice in stage two, they are asked to express their confidence that the policy they selected is the best possible response option.

After completing stage two, all respondents exit the scenario. We map response choices and confidence levels for Scenario Two in Figure 3.4.

**Figure 3.4: Mapping Scenario Two Response Preferences and Confidence Levels**



As previously mentioned, one of the primary objectives in designing Scenarios One and Two was to investigate potential differences in public preferences for responding to limited nuclear attacks against US territory and American civilians versus limited nuclear attacks against US military forces deployed overseas in which no civilian casualties result. It is important to remember that each scenario is presented to a different sample, and that no respondents participate in more than one scenario. Differences of about five percent in central tendencies between comparable samples are expected due to random chance. In our comparative scenarios, we find that response patterns share certain general characteristics such as: (a) the option for invasion is the least preferred response in both scenarios; (b) about half of those in both scenarios choosing conventional airstrikes as the initial response option prefer to de-escalate in stage two; and (c) majorities of those choosing invasion in the first stage of both scenarios stick with that option in stage two. But there also are differences worth noting. While negotiations/diplomacy, conventional airstrikes, and nuclear retaliation receive roughly comparable percentages in Scenario One, the clear preference in Scenario Two (modal response) is conventional airstrikes, and nuclear retaliation in Scenario Two receives less initial support than in the

first scenario. Also note that patterns of confidence levels differ between the scenarios. In Scenario One, those choosing nuclear retaliation in either stage one or stage two are significantly more confident that their preference is the best response option than are other respondents. In Scenario Two, that same differential is present for the initial policy choices in stage one, but those preferring conventional military force in the form of airstrikes or invasion report the highest confidence levels in stage two.

Perhaps a better comparison is available when we combine response patterns across both stages of both scenarios as presented in Table 3.9.

**Table 3.9: Comparative Response Options Summary (Scenarios 1 and 2)**

Combined Stages 1 & 2	Diplomacy / Negotiations Only	Conventional Forces Only	Nuclear Weapons
Scenario One	26.4%	37.4%	36.2%
Scenario Two	22.6%	45.2%	32.2%

Clearly, more participants prefer conventional means of responding when US and allied naval forces are attacked with a nuclear weapon than is the case when the attack is against US cities, but in terms of willingness to retaliate with nuclear weapons, both scenarios receive support from roughly a third of respondents, and the four percent difference between scenarios does not exceed the roughly five percent variation likely to occur by chance. We conclude that while some differences are notable, the overall patterns of response preferences are generally similar for both scenarios.

## Comparative Baselines

We are unaware of these types of nuclear scenarios having been used previously in public surveys, but we reviewed other questions about nuclear retaliation from selected national surveys of the American public administered during and since the end of the Cold War to approximate a baseline that may help provide context.<sup>5</sup> We reviewed a sample of 50 US national surveys conducted

<sup>5</sup> Though prior surveys had been done on public opinion about the use of nuclear weapons against Japan in WWII, the earliest survey among those we reviewed that asked about the use of US nuclear weapons against potential future adversaries was conducted by the National

between 1949 and 1991 by numerous organizations and employing various question formats, and we found 83 relevant questions about the potential use of US nuclear weapons during the Cold War era. This period encompassed US combat involvements in Korea, Vietnam, the Persian Gulf War (Iraq-1), and dozens of smaller or non-combat security crises elsewhere. The only rationale for using US nuclear weapons in these surveys that consistently was supported by public majorities was retaliation for Soviet or Chinese nuclear attacks on the United States. Even at the height of the Cold War when questions postulated that NATO allies were being overrun by Soviet forces in Europe, we found little public support for using US nuclear weapons in defense of allies unless they had been attacked first with nuclear weapons. When questions of conscience were raised, most survey participants reported that they could not morally justify the use of nuclear weapons.

We also reviewed 54 relevant questions from 28 surveys conducted by various organizations between 1992 and 2011. This period includes the terror attacks on the US of September 11, 2001, US combat in Iraq-2 (Operation Iraqi Freedom), Afghanistan, Libya, and the larger continuing struggle against terrorism. Again, we found majority public support only for retaliation to nuclear attacks on the US, with plurality support reported for nuclear retaliation to acts of nuclear terrorism if a state is known to be complicit. One issue of note is that we found an observable drop in support for the use of US nuclear weapons after widespread public awareness of the development and effective use of precision guided conventional munitions.

When results of our scenario experiments are viewed in the context of pre- and post-Cold War surveys inquiring about using US nuclear weapons without specific scenarios, we conclude that while our findings are more detailed and nuanced than the abstract questions usually administered, they reinforce impressionistic findings over several decades. The American people are cautious and reluctant about the potential use of US nuclear weapons against an enemy. Again noting the important caveat about the implications of unavoidable *ex-post* affective influences that would help shape public responses to a

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Opinion Research Center in October, 1949. The latest Cold War era survey we included was conducted by NBC News and the *Wall Street Journal* in February 1991, and it inquired about the use of nuclear weapons to respond to potential Iraqi employment of chemical or biological weapons in the Persian Gulf War (Operation Desert Storm). The dissolution of the USSR in December 1991 marks a definitive end to the Cold War and provides the separation we used between samples. All survey questions we reviewed are available upon request.

limited nuclear attack on the US or its military forces, our data suggest that majority public support for nuclear retaliation to a nuclear attack on the US from Russia or China that was assumed during the Cold War may not pertain today should the US or its military forces suffer limited nuclear attacks from a Level-II nuclear threat. In both our scenarios, only about one-third of respondents justified a US nuclear response to such attacks.

While we cannot know all the different rationales that underlie our respondents' views, we can speculate about public preferences for responding to the limited nuclear attack scenarios we presented; these suppositions warrant further discussion and investigation.

- *Fear of nuclear escalation:* Both scenarios discussed above involve North Korea, which is most closely linked diplomatically and economically with China. Of course China came to the defense of North Korea during the Korean conflict (1951–1953) and played a major role in the resulting stalemate. North Korea borders both China and Russia, the only two peer nuclear weapons states to the US. Some participants may have considered the potential for nuclear escalation among the US, China, and Russia, and concluded that the associated existential nuclear threats were too great for the US to retaliate against North Korea with nuclear weapons.
- *Decoupling of the North Korean regime from its citizenry:* The North Korean regime is one of the most repressive in the world and is widely perceived to operate outside international norms. The North Korean citizenry is fundamentally related culturally with that of South Korea, a key US ally. It is possible that our survey participants distinguished between the government of North Korea versus the people of North Korea, and were hesitant to use nuclear weapons against a population that may have had little if any voice in authorizing the initial nuclear attacks from the North Korean regime. To the degree (if any) that this supposition is valid, it may have implications for future relationships with other regimes that acquire nuclear weapons but are perceived to lack widespread domestic support, such as Iran.
- *Confidence in US conventional military superiority and technologies:* Some military objectives that once were thought to be achievable only with nuclear weapons now can be accomplished with advanced conventional technologies such as drones and precision guided munitions, and emerging technologies such as prompt global strike capabilities. Images of the successful application of advanced conventional armaments and delivery systems in Iraq, Afghanistan, and elsewhere in the struggle against terrorism have increased public awareness of increasingly sophisticated US conventional capabilities. Some participants may have been reluctant to

use US nuclear weapons against a state that—even when possessing nuclear weapons—cannot yet pose an existential threat to US survival. They may have thought that the same security objectives could be achieved using only conventional weapons and forces.

- *Moral reservations:* Surveys from over six decades have repeatedly shown deep and persistent moral concerns among the American public about using nuclear weapons. While *post hoc* public support for the decision to employ US nuclear weapons against Japan to end World War II without invading the Japanese home islands was robust, debate continues even today about the morality and necessity of those actions. Americans repeatedly report moral concerns and difficulty justifying the potential use of US nuclear weapons, and some Americans may not be able to morally justify the use of US nuclear weapons under any circumstances.
- *Normative precedence:* In the 66 years since the use of US nuclear weapons to end the war with Japan, through numerous wars and hostile conflicts between nuclear and non-nuclear states, no nuclear state has determined that the use of nuclear weapons was necessary or justified to achieve national objectives—even when those objectives were thwarted by non-nuclear adversaries. Setting a post-World War II precedence by using US nuclear weapons could, perhaps in the reasoning of some respondents, lead to the future use of nuclear weapons by others. Some participants may have declined to use US nuclear weapons in our scenarios for fear of lowering the normative barrier against the future use of such weapons.

## Short Answer

### **Q: How do ordinary Americans view response options to limited nuclear attacks against the US or its military forces?**

Hypothetical limited nuclear attacks by North Korea against the United States or limited nuclear attacks against US military forces at sea described in comparative multistage scenarios are seen similarly, with US nuclear retaliation being preferred by about one in three respondents. Preferences for nuclear responses are almost surely more moderate in scenario exercises than would be expected in the actual event of such attacks because of affective influences that cannot be simulated. Assumptions of majority public support for nuclear retaliation prevalent during the Cold War when the adversaries were peer nuclear weapons powers may not apply in a multi-level post-Cold War security environment in which some states or nonstate groups can pose nuclear threats to the US that are not existential. Potential

reasons (suppositions) for reluctance of our respondents to choose nuclear retaliation include: (a) appreciation of the risks of potential nuclear escalation involving peer nuclear powers Russia and/or China; (b) decoupling of responsibility between the attacking government and its people; (c) confidence in advanced US conventional military capabilities to defeat a limited nuclear weapons power without resorting to US nuclear weapons; (d) moral reluctance to justify the use of US nuclear weapons when the survival of the United States is not at risk; and (e) fear of lowering the barrier against the use of nuclear weapons by others.

We provide analysis of our third scenario, which postulates a terrorist attack on the US involving radiological devices, in the following chapter that addresses security from terrorism. After having presented all three scenarios, we analyze who is more and who is less willing to support nuclear retaliation to limited nuclear attacks on the US in Chapter Four.

## Chapter Four

### Security from Terrorism

Next we turn to broad issues of terrorism while also extending discussions from the previous chapter by presenting our third scenario involving radiological attacks. Specifically, we address the following four research questions.

- *Perspectives on Terrorism:* How are public perspectives evolving regarding the threat of terrorism, progress in the struggle against terrorism, and prospects for eventually prevailing?
- *Cyber War:* How is the threat of cyber war viewed; how confident is the public in our abilities to defend critical US infrastructures from cyber attacks; and how do people think the US should respond to cyber attacks?
- *Radiological Terrorism:* How should we respond to the use of a dirty bomb against the US?
- *Nuclear Divides:* How do demographics, ideology, and Cold War experience affect public preferences for responding to limited nuclear attacks?

#### Section 4.1: Perspectives on Terrorism

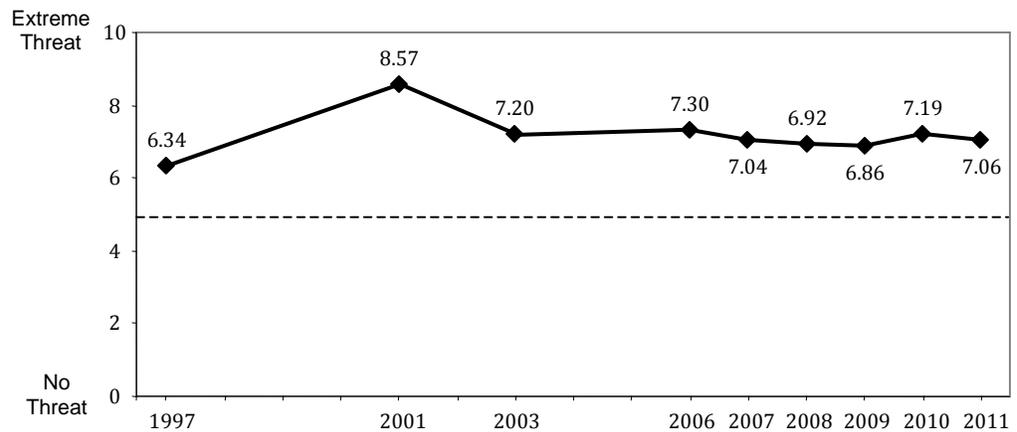
In studying trends in threat perceptions, it is useful to track responses to an overview question as well as more specific dimensions of the issue. For example, tracking overall perceptions of the threat of terrorism of all kinds provides a valuable benchmark, but because terrorism is multidimensional, it also is necessary to monitor sub-dimensions, such as perceptions of the threats posed by various weapons of mass destruction (WMD) or suicide bombings. To make the threat picture more comprehensive, it also is useful to compare perceptions of threats to the US versus worldwide threats and the contemporary threat as compared to expectations about future threats. To bring such a comprehensive picture into focus, we have been tracking public perceptions of the overall threat of terrorism of all kinds to the US since 1997, well before the events of 9/11 and the subsequent “war on terrorism.” Beginning in 2008, we also have tracked percep-

tions of multiple dimensions of that overall threat. We begin in Figure 4.1 by showing trends in mean responses to the following omnibus question.

*Lead-in:* For the following questions, please consider both the *likelihood* of terrorism and its potential *consequences*. Each is answered on a scale from zero to ten, where zero means *no threat*, and ten means *extreme threat*.

S56: Focusing specifically on our own country, and considering both foreign and domestic sources of terrorism, how do you rate the threat of all kinds of terrorism in the *United States* today?

**Figure 4.1: Mean Threat of Terrorism of All Types in the US Today**



Unsurprisingly, the perceived terror threat level in 1997 was significantly below that registered immediately following the attacks of 9/11. Mean threat assessments subsequently declined to near a value of seven (which is significantly higher than the pre-9/11 starting point) and have fluctuated around that level in subsequent surveys. After the highly publicized demise of Osama bin Laden on May 2, 2011, and the continuing depletion of the ranks of other senior leaders of al-Qaeda, our respondents register a modest, but statistically significant ( $p = .0319$ ) decrease in mean threat perceptions for 2011. That assessment is in keeping with the general post-9/11 trend while remaining more than 11 percent above our 1997 benchmark. This suggests that the public considers the threat of terrorism to be broader and more persistent than any single individual or organization.

Next we turn to the set of additional related questions that we began in 2008 to address the worldwide threat, specific dimensions of the WMD terrorism

threat, and prospects for threat change over the next decade. Each of the following are answered using the same scale from zero to ten, where zero means *no threat*, and ten means *extreme threat*.

- S55: Remembering to consider both the *likelihood* and potential *consequences*, how do you rate the overall threat of terrorism of all types throughout the *world* today?
- S57: Narrowing our focus to the threat of *nuclear* terrorism, how do you rate the threat of terrorists creating a nuclear explosion in the United States today?
- S58: So-called “dirty” bombs are devices that use conventional explosives to scatter radioactive materials. How do you rate the threat of terrorists using a dirty bomb in the United States today?
- S59: Biological devices are used to spread biological agents such as germs and viruses. How do you rate the threat of terrorists using a biological device in the United States today?
- S60: Chemical terrorism could result from terrorist attacks on US chemical installations or by terrorists purposely dispensing dangerous chemical agents. How do you rate the threat of chemical terrorism in the United States today?
- S61: How do you rate the threat of suicide bombings by terrorists in the United States today?
- S62: Turning now to the future, how do you rate the overall threat of terrorism to the United States in the next ten years?

In Table 4.1, we compare mean responses for each of the added questions in each measurement period, arranged from highest to lowest in 2011.

**Table 4.1: Mean Dimensions of the Threat of Terrorism: 2008–2011**

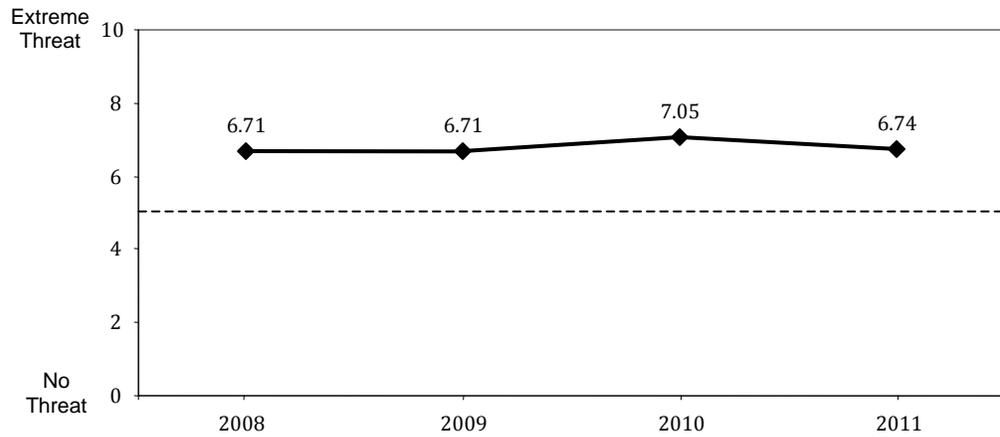
(0 = no threat— 10 = extreme threat)	2008	2009	2010	2011	'10 vs. '11 <i>p</i> -Value
Terrorism of all types throughout world today	7.61	7.47	7.55	7.64	.2099
Terrorism of all types in US in next 10 years	7.24	7.18	7.57	7.30	< .0001
Suicide bombings in US today	6.58	6.57	6.93	6.62	.0003
Biological device in US today	6.72	6.81	6.62	6.37	.0019
Chemical terrorism in US today	6.65	6.71	6.58	6.31	.0008
Dirty bomb in US today	6.44	6.44	6.43	6.16	.0011
Nuclear explosion in US today	5.54	5.75	5.47	5.26	.0116

The statistical significance of differences in means tests comparing 2010 and 2011 values are shown as *p* values in the final column. While perceptions of various dimensions of the terrorism threat in 2011 are generally similar to those in earlier periods, each (except the mean threat of terrorism worldwide) declines significantly from our most recent prior measurements in 2010. This suggests that events between mid-2010 and mid-2011 resulted in a decline in public perceptions of the various threats of terrorism to the US, but that participants do not see an appreciable decline in the worldwide threat of terrorism, with the mean in 2011 being statistically indistinguishable from that first measured in 2008.

By combining the seven dimensional measures shown in Table 4.1 with our omnibus question graphed in Figure 4.1, we create an integrated and combined terror threat index.<sup>1</sup> Incorporating multiple dimensions of the terror threat with expectations about the future threat and including threat perceptions for the US and elsewhere in the world creates a powerful and robust metric that can be tracked over time. Figure 4.2 shows mean values for our terror threat index since its introduction in 2008.

<sup>1</sup> All component questions are equally weighted and averaged to create the composite terror threat index.

**Figure 4.2: Trend in Mean Composite Terror Threat Index: 2008–2011**



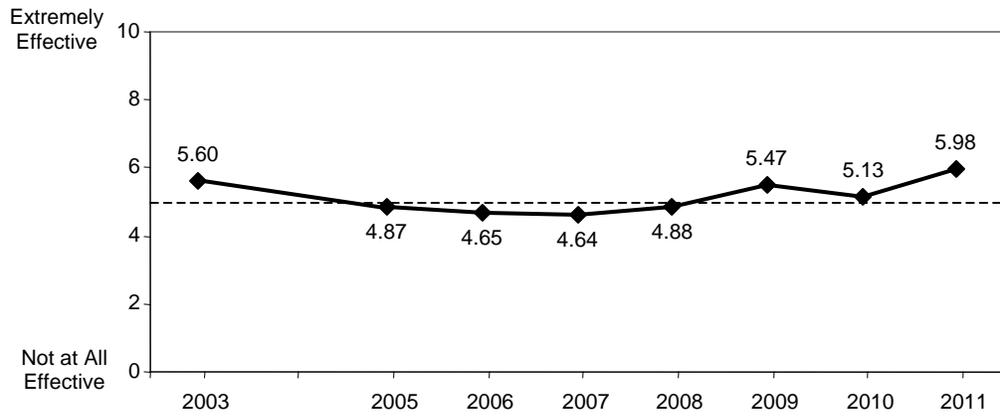
The resulting trend in mean index values shows that the US public does not consider the threat of terrorism to be declining appreciably, even though no large-scale attacks against the US have been successful since 9/11, large numbers of US forces have been withdrawn from Iraq, and US force levels in Afghanistan are beginning to decrease. The statistically significant increase recorded in 2010 ( $p < .0001$ ) likely reflected the effects of several attempted attacks such as the failed airline bombing attack of December 25, 2009, the unsuccessful Times Square car bombing attempt on May 1, 2010, and other plots that were disrupted. By 2011, and after the death of bin Laden, the index returns to the baseline, showing a continuing public sense of persistent threat.

To further test public perceptions of relative progress in the struggle against terrorism and confidence about the future, we have tracked the following two questions since 2003.

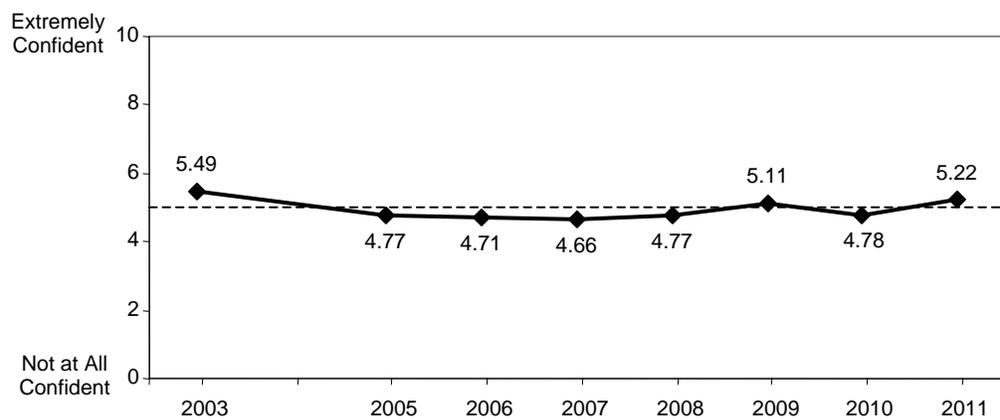
- S73: On a scale from zero to ten, where zero means *not at all effective* and ten means *extremely effective*, how effective, overall, do you believe US efforts in the war on terrorism have been thus far?
- S63: Using a scale from zero to ten, where zero means *not at all confident* and ten means *extremely confident*, how confident are you that we will eventually win the war on terrorism?

We chart mean responses in Figures 4.3 and 4.4.

**Figure 4.3: Mean US Effectiveness in War on Terrorism**



**Figure 4.4: Mean Confidence in Eventually Winning War on Terrorism**



As compared to mean terror threat assessments previously described, judgments in 2011 of mean US effectiveness in the struggle against terror and mean confidence in eventually prevailing show statistically significant upturns ( $p < .0001$ ). This may indicate that the death of bin Laden and other al-Qaeda leaders justifies cautious optimism, but the threat of terrorism remains a substantial public concern.

## Short Answer

**Q: How are public perspectives evolving regarding the threat of terrorism, progress in the struggle against terrorism, and prospects for eventually prevailing?**

Mean assessments of the overall threat of terrorism of all kinds in the US peaked immediately after 9/11 and since have declined about 18 percent, but they remain well above pre-9/11 assessments. The threat of terrorism world-wide is judged to be higher than in the US, but the threat of terrorism in the US is expected to grow. Nevertheless, the perceived effectiveness of the war on terror increased significantly in 2011. Though reasons were not measured, it seems likely that these results may derive partially from the death of Osama bin Laden and other al-Qaeda leaders, troop withdrawals from Iraq, and pending reductions in troop levels in Afghanistan. Mean judgments of prospects for eventually prevailing in the struggle against terrorism increased, but only to slightly above midscale. Respondents consider the remaining threat of terrorism to be substantial, but are cautiously optimistic about the future.

## Section 4.2: Cyber War

In 2011, we initiate a new series of questions to investigate public awareness of the emerging threat of cyber war. Our objectives are to establish baselines of public perceptions and understandings against which future concerns can be compared as issues of cyber threats evolve. Our initial inquiries are designed to address the following research questions.

How is the threat of cyber war viewed; how confident are ordinary people in our abilities to defend critical US infrastructures from cyber attacks; and how do respondents think the US should respond to cyber attacks?

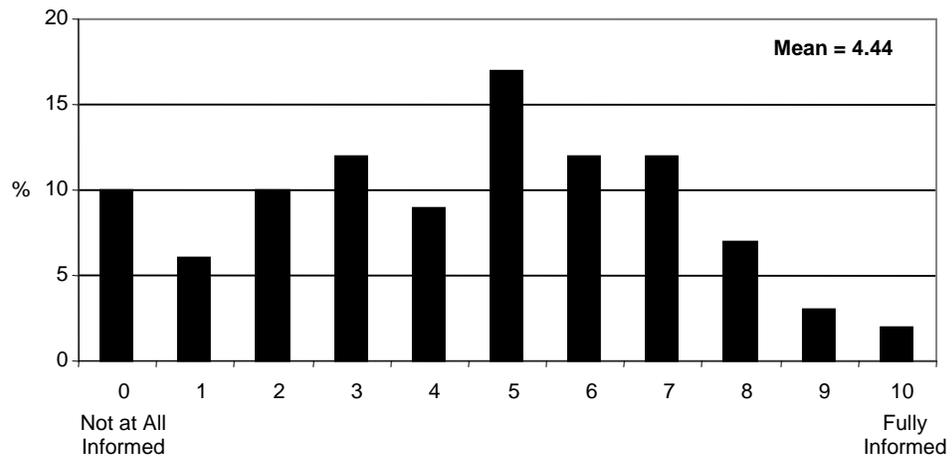
To provide a common footing, we begin by defining key terms as follows:

Cyber war is a disputed term, but for this survey, it refers to organized actions by countries, groups, or individuals to penetrate government and civilian computers and networks for the purpose of causing sustained damage or disruption. Attacks in this type of conflict are termed cyber attacks.

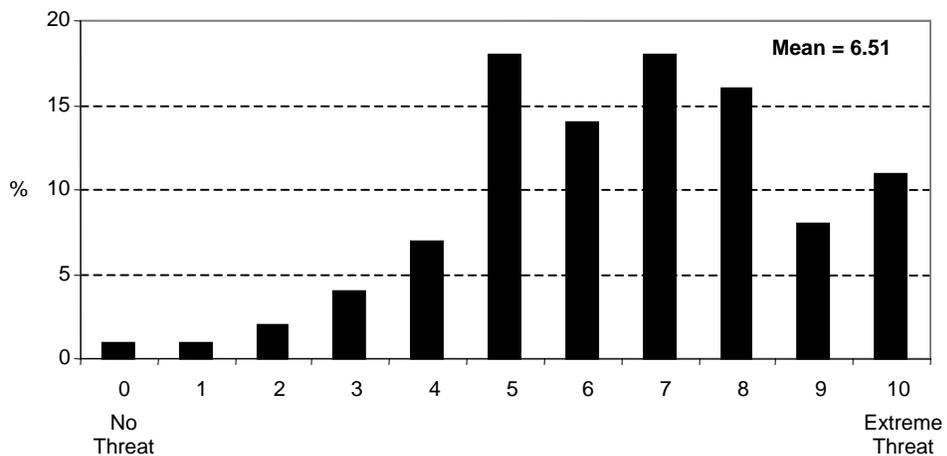
Our first inquires address public awareness and threat perceptions using the following questions. We chart distributions of responses and means in Figures 4.5 and 4.6.

- S48: On a scale from zero to ten, where zero means *not at all informed* and ten means *fully informed*, how well informed do you consider yourself to be about the issue of cyber war?
- On a scale from zero to ten, where zero means *no threat* and ten means *extreme threat*, how do you assess the threat of cyber war to the United States today?

**Figure 4.5: How Well Informed on Cyber War?**



**Figure 4.6: Perceived Threat of Cyber War to US Today**



While only about one in three of our respondents rate their level of knowledge or information about cyber war above midscale, two out of three rate the threat of cyber war above midscale. These response patterns suggest a public that is aware of the emerging issue of cyber war, does not feel well informed about it, but perceives it to pose a substantial threat.

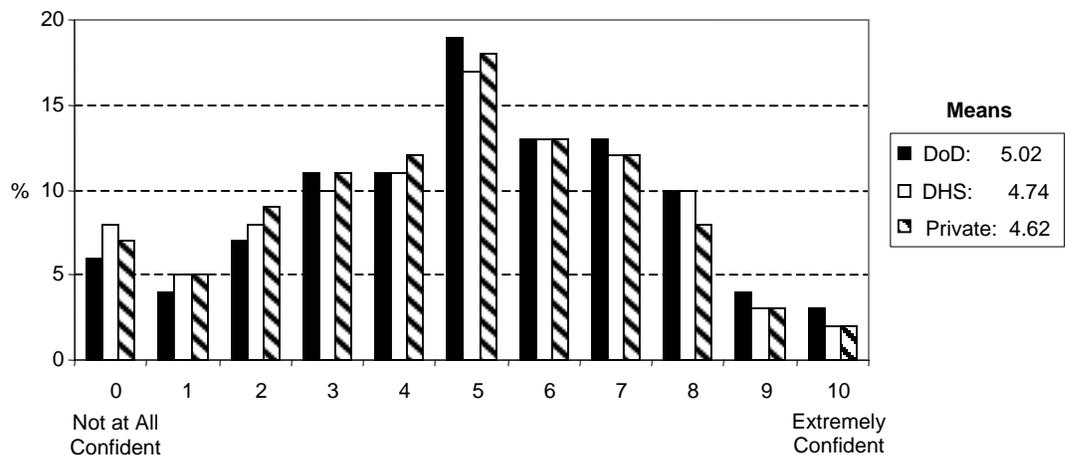
Our next questions inquire into public confidence in two government organizations and the private sector to protect critical US infrastructures.

*Lead-in:* Now we want to know about the level of confidence you have in different organizations to protect critical US infrastructures such as communications, transportation, banking, water supplies, and electrical power grids from cyber attack. Please use a scale from zero to ten, where zero means *not at all confident* and ten means *extremely confident* when considering each of the following: (random order)

- S50: How confident are you in the abilities of the Department of Defense to protect critical US infrastructures from cyber attacks?
- S51: How confident are you in the abilities of the Department of Homeland Security to protect critical US infrastructures from cyber attacks?
- How confident are you in the abilities of private industries to protect critical US infrastructures from cyber attacks?

We compare distributions of responses and means in Figure 4.7.

**Figure 4.7: Confidence in Protecting Critical US Infrastructures from Cyber Attack**



Though the median response for all three entities is the midscale value of five, and two of the three means are below midscale, participants do indicate statistically significant differences in the relative mean levels of confidence, with the Department of Defense (DoD) receiving the highest expressed confidence in abilities to defend critical US infrastructures from cyber attacks.<sup>2</sup> Interestingly, none of the three named entities has clear responsibility for defending US infrastructures nationwide. The DoD has the United States Cyber Command, a sub-unified military command subordinated to United States Strategic Command. Cyber Command is formally tasked with defending DoD agencies from cyber attack. Cyber defense of the rest of the government is tasked to the Department of Homeland Security (DHS), but DHS responsibilities do not include protecting utilities and other critical infrastructures from cyber attack. Private industries are left to defend their own individual interests from cyber attack, including privately or corporately owned entities that make up much of critical US infrastructures. Clarke and Knake (2010, 143–144) describe the muddle of responsibilities for defending US infrastructures from cyber attacks as follows:

As it stands now, the Department of Homeland Security defends the non-DoD part of the federal government. The rest of us are on our own. There is *no* federal agency that has the mission to defend the banking system, the transportation networks, or the power grid from cyber attack. Cyber Command and DHS think that by defending their government customers they may coincidentally help the private sector a little, maybe. The government thinks it is the responsibility of individual corporations to defend themselves from cyber war. ... When you talk to CEOs and the other C-level types in big companies, they all say pretty much the same things: we will spend enough on computer security to protect against the day-to-day threat of cyber crime. We cannot, they say, be expected to know how to, or spend the money to, defend against a nation-state attack in a cyber war. ... On this fundamental issue of whose job it is to defend America's infrastructure in a cyber war, the government and industry are talking past each other. As a result, no one is defending the likely targets in a cyber war, at least not in the U.S.

Similarly, McCarthy (2009, 543–544) states:

Unfortunately, the Federal Government has displayed irresolute and inconsistent leadership regarding cyber critical infrastructure protection. ... Federal policy has neither clearly defined factors that would comprise a cyber incident

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<sup>2</sup> Statistical significance of differences in paired means: DoD vs. DHS:  $p < .0001$ ; DoD vs. private industry:  $p < .0001$ ; DHS vs. private industry:  $p = .0025$ .

of national significance nor specified triggers and thresholds for action during an emergency. Vague policies have resulted in little operational guidance for Federal response entities if such an event were to occur. The existing guidance does not clearly delineate roles and responsibilities for stakeholders in the Federal Government or provide expectations for private sector entities.

Given the lack of clearly assigned responsibilities for defending critical US infrastructures from cyber attack, a general lack of public confidence and a tendency to expect protection from the DoD is understandable. To further probe emerging public preferences for *how* the US should respond to such attacks, we pose the following inquiries. We provide two alternative wordings to test public preferences regarding response options if the offending state is a Level-II nuclear threat or if the offending state is a Level-I peer nuclear power. The composition of each is the same except that respondents randomly receive wording identifying either Iran or China as the instigator of cyber attacks against the US.

If we determined to a high degree of confidence that the government of Iran (China) was responsible for cyber attacks against critical US infrastructures that severely damage our economy and place US citizens at risk, which of the following actions would you most support? It is OK if you do not agree completely with the selected course of action. We just need to know which option you agree with the *most*.

- Demand that the United Nations impose sanctions against Iran (China), but do not retaliate with US cyber attacks or attacks using military forces against Iran (China) unless the UN authorizes such actions.
- Conduct US cyber attacks against Iran's (China's) critical infrastructures in retaliation, but do not use US conventional military forces against Iran (China).
- Conduct cyber attacks against Iran (China) plus limited attacks using conventional military forces such as aircraft, missiles, and ships to punish the Iranian (Chinese) government.
- Attack with sufficient US military forces to topple Iran's (China's) government.

We compare response preferences in Table 4.2

**Table 4.2: Preferences for Responding to Cyber Attacks on the US: Iran vs. China**

%	Iran	China
Demand UN sanctions, but do not retaliate with US cyber attacks or attacks using military forces without UN authorization	39	53
Conduct US cyber attacks against their critical infrastructures in retaliation, but do not use US conventional military forces	18	25
Conduct cyber attacks plus limited attacks using conventional US military forces such as aircraft, missiles, and ships	18	10
Attack with sufficient US military forces to topple their government	25	12

Even with the disparity in the relative capabilities of the hypothesized attacker, the response option receiving the highest preference in both cases is to seek UN sanctions and diplomatic resolution while avoiding retaliation with either cyber or physical military force. Beyond that choice, respondents clearly differentiate between the nature and capabilities of the two offending states, and are more willing to use punitive options against Iran than against China. These initial inquiries suggest that members of the general public may not yet have considered the depth and breadth of damages that a state-level cyber attack against critical US infrastructures could cause and are reluctant to respond with either retaliatory US cyber or military capabilities to attacks in which military force has not been used against the US. They also indicate a cautious approach to conflict with China.

## Short Answer

**Q: How is the threat of cyber war viewed; how confident is the public in our abilities to defend critical US infrastructures from cyber attacks; and how do people think the US should respond to cyber attacks?**

Cyber war is an emerging issue about which most respondents do not feel well informed, but it is perceived as posing a serious threat to the US. The Department of Defense is trusted more than the Department of Homeland Security or private industry to protect critical US infrastructures from cyber attack (even if none are formally tasked with doing so). Participants differentiate response preferences depending on the nature and capabilities of the

attacker. About six in ten respondents support various levels of retaliation against cyber attacks from Iran, with one in four supporting forced regime change. About half of respondents support retaliation for cyber attacks from China, with the other half favoring diplomatic actions only.

### **Section 4.3: Responding to Radiological Terrorism**

In this section, we review our third and final scenario. Recall that responses to two scenarios involving limited nuclear attacks by North Korea on the US and on its military forces deployed overseas are described and discussed in Chapter Three. We also note that because no respondents are allowed to participate in more than one scenario, each of the three scenario subsamples numbered about 800. The limitations, caveats, and utilities of scenario metrics discussed in Section 3.1 also pertain to our discussion here. After reporting on our final scenario, we present comparative analyses across the three scenarios and provide initial characterizations of who is more willing to use nuclear retaliation and who is less supportive of such responses.

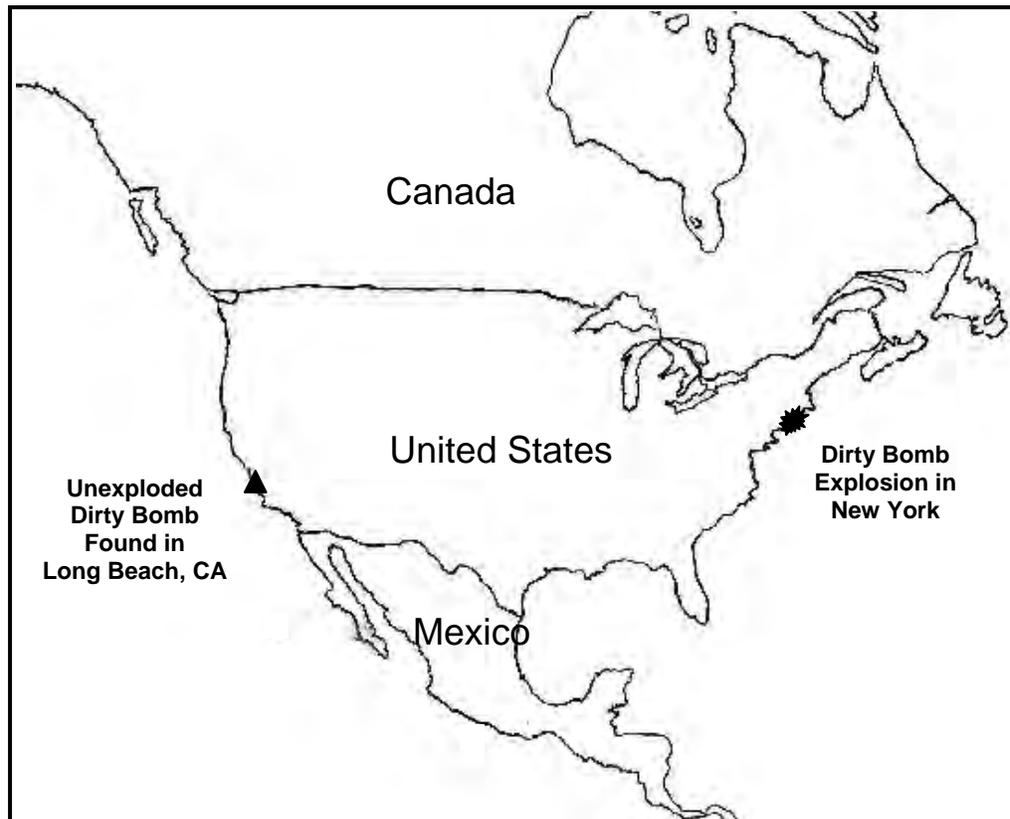
Each participant in the first stage of Scenario Three receives the following situational description and views the following graphic depiction.

**SITUATION:** The year is 2015, and Iran successfully conducts its first underground nuclear test explosion. The US declares that Iran will not be allowed to continue developing nuclear weapons. Without warning, an explosion occurs at the New York container terminal on Staten Island. Response personnel discover eight people dead and 15 wounded and determine that the area is highly radioactive. Strong offshore winds are pushing radioactive airborne elements northeastward over portions of New Jersey and New York, exposing unknown numbers of people to varying levels of radiation. The scene of the blast remains highly radioactive, and an area the size of four square blocks is heavily contaminated.

Tests determine that the device was a “dirty bomb” involving radioactive matter dispersed by conventional explosives and that the radioactive materials originated in Iran. Though Iran denies involvement, Hezbollah, an Iranian-supported terrorist organization operating in Lebanon, warns that other nuclear devices have been smuggled into the United States and will be detonated if the US attacks Iranian nuclear facilities. An intensive search discovers an unexploded dirty bomb at the Port of Long Beach in Los Angeles, California. Examination confirms Iranian nuclear materials, and analysis of the triggering

mechanism and conventional explosives packaging shows similarities with known Hezbollah explosive devices.

**Figure 4.8: Scenario Three Illustration**



Each respondent then receives the following instruction and is presented with the four response options shown in Table 4.3, only one of which can be chosen. We also show distributions of responses in that table.

*Lead-in:* Though it is not possible to outline a full range of policy choices, and more information would be wanted, we are presenting a limited number of response options that we ask you to consider. It is OK if you do not agree completely with any of the choices, we just need to know which one of the following options you favor the *most*.

**Table 4.3: Scenario Three Response Options (Stage-1)**

	2011 (%)
<p><i>Diplomacy and Negotiations:</i> Ask for United Nations support to investigate and determine who is responsible. Though Iran continues to deny involvement in the explosion in New York or the device found in Long Beach, warn Iran that further attacks on the United States will result in military actions against Iran, and that all options are on the table, including US nuclear weapons. Contact Hezbollah in Lebanon and Iranian government authorities to begin negotiations.</p>	<b>31</b>
<p><i>Airstrikes Using Conventional Armaments:</i> Conduct conventional air and missile strikes against Iranian nuclear production facilities and sustain the attacks until a high degree of damage is assured <i>without</i> using US nuclear weapons. Reinforce US military forces in the region and position them for potential invasion of Iran. Demand that Iran identify persons responsible for the dirty bombs. Warn that the US will destroy the Iranian government and the Hezbollah organization in Lebanon if another attack on the US occurs.</p>	<b>35</b>
<p><i>Invasion Using Conventional Armaments:</i> Attempt to organize a coalition of regional forces for the invasion of Iran. If necessary, use US military forces alone to invade Iran, overthrow the Iranian government, destroy Iranian nuclear weapons capabilities, and secure Iranian nuclear materials. Do not use US nuclear weapons unless US forces are attacked with Iranian nuclear weapons. When Iran's nuclear capabilities have been destroyed, withdraw US military forces. Do not occupy Iran for the long-term.</p>	<b>19</b>
<p><i>Retaliation Using Nuclear Weapons:</i> Launch US nuclear strikes against Iranian nuclear weapons facilities and major military installations. Ensure the defeat of the Iranian government and the destruction of Iranian nuclear weapons and facilities and the removal of nuclear materials. Use all necessary military force.</p>	<b>15</b>

After each participant chooses a preferred response option, paths diverge. Respondents who prefer diplomacy and negotiations and those choosing US nuclear retaliation are presented with a restatement of their preferred option and asked the following question before exiting the scenario.

On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that this is the best possible course of action under these circumstances?

The 35 percent of respondents who choose airstrikes using conventional armaments and the 19 percent who choose invasion using conventional armaments in stage one of the scenario advance to stage two where they receive additional information and are presented with three subsequent policy options. In each case, one policy option provides an opportunity to de-escalate from force to diplomacy and negotiations; a second option provides for continuing or escalating conventional force applications; and a third option allows escalation to nuclear weapons. Each is described below.

## **Stage Two: Airstrikes Using Conventional Armaments**

Respondents initially selecting to respond with airstrikes employing conventional armaments are provided a recap of their policy choice and the following new information, after which they are asked to choose one of the three policy options shown in Table 4.4.

**RESULT:** Iranian air defenses are overwhelmed within the first three days of bombing, with the loss of six American planes. Substantial damage is believed to have been inflicted on Iranian nuclear facilities, but it is unknown whether all of Iran's nuclear weapons have been destroyed. Iran states that if US airstrikes are halted, it will assist in finding the persons responsible for the dirty bombs. Iran also threatens to use a nuclear weapon against US naval forces operating in the Persian Gulf if US airstrikes do not cease within the next 24 hours.

**Table 4.4: Scenario Three Response Options (Stage-2) if Conventional Air-strikes Chosen Initially**

	<b>2011 (%)</b>
<i>Option-1:</i> Halt US airstrikes and accept Iran's offer to help find those responsible for placing the dirty bombs in the US. Enlist the assistance of the United Nations Security Council in negotiating with Iran to allow UN inspectors to verify the status of Iranian nuclear weapons and facilities.	<b>39</b>
<i>Option-2:</i> Continue US airstrikes with conventional weapons and insert special operations forces to penetrate Iranian nuclear facilities and to direct US airstrikes against all nuclear related targets. Reinforce and position US ground forces on Iran's borders with Iraq and Afghanistan and signal the intention to invade Iran if Iranian leaders do not surrender their nuclear weapons. Do not use US nuclear weapons unless Iran uses its nuclear weapons first.	<b>51</b>
<i>Option-3:</i> Preempt Iran's threat of using nuclear weapons with limited nuclear strikes by US aircraft and missiles to destroy Iranian nuclear capabilities and major military bases. Follow the nuclear attacks with ground forces to topple the Iranian government. Provide humanitarian assistance, but do not attempt to occupy Iran for the long-term.	<b>10</b>

After choosing a stage two response option, participants are asked the same question previously shown about how confident they are that their choice is the best possible response option.

## **Stage Two: Invasion Using Conventional Armaments**

Respondents who initially choose to proceed with an invasion of Iran using conventional forces and armaments are provided a recap of their policy choice, the following new information, and stage two policy options shown in Table 4.5.

**RESULT:** Within a month of the US invasion, Iran appears to be losing the war and asks for negotiations and indicates willingness to give up its nuclear weapons, but refuses to change its government. Iran warns that unless US forces halt the invasion and begin negotiations, it will be forced to use nuclear weapons against US ground forces and ships at sea. Iran also threatens to attack Saudi Arabian oil facilities with missiles and to block the Strait of Hormuz, a nautical bottleneck through which most tankers carrying oil from Sau-

di Arabia and other oil producers in the Persian Gulf area must pass. Iran calls for China to mediate a cease-fire and to act as a neutral party to receive and verify the surrender of all Iranian nuclear weapons.

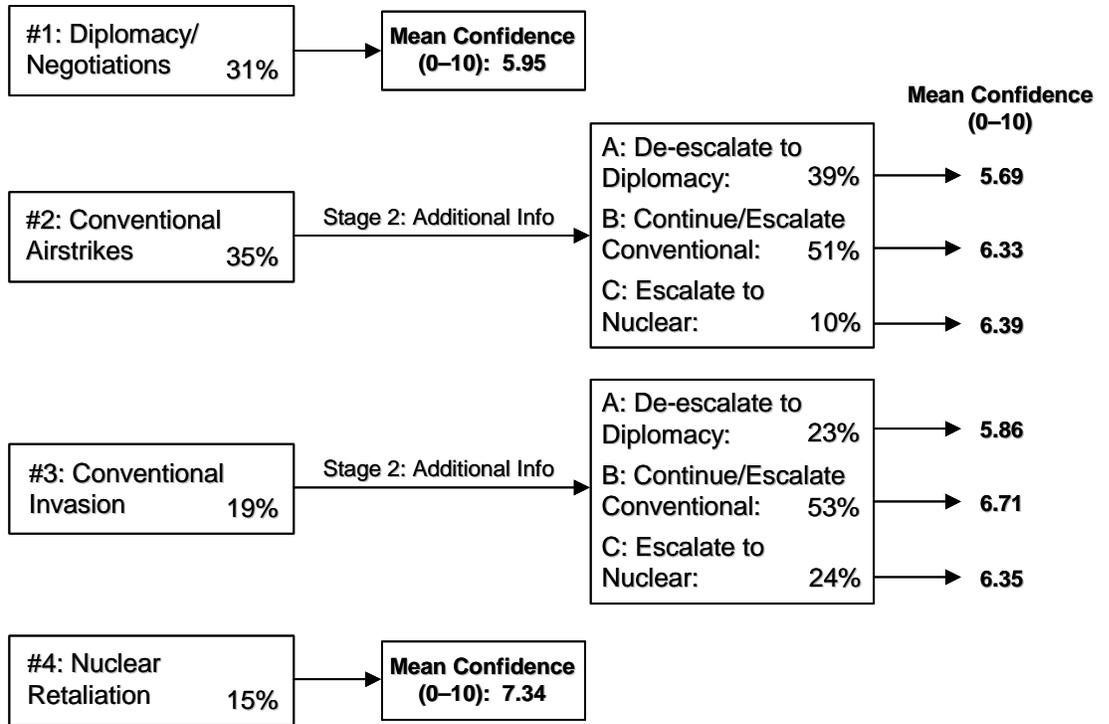
**Table 4.5: Scenario Three Response Options (Stage-2) if Invasion Using Conventional Armaments Initially Chosen**

	<b>2011 (%)</b>
<i>Option-1:</i> Declare a cease-fire and begin negotiations with the Iranian government to turn over its nuclear weapons to the International Atomic Energy Agency. Keep US forces in place until Iran surrenders all its nuclear weapons. Warn Iran that any attempts to block oil shipments in the Persian Gulf or to attack oil production facilities in Saudi Arabia will result in continued US invasion and the overthrow of the Iranian government.	<b>23</b>
<i>Option-2:</i> Continue the invasion and advise that any use of nuclear weapons by Iran will result in unrestricted nuclear war with the US and the complete destruction of the Iranian government. Tell Iran that the US will accept a cease-fire only if Iran surrenders its nuclear weapons to US forces, agrees to destroy Iranian nuclear facilities under US supervision, and agrees to elections to replace its government.	<b>53</b>
<i>Option-3:</i> Preempt Iran's threat of using nuclear weapons with limited nuclear strikes by US aircraft and missiles to destroy Iranian nuclear capabilities and major military bases. Follow the nuclear attacks with ground forces to topple the Iranian government. Provide humanitarian assistance, but do not attempt to occupy Iran for the long-term.	<b>24</b>

After choosing a preferred response, participants are asked to express on a scale from zero to ten their confidence that the preferred policy is the best possible response option.

After completing stage two, all respondents exit the scenario. We map response choices and confidence levels for Scenario Three in Figure 4.9.

**Figure 4.9: Mapping Scenario Three Response Preferences and Certainty Levels**



Clearly, nuclear retaliation (15%) is the least preferred option, and is supported by substantially smaller proportions of respondents than was produced among the samples for scenario one (29%) or scenario two (24%). For all three scenarios, a conventional land invasion receives support from less than 20 percent of participants in each sample. Almost one in three respondents to our radiological scenario prefer to avoid using military force and opt for diplomatic resolutions, while a bit more than one in three prefer conventional airstrikes in stage one. Of those initially choosing airstrikes with conventional munitions, almost 40 percent later chose to de-escalate in stage two, while about half want to continue or escalate conventional options. Only one in ten prefer to escalate to nuclear weapons in stage two. Of those selecting conventional invasion in stage one, more than half want to stick to their choice in stage two, and almost one in four are willing to escalate to nuclear options. This pattern is similar to stage two patterns reported for our prior two scenarios, suggesting that once the step of committing US ground forces is taken, a large majority of respondents want to pursue military force to conclusion. Note, however, that the patterns of reported confi-

dence about policy preferences in stage two differ from earlier scenarios in that the highest confidence is reported among those choosing conventional force options; recall that in both scenarios one and two, the highest confidence levels are among those choosing nuclear retaliation.

We now are able to compare combined response preferences for no force, conventional only force applications, and nuclear retaliation across the three scenarios in Table 4.6.

**Table 4.6: Comparative Response Options Summary (Scenarios 1, 2, 3)**

Combined Stages 1 & 2	Diplomacy / Negotiations Only	Conventional Forces Only	Nuclear Weapons
Scenario One	26.4%	37.4%	36.2%
Scenario Two	22.6%	45.2%	32.2%
Scenario Three	31.4%	45.5%	23.1%

Participants report substantially less support for nuclear retaliation to a radiological terror attack on the US than in response to limited nuclear attacks involving the use of nuclear weapons against the US or its military forces. The similarity of response preferences between scenarios one and two and the different pattern reported in scenario three illustrate two points. First, not even pluralities of respondents in any of the three scenarios choose nuclear retaliation when affective influences are absent. That is not to say that larger proportions of the general public would not choose to respond to these scenarios with nuclear weapons in the event of actual circumstance in which real world affective and emotional influences are present, but it does show that reluctance to use nuclear weapons remains a deeply held value. Second, even though respondents are limited to participating in only one scenario, the three samples show clear differences in response preferences between the use of nuclear weapons versus dirty bombs. These response patterns suggest that policy makers considering options for responding to limited nuclear attacks or acts of radiological terrorism will need to consider carefully differential levels of US public support, and the case will need to be made to the American people for how policies for responding to nuclear events are rationalized. A limited nuclear attack by a country that cannot threaten US survival or a radiological terror attack that is limited in effect may elicit

somewhat different public demands and preferences than were anticipated during the Cold War when the primary threat was a peer nuclear weapons power posing an existential threat.

## Short Answer

### **Q: How should we respond to the use of a dirty bomb against the US?**

Assuming that attribution for the terror attack is established to a high degree of certainty, more than two out of three participants (about 69 percent) prefer to respond to an act of radiological terrorism against the US with military force, while about 31 percent favor pursuing diplomatic resolutions. These percentages are expected to shift to greater levels of support for forceful responses should the hypothesized events actually take place, because directionally predictable affective influences would almost surely be present. The clear preference among our respondents in the given scenario is to apply military force using conventional armaments, with only about 23 percent supporting nuclear retaliation. Clear distinctions are reported between preferences for responding to radiological terrorism versus responding to limited attacks in which nuclear weapons are used against the US or its military forces.

## Section 4.4: Nuclear Divides

**T**o this point in Chapters Three and Four we have described grouped response patterns to three nuclear scenarios. In this concluding section, we attempt to better understand the characteristics of respondents in each sample who do and who do not rationalize the use of US nuclear weapons in response to the described attacks. Is public justification of nuclear retaliation differentiated by demographics, beliefs, or experiential differences? Specifically, we address the following analytical question.

How do demographics, ideology, and Cold War experience relate to public preferences for responding to limited nuclear attacks?

We begin by presenting paired comparisons between those respondents who choose nuclear retaliation in either stage one or stage two of each of our three

scenarios and those who choose non-nuclear response options. The characteristics we compare across the two groups include the following attributes.

- Mean age (expressed on a continuous scale from 18 to 89 years of age)
- Education (college graduate or not)
- Gender
- Race/ethnicity (minority defined as Native American, African American or Hispanic; majority defined as white or Asian)
- Mean household income in 2010 (grouped into 16 categories ranging from less than \$10,000 to more than \$200,000)
- Mean political ideology (expressed on a continuous scale from one to seven, where one means strongly liberal and seven means strongly conservative)
- Experiencing some portion of the Cold War as an adult (determined as being 18 years of age prior to 1992; includes ages 38 and above)
- Confidence that scenario response preference is the best possible option (expressed on a continuous scale from zero to ten, where zero means not at all confident and ten means completely confident)

In Table 4.7 we compare values for each attribute measured in each of our three scenarios plus a comparison of combined responses to all scenarios. For those attributes measured on continuous scales (age, income, ideology, and certainty of response), statistical significance is represented as  $p$ -values for differences in means tests ( $t$ -tests).<sup>3</sup> For those attributes measured as categorical variables (education, gender, and race/ethnicity), statistical significance is represented by Fisher's exact  $p$ -values for Chi Square tests.

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<sup>3</sup> Two-tailed  $t$ -tests are performed when the hypothesis being tested does not assume directional variation (age, income, and certainty of response). Because previous studies in this series have found political conservatism to be directionally related to increasing valuations of US nuclear weapons and greater willingness to use US military force, we have reason to hypothesize that increasing conservatism will be associated with increasing preferences for nuclear retaliation. Accordingly, we employ a one-tail  $t$ -test of differences in mean ideology between those who prefer nuclear retaliation in comparison to those who prefer non-nuclear response options.

**Table 4.7: Comparing Attributes of Willingness to Employ Nuclear Retaliation**

	Scenario-1 Nuclear		Scenario-2 Nuclear		Scenario-3 Nuclear		Combined Nuclear	
	No	Yes	No	Yes	No	Yes	No	Yes
<b>Mean Age</b>	45.17	50.01	45.17	49.93	47.19	52.33	45.94	50.59
	$p < .0001$		$p = .0001$		$p = .0001$		$p < .0001$	
<b>Education</b>								
College Grad. (%)	65.27	34.73	71.51	28.49	76.53	23.47	68.44	31.56
Not College Grad. (%)	62.72	43.05	65.07	34.93	77.48	22.52	71.32	28.68
	$p = .5002$		$p = .0626$		$p = .8192$		$p = .1384$	
<b>Gender</b>								
Women (%)	69.95	30.05	74.72	25.28	78.38	21.69	74.30	25.70
Men (%)	56.95	43.05	61.99	38.01	75.86	24.14	65.13	34.87
	$p = .0002$		$p = .0002$		$p = .4076$		$p < .0001$	
<b>Race/Ethnicity</b>								
Majority (%)	62.42	37.58	68.40	31.60	78.79	21.21	69.46	30.54
Minorities (%)	71.56	28.44	62.75	37.25	77.03	22.97	70.97	29.03
	$p = .0678$		$p = .2562$		$p = .7977$		$p = .6414$	
<b>Mean Income</b>	6.30	6.32	6.31	6.34	6.28	6.28	6.30	6.32
	$p = .9740$		$p = .9263$		$p = .9952$		$p = .9076$	
<b>Mean Ideology</b>	3.93	4.35	4.12	4.32	3.99	4.70	4.01	4.43
	$p = .0003$		$p = .0520$		$p < .0001$		$p < .0001$	
<b>Mean Confidence</b>	6.19	7.14	6.10	7.11	6.08	7.01	6.12	7.10
	$p < .0001$		$p < .0001$		$p < .0001$		$p < .0001$	

As respondent age increases, willingness to employ nuclear weapons in each of our three scenarios systematically increases; men are significantly more supportive of nuclear retaliation than are women; support for nuclear retaliation increases predictably with political conservatism; and those who opt for the use of nuclear weapons in each scenario are significantly more confident that nuclear retaliation is the best possible response option. Preferences for using nuclear weapons in our scenarios is not systematically differentiated by education, race/ethnicity, or household income.

Because age and Cold War experience covary (Herron and Jenkins-Smith 2007, 2010), and because we know age is positively associated with prefer-

ences for nuclear retaliation in each of our scenarios, we conducted logistical regressions in which chronological age was held constant in order to test whether having experienced some portion of the Cold War as an adult (defined as being 18 years of age or older prior to 1992) is systematically predictive of willingness to employ nuclear weapons in our scenarios. Results for each of the three scenarios and for combined data from all three scenarios indicate that having experienced the Cold War as an adult is not systematically related to willingness to employ nuclear retaliation in the described scenarios.

## **Short Answer**

**Q: How do demographics, ideology, and Cold War experience relate to public preferences for responding to limited nuclear attacks?**

In the two hypothetical scenarios described in Chapter Three (limited nuclear attacks by North Korea against the US and against US military forces at sea) and the hypothetical dirty bomb scenario described in Chapter Four, willingness to respond to limited nuclear attacks on the US or its military forces using US nuclear weapons increases systematically with age and political conservatism and is higher among men. Most respondents who prefer nuclear retaliation also are significantly more confident that nuclear weapons provide the best possible option than are most who choose other responses. Willingness to use US nuclear weapons to respond to limited nuclear attacks in the described scenarios does not vary systematically with education, race/ethnicity, income, or Cold War experience.

## Chapter Five

# Energy and Environmental Security

In this chapter we address public assessments of energy security that help shape the context for energy policy debates about the future. Key elements include public confidence in energy availability, preferences for the mix of energy sources, attitudes on living with fossil fuels, and concerns about energy dependence. Because energy security is in many ways interactive with environmental security, we also investigate public beliefs about global climate change, how they are differentiated, and how they relate to energy concerns and preferences. Specifically, we seek insight into the following two primary research questions.

- *Energy Security*: How are US public views on energy requirements, comparative energy sources, energy conservation versus development, and energy independence evolving?
- *Environmental Security*: How do public beliefs about global climate change and environmental security relate to preferences for the energy future, and how are they differentiated?

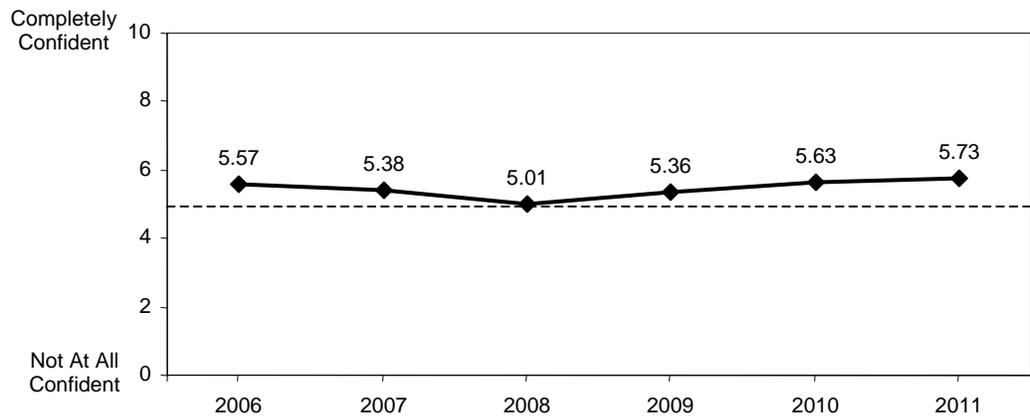
## Section 5.1: Energy Security

Two of the leading indicators of public beliefs about energy security are confidence in adequate future sources of energy and assessments of current US policies to secure the energy future. To monitor public views on both indicators, we have been tracking answers to the following two survey questions since 2006, and we chart trends in mean responses in Figures 5.1 and 5.2.

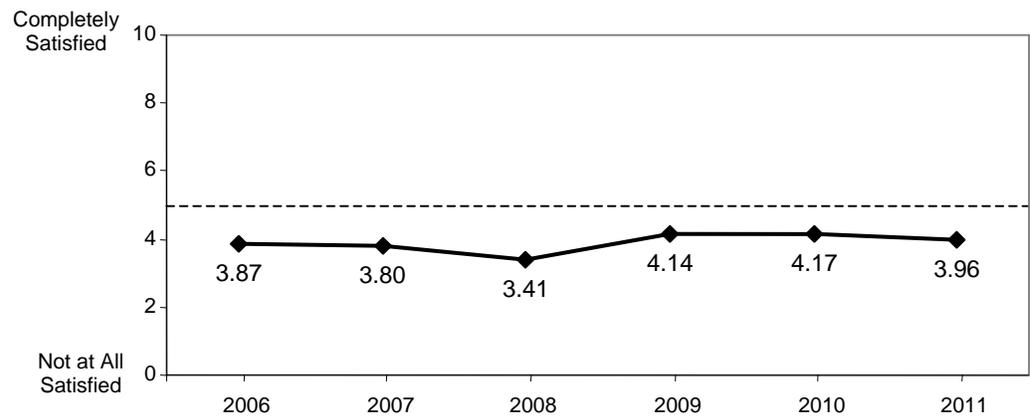
- E9: Using a scale from zero to ten, where zero means you are *not at all confident* and ten means you are *completely confident*, how confident are you that there will be adequate sources of energy to meet the energy needs of the US during the next 20 years? Please think about US energy needs overall, including transportation, heating, electricity, and other energy requirements when considering your answer.

- E10: As you may know, US energy policies generally deal with such issues as the sources and adequacy of energy supplies, the costs of various types of energy, and the environmental implications of using energy. On a scale from zero to ten, where zero means *not at all satisfied* and ten means *completely satisfied*, how satisfied are you with current US energy policies coverall?

**Figure 5.1: Mean Confidence in Adequate Sources of Energy**



**Figure 5.2: Mean Satisfaction with Current US Energy Policies Overall**



Public confidence in adequate sources of energy to meet future needs can be expected to somewhat mirror perceptions of energy costs, availability, and stability of supplies. Note that the mean confidence level depicted in Figure 5.1 is lowest (at midscale) in 2008, when our survey was conducted amidst speculations of declining US petroleum reserves, the possibility that the world

had reached “peak oil” resources, and near record high oil prices.<sup>1</sup> Since that point, mean public confidence has risen significantly ( $p < .0001$ ), and notwithstanding high gasoline prices, it continues its upward trend in 2011. While the public is mildly optimistic about future energy availability, mean satisfaction with current energy policies has been below midscale since we began asking the question, as shown in Figure 5.2.

Because fossil fuels are important both to energy availability and to energy policy, we also began asking respondents in 2006 to assess the risks associated with fossil fuels, and in 2009 we added measurements of public support for further exploring and developing US oil and gas deposits using the following questions.

*Lead-in:* The next question concerns all kinds and uses of energy, including electricity for homes and business; gas, oil, and coal for heating; and transportation fuels, such as gasoline and diesel.

- E32: Considering the effects of both normal operations and potential accidents, and using a scale from zero to ten where zero means *no risk* and ten means *extreme risk*, how do you rate the risks to society and the environment from fossil fuels, such as coal, oil, and natural gas.

*Lead-in:* (arguments in random order)

Some people *oppose* further developing US deposits of oil and gas. They argue that doing so increases greenhouse gas emissions, harms the environment, and reduces the economic incentives for developing alternative sources of energy that are cleaner.

Some people *support* further developing US deposits of oil and gas. They argue that doing so keeps energy prices lower, reduces dependence on foreign sources, and gains time for developing alternative sources of energy that are cleaner.

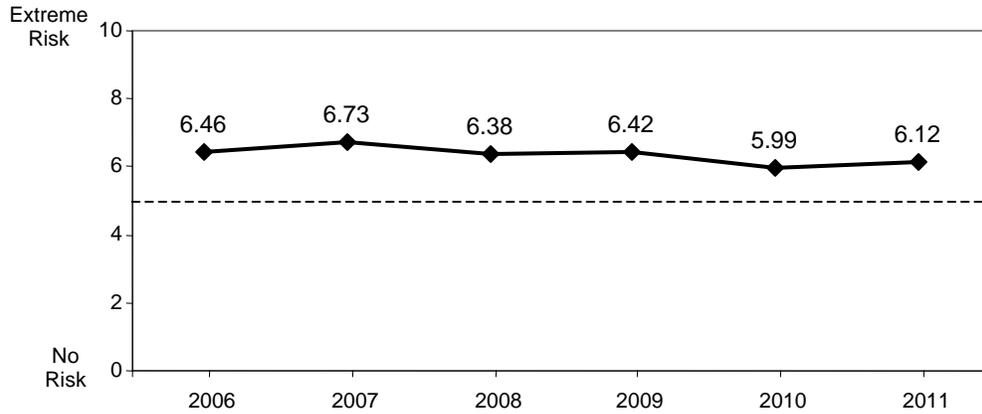
- E42: Considering both arguments and using a scale from one to seven where one means *strongly oppose* and seven means *strongly support*, how do you feel about further exploring and developing US deposits of oil and gas?

In Figures 5.3 and 5.4 we chart trends in mean responses.

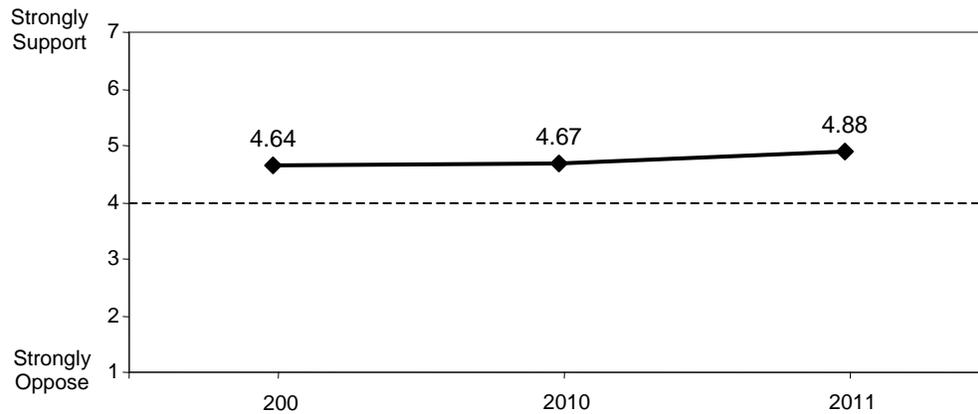
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<sup>1</sup> The price of a barrel of crude oil peaked in August, 2008, at more than \$147.

**Figure 5.3: Mean Risks of Fossil Fuels**



**Figure 5.4: Mean Support for Further Exploring and Developing US Oil and Gas Deposits**



As apparent in Figure 5.3, our respondents judge risks of fossil fuels to be above midscale in each measurement period, but the trend has declined a modest but statistically significant five percent since 2006 ( $p < .0001$ ). As shown in Figure 5.4, mean support for further exploring and developing US oil and gas deposits remains above midscale and increases about the same five percent ( $p < .0001$ ) over the past three years. So although respondents recognize significant risks from fossil fuels, most want the US to increase domestic production of oil and gas.

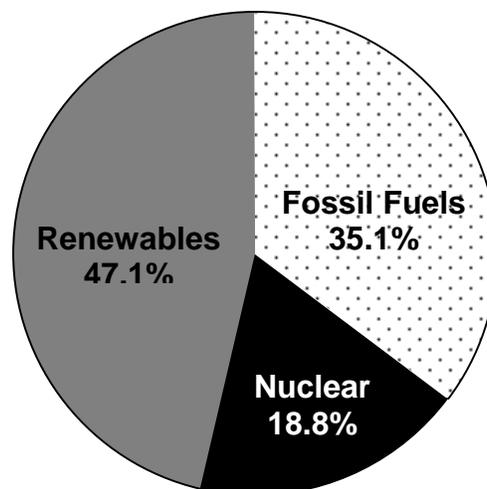
To provide a more integrated picture of how members of the public prefer that we shape the future US energy mix, we pose the following questions.

*Lead-in:* Now think about the overall mix of energy sources for the US. We currently get about 85 percent of our energy from fossil fuels, eight percent from nuclear energy, and six percent from renewable sources. The following three questions concern how you would like to see this mix of energy sources change over the next 20 years. Please tell me approximately what percentage of the total US energy supply you would like to see come from each of these three energy sources. (random order)

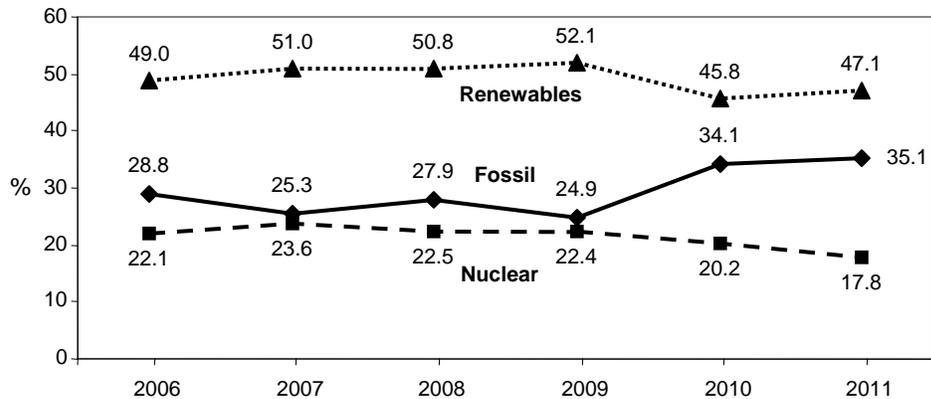
- E38: What percent of our energy should come from fossil fuels, which currently provide about 85 percent of our energy?
- E39: What percent of our energy should come from nuclear energy, which currently provides about eight percent of our energy?
- E40: What percent of our energy should come from renewable sources, which currently provide about six percent of our energy?

In Figure 5.5, we show distributions of responses in 2011, and in Figure 5.6, we chart trends in mean preferences for each source of energy since 2006.

**Figure 5.5: Preferred Future US Energy Mix (Next 20 Years): 2011**



**Figure 5.6: Trends in Mean Preferred US Energy Mix (Next 20 Years): 2006–2011**



Though the ordinal ranking of preferences among the three major energy sources has remained the same in each measurement period, the relative proportions of an idealized future mix show distinctive trends. From a high of 52.1 percent in 2009, preferences for the proportion of energy deriving from renewable sources has declined by a statistically significant five percent ( $p < .0001$ ). During the same period, preferred proportions of the future energy mix deriving from fossil fuels has increased more than twice that amount from 24.9 percent in 2009 to 35.1 percent in 2011 ( $p < .0001$ ). During those same three years, preferences for nuclear energy declined 4.6 percent ( $p < .0001$ ). Thus the gap between preferred proportions of renewable vs. fossil fuels has narrowed substantially over the past three years, while relative preferences for nuclear energy have continued declining, and the gap between preferences for fossil fuels vs. nuclear sources has dramatically widened.<sup>2</sup>

We conclude this section with responses to two associated questions about preferred directions for the energy future. As shown below, the first question addresses preferences for balancing energy conservation and development, and the second addresses perceived importance of reducing US dependence on foreign sources of energy.

<sup>2</sup> In Chapter Six, we specifically address implications of the Fukushima, Japan, nuclear experiences resulting from the 9.0 earthquake and associated tsunami on March 11, 2011.

*Lead-in:* (arguments in random order)

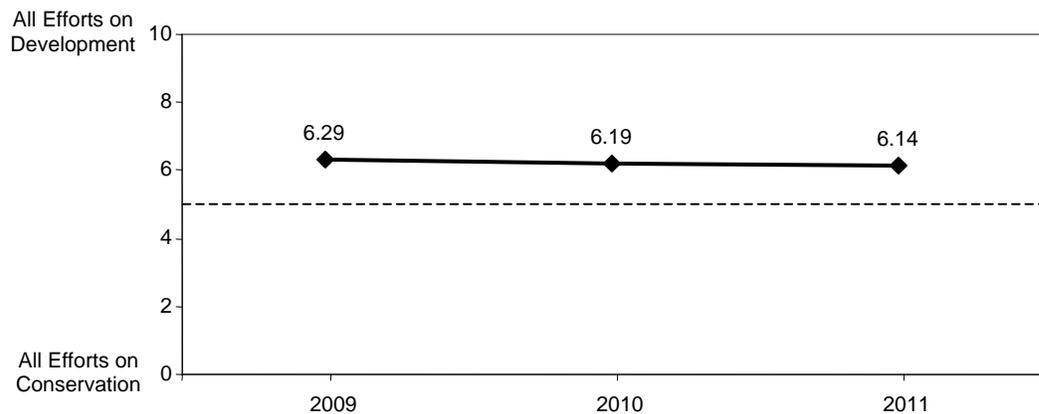
Some people argue that regardless of the future mix of energy sources, we must also significantly reduce energy consumption.

Some people think that significantly reducing energy consumption limits economic growth and is not practical.

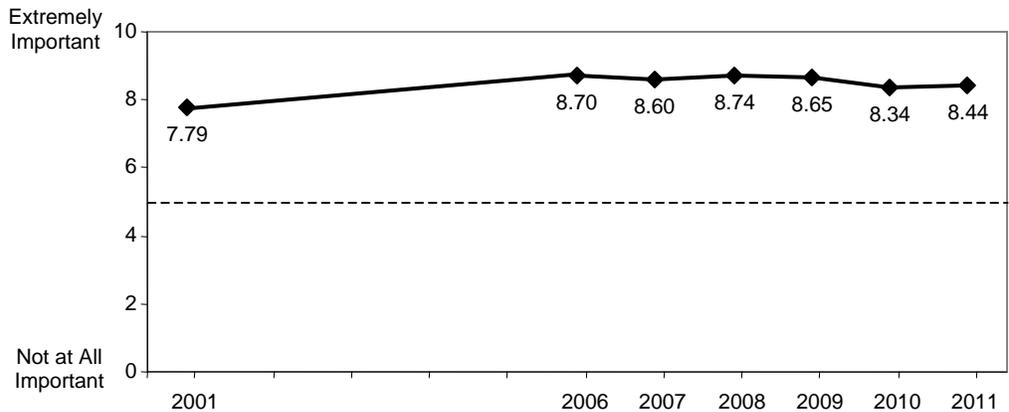
- E41: Considering both arguments and using a scale from zero to ten, where zero means *place all efforts on reducing energy consumption* and ten means *place all efforts on developing the energy mix you identified above*, what strategy would you prefer?
- E37: Using a scale from zero to ten, where zero means *not at all important* and ten means *extremely important*, how important is it to reduce US dependence on foreign sources of energy of all types?

We began asking the question on energy conservation vs. consumption in 2009, but our tracking of the importance of energy independence began in 2001. Trends in responses to each question are shown in Figures 5.7 and 5.8.

**Figure 5.7: Balancing Energy Conservation and Development**



**Figure 5.8: Mean Importance of Reducing US Dependence on Foreign Energy**



As shown in Figure 5.7, in each of our three measurement periods beginning in 2009, participants register statistically indistinguishable mean preferences for balancing energy conservation and development, with greater emphasis preferred for developing existing and new energy resources. And as Figure 5.8 clearly shows, a large majority of our respondents consider it important to reduce US dependence on foreign energy sources. Means above a value of eight on a zero-to-ten scale approach public consensus.

## Short Answer

**Q: How are US public views on energy requirements, comparative energy sources, energy conservation vs. development, and energy independence evolving?**

Since a low point in 2008, public confidence in future energy sufficiency has increased significantly to above midscale, while mean satisfaction with US energy policies also has grown, but remains below midscale. In 2011, the average preferred US energy mix in the next two decades is to (a) increase renewable sources of energy from today's approximately six percent of overall US energy production to 47 percent; (b) increase nuclear energy generation from today's approximately eight percent to 18 percent; and to decrease energy produced by burning fossil fuels from today's approximately 85 percent of overall energy to 35 percent. However, public preferences also show a clear trend over the past three years in which the gap between preferences for

energy produced from fossil fuels and energy produced by renewable sources has narrowed significantly, while the gap between preferences for fossil energy and that produced by nuclear generation has widened significantly. At the same time, mean perceptions of risks deriving from burning fossil fuels are declining, and support for exploring and developing US oil and gas deposits is growing. While recognizing the need for both energy development and conservation, most participants consistently prefer to emphasize energy development, and a large majority considers it important to reduce US dependence on foreign sources of energy.

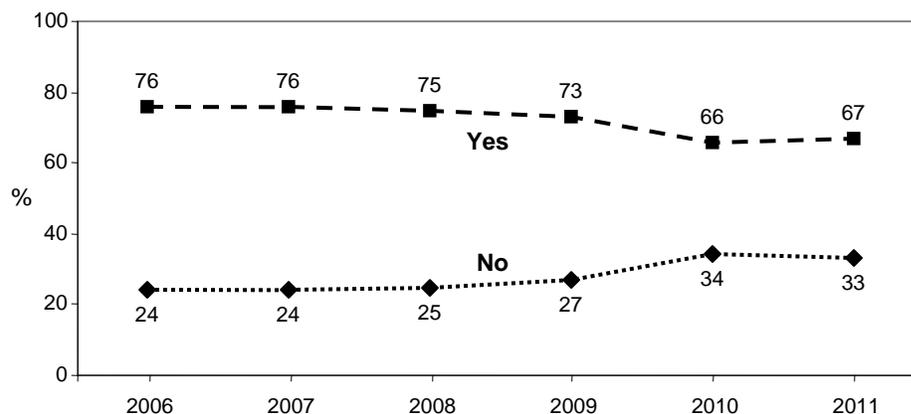
## Section 5.2: Environmental Security

Next we examine public beliefs about global climate change and how those beliefs relate to securing the energy future. We begin with trends in responses to the following two questions.

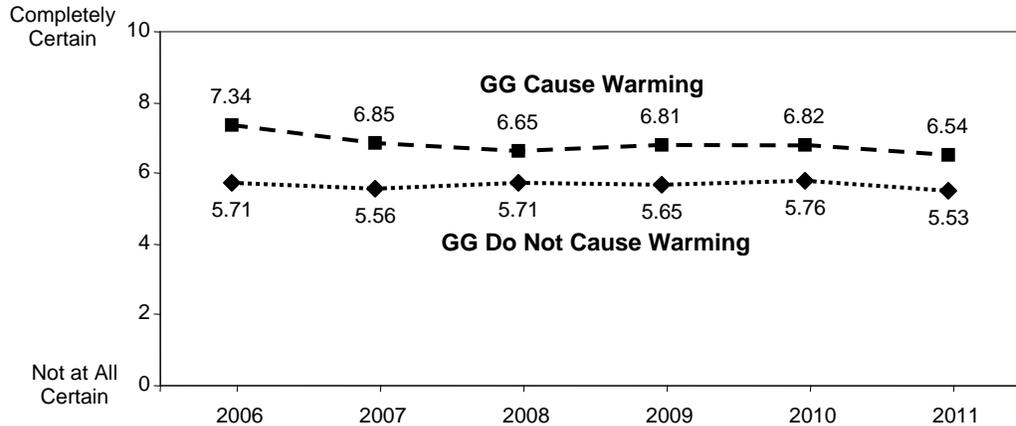
- E27: In your view, are greenhouse gases, such as those resulting from the combustion of coal, oil, natural gas, and other materials causing average global temperatures to rise?
- E28: On a scale from zero to ten, where zero means *not at all certain* and ten means *completely certain*, how certain are you that greenhouse gases <are/are not from prior question> causing average global temperatures to rise?

In Figure 5.9 we compare trends in distributions for those who believe greenhouse gases are causing global warming with those who believe greenhouse gases are not causative. In Figure 5.10, we chart trends in mean certainty of these contrasting beliefs.

**Figure 5.9: Are Greenhouse Gases Causing Global Warming?**



**Figure 5.10: Mean Certainty of Views on Greenhouse Gases and Global Warming**



As Figure 5.9 shows, public beliefs about global climate change are evolving. While still a substantial majority in 2011, the percentage of respondents who believe greenhouse gases are causing global warming has declined about nine percent since 2006. Those who believe a causal link exists between greenhouse gas emissions and global climate change have declined from about three out of four respondents in 2006 to about two out of three respondents in 2011, and those beliefs are stronger and more prevalent among women, younger participants, and those more politically liberal.

Not only has the gap between beliefs about causality narrowed, but the certainty with which those beliefs are held has also shifted. As shown in Figure 5.10, mean certainty among those who believe greenhouse gases cause global warming has declined a statistically significant 10.9 percent ( $p < .0001$ ) since 2006, while certainty of beliefs that greenhouse gases are not causally linked to warming has declined a statistically insignificant 3.2 percent ( $p = .2395$ ). Thus far, the trend in the debate is toward skepticism and uncertainty, though a sizable majority of those we surveyed continue to believe greenhouse gases are causing global climate change.

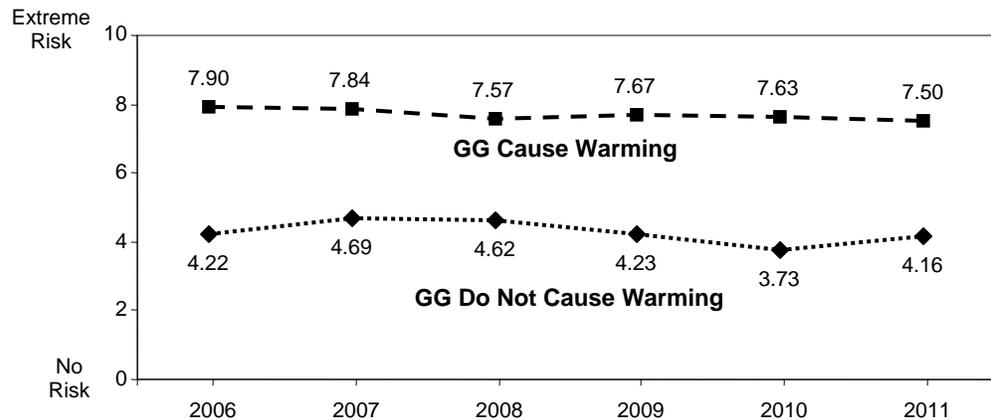
To gain insight into potential links between environmental security and energy security, we examine how beliefs about the nature and causes of climate change relate to perceptions of environmental risks, the importance of reducing greenhouse gases, and preferences for the future US energy mix. We begin with the two following questions that investigate how beliefs

about the risks of climate change and the importance of reducing greenhouse gas emissions are differentiated among those who believe such gases cause global warming and those who do not.

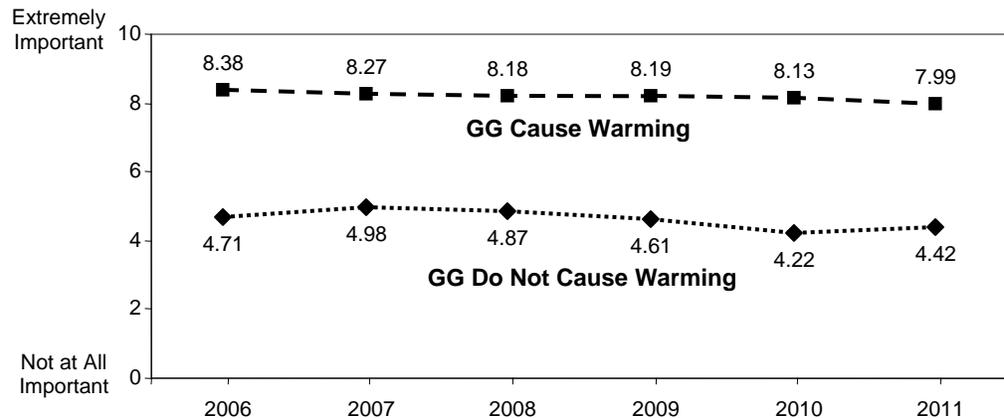
- E29: On a scale from zero to ten, where zero means *no risk* and ten means *extreme risk*, how much risk do you think global warming poses for people and the environment?
- E30: On a scale from zero to ten, where zero means *not at all important* and ten means *extremely important*, how important do you think it is for the US to reduce greenhouse gas emissions?

In Figures 5.11 and 5.12, we contrast trends in mean responses to each question among those respondents who believe greenhouse gases cause global warming and those who do not.

**Figure 5.11: Mean Risks of Global Warming to People and the Environment**



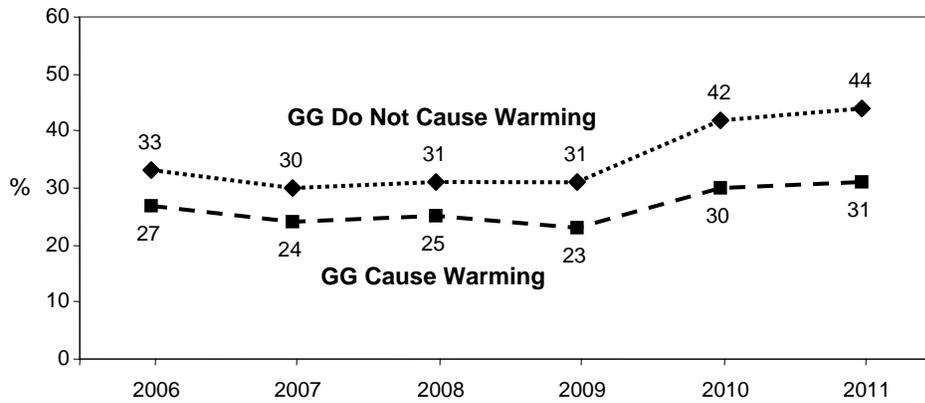
**Figure 5.12: Mean Importance of Reducing Greenhouse Gas Emissions**



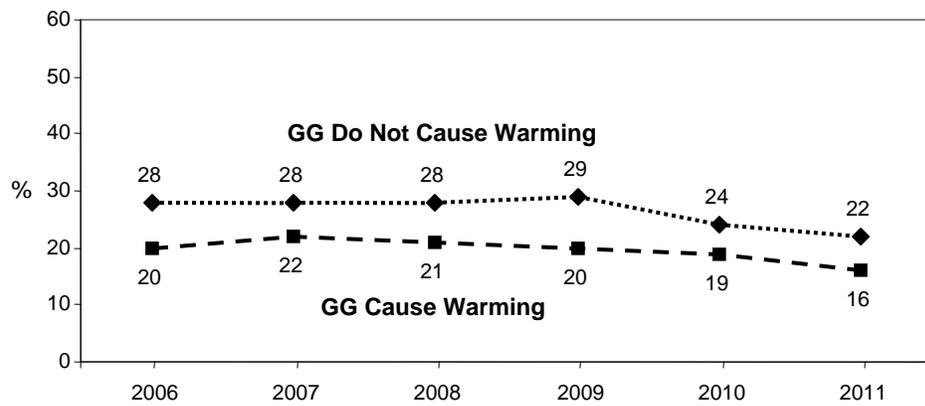
First, note that beliefs about risks associated with climate change and perceived importance of reducing greenhouse gases are clearly differentiated between those participants who believe greenhouse gases cause warming (dashed lines) and those who do not (dotted lines). For each measurement period in each figure, differences in means are statistically significant ( $p < .0001$ ). Next, note that in Figure 5.11, those who believe greenhouse gases cause global warming report a statistically significant decline in mean perceived risks of climate change between 2006 and 2011 ( $p < .0001$ ), and in Figure 5.12, both those who believe greenhouse gases are causally linked to warming—and those who do not—show significant trends downward in mean rated importance of reducing greenhouse gas emissions over the same time period ( $p < .0001$ ). Thus we have two distinct patterns over time: (a) differences in beliefs about the effects of greenhouse gases on global warming relate systematically to perceived risks of climate change and the importance of reducing greenhouse gases; and (b) perceived risks of global warming and importance of reducing greenhouse gas emissions are slowly declining over time.

To close this section, we examine how beliefs about climate change and environmental security relate to preferences for the proportions of future US energy deriving from fossil fuels, nuclear generation, and renewable energy sources. Figure 5.6 (above) charts trends in mean preferences for the future energy mix among all respondents. In Figure 5.13 we compare preferences for the percentage of US energy produced by burning fossil fuels among those who believe that greenhouse gases cause global warming and those who believe greenhouse gases do not cause warming. In Figure 5.14 we provide the same trend lines for preferred proportions of future US energy produced by nuclear generation among those holding opposing beliefs about greenhouse gases causing global warming. And in Figure 5.15 we contrast preferences for renewable sources of energy among the same two groups of respondents. Consistent with previous graphs, those who believe that greenhouse gases cause global warming are represented by dashed lines, and those who believe greenhouse gases do not cause warming are shown with dotted lines.

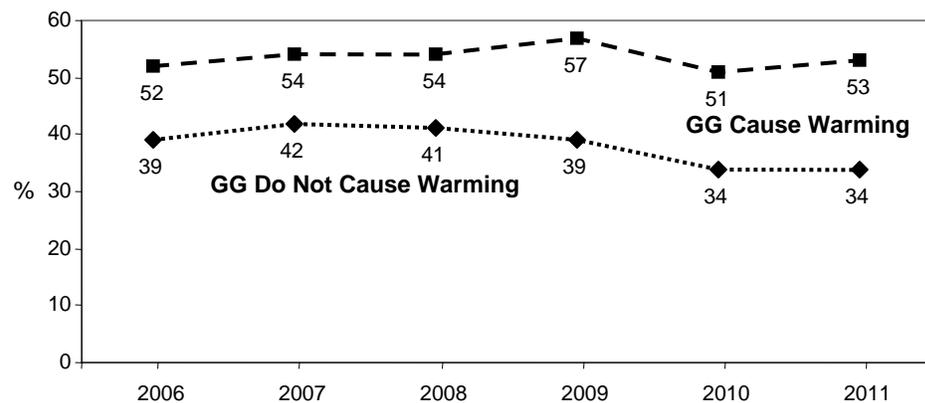
**Figure 5.13: Preferred Percent of Future Energy from Fossil Fuels**



**Figure 5.14: Preferred Percent of Future Energy from Nuclear Generation**



**Figure 5.15: Preferred Percent of Future Energy from Renewable Sources**



These displays show graphically how beliefs about linkages between greenhouse gas emissions and global climate change relate to preferences for future energy security. Preferences are most clearly contrasted in desired proportions of future energy deriving from fossil fuels (Figure 5.13) and renewable energy sources (Figure 5.15), where those who believe greenhouse gases cause global warming strongly prefer an energy future that emphasizes renewables. Their counterparts who do not believe greenhouse gases cause warming are much more tolerant and supportive of energy produced by burning fossil fuels.

However, preferences for the role of nuclear generation in the future energy mix, shown in Figure 5.14, are more complex. There are two primary observations to note. First, even though nuclear generation results in few if any greenhouse gas emissions, those who causally associate greenhouse gases with global warming prefer smaller proportions of the future US energy mix to come from nuclear power than do those who do not believe greenhouse gases cause warming. That likely results from other environmental concerns than climate change. Environmentalists and others who prefer a smaller role for nuclear generation may consider the risks of operational accidents, natural disasters, potential terrorist attacks, and used nuclear fuel management to pose risks that more than offset the benefits of reduced greenhouse gas emissions. Second, a clear trend is apparent among both groups in which preferences for the proportion of future energy provided by nuclear generation has declined significantly since 2009 ( $p < .0001$  for each group), and the gap between the nuclear preferences of each of our two contrasting groups has narrowed, suggesting that factors other than climate change are shaping public views on nuclear energy. We investigate both observations in the following chapter, including the implications of the nuclear events at Japanese reactors during 2011.

## Short Answer

**Q: How do public beliefs about global climate change and environmental security relate to preferences for the energy future, and how are they differentiated?**

Views of climate change risks and the importance of reducing greenhouse gas emissions are clearly differentiated among those who do and do not be-

lieve greenhouse gases cause global warming. But beliefs that greenhouse gases cause global warming decline from about three out of four respondents in 2006 to about two out of three participants in 2011, and levels of certainty with which beliefs about greenhouse gases and climate change are held are declining most rapidly among those who believe greenhouse gases are causal. Beliefs about greenhouse gases causing global warming are stronger among women and younger respondents, but they are most clearly differentiated by political ideology, with perceptions of strong causal linkages increasing with liberalism and decreasing with conservatism. Preferences for the future US energy mix are clearly differentiated by beliefs about whether greenhouse gases cause warming. Those who doubt a causal relationship favor fossil fuels, and those who believe the causal linkage is strong favor renewable energy sources. These findings show robust linkages between public beliefs about energy security and environmental security.

## Chapter Six

### Nuclear Dimensions of Energy Security

This chapter focuses more specifically on nuclear energy and associated policy issues, with special interest in how US public views on nuclear generation are evolving in the aftermath of the 9.0 Tohoku earthquake and resulting tsunami that struck Japan on March 11, 2011. Additionally, we analyze factors associated with used nuclear fuel management and nuclear repository siting in the US, and public trust in alternative sources of related technical information. Specifically, we address the following research questions.

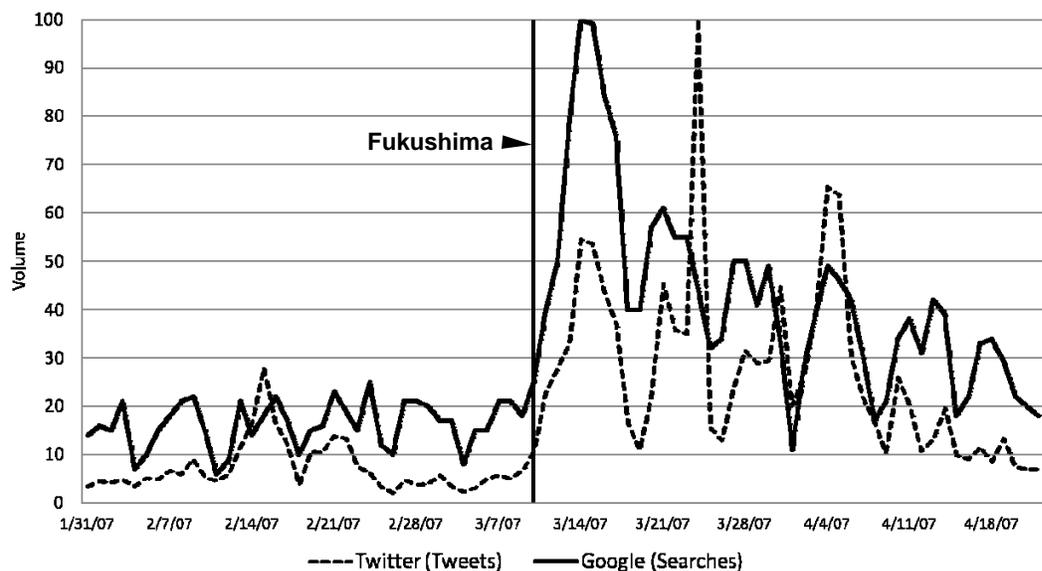
- *Nuclear Energy Outlook:* How do public views of risks, benefits, and support for US nuclear generation following the Japanese experience at Fukushima compare to pre-event views, and how do the implications of Fukushima compare to those following the nuclear accidents at Three Mile Island (1979) and Chernobyl (1986)?
- *Managing Used Nuclear Fuels:* How aware are members of the public about current practices for managing used nuclear fuels in the US, and how do concept, design, and policy process considerations affect public support for used nuclear fuel repositories?
- *Public Trust:* How is trust in technical information about used nuclear fuel distributed among public agencies and non-profit organizations, and what predispositions about institutional biases are held by the US public?

#### Section 6.1: Evolving Public Perspectives on Nuclear Energy

The events that severely damaged the Fukushima Daiichi reactors and cooling pools in March 2011 occurred about two months before beginning our energy and environment surveys, and the recovery from those events continues as this report is written. Unsurprisingly, the events in Japan resulted in substantial (and continuing) media coverage. But public attention is necessarily constrained, in that a limited number of issues can achieve and hold attention in a given period of time. Rising issues such as economic concerns and pending elections compete with nuclear issues for primacy, and even events as serious as those surrounding Fukushima do not sustain high levels of public attention indefinitely. However, new measures

involving Internet and interactive media patterns permit greater insight into changes in public attention over time. We employ data from Internet searches initiated by users of the Google search engine and data from the stream of Twitter messages to evaluate the intensity of public attention to nuclear issues following the Fukushima events. Because both of these data streams are user-initiated, they reflect changes in users' efforts to find information, express responses to that information (in Tweets), and share interpretations of that information (in the form of "re-Tweets"). While not a comprehensive measure of public attention or issue salience, these activities do provide a rough barometer of the intensity of public focus on specific events.<sup>1</sup> Figure 6.1 shows trends in Google searches and Tweets that include the words "nuclear waste," starting a month before the events at Fukushima and continuing through April 2011.

**Figure 6.1: Public Attention to "Nuclear Waste" Before and After Fukushima**



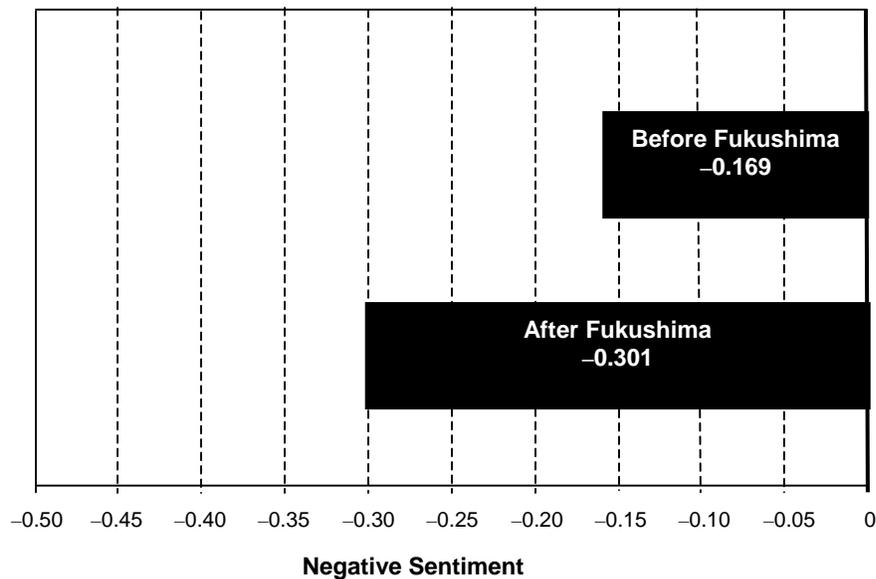
The vertical line represents March 11, 2011, the date of the initiating earthquake and tsunami. The solid trend line represents changes in Google searches using the term "nuclear waste," and the dashed trend line represents the volume of Tweets containing the term "nuclear waste." Note that Google searches rise sharply over the March 11–17 period, then gradually

<sup>1</sup> For a more detailed comparison of the influences of traditional and new media coverage of nuclear accidents and radiation events, see Friedman (2011).

decline toward pre-event levels. The volume of Tweets also rises sharply on March 11, but continues to fluctuate with a peak on March 25 and more gradually returns toward pre-event volumes. Both trends show substantially increased attention to nuclear waste issues triggered by the events at Fukushima and how these measures of public attention drift back toward pre-event levels over the weeks following the events.

Because data from the Twitter stream include short strings of text containing the term “nuclear waste,” it is possible to analyze the content of those messages to see if the Fukushima events result in a change in the negative or positive content of the messages. Using a large dictionary of terms and a simple content analysis algorithm, we search the strings for negative and positive words attached to the use of the term “nuclear waste.” We then use the balance of negative and positive terms to develop a “sentiment” score for each Tweet. By comparing the average sentiment scores before and after the Fukushima events, we test differences for statistical significance, and chart results in Figure 6.2.

**Figure 6.2: Average Tweet “Sentiment”**



As shown, average sentiment changes from mildly negative before the Fukushima nuclear events to substantially more negative after the events. The change in mean values, across the several hundred thousand “tweets” evalu-

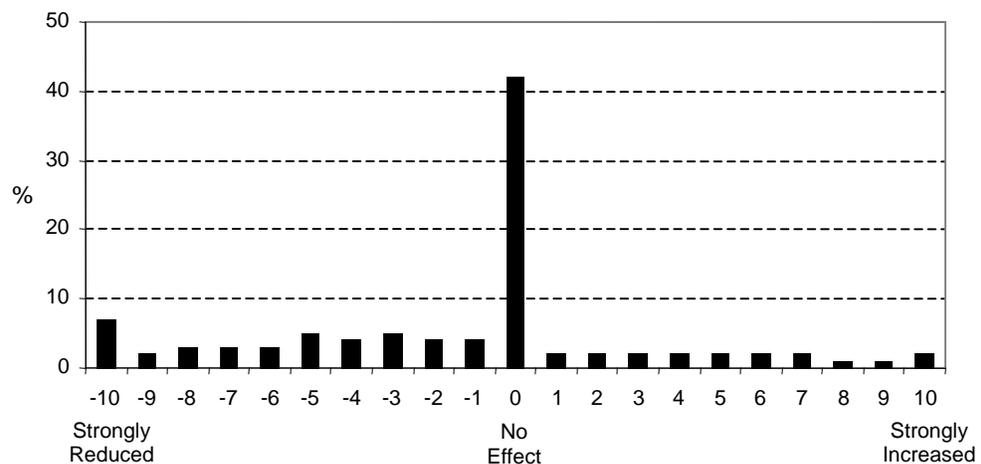
ated, is highly statistically significant. In short, the Fukushima events both substantially increase attention to used nuclear fuel issues and result in a notable shift toward a more negative sentiment in public expressions about “nuclear waste.” To compare the volume and sentiment in Internet traffic shown above with a systematic analysis of public attitudes, we pose the following question in our 2011 survey, with interviews completed between four and eight weeks after the nuclear events in Fukushima.

*Lead-in:* As you probably know, a severe earthquake occurred on March 11, 2011, in the Pacific Ocean near Japan, creating large tidal waves that destroyed some Japanese coastal cities. Also damaged was the Fukushima nuclear power plant, which released radioactivity into the atmosphere and nearby portions of the sea. Some of that radiation continues to pose risks to nearby populations. The earthquake and tidal wave killed thousands of Japanese; the release of radiation at Fukushima is not known to have produced any deaths, but could contribute to future illnesses. We would like to know how that event has influenced your confidence in US nuclear power.

- E88: On a scale from minus ten to plus ten, where minus ten means the Japanese experience has *strongly reduced* your support for US nuclear power production, zero means the Japanese experience has had *no effect* on your support, and plus ten means the Japanese experience has *strongly increased* your support, how have recent events in Japan influenced your support for nuclear power production in the United States?

We chart responses in Figure 6.3.

**Figure 6.3: Change in Support for Nuclear Energy in the US Due to Fukushima**



Overall, 42 percent of respondents indicate that the Fukushima events had no effect on their support for nuclear power in the US; 40 percent report that the events decreased their support; and 18 percent report increased support. The average reported response to the Japanese experiences is a reduction of 1.41 points in mean support on the scale from minus ten to plus ten. In sum, self-reported changes in support for US nuclear energy are negative, but the average change is modest, and the pattern is not uniform. These response patterns indicate that although the salience of events in Fukushima was temporarily high, and intensity of Internet inquiries and exchanges of Tweets initially were intense, the stated net effects on US attitudes toward nuclear energy are modest. The persistence of effects remains to be seen.

To investigate more specifically the nature of the effects of Fukushima in terms of risk and benefit perceptions, we compare mean assessments of four dimensions of nuclear energy risks and benefits measured June 8–10, 2010, (about nine months prior to the Fukushima events) and again, using the same metrics, June 1–2, 2011 (beginning 81 days after Fukushima).<sup>2</sup> Following are the four risk measures and four benefit measures used for comparisons.

*Lead-in:* First, we want to ask about your beliefs about some of the possible risks associated with nuclear energy use in the US. Please consider both the likelihood of a nuclear event occurring and its potential consequences when evaluating the risk posed by each of the following on a scale from zero to ten where zero means *no risk* and ten means *extreme risk*. (random order)

- E43: An event at a US nuclear power plant within the next 20 years that results in the release of large amounts of radioactivity.
- E44: An event during the transportation or storage of spent nuclear fuel from nuclear power plants in the US within the next 20 years that results in the release of large amounts of radioactivity.
- E45: A terrorist attack at a US nuclear power plant within the next 20 years that results in the release of large amounts of radioactivity.
- E46: The diversion of nuclear fuel from a nuclear power plant in the US within the next 20 years for the purpose of building a nuclear weapon.

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<sup>2</sup> The survey in 2010 and the survey in 2011 were of different, but similarly sized and constructed national Internet samples.

*Lead-in:* Now we want to know about your beliefs about some of the possible benefits associated with nuclear energy use in the US. Please evaluate the benefits associated with each of the following on a scale from zero to ten, where zero means *not at all beneficial* and ten means *extremely beneficial*. (random order)

- E47: Fewer overall greenhouse gas emissions because nuclear energy production does not create greenhouse gases.
- E48: Reliable power because nuclear energy generates large amounts of electricity and is not affected by weather conditions, such as low rainfall or no wind.
- E49: Greater US energy independence because nuclear energy production does not require oil or gas from foreign sources.
- E50: Reduced environmental damage because of less need for mining coal or extracting oil and gas.

In Table 6.1, we compare mean responses provided in 2010 with those measured after key events at Fukushima in 2011. Statistical differences in means are represented by the *p*-values shown.

**Table 6.1: Mean Assessments of Selected Risks and Benefits Associated with Nuclear Generation in the US**

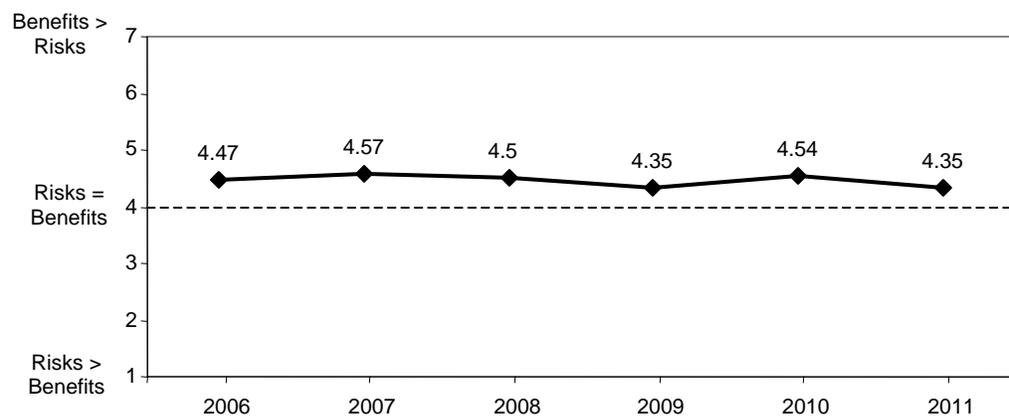
Means	2010	2011	<i>p</i> -Value
<b>Risk Measures (0 = No Risk—10 = Extreme Risk)</b>			
E43: Operational event	6.19	6.37	.0714
E44: Transportation event	6.23	6.16	.4581
E45: Terrorist attack	6.72	6.70	.8722
E46: Diversion of nuclear fuel	5.63	5.60	.7284
<b>Benefit Measures (0 = Not at all Beneficial—10 = Extremely Beneficial)</b>			
E47: Fewer greenhouse gases	7.06	6.76	.0003
E48: Reliable electricity	7.25	6.94	.0011
E49: Greater energy independence	7.41	7.13	.0010
E50: Reduced mining effects	7.10	6.84	.0024

Mean perceptions of risks of nuclear energy changed little from 2010 to 2011. Among the categories of risk measured, only the risk of an accident at an operating nuclear power plant increased, on average. Given the nature of the earthquake and tsunami related events at Fukushima, it is not surprising that risks involving transportation of nuclear materials, terrorist attacks, or diversion of nuclear fuels for the purposes of constructing nuclear weapons are largely unaffected. More surprising is that each of the four categories of perceived benefits from nuclear energy shows statistically significant reductions. Perceptions of the benefits resulting from a secure, domestic supply; a reliable source of base-load electricity; reduced environmental damage from mining or drilling for fossil fuels; and even reduced greenhouse gas emissions all decline, on average. It seems likely that Fukushima imagery of indefinitely idled nuclear reactors, as well as explosions in plant buildings and unresolved clean-up issues, erode expected benefits of nuclear energy more than they affect perceived risks.

To put those differences in context over time, we pose the following question that requires participants to integrate perceptions of risks and benefits and express an overall balance. Figure 6.4 shows mean responses to the following question measured annually since 2006.

E51: Using a scale from one to seven, where one means the risks of nuclear energy far outweigh its benefits, four means the risks and benefits are equally balanced, and seven means the benefits of nuclear energy far outweigh its risks, how do you rate the overall balance of the risks and benefits of nuclear energy in the US? Remember, you can choose any number from one to seven.

**Figure 6.4: Trend in Mean Balance of Nuclear Energy Risks and Benefits**

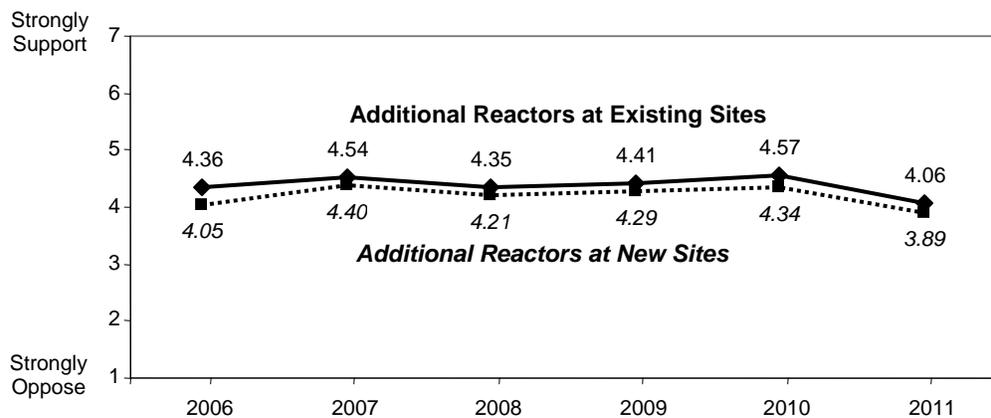


All mean responses are above midscale, including the post-Fukushima average for 2011, indicating that six national samples all report that, on average, the benefits of nuclear energy in the United States outweigh associated risks. Nevertheless, the decline in mean value from 4.54 reported in 2010 to 4.35 reported in 2011 is statistically significant ( $p < .0001$ ), but the mean assessment in 2011 it is no lower than the balance reported in 2009.

Another key comparative measure is US public support for additional nuclear generation capacities. Using the following questions, we annually have been measuring public attitudes on constructing new nuclear generation capacities at existing sites and at new locations. In Figure 6.5, we compare trends in responses to both questions since 2006.

- E52: Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about constructing additional nuclear reactors at the sites of existing nuclear power plants in the US?
- E53: Using the same scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about constructing additional nuclear power plants at new locations in the US?

**Figure 6.5: Trends in Mean Support for Additional US Nuclear Reactors**

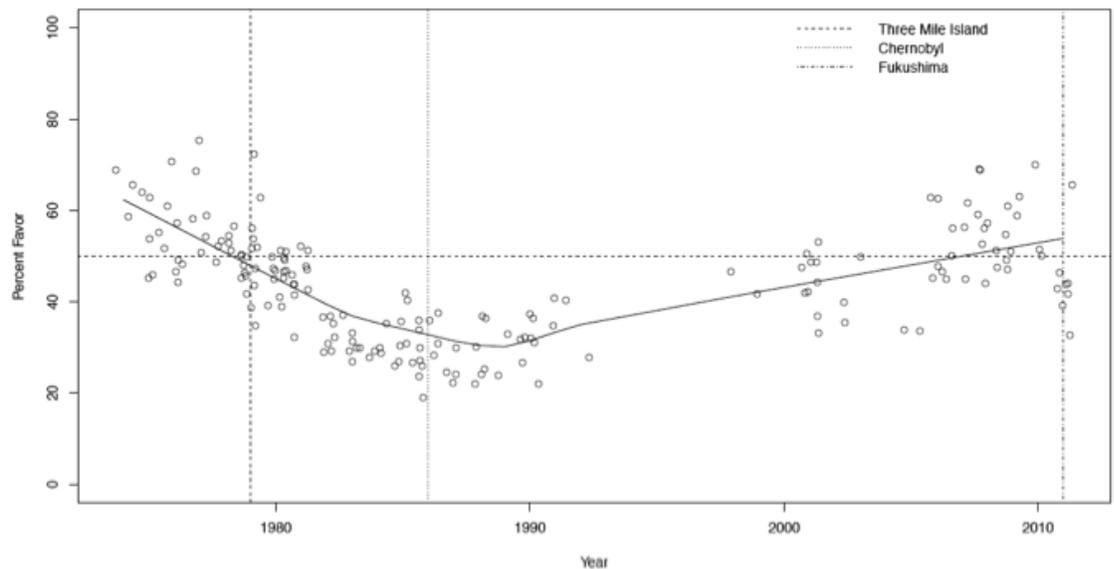


Mean support for constructing new nuclear reactors at the sites of existing nuclear power plants has remained above midscale since 2006, and though it drops in our latest measurement, it remains near the scale midpoint of four. Support for building additional nuclear power plants at new locations in the US receives relatively lower mean support in each of our surveys, and

drops to just below midscale in 2011. The decline in support from that reported in 2010 for additional reactors for both questions registered after the events at Fukushima in 2011 is statistically significant ( $p < .0001$ ). But both measures continue to be near midscale, indicating that our respondents, on average, remain open-minded about increasing US nuclear generation capacities—even after Fukushima—and the policy space appears inviting for continued debate about the future of nuclear power in the United States.

Of course the implications of Fukushima are still evolving, and to provide a more comprehensive and relative perspective on public reactions to nuclear events over time, we analyzed data from 185 surveys that included various measures of support for new nuclear power plants taken over the past three decades. For each survey, we calculated the percentage of respondents who said they supported building new power plants. Figure 6.6 shows the percentage support in each survey, plotted by the year and month in which the survey was conducted. The dates of the Three Mile Island, Chernobyl, and Fukushima nuclear events are shown as vertical dashed lines.

**Figure 6.6: Trend in Support for New US Nuclear Power Plants in National Surveys**



Note that support for new US nuclear power plants is well above 50 percent prior to the Three Mile Island (TMI) nuclear accident in 1979, but the trend in support, which was already declining before TMI, drops steadily through the

mid-1980s to under 40 percent. The Chernobyl disaster appears to result in modest additional decline, though by the early 1990s the trend appears to be toward gradually increasing public support. The gap in data through the mid-1990s reflects the decline in relative salience of nuclear issues during that period. By the beginning of the next decade, support increases, and it continues to grow over the first decade of this century. This period, with support rising above 50 percent for the first time since the early 1980s, was widely characterized as a “nuclear renaissance.” Following the Fukushima nuclear events, however, public support appears to be declining again, but these data provide reason for caution in interpreting the longer-term effects of the Fukushima nuclear events on American attitudes toward nuclear energy.

The changing levels of public support for new nuclear power plants may reflect the manner in which events like those at Fukushima are interpreted through competing policy narratives about those events. TMI, for example, was for many years interpreted chiefly as a disaster for nuclear energy, symptomatic of the dire risks posed by the technology. But the interpretation of an event is subject to change, and the valence for risk can be contested in the course of public policy debates. In the TMI case, in some domains, the focus was shifted to the fact that no deaths were attributable to the event despite its status as the worst nuclear disaster in US history. Other factors relate to public experience with and proximity to nuclear events. Chernobyl was a far greater nuclear disaster in terms of radiation exposure and lives affected, but it occurred thousands of miles from the US homeland. Fukushima represents the world’s third substantially negative nuclear power event, but like TMI, no deaths have been attributed to radiation exposure, and like Chernobyl, Fukushima is thousands of miles from the US and has had few if any direct effects on the American population. After Fukushima, it is to be expected that public attention to the event temporarily will increase the resonance of narratives about the risks posed by nuclear energy—or perhaps even more to the apparent uncertainties associated with reliance on nuclear generation—but the long-term implications remain unclear. The ongoing events at Fukushima, coupled with the competing narratives seeking to characterize the implications for US energy policies, mean only that public responses will continue to evolve over time, but the direction and magnitude of long-term implications from Fukushima remain to be seen.

## Short Answer

**Q: How do public views of risks, benefits, and support for US nuclear generation following the Japanese experience at Fukushima compare to pre-event views, and how do the implications of Fukushima compare to those following the nuclear accidents at Three Mile Island (1979) and Chernobyl (1986)?**

The nuclear events of March 2011 at the Fukushima Daiichi Nuclear Power Station in Japan led to a substantial increase in US public attention to nuclear energy issues, and they have had a modestly negative impact on public support for nuclear energy in the United States to date. The nuclear accident at Three Mile Island was the first of its kind in the world, and resulted in retrenchment in US nuclear energy development. Perhaps because of its distant location, Chernobyl had less direct impact on US attitudes. Fukushima is the world's third major nuclear energy adverse event, but like Three Mile Island, it resulted in no direct fatalities, and like Chernobyl, it occurred far from US shores. Following Fukushima, public assessments of nuclear energy risks have not increased significantly, but public beliefs in the benefits of nuclear energy have declined (at least temporarily). The overall balance of risks and benefits of US nuclear power shifts about four percent away from benefits and toward risks compared to 2010, but benefits are still considered to outweigh associated risks, on average. Support for additional US nuclear generation capacities at existing or new sites declines about 10–11 percent compared to 2010, but mean views remain near midscale, indicating neither strong support nor strong opposition to expanding nuclear power in the US. However, the implications of the nuclear events at Fukushima are still evolving and can be expected to figure prominently in continuing US policy debates on nuclear energy.

## Section 6.2: Managing Used Nuclear Fuel in the United States

**I**n this section, we first assess public understandings of current US practices for managing used nuclear fuel, and then we explore implications of various policy design factors in nuclear materials management for public acceptance and support.

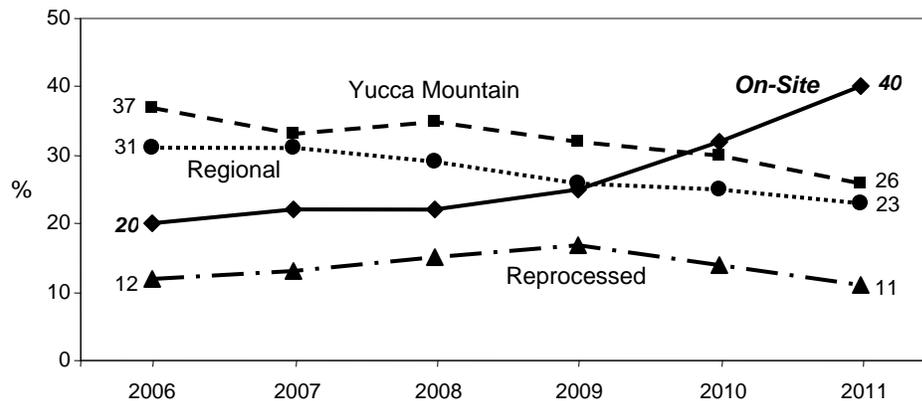
## Public Understandings of Current Used Nuclear Fuel Management

The highlighting of used nuclear fuel (UNF) stored in cooling pools at the site of nuclear reactors in the recent events at Fukushima, Japan, and the associated risks have the potential both to focus public attention on how UNF is managed in the US and to influence public acceptance of those practices. To evaluate public awareness of UNF management practices, we have been tracking responses to the following question since 2006.

E55: As nuclear fuel is used to generate electricity, it becomes contaminated with radioactive byproducts. When it can no longer efficiently produce electricity, it is called used or spent nuclear fuel. To the best of your knowledge, what is currently being done with most of the spent nuclear fuel produced in the US?

Respondents are then given four options, provided in random order, including temporary storage on site, storage in regional repositories, reprocessing for reuse, or disposal in a geologic repository at Yucca Mountain. We show patterns of responses over time in Figure 6.7.

**Figure 6.7: Mean Knowledge of Current Disposition of US Used Nuclear Fuel**



Through 2009, a plurality of survey participants believed that UNF was being shipped to the Yucca Mountain repository. Since then, however, awareness has been growing that most used fuel assemblies are being temporarily stored at the sites of operating nuclear power plants. Note that the increase in correct responses grows substantially between 2010 and 2011, and it seems likely that media coverage of issues with cooling pools at the Fuku-

shima Daiichi facilities may have helped promote public knowledge of how UNF is being managed in the US. Though most of our respondents remain unaware that UNF is being stored at nuclear power plants in the US, public knowledge about UNF storage practices is growing. However, when asked whether UNF is being stored at nuclear power plants in their own state, only 13 percent of participants answer correctly, 59 percent do not know, and 28 percent answer incorrectly. Thus, while factual knowledge about how used nuclear fuel is being managed in the US is becoming more widespread, public understanding of the issue remains incomplete. This is characteristic of the early stages of public policy debates.

In such debates it is useful to monitor how Americans' assessments of on-site storage are evolving—particularly from 2010 to 2011, when the matter of on-site storage received significant attention in media coverage of the nuclear events at Fukushima. To help gauge public preferences, we provide respondents with generic policy arguments for and against continuing on-site storage and ask whether they support or oppose continuing indefinitely the storage of UNF at US nuclear power plants.

*Lead-in:* Currently, US spent nuclear fuel is being temporarily stored at over 100 sites in 39 states. Most of it is stored at nuclear power plants where it is placed in secure cooling pools. In some cases, the spent fuel is transferred to specialized concrete casks stored above ground near the nuclear power plant. At each site, the cooling pools and storage casks are protected at all times by security forces. Some people think this is an acceptable solution for the foreseeable future, while others think such practices are risky and other options need to be adopted. (arguments randomly ordered)

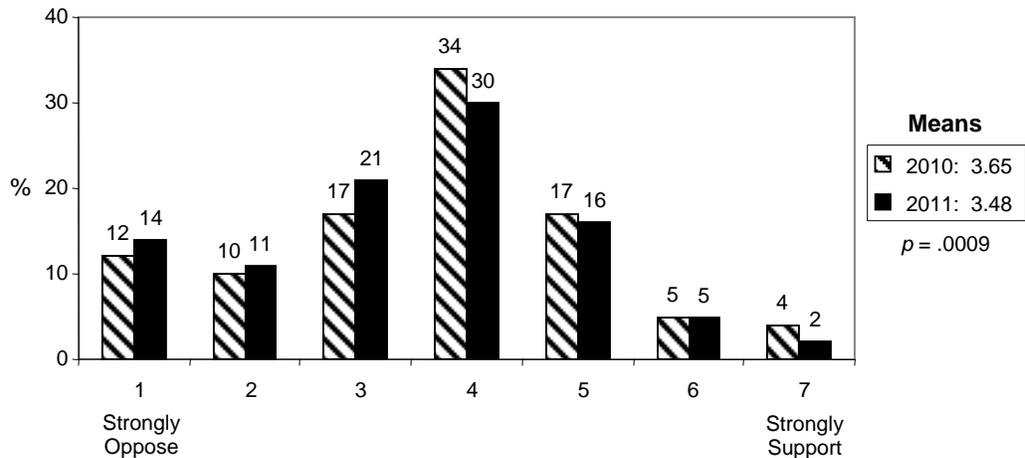
*Opponents* argue that some nuclear power plants where spent nuclear fuel is stored are near rivers, oceans, and large population centers. On rare occasions spent fuel has leaked radiation into the cooling pools. Moreover, the cooling pools and containers are located at ground level, and therefore might be vulnerable to terrorists. They note that these storage practices do not provide a permanent solution for managing spent nuclear fuel.

*Supporters* argue that transporting spent nuclear fuel by train or truck to consolidated storage facilities is risky, that storing spent nuclear fuel at nuclear power plants is less expensive than consolidated storage, and that it buys time for finding future solutions. Moreover, storage at nuclear power plants has not caused any accidents in the United States that have exposed the public to radiation.

- E57: Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about the current practice of storing spent nuclear fuel at or near nuclear power plants?

Figure 6.8 compares distributions and mean responses in 2010 with those reported after Fukushima in 2011.

**Figure 6.8: Support for Continuing On-Site Storage of UNF: 2010 vs. 2011**



Though the modal response to the support/opposition scale is the midpoint value of four, the distribution is skewed toward opposition of on-site storage in both 2010 and 2011. Mean support for on-site storage also decreases significantly in 2011. After the events at Fukushima, a plurality of about 46 percent of participants oppose continued on-site storage for the foreseeable future, while only 23 percent support it, and 30 percent are undecided.

Overall, these data indicate that public understanding of current UNF management practices is still in a relatively early stage of development. Though there is a growing realization that most UNF is stored on-site near nuclear power plants, most of our respondents do not know whether or not that practice is used in their state of residence. And while public opposition to continuing the practice of indefinite on-site storage appears to be growing, that opposition has not (yet) become a majority.

## Implications of Concept and Policy Design in UNF Management

Like consumers' preferences for goods and services, public support or opposition for public policies can vary with design of the attributes of the policy under consideration. When conceptualizing and designing policies for managing UNF, considerations include (but are not limited to) the following:

- Number of used nuclear fuel/high level nuclear waste repositories to be constructed (centralized, regional, or local)
- Permanence of storage or retrievability of the nuclear materials (given the repository design)
- Depth of storage (surface, geologic mine, or deep borehole)
- Combining the repository with other fuel-cycle functions (such as research and/or reprocessing)

For example, under the 1987 amendments to the Nuclear Waste Policy Act, the proposed Yucca Mountain repository was conceived as a single centralized mine-like repository (with additional repositories to be considered in the future), that was to provide permanent disposal (after a period of monitoring) for a once-through nuclear fuel cycle. As conceived and developed by the Department of Energy, the facility was proposed to be a stand-alone repository with no other fuel-cycle facilities or functions attached. The question raised in our inquiry is whether members of the public might prefer some policy design attributes, or combinations of attributes, to others and whether a modified design could generate or undermine support for a repository within a potential host community.

*Number of repositories:* We asked participants to consider three options for the number of nuclear repositories using the following question wording.

*Lead-in:* First we want you to consider the number of storage sites for spent nuclear fuel. While nuclear power plants will continue to store some spent fuel in their cooling pools, much of the radioactive materials currently at temporary storage sites in 39 states might be consolidated at a smaller number of regional or central facilities. Once it is consolidated, the spent nuclear fuel can more easily be secured and protected from attack. The fewer the number of regional or central storage facilities, the less complex are the political and legal obstacles for finding communities willing and able to host the facilities.

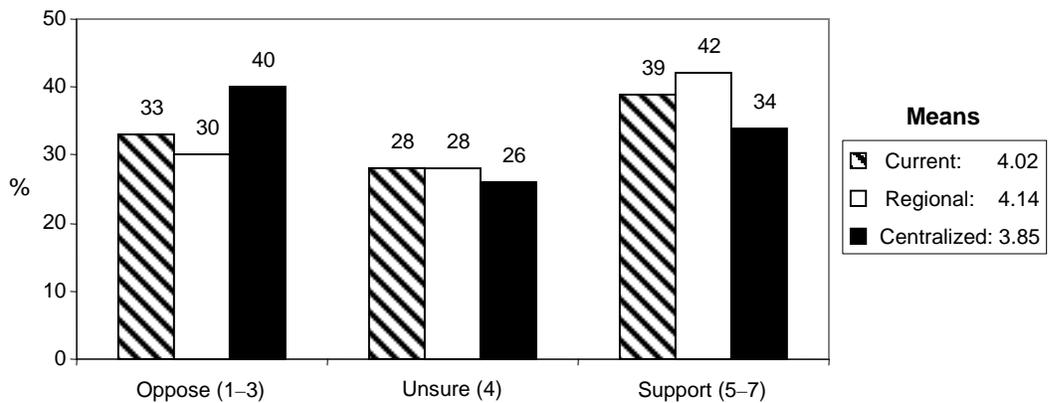
At the same time, a larger number of regional storage facilities would reduce the distances radioactive materials must be transported by train or truck, and also would reduce the number of communities through which the transport routes would pass.

Please respond to the three following policy options on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*. (random order)

- E58: After spent nuclear fuel is removed from the cooling pools, continue the current practice of temporarily storing it above ground at designated nuclear power plants. This option does not require additional transportation of radioactive materials by train or truck, and it presents few additional political or legal obstacles.
- E59: Construct six to eight regional storage sites that can be more easily secured and can provide longer-term storage. This option requires transporting spent nuclear fuel by train or truck over moderate distances and is likely to generate political and legal opposition.
- E60: Construct two large centralized storage sites (one in the western US and one in the eastern US) that can be most secure and provide permanent storage. This option requires transporting spent nuclear fuel by train or truck over longer distances and is likely to generate political and legal opposition.

Figure 6.9 shows grouped response distributions and mean values for the three options.

**Figure 6.9: Variation in Storage Facility Support by Number of Sites**



When presented with the three hypothetical options for the number of storage sites, participants report strongest preference for having six to eight regional repositories. Greatest initial reluctance is for two centralized sites.<sup>3</sup> However, the distribution of support on an issue in which public understanding is only recently growing suggests that there is at present considerable leeway in this aspect of nuclear repository policy design.

*Retrievability of nuclear materials:* Policy debates in other countries, most notably in Finland, suggest that publics in those countries prefer a disposal strategy that makes possible the retrieval of UNF either to increase safety or to make use of the materials (Hokkanen and Kojo 2003; OEC-NEA 2001, 2009). This preference is believed to stem, in part, from expectations that technical understanding and knowledge about UNF will continue to grow, and associated technologies will advance such that the prospect of achieving safety or potential resource values is best served by assuring that future generations can revise or even reverse current-day policies for managing UNF. On the other hand, facilitating retrieval is thought by some analysts to pose risks of further proliferation of nuclear weapons. The key question of interest in this aspect of repository design is whether members of the US public prefer that repositories be designed to facilitate possible future retrieval of the stored materials or opt for permanent disposal. To investigate preferences among our respondents, we make the following inquiry.

*Lead-in:* Now we want you to consider the issue of whether stored radioactive materials should be managed in a way that allows authorized personnel to gain access to them and retrieve the materials in the future, or that seeks to permanently block access to them. One option is to build facilities where the stored materials are continuously monitored and can be retrieved for reprocessing, or possibly to make them less dangerous using future technological developments. This option requires greater security efforts and may be more vulnerable to attack or theft. Another option is to attempt to seal-off storage sites in such a way that people cannot readily gain access to the materials in the future. This option is more secure, but does not allow reprocessing or treatment by future technological advancements.

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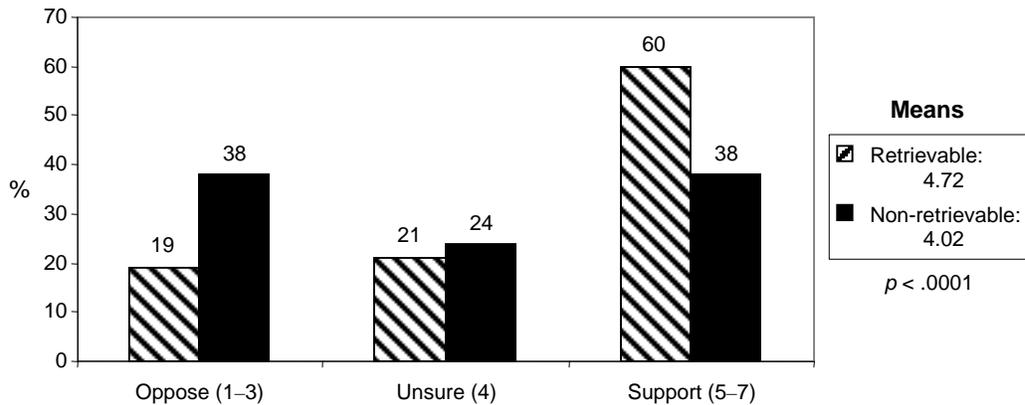
<sup>3</sup> Discussions in focus groups for previous projects on nuclear materials management have indicated that considerations of the number of facilities evoke fairness issues for some members of the public. Having high-level nuclear materials concentrated at one or a few sites is seen as imposing an unfair burden on residents near those sites.

Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, please indicate how you feel about each of the following two options. (random order)

- E62: Construct sites so that stored materials are monitored and can readily be retrieved in the future.
- E63: Construct sites so that stored materials are permanently sealed away and cannot readily be retrieved in the future.

We compare grouped responses and mean values in Figure 6.10.

**Figure 6.10: Preferences for Retrievable vs. Non-Retrieveable Storage**



While the public does not rule out permanent disposal, which receives an average score virtually at the scale midpoint, there is substantially greater public support for a repository design that permits retrieval. A majority of 60 percent of our respondents indicate that they support the retrievable repository design, and the difference in mean preferences for the two options is statistically significant ( $p < .0001$ ).

*Depth of storage:* A third design element concerns the depth at which the radioactive materials are stored or disposed, ranging from surface storage to deep boreholes. To determine if public support is influenced by storage depth, we ask participants the following series of questions.

*Lead-in:* Next we want you to consider the issue of storage depth. There are three general options. (random order)

One option is to store spent nuclear fuel at or near the surface in concrete and steel structures. This allows monitoring and retrieval, but it is considered to provide a safe means to manage the materials for only about a hundred years.

One option is to build mine-like storage facilities that are deep underground. These can be constructed to allow materials to be retrieved, or they can be designed to permanently block access in the future. They are suitable for storage over thousands of years.

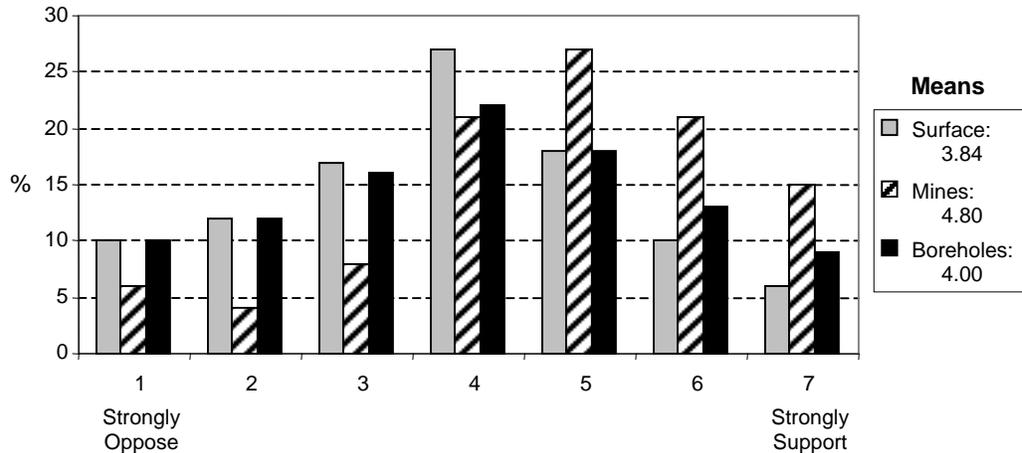
One option involves drilling multiple boreholes of about 1.5 feet in diameter and up to three miles deep. Spent nuclear fuel would be stored in the deepest parts of the boreholes that are in bedrock. There is almost no chance that the materials could migrate into the surface environment over thousands of years, and they would be extremely difficult to retrieve after the boreholes are sealed.

Please respond to the three following policy options on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*. (random order)

- E64: Construct storage facilities at or near the surface of the earth that are less permanent but allow retrieval for reprocessing, research, or other treatments.
- E65: Construct storage facilities underground that are like mines that could be either permanently sealed or could allow materials to be retrieved.
- E66: Construct very deep boreholes that afford permanent and safe disposal, but would make materials extremely difficult to be retrieved after the boreholes are sealed.

We compare distributions of responses and mean values in Figure 6.11.

**Figure 6.11: Support for Repository Design by Storage Depth**



Public support is greatest for geologic mine-type repositories. Sixty-three percent of our respondents support that design, as compared with 40 percent for the deep-borehole design, and 34 percent for surface storage in concrete and steel structures. Differences in support across the three options are statistically significant,<sup>4</sup> with the indefinite surface storage option garnering the greatest opposition.

*Combining storage with other facilities and functions:* Another important policy design variation consists of “bundling” a repository with other facilities and functions related to fuel cycle management.<sup>5</sup> A number of studies suggest that bundling nuclear fuel cycle facilities and functions provide industrial and safety benefits (Kazimi, Moniz, and Forsberg 2011; Forsberg 2010, 2011). To better understand how combining fuel cycle facilities and functions affect public support for siting a nuclear repository, we conduct an experiment in our 2011 survey in which we assess support for a “base” repository design and then measure change in support if the design is coupled with other nuclear facilities, functions, and incentives. The additions include: (a) a laboratory for research on increasing the safety of future management of radioactive materials; (b) facilities for reprocessing UNF; and (c) financial compensation to affected states and local communities. The base repository design is described as follows:

For the next few questions, assume that construction of two underground mine-like storage facilities is being considered for the storage of spent nuclear fuel. One would be in the eastern US, and the other in the west. Each of these sites would include secure surface storage buildings and a mine deep underground where radioactive materials could be isolated from people and the environment and could be designed to allow retrieval or to permanently seal away the materials. The facilities and the mines would be designed to meet all technical and safety requirements set by the US Nuclear Regulatory Commission, the US Environmental Protection Agency, and applicable state regulatory agencies.

We then ask participants to express their level of support or opposition for the base repository design using a scale from one to seven, where one

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<sup>4</sup> Surface vs. mines:  $p < .0001$ ; surface vs. boreholes:  $p = .0071$ ; mines vs. boreholes:  $p < .0001$ .

<sup>5</sup> One can also consider combining storage with non-fuel cycle facility options, such as parks or hospitals, but that is beyond the scope of this study. See, for example, Organization for Economic Cooperation–Nuclear Energy Agency (2007).

means *strongly oppose* and seven means *strongly support*. This is followed by introducing the three design options in random order.

*Lead-in:* Now we want you to consider how your support would be affected by more specific information. Please respond to each of the following questions on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*.

- E68: What would be your level of support if you learned that each of the sites also would contain a national research laboratory for studying ways to more safely and efficiently manage and dispose of nuclear materials?
- E69: What would be your level of support if you learned that each of the sites also would include facilities for reprocessing spent nuclear fuel for reuse in generating electricity?
- E70: What would be your level of support if you learned that the states and local communities hosting the sites would receive several billion dollars a year, paid for by revenues from nuclear energy, that could be used for hospitals, roads, and schools?

We compare support for the base-design with support for each of the repository options in Table 6.2.

**Table 6.2: Effects of Bundling Facility Options on Support for a Repository**

<b>Design Factors</b>	<b>% Oppose</b>	<b>% Unsure</b>	<b>% Support</b>	<b>Means (1–7)</b>	<b>Change from Base Mean</b>
<b><i>Two Mine-Like Repositories (Base)</i></b>	<b>19</b>	<b>24</b>	<b>57</b>	<b>4.65</b>	<b>N/A</b>
With Research Lab	11	16	73	5.28	+ 13.5%
With Reprocessing	14	19	67	5.07	+ 9.0%
With Financial Compensation	19	18	63	4.90	+ 5.4%

When the full description of the base repository design is presented (including the stipulation that the repository will meet federal and state regulatory requirements), 57 percent of participants express support. When the research laboratory option is added, the proportion of respondents supporting the repository rises to about 73 percent (an increase of 13.5 percent over the base

design). When the reprocessing option is considered independently as the only design change, support increases to 67 percent (9.0 percent over the base design). When financial compensation to states and local communities is considered as the sole design modification, support increases to about 63 percent (5.4 percent above base design). Data from our experiment with repository bundling demonstrate that a combination of facility design, function, and incentive options—when seen as beneficial—can substantially increase public support for repository siting. While further experiments are necessary to evaluate combinations of options, these initial findings are consistent with earlier research (Jenkins-Smith and Kunreuther 2001), and they suggest that various design considerations can affect public acceptance or resistance to siting nuclear repositories.

## Short Answer

**Q: How aware are members of the public about current practices for managing used nuclear fuels in the US, and how do concept, design, and policy process considerations affect public support for used nuclear fuel repositories?**

Public awareness of current practices of temporarily storing used nuclear fuel at or near the sites of US nuclear power plants has doubled since 2006 to about 40 percent, but most members of the public remain uninformed about UNF management policies. When told of current practices, mean support for on-site storage is below midscale and declining. When examining key design variables for UNF repository siting, we find that: (a) regional sites are preferred over two centralized national repositories; (b) designs allowing the future retrieval of UNF are strongly favored over once-through permanent disposal designs; and (c) mine-like facilities are preferred over surface facilities or deep boreholes. Experimental results suggest that public support for a geologic repository base design increases independently with: (a) co-located research facilities (+13.5 percent); (b) reprocessing (+9.0 percent); and (c) financial compensation (+5.4 percent).

## Section 6.3: Public Trust in Technical Information About UNF

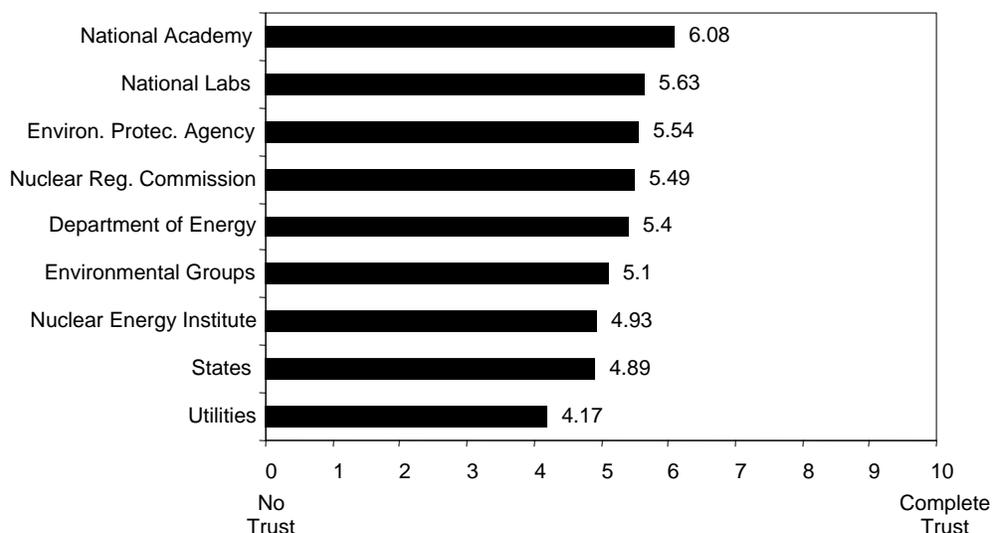
When policy choices involve specialized expertise and complex decision making processes, members of the public typically must rely on the expertise of others in deciding whether to support or oppose specific policy options. Nuclear materials management policies, in particular, require the public to rely on information provided by technical experts from a variety of public agencies and groups. To gain insight into relative levels of public trust in technical information about UNF management and the valence of public expectations about associated risk assessments, we pursue two related inquiries, beginning with the following questions.

*Lead-in:* Managing spent nuclear fuel and other radioactive materials can be technically complex, and getting information you can trust is important. Please indicate your level of trust in information provided by the science and engineering experts from each of the following organizations using a scale from zero to ten, where zero means *no trust* and ten means *complete trust*. (random order)

- E73: The US Nuclear Regulatory Commission
- E74: The US Environmental Protection Agency
- E75: US national laboratories for energy and security
- E76: The National Academy of Sciences
- E77: State regulatory agencies
- E78: Environmental advocacy groups, such as the National Resources Defense Council or the Sierra Club
- E79: The Nuclear Energy Institute, which represents the nuclear power industry
- E80: Utility companies that own nuclear power plants
- E81 The US Department of Energy

In Figure 6.12 we compare mean levels of trust from highest to lowest.

**Figure 6.12: Mean Trust in Experts from Agencies and Groups**



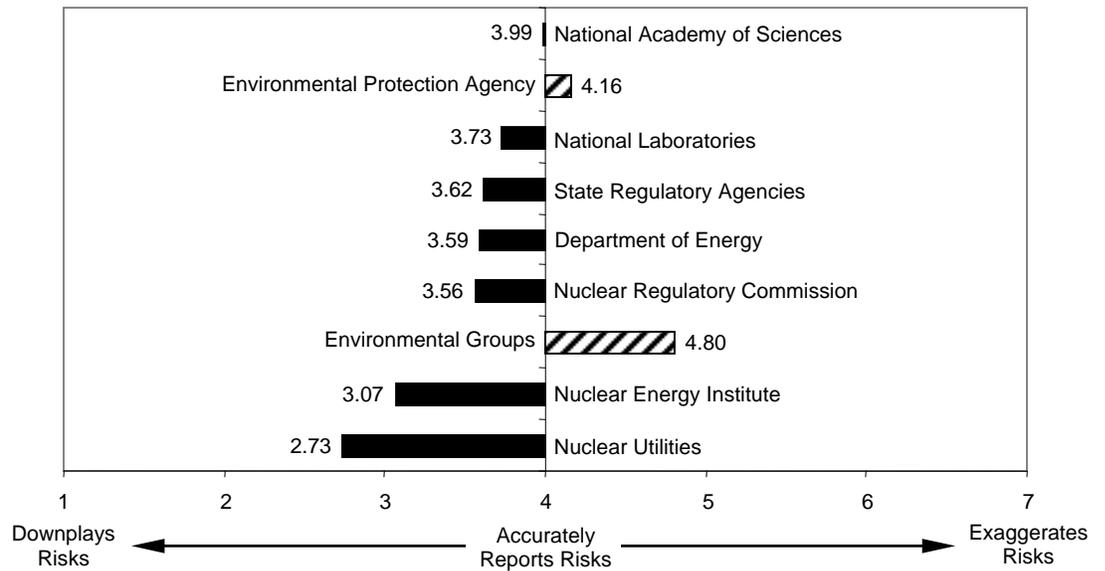
Average levels of trust in information sources vary significantly, with greatest trust accorded to technical experts from the National Academy of Sciences. Experts from the national laboratories are rated second, with experts from federal agencies (EPA, NRC, and DOE) close behind. Note that experts from all of these organizations score significantly above the scale midpoint for public trust. Mean trust scores for technical experts from advocacy organizations, including environmental groups and the Nuclear Energy Institute, fall significantly below those for the federal agencies. Mean trust in experts from state regulatory agencies is statistically tied with that for the Nuclear Energy Institute. Lowest in average trust (though less than a point below midscale) are experts from the nuclear utilities.

Our second inquiry relates to valence of expected bias. Since trust is not perfect for any of the groups studied, it becomes important to understand whether the public perceives a systematic pattern of bias from experts within the array of organizations and groups involved in UNF policy debates. Our interest is in understanding whether some groups are perceived systematically to understate or downplay risks associated with nuclear materials management, while others may be perceived to exaggerate those risks. To better understand the valence of expected bias, we ask the following question.

*Lead-in:* Now we want to know more about impressions you may have about how these organizations are likely to assess risks associated with managing radioactive materials, such as spent nuclear fuel. Using a scale from one to seven, where one means the organization is likely to *downplay* risks, four means the organization is likely to *accurately assess* risks, and seven means the organization is likely to *exaggerate* risks, please rate your impression of how each organization is likely to assess risks. (same nine organizations listed in random order)

We compare average scores for perceived institutional risk bias in Figure 6.13.

**Figure 6.13: Mean Perceived Institutional Risk Bias**



The National Academy of Sciences (which also is the most trusted organization) is perceived to be the least institutionally biased, with a score of 3.99. The Environmental Protection Agency is seen to tend slightly toward exaggerating risks of managing radioactive materials, while the National Labs are seen to slightly downplay those risks. State regulatory agencies, the Department of Energy, and the Nuclear Regulatory Commission are seen to have modest institutional biases in the direction of downplaying risks. Environmental groups are perceived to exhibit a sizable bias toward exaggerating risks of managing radioactive materials, while the Nuclear Energy Institute is believed to have a bias of similar magnitude, but in the opposite direction. Nuclear utility companies are perceived to have the larg-

est institutional bias of all the groups measured, and the expectation is that they tend to underestimate risks. These data illustrate that expert spokespersons for major institutional players in debates over UNF policies are not naively assumed to present equally valid information. The public discriminates among technical sources of information in terms of perceptions and expectations. Trust for experts varies across groups and institutions, but perhaps more importantly, the size and direction of perceived institutional orientations makes it likely that claims about nuclear safety or risk will be filtered by the public through lenses of expected biases, with some institutional actors expected to exaggerate risks and others to minimize them.

## Short Answer

**Q: How is trust in technical information about used nuclear fuel distributed among public agencies and non-profit organizations, and what predispositions about institutional biases are held by the US public?**

As mass opinion about UNF disposition evolves, members of the public necessarily will depend on experts for technical information and advice when considering alternative policy options. Nuclear expertise is therefore an important national resource, but public trust in nuclear experts is not evenly distributed. Experts from the National Academy of Sciences are seen as most trustworthy and least likely to bias assessments of risks associated with UNF management options. Nuclear experts from the US national laboratories also are trusted highly, followed by those from responsible government agencies (EPA, NRC, and DOE). In what may be a legacy of prior national repository siting efforts, experts from the national labs, DOE, and the NRC all are perceived to have a tendency to downplay risks, while the EPA is expected to exaggerate risks. Experts representing “public interest” and industry groups are less trusted and are seen as carrying greater institutional biases. As the debate over UNF management continues, it will be important both to recognize public expectations of trust and bias among experts and to engage the public in a manner that builds confidence.

## ***Appendix 1***

### **Research Methodology**

#### **Section 1: Sampling**

##### **Internet Surveys**

**S**amples for the Internet versions of the energy and environmental survey and the nuclear security and terrorism survey were purchased from Survey Sampling International (SSI), which provides direct access to more than six million research respondents plus millions more through preferred partner relationships across 54 countries. In the United States, SSI maintains an Internet panel, titled SurveySpot, consisting of volunteer members from many sources, including several thousand Web properties, multiple online recruitment methods, and random digit dialing telephone recruitment. SurveySpot members are recruited exclusively using permission-based techniques. Unsolicited email is not employed; membership requires a double opt-in, and all applicants are carefully screened. The membership of SurveySpot is continuously changing, but typically includes more than a million panelists representing a similar number of US households (only one member in each household can participate in any SurveySpot panel for the same survey). SSI maintains a subpanel of approximately 400,000 members whose demographics are roughly proportional to national census characteristics. Our samples were randomly drawn from the census balanced subpanel. Each member of the samples received an email invitation to participate in the survey describing the general nature and subject matter of the study. As an incentive to participate, each respondent who completed the survey received a five dollar stipend and was entered into a drawing for a larger cash award.

Samples for both surveys were drawn using the following procedures:

- The total available universe (population) of eligible respondents was identified.
- The available universe was sorted by ZIP codes.

- The available universe was divided by the required sample size to create a selection interval.
- A random number greater than or equal to zero and less than the selection interval was generated to provide a starting point. Generation was done via a standard Oracle random number generation algorithm.
- Using this starting point, every  $n$ th record was selected according to the selection interval. When there were requirements to eliminate duplicate or otherwise ineligible panelists (age, household, etc.), the next record was selected as a replacement. The  $n$ th intervals were not recalculated as a result of eliminating ineligibles.
- The resulting sample was randomly sorted using a standard Oracle random sorting algorithm.
- After the sample was randomly sorted, sample units (e-mail addresses) were randomly assigned to batch mailings. When samples were batch mailed, each batch represented a mini version of the entire overall sample, virtually identical in demographics, geography, etc. to every other batch.

## Phone Surveys

For the phone versions of the nuclear security and terrorism survey and the energy and environmental survey, national sample frames of randomly selected and randomly ordered households having one or more telephones were purchased from Survey Sampling, International (SSI). The sample frames were drawn from a random digit database, stratified by county, in which each telephone exchange and working block had a probability of selection equal to its share of listed telephone households. This was accomplished as follows. All blocks within a county were organized in ascending order by area code, exchange, and block number. After a proportional quota had been allocated to all counties in the frame, a sampling interval was calculated by summing the number of listed residential numbers in each eligible block within the county and dividing that sum by the number of sampling points assigned to the county. From a random start between zero and the sampling interval, blocks were systematically selected in proportion to their density of listed households. After a block was selected, a two-digit random number in the range 00–99 was appended to the exchange and block to form a ten digit telephone number. Known business numbers were eliminated.

For each survey, the sample frame was loaded into a computer assisted telephone interviewing system at the Survey Research Center of the University of Oklahoma's Public Opinion Learning Laboratory that selected and dialed the individual numbers. Each household in each sample had an equal chance of being called. Probability sampling was extended within each household by interviewing only the member of the household over the age of 18 with the most recent birthday. Up to ten attempts were made to contact the individual selected for the sample. No substitutions were made.

## Demographic Representativeness

Table A1.1 compares key national and regional population parameters to the demographic characteristics of respondents to our four surveys in 2011.

**Table A1.1: Demographic Representativeness of Respondents**

Demographic Category	US Population	NS-Web 2011 (%)	NS-Phone 2011 (%)	EE-Web 2011 (%)	EE-Phone 2011 (%)
<b>Gender<sup>1</sup></b>					
Men	48.2 <sup>2</sup>	50.0	41.8	47.7	45.4
Women	51.8 <sup>3</sup>	50.0	58.2	52.3	54.6
<b>Age<sup>4</sup></b>					
18-24	13.2	9.2	1.9	11.4	2.9
25-49	43.6	41.5	25.2	42.9	25.9
50 and above	43.2	49.3	72.9	45.7	71.2
<b>Education<sup>5</sup></b>					
H.S. Grad or Higher	85.3 <sup>6</sup>	97.9	95.8	97.0	96.8
Bachelor's or >	25.7 <sup>7</sup>	44.0	50.4	39.2	46.5

<sup>1</sup> U.S. Census Bureau 2000a.

<sup>2</sup> The proportion of men 18 years old and above is used for comparison because by design we excluded individuals below the age of 18 from participating in our surveys.

<sup>3</sup> The proportion of women 18 years old and above is used for comparison because by design we excluded individuals below the age of 18 from participating in our surveys.

<sup>4</sup> U.S. Census Bureau 2000b.

<sup>5</sup> U.S. Census Bureau 2010a.

<sup>6</sup> The proportion of the population 18 years of age and above having graduated high school (including equivalency) or having attained higher levels of education is used for comparison because by design we excluded individuals below the age of 18 from participating in our surveys.

<sup>7</sup> The proportion of the population 18 years of age and above having a Bachelor's degree or higher is used for comparison because by design we excluded individuals below the age of 18 from participating in our surveys.

**Table A1.1 (cont.): Demographic Representativeness of Respondents**

Demographic Category	US Population	NS-Web 2011 (%)	NS-Phone 2011 (%)	EE-Web 2011 (%)	EE-Phone 2011 (%)
<b>Race / Ethnicity<sup>8</sup></b>					
White, non-Hispanic	69.6	82.3	88.5	82.7	87.2
African Am. / Black	12.1	8.0	4.3	6.9	5.0
Hispanic (any race)	12.9	5.2	3.1	5.8	3.4
Am. Indian	0.7	0.6	2.0	0.7	2.2
Asian / Pacific Is.	4.7	3.3	1.4	3.4	1.6
Other	NA	0.6	0.7	0.5	0.6
<b>Household Income<sup>9</sup></b>					
\$0–49,999	50.2	49.0	34.0	56.5	34.5
\$50,000–99,999	29.6	36.1	34.5	33.6	39.6
\$100,000 and above	20.2	14.9	31.5	9.9	25.9
<b>Region<sup>10</sup></b>					
Northeast <sup>11</sup>	18.5	20.0	17.4	18.3	16.4
Midwest <sup>12</sup>	21.8	24.2	26.9	21.5	26.6
South <sup>13</sup>	36.6	35.1	38.4	36.7	36.5
West <sup>14</sup>	23.1	20.7	17.3	23.5	20.5

<sup>8</sup> U.S. Census Bureau 2000b.

<sup>9</sup> U.S. Census Bureau 2011.

<sup>10</sup> U.S. Census Bureau 2010b. Alaska, Hawaii, Micronesia, Guam, Marshall Islands, Northern Mariana Islands, Palau, Puerto Rico, Midway Islands, and the Virgin Islands are not included in the phone sample frames. Regional population data include only 18 years of age and older.

<sup>11</sup> States included in the *Northeast* region include Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and the District of Columbia.

<sup>12</sup> States included in the *Midwest* region include Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

<sup>13</sup> States included in the *South* region include Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

<sup>14</sup> States included in the *West* region include Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. Alaska and Hawaii are included in the Internet samples, but are excluded from the phone samples.

## Section 2: Data Collection

Data for the Internet survey on nuclear security and terrorism were collected May 9–10, 2011, from 2,610 respondents. The phone survey on nuclear security and terrorism was conducted April 11–May 12, 2011, among 648 participants. Data for the Internet survey on energy and environmental security were collected from 2,005 participants June 1–2, 2011. The phone survey on energy and environmental security was conducted May 17–June 12, 2011, with 593 respondents.

For the protection of participants, all survey questions and their applications were approved by the Institutional Review Board of the University of Oklahoma. The nationwide telephone surveys were conducted by the University of Oklahoma's Public Opinion Learning Laboratory. Before data collection began, an extensive review of the survey instruments was conducted by the senior interviewing staff, survey research center supervisors, and the research design team. During this step the surveys were checked for content that might be culturally insensitive or threatening to different socioeconomic or demographic groups. This process reduced the likelihood that the instruments would inadvertently induce respondents from different groups or classes to drop out before completing the surveys. Also during this step, the skip patterns used were checked to ensure that the specified research parameters were met. Then a verbal protocol test was conducted for each survey with senior interviewers to identify any remaining problematic question wording or computer programming errors.

When the survey instruments were in final form, training was conducted with each of the interviewers and supervisors to ensure they were proficient in the standardized procedures and terminology. This process entailed oral reading of the survey instruments in group training sessions to make sure that proper and consistent emphasis was given to the various words and phrases specified in the surveys, and to assure that respondents were interviewed using consistent phrasing, emphasis, and protocols during the data collection processes. Data collection did not begin until each interviewer demonstrated thorough competence with the survey instructions and reading aloud the questions for each survey instrument.

The interviews for each survey were conducted by experienced interviewers using a computer-assisted telephone interviewing system that recorded data

in centralized collection files. Rigorous supervision and quality control measures were applied throughout the data collection processes. No interviews were conducted without the presence of a supervisor. A silent monitor was used by supervisors to evaluate individual interviewers and to ensure high quality and continuity in application of the survey protocols throughout the data collection phases. The quality of the data collected was continually monitored to assure that intended collection standards were maintained for each survey. These procedures included periodic downloading and analysis of responses and diagnostics such as the degree of “reluctance” of survey participants, the proportions of collections by region, and standardized recording of verbatim responses where appropriate.

The sample sizes and random selection procedures for the phone surveys provide approximately plus or minus four percent sampling error. Using calculation formulas in accordance with the American Association for Public Opinion Research guidelines (AAPOR 2004), the cooperation rate for the nuclear security and terrorism phone survey was 63.1 percent, and the cooperation rate for the energy and environmental security phone survey was 56.4 percent.<sup>15</sup>

Both Internet surveys were self-administered and data were automatically compiled by Survey Sampling International. Comparable cooperation rates cannot be calculated for Internet surveys.

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<sup>15</sup> The formula for calculating the cooperation rate is as follows: Completes / Completes + Partial + Screened Refusals.

## Appendix Two

### Nuclear Security and Terrorism Data Summaries

Web:  $n = 2,610$ ; 9–10 May 2011; avg. time = 35.6 min

Phone:  $n = 648$ ; 11 April—12 May 2011

**S1\_age** How old are you?

	Means
2011 web	47.7
2011 phone	58.6
2010 web	45.9
2010 phone	57.3
2009 web	45.8
2008 web	46.4
2007 web	45.0
2007 phone	51.9
2006 web	45.9
2005 web	49.4
2005 phone	48.7
2003 phone	47.6
2001 phone	45.0
1999 phone	44.0
1997 phone	44.3
1995 phone	42.2
1993 phone	42.3

**S2\_edu** What is the highest level of education you have completed?

%	2011 web	2011 phone	2010 web	2010 phone	2009 web	2008 web	2007 web	2007 phone	2006 web	2005 web	2005 phone
< High school graduate	2	4	2	4	2	2	2	6	1	1	5
High school graduate	19	19	20	24	23	16	17	24	17	15	26
Some college / vocational school	35	26	37	27	35	37	37	28	37	41	29
College graduate	27	28	25	24	25	27	26	23	26	24	25
Some graduate work	5	2	6	2	6	6	6	3	6	7	3
Master's degree	9	17	8	15	8	10	10	13	10	9	9
Doctorate	2	4	3	4	2	3	2	3	3	2	3
Other degree	0	0	0	0	0	0	0	0	0	1	0

**S3\_gend** As part of the survey, I am required to ask: are you male or female?

%	Female	Male
11 web	50.0	50.0
11 phone	58.2	41.8
10 web	49.0	51.0
10 phone	55.7	44.3
09 web	52.6	47.4
08 web	53.0	47.0
07 web	48.8	51.2
07 phone	57.4	42.6
06 web	51.8	48.2
05 web	46.2	53.8
05 phone	58.6	41.4
03 phone	54.8	45.2
01 phone	55.2	44.8
99 phone	55.6	44.4
97 phone	54.6	45.4
95 phone	54.5	45.5
93 phone	50.8	49.2

The next several questions are about today's security conditions.

**S4\_intnow** Considering international security as a whole, using a scale from zero to ten, where zero means *not at all secure* and ten means *completely secure*, how do you rate *international security* today?

%	Not at All <u>Secure</u>										Completely <u>Secure</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	3	2	5	12	13	21	18	15	7	2	1	5.07	
11 phone	2	2	4	8	10	32	14	15	8	1	3	5.32	
10 web	4	3	7	13	12	20	15	14	6	2	2	4.87	
10 phone	4	3	5	11	13	24	13	14	9	1	2	5.00	
09 web	4	2	7	13	11	18	17	16	6	2	3	5.02	
08 web	4	2	7	12	13	22	17	13	7	1	2	4.87	
07 web	3	2	8	13	12	21	17	15	6	1	1	4.92	
07 phone	4	2	4	9	11	28	15	15	9	2	2	5.19	
06 web	4	2	8	14	15	21	16	15	4	1	1	4.68	
05 web	5	3	8	13	13	23	13	13	6	1	1	4.64	
05 phone	4	1	4	8	10	26	15	18	11	2	2	5.37	

[11 web vs. 10 web:  $p = .0051$ ] [11 web vs. 11 phone:  $p = .0056$ ]

**S5\_USnow** Using the scale from zero to ten, where zero means *not at all secure* and ten means *completely secure*, how do you rate the security of the *United States* today?

%	Not at All Secure										Completely Secure		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	2	1	3	7	8	15	17	23	18	5	1	5.96	
11 phone	3	1	2	7	7	19	10	24	18	6	3	6.05	
10 web	5	3	4	9	10	17	15	19	13	4	2	5.40	
10 phone	6	3	5	8	8	18	12	17	16	4	2	5.44	
09 web	3	2	4	8	9	16	15	20	14	6	3	5.72	
08 web	3	2	6	9	10	17	17	18	13	4	2	5.46	
07 web	4	2	5	10	11	18	16	18	12	4	1	5.37	
07phone	4	2	4	7	8	19	13	20	15	5	3	5.70	
06 web	3	4	6	11	12	18	17	16	10	3	0	5.07	
05 web	4	3	5	10	11	18	15	17	12	3	1	5.21	
05 phone	4	1	2	7	7	19	13	21	18	5	4	5.95	

[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .3219$ ]

**S6\_big** Which of the following would you say poses the single, biggest threat to security in the United States today? Is it:

Cause (%)	Web 11	Web 10	Web 09	Web 08	Web 07	Ph 07	Web 06	Web 05	Ph 05
1. Poverty and economic inequality	17	14	20	19	9	12	10	10	15
2. Threats to the environment	2	4	3	4	3	5	2	2	5
3. Religious and political extremism	14	14	12	13	15	15	15	24	17
4. War between nations	6	4	11	8	8	8	7	6	5
5. Acts of terrorism	36	36	28	29	34	29	37	36	34
6. Crime and corruption	9	9	12	9	9	11	9	14	15
7. Illegal immigration	12	14	11	12	19	15	16	NA	NA
8. Something else	3	4	4	5	3	6	4	8	9

The following questions ask you to assess the risk of the US being involved in nuclear conflict in the next ten years. Please consider both the likelihood and potential consequences of such conflicts when evaluating the level of risk on a scale from zero to ten, where zero means *no risk* and ten means *extreme risk*.

**S7\_China** How do you rate the risk of the US being involved in a nuclear war with China in the next ten years?

%	No Risk										Extreme Risk		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	9	12	16	14	10	15	8	7	5	2	3	3.78	
10 web	8	8	12	13	11	21	8	8	5	3	4	4.28	
09 web	8	6	13	13	8	18	11	9	7	2	5	4.46	
08 web	8	7	13	13	10	18	10	10	6	1	4	4.31	
07 web	4	9	12	14	10	18	9	10	6	2	5	4.46	
07 phone	4	8	12	12	9	14	8	8	6	2	6	4.09	
06 web	7	8	15	12	9	16	11	10	5	2	4	4.32	
05 web	5	9	15	14	8	17	11	11	5	2	4	4.32	
05 phone	13	8	12	13	11	14	7	7	7	1	6	4.09	

[11 web vs. 10 web:  $p < .0001$ ]

**S8\_Rus** How do you rate the risk of the US being involved in a nuclear war with Russia in the next ten years?

%	<u>No Risk</u>										<u>Extreme Risk</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	14	18	17	13	10	11	5	4	4	1	2	3.06
10 web	13	11	15	14	10	17	7	5	3	1	4	3.57
09 web	12	11	16	14	10	17	6	7	3	1	3	3.55
08 web	12	15	16	14	10	15	6	4	3	1	3	3.36
07 web	11	16	17	15	11	14	6	3	2	1	3	3.21
07 phone	24	13	15	13	7	11	4	4	3	1	4	2.98
06 web	14	17	18	16	9	13	6	3	2	1	2	3.02
05 web	16	19	18	15	11	11	4	3	2	0	2	2.76
05 phone	24	14	16	12	9	9	4	3	3	0	5	2.84

[11 web vs. 10 web:  $p < .0001$ ]

**S9\_nprolif** How do you rate the risk that nuclear weapons will spread to other countries within the next ten years?

%	<u>No Risk</u>										<u>Extreme Risk</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	2	3	4	7	12	14	16	16	11	14	6.70
11 phone	1	1	3	4	7	16	7	13	20	8	19	6.92
10 web	1	0	2	4	4	13	13	16	18	10	19	7.08
10 phone	2	1	3	3	5	14	6	12	18	10	26	7.20
09 web	1	1	2	3	5	11	11	17	17	8	23	7.21
08 web	1	1	2	3	3	13	11	18	20	9	20	7.22
07web	0	1	1	3	5	11	11	17	17	11	24	7.39
07 phone	1	1	3	3	3	11	9	13	20	8	28	7.40
06 web	0	1	1	2	4	10	10	16	18	13	24	7.56
05 web	0	0	1	4	2	10	10	16	18	12	26	7.61
05 phone	1	1	2	4	5	13	9	13	17	10	25	7.21

[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .0414$ ]

**S10\_NKrisk** Now consider the case of North Korea. For this question, assume that North Korea possesses nuclear weapons. On the scale from zero to ten, where zero means *no risk* and ten means *extreme risk*, how do you rate the risk of the US being involved in a nuclear war with North Korea within the next ten years?

%	<u>No Risk</u>										<u>Extreme Risk</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	2	3	5	8	10	17	15	17	13	5	6	5.79
10 web	3	3	5	7	9	19	14	16	9	7	9	5.83
09 web	2	2	4	6	6	18	13	15	14	6	15	6.37
08 web	3	3	7	9	8	17	14	16	11	5	8	5.66
07 web	2	2	6	9	8	17	14	15	11	6	9	5.89
07 phone	7	3	7	8	8	17	11	12	14	4	8	5.40
06 web	2	3	6	9	9	20	16	15	9	5	6	5.54
05 web	2	3	6	8	9	14	13	16	13	8	9	5.99
05 phone	7	4	7	10	9	17	9	12	12	6	8	5.37

[11 web vs. 10 web:  $p = .5713$ ]

**S11\_NKprolif** Again, assuming that North Korea possesses nuclear weapons and using the scale from zero to ten, where zero means *no risk* and ten means *extreme risk*, how do you rate the risk of North Korea providing nuclear weapons or nuclear materials to terrorists?

%	<u>No Risk</u>										<u>Extreme Risk</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	1	3	5	6	13	14	17	17	10	14	6.75
10 web	2	1	3	3	6	15	11	18	15	10	17	6.83
09 web	1	1	3	3	5	12	11	13	16	11	24	7.20
08 web	1	1	3	5	6	13	12	16	16	9	18	6.84
07 web	1	1	2	4	6	13	10	18	17	10	17	6.92
07 phone	3	2	4	6	5	11	10	14	17	9	20	6.73
06 web	1	1	3	4	6	16	14	17	15	9	14	6.68
05 web	1	1	3	4	4	13	12	16	17	11	19	7.04
05 phone	2	1	4	5	6	14	9	14	17	10	17	6.69

[11 web vs. 10 web:  $p = .3390$ ]

**S12\_NKUN** On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how would you feel about using US military forces, as part of a United Nations military coalition, to compel North Korea to abandon its nuclear weapons program if diplomacy and economic sanctions fail to achieve this goal?

%	<u>Strongly Oppose</u>					<u>Strongly Support</u>		Mean
	1	2	3	4	5	6	7	
11 web	5	5	9	22	22	15	23	4.87
10 web	5	5	8	23	22	14	23	4.85
09 web	4	4	7	18	20	15	32	5.19
08 web	6	7	10	20	21	14	22	4.71
07 web	9	8	11	23	19	12	19	4.49
07 phone	19	7	9	11	18	10	26	4.37
06 web	9	9	11	22	21	11	17	4.39

[11 web vs. 10 web:  $p = .6673$ ]

**S13\_NKUS** Again on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how would you feel about using US military forces, acting alone if necessary, to compel North Korea to abandon its nuclear weapons program if diplomatic efforts fail and the United Nations declines to take such action?

%	<u>Strongly Oppose</u>					<u>Strongly Support</u>		Mean
	1	2	3	4	5	6	7	
11 web	15	12	14	22	16	10	12	3.89
10 web	14	10	12	23	17	10	14	4.05
09 web	11	10	11	21	19	10	19	4.30
08 web	21	12	13	18	14	8	14	3.72
07 web	21	14	13	19	14	7	12	3.59
07 phone	34	12	9	9	12	6	17	3.39
06 web	24	15	13	18	13	6	10	3.42

[11 web vs. 10 web:  $p = .0117$ ]

**S14\_IRrsk** For this question, assume that Iran possesses nuclear weapons. On the scale from zero to ten, where zero means *no risk* and ten means *extreme risk*, how do you rate the risk of the US being involved in a nuclear war with Iran within the next ten years?

%	No Risk										Extreme Risk	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	2	3	5	8	8	14	13	15	15	7	10	6.08
10 web	3	3	4	6	8	16	11	14	14	7	14	6.24
09 web	3	2	5	7	7	16	15	13	13	6	14	6.16
08 web	2	3	4	6	8	16	10	15	13	9	15	6.31
07 web	2	2	6	7	7	16	14	13	14	8	11	6.14
07 phone	7	5	6	8	8	13	10	14	11	5	14	5.64
06 web	1	3	4	8	8	13	13	16	13	8	13	6.27
05 web	3	5	8	9	9	16	14	14	10	5	8	5.46
05 phone	9	5	9	11	11	15	10	11	8	3	9	4.88

[11 web vs. 10 web:  $p = .0692$ ]

**S15\_IRprolif** Again, assuming that Iran possesses nuclear weapons and using the scale from zero to ten, where zero means *no risk* and ten means *extreme risk*, how do you rate the risk of Iran providing nuclear weapons or nuclear materials to terrorists?

%	No Risk										Extreme Risk	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	1	2	3	4	9	9	14	18	14	26	7.56
10 web	2	1	2	3	4	10	9	12	16	13	29	7.55
09 web	1	1	2	3	3	11	9	13	15	12	29	7.48
08 web	1	1	1	3	4	10	9	12	14	13	33	7.67
07 web	1	1	1	3	4	10	10	13	15	12	30	7.59
07 phone	2	2	2	3	4	8	9	12	16	10	32	7.48
06 web	1	1	2	3	4	8	9	12	17	15	29	7.66
05 web	1	1	2	4	4	10	10	16	17	12	23	7.25
05 phone	2	1	2	5	6	11	9	16	16	9	23	6.99

[11 web vs. 10 web:  $p = .8711$ ]

**S16\_IRUN** On a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how would you feel about using US military forces, as part of a United Nations military coalition, to compel Iran to abandon its nuclear weapons program if diplomacy and economic sanctions fail to achieve this goal?

%	Strongly Oppose					Strongly Support		Mean
	1	2	3	4	5	6	7	
11 web	4	4	8	20	22	17	25	5.01
10 web	5	5	7	18	20	17	28	5.06
09 web	4	4	6	18	21	17	30	5.18
08 web	6	6	9	19	19	14	26	4.87
07 web	8	7	10	20	20	13	22	4.67
07 phone	17	7	8	9	15	14	31	4.62
06 web	8	6	10	18	21	15	22	4.71

[11 web vs. 10 web:  $p = .4246$ ]

**S17\_IRUS** Again on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how would you feel about using US military forces, acting alone if necessary, to compel Iran to abandon its nuclear weapons program if diplomatic efforts fail and the United Nations declines to take such action?

%	<u>Strongly Oppose</u>						<u>Strongly Support</u>		Mean
	1	2	3	4	5	6	7		
11 web	13	11	12	20	17	11	17	4.16	
10 web	12	9	10	20	17	12	19	4.33	
09 web	11	10	10	18	15	14	21	4.44	
08 web	19	11	11	18	14	9	18	3.97	
07 web	20	12	13	18	14	9	14	3.77	
07 phone	32	11	9	7	12	9	20	3.62	
06 web	22	14	11	16	14	9	14	3.70	

[11 web vs. 10 web:  $p = .0090$ ]

**S18\_detnuc** Now, using a scale from zero to ten, where zero means *not at all important* and ten means *extremely important*, how important do you believe US nuclear weapons are for preventing other countries from using nuclear weapons against us today?

%	<u>Not At All Important</u>										<u>Extremely Important</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	1	2	4	4	12	10	13	15	10	27	7.32	
11 phone	2	2	2	3	5	11	5	8	14	11	38	7.66	
10 web	2	1	3	3	5	15	9	14	13	8	27	7.09	
10 phone	3	2	3	3	3	10	6	9	12	10	38	7.49	
09 web	3	1	2	3	5	13	10	11	13	8	31	7.33	
08 web	1	1	2	4	4	15	10	11	14	8	29	7.28	
07 web	2	1	2	4	5	14	9	12	13	10	27	7.12	
07 phone	4	2	4	4	3	12	6	10	13	7	36	7.22	
06 web	3	1	2	5	5	11	9	13	14	9	28	7.13	
05 web	3	1	3	4	5	11	7	10	14	10	33	7.28	
05 phone	5	3	3	4	4	12	6	10	13	7	34	7.03	
03 phone	2	1	3	3	3	10	8	11	18	9	31	7.47	
01 phone	2	1	2	2	5	8	8	12	16	11	33	7.62	
99 phone	1	1	2	3	4	10	7	12	19	11	31	7.66	
97 phone	2	1	2	3	4	11	9	11	18	11	29	7.41	
95 phone	2	1	2	3	3	10	8	13	16	8	34	7.60	

[11 web vs. 10 web:  $p = .0045$ ] [11 web vs. 11 phone:  $p = .0019$ ]

**S19\_detprolif** On the same scale from zero to ten, how important are US nuclear weapons for preventing other countries from providing nuclear weapons or nuclear materials to terrorists today?

%	Not At All <u>Important</u>										Extremely <u>Important</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	5	2	5	6	7	15	11	12	13	7	18	6.27	
11 phone	6	2	5	5	6	13	6	9	14	8	25	6.49	
10 web	5	2	4	6	7	19	10	11	11	6	19	6.20	
10 phone	8	2	5	4	6	10	9	9	12	6	29	6.55	
09 web	6	2	4	7	7	16	8	12	11	5	21	6.24	
08 web	5	2	5	7	6	17	10	12	10	6	20	6.19	
07 web	6	3	4	8	6	16	10	12	12	7	16	5.97	
07 phone	7	5	7	7	4	14	7	10	12	4	22	5.97	
06 web	8	4	6	7	7	14	12	12	10	5	16	5.72	
05 web	7	4	6	6	6	14	9	12	11	6	20	6.03	
05 phone	7	6	5	7	6	14	6	11	12	5	22	6.04	

[11 web vs. 10 web:  $p = .4458$ ] [11 web vs. 11 phone:  $p = .0814$ ]

**S20\_detcb** How important are US nuclear weapons for preventing other countries from using chemical or biological weapons against us today?

%	Not At All <u>Important</u>										Extremely <u>Important</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	4	2	3	5	5	13	10	13	14	9	22	6.71	
10 web	4	2	3	5	5	15	10	13	12	8	22	6.63	
09 web	5	2	3	4	6	13	10	12	11	8	27	6.74	
08 web	4	2	3	6	5	15	9	12	12	8	25	6.69	
07 web	5	3	5	6	6	14	10	14	13	8	17	6.22	
07 phone	6	5	6	6	5	13	7	11	13	5	24	6.20	
06 web	6	3	5	7	6	13	10	13	11	7	18	6.13	
05 web	7	3	6	7	7	12	8	12	11	7	20	6.07	
05 phone	7	5	5	6	6	12	6	11	13	6	24	6.20	
03 phone	7	4	6	7	6	12	8	10	14	6	21	6.08	
01 phone	8	4	7	8	5	11	6	11	12	6	22	6.03	
99 phone	5	2	5	6	5	11	9	11	15	9	22	6.57	

[11 web vs. 10 web:  $p = .3403$ ]

So far we have been asking you about deterring actions by other countries. Now we want you to consider the importance of US nuclear weapons for deterring terrorist groups that may have members from several different countries and may operate from multiple locations.

**S21\_ternuc** Using the same scale from zero to ten, where zero means *not at all important* and ten means *extremely important*, how important are US nuclear weapons for preventing terrorist groups from using nuclear weapons against us today?

%	Not At All Important										Extremely Important		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	8	3	5	6	6	12	9	13	12	7	20	6.13	
11 phone	9	5	4	6	5	9	5	7	13	7	29	6.36	
10 web	7	4	6	7	6	15	9	11	9	6	20	5.93	
10 phone	11	3	6	6	4	11	4	9	12	7	28	6.27	
09 web	7	2	5	6	5	13	9	10	11	7	24	6.34	
08 web	9	4	5	7	6	13	9	8	10	7	22	5.98	

[11 web vs. 10 web:  $p = .0573$ ] [11 web vs. 11 phone:  $p = .0998$ ]

**S22\_terbio** Again, on the same scale from zero to ten, how important are US nuclear weapons for preventing terrorist groups from using chemical or biological weapons against us today?

%	Not At All Important										Extremely Important		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	9	4	6	7	6	11	9	12	12	6	18	5.86	
10 web	9	4	6	7	7	14	9	10	9	6	19	5.73	
09 web	8	3	5	6	6	13	9	10	11	8	22	6.16	
08 web	10	5	6	7	5	13	8	10	9	7	20	5.77	

[11 web vs. 10 web:  $p = .2121$ ]

**S23\_USstat** How important are nuclear weapons for maintaining US influence and status as a world leader?

%	Not At All Important										Extremely Important		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	2	1	2	4	4	13	10	13	14	11	25	7.13	
11 phone	3	1	3	3	3	9	6	11	16	11	34	7.55	
10 web	4	2	3	3	5	15	9	13	14	8	23	6.78	
10 phone	4	1	3	2	6	10	5	10	17	10	32	7.30	
09 web	3	2	2	4	4	13	10	10	14	9	29	7.14	
08 web	3	1	3	4	5	13	11	13	13	8	25	6.90	
07 web	4	2	3	5	4	13	11	12	14	10	22	6.78	
07 phone	5	3	4	5	5	14	7	11	13	7	27	6.71	
06 web	4	2	3	4	4	12	10	12	15	8	25	6.88	
05 web	5	2	4	5	4	12	7	12	15	10	24	6.76	
05 phone	5	4	3	5	5	13	7	11	14	6	28	6.71	

[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .0004$ ]

**S24\_USsup** How important are nuclear weapons for maintaining US military superiority?

%	Not At All <u>Important</u>										Extremely <u>Important</u>	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	2	1	3	3	4	11	9	12	14	12	30	7.38
11 phone	2	1	2	2	2	11	4	8	16	10	41	7.87
10 web	4	1	3	3	4	14	9	12	12	10	28	7.10
10 phone	3	1	2	2	4	8	5	10	14	11	39	7.72
09 web	3	1	2	4	3	12	9	12	13	10	31	7.32
08 web	3	1	3	4	4	11	10	13	13	9	30	7.22
07 web	3	2	3	3	4	13	10	12	14	11	25	7.07
07 phone	4	2	4	4	4	11	6	10	14	8	32	7.07
06 web	4	1	2	4	4	11	9	12	14	11	27	7.13
05 web	4	2	3	4	3	10	8	12	15	10	29	7.11
05 phone	4	3	3	4	3	11	7	13	14	7	31	7.05

[11 web vs. 10 web:  $p = .0009$ ] [11 web vs. 11 phone:  $p < .0001$ ]

Now, using a scale from one to seven where one means you *strongly disagree* and seven means you *strongly agree*, please respond to the following two statements.

**S25\_feas** It is *feasible* to eliminate all nuclear weapons worldwide within the next 25 years.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>	Mean
	1	2	3	4	5	6	7	
11 web	25	16	16	16	12	5	9	3.25
11 phone	36	12	10	8	10	4	20	3.37
10 web	25	16	14	17	11	7	10	3.33
10 phone	39	12	9	6	10	5	19	3.26
09 web	24	16	12	17	13	6	12	3.45
08 web	26	16	14	16	11	6	10	3.28
07 web	25	16	15	15	11	7	11	3.36
07 phone	37	10	9	7	10	5	23	3.48
06 web	26	16	14	13	12	7	12	3.36
05 web	30	15	12	13	11	7	13	3.31
05 phone	36	11	8	5	10	4	25	3.56
03 phone	35	10	9	7	9	7	24	3.62
01 phone	37	10	9	7	10	6	22	3.48
99 phone	33	10	9	8	12	5	23	3.64
97 phone	31	11	9	6	11	6	26	3.76
95 phone	26	9	10	9	13	8	24	3.95
93 phone	29	14	8	6	11	7	25	3.78

[11 web vs. 10 web:  $p = .2166$ ] [11 web vs. 11 phone:  $p = .1874$ ]

**S26\_desire** It is *desirable* to eliminate all nuclear weapons worldwide within the next 25 years.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>	Mean
	1	2	3	4	5	6	7	
11 web	5	3	5	12	15	18	41	5.47
11 phone	16	3	6	5	9	9	52	5.23
10 web	7	4	6	14	13	17	40	5.32
10 phone	16	4	6	5	8	8	53	5.21
09 web	7	3	4	12	14	17	43	5.46
08 web	6	4	4	13	13	16	45	5.51
07 web	5	3	5	12	14	16	45	5.54
07 phone	13	4	3	3	7	8	61	5.60
06 web	5	4	5	9	12	17	49	5.63
05 web	5	4	4	9	11	13	55	5.75
05 phone	10	3	4	3	7	8	65	5.76

[11 web vs. 10 web:  $p = .0144$ ] [11 web vs. 11 phone:  $p = .0050$ ]

**S27\_retain** Using a scale from zero to ten, where zero means *not at all important* and ten means *extremely important*, how important is it for the US to retain nuclear weapons today?

%	<u>Not at All Important</u>										<u>Extremely Important</u>	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	1	1	2	2	4	11	8	12	16	11	33	7.61
11 phone	2	2	2	2	2	10	5	11	11	8	44	7.81
10 web	3	1	2	3	3	13	9	14	12	10	31	7.37
10 phone	3	2	2	3	3	8	3	12	12	7	44	7.77
09 web	2	1	2	2	3	13	9	11	13	9	35	7.55
08 web	2	1	2	3	4	12	8	12	12	9	35	7.51
07 web	2	1	1	4	5	11	8	12	14	10	31	7.41
07 phone	3	3	3	3	2	12	6	14	10	5	39	7.38
06 web	3	1	2	3	4	11	8	12	14	9	33	7.45
05 web	3	1	2	3	3	10	8	11	12	10	38	7.56
05 phone	4	2	2	3	3	11	7	12	13	6	37	7.33
03 phone	3	2	2	3	3	11	9	15	14	7	32	7.30
01 phone	1	1	1	2	3	10	7	17	12	6	39	7.75
99 phone	2	2	1	3	3	9	9	14	15	7	34	7.50
97 phone	3	1	2	3	4	14	7	18	13	5	30	7.19
95 phone	7	0	6	10	0	11	0	18	12	0	36	6.78
93 phone	6	6	0	11	0	14	20	0	13	0	30	6.59

[11 web vs. 10 web:  $p = .0035$ ] [11 web vs. 11 phone:  $p = .0780$ ]

**S28\_CTBT** Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about the US participating in a treaty that bans all nuclear test explosions?

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	3	3	5	17	19	20	32	5.34
11 phone	11	5	6	5	11	12	51	5.41
10 web	5	3	6	19	18	16	33	5.22
10 phone	16	3	4	6	12	12	48	5.20
09 web	4	2	5	17	16	15	40	5.44
08 web	4	3	6	15	18	16	39	5.44
07 web	3	2	4	16	18	20	37	5.55
07 phone	8	3	3	3	11	11	61	5.84
03 phone	12	5	8	7	11	12	44	5.14
01 phone	12	6	9	8	12	12	41	4.99
99 phone	13	3	5	6	11	13	49	5.34
97 phone	12	4	5	7	10	11	52	5.39
95 phone*	6	5	3	15	13	11	46	5.43

[11 web vs. 10 web:  $p = .0278$ ] [11 web vs. 11 phone:  $p = .4182$ ]

**S29\_FMC** On the same scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about the US participating in a treaty that bans production of nuclear materials that could be used to make nuclear weapons?

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	4	3	6	17	20	18	32	5.27
10 web	5	3	7	20	20	16	30	5.12
03 phone	11	5	7	8	13	11	44	5.17
01 phone	13	6	7	11	15	12	36	4.90
99 phone	11	5	6	8	12	13	46	5.28
97 phone	12	4	7	8	11	11	46	5.18
95 phone	6	6	4	16	16	10	43	5.30

[11 web vs. 10 web:  $p = .0052$ ]

**S30\_disarm** Again, using the same scale from one to seven, how do you feel about the US agreeing to a provision that requires us to eventually eliminate all of our nuclear weapons?

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	14	7	10	19	17	13	21	4.41
10 web	15	7	11	20	16	11	21	4.33
03 phone	27	8	7	8	11	8	31	4.16
01 phone	29	10	10	8	10	6	26	3.86
99 phone	25	8	7	8	10	9	32	4.27
97 phone	23	8	9	7	10	8	35	4.40
95 phone	12	12	7	18	12	7	32	4.62

[11 web vs. 10 web:  $p = .2327$ ]

Currently, the United States and Russia have more nuclear weapons than any other countries. The US and Russia have agreed to reduce their numbers of ready-to-use, long-range nuclear weapons to 1,550 each.

[arguments randomized]

Some people argue that since the end of the Cold War, US nuclear weapons have become much less important for our security and that of our allies. They argue that the US needs only a few hundred strategic nuclear weapons to prevent other countries or terrorist groups from using nuclear weapons against us or our key allies that do not have nuclear weapons such as Germany, Japan, and South Korea. They think money spent on maintaining a large US nuclear arsenal should be substantially reduced.

Some people argue that because nuclear weapons have spread to other countries such as India, Pakistan, and possibly North Korea, and because Iran and some terrorist groups may be seeking nuclear weapons, it would be unwise for the US to reduce below 1,550 ready-to-use, long-range nuclear weapons currently agreed to with Russia. They think money spent on the US nuclear arsenal must be sustained to prevent others from using nuclear weapons against us, and to reduce the need for our key allies to develop nuclear weapons of their own.

**S31\_arsenal** Assuming zero is the minimum number and 1,550 is the maximum number, how many ready-to-use, long-range nuclear weapons do you think the United States needs to prevent other countries or terrorist groups from using nuclear weapons against us and our key allies? (verbatim)

	Mean	Median
11 web	1,045	1,000
11 phone	972	1,103
10 web	1,047	1,300
10 phone	1,025	1,500

[11 web vs. 10 web:  $p = .9100$ ] [11 web vs. 11 phone:  $p = .0061$ ]

Please respond to the following statements on a scale from one to seven where one means you *strongly disagree* and seven means you *strongly agree*. [s32–s36 Randomized]

**S32\_warhds1** The United States should decrease the numbers of ready-to-use, long-range nuclear weapons below the planned minimum level of 1,550 if Russia agrees to similar reductions that are verifiable.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7		
11 web	18	9	9	17	16	14	17	4.13	
10 web	19	7	8	20	14	13	19	4.15	
09 web	19	8	8	21	15	13	16	4.07	
08 web	18	9	9	19	15	12	18	4.09	

[11 web vs. 10 web:  $p = .7572$ ]

**S33\_warhds2** The United States should continue to reduce the numbers of ready-to-use, long-range nuclear weapons below 1,550, even if Russia does not.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7		
11 web	37	14	10	15	10	6	7	2.92	
10 web	38	13	10	17	8	5	8	2.91	
09 web	34	13	10	18	11	7	8	3.11	
08 web	35	13	12	17	9	7	8	3.05	

[11 web vs. 10 web:  $p = .8073$ ]

**S34\_warhds3** The United States should not reduce the size of its nuclear stockpile below the level of any other country.

%	<u>Strongly Disagree</u>				<u>Strongly Agree</u>			Mean
	1	2	3	4	5	6	7	
11 web	7	6	7	12	12	15	42	5.28
10 web	9	4	7	16	12	13	40	5.13
09 web	9	6	6	15	11	13	39	5.10
08 web	8	7	8	14	12	13	39	5.13

[11 web vs. 10 web:  $p = .0314$ ]

**S35\_warhds4** Having large numbers of US nuclear weapons is no longer necessary. As long as we have a few dozen nuclear weapons, we can prevent others from using nuclear weapons against us and our key allies.

%	<u>Strongly Disagree</u>				<u>Strongly Agree</u>			Mean
	1	2	3	4	5	6	7	
11 web	26	15	12	17	13	9	8	3.35
10 web	24	13	12	20	13	9	10	3.51
09 web	27	13	12	20	12	8	8	3.33
08 web	26	14	12	18	13	7	9	3.36

[11 web vs. 10 web:  $p = .0149$ ]

**s36\_warhds5** Regardless of what others do, the US should eliminate all its nuclear weapons as soon as possible. This would put the US in a position of moral leadership by setting an example for others; it would bring the US into compliance with a key objective of the Nuclear Nonproliferation Treaty; and it would make the world safer.

%	<u>Strongly Disagree</u>				<u>Strongly Agree</u>			Mean
	1	2	3	4	5	6	7	
11 web	47	15	10	12	7	4	5	2.48
10 web	43	13	9	16	7	4	7	2.72
09 web	43	12	9	16	8	5	6	2.74
08 web	44	14	9	14	9	4	6	2.65

[11 web vs. 10 web:  $p = .0001$ ]

The next series presents pairs of contrasting statements, and we want to know which statement you agree with the most. It is OK if you do not completely agree with either statement. We just need to know which statement you agree with the *most*.

[S37–S42 random order; also statements within each pair randomly ordered]

**S37\_sec** These statements contrast views about world security today.

	%			
	Web 2011	Web 2010	Phone 2001	Phone 1999
Today the world is a <i>less</i> dangerous place for the US than it was during the Cold War.	22	23	24	36
Today the world is a <i>more</i> dangerous place for the US than it was during the Cold War.	78	77	76	64

**S38\_rsk\_ben** These statements contrast views about risks and benefits of the US nuclear arsenal.

	Web 2011	Web 2010	Phone 2001	Phone 1999
The US nuclear arsenal deters attacks and ensures our security, and these <i>benefits</i> far outweigh any <i>risks</i> from US nuclear weapons.	77	73	79	73
The US nuclear arsenal threatens civilization and cannot be safely managed, and these <i>risks</i> far outweigh any <i>benefits</i> from US nuclear weapons.	23	27	21	27

**S39\_use** These statements contrast views about the uses of US nuclear weapons.

	Web 2011	Web 2010	Phone 2001	Phone 1999
US nuclear weapons have no use except for deterring others from using their nuclear weapons against us.	35	37	40	42
US nuclear weapons are useful both for deterring others from using their nuclear weapons against us and for winning wars if necessary.	65	63	60	58

**S40\_det** These statements contrast views about deterring terrorist groups.

	Web 2011	Web 2010
U.S. nuclear weapons are not at all effective for deterring non-state terrorist groups from using weapons of mass destruction against us.	47	49
U.S. nuclear weapons are extremely effective for deterring non-state terrorist groups from using weapons of mass destruction against us.	53	51

**S41\_abolish** These statements contrast views about the possibility of a world free of nuclear weapons.

	Web 2011	Web 2010
It is possible to abolish all nuclear weapons worldwide if the US carefully negotiates with other countries to gradually reduce the numbers of nuclear weapons to zero.	16	20
While gradual reductions in the numbers of nuclear weapons may be beneficial, it will not be possible to convince all countries to abolish all nuclear weapons.	84	80

**S42\_safewrld** These statements contrast views about the effects of a world free of nuclear weapons.

	Web 2011	Web 2010
A world without nuclear weapons would be safer than today because the destructive power of nuclear weapons would no longer be a threat.	58	54
A world without nuclear weapons would be more dangerous than today because countries could again conduct large-scale wars like World Wars I and II to settle disputes.	42	46

The next set of questions concerns your views about investment priorities. Please indicate how you think government spending should change for each of the following using a scale from one to seven, where one means spending should *substantially decrease* and seven means spending should *substantially increase*. [S43–S47 randomized]

**S43\_spend1:** How should government spending change for ensuring the reliability and safety of existing US nuclear weapons?

%	Substantially Decrease			Substantially Increase			Mean	
	1	2	3	4	5	6		7
11 web	2	4	11	38	23	13	10	4.55
10 web	2	3	10	35	24	13	13	4.65

[11 web vs. 10 web:  $p = .0412$ ]

**S44\_spend2:** How should government spending change for preventing weapons of mass destruction from entering through US ports?

%	Substantially Decrease			Substantially Increase			Mean	
	1	2	3	4	5	6		7
11 web	1	2	6	22	26	21	23	5.24
10 web	2	2	5	21	21	20	29	5.34
09 web	3	2	5	19	21	19	31	5.34
08 web	2	2	6	20	17	18	34	5.41
07 web	1	2	4	20	20	21	32	5.47
07 phone	5	2	5	7	13	15	54	5.83
06 web	1	1	3	16	20	27	33	5.65
05 web	2	2	3	16	20	23	35	5.60
05 phone	5	2	5	8	14	17	50	5.73

[11 web vs. 10 web:  $p = .0489$ ]

**S45\_spend3:** How should government spending change for maintaining the ability to develop and improve US nuclear weapons in the future?

%	Substantially Decrease			Substantially Increase			Mean	
	1	2	3	4	5	6		7
11 web	7	10	18	33	18	8	6	3.96
11 phone	15	8	14	18	23	7	16	4.10
10 web	7	8	14	37	18	7	9	4.08
10 phone	16	7	13	14	20	7	23	4.27
09 web	6	6	11	33	21	11	11	4.33
08 web	6	9	14	31	20	8	11	4.18
07 web	6	8	12	37	20	9	8	4.16
07 phone	13	9	14	17	22	8	17	4.19
06 web	5	6	12	32	25	11	9	4.33
05 web	8	7	14	33	19	9	10	4.15
05 phone	17	10	17	15	18	8	16	3.94
03 phone	13	8	11	14	19	15	21	4.47
01 phone	7	7	8	10	21	14	32	5.02
99 phone	10	7	9	13	20	13	28	4.78
97 phone	13	9	12	13	19	10	24	4.45
95 phone	23	8	11	12	16	8	22	4.00
93 phone	23	12	16	12	14	8	16	3.68

[11 web vs. 10 web:  $p = .0193$ ] [11 web vs. 11 phone:  $p = .0592$ ]

**S46\_spend4** How should government spending change for improving US border security?

%	Substantially Decrease						Substantially Increase		Mean
	1	2	3	4	5	6	7		
11 web	2	3	6	19	22	19	30	5.34	
10 web	2	2	5	19	18	18	35	5.46	
09 web	3	3	6	19	20	19	31	5.29	
08 web	2	3	7	20	19	16	33	5.31	
07 web	1	2	5	18	20	20	34	5.47	
07 phone	5	3	7	8	15	13	49	5.58	
06 web	1	2	4	16	18	25	33	5.57	
05 web	1	1	4	15	18	20	40	5.68	
05 phone	4	3	5	9	16	17	47	5.68	

[11 web vs. 10 web:  $p = .0222$ ]

**S47\_spend5** How should government spending change for improving our capabilities for responding to large-scale acts of terrorism in the US?

%	Substantially Decrease						Substantially Increase		Mean
	1	2	3	4	5	6	7		
11 web	1	2	6	26	26	19	20	5.10	
10 web	2	1	5	25	23	19	26	5.24	
09 web	2	3	6	23	22	18	27	5.19	
08 web	2	3	7	24	21	18	26	5.20	
07 web	2	1	6	21	24	22	24	5.28	
07 phone	3	2	6	9	17	16	47	5.70	
06 web	1	1	3	18	23	27	27	5.49	
05 web	2	2	5	20	24	21	27	5.32	
05 phone	4	3	6	12	19	14	41	5.48	

[11 web vs. 10 web:  $p = .0036$ ]

Now we want you to consider a different kind of threat. Cyber war is a disputed term, but for this survey, it refers to organized actions by countries, groups, or individuals to penetrate government and civilian computers and networks for the purpose of causing sustained damage or disruption. Attacks in this type of conflict are termed cyber attacks.

**S48\_cybinfo:** On a scale from zero to ten, where zero means *not at all informed* and ten means *fully informed*, how well informed do you consider yourself to be about the issue of cyber war?

%	Not at All Informed										Fully Informed		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	10	6	10	12	9	17	12	12	7	3	2	4.44	

**S49\_cybthrt:** On a scale from zero to ten, where zero means *no threat* and ten means *extreme threat*, how do you assess the threat of cyber war to the United States today?

%	No Threat										Extreme Threat		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	1	2	4	7	18	14	18	16	8	11	6.51	

Now we want to know about the level of confidence you have in different organizations to protect critical U.S. infrastructures such as communications, transportation, banking, water supplies, and electrical power grids from cyber attack. Please use a scale from zero to ten, where zero means *not at all confident* and ten means *extremely confident* when considering each of the following:  
[S50–S52 randomized]

**S50\_cybDOD:** How confident are you in the abilities of the Department of Defense to protect critical U.S. infrastructures from cyber attacks?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	6	4	7	11	11	19	13	13	10	4	3	5.02	

**S51\_cybDHS:** How confident are you in the abilities of the Department of Homeland Security to protect critical U.S. infrastructures from cyber attacks?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	8	5	8	10	11	17	13	12	10	3	2	4.74	

**S52\_cybpriv:** How confident are you in the abilities of private industries to protect critical U.S. infrastructures from cyber attacks?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	7	5	9	11	12	18	13	12	8	3	2	4.62	

[Split Design: half received S53; half received S54]

**S53\_cybIran:** If we determined to a high degree of confidence that the government of Iran was responsible for cyber attacks against critical U.S. infrastructures that severely damage our economy and place U.S. citizens at risk, which of the following actions would you most support? It is OK if you do not agree completely with the selected course of action. We just need to know which option you agree with the *most*.

	%	11 Web
Demand that the United Nations impose sanctions against Iran, but do not retaliate with U.S. cyber attacks or attacks using military forces against Iran unless the UN authorizes such actions.	39	39
Conduct U.S. cyber attacks against Iran's critical infrastructures in retaliation, but do not use U.S. conventional military forces against Iran.	18	18
Conduct cyber attacks against Iran plus limited attacks using conventional military forces such as aircraft, missiles, and ships to punish the Iranian government.	18	18
Attack with sufficient U.S. military forces to topple Iran's government.	25	25

**S54\_cybChina:** If we determined to a high degree of confidence that the government of China was responsible for cyber attacks against critical U.S. infrastructures that severely damage our economy and place U.S. citizens at risk, which of the following actions would you most support? It is OK if you do not agree completely with the selected course of action. We just need to know which option you agree with the *most*.

%	11 Web
Demand that the United Nations impose sanctions against China, but do not retaliate with U.S. cyber attacks or attacks using military forces against China unless the UN authorizes such actions.	53
Conduct U.S. cyber attacks against China's critical infrastructures in retaliation, but do not use U.S. conventional military forces against China.	25
Conduct cyber attacks against China plus limited attacks using conventional military forces such as aircraft, missiles, and ships to punish the Chinese government.	10
Attack with sufficient U.S. military forces to topple China's government.	12

The following questions focus more specifically on the issue of terrorism. For each, please consider both the *likelihood* of terrorism and its potential *consequences*. Each is answered on a scale from zero to ten, where zero means *no threat* and ten means *extreme threat*.

**S55\_ter1** Remembering to consider both the *likelihood* and potential *consequences*, how do you rate the overall threat of terrorism of all types throughout the *world* today?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	0	0	1	1	3	9	10	19	22	13	21	7.64
10 web	1	1	1	1	4	12	10	16	20	11	24	7.55
09 web	1	1	1	2	4	11	9	16	17	11	26	7.47
08 web	0	0	1	2	4	10	10	15	19	12	26	7.61

[11 web vs. 10 web:  $p = .2099$ ]

**S56\_ter2** Focusing more specifically on our own country, and considering both foreign and domestic sources of terrorism, how do you rate the threat of all kinds of terrorism in the *United States* today?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	0	1	1	3	4	13	14	21	18	11	13	7.02
11 phone	1	1	2	2	5	13	8	16	20	7	24	7.19
10 web	1	1	1	3	6	14	14	16	17	10	17	7.03
10 phone	0	1	2	3	3	10	9	16	19	9	29	7.58
09 web	1	1	2	3	7	14	13	17	17	9	16	6.86
08 web	0	1	2	4	7	13	13	16	18	9	17	6.92
07 web	0	0	1	2	4	11	13	21	21	11	15	7.20
07 phone	1	1	2	5	4	14	12	18	20	5	18	6.87
06 web	0	1	1	3	4	9	13	22	20	12	16	7.30
03 phone	1	1	3	4	4	10	10	15	22	8	21	7.20
01 phone	1	0	1	2	1	4	4	11	14	10	51	8.57
97 phone	1	2	4	8	7	17	12	15	13	5	16	6.34

[11 web vs. 10 web:  $p = .8929$ ] [11 web vs. 11 phone:  $p = .0805$ ]

**S57\_ter3** Narrowing our focus to the threat of *nuclear* terrorism, how do you rate the threat of terrorists creating a nuclear explosion in the United States today?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	5	9	10	11	18	15	13	10	4	5	5.26
10 web	2	4	6	9	12	21	12	12	10	4	8	5.47
09 web	2	4	7	8	10	18	13	11	11	6	10	5.75
08 web	2	5	8	9	10	16	12	12	11	5	9	5.54

[11 web vs. 10 web:  $p = .0116$ ]

**S58\_ter4** So-called “dirty” bombs are devices that use conventional explosives to scatter radioactive materials. How do you rate the threat of terrorists using a dirty bomb in the United States today?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	2	5	7	9	16	14	16	14	8	9	6.16
10 web	2	2	4	4	8	17	12	14	14	9	14	6.43
09 web	1	2	4	5	10	15	13	13	14	8	16	6.44
08 web	1	3	5	7	8	15	11	13	14	9	15	6.44

[11 web vs. 10 web:  $p = .0011$ ]

**S59\_ter5** Biological devices are used to spread biological agents such as germs and viruses. How do you rate the threat of terrorists using a biological device in the United States today?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	2	4	5	8	15	15	16	16	8	11	6.37
10 web	1	2	3	4	8	16	12	17	13	9	16	6.62
09 web	1	2	3	5	7	14	11	14	15	9	19	6.81
08 web	1	2	4	5	8	13	12	15	13	11	17	6.72

[11 web vs. 10 web:  $p = .0019$ ]

**S60\_ter6** Chemical terrorism could result from terrorist attacks on US chemical installations or by terrorists purposely dispensing dangerous chemical agents. How do you rate the threat of chemical terrorism in the United States today?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	2	4	5	8	16	15	16	15	9	9	6.31
10 web	1	2	3	4	8	16	13	16	14	9	15	6.58
09 web	1	2	3	5	7	15	12	13	14	11	17	6.71
08 web	1	2	3	6	8	14	11	15	14	11	16	6.65

[11 web vs. 10 web:  $p = .0008$ ]

**S61\_ter7** How do you rate the threat of suicide bombings by terrorists in the United States today?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	2	4	5	7	12	13	16	16	12	13	6.62
10 web	1	2	3	3	7	13	12	12	15	11	21	6.93
09 web	2	3	4	4	7	15	12	13	13	10	17	6.57
08 web	1	3	4	6	8	14	11	13	14	9	18	6.58

[11 web vs. 10 web:  $p = .0003$ ]

**S62\_ter8** Turning now to the future, how do you rate the overall threat of terrorism to the United States in the next ten years?

%	<u>No Threat</u>										<u>Extreme Threat</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	1	1	3	5	12	12	15	18	14	18	7.23
11 phone	1	1	2	3	4	11	7	13	19	9	31	7.61
10 web	1	1	1	2	5	13	10	13	15	15	24	7.39
10 phone	0	0	2	4	2	7	6	11	17	11	39	8.01
09 web	1	1	3	3	5	14	10	13	14	12	24	7.18
08 web	1	1	2	3	6	12	10	13	15	11	25	7.24

[11 web vs. 10 web:  $p = .0306$ ] [11 web vs. 11 phone:  $p = .0002$ ]

**S63\_winwot** Using a scale from zero to ten, where zero means *not at all confident* and ten means *extremely confident*, how confident are you that we will eventually win the war on terrorism?

%	<u>Not At All Confident</u>										<u>Extremely Confident</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11web	8	3	6	8	8	16	14	15	11	4	6	5.25
11 phone	9	5	8	8	7	21	7	11	10	3	10	5.09
10 web	12	4	8	9	8	20	11	12	7	4	6	4.79
10 phone	12	5	8	8	9	24	6	9	7	4	8	4.75
09 web	9	2	7	10	9	18	12	13	9	4	7	5.11
08 web	12	4	9	11	7	17	10	12	8	4	6	4.77
07 web	13	5	9	11	9	14	10	11	8	4	6	4.56
07 phone	10	7	9	9	7	20	9	9	9	3	8	4.78
06 web	13	5	9	11	7	14	10	11	9	4	7	4.70
05 web	15	5	10	9	7	11	9	13	10	5	7	4.71
05 phone	10	9	9	8	7	15	8	12	9	4	10	4.85
03 phone	7	5	7	7	8	17	10	11	11	5	12	5.49

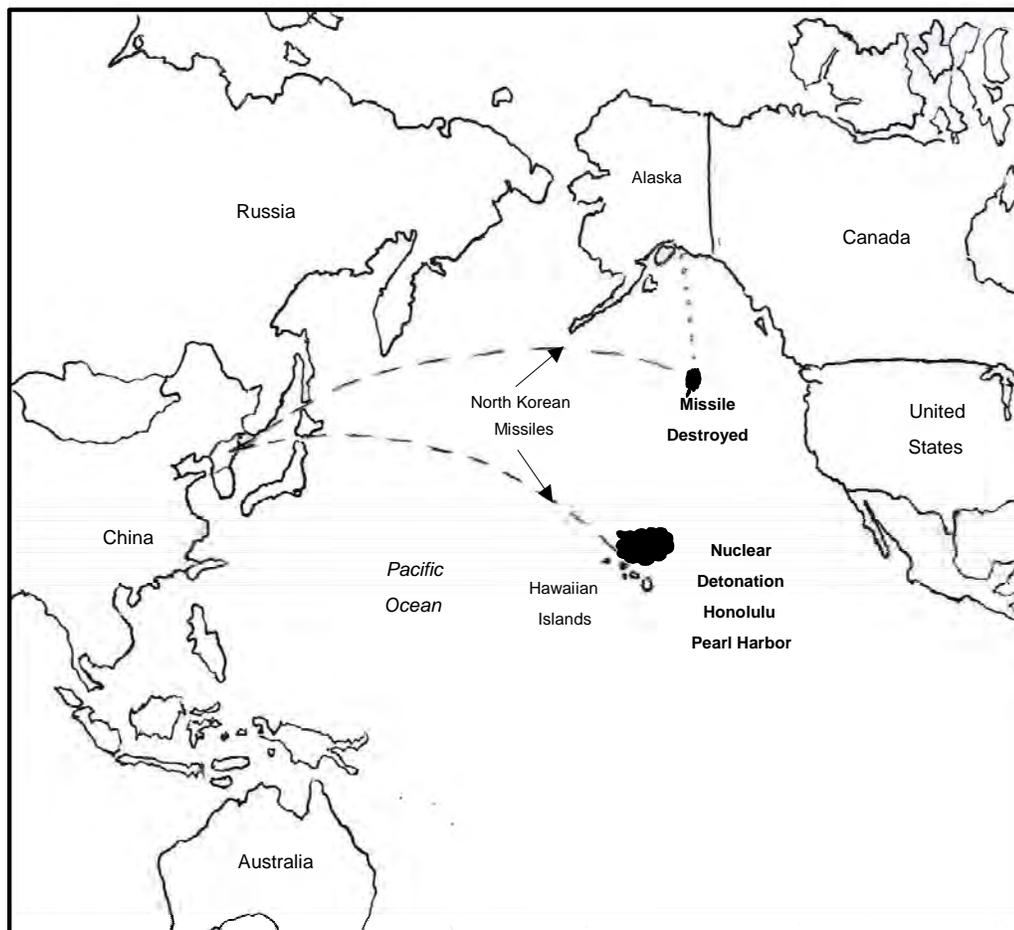
[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .2023$ ]

Now we want your reaction to a specific scenario. First, we will describe the general situation, then we will present several different policy choices and ask you with which option you agree the *most*. The scenario cannot possibly provide all the information you would like to know, and the policy options cannot represent every course of action that might be considered, so it is OK if you do not agree completely with any of the options. Just tell us which one you favor the *most*.

**[SPLIT DESIGN: 1/3 receive scenario-1; 1/3 receive scenario-2; 1/3 receive scenario-3]**

**S64\_scenario1 (1/3 of respondents): SITUATION:** The year is 2015. A military faction takes control in North Korea and begins shelling Seoul (the capital of South Korea), bombing South Korean air bases, and invading South Korea. U.S. and South Korean forces slow the invasion and conduct airstrikes on military targets in North Korea using conventional munitions. Within a week, the North Korean invasion is reversed, and U.S. and South Korean ground forces regain South Korean territory and prepare to invade North Korea.

Without warning, two advanced models of the Taepodong-2 missile are launched from North Korea. One strikes Honolulu, Hawaii with a nuclear explosion producing at least 40,000 dead and unknown numbers of injured and missing persons. U.S. naval facilities at Pearl Harbor are heavily damaged. The second North Korean missile is intercepted off the coast of Alaska and destroyed by U.S. missile defenses before it reaches its intended target of Seattle, Washington. Chinese and Russian nuclear forces are brought to their highest levels of alert, and both countries call on all parties to cease hostilities. North Korea warns that if American and South Korean forces invade North Korea, it will launch additional nuclear missile strikes against cities in the United States and South Korea.



Though it is not possible to outline a full range of policy choices, and more information would be wanted, we are presenting a limited number of response options that we ask you to consider. It is OK if you do not agree completely with any of the choices, we just need to know which one of the following options you favor the *most*. [n = 793]

%	11 Web
<p><b>S64_1: Diplomacy and negotiations:</b> Demand a cease-fire and warn that further nuclear attacks from North Korea will result in full-scale U.S. nuclear retaliation. Assure China and Russia that the U.S. will not attack either country. Demand that UN coalition forces be assembled to force North Korea to negotiate a settlement. The primary objectives are to stop further nuclear attacks, to discourage China and Russia from entering the conflict, and to avoid nuclear escalation. [IF SELECTED, GO TO S64_1_conf]</p>	26
<p><b>S64_2: Airstrikes using conventional armaments:</b> While pursuing diplomatic measures at the United Nations, conduct air attacks using precision guided conventional munitions against known and suspected nuclear facilities and missile launch sites in North Korea. Reinforce U.S. forces in South Korea but do not invade North Korea. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon. [IF SELECTED, GO TO S64_2_options]</p>	28
<p><b>S64_3: Invasion using conventional armaments:</b> Conduct U.S. and South Korean air, land, and sea attacks against North Korea using conventional armaments, with the objectives of invading and militarily defeating North Korea and reuniting the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon. Vigorously pursue coalition support from other countries through the United Nations. [IF SELECTED, GO TO S64_3_options]</p>	17
<p><b>S64_4: Retaliation using nuclear weapons:</b> Conduct nuclear strikes against North Korea using U.S. intercontinental ballistic and cruise missiles to destroy North Korean nuclear weapons and facilities before more North Korean nuclear weapons are used. The objectives are to completely defeat North Korea and unify the Korean peninsula under a single government. Advise China and Russia that the U.S. does not intend to use nuclear weapons against either nation, but warn both countries not to interfere with the military defeat of North Korea. Assure China and Russia that U.S. forces will withdraw from a unified Korea when recovery is complete. [IF SELECTED, GO TO S64_4_conf]</p>	29

If S64\_1 selected:

***You chose diplomacy and negotiations as follows:***

*Demand a cease-fire and warn that further nuclear attacks from North Korea will result in full-scale U.S. nuclear retaliation. Assure China and Russia that the U.S. will not attack either country. Demand that UN coalition forces be assembled to force North Korea to negotiate a settlement. The primary objectives are to stop further nuclear attacks, to discourage China and Russia from entering the conflict, and to avoid nuclear escalation.*

**S64\_1\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that this is the best possible course of action under these circumstances?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	0	0	1	4	5	24	21	18	17	4	5	6.28	

If S64\_2 selected:

***You chose U.S. airstrikes using conventional armaments as follows:***

*While pursuing diplomatic measures at the United Nations, conduct air attacks using precision guided conventional munitions against known and suspected nuclear facilities and missile launch sites in North Korea. Reinforce U.S. forces in South Korea but do not invade North Korea. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon.*

RESULT: In response to U.S. and South Korean conventional air and missile strikes, North Korea continues to shell Seoul, the capital of South Korea, with conventional artillery, but does not use another nuclear weapon and does not attempt another invasion of South Korea.

It is OK if you do not agree completely with any of the following choices, we just need to know which one of the options you favor the *most*.

%	11 Web
<b>S64_2_1: Option 1:</b> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, stop U.S. and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Demand that United Nations coalition forces be assembled to force North Korea to negotiate a settlement and surrender its nuclear weapons and materials to UN representatives.	50
<b>S64_2_2: Option 2:</b> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, invade North Korea using conventional forces with the objective of overthrowing the North Korean regime and unifying the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon.	41
<b>S64_2_3: Option 3:</b> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, use U.S. nuclear weapons to destroy North Korean military forces and nuclear weapons capabilities, overthrow the North Korean regime, and reunite the Korean peninsula under a single government.	9

**S64\_2\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that response option [fill from above] is the best possible course of action under these circumstances?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	1	2	5	7	19	19	19	15	6	5	6.14	

If S64\_3 selected:

**You chose invasion using conventional armaments as follows:**

*Conduct U.S. and South Korean air, land, and sea attacks against North Korea using conventional armaments, with the objectives of invading and militarily defeating North Korea and reuniting the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon. Vigorously pursue coalition support from other countries through the United Nations.*

RESULT: In response to U.S. and South Korean conventional military attacks and invasion, North Korea continues to shell Seoul, the capital of South Korea, and launches air strikes against U.S. and South Korean military forces and bases in South Korea. North Korea appeals to China for assistance and evacuates North Korean military and political leaders to bunkers and command centers located deep within mountains that cannot be destroyed by precision guided conventional munitions. North Korea declares that if U.S. and South Korean forces do not stop attacking and withdraw, the North will have no choice but to attack South Korea with nuclear weapons.

It is OK if you do not agree completely with any of the following choices, we just need to know which one of the options you favor the *most*.

%	11 Web
<b>S64_3_1: Option 1:</b> If invading forces do not quickly compel North Korea to cease hostilities, stop U.S. and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Take the matter to the United Nations Security Council and open negotiations with North Korea. Withdraw U.S. and South Korean forces from North Korean territory if North Korea agrees to surrender its nuclear weapons and materials to UN representatives.	14
<b>S64_3_2: Option 2:</b> Continue the invasion and conventional attacks on North Korea with the objectives of destroying North Korean nuclear weapons and facilities, overthrowing the North Korean regime, and reuniting the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea again uses a nuclear weapon.	58
<b>S64_3_3: Option 3:</b> In support of U.S. and South Korean invading forces, use U.S. nuclear weapons to destroy North Korean underground command centers, nuclear weapons and facilities, and missile launch sites. Do not stop until North Korea is defeated and the Korean peninsula is reunited under a single government.	28

**S64\_3\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that response option [fill from above] is the best possible course of action under these circumstances?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	0	0	1	5	8	22	18	22	13	5	6	6.35	

If S64\_4 selected:

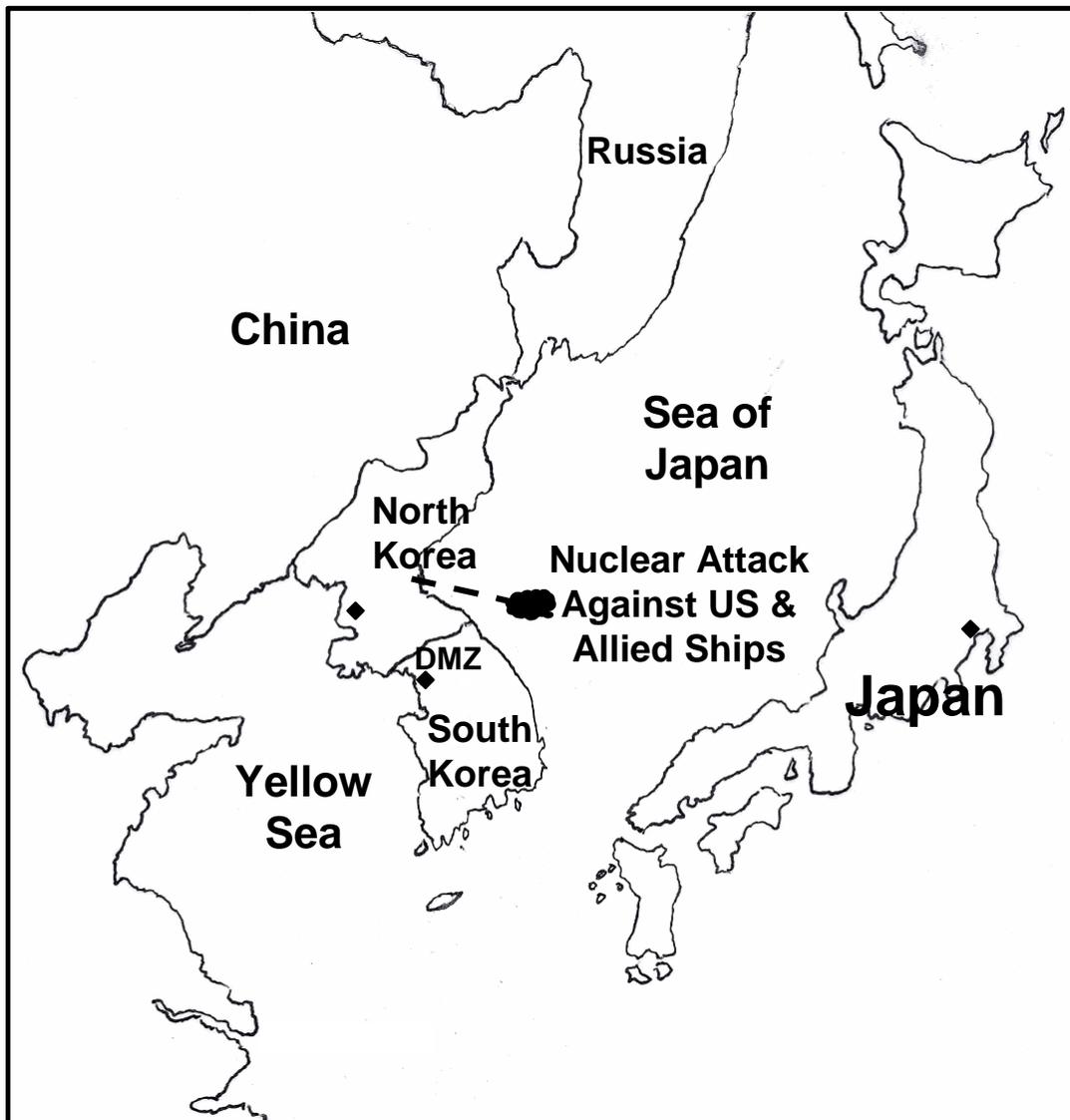
***You chose retaliation using nuclear weapons as follows:***

*Conduct nuclear strikes against North Korea using U.S. intercontinental ballistic and cruise missiles to destroy North Korean nuclear weapons and facilities before more North Korean nuclear weapons are used. The objectives are to completely defeat North Korea and unify the Korean peninsula under a single government. Advise China and Russia that the U.S. does not intend to use nuclear weapons against either nation, but warn both countries not to interfere with the military defeat of North Korea. Assure China and Russia that U.S. forces will withdraw from a unified Korea when recovery is complete.*

**S64\_4\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that this is the best possible course of action under these circumstances?

%	Not at All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	0	2	2	3	12	12	21	19	11	17	7.26	

**S65\_scenario2 (1/3 of respondents): SITUATION:** The year is 2015. North and South Korea exchange artillery fire near the demilitarized zone (DMZ) separating the two Koreas, and North Korea threatens nuclear war if the United States, South Korea, and Japan conduct planned joint naval exercises in international waters in the Sea of Japan. When those maneuvers proceed, an anti-ship missile is launched from North Korea carrying a nuclear warhead that explodes above the American aircraft carrier *U.S.S. George Washington*, sinking it along with a U.S. destroyer and a Japanese support ship. A U.S. cruiser and two South Korean destroyers are badly damaged. The immediate loss in lives is estimated to be in excess of 8,000 military personnel, with additional numbers of wounded and irradiated sailors, but no civilian casualties are caused by the nuclear attack. North Korean troops are massed near the demilitarized zone, and artillery fire from North Korea is striking Seoul, the capital of South Korea, but no land invasion has yet been launched by either side.



Though it is not possible to outline a full range of policy choices, and more information would be wanted, we are presenting a limited number of response options that we ask you to consider. It is OK if you do not agree completely with any of the choices, we just need to know which one of the following options you favor the *most*. [n = 774]

%	11 Web
<p><b>S65_1: Diplomacy and negotiations:</b> Demand a cease-fire and warn that further nuclear attacks from North Korea will result in full-scale U.S. nuclear retaliation. Assure China and Russia that the U.S. will not attack either country. Demand that UN coalition forces be assembled to force North Korea to negotiate a settlement. The primary objectives are to stop further nuclear attacks, to discourage China and Russia from entering the conflict, and to avoid nuclear escalation. [IF SELECTED, GO TO S65_1_conf]</p>	23
<p><b>S65_2: Airstrikes using conventional armaments:</b> While pursuing diplomatic measures at the United Nations, conduct air attacks using precision guided conventional munitions against known and suspected nuclear facilities and missile launch sites in North Korea. Reinforce U.S. forces in South Korea but do not invade North Korea. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon. [IF SELECTED, GO TO S65_2_options]</p>	36
<p><b>S65_3: Invasion using conventional armaments:</b> Conduct U.S. and South Korean air, land, and sea attacks against North Korea using conventional armaments, with the objectives of invading and militarily defeating North Korea and reuniting the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon. Vigorously pursue coalition support from other countries through the United Nations. [IF SELECTED, GO TO S65_3_options]</p>	17
<p><b>S65_4: Retaliation using nuclear weapons:</b> Conduct nuclear strikes against North Korea using U.S. intercontinental ballistic and cruise missiles to destroy North Korean nuclear weapons and facilities before more North Korean nuclear weapons are used. The objectives are to completely defeat North Korea and unify the Korean peninsula under a single government. Advise China and Russia that the U.S. does not intend to use nuclear weapons against either nation, but warn both countries not to interfere with the military defeat of North Korea. Assure China and Russia that U.S. forces will withdraw from a unified Korea when recovery is complete. [IF SELECTED, GO TO S65_4_conf]</p>	24

If S65\_1 selected:

***You chose diplomacy and negotiations as follows:***

*Demand a cease-fire and warn that further nuclear attacks from North Korea will result in full-scale U.S. nuclear retaliation. Assure China and Russia that the U.S. will not attack either country. Demand that UN coalition forces be assembled to force North Korea to negotiate a settlement. The primary objectives are to stop further nuclear attacks, to discourage China and Russia from entering the conflict, and to avoid nuclear escalation.*

**S65\_1\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that this is the best possible course of action under these circumstances?

%	Not at All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	3	1	2	2	9	18	18	19	13	7	8	6.30	

If S65\_2 selected:

**You chose airstrikes using conventional armaments as follows:**

*While pursuing diplomatic measures at the United Nations, conduct air attacks using precision guided conventional munitions against known and suspected nuclear facilities and missile launch sites in North Korea. Reinforce U.S. forces in South Korea but do not invade North Korea. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon.*

RESULT: In response to U.S. and South Korean conventional air and missile strikes, North Korea continues to shell Seoul, the capital of South Korea, and South Korean military bases near the demilitarized zone with conventional artillery munitions, but North Korea does not use another nuclear weapon and does not invade South Korea.

It is OK if you do not agree completely with any of the following choices, we just need to know which one of the options you favor the *most*.

%	11 Web
<b>S65_2_1: Option 1:</b> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, stop U.S. and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Demand that United Nations coalition forces be assembled to force North Korea to negotiate a settlement and surrender its nuclear weapons and materials to UN representatives.	51
<b>S65_2_2: Option 2:</b> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, invade North Korea using conventional forces with the objectives of overthrowing the North Korean regime and unifying the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon.	40
<b>S65_2_3: Option 3:</b> If air attacks using conventional munitions do not quickly compel North Korea to cease hostilities, use U.S. nuclear weapons to destroy North Korean military forces and nuclear weapons capabilities, overthrow the North Korean regime, and reunite the Korean peninsula under a single government.	9

**S65\_2\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that response option [fill from above] is the best possible course of action under these circumstances?

%	Not at All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	1	2	6	10	21	19	23	12	3	3	5.89	

If 65\_3 selected:

**You chose invasion using conventional armaments as follows:**

*Conduct U.S. and South Korean air, land, and sea attacks against North Korea using conventional armaments, with the objectives of invading and militarily defeating North Korea and reuniting the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea uses another nuclear weapon. Vigorously pursue coalition support from other countries through the United Nations.*

RESULT: In response to U.S. and South Korean conventional military attacks and invasion, North Korea continues to shell Seoul, the capital of South Korea, and launches air strikes against U.S. and South Korean military forces and bases in South Korea. North Korea appeals to China for assistance and evacuates North Korean military and political leaders to bunkers and command centers located deep within mountains that cannot be destroyed by precision guided conventional munitions. North Korea declares that if U.S. and South Korean forces do not cease their attacks and withdraw, the North will have no choice but to attack South Korea with nuclear weapons.

It is OK if you do not agree completely with any of the following choices, we just need to know which of the options you favor the *most*.

%	11 Web
<b>S65_3_1: Option 1:</b> If invading forces do not quickly compel North Korea to cease hostilities, stop U.S. and South Korean attacks and enlist the assistance of China and Russia to pressure North Korea to accept a cease-fire. Take the matter to the United Nations Security Council and open negotiations with North Korea. Withdraw U.S. and South Korean forces from North Korean territory if North Korea agrees to surrender its nuclear weapons and materials to UN representatives.	11
<b>S65_3_2: Option 2:</b> Continue the invasion and conventional attacks on North Korea with the objectives of destroying North Korean nuclear weapons and facilities, overthrowing the North Korean regime, and reuniting the Korean peninsula under a single government. Do not use U.S. nuclear weapons unless North Korea again uses a nuclear weapon.	62
<b>S65_3_3: Option 3:</b> In support of U.S. and South Korean invading forces, use U.S. nuclear weapons to destroy North Korean underground command centers, nuclear weapons and facilities, and missile launch sites. Do not stop until North Korea is defeated and the Korean peninsula is reunited under a single government.	27

**S65\_3\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that response option [fill from above] is the best possible course of action under these circumstances?

%	Not at All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	0	3	5	8	17	16	31	10	5	5	6.17	

If 65\_4 selected:

***You chose retaliation using nuclear weapons as follows:***

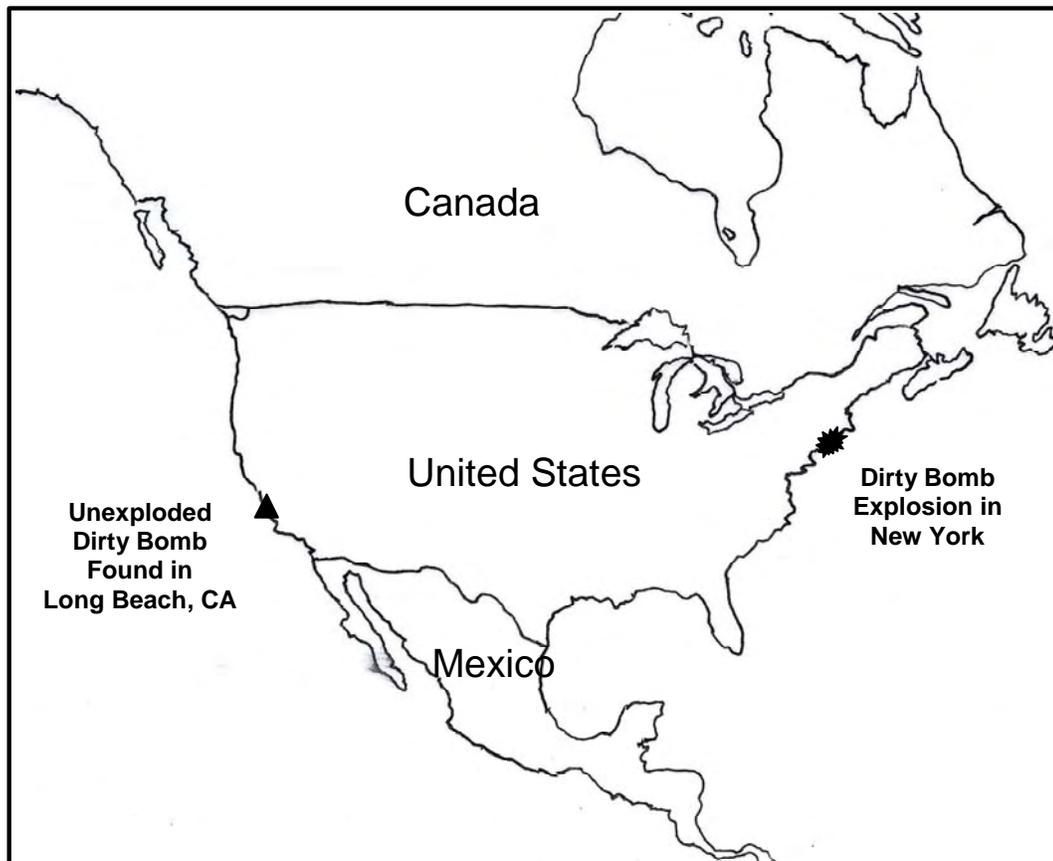
*Conduct nuclear strikes against North Korea using U.S. intercontinental ballistic and cruise missiles to destroy North Korean nuclear weapons and facilities before more North Korean nuclear weapons are used. The objectives are to completely defeat North Korea and unify the Korean peninsula under a single government. Advise China and Russia that the U.S. does not intend to use nuclear weapons against either nation, but warn both countries not to interfere with the military defeat of North Korea. Assure China and Russia that U.S. forces will withdraw from a unified Korea when recovery is complete.*

**S65\_4\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that this is the best possible course of action under these circumstances?

%	Not at All Confident										Extremely Confident	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	1	1	2	1	4	10	9	15	22	11	24	7.49

**S66\_scenario3 (1/3 of respondents): SITUATION:** The year is 2015, and Iran successfully conducts its first underground nuclear test explosion. The U.S. declares that Iran will not be allowed to continue developing nuclear weapons. Without warning, an explosion occurs at the New York container terminal on Staten Island. Response personnel discover eight people dead and 15 wounded and determine that the area is highly radioactive. Strong offshore winds are pushing radioactive airborne elements northeastward over portions of New Jersey and New York, exposing unknown numbers of people to varying levels of radiation. The scene of the blast remains highly radioactive, and an area the size of four square blocks is heavily contaminated.

Tests determine that the device was a “dirty bomb” involving radioactive matter dispersed by conventional explosives and that the radioactive materials originated in Iran. Though Iran denies involvement, Hezbollah, an Iranian-supported terrorist organization operating in Lebanon, warns that other nuclear devices have been smuggled into the United States and will be detonated if the U.S. attacks Iranian nuclear facilities. An intensive search discovers an unexploded dirty bomb at the Port of Long Beach in Los Angeles, California. Examination confirms Iranian nuclear materials, and analysis of the triggering mechanism and conventional explosives packaging shows similarities with known Hezbollah explosive devices.



Though it is not possible to outline a full range of policy choices, and more information would be wanted, we are presenting a limited number of response options that we ask you to consider. It is OK if you do not agree completely with any of the choices, we just need to know which one of the following options you favor the *most*. [n = 824]

%	11 Web
<p><b>S66_1: Diplomacy and negotiations:</b> Ask for United Nations support to investigate and determine who is responsible. Though Iran continues to deny involvement in the explosion in New York or the device found in Long Beach, warn Iran that further attacks on the United States will result in military actions against Iran, and that all options are on the table, including U.S. nuclear weapons. Contact Hezbollah in Lebanon and Iranian government authorities to begin negotiations. [IF SELECTED, GO TO S66_1_conf]</p>	31
<p><b>S66_2: Airstrikes using conventional armaments:</b> Conduct conventional air and missile strikes against Iranian nuclear production facilities and sustain the attacks until a high degree of damage is assured <i>without</i> using U.S. nuclear weapons. Reinforce U.S. military forces in the region and position them for potential invasion of Iran. Demand that Iran identify persons responsible for the dirty bombs. Warn that the U.S. will destroy the Iranian government and the Hezbollah organization in Lebanon if another attack on the U.S. occurs.</p>	35
<p><b>S66_3: Invasion using conventional armaments:</b> Attempt to organize a coalition of regional forces for the invasion of Iran. If necessary, use U.S. military forces alone to invade Iran, overthrow the Iranian government, destroy Iranian nuclear weapons capabilities, and secure Iranian nuclear materials. Do not use U.S. nuclear weapons unless U.S. forces are attacked with Iranian nuclear weapons. When Iran's nuclear capabilities have been destroyed, withdraw U.S. military forces. Do not occupy Iran for the long-term. [IF SELECTED, GO TO S66_3_options]</p>	19
<p><b>S66_4: Retaliation using nuclear weapons:</b> Launch U.S. nuclear strikes against Iranian nuclear weapons facilities and major military installations. Ensure the defeat of the Iranian government and the destruction of Iranian nuclear weapons and facilities and the removal of nuclear materials. Use all necessary military force. [IF SELECTED, GO TO S66_4_conf]</p>	15

If S66\_1 selected:

***You chose diplomacy and negotiations as follows:***

*Ask for United Nations support to investigate and determine who is responsible. Though Iran continues to deny involvement in the explosion in New York or the device found in Long Beach, warn Iran that further attacks on the United States will result in military actions against Iran, and that all options are on the table, including U.S. nuclear weapons. Contact Hezbollah in Lebanon and Iranian government authorities to begin negotiations.*

**S66\_1\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that this is the best possible course of action under these circumstances?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	3	1	2	8	8	19	16	21	16	2	5	5.95	

If S66\_2 selected:

**You chose airstrikes using conventional armaments as follows:**

*Conduct conventional air and missile strikes against Iranian nuclear production facilities and sustain the attacks until a high degree of damage is assured without using U.S. nuclear weapons. Reinforce U.S. military forces in the region and position them for potential invasion of Iran. Demand that Iran identify persons responsible for the dirty bombs. Warn that the U.S. will destroy the Iranian government and the Hezbollah organization in Lebanon if another attack on the U.S. occurs.*

RESULT: Iranian air defenses are overwhelmed within the first three days of bombing, with the loss of six American planes. Substantial damage is believed to have been inflicted on Iranian nuclear facilities, but it is unknown whether all of Iran’s nuclear weapons have been destroyed. Iran states that if U.S. airstrikes are halted, it will assist in finding the persons responsible for the dirty bombs. Iran also threatens to use a nuclear weapon against U.S. naval forces operating in the Persian Gulf if U.S. airstrikes do not cease within the next 24 hours.

It is OK if you do not agree completely with any of the following choices, we just need to know which one of the options you favor the *most*.

%	11 Web
<b>S66_2_1: Option 1:</b> Halt U.S. airstrikes and accept Iran’s offer to help find those responsible for placing the dirty bombs in the U.S. Enlist the assistance of the United Nations Security Council in negotiating with Iran to allow UN inspectors to verify the status of Iranian nuclear weapons and facilities.	39
<b>S66_2_2: Option 2:</b> Continue U.S. airstrikes with conventional weapons and insert special operations forces to penetrate Iranian nuclear facilities and to direct U.S. airstrikes against all nuclear related targets. Reinforce and position U.S. ground forces on Iran’s borders with Iraq and Afghanistan and signal the intention to invade Iran if Iranian leaders do not surrender their nuclear weapons. Do not use U.S. nuclear weapons unless Iran uses its nuclear weapons first.	51
<b>S66_2_3: Option 3:</b> Preempt Iran’s threat of using nuclear weapons with limited nuclear strikes by U.S. aircraft and missiles to destroy Iranian nuclear capabilities and major military bases. Follow the nuclear attacks with ground forces to topple the Iranian government. Provide humanitarian assistance, but do not attempt to occupy Iran for the long-term.	10

**S66\_2\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that response option [fill from above] is the best possible course of action under these circumstances?

%	Not at All <u>Confident</u>										Extremely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	2	2	2	4	6	24	18	18	14	5	6	6.08	

If S66\_3 selected:

**You chose invasion using conventional armaments as follows:**

*Attempt to organize a coalition of regional forces for the invasion of Iran. If necessary, use U.S. military forces alone to invade Iran, overthrow the Iranian government, destroy Iranian nuclear weapons capabilities, and secure Iranian nuclear materials. Do not use U.S. nuclear weapons unless U.S. forces are attacked with Iranian nuclear weapons. When Iran’s nuclear capabilities have been destroyed, withdraw U.S. military forces. Do not occupy Iran for the long-term.*

RESULT: Within a month of the U.S. invasion, Iran appears to be losing the war and asks for negotiations and indicates willingness to give up its nuclear weapons, but refuses to change its government. Iran warns that unless U.S. forces halt the invasion and begin negotiations, it will be forced to use nuclear weapons against U.S. ground forces and ships at sea. Iran also threatens to attack Saudi Arabian oil facilities with missiles and to block the Strait of Hormuz, a nautical bottleneck through which most tankers carrying oil from Saudi Arabia and other oil producers in the Persian Gulf area must pass. Iran calls for China to mediate a cease-fire and to act as a neutral party to receive and verify the surrender of all Iranian nuclear weapons.

It is OK if you do not agree completely with any of the following choices, we just need to know which one of the options you favor the *most*.

<p><b>S66_3_1: Option 1:</b> Declare a cease-fire and begin negotiations with the Iranian government to turn over its nuclear weapons to the International Atomic Energy Agency. Keep U.S. forces in place until Iran surrenders all its nuclear weapons. Warn Iran that any attempts to block oil shipments in the Persian Gulf or to attack oil production facilities in Saudi Arabia will result in continued U.S. invasion and the overthrow of the Iranian government.</p>	23
<p><b>S66_3_2: Option 2:</b> Continue the invasion and advise that any use of nuclear weapons by Iran will result in unrestricted nuclear war with the U.S. and the complete destruction of the Iranian government. Tell Iran that the U.S. will accept a cease-fire only if Iran surrenders its nuclear weapons to U.S. forces, agrees to destroy Iranian nuclear facilities under U.S. supervision, and agrees to elections to replace its government.</p>	53
<p><b>S66_3_3: Option 3:</b> Preempt Iran’s threat of using nuclear weapons with limited nuclear strikes by U.S. aircraft and missiles to destroy Iranian nuclear capabilities and major military bases. Follow the nuclear attacks with ground forces to topple the Iranian government. Provide humanitarian assistance, but do not attempt to occupy Iran for the long-term.</p>	24

**S66\_3\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that response option [fill from above] is the best possible course of action under these circumstances?

%	Not at All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	1	1	7	5	19	16	16	20	7	7	6.43	

If S66\_4 selected:

**You chose retaliation using nuclear weapons as follows:**

*Launch U.S. nuclear strikes against Iranian nuclear weapons facilities and major military installations. Ensure the defeat of the Iranian government and the destruction of Iranian nuclear weapons and facilities and the removal of nuclear materials. Use all necessary military force.*

**S66\_4\_conf:** On a scale from zero to ten where zero means *not at all confident* and ten means *completely confident*, how confident are you that this is the best possible course of action under these circumstances?

%	Not at All Confident										Extremely Confident	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	2	0	3	0	4	14	11	16	12	11	26	7.34

Increasing security for Americans sometimes requires reducing liberties, and finding the right mix of security and liberty is a matter for public debate.

**S67\_marb1** For this question, assume that *black* marbles represent the level of emphasis placed on the *security* of Americans and *white* marbles represent the level of emphasis placed on *liberties* of Americans. How many of each color would you place in a total combined mix of 100 marbles?

%	Black (Security)	White (Liberties)
11 web	52.1	47.9
11 phone	46.8	53.2
10 web	50.2	49.8
10 phone	46.3	53.7
09 web	50.0	50.0
08 web	50.1	49.9
07 web	46.8	53.2
07 phone	47.9	52.0
06 web	46.4	53.6

[11 web vs. 10 web (black/white):  $p = .0030$ ] [11 web vs. 11 phone (black/white):  $p < .0001$ ]

**S68\_marb2** Again, using the marbles example where *black* marbles represent the level of emphasis placed on the *security* of Americans, and *white* marbles represent the level of emphasis placed on *liberties* of Americans, how many of each color do you think represents the way the US government is balancing considerations of security and liberties today?

%	Black (Security)	White (Liberties)
11 web	53.3	46.7
11 phone	53.3	46.7
10 web	51.2	48.8
10 phone	49.2	50.8
09 web	51.3	48.7
08 web	54.2	45.8
07 web	50.1	49.9
07 phone	54.3	45.7

[11 web vs. 10 web (black/white):  $p = .0004$ ] [11 web vs. 11 phone (black/white):  $p = .9666$ ]

Using a scale where one means *strongly oppose* and seven means *strongly support*, how would you feel about the following measures for preventing terrorism in the US?

**S69\_intrude1** Requiring national identification cards for all US citizens.

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	11	7	6	15	16	14	31	4.83
10 web	10	6	6	18	13	13	34	4.93
09 web	11	4	6	18	13	13	35	4.97
08 web	10	6	7	16	14	12	34	4.92
07 web	9	5	6	16	15	15	33	5.00
07 phone	17	6	5	6	10	10	45	4.97
06 web	10	5	5	14	15	17	34	5.05
05 web	15	6	6	13	13	14	34	4.80
05 phone	19	6	7	6	11	10	41	4.78
03 phone	24	7	5	7	11	11	34	4.46
01 phone	14	7	6	7	13	11	43	5.04
95 phone	27	6	7	8	13	7	32	4.23

[11 web vs. 10 web:  $p = .1541$ ]

**S70\_intrude2** Restricting immigration into the US to prevent terrorism.

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	4	5	7	13	15	17	38	5.33
10 web	5	4	6	16	14	16	40	5.37
09 web	5	4	6	14	14	16	41	5.39
08 web	4	4	7	15	13	14	42	5.38
07 web	4	5	6	13	14	16	42	5.43
07 phone	10	6	6	8	13	14	43	5.19
06 web	4	4	8	13	12	17	42	5.43
05 web	6	4	6	12	13	16	43	5.43
05 phone	10	6	9	7	13	14	42	5.18
03 phone	12	6	8	8	13	13	40	5.03
01 phone	8	5	7	8	14	12	45	5.33

[11 web vs. 10 web:  $p = .5107$ ]

**S71\_intrude3** Permitting government officials to hold and interrogate suspected terrorists within the US for a period of one year without charging the suspects with a crime.

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	11	9	11	18	16	12	22	4.45
10 web	13	9	11	19	13	13	23	4.38
09 web	14	9	10	19	15	12	21	4.34
08 web	17	9	12	17	13	11	21	4.16
07 web	17	11	11	18	14	11	18	4.08
07 phone	27	10	9	8	13	9	25	3.94
06 web	15	10	10	18	14	12	21	4.28
05 web	21	10	9	15	12	11	22	4.06
05 phone	28	11	9	8	12	8	24	3.83

[11 web vs. 10 web:  $p = .3624$ ]

**S72\_intrude4** Permitting government officials to monitor the phone conversations of American citizens who are suspected of involvement in terrorism without requiring a warrant from a court of law.

%	<u>Strongly Oppose</u>						<u>Strongly Support</u>		Mean
	1	2	3	4	5	6	7		
11 web	13	9	10	16	17	12	23	4.42	
10 web	14	9	9	19	13	12	24	4.38	
09 web	15	8	9	17	15	13	23	4.40	
08 web	16	10	9	16	14	11	24	4.30	
07 web	16	8	10	16	13	13	24	4.37	
06 web	17	8	8	14	14	14	26	4.48	

[11 web vs. 10 web:  $p = .5515$ ]

**S73\_WOT** Now, on a scale from zero to ten, where zero means *not at all effective* and ten means *extremely effective*, how effective, overall, do you believe US efforts in the war on terrorism have been thus far?

%	<u>Not At All Effective</u>							<u>Extremely Effective</u>				Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	2	1	4	6	7	16	19	23	15	5	3	5.98
10 web	4	3	5	11	13	18	17	15	8	2	3	5.13
09 web	4	3	5	9	11	19	15	16	11	4	4	5.47
08 web	7	4	8	11	11	17	13	14	9	3	3	4.88
07 web	9	5	12	13	11	15	13	12	7	1	2	4.42
07 phone	7	6	7	10	10	18	14	14	9	2	4	4.87
06 web	8	6	9	11	10	14	15	15	8	2	3	4.65
05 web	9	5	9	12	8	15	13	14	9	3	4	4.73
05 phone	5	5	7	9	10	18	13	15	11	2	4	5.05
03 phone	3	3	5	8	9	18	14	18	12	3	6	5.60

[11 web vs. 10 web:  $p < .0001$ ]

On a scale from zero to ten, where zero means *not at all confident* and ten means *completely confident*, how confident are you that the US can achieve each of the following in the next ten years?

**S74\_USlarge** How confident are you that the US can prevent large-scale terrorist attacks that injure or kill thousands of people from occurring in the US in the next ten years?

%	<u>Not At All Confident</u>							<u>Completely Confident</u>				Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	4	2	5	6	9	18	16	20	14	4	3	5.67
10 web	7	3	7	9	10	20	14	14	9	3	3	5.01
09 web	6	2	6	7	10	20	15	16	9	4	4	5.26
08 web	7	3	8	10	10	17	13	13	11	4	3	4.99
07 web	9	5	8	12	9	19	13	14	8	2	3	4.71
07 phone	4	4	6	8	10	19	14	15	10	3	6	5.28
06 web	8	5	8	13	9	18	13	13	7	2	3	4.63
05 web	13	4	10	11	9	13	12	14	9	3	3	4.53
05 phone	5	6	5	9	10	18	11	15	12	3	6	5.26

[11 web vs. 10 web:  $p < .0001$ ]

**S75\_USsmall** How confident are you that the US can prevent small-scale terrorist attacks that injure or kill a few people from occurring in the US in the next ten years?

%	Not At All <u>Confident</u>										Completely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	7	4	8	10	9	17	13	14	10	5	3	5.03	
10 web	12	5	8	13	10	18	12	9	8	3	3	4.35	
09 web	9	4	8	11	11	19	12	11	8	4	4	4.74	
08 web	11	7	9	10	12	17	9	9	9	3	4	4.44	
07 web	13	6	9	12	9	16	11	11	7	3	3	4.33	
07 phone	6	8	10	12	11	18	10	11	6	2	6	4.57	
06 web	15	7	10	12	10	14	10	9	7	3	3	4.08	
05 web	18	7	10	10	9	14	8	10	8	3	3	4.04	
05 phone	10	11	9	12	10	16	8	10	7	3	5	4.27	

[11 web vs. 10 web:  $p < .0001$ ]

**S76\_water** How confident are you that the US can prevent terrorist attacks that destroy critical US infrastructures, like water and power plants in the next ten years?

%	Not At All <u>Confident</u>										Completely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	4	2	5	8	9	20	16	17	13	4	3	5.51	
10 web	8	4	6	10	12	22	13	11	8	3	4	4.88	
09 web	7	3	5	10	12	22	14	13	8	3	4	5.01	
08 web	9	5	9	9	11	18	12	10	10	4	4	4.75	
07 web	9	4	8	12	12	18	12	12	9	3	2	4.68	
07 phone	5	6	7	9	12	20	13	13	9	2	5	5.00	
06 web	10	5	9	12	11	16	13	12	7	2	3	4.46	
05 web	14	5	10	11	10	15	10	12	8	3	2	4.33	
05 phone	6	6	8	11	11	20	12	11	9	2	4	4.80	

[11 web vs. 10 web:  $p < .0001$ ]

Efforts to prevent terrorism are causing debate about whether we should limit privacy and personal liberties in an effort to improve national security.

On a scale from one to seven where one means *strongly oppose* and seven means *strongly support*, how do you feel about the government taking the following measures in an effort to help prevent terrorism? [S77–S82 Randomized]

**S77\_bigbro1** Collecting personal information about you, such as your name, address, phone number, income, and social security number.

%	<u>Strongly Oppose</u>						<u>Strongly Support</u>		Mean
	1	2	3	4	5	6	7		
11 web	19	11	11	19	16	11	12	3.86	
10 web	20	9	13	20	12	12	13	3.86	
09 web	21	10	10	20	14	10	15	3.87	
08 web	21	10	10	20	15	11	13	3.84	
07 web	18	10	11	21	17	11	13	3.93	
07 phone	27	9	7	9	14	11	23	3.98	
06 web	20	11	11	17	15	12	14	3.89	
05 web	24	11	9	17	14	10	14	3.75	
05 phone	29	8	8	8	14	9	23	3.89	

[11 web vs. 10 web:  $p = .9889$ ]

**S78\_bigbro2** Collecting information about your behavior, such as where you shop, what you buy, what organizations you belong to, and where you travel.

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	29	16	13	18	12	6	7	3.10
10 web	27	14	13	20	10	8	9	3.29
09 web	31	15	12	18	9	7	8	3.13
08 web	30	15	13	18	11	6	8	3.14
07 web	27	14	12	18	14	7	9	3.32
07 phone	42	11	9	9	10	6	13	3.04
06 web	30	14	12	16	12	7	8	3.19
05 web	38	14	11	14	11	5	7	2.88
05 phone	45	12	9	7	11	5	11	2.86

[11 web vs. 10 web:  $p = .0037$ ]

**S79\_bigbro3** Conducting pat-down searches of your clothing and inspections of your belongings.

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	17	11	12	19	16	12	13	3.93
10 web	17	9	11	22	14	11	15	4.02
09 web	21	9	11	19	15	11	13	3.84
08 web	19	11	12	20	14	11	14	3.89
07 web	17	11	11	20	16	12	12	3.91
07 phone	36	10	10	8	11	8	17	3.40
06 web	21	10	11	19	15	11	12	3.79
05 web	23	10	10	18	15	10	14	3.79
05 phone	37	11	9	7	13	7	16	3.34

[11 web vs. 10 web:  $p = .2237$ ]

**S80\_bigbro4** Taking photographic images of you without your knowledge.

%	<u>Strongly Oppose</u>			<u>Strongly Support</u>				Mean
	1	2	3	4	5	6	7	
11 web	31	16	12	17	10	7	7	3.09
10 web	29	13	13	18	10	8	8	3.25
09 web	32	12	11	18	10	8	9	3.21
08 web	31	12	12	18	10	7	10	3.20
07 web	29	13	11	18	13	8	8	3.28
07 phone	48	10	7	7	9	6	12	2.85
06 web	30	13	11	17	12	7	10	3.28
05 web	38	14	9	15	11	5	8	2.93
05 phone	51	11	7	7	9	4	10	2.65

[11 web vs. 10 web:  $p = .0224$ ]

**S81\_bigbro5** Taking harmless electronic scans of your hands and face.

%	<u>Strongly Oppose</u>						<u>Strongly Support</u>		Mean
	1	2	3	4	5	6	7		
11 web	18	9	10	18	18	13	15	4.06	
10 web	16	9	8	19	15	15	18	4.23	
09 web	19	8	9	19	14	13	17	4.09	
08 web	18	7	10	19	15	13	18	4.18	
07 web	16	8	9	19	19	13	16	4.19	
07 phone	34	8	8	8	13	9	21	3.69	
06 web	18	9	9	17	16	14	17	4.12	
05 web	21	8	8	16	17	13	18	4.10	
05 phone	35	9	8	5	14	9	20	3.60	

[11 web vs. 10 web:  $p = .0153$ ]

**S82\_bigbro6** Taking a sample of your DNA.

%	<u>Strongly Oppose</u>						<u>Strongly Support</u>		Mean
	1	2	3	4	5	6	7		
11 web	30	12	11	16	13	8	11	3.39	
10 web	30	11	9	17	11	9	12	3.45	
09 web	31	10	9	17	11	8	13	3.45	
08 web	32	10	9	16	11	9	13	3.42	
07 web	27	12	8	17	14	10	12	3.57	
07 phone	46	9	7	6	9	6	18	3.12	
06 web	30	11	10	15	11	10	13	3.46	
05 web	34	9	8	15	12	9	14	3.45	
05 phone	46	9	6	6	9	7	17	3.13	

[11 web vs. 10 web:  $p = .3627$ ]

The next few questions concern your views on the government in Washington. These do not refer to Democrats or Republicans in particular, just the government, in general.

**S83\_doright** First, on a scale from zero to ten, where zero means *none of the time* and ten means *all of the time*, how much of the time do you trust the government in Washington to do what is right for the American people?

%	<u>None of the Time</u>										<u>All of the Time</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	7	8	11	12	9	17	14	11	8	3	1	4.50	
11 phone	9	8	8	13	12	16	9	11	8	2	5	4.48	
10 web	10	8	13	12	11	18	10	9	5	2	2	4.06	
10 phone	15	7	10	9	11	14	7	11	9	3	5	4.27	
09 web	8	7	9	12	10	20	12	10	7	2	3	4.48	
08 web	7	7	12	14	12	18	11	10	5	2	2	4.20	
07 web	8	7	13	16	10	19	12	8	5	1	1	4.04	
07 phone	8	7	10	13	12	23	9	10	4	1	3	4.21	
06 web	9	9	15	14	11	15	10	10	5	1	2	3.98	
05 web	9	10	13	13	10	15	10	11	6	2	1	4.05	
05 phone	6	8	8	12	10	23	12	10	7	2	3	4.58	

[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .8526$ ]

Now we want to know about the level of confidence you have in different agencies to respond to terrorist attacks that cause mass casualties like 9/11. Please use a scale from zero to ten, where zero means *not at all confident* and ten means *extremely confident* when considering each of the following. [s84–s87 Randomized]

**S84\_respond1** How confident are you in the ability of the US Department of Homeland Security to respond to large-scale terrorist attacks in the US?

%	Not At All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	5	3	5	7	8	15	13	17	14	8	5	5.73	
10 web	6	5	8	9	11	17	11	13	10	5	5	5.07	
09 web	7	5	7	6	9	17	12	14	11	6	5	5.29	
08 web	7	6	8	9	11	16	11	13	11	5	4	4.99	
07 web	9	6	8	9	10	18	12	12	9	4	3	4.78	
07 phone	6	6	8	10	11	16	13	13	11	3	4	4.96	
06 web	11	8	9	10	10	15	12	11	8	3	3	4.38	
05 web	10	6	8	8	9	14	12	14	10	5	4	4.87	
05 phone	5	4	5	8	8	17	12	16	15	4	7	5.62	

[11 web vs. 10 web:  $p < .0001$ ]

**S85\_respond2** How confident are you in the ability of the US Department of Defense, including active, reserve, and National Guard forces, to respond to large-scale terrorist attacks in the US?

%	Not At All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	3	2	4	5	7	13	14	18	17	10	8	6.34	
10 web	3	4	5	7	10	17	12	17	13	7	6	5.72	
09 web	4	3	5	6	9	16	12	15	14	8	7	5.81	
08 web	5	3	7	7	10	14	12	14	13	8	6	5.66	
07 web	5	4	5	7	8	16	14	14	13	8	7	5.78	
07 phone	3	2	4	8	8	14	14	18	15	5	8	5.95	
06 web	3	4	6	9	8	15	13	14	14	7	8	5.77	
05 web	5	3	5	7	8	14	9	16	15	8	11	5.99	
05 phone	2	2	3	4	6	12	11	17	21	8	14	6.73	

[11 web vs. 10 web:  $p < .0001$ ]

**S86\_respond3** How confident are you in the ability of your state government to respond to large-scale terrorist attacks in the US?

%	Not At All Confident										Extremely Confident		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	6	6	8	9	11	16	13	14	10	4	4	4.98	
10 web	8	8	9	11	11	17	10	11	8	4	4	4.64	
09 web	8	6	8	10	10	19	11	12	8	4	4	4.80	
08 web	7	6	10	11	9	18	11	11	9	4	4	4.77	
07 web	7	6	9	10	11	19	13	10	8	3	3	4.63	
07 phone	6	4	8	10	13	19	12	12	8	3	5	4.90	
06 web	8	6	10	12	12	19	12	10	6	2	2	4.37	
05 web	10	7	11	11	11	17	12	10	6	3	3	4.36	
05 phone	5	5	7	10	10	20	12	13	10	2	6	5.14	

[11 web vs. 10 web:  $p = .0003$ ]

**S87\_respond4** How confident are you in the ability of your city and county government to respond to large-scale terrorist attacks in the US?

%	Not At All Confident						Extremely Confident					Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	9	7	9	10	10	17	13	11	8	4	3	4.57
10 web	11	8	10	9	11	17	8	10	7	4	4	4.33
09 web	11	7	9	11	11	17	10	10	8	4	3	4.45
08 web	10	9	10	12	11	15	10	10	7	4	3	4.30
07 web	10	9	10	11	11	18	11	8	6	3	3	4.22
07 phone	7	7	10	13	13	17	9	12	6	2	4	4.44
06 web	12	10	12	12	11	16	10	8	5	2	2	3.94
05 web	14	9	12	11	10	16	10	8	5	3	3	3.84
05 phone	7	8	10	11	11	19	10	11	7	2	5	4.58

[11 web vs. 10 web:  $p = .0143$ ]

The next few questions are about your beliefs concerning a variety of issues. [S88–S89 Randomized]

**S88\_nature** First, on a scale where zero means nature is *robust and not easily damaged* and ten means nature is *fragile and easily damaged*, how do you view nature?

%	Robust and Not Easily Damaged						Fragile and Is Easily Damaged					Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	3	2	6	9	9	18	14	15	12	5	8	5.71
10 web	3	2	5	6	8	20	13	15	11	5	11	5.97
09 web	4	2	5	7	9	17	12	15	12	5	13	5.94
08 web	2	2	5	8	7	16	11	15	15	6	12	6.14
07 web	3	2	4	7	7	16	10	16	16	6	13	6.24
07 phone	3	3	3	7	4	17	8	13	14	6	22	6.56
06 web	3	1	4	6	9	16	11	15	15	7	13	6.28
05 web	3	2	6	8	8	16	9	14	15	5	15	6.13
05 phone	3	3	3	5	5	15	7	12	15	5	27	6.85
02(E) phone	2	2	3	3	4	13	7	11	17	7	33	7.36

[11 web vs. 10 web:  $p = .0036$ ]

**S89\_env** On a scale where zero means the natural environment is *not at all threatened* and ten means the natural environment is on the *brink of disaster*, how do you assess the current state of the natural environment?

%	Not at All Threatened						Brink of Disaster					Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	2	2	4	8	9	21	18	18	10	3	4	5.60
10 web	2	2	4	8	7	22	18	16	9	4	7	5.73
09 web	3	2	4	6	8	19	17	16	13	4	8	5.85
08 web	2	2	5	6	7	18	14	17	15	6	7	6.04
07 web	2	2	3	5	8	17	18	19	14	5	8	6.11
07 phone	2	3	4	7	8	17	13	17	14	6	10	6.06
06 web	1	1	3	6	7	20	19	19	12	5	7	6.07
05 web	2	2	5	8	8	20	16	18	12	5	6	5.83
05 phone	2	2	3	8	8	18	15	16	12	4	11	6.03
02(E) phone	1	1	3	5	6	19	16	18	14	6	11	6.40
01 phone	1	2	3	7	9	18	16	17	14	5	10	6.22
97 phone	1	3	4	8	10	17	14	19	11	4	9	5.95

[11 web vs. 10 web:  $p = .0998$ ]

Please respond to each of the following statements using a scale from one to seven, where one means *strongly disagree* and seven means *strongly agree*. [s98–s103 Randomized]

**S90\_CI\_1** Unless directly attacked, we should not use US military force without authorization from the United Nations.

%	<u>Strongly Disagree</u>			<u>Strongly Agree</u>				Mean
	1	2	3	4	5	6	7	
11 web	16	9	12	21	18	14	11	4.01
10 web	19	10	10	20	17	12	12	3.87
09 web	19	9	10	21	16	11	13	3.94
08 web	17	8	10	19	15	15	16	4.17
07 web	17	8	10	18	17	14	16	4.15
07 phone	27	9	8	7	11	11	26	4.04
06 web	17	8	9	19	16	15	15	4.16

[11 web vs. 10 web:  $p = .0511$ ]

**S91\_CI\_2** Like the citizens of many other countries, officials and citizens of the United States, including members of the military, should be subject to criminal proceedings under the *International Criminal Court* in Europe.

%	<u>Strongly Disagree</u>			<u>Strongly Agree</u>				Mean
	1	2	3	4	5	6	7	
11 web	16	6	9	26	19	12	12	4.09
10 web	16	6	9	30	17	10	13	4.07
09 web	15	7	9	27	17	11	14	4.15
08 web	14	6	7	26	17	13	16	4.34
07 web	13	6	10	28	17	11	14	4.19
07 phone	24	8	7	8	16	14	22	4.18
06 web	14	6	8	25	18	12	17	4.29

[11 web vs. 10 web:  $p = .7485$ ]

**S92\_CI\_3** We should agree to accept internationally established limits on US production of carbon dioxide and other greenhouse gases thought to cause global warming.

%	<u>Strongly Disagree</u>			<u>Strongly Agree</u>				Mean
	1	2	3	4	5	6	7	
11 web	11	5	8	22	20	16	17	4.49
10 web	12	5	8	24	17	15	18	4.47
09 web	11	5	8	22	19	16	20	4.62
08 web	10	5	7	21	19	14	25	4.79
07 web	8	4	7	20	20	15	26	4.86
07 phone	14	5	7	7	14	15	39	5.02
06 web	7	4	5	21	19	19	25	4.98

[11 web vs. 10 web:  $p = .6839$ ]

**S93\_MI\_1** The US can never entrust its security to international organizations such as the United Nations.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>	Mean
	1	2	3	4	5	6	7	
11 web	3	6	11	20	19	14	26	4.93
10 web	4	5	11	23	17	12	29	4.95
09 web	5	6	11	23	16	11	28	4.83
08 web	5	8	12	21	15	14	26	4.77
07 web	5	6	12	22	17	12	26	4.80
07 phone	12	7	8	10	17	10	35	4.83
06 web	4	6	10	22	16	13	29	4.97
05 web	7	6	8	18	14	14	33	5.01
05 phone	13	8	9	11	15	10	34	4.71

[11 web vs. 10 web:  $p = .8265$ ]

**S94\_MI\_2** Even though allies are important, the US must be willing to act alone to protect American interests.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>	Mean
	1	2	3	4	5	6	7	
11 web	2	3	5	15	21	22	31	5.42
10 web	2	3	6	20	18	18	32	5.33
09 web	3	4	6	19	17	18	32	5.28
08 web	3	4	8	17	20	16	31	5.20
07 web	3	4	6	19	21	17	29	5.18
07 phone	8	5	6	9	15	16	42	5.34
06 web	4	4	6	16	19	20	31	5.23
05 web	6	6	6	13	16	17	36	5.24
05 phone	8	6	6	7	16	14	43	5.31

[11 web vs. 10 web:  $p = .0736$ ]

**S95\_MI\_3** The US must be willing to act preemptively by using military force against those that threaten us before they can attack us.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>	Mean
	1	2	3	4	5	6	7	
11 web	4	8	9	23	23	16	17	4.66
10 web	6	6	8	25	19	14	22	4.75
09 web	6	5	7	23	19	17	23	4.87
08 web	8	9	9	23	19	14	19	4.50
07 web	8	8	11	24	21	13	16	4.42
07 phone	17	10	8	11	17	10	26	4.36
06 web	9	8	10	22	21	13	17	4.47
05 web	12	8	8	19	18	15	20	4.46
05 phone	18	9	9	12	17	10	26	4.32

[11 web vs. 10 web:  $p = .1257$ ]

**S95a\_eyeforeye** If terrorists use a nuclear weapon against the US, we would be justified in using nuclear weapons to fight a war on terrorism.

%	<u>Strongly Disagree</u>				<u>Strongly Agree</u>			Mean
	1	2	3	4	5	6	7	
11 web	5	5	6	17	19	18	30	5.13
10 web	6	3	7	16	21	14	34	5.21
09 web	5	4	6	19	16	15	36	5.25
08 web	5	6	5	18	19	16	32	5.14
07 web	6	6	9	19	19	14	28	4.92
07 phone	15	7	6	9	12	11	40	4.84
06 web	6	6	8	18	16	17	29	5.00
05 web	11	6	8	18	15	13	29	4.75
05 phone	16	9	8	8	13	12	35	4.67

[11 web vs. 10 web:  $p = .2307$ ]

[S96–S107 Randomized]

**S96\_egal\_1** What society needs is a fairness revolution to make the distribution of goods more equal.

%	<u>Strongly Disagree</u>				<u>Strongly Agree</u>			Mean
	1	2	3	4	5	6	7	
11 web	16	11	11	22	18	12	11	3.94
10 web	17	11	11	24	15	10	12	3.87
09 web	16	8	10	24	18	12	13	4.07
08 web	13	9	11	22	19	11	14	4.14
07 web	14	9	11	27	20	9	10	3.99
07 phone	23	9	10	13	17	10	18	3.91
06 web	13	9	10	27	17	12	12	4.09
05 web	17	10	10	24	17	10	11	3.92
05 phone	20	10	8	13	18	10	22	4.15

[11 web vs. 10 web:  $p = .3369$ ]

**S97\_indiv1** Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own.

%	<u>Strongly Disagree</u>				<u>Strongly Agree</u>			Mean
	1	2	3	4	5	6	7	
11 web	5	7	13	23	22	16	13	4.51
10 web	5	7	11	26	20	13	18	4.58
09 web	6	8	13	24	19	15	16	4.49
08 web	8	10	13	24	18	13	14	4.27

[11 web vs. 10 web:  $p = .2348$ ]

**S98\_hier1** The best way to get ahead in life is to work hard to do what you are told to do.

%	<u>Strongly Disagree</u>				<u>Strongly Agree</u>			Mean
	1	2	3	4	5	6	7	
11 web	4	6	11	23	25	19	12	4.62
10 web	4	5	11	24	24	16	17	4.73
09 web	4	5	9	25	23	17	17	4.75
08 web	5	5	10	23	24	17	16	4.71

[11 web vs. 10 web:  $p = .0595$ ]

**S99\_fatal1** The most important things that take place in life happen by random chance.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7		
11 web	15	15	17	25	16	7	4	3.49	

**S100\_egal2** Society works best if power is shared equally.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7		
11 web	6	6	10	24	23	16	14	4.58	
10 web	6	7	10	28	20	14	16	4.55	
09 web	8	7	10	26	20	15	15	4.49	
08 web	5	7	10	22	22	15	18	4.66	
07 web	6	5	11	25	21	16	15	4.58	
07 phone	11	6	8	11	18	15	32	4.89	
06 web	6	6	10	25	19	16	17	4.64	
05 web	6	6	10	22	20	16	19	4.66	
05 phone	9	6	9	11	17	14	34	4.98	

[11 web vs. 10 web:  $p = .6017$ ]

**S101\_indiv2** Even the disadvantaged should have to make their own way in the world.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7		
11 web	6	9	16	25	22	12	9	4.22	
10 web	5	8	14	29	21	10	13	4.36	
09 web	6	11	14	27	19	11	11	4.21	
08 web	7	10	14	25	21	13	11	4.26	

[11 web vs. 10 web:  $p = .0121$ ]

**S102\_hier2** Society is in trouble because people do not obey those in authority.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7		
11 web	9	10	12	21	22	15	10	4.23	
10 web	8	8	12	24	20	13	16	4.42	
09 web	9	7	11	23	22	14	14	4.41	
08 web	8	9	11	21	20	16	16	4.49	

[11 web vs. 10 web:  $p = .0023$ ]

**S103\_fatal2** No matter how hard we try, the course of our lives is largely determined by forces beyond our control.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7		
11 web	9	13	14	22	21	11	10	4.05	

**S104\_egal3** It is our responsibility to reduce differences in income between the rich and the poor.

%	<u>Strongly Disagree</u>						<u>Strongly Agree</u>	Mean
	1	2	3	4	5	6	7	
11 web	17	10	11	20	17	13	13	3.99
10 web	17	9	12	22	14	11	15	3.98
09 web	16	9	10	20	17	12	15	4.13
08 web	13	9	10	20	17	13	17	4.25
07 web	15	7	10	24	17	11	15	4.16
07 phone	23	10	9	10	15	10	23	4.08
06 web	14	10	11	20	16	12	18	4.23
05 web	17	9	11	20	17	11	16	4.08
05 phone	22	10	10	10	15	10	25	4.14

[11 web vs. 10 web:  $p = .8870$ ]

**S105\_indiv3** We are all better off when we compete as individuals.

%	<u>Strongly Disagree</u>					<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7	
11 web	7	10	15	24	19	13	11	4.22
10 web	8	9	12	27	17	12	15	4.32
09 web	9	8	10	25	18	14	16	4.40
08 web	8	8	11	27	17	13	16	4.38

[11 web vs. 10 web:  $p = .0985$ ]

**S106\_hier3** Society would be much better off if we imposed strict and swift punishment on those who break the rules.

%	<u>Strongly Disagree</u>					<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7	
11 web	5	7	10	21	22	18	17	4.71
10 web	3	4	8	23	21	17	24	5.02
09 web	4	4	8	20	20	18	26	5.08
08 web	3	5	7	21	20	17	26	5.04

[11 web vs. 10 web:  $p < .0001$ ]

**S107\_fatal3** For the most part, succeeding in life is a matter of chance.

%	<u>Strongly Disagree</u>					<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7	
11 web	14	18	18	21	15	8	5	3.50

Please rate the degree to which each of the following four groups of statements describes your outlook on life, using a scale from zero to ten, where zero means *not at all* and ten means *completely*.

[CULTURE TYPES random order]

**S109\_H\_rate:** I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	95 4.0	58 2.5	119 5.1	149 6.3	195 8.3	472 20.1	321 13.6	352 15.0	313 13.3	156 6.6	122 5.2	5.70	
11 web (2) count / %	94 4.0	81 3.4	145 6.2	164 7.0	201 8.6	435 18.5	298 12.7	344 14.6	318 13.5	144 6.1	126 5.4	5.59	

**S109\_I\_rate:** Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	58 2.5	35 1.5	70 3.0	89 3.8	120 5.1	355 15.1	271 11.5	357 15.2	418 17.8	255 10.8	324 13.8	6.68	
11 web (2) count / %	62 2.6	59 2.5	72 3.1	105 4.5	140 6.0	317 13.5	259 11.0	358 15.2	407 17.3	257 10.9	314 13.4	6.57	

**S109\_E\_rate:** Much of society today is unfair and corrupt, and my most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	202 8.6	92 3.9	167 7.1	194 8.2	215 9.1	447 19.0	273 11.6	289 12.3	240 10.2	107 4.5	126 5.4	5.06	
11 web (2) count / %	191 8.1	121 5.1	183 7.8	216 9.2	233 9.9	394 16.8	265 11.3	276 11.7	229 9.7	112 4.8	131 5.6	4.98	

**S109\_F\_rate:** Life is unpredictable and I have little control. I have to live by lots of rules, but I don't get to make them. My fate in life is determined mostly by chance. I can't become a member of the groups that make most of the important decisions affecting me. Getting along in life is largely a matter of doing the best I can with what comes my way, so I focus on taking care of myself and the people closest to me.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	255 10.8	129 5.5	239 10.2	284 12.1	204 8.7	387 16.5	234 9.9	260 11.1	182 7.7	81 3.4	97 4.1	4.50	
11 web (2) count / %	241 10.3	148 6.3	251 10.7	292 12.4	217 9.2	356 15.1	234 10.0	251 10.7	179 7.6	75 3.2	107 4.6	4.47	

Now that you have rated how well each of the four groups of statements describes your outlook, we need you to rank them from the one with which you *most* agree to the one with which you *least* agree. It is OK if you do not completely agree or completely disagree with any of the four groups of statements. (When considering how to rank them, you may change the zero to ten rating you previously assigned if you want to do so.)

Please use the drop-down boxes to assign a number from four (*most* agree) to one (*least* agree) for each group of statements. You can use a ranking number only once, and you must assign a rank to each group of statements before you can advance to the next page.

**S109\_H\_rank:** I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.

	<u>Least Agree</u>			<u>Most Agree</u>		Mean
	1	2	3	4		
11 web	19	27	28	26	2.60	

**S109\_I\_rank:** Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.

	<u>Least Agree</u>			<u>Most Agree</u>		Mean
	1	2	3	4		
11 web	15	19	25	41	2.92	

**S109\_E\_rank:** Much of society today is unfair and corrupt, and my most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.

	<u>Least Agree</u>			<u>Most Agree</u>		
	1	2	3	4	Mean	
11 web	29	28	25	18	2.31	

**S109\_F\_rank:** Life is unpredictable and I have little control. I have to live by lots of rules, but I don't get to make them. My fate in life is determined mostly by chance. I can't become a member of the groups that make most of the important decisions affecting me. Getting along in life is largely a matter of doing the best I can with what comes my way, so I focus on taking care of myself and the people closest to me.

	<u>Least Agree</u>			<u>Most Agree</u>		
	1	2	3	4	Mean	
11 web	35	28	23	14	2.17	

Finally, the last few questions concern some basic background information about you. Recall that your responses are anonymous, and our analyses will not reveal any individual's responses.

**S110\_zip** What is the five digit zip code at your residence? (This information will only be used to compare grouped regional differences, not to identify you.) (verbatim)

**S111\_citizen** Are you a citizen of the United States?

	<u>No</u>	<u>Yes</u>
	0	1
11 web	5	95
10 web	6	94
09 web	6	94
08 web	3	97

**S112\_patriot** On a scale from zero to ten, where zero means *not at all proud* and ten means *extremely proud*, how proud are you to be an American?

%	<u>Not At All Proud</u>										<u>Extremely Proud</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	0	1	1	1	4	4	8	12	15	54	8.72	
10 web	1	1	1	1	2	6	4	9	12	13	51	8.50	
09 web	1	0	1	1	1	5	4	7	10	11	58	8.70	
08 web	1	0	1	1	1	6	5	9	12	13	52	8.59	

[11 web vs. 10 web:  $p = .0022$ ]

**S113\_party** With which political party do you most identify?

%	<u>Democrat</u>	<u>Republican</u>	<u>Independent</u>	<u>Other</u>
	1	2	3	4
11 web	35	28	32	5
11 phone	37	35	24	4
10 web	39	27	28	7
10 phone	34	33	27	6
09 web	39	29	22	9
08 web	38	33	24	5
07 web	38	33	23	6
07 phone	44	40	11	5
06 web	38	36	20	6
05 web	32	41	18	9
05 phone	43	45	9	4
03 phone	41	45	10	5
01 phone	44	45	7	4
99 phone	47	41	6	6
97 phone	43	44	10	3
95 phone	37	37	23	3
93 phone	43	39	16	2

**S114\_iden** Do you completely, somewhat, or slightly identify with that political party?

%	<u>Not At All</u>	<u>Slightly</u>	<u>Somewhat</u>	<u>Completely</u>	Mean
	0	1	2	3	
11 web	NA	8	61	31	2.23
11 phone	NA	9	52	39	2.30
10 web	NA	11	58	31	2.20
10 phone	NA	9	55	36	2.27
09 web	NA	8	59	33	2.25
08 web	NA	7	62	31	2.24
07 web	5	15	60	20	1.95
07 phone	0	12	57	31	2.20
06 web	7	16	62	15	1.84
05 web	NA	13	64	23	2.11
05 phone	NA	13	56	32	2.19
03 phone	NA	11	56	33	2.22
01 phone	NA	8	53	39	2.31
99 phone	NA	22	60	19	2.03
97 phone	NA	21	61	18	2.03
95 phone	NA	21	58	21	1.99
93 phone	NA	18	55	26	2.08

[11 web vs. 10 web:  $p = .2025$ ] [11 web vs. 11 phone:  $p = .0593$ ]

**S115\_ideol** On a scale of political ideology, individuals can be arranged from *strongly liberal* to *strongly conservative*. Which of the following categories best describes your views?

%	<u>Strongly Liberal</u> 1	<u>Liberal</u> 2	<u>Slightly Liberal</u> 3	<u>Middle of the road</u> 4	<u>Slightly Conserv.</u> 5	<u>Conserv.</u> 6	<u>Strongly Conserv.</u> 7	Mean
11 web	5	14	11	34	14	16	7	4.14
10 web	5	14	9	22	14	22	13	4.43
10 phone	6	13	10	36	14	14	7	4.09
10 phone	5	10	10	26	14	22	13	4.53
09 web	6	12	10	38	12	15	7	4.12
08 web	5	15	11	33	14	15	6	4.05
07 web	4	14	12	36	14	16	5	4.11
07 phone	5	12	9	29	16	22	7	4.36
06 web	4	12	12	35	15	17	5	4.16
05 web	5	12	11	31	15	21	5	4.23
05 phone	5	13	10	26	18	19	8	4.28
03 phone	6	12	10	27	18	19	9	4.34
01 phone	4	12	11	27	18	19	9	4.35
99 phone	4	13	8	29	17	20	8	4.37
97 phone	4	10	11	28	17	24	7	4.43
95 phone	2	10	11	28	21	20	7	4.46
93 phone	4	12	12	28	17	19	9	4.34

[11 web vs. 10 web:  $p = .3816$ ] [11 web vs. 11 phone:  $p = .0001$ ]

**S116\_race** Which of the following best describes your race or ethnic background?

%	<b>American Indian</b>	<b>Asian</b>	<b>Black/African-American</b>	<b>Hispanic</b>	<b>White, non-Hispanic</b>	<b>Other</b>
11 web	1	4	8	5	81	1
11 phone	2	1	4	3	89	1
10 web	1	3	10	4	81	1
10 phone	1	1	6	4	86	2
09 web	1	4	6	5	84	1
08 web	1	4	4	5	86	1
07 web	1	4	6	4	85	1
07 phone	3	1	6	4	83	2
06 web	1	3	5	3	87	1
05 web	1	2	3	3	89	2
05 phone	2	2	5	4	83	4
03 phone	3	1	5	4	85	1
01 phone	3	3	6	5	81	3
99 phone	2	2	7	5	79	4
97 phone	2	1	6	4	81	5
95 phone	2	2	7	4	79	6
93 phone	2	2	6	4	84	2

**S117\_inc** Please indicate which of the following income categories approximates the total estimated annual income for your *household* for the year 2010.

	<u>&lt; \$10K</u>	<u>\$10-20K</u>	<u>\$20-30K</u>	<u>\$30-40K</u>	<u>\$40-50K</u>
%	1	2	3	4	5
11 web	6	10	12	10	10
10 web	3	7	8	7	10
10 web	7	12	13	14	10
10 phone	3	8	8	7	9
09 web	7	11	13	13	10
08 web	5	9	14	12	10
07 web	5	10	12	13	10
07 phone	5	7	9	10	9
06 web	3	9	16	13	10
05 web	4	8	15	14	11
05 phone	4	7	11	10	11

	<u>\$50-60K</u>	<u>\$60-70K</u>	<u>\$70-80K</u>	<u>\$80-90K</u>	<u>\$90-100K</u>
%	6	7	8	9	10
11 web	11	10	6	5	4
11 phone	11	7	8	3	5
10 web	12	7	6	4	2
10 phone	12	8	7	5	5
09 web	9	9	7	4	3
08 web	11	9	8	5	4
07 web	12	9	8	5	3
07 phone	11	11	8	6	3
06 web	13	10	7	5	3
05 web	12	9	7	5	3
05 phone	10	10	7	5	5

	<u>\$100-110K</u>	<u>\$110-1200K</u>	<u>\$120-130K</u>	<u>\$130-140K</u>	<u>\$140-150K</u>
%	11	12	13	14	15
11 web	4	3	2	2	1
11 phone	4	4	4	3	3
10 web	3	2	2	1	1
10 phone	5	2	3	2	1
09 web	3	2	2	1	2
08 web	3	2	2	2	1
07 web	3	2	2	2	1
07 phone	4	5	3	2	2
06 web	2	2	2	1	1
05 web	3	2	2	1	1
05 phone	3	4	2	2	1

	<u>&gt; \$150K</u>	Median
%	16	
05 web	4	5
05 phone	7	6

	<u>\$150–160K</u>	<u>\$160–1700K</u>	<u>\$170–180K</u>	<u>\$180–190K</u>	<u>\$190–200K</u>
%	16	17	18	19	20
11 web	0	0	0	1	1
11 phone	2	2	1	1	1
10 web	1	0	0	1	0
10 phone	2	2	1	0	1
09 web	0	0	0	0	1
08 web	1	0	0	0	0
07 web	1	0	0	0	0
07 phone	1	1	0	0	1
06 web	0	1	0	0	1

	<u>&gt; \$200K</u>	Median
%	21	
11 web	1	6
11 phone	6	7
10 web	2	5
10 phone	6	7
09 web	2	5
08 web	1	6
07 web	1	5
07 phone	4	6
06 web	1	6

### Median Ranges

11 web	11 phone	10 web	10 phone	09 web	08 web	07 web	07 phone
\$50K– 60K	\$60K– 70K	\$40K– 50K	\$60– 70K	\$40K– 50K	\$50K– 60K	\$40K– 50K	\$50K– 60K

06 web	05 web	05 phone	03 phone	01 phone	99 phone	97 phone	95 phone	93 phone
\$50K– 60K	\$40K– 50K	\$50K– 60K	\$40K– 50K	\$50K– 60K	\$40K– 50K	\$40K – 50K	\$30K – 40K	\$35K – 40K

**S118\_web** Shifting now to a different topic, about how often do you access the Internet using a computer or some sort of a smartphone, like a Blackberry or iPhone?

	<u>Never</u>	<u>&lt; Once/ Month</u>	<u>Several Times/ Month</u>	<u>Once/ Week</u>	<u>Several Times/ Week</u>	<u>Once or Twice/Day</u>	<u>Several Times/ Day</u>
%	0	1	2	3	4	5	6
11 web	NA	7	1	2	6	22	63
11 phone	14	2	3	4	9	15	54

**S119\_purp:** What is your single biggest reason for accessing the Internet?

	<u>Shopping</u>	<u>Researching Products</u>	<u>Social Networking</u>	<u>News</u>	<u>Something Else</u>
	1	2	3	4	5
11 web	5	7	22	30	36
11 phone	3	2	11	25	60

**S120\_FB** About how often do you use Facebook?

	<u>Never</u>	<u>&lt; Once/</u> <u>Month</u>	<u>Several Times/</u> <u>Month</u>	<u>Once/</u> <u>Week</u>	<u>Several Times/</u> <u>Week</u>	<u>Once or</u> <u>Twice/Day</u>	<u>Several Times/</u> <u>Day</u>
%	0	1	2	3	4	5	6
11 web	26	10	6	8	13	18	19
11 phone	49	8	6	7	9	11	10

**S121\_goog** About how often do you use Google?

	<u>Never</u>	<u>&lt; Once/</u> <u>Month</u>	<u>Several Times/</u> <u>Month</u>	<u>Once/</u> <u>Week</u>	<u>Several Times/</u> <u>Week</u>	<u>Once or</u> <u>Twice/Day</u>	<u>Several Times/</u> <u>Day</u>
%	0	1	2	3	4	5	6
11 web	7	11	10	7	23	19	24
11 pone	7	6	12	12	21	14	28

**S122\_twit** About how often do you use Twitter?

	<u>Never</u>	<u>&lt; Once/</u> <u>Month</u>	<u>Several Times/</u> <u>Month</u>	<u>Once/</u> <u>Week</u>	<u>Several Times/</u> <u>Week</u>	<u>Once or</u> <u>Twice/Day</u>	<u>Several Times/</u> <u>Day</u>
%	0	1	2	3	4	5	6
11 web	79	7	3	3	4	2	3
11 phone	95	2	1	1	1	0	0

**S123\_Ipnl** How many Internet survey panels do you belong to?

	Mean
11 web	5.34
11 phone	0.12

**S124\_pnlfreq** About how often do you answer surveys on the Internet?

	<u>Never</u>	<u>&lt; Once/</u> <u>Month</u>	<u>Several Times/</u> <u>Month</u>	<u>Once/</u> <u>Week</u>	<u>Several Times/</u> <u>Week</u>	<u>Once or</u> <u>Twice/Day</u>	<u>Several Times/</u> <u>Day</u>
%	0	1	2	3	4	5	6
11 web	0	3	8	9	27	23	31
11 phone	65	26	6	1	1	0	0

## Appendix Three

### Energy and Environment Data Summaries

Web:  $n = 2,005$ ; 1–2 June 2011; avg. time = 32 min

Phone:  $n = 593$ ; 17 May–12 June 2011

**E1\_age** How old are you? Mean

2011 web	46.8
2011 phone	57.2
2010 web	47.8
2010 phone	55.7
2009 web	45.8
2008 web	44.5
2008 phone	53.3
2007 web	48.4
2006 web	44.2
2006 phone	50.6

**E2\_edu** What is the highest level of education you have completed?

%	2011 web	2011 phone	2010 web	2010 phone	2009 web	2008 web	2008 phone	2007 web	2006 web	2006 phone
< High school graduate	3	3	3	3	2	1	3	1	1	6
High school graduate	21	24	22	25	20	19	27	17	14	26
Some college/vocational school	37	26	37	27	37	37	29	35	39	28
College graduate	25	26	26	28	25	26	24	26	27	22
Some graduate work	5	4	4	2	6	5	3	7	6	3
Master's degree	7	13	7	12	7	10	12	10	9	11
Doctorate	2	4	2	3	3	2	2	3	3	3
Other degree	0	0	0	0	0	0	0	<1	0	0

**E3\_gend** As part of the survey, I am required to ask: are you male or female?

%	Female	Male
	0	1
11 web	52.3	47.7
11 phone	54.6	45.4
10 web	52.3	47.7
10 phone	56.1	43.9
09 web	52.2	47.8
08 web	52.4	47.6
08 phone	57.6	42.4
07 web	50.9	49.1
06 web	48.2	51.8
06 phone	58.9	41.1

Now I want to ask you some questions about important issues facing policy makers in the US today.

For each of the following issues, please rate your level of concern about the issue using a scale from zero to ten, where zero means you are *not at all concerned* and ten means you are *extremely concerned*. How concerned are you about: [E4–E8 Randomized]

**E4\_worry1** Threats to national security, including terrorism?

%	Not at All Concerned										Extremely Concerned		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	2	2	3	4	10	9	14	16	14	26	7.43	
11 phone	2	0	1	2	3	11	6	13	17	10	35	7.75	
10 web	2	1	2	3	3	8	9	13	15	14	30	7.56	
10 phone	1	0	2	4	2	9	6	13	17	7	38	7.84	
09 web	2	1	2	2	3	7	8	11	15	14	35	7.83	
08 web	1	1	1	2	3	9	8	14	16	14	31	7.75	
08 phone	1	1	1	1	4	13	7	12	18	9	34	7.71	
07 web	0	1	1	1	2	7	9	13	18	16	31	7.96	
06 web	1	0	1	3	3	8	7	14	17	17	29	7.86	
06 phone	2	1	1	2	3	9	6	9	16	10	40	7.91	

[11 web vs. 10 web:  $p = .1126$ ] [11 web vs. 11 phone:  $p = .0054$ ]

**E5\_worry2** The delivery and cost of healthcare in the US?

%	Not at All Concerned										Extremely Concerned		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	1	1	1	1	2	5	4	10	17	19	40	8.35	
11 phone	1	0	1	2	2	5	4	8	16	13	48	8.48	
10 web	2	0	1	2	2	6	5	10	16	17	39	8.18	
10 phone	1	1	1	2	2	7	3	10	17	9	47	8.28	
09 web	2	0	1	1	2	5	5	10	13	19	43	8.40	
08 web	1	0	1	1	2	4	5	10	16	16	45	8.50	
08 phone	0	0	2	1	1	9	6	8	17	10	46	8.29	
07 web	0	0	1	1	1	5	6	11	15	19	40	8.43	
06 web	1	0	1	1	1	6	6	10	15	18	42	8.41	
06 phone	1	0	1	1	2	6	4	9	17	13	47	8.47	

[11 web vs. 10 web:  $p = .0122$ ] [11 web vs. 11 phone:  $p = .1697$ ]

**E6\_worry3** The availability and cost of energy in the US?

%	Not at All Concerned					Extremely Concerned					Mean	
	0	1	2	3	4	5	6	7	8	9		10
11 web	1	0	0	1	3	6	7	12	20	19	31	8.12
11 phone	1	0	1	1	2	7	7	14	23	11	32	7.96
10 web	2	1	1	2	2	7	8	15	18	16	29	7.82
10 phone	1	0	1	1	3	11	6	20	21	9	27	7.66
09 web	1	0	1	1	2	6	7	13	18	17	35	8.19
08 web	0	0	0	1	2	4	4	10	14	17	47	8.61
08 phone	0	0	1	1	1	6	7	9	19	14	42	8.38
07 web	0	0	1	1	1	5	6	13	20	19	34	8.31
06 web	0	0	1	1	1	5	6	12	18	20	36	8.41
06 phone	1	0	1	1	2	8	5	12	21	12	37	8.09

[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .0754$ ]

**E7\_worry4** The effects of human activities on the environment? (NOTE: wording change in 09)

%	Not at All Concerned					Extremely Concerned					Mean	
	0	1	2	3	4	5	6	7	8	9		10
11 web	3	1	4	3	5	10	10	13	17	13	22	7.11
11 phone	4	2	4	4	5	15	10	12	19	8	18	6.56
10 web	4	2	2	3	5	11	9	12	15	13	24	7.02
10 phone	3	1	3	4	4	14	5	12	18	9	28	7.17
09 web	3	2	2	3	3	9	9	12	16	13	27	7.30
08 web	2	1	1	2	3	7	8	12	17	14	33	7.81
08 phone	1	1	2	2	3	14	8	12	21	8	28	7.45
07 web	1	0	2	2	3	9	9	14	18	17	25	7.63
06 web	1	1	2	2	3	9	9	15	16	15	26	7.52
06 phone	1	1	1	2	3	13	8	14	19	9	28	7.50

[11 web vs. 10 web:  $p = .2816$ ] [11 web vs. 11 phone:  $p < .0001$ ]

**E8\_worry5** The state of the economy, including jobs and inflation?

%	Not at All Concerned					Extremely Concerned					Mean	
	0	1	2	3	4	5	6	7	8	9		10
11 web	1	0	0	1	1	4	4	10	15	18	46	8.65
11 phone	0	0	0	0	1	4	3	6	15	14	57	8.97
10 web	1	0	1	1	2	5	4	9	16	19	42	8.42
10 phone	0	0	0	1	1	3	3	8	20	11	52	8.80
09 web	1	0	0	1	1	3	4	7	13	19	50	8.76
08 web	0	0	0	1	2	5	6	10	16	16	45	8.50
08 phone	0	0	1	1	1	7	4	9	16	13	48	8.54
07 web	1	0	1	3	2	8	9	14	20	16	27	7.80
06 web	1	0	1	1	2	7	8	15	18	17	29	7.92
06 phone	1	1	2	3	3	10	7	13	20	11	30	7.62

[11 web vs. 10 web:  $p = .0002$ ] [11 web vs. 11 phone:  $p < .0001$ ]

The next several questions ask about your views on energy and environmental issues. These questions concern your perceptions and beliefs, so don't worry about being right or wrong when providing your answers.

**E9\_futr** Using a scale from zero to ten, where zero means you are *not at all confident* and ten means you are *completely confident*, how confident are you that there will be adequate sources of energy to meet the energy needs of the US during the next 20 years? Please think about US energy needs overall, including transportation, heating, electricity, and other energy requirements when considering your answer.

%	Not at All <u>Confident</u>										Completely <u>Confident</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	4	2	6	8	10	20	13	15	10	4	7	5.51	
11 phone	3	1	3	4	8	19	11	14	14	6	16	6.48	
10 web	5	2	5	8	11	19	11	14	12	5	7	5.47	
10 phone	3	2	4	5	7	22	11	10	16	5	15	6.19	
09 web	5	2	6	9	12	20	13	13	10	3	7	5.36	
08 web	8	4	9	12	10	18	11	11	7	3	7	4.85	
08 phone	9	2	5	8	9	21	8	10	12	4	12	5.46	
07 web	5	1	7	12	10	18	13	14	10	4	7	5.38	
06 web	6	3	9	11	10	18	12	10	11	5	6	5.16	
06 phone	4	1	5	7	10	20	7	12	12	7	14	5.97	

[11 web vs. 10 web:  $p = .6228$ ] [11 web vs. 11 phone:  $p < .0001$ ]

**E10\_egpol** As you may know, US energy policies generally deal with such issues as the sources and adequacy of energy supplies, the costs of various types of energy, and the environmental implications of using energy. Using a scale from zero to ten, where zero means *not at all satisfied* and ten means *completely satisfied*, how satisfied are you with current US energy policies overall?

%	Not at All <u>Satisfied</u>										Completely <u>Satisfied</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	11	5	10	15	13	22	11	7	4	1	1	3.96	
10 web	10	5	9	13	13	24	11	7	4	2	2	4.17	
09 web	10	4	10	16	14	20	11	7	4	1	2	4.14	
08 web	18	8	14	16	12	15	7	5	3	1	2	3.36	
08 phone	19	4	12	13	14	21	5	6	4	1	2	3.54	
07 web	13	6	12	13	16	18	10	7	3	2	1	3.80	
06 web	12	7	12	15	14	18	9	6	3	2	1	3.77	
06 phone	15	4	10	11	13	23	8	7	6	1	2	3.97	

[11 web vs. 10 web:  $p = .0051$ ]

**E11\_nature** On a scale from zero to ten, where zero means that nature is *robust and not easily damaged* and ten means nature is *fragile and easily damaged*, how do you view nature?

%	<u>Robust and Not Easily Damaged</u>						<u>Fragile and Is Easily Damaged</u>						Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	3	1	5	6	7	17	10	15	15	7	14	6.31	
10 web	3	2	4	5	8	16	9	15	14	7	17	6.38	
09 web	3	2	3	5	6	15	11	17	15	7	17	6.52	
08 web	2	2	4	6	7	14	10	17	15	7	17	6.51	
08 phone	3	1	3	4	4	19	8	11	17	6	24	6.85	
07 web	2	1	4	4	6	15	11	17	17	10	14	6.63	
06 web	2	1	3	5	7	15	12	16	16	8	15	6.61	
06 phone	2	1	2	3	4	15	7	13	17	9	28	7.25	
02 phone	2	2	3	3	4	13	7	11	17	7	33	7.36	

[11 web vs. 10 web:  $p = .3790$ ]

As you may know, the issue of global climate change has been the subject of public discussion over the last few years.

**E12\_inform** On a scale from zero to ten where zero means *not at all informed* and ten means *completely informed*, how well informed do you consider yourself to be about the issue of global climate change?

%	<u>Not At All Informed</u>						<u>Completely Informed</u>						Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	2	2	3	7	10	20	16	18	13	5	5	5.87	
10 web	2	1	3	6	9	22	15	16	13	5	7	5.96	
09 web	1	1	3	5	6	20	15	18	16	6	7	6.22	
08 web	1	2	2	5	9	17	15	19	16	7	7	6.24	
08 phone	4	0	3	5	4	13	12	16	22	9	13	6.66	
07 web	1	1	2	5	6	17	17	21	16	8	6	6.35	

[11 web vs. 10 web:  $p = .2409$ ]

**E13\_temp** In your personal experience, over the past few years have average temperatures where you live been rising, falling, or staying about the same as previous years?

%	<u>Rising</u>	<u>Falling</u>	<u>Staying About the Same</u>
	1	2	3
11 web	47	15	38
10 web	42	13	44
09 web	47	14	39
08 web	52	13	35
08 phone	49	11	40
07 web	59	5	36

**E14\_drought** In your personal experience, over the past few years has drought where you live been more frequent, less frequent, or stayed about the same as previous years?

%	<u>More Frequent</u>	<u>Less Frequent</u>	<u>Stayed About the Same</u>
	1	2	3
11 web	32	22	46
10 web	29	21	50
09 web	39	16	45
08 web	44	13	43
08 phone	40	8	52

**E15\_floods** In your personal experience, over the past few years has flooding where you live been more frequent, less frequent, or stayed about the same as previous years?

%	<u>More Frequent</u>	<u>Less Frequent</u>	<u>Stayed About the Same</u>
	1	2	3
11 web	36	16	48
10 web	32	15	53
09 web	31	19	51
08 web	28	20	51
08 phone	26	19	56

Scientists who specialize in the study of the earth's climate have debated the possible effects of climate change. To the best of your knowledge, do most scientists expect any of the following changes in the global climate to take place? [e16–e20 Randomized]

**E16\_expt1** Do most scientists expect temperature to rise?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	13	87
10 web	18	82
09 web	15	85
08 web	11	89
08 phone	12	88
07 web	10	90

[11 web vs. 10 web: Chi Sq = 15.35;  $p < .0001$ ]

**E17\_expt2** Do most scientists expect ocean levels to drop?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	60	40
10 web	62	38
09 web	62	38
08 web	59	41
08 phone	67	33
07 web	66	34

[11 web vs. 10 web: Chi Sq = 1.65;  $p = .2094$ ]

**E18\_expt3** Do most scientists expect more frequent droughts?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	27	73
10 web	29	71
09 web	23	77
08 web	20	80
08 phone	16	84
07 web	17	83

[11 web vs. 10 web: Chi Sq = 1.09;  $p = .2975$ ]

**E19\_expt4** Do most scientists expect fewer floods?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	84	16
10 web	81	19
09 web	79	21
08 web	80	20
08 phone	80	20
07 web	87	13

[11 web vs. 10 web: Chi Sq = 5.27;  $p = .0225$ ]

**E20\_expt5** Do most scientists expect more severe weather storms, like hurricanes and tornadoes?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	10	90
10 web	15	85
09 web	14	86
08 web	12	88
08 phone	9	91
07 web	10	90

[11 web vs. 10 web: Chi Sq = 17.41;  $p < .0001$ ]

Many scientists have argued that global average temperatures have risen slightly and will continue to increase for many years as a result of human activities. To the best of your knowledge:

[E21–E25 Randomized]

**E21\_rise1** Do most scientists believe exhausts from cars and trucks cause global temperatures to rise?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	13	87
10 web	14	86
09 web	11	89
08 web	11	89
08 phone	10	90
07 web	10	90

[11 web vs. 10 web: Chi Sq = 2.01;  $p = .1655$ ]

**E22\_rise2** Do most scientists believe nuclear power plants cause global temperatures to rise?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	50	50
10 web	52	48
09 web	48	52
08 web	45	55
08 phone	52	48
07 web	51	49

[11 web vs. 10 web: Chi Sq = 0.28;  $p = .6027$ ]

**E23\_rise3** Do most scientists believe disposal of toxic chemicals in landfills causes global temperatures to rise?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	36	64
10 web	37	63
09 web	33	67
08 web	36	64
08 phone	38	62
07 web	45	55

[11 web vs. 10 web: Chi Sq = 0.29;  $p = .6124$ ]

**E24\_rise4** Do most scientists believe coal powered electricity plants cause global temperatures to rise?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	31	69
10 web	30	70
09 web	26	74
08 web	24	76
08 phone	24	76
07 web	24	76

[11 web vs. 10 web: Chi Sq = 0.44;  $p = .5231$ ]

**E25\_rise5** Do most scientists believe the destruction of jungles and forests causes global temperatures to rise?

%	<u>No</u>	<u>Yes</u>
	0	1
11 web	13	87
10 web	15	85
09 web	14	86
08 web	14	86
08 phone	13	87
07 web	12	88

[11 web vs. 10 web: Chi Sq = 3.36;  $p = .0706$ ]

**E26\_deg** To the best of your knowledge, how much do scientists think the average global temperature will increase over the next 50 to 70 years?

%	<u>0-1 Degree</u>	<u>2-5 Degrees</u>	<u>6-9 Degrees</u>	<u>10 or More Degrees</u>
	1	2	3	4
11 web	12	49	23	15
10 web	14	50	22	15
09 web	11	47	24	18
08 web	13	48	24	15
08 phone	13	49	22	15
07 web	11	48	23	18

**E27\_gcc** In your view, are greenhouse gases, such as those resulting from the combustion of coal, oil, natural gas, and other materials causing average global temperatures to rise?

%	<u>Are Not</u>	<u>Are</u>
	0	1
11 web	30	70
11 phone	43	57
10 web	33	67
10 phone	37	63
09 web	27	73
08 web	25	75
08 phone	24	76
07 web	24	76
06 web	25	75
06 phone	23	77

[11 web vs. 10 web: Chi Sq = 3.10;  $p = .0806$ ] [11 web vs. 11 phone: Chi Sq = 32.35;  $p < .0001$ ]

**E28\_gcccert** On a scale from zero to ten, where zero means *not at all certain* and ten means *completely certain*, how certain are you that greenhouse gases <are/are not> (from E27) causing average global temperatures to rise?

%	<u>Not at All Certain</u>										<u>Completely Certain</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	4	2	3	5	6	20	15	17	14	6	9	6.12	
11 phone	7	1	3	4	5	16	7	10	17	10	20	6.55	
10 web	4	1	3	4	6	19	14	15	15	7	12	6.28	
10 phone	5	1	3	4	3	13	5	10	19	9	28	7.15	
09 web	4	1	2	4	5	18	12	17	16	8	13	6.50	
08 web	3	1	2	4	5	16	16	17	16	8	11	6.40	
08 phone	6	3	4	4	4	14	9	13	16	4	23	6.47	
07 web	4	1	2	3	4	18	13	16	18	9	12	6.53	
06 web	3	1	2	3	3	15	14	18	19	10	13	6.78	
06 phone	4	1	2	3	3	12	8	13	19	11	23	7.11	

[11 web vs. 10 web:  $p = .0380$ ] [11 web vs. 11 phone:  $p = .0005$ ]

**E29\_gcersk** On the scale from zero to ten, where zero means *no risk* and ten means *extreme risk*, how much risk do you think global warming poses for people and the environment?

%	<u>No Risk</u>										<u>Extreme Risk</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	3	2	3	5	5	12	12	16	16	9	16	6.55
11 phone	11	2	5	6	6	15	6	11	14	7	16	5.84
10 web	5	2	5	5	4	15	10	15	15	8	17	6.34
10 phone	9	2	6	5	5	9	9	8	19	7	21	6.26
09 web	3	2	4	4	4	12	12	15	16	9	20	6.75
08 web	3	2	3	4	4	13	11	16	17	8	19	6.79
08 phone	5	2	3	6	4	12	8	11	14	9	27	6.89
07 web	3	1	3	4	3	11	11	13	17	11	23	7.07
06 web	2	2	3	4	5	11	11	15	15	11	21	6.96
06 phone	4	1	3	3	4	11	8	13	19	9	24	7.03

[11 web vs. 10 web:  $p = .0178$ ] [11 web vs. 11 phone:  $p < .0001$ ]

**E30\_slow** On a scale from zero to ten, where zero means *not at all important* and ten means *extremely important*, how important do you think it is for the US to reduce greenhouse gas emissions?

%	<u>Not at All Important</u>					<u>Extremely Important</u>					Mean	
	0	1	2	3	4	5	6	7	8	9		10
11 web	3	2	3	4	4	13	10	14	14	10	24	6.97
11 phone	10	2	4	6	5	14	6	9	15	7	23	6.29
10 web	4	2	4	4	4	14	10	12	13	8	25	6.81
10 phone	7	2	5	3	4	10	6	9	14	9	31	6.88
09 web	3	2	2	3	3	12	9	11	14	11	30	7.24
08 web	3	1	2	3	4	12	9	13	13	10	30	7.30
08 phone	5	1	3	3	2	11	4	9	14	9	39	7.48
07 web	2	1	2	3	2	11	11	12	14	12	31	7.47
06 web	2	1	2	3	3	10	10	14	16	11	28	7.41
06 phone	3	1	3	2	3	10	6	10	17	9	35	7.54

[11 web vs. 10 web:  $p = .0600$ ] [11 web vs. 11 phone:  $p < .0001$ ]

**E31\_CI\_3** We should agree to accept internationally established limits on US production of carbon dioxide and other greenhouse gases thought to cause global warming.

%	<u>Strongly Disagree</u>					<u>Strongly Agree</u>		Mean
	1	2	3	4	5	6	7	
11 web	11	5	6	21	22	14	20	4.63
10 web	13	5	7	21	19	14	21	4.56
09 web	10	5	7	21	22	16	20	4.68
08 web	9	5	6	22	20	17	20	4.69
08 phone	17	6	8	9	17	13	30	4.61
07 web	8	4	8	20	22	17	21	4.78
06 web	8	6	7	22	21	16	21	4.76
06 phone	12	4	7	10	19	16	31	4.92

[11 web vs. 10 web:  $p = .2351$ ]

The next set of questions concerns all kinds and uses of energy, including electricity for homes and businesses; gas, oil, and coal for heating; and transportation fuels, such as gasoline and diesel.

Considering the effects of both normal operations and potential accidents, how do you rate the risks to society and the environment from each of the following sources of energy using a scale from zero to ten, where zero means *no risk* and ten means *extreme risk*? [E32–E35 Randomized]

**E32\_ersk1** The risks from fossil fuels, such as coal, oil, and natural gas?

%	<u>No Risk</u>										<u>Extreme Risk</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	4	3	4	6	7	14	12	14	16	10	10	6.12	
10 web	4	3	6	6	8	16	12	12	12	8	13	5.99	
09 web	3	2	4	5	6	15	11	15	16	10	12	6.42	
08 web	2	2	4	5	6	17	13	14	16	8	13	6.36	
08 phone	4	1	4	6	7	14	8	14	18	6	17	6.45	
07 web	2	2	3	4	5	13	10	16	16	11	16	6.73	
06 web	2	2	5	5	5	17	12	17	15	10	11	6.40	
06 phone	3	1	3	5	5	16	11	17	18	8	13	6.53	

[11 web vs. 10 web:  $p = .1384$ ]

**E33\_ersk2** The risks from nuclear power plants?

%	<u>No Risk</u>										<u>Extreme Risk</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	2	3	6	5	6	12	10	12	14	10	20	6.61	
10 web	4	5	8	8	6	15	9	10	12	8	15	5.90	
09 web	3	3	6	5	6	12	10	12	13	11	20	6.51	
08 web	2	3	6	5	5	10	8	13	15	11	23	6.86	
08 phone	6	3	7	7	8	14	7	12	13	6	17	5.90	
07 web	3	5	6	7	6	14	10	11	13	10	16	6.14	
06 web	2	4	6	7	6	11	9	11	13	10	20	6.50	
06 phone	3	1	4	5	6	11	7	10	17	10	27	6.99	

[11 web vs. 10 web:  $p < .0001$ ]

**E34\_ersk3** The risks from renewable sources of energy, such as from hydroelectric dams, solar power, and wind generation?

%	<u>No Risk</u>										<u>Extreme Risk</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	21	19	16	10	7	10	5	5	3	2	3	2.88	
10 web	21	18	16	9	6	11	5	4	3	3	4	3.00	
09 web	31	21	15	8	4	8	4	3	2	2	2	2.29	
08 web	24	23	16	9	6	8	4	3	3	2	3	2.55	
08 phone	26	11	19	14	6	10	3	3	4	1	4	2.82	
07 web	27	22	17	10	4	8	3	3	2	1	3	2.35	
06 web	21	19	18	10	7	10	3	4	3	1	3	2.81	
06 phone	21	10	15	13	9	11	4	4	6	2	5	3.38	

[11 web vs. 10 web:  $p = .2207$ ]

**E35\_deaths:** Which one of the following sources of electricity generation in the United States causes the most American deaths each year? [Randomized]

	<u>Coal</u> 1	<u>Nuclear</u> 2	<u>Hydro</u> 3	<u>Nat. Gas</u> 4	<u>Oil</u> 5	<u>Solar</u> 6	<u>Wind</u> 7	<u>Geothermal</u> 8
11 web	41	17	3	18	15	1	4	2

Please respond to the following statements using a continuous scale from one to seven, where one means *strongly disagree* and seven means *strongly agree*.

**E36\_nucgg:** Nuclear power plants produce significant amounts of greenhouse gases.

%	Strongly Disagree							Strongly Agree	Mean
	1	2	3	4	5	6	7		
11 web	14	13	13	26	17	9	8	3.81	
10 web	16	12	11	26	14	9	12	3.87	
09 web	17	12	13	25	15	8	9	3.70	

[11 web vs. 10 web:  $p = .2958$ ]

**E37\_depd** Using a scale from zero to ten, where zero means *not at all important* and ten means *extremely important*, how important is it to reduce US dependence on foreign sources of energy of all types?

%	Not at All Important											Extremely Important	Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web	0	0	0	1	2	7	6	10	16	14	43	8.38	
11 phone	1	0	1	2	1	5	4	8	17	10	52	8.62	
10 web	1	0	0	1	2	8	6	11	14	14	43	8.28	
10 phone	2	0	0	1	1	5	4	8	17	9	52	8.56	
09 web	0	0	0	1	2	6	4	8	15	11	52	8.65	
08 web	0	0	1	1	2	5	5	9	11	13	53	8.65	
08 phone	1	0	1	0	1	3	3	6	12	10	64	9.04	
07 web	0	0	0	1	1	5	4	10	17	15	46	8.60	
06 web	0	0	1	1	1	5	4	10	17	15	46	8.61	
06 phone	2	0	1	1	1	3	3	7	14	13	56	8.79	
01 phone	2	1	1	3	2	10	6	10	22	11	33	7.79	

[11 web vs. 10 web:  $p = .1278$ ] [11 web vs. 11 phone:  $p = .0085$ ]

Now think about the overall mix of energy sources for the US. We currently get about 85 percent of our energy from fossil fuels, 8 percent from nuclear energy, and 6 percent from renewable sources. The following three questions concern how you would like to see this mix of energy sources change over the next 20 years. Please tell me approximately what percentage of the total US energy supply you would like to see come from each of these three energy sources. [E38–E40 Randomized]

**E38\_20yrs1** What percent of our energy should come from fossil fuels, which currently provide about 85 percent of our energy?

%	Fossil Fuels (Mean)
11 web	35.1
10 web	34.1
09 web	24.9
08 web	26.5
08 phone	28.9
07 web	25.3
06 web	26.6
06 phone	31.3

[11 web vs. 10 web:  $p = .2623$ ]

**E39\_20yrs2** What percent of our energy should come from nuclear energy, which currently provides about 8 percent of our energy?

%	Nuclear Energy (Mean)
11 web	17.8
10 web	20.2
09 web	22.4
08 web	21.9
08 phone	24.4
07 web	23.6
06 web	22.0
06 phone	22.2

[11 web vs. 10 web:  $p < .0001$ ]

**E40\_20yrs3** What percent of our energy should come from renewable sources, which currently provide about 6 percent of our energy?

%	Renewable Sources (Mean)
11 web	47.1
10 web	45.8
09 web	52.1
08 web	51.9
08 phone	47.2
07 web	51.0
06 web	51.4
06 phone	46.3

[11 web vs. 10 web:  $p = .1845$ ]

[Arguments Randomized]

Some people argue that regardless of the future mix of energy sources, we must also significantly reduce energy consumption.

Some people think that significantly reducing energy consumption limits economic growth and is not practical.

**E41\_needs** Considering both arguments and using the zero-to-ten scale below, where zero means *place all efforts on reducing energy consumption* and ten means *place all efforts on developing the energy mix you identified above*, what strategy would you prefer? Notice that when you select a response, the resulting balance is shown in the two boxes.

%	All Efforts on Conservation										All Efforts on Development	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	1	2	5	7	29	13	16	12	4	9	6.14
10 web	2	1	2	3	7	31	12	15	13	4	10	6.19
09 web	2	1	2	4	7	25	12	17	13	5	12	6.29

[11 web vs. 10 web:  $p = .4643$ ]

There is another important debate about the energy future that we want you to consider. [Randomized]

Some people *oppose* further developing US deposits of oil and gas. They argue that doing so increases greenhouse gas emissions, harms the environment, and reduces the economic incentives for developing alternative sources of energy that are cleaner.

Some people *support* further developing US deposits of oil and gas. They argue that doing so keeps energy prices lower, reduces dependence on foreign sources, and gains time for developing alternative sources of energy that are cleaner.

**E42\_explore** Considering both arguments and using a scale from one to seven where one means *strongly oppose* and seven means *strongly support*, how do you feel about further exploring and developing US deposits of oil and gas?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	4	5	10	22	21	13	25	4.88
10 web	7	5	11	24	20	11	22	4.67
09 web	6	6	10	26	20	11	21	4.64

[11 web vs. 10 web:  $p = .0004$ ]

The next set of questions focuses specifically on the possible risks and benefits of nuclear energy.

First, I want to ask about your beliefs about some of the possible risks associated with nuclear energy use in the US. Please consider both the likelihood of a nuclear event occurring and its potential consequences when evaluating the risk posed by each of the following on a scale from zero to ten where zero means *no risk* and ten means *extreme risk*. [E43–E46 Randomized]

**E43\_nrsk1** An event at a US nuclear power plant within the next 20 years that results in the release of large amounts of radioactivity.

%	No Risk										Extreme Risk	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	2	5	7	7	6	11	9	12	12	9	20	6.37
10 web	2	6	7	7	6	14	10	10	11	10	18	6.19
09 web	2	6	7	7	4	13	9	10	12	9	21	6.35
08 web	3	6	7	6	5	12	8	14	12	8	20	6.29
08 phone	4	8	10	11	8	17	6	7	9	2	18	5.34
07 web	2	5	7	6	7	13	10	11	12	8	18	6.17
06 web	3	5	7	8	6	14	9	9	11	8	19	6.19
06 phone	3	6	9	8	7	14	6	9	10	4	24	6.06
02 phone	2	5	9	10	7	14	7	10	11	4	21	5.95

[11 web vs. 10 web:  $p = .0714$ ]

**E44\_nrsk2** An event during the transportation or storage of spent nuclear fuel from nuclear power plants in the US within the next 20 years that results in the release of large amounts of radioactivity.

%	No Risk										Extreme Risk	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	2	5	8	8	7	10	12	11	11	8	18	6.16
10 web	2	5	6	7	7	14	10	10	12	10	18	6.23
09 web	2	5	8	5	5	12	10	11	12	9	21	6.42
08 web	2	5	7	6	5	12	9	13	12	9	20	6.37
08 phone	4	7	8	9	7	16	8	10	9	3	20	5.72
07 web	2	4	8	6	8	13	9	13	13	8	16	6.19
06 web	1	4	6	7	7	15	11	11	12	9	18	6.34
06 phone	2	5	7	7	7	14	6	10	13	5	23	6.22
02 phone*	2	4	7	10	9	16	7	9	11	4	21	6.05

\*"accident in the management of spent nuclear fuel"

[11 web vs. 10 web:  $p = .4581$ ]

**E45\_nrsk3** A terrorist attack at a US nuclear power plant within the next 20 years that results in the release of large amounts of radioactivity.

%	No Risk										Extreme Risk	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	1	3	6	7	6	11	9	12	13	10	23	6.70
10 web	2	3	5	6	6	13	8	11	12	10	24	6.72
09 web	2	4	5	6	5	13	8	10	14	9	25	6.77
08 web	2	3	5	5	6	12	10	12	12	9	24	6.76
08 phone	4	6	7	8	8	13	9	9	11	4	22	5.97
07 web	1	2	5	5	6	11	9	13	13	11	23	6.93
06 web	2	2	4	5	5	12	10	12	13	10	24	6.91
06 phone	2	3	5	7	5	12	7	11	11	6	30	6.83
02 phone	2	2	4	6	6	10	8	11	13	7	32	7.02

[11 web vs. 10 web:  $p = .8772$ ]

**E46\_nrsk4** The diversion of nuclear fuel from a nuclear power plant in the US within the next 20 years for the purpose of building a nuclear weapon.

%	<u>No Risk</u>										<u>Extreme Risk</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	4	8	9	7	7	14	9	11	9	6	15	5.60
10 web	5	7	8	7	8	14	9	10	10	8	14	5.63
09 web	6	6	7	6	7	14	10	10	8	8	18	5.80
08 web	4	7	7	7	6	13	10	14	10	6	17	5.86
08 phone	9	8	10	12	8	15	6	8	6	3	16	4.93
07 web	4	6	10	7	8	14	10	10	11	7	13	5.60
06 web	4	7	9	8	7	15	8	10	11	7	15	5.64
06 phone	6	6	9	8	7	14	6	9	10	4	22	5.75

[11 web vs. 10 web:  $p = .7284$ ]

Now we want to know about your beliefs about some of the possible benefits associated with nuclear energy use in the US. Please evaluate the benefits associated with each of the following on a scale from zero to ten, where zero means *not at all beneficial* and ten means *extremely beneficial*.

[E47–E50 Randomized]

**E47\_nben1** Fewer overall greenhouse gas emissions because nuclear energy production does not create greenhouse gases.

%	<u>Not At All Beneficial</u>										<u>Extremely Beneficial</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	3	1	2	4	6	16	11	15	15	11	16	6.76
10 web	2	1	2	3	5	14	10	13	16	13	20	7.06
09 web	3	1	1	3	4	15	10	12	15	12	23	7.13
08 web	2	1	2	2	6	15	11	14	17	10	21	7.05
08 phone	4	1	1	2	5	17	6	12	19	4	29	7.09
07 web	1	1	1	2	3	14	11	17	17	13	20	7.36
06 web	2	1	1	2	3	15	10	15	20	12	20	7.26
06 phone	4	2	2	3	3	15	9	13	17	7	24	6.89
02 phone	3	1	2	4	6	17	9	13	17	7	20	6.73

[11 web vs. 10 web:  $p = .0003$ ]

**E48\_nben2** Reliable power because nuclear energy generates large amounts of electricity and is not affected by weather conditions, such as low rainfall or no wind.

%	<u>Not At All Beneficial</u>										<u>Extremely Beneficial</u>	
	0	1	2	3	4	5	6	7	8	9	10	Mean
11 web	2	1	2	3	6	14	11	16	16	12	17	6.94
10 web	2	1	1	2	5	13	10	13	18	13	22	7.25
09 web	2	1	1	2	4	14	10	15	15	12	23	7.22
08 web	2	1	1	2	5	13	12	14	16	11	22	7.18
08 phone	4	0	2	2	3	13	7	11	20	9	30	7.38
07 web	1	1	1	1	2	12	11	17	18	15	20	7.46
06 web	2	1	1	2	3	13	10	16	18	14	21	7.34
06 phone	4	1	2	3	3	12	8	15	19	8	24	7.12
02 phone	2	1	2	3	4	15	8	15	21	7	22	7.11

[11 web vs. 10 web:  $p = .0001$ ]

**E49\_nben3** Greater US energy independence because nuclear energy production does not require oil or gas from foreign sources.

%	Not At All <u>Beneficial</u>										Extremely <u>Beneficial</u>	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	2	1	2	3	5	13	10	14	16	12	21	7.13
10 web	2	1	1	2	4	12	9	13	17	13	25	7.41
09 web	2	1	2	2	5	13	9	13	15	14	25	7.36
08 web	2	1	1	2	4	13	10	15	16	12	25	7.31
08 phone	3	0	2	2	2	13	5	11	19	8	34	7.57
07 web	1	0	1	1	2	13	9	15	19	15	24	7.60
06 web	2	1	1	2	2	13	9	13	18	14	25	7.52
06 phone	3	2	2	3	3	12	8	12	19	9	26	7.20
02 phone	2	1	1	2	4	15	9	15	19	9	23	7.16

[11 web vs. 10 web:  $p = .0010$ ]

**E50\_nben4** Reduced environmental damage because of less need for mining coal or extracting oil and gas.

%	Not At All <u>Beneficial</u>										Extremely <u>Beneficial</u>	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	2	1	2	3	5	15	11	16	16	11	17	6.84
10 web	2	1	2	3	5	13	11	13	16	12	22	7.10
09 web	2	1	2	3	4	14	10	13	14	13	24	7.24
08 web	2	1	2	1	6	12	11	16	16	12	21	7.12
08 phone	2	0	2	4	3	14	8	14	18	6	29	7.30
07 web	1	0	1	2	3	14	10	16	19	13	21	7.43
06 web	2	1	2	3	3	13	11	16	18	11	21	7.18
06 phone	4	1	3	4	4	15	10	13	18	7	22	6.83

[11 web vs. 10 web:  $p = .0024$ ]

**E51\_riskben** Using a scale from one to seven, where one means the risks of nuclear energy far outweigh its benefits, four means the risks and benefits are equally balanced, and seven means the benefits of nuclear energy far outweigh its risks, how do you rate the overall balance of the risks and benefits of nuclear energy in the US? Remember, you can choose any number from one to seven.

%	Risks > <u>Benefits</u>			Risks/Benefits <u>Balanced</u>			Benefits > <u>Risks</u>		Mean
	1	2	3	4	5	6	7		
11 web	6	7	16	31	19	13	8	4.20	
11 phone	9	4	6	24	19	14	25	4.80	
10 web	6	6	13	30	20	14	11	4.40	
10 phone	6	4	6	24	17	14	29	5.01	
09 web	7	6	13	32	17	13	12	4.35	
08 web	5	7	13	31	19	13	12	4.38	
08 phone	7	2	8	26	15	16	27	4.95	
07 web	4	5	10	32	22	16	11	4.57	
06 web	7	6	13	30	20	13	10	4.32	
06 phone	8	6	7	24	22	16	18	4.64	
02 phone	7	4	10	29	22	14	15	4.57	

[11 web vs. 10 web:  $p = .0003$ ] [11 web vs. 11 phone:  $p < .0001$ ]

**E52\_new1** Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about constructing additional nuclear reactors at the sites of existing nuclear power plants in the US?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	13	9	14	23	21	10	10	4.02
11 phone	21	8	8	14	14	10	24	4.19
10 web	9	7	9	24	19	16	16	4.48
10 phone	16	3	8	12	15	9	38	4.85
09 web	11	7	9	23	18	13	18	4.41
08 web	10	7	12	25	21	11	14	4.29
08 phone	18	5	7	15	13	14	29	4.58
07 web	7	7	10	23	22	17	14	4.54
06 web	11	7	9	24	24	13	13	4.34
06 phone	18	6	10	12	16	14	24	4.40
02 phone	19	6	10	17	19	10	19	4.14

[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .0578$ ]

**E53\_new2** Using the same scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about constructing additional nuclear power plants at new locations in the US?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	16	11	14	19	19	10	11	3.89
11 phone	27	6	11	13	13	9	21	3.90
10 web	12	9	11	21	17	14	17	4.29
10 phone	17	6	9	14	14	10	29	4.49
09 web	14	8	10	21	16	13	18	4.29
08 web	12	9	13	21	18	12	15	4.19
08 phone	21	6	9	15	13	10	27	4.29
07 web	9	9	12	20	19	16	15	4.40
06 web	14	8	11	22	17	14	14	4.16
06 phone	25	10	10	11	12	11	21	3.92
02 phone	25	8	12	15	15	9	16	3.77

[11 web vs. 10 web:  $p < .0001$ ] [11 web vs. 11 phone:  $p = .9061$ ]

**E54\_near** To the best of your knowledge, is your primary residence located within approximately 100 miles of an operating nuclear power plant?

%	No	Yes	Don't Know	Correct	Incorrect
	0	2	3		
11 web	45	34	20		
10 web	45	32	23		

**E55\_disp** As nuclear fuel is used to generate electricity, it becomes contaminated with radioactive byproducts. When it can no longer efficiently produce electricity, it is called used or spent nuclear fuel. To the best of your knowledge, what is currently being done with most of the spent nuclear fuel produced in the US? Is it: [Randomized]

%	2011 web	2011 ph	2010 web	2010 ph	2009 web	2008 web	2008 ph	2007 web	2006 web	2006 ph
1 - Stored in special containers at nuclear power plants throughout the US	40	40	32	29	25	22	23	22	20	20
2 - Shipped to Nevada and stored in a facility deep underground	24	32	28	38	32	32	47	33	33	43
3 - Chemically reprocessed and reused	12	8	15	11	17	17	7	13	13	10
4 - Shipped to regional storage sites	23	21	25	22	26	30	23	31	34	26

**E56\_casks:** To the best of your knowledge, is spent nuclear fuel being stored above ground at any nuclear power plant within your state?

%	<u>No</u> 0	<u>Yes</u> 1	<u>Don't Know</u> 2	Correct	Incorrect/DK
11 web	28	13	59	13	87
10 web	30	10	59	12	88

Spent nuclear fuel is highly radioactive and must be safeguarded for thousands of years or chemically reprocessed. If it is reprocessed, the uranium can be separated from the waste and reused to make new fuel rods for generating electricity, but the remaining elements are highly radioactive for a very long time and must be safeguarded and isolated from the environment for thousands of years.

In 2010 the government halted construction of a deep underground facility inside Yucca Mountain in Nevada that had been intended for long-term disposition of spent nuclear fuel, and very little spent nuclear fuel is being reprocessed in the U.S.

Currently, US spent nuclear fuel is being temporarily stored at over 100 sites in 39 states. Most of it is stored at nuclear power plants where it is placed in secure cooling pools. In some cases, the spent fuel is transferred to specialized concrete casks stored above ground near the nuclear power plant. At each site, the cooling pools and storage casks are protected at all times by security forces. Some people think this is an acceptable solution for the foreseeable future, while others think such practices are risky and other options need to be adopted.

[following arguments randomized]

*Opponents* argue that some nuclear power plants where spent nuclear fuel is stored are near rivers, oceans, and large population centers. On rare occasions spent fuel has leaked radiation into the cooling pools. Moreover, the cooling pools and containers are located at ground level, and therefore might be vulnerable to terrorists. They note that these storage practices do not provide a permanent solution for managing spent nuclear fuel.

*Supporters* argue that transporting spent nuclear fuel by train or truck to consolidated storage facilities is risky, that storing spent nuclear fuel at nuclear power plants is less expensive than consolidated storage, and that it buys time for finding future solutions. Moreover, storage at nuclear power plants has not caused any accidents in the United States that have exposed the public to radiation.

**E57\_opt1** Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about the current practice of storing spent nuclear fuel at or near nuclear power plants?

%	Strongly Oppose					Strongly Support		Mean
	1	2	3	4	5	6	7	
11 web	14	11	21	30	16	5	2	3.48
10 web	12	10	17	34	17	5	4	3.65
09 web	14	10	21	32	15	4	4	3.54
08 web	12	12	21	30	15	5	5	3.58
08 phone	25	11	14	17	17	6	11	3.51
07 web	10	12	19	34	17	4	3	3.60
06 web	10	11	22	35	15	4	3	3.56
06 phone	22	10	14	14	19	8	13	3.73

[11 web vs. 10 web:  $p = .0009$ ]

Now we want your general views about various options for future management of spent nuclear fuel. There are no right or wrong answers, and it is not necessary that you have expert knowledge about these issues. We are interested in what you think about some of the choices that must be made about managing radioactive materials.

First we want you to consider the number of storage sites for spent nuclear fuel. While nuclear power plants will continue to store some spent fuel in their cooling pools, much of the radioactive materials currently at temporary storage sites in 39 states might be consolidated at a smaller number of regional or central facilities. Once it is consolidated, the spent nuclear fuel can more easily be secured and protected from attack. The fewer the number of regional or central storage facilities, the less complex are the political and legal obstacles for finding communities willing and able to host the facilities. At the same time, a larger number of regional storage facilities would reduce the distances radioactive materials must be transported by train or truck, and would also reduce the number of communities through which the transport routes would pass.

Please respond to the three following policy options on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*. [E58–E60 Randomized]

**E58\_nmbrs1** After spent nuclear fuel is removed from the cooling pools, continue the current practice of temporarily storing it above ground at designated nuclear power plants. This option does not require additional transportation of radioactive materials by train or truck, and it presents few additional political or legal obstacles.

%	Strongly Oppose					Strongly Support		Mean
	1	2	3	4	5	6	7	
11 web	8	10	15	28	22	11	6	4.02
10 web	8	8	13	31	21	12	8	4.15

[11 web vs. 10 web:  $p = .0215$ ]

**E59\_nmbrs2** Construct six to eight regional storage sites that can be more easily secured and can provide longer-term storage. This option requires transporting spent nuclear fuel by train or truck over moderate distances and is likely to generate political and legal opposition.

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	8	8	14	27	22	14	6	4.14
10 web	8	8	13	29	22	13	7	4.18

[11 web vs. 10 web:  $p = .5344$ ]

**E60\_nmbrs3** Construct two large centralized storage sites (one in the western US and one in the eastern US) that can be most secure and provide permanent storage. This option requires transporting spent nuclear fuel by train or truck over longer distances and is likely to generate political and legal opposition.

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	13	12	16	26	14	11	9	3.85
10 web	12	12	14	27	16	11	9	3.91

[11 web vs. 10 web:  $p = .2674$ ]

## SPLIT DESIGN FOR INTRODUCTION

**INTRO-A (50%):** Next we want you to consider the issue of reprocessing, which involves the chemical separation of radioactive materials in spent nuclear fuel. After reprocessing, most of the uranium and plutonium can be captured and reused to generate electricity, reducing the amount of uranium that must be mined in the U.S. or purchased from other countries. Remaining materials are radioactive and must be safeguarded and isolated from the environment. Finally, reprocessing may also separate the plutonium which, like uranium, could be used to make nuclear weapons.

**INTRO-B (50%):** Next we want you to consider the issue of reprocessing, which involves the chemical separation of radioactive materials in spent nuclear fuel. After reprocessing, most of the uranium and plutonium can be captured and reused to generate electricity, reducing the amount of uranium that must be mined in the U.S. or purchased from other countries. Some remaining materials are highly radioactive and must be safeguarded and isolated from the environment for thousands of years. In addition, substantial quantities of medium and low level radioactive materials are created by reprocessing, and these too must be disposed of in a way that safeguards people and the environment. Finally, reprocessing may also separate the plutonium which, like uranium, could be used to make nuclear weapons.

**E61\_reproc** Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, how do you feel about the option for reprocessing spent nuclear fuel?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web (A)	4	3	8	25	26	19	15	4.82
11 web (B)	5	3	9	26	29	14	14	4.67
10 web	4	2	7	28	25	17	17	4.86
09 web	3	2	7	23	25	18	21	5.02
08 web	3	3	6	22	27	19	20	5.05
08 phone	8	4	7	14	22	16	29	5.01

[11 web-A vs. 11 web-B:  $p = .0393$ ] [11 web-A vs. 10 web:  $p = .5783$ ] [11 web-B vs. 10 web:  $p = .0029$ ]

Now we want you to consider the issue of whether stored radioactive materials should be managed in a way that allows authorized personnel to gain access to them and retrieve the materials in the future, or that seeks to permanently block access to them. One option is to build facilities where the stored materials are continuously monitored and can be retrieved for reprocessing, or possibly to make them less dangerous using future technological developments. This option requires greater security efforts and may be more vulnerable to attack or theft. Another option is to attempt to seal off storage sites in such a way that people cannot readily gain access to the materials in the future. This option is more secure, but does not allow reprocessing or treatment by future technological advancements.

Using a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*, please indicate how you feel about each of the following two options. (random order)

**E62\_retrieve1:** Construct sites so that stored materials are monitored and can readily be retrieved in the future.

%	Strongly Oppose			Support				Mean
	1	2	3	4	5	6	7	
11 web	5	5	9	21	27	20	13	4.72
10 web	4	3	6	22	24	24	17	4.98

[11 web vs. 10 web:  $p < .0001$ ]

**E63\_retrieve2:** Construct sites so that stored materials are permanently sealed away and cannot readily be retrieved in the future.

%	Strongly Oppose			Strongly Support				Mean
	1	2	3	4	5	6	7	
11 web	8	11	19	24	18	10	10	4.02
10 web	7	9	17	29	16	12	10	4.14

[11 web vs. 10 web:  $p = .0321$ ]

Next we want you to consider the issue of storage depth. There are three general options. [Randomized]

One option is to store spent nuclear fuel at or near the surface in concrete and steel structures. This allows monitoring and retrieval, but it is considered to provide a safe means to manage the materials for only about a hundred years.

One option is to build mine-like storage facilities that are deep underground. These can be constructed to allow materials to be retrieved, or they can be designed to permanently block access in the future. They are suitable for storage over thousands of years.

One option involves drilling multiple boreholes of about 1.5 feet in diameter and up to three miles deep. Spent nuclear fuel would be stored in the deepest parts of the boreholes that are in bedrock. There is almost no chance that the materials could migrate into the surface environment over thousands of years, and they would be extremely difficult to retrieve after the boreholes are sealed.

Please respond to the three following policy options on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*. [E64–E66 Randomized]

**E64\_facility1** Construct storage facilities at or near the surface of the earth that are less permanent but allow retrieval for reprocessing, research, or other treatments.

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	10	12	17	27	18	10	6	3.84
10 web	8	10	14	26	20	14	8	4.16

[11 web vs. 10 web:  $p < .0001$ ]

**E65\_facility2:** Construct storage facilities underground that are like mines that could be either permanently sealed or could allow materials to be retrieved.

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	6	4	8	20	27	21	15	4.80
10 web	4	4	6	22	22	23	18	4.92

[11 web vs. 10 web:  $p = .0229$ ]

**E66\_facility3:** Construct very deep boreholes that afford permanent and safe disposal, but would make materials extremely difficult to be retrieved after the boreholes are sealed.

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	10	12	16	22	18	13	9	4.00
10 web	9	11	15	26	17	11	11	4.08

[11 web vs. 10 web:  $p = .2471$ ]

**E67\_mines** For the next few questions, assume that construction of two underground mine-like storage facilities is being considered for the storage of spent nuclear fuel. One would be in the eastern U.S., and the other in the west. Each of these sites would include secure surface storage buildings and a mine deep underground where radioactive materials could be isolated from people and the environment and could be designed to allow retrieval or to permanently seal away the materials. The facilities and the mines would be designed to meet all technical and safety requirements set by the U.S. Nuclear Regulatory Commission, the U.S. Environmental Protection Agency, and applicable state regulatory agencies. Using a scale from one to seven where one means *strongly oppose* and seven means *strongly support*, how do you feel about this option?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	4	3	7	27	29	17	12	4.75
11 phone	21	4	9	14	17	12	24	4.32
10 web	3	2	7	31	28	16	14	4.82
10 phone	15	6	10	10	18	15	26	4.60

[11 web vs. 10 web:  $p = .2442$ ] [11 web vs. 11 phone:  $p < .0001$ ]

Now we want you to consider how your support would be affected by more specific information. Please respond to each of the following questions on a scale from one to seven, where one means *strongly oppose* and seven means *strongly support*. [E68–E70 Randomized]

**E68\_lab** What would be your level of support if you learned that each of the sites also would contain a national research laboratory for studying ways to more safely and efficiently manage and dispose of nuclear materials?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	3	2	4	18	26	23	24	5.27
11 phone	11	2	4	10	13	14	45	5.32

[11 web vs. 11 phone:  $p = .5038$ ]

**E69\_reuse:** What would be your level of support if you learned that each of the sites also would include facilities for reprocessing spent nuclear fuel for reuse in generating electricity?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	4	2	6	22	26	24	17	5.00
11 phone	11	4	7	8	12	15	44	5.28

[11 web vs. 11 phone:  $p = .0008$ ]

**E70\_comp** What would be your level of support if you learned that the states and local communities hosting the sites would receive several billion dollars a year, paid for by revenues from nuclear energy, that could be used for hospitals, roads, and schools.

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	5	4	7	20	23	21	19	4.93
11 phone	17	4	5	11	15	13	34	4.81

[11 web vs. 11 phone:  $p = .1770$ ]

**E71\_nmby1:** What would be your level of support if you learned that one of these sites is to be located in your state?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web	10	6	10	26	21	15	12	4.34
11 phone	24	5	8	10	14	13	26	4.30

[11 web vs. 11 phone:  $p = .6104$ ]

**E72\_nmby2:** What would be your level of support if you learned that one of these sites is to be located (random: 50, 100, 300) miles from your principle residence? [for phone: only 50 or 300]

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
<b>2011 WEB</b>								
50 miles	16	10	13	26	16	10	8	3.81
100 miles	18	8	12	21	18	12	11	3.92
300 miles	12	7	8	25	22	14	13	4.31

[11 web: 50 miles vs. 100 miles:  $p = .3488$ ; 50 miles vs. 300 miles:  $p < .0001$ ; 100 miles vs. 300 miles:  $p = .0005$ ]

[11 web vs. 11 phone (below): 50 miles:  $p = .1100$ ; 300 miles:  $p = .0950$ ]

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
<b>2011 PHONE</b>								
50 miles	38	5	8	8	13	8	20	3.57
300 miles	29	5	6	12	14	11	24	4.06

[11 phone: 50 miles vs. 300 miles:  $p = .0166$ ]

Managing spent nuclear fuel and other radioactive materials can be technically complex, and getting information you can trust is important. Please indicate your level of trust in information provided by science and engineering experts from each of the following organizations using a scale from zero to ten, where zero means *no trust* and ten means *complete trust*. [E73–E81 Randomized]

**E73\_NRC** The U.S. Nuclear Regulatory Commission

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	6	3	5	6	9	20	11	15	13	7	5	5.49
10 web	6	3	5	6	9	21	11	13	13	7	6	5.56

[11 web vs. 10 web:  $p = .5001$ ]

**E74\_EPA** The U.S. Environmental Protection Agency

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	7	3	6	6	8	18	12	14	13	7	6	5.54
10 web	8	4	6	5	8	18	12	12	14	7	7	5.55

[11 web vs. 10 web:  $p = .9173$ ]

**E75\_labs** U.S. national laboratories for energy and security

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	5	3	4	6	10	21	13	15	13	7	4	5.63
10 web*	9	5	6	7	11	20	11	12	10	5	5	5.00

\* U.S. government-owned energy and national security laboratories.

[11 web vs. 10 web:  $p < .0001$ ]

**E76\_NAS** The National Academy of Sciences

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	3	2	3	5	8	20	12	14	16	9	7	6.08
10 web	4	2	4	5	9	20	12	14	15	9	7	5.98

[11 web vs. 10 web:  $p = .2620$ ]

**E77\_state** State regulatory agencies

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	7	5	7	9	11	23	12	11	9	4	3	4.89
10 web	8	4	7	9	11	21	13	11	8	4	3	4.81

[11 web vs. 10 web:  $p = .4301$ ]

**E78\_NGO** Environmental advocacy groups, such as the National Resources Defense Council or the Sierra Club

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	10	4	5	7	10	20	12	12	11	6	4	5.10
10 web	10	5	6	6	9	19	10	12	11	6	6	5.16

[11 web vs. 10 web:  $p = .5013$ ]

**E79\_NEI** The Nuclear Energy Institute, which represents the nuclear power industry

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	8	5	7	8	10	21	11	12	10	5	3	4.93
10 web	8	4	5	7	11	21	12	12	11	5	5	5.14

[11 web vs. 10 web:  $p = .0222$ ]

**E80\_util** Utility companies that own nuclear power plants

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	12	8	10	9	12	19	10	8	6	3	2	4.17

**E81\_DOE** The U.S. Department of Energy

%	No Trust										Complete Trust	Mean
	0	1	2	3	4	5	6	7	8	9	10	
11 web	7	3	4	8	10	20	12	14	12	6	4	5.40

Now we want to know more about impressions you may have about how these organizations are likely to assess risks associated with managing radioactive materials, such as spent nuclear fuel. Using a scale from one to seven, where one means the organization is likely to *downplay* risks, four means the organization is likely to *accurately assess* risks, and seven means the organization is likely to *exaggerate* risks, please rate your impressions of how each organization is likely to assess risks. [E73a–E81a Randomized]

**E73a\_NRC\_rsk** The U.S. Nuclear Regulatory Commission

%	Downplay Risks			Accurately Report Risks			Exaggerate Risks	Mean
	1	2	3	4	5	6	7	
	9	10	23	43	10	4	2	3.56
10 web	9	8	21	45	10	5	3	3.64

[11 web vs. 10 web:  $p = .0943$ ]

**E74a\_EPA\_rsk** The U.S. Environmental Protection Agency

%	Downplay Risks			Accurately Report Risks			Exaggerate Risks	Mean
	1	2	3	4	5	6	7	
11 web	6	5	15	38	18	11	7	4.16
10 web	7	6	14	39	17	10	7	4.12

[11 web vs. 10 web:  $p = .3987$ ]

**E75a\_labs\_rsk** U.S. national laboratories for energy and security

%	Downplay Risks			Accurately Report Risks			Exaggerate Risks	Mean
	1	2	3	4	5	6	7	
11 web	6	7	20	50	12	3	2	3.73
10 web*	12	12	23	33	10	5	4	3.49

\* U.S. government-owned energy and national security laboratories.

[11 web vs. 10 web:  $p < .0001$ ]

**E76a\_NAS\_rsk** The National Academy of Sciences

%	Downplay Risks			Accurately Report Risks			Exaggerate Risks	Mean
	1	2	3	4	5	6	7	
11 web	4	5	13	57	14	5	3	3.99
10 web	4	4	11	57	15	6	3	4.06

[11 web vs. 10 web:  $p = .0725$ ]

**E77a\_state\_rsk** State regulatory agencies

%	Downplay Risks		Accurately Report Risks			Exaggerate Risks		Mean
	1	2	3	4	5	6	7	
11 web	8	10	25	34	15	5	3	3.62
10 web	10	10	22	33	15	6	4	3.66

[11 web vs. 10 web:  $p = .4275$ ]

**E78a\_NGO\_rsk** Environmental advocacy groups, such as the National Resources Defense Council or the Sierra Club

%	Downplay Risks		Accurately Report Risks			Exaggerate Risks		Mean
	1	2	3	4	5	6	7	
11 web	4	4	9	28	21	17	18	4.80
10 web	4	3	8	28	21	17	19	4.85

[11 web vs. 10 web:  $p = .4100$ ]

**E79a\_NEI\_rsk** The Nuclear Energy Institute, which represents the nuclear power industry

%	Downplay Risks		Accurately Report Risks			Exaggerate Risks		Mean
	1	2	3	4	5	6	7	
11 web	18	17	23	31	7	3	1	3.07
10 web	17	16	22	31	7	4	2	3.15

[11 web vs. 10 web:  $p = .1308$ ]

**E80a\_util\_rsk** Utility companies that own nuclear power plants

%	Downplay Risks		Accurately Report Risks			Exaggerate Risks		Mean
	1	2	3	4	5	6	7	
11 web	26	22	21	21	6	2	2	2.73

**E81a\_DOE\_rsk** The U.S. Department of Energy

%	Downplay Risks		Accurately Report Risks			Exaggerate Risks		Mean
	1	2	3	4	5	6	7	
11 web	8	11	24	39	11	4	3	3.59

There are at least two alternative approaches for choosing suitable sites for long-term disposition of spent nuclear fuel and other highly radioactive materials. In one approach, technical experts identify ideal sites and then ask affected states and nearby communities to accept a nuclear repository. In the other approach, communities volunteer to host a nuclear repository and then technical experts evaluate the suitability and engineering requirements to meet safety standards. *In each approach, govern-*

*ment regulators evaluate whether a site can safely contain nuclear materials for thousands of years using the same safety requirements.* [E82, E83 Randomized]

**E82\_intro:** In this option, Congress directs the federal government to identify two sites, one in the western U.S. and one in the east, that technical experts determine to be suitable for hosting nuclear repositories. Federal legislation is passed directing these two states and local affected communities to host a national nuclear repository. Federal agencies work with the selected states and local communities to minimize negative economic, environmental, and social impacts while also creating thousands of jobs and large investments. **This process places priority on technical experts first finding suitable sites, then working with the affected states and communities to meet their concerns.**

**E82\_top:** On a continuous scale from one to seven, where one means you *strongly oppose* this policy process and seven means you *strongly support* it, how do you rate this site selection process?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web (1)	5	6	12	34	24	11	8	4.32
11 web (2)	6	8	12	30	23	12	9	4.27
11 phone	15	5	12	15	21	10	22	4.42

[11 web\_1 vs. 11 web\_2:  $p = .0262$ ] [11 web\_1 vs. 11 phone:  $p = .2088$ ] [11 web\_2 vs. 11 phone:  $p = .0778$ ]

**E83\_intro:** In this option, Congress invites states and local communities to apply and compete to host one national nuclear repository in the western U.S. and one in the east that will create thousands of jobs and large investments. Federal agencies then work with qualified states and communities who want to compete, and the two sites that are judged most suitable by technical experts are chosen to host a national nuclear repository. **This process places priority on first finding supportive host communities, then technical experts selecting the most suitable sites among them.**

**E83\_botm:** On a continuous scale from one to seven, where one means you *strongly oppose* this policy process and seven means you *strongly support* it, how do you rate this site selection process?

%	Strongly Oppose						Strongly Support	Mean
	1	2	3	4	5	6	7	
11 web (1)	4	4	11	33	23	14	11	4.56
11 web (2)	5	5	11	30	22	15	12	4.52
11 phone	12	4	8	15	21	14	26	4.75

[11 web\_1 vs. 11 web\_2:  $p = .0875$ ] [11 web\_1 vs. 11 phone:  $p = .0157$ ] [11 web\_2 vs. 11 phone:  $p = .0062$ ]

**E84\_siterank:** Now that you have recorded your level of support or opposition to each of these two site selection processes, we need you to rank them from the *most* preferred to the *least* preferred. Please use the drop-down boxes to assign a preference number from 2 (most preferred) to 1 (least preferred). You can use a preference number only once, and you must assign a preference number for each listing before you can advance to the next page.

%	Least Preferred	Most Preferred
	1 (E82_top)	2 (E83_botm)
11 web	45.4	54.6
11 phone	47.7	52.3

[11 web vs. 11 phone: Chi Sq = 6.99;  $p = .0089$ ]

[Assumptions randomized]

Assume that Congress directed the federal government to implement a site selection process that places priority on technical experts first finding suitable sites, then working with the affected states and communities to meet their concerns.

Assume that Congress directed the federal government to implement a site selection process that places priority on first finding supportive host communities, then technical experts selecting the most suitable sites among them.

What role should the governors of the selected states play in the policy process? Please respond to the following three statements on a scale from one to seven, where one means *strongly disagree* and seven means *strongly agree*. [E85–E87 Randomized]

**E85\_advise:** The governors of the selected states should have only an advisory role and not be able to overrule the decision of where to build the nuclear repositories.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	14	11	14	23	17	12	10	3.93

**E86\_veto:** The governors of the selected states should be able to veto the decision about where to build the nuclear repositories, but Congress should be able to override the governors’ vetoes with a two-thirds majority vote.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	12	9	12	28	19	12	9	4.03

**E87\_sayso:** The governors of the selected states should be able to veto the decision about where to build the nuclear repositories, and Congress should be required to accept the governors’ vetoes.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	10	9	13	23	18	14	13	4.23

As you probably know, a severe earthquake occurred on March 11, 2011 in the Pacific Ocean near Japan, creating large tidal waves that destroyed some Japanese coastal cities. Also damaged was the Fukushima nuclear power plant, which released radioactivity into the atmosphere and nearby portions of the sea. Some of that radiation continues to pose risks to nearby populations. The earthquake and tidal wave killed thousands of Japanese; the release of radiation at Fukushima is not known to have

produced any deaths, but could contribute to future illnesses. We would like to know how that event has influenced your confidence in US nuclear power.

**E88\_Jpn:** On a scale from minus ten to plus ten, where minus ten means the Japanese experience has *strongly reduced* your support for US nuclear power production, zero means the Japanese experience has had *no effect* on your support, and plus ten means the Japanese experience has *strongly increased* your support, how have recent events in Japan influenced your support for nuclear power production in the United States?

	Strongly Reduced										No Effect										Strongly Increased			Mean
	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10			
11 web	7	2	3	3	3	5	4	5	4	4	42	2	2	2	2	2	2	2	2	1	1	2	-1.41	

The next several questions are about your beliefs concerning a variety of issues.

**E89\_environ** On a scale where zero means the natural environment is *not at all threatened* and ten means the natural environment is on the *brink of disaster*, how do you assess the current state of the natural environment?

	Not At All Threatened										Brink of Disaster		Mean
%	0	1	2	3	4	5	6	7	8	9	10		
11 web	2	2	4	8	8	20	21	18	11	3	4	5.66	
10 web	2	3	5	7	7	20	18	18	11	4	5	5.73	
09 web	2	2	4	5	7	17	19	22	12	3	7	6.01	
08 web	2	1	3	6	7	18	19	21	12	4	7	6.04	
08 phone	4	4	3	6	7	19	13	20	13	2	10	5.87	
02 phone	1	1	3	5	6	19	16	18	14	6	11	6.40	
01 phone	1	2	3	7	9	18	16	17	14	5	10	6.22	
97 phone	1	3	4	8	10	17	14	19	11	4	9	5.95	

[11 web vs. 10 web:  $p = .4306$ ]

**E90\_doright** On a scale from zero to ten, where zero means *none of the time* and ten means *all of the time*, how much of the time do you trust the government in Washington to do what is right for the American people?

	None of the Time										All of the Time		Mean
%	0	1	2	3	4	5	6	7	8	9	10		
11 web	11	10	16	16	11	16	8	7	3	1	1	3.50	
10 web	14	10	12	13	11	17	9	7	3	1	2	3.66	
09 web	10	8	13	14	10	19	12	7	4	1	2	3.94	
08 web	12	10	17	16	11	14	8	6	3	1	2	3.53	
08 phone	18	7	12	14	8	17	9	8	3	2	3	3.68	
07 web	9	8	14	16	10	16	12	10	4	1	1	3.93	
06 web	7	9	12	15	10	16	13	9	5	2	1	4.09	
06 phone	10	8	10	11	12	19	10	8	7	1	3	4.16	

[11 web vs. 10 web:  $p = .0724$ ]

Now, please respond to each of the following statements using a scale from one to seven, where one means *strongly disagree* and seven means *strongly agree*. [E91–102 Randomized]

**E91\_egal\_1** What society needs is a fairness revolution to make the distribution of goods more equal.

%	Strongly Disagree			Strongly Agree			Mean	
	1	2	3	4	5	6		7
11 web	17	10	10	25	17	11	11	3.91
10 web	17	7	11	24	17	14	11	4.04
09 web	14	8	11	22	18	14	13	4.18
08 web	11	9	12	24	19	12	14	4.21
08 phone	24	11	7	12	16	9	21	3.94
07 web	12	9	11	25	21	10	13	4.16
06 web	11	10	11	26	18	10	14	4.16
06 phone	16	11	9	14	17	11	24	4.30

[11 web vs. 10 web:  $p = .0487$ ]

**E92\_indiv1** Even if some people are at a disadvantage, it is best for society to let people succeed or fail on their own.

%	Strongly Disagree			Strongly Agree			Mean	
	1	2	3	4	5	6		7
11 web	5	8	13	24	22	14	15	4.53
10 web	5	8	11	24	21	16	16	4.59
09 web	6	8	11	21	21	16	16	4.57
08 web	6	9	14	24	20	13	13	4.37
08 phone	11	9	9	12	19	11	28	4.64

[11 web vs. 10 web:  $p = .3070$ ]

**E93\_hier1** The best way to get ahead in life is to work hard to do what you are told to do.

%	Strongly Disagree			Strongly Agree			Mean	
	1	2	3	4	5	6		7
11 web	6	5	12	25	25	16	11	4.50
10 web*	4	5	9	25	23	20	14	4.76
09 web*	4	4	10	23	23	19	17	4.84
08 web*	4	6	10	23	25	19	13	4.70
08 phone*	12	8	8	15	15	12	30	4.67

\*“The best way to get ahead in life is to work hard and do what you are told.”

[11 web vs. 10 web:  $p < .0001$ ]

**E94\_fatal1** The most important things that take place in life happen by chance.

%	Strongly Disagree			Strongly Agree			Mean	
	1	2	3	4	5	6		7
11 web	15	18	18	23	14	7	5	3.44

**E95\_egal2** Society works best if power is shared equally.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	5	7	11	24	21	18	14	4.62
10 web	7	5	10	25	22	17	14	4.58
09 web	6	5	9	24	21	18	17	4.71
08 web	5	6	9	25	22	17	16	4.67
08 phone	11	6	9	12	18	16	28	4.79
07 web	5	7	10	25	23	16	15	4.62
06 web	6	7	9	25	22	16	15	4.58
06 phone	9	6	8	12	19	13	33	4.97

[11 web vs. 10 web:  $p = .5079$ ]

**E96\_indiv2** Even the disadvantaged should have to make their own way in the world.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	5	8	16	28	21	12	11	4.29
10 web	6	7	14	25	22	15	12	4.42
09 web	6	8	13	24	22	13	13	4.40
08 web	6	10	17	25	21	12	10	4.22
08 phone	20	12	12	15	15	6	20	3.90

[11 web vs. 10 web:  $p = .0257$ ]

**E97\_hier2** Society is in trouble because people do not obey those in authority.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	10	12	15	23	19	11	10	4.02
10 web	9	8	13	26	19	13	12	4.25
09 web	7	8	11	22	21	16	15	4.50
08 web	7	8	12	23	22	15	14	4.46
08 phone	21	9	9	13	16	10	22	4.12

[11 web vs. 10 web:  $p = .0003$ ]

**E98\_fatal2** No matter how hard we try, the course of our lives is largely determined by forces beyond our control.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	9	13	15	22	20	11	10	4.04

**E99\_egal3** It is our responsibility to reduce differences in income between the rich and the poor.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	18	10	12	20	19	11	10	3.86
10 web	17	10	11	22	17	12	11	3.91
09 web	15	9	10	21	16	12	16	4.16
08 web	12	10	10	21	19	13	15	4.24
08 phone	24	10	9	14	15	10	19	3.91
07 web	14	8	9	21	18	12	17	4.25
06 web	13	9	11	20	18	12	16	4.24
06 phone	19	9	10	12	14	9	28	4.31

[11 web vs. 10 web:  $p = .4694$ ]

**E100\_indiv3** We are all better off when we compete as individuals.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	7	8	14	24	20	15	13	4.39
10 web	6	7	10	27	20	16	13	4.49
09 web	8	7	12	23	18	15	17	4.47
08 web	8	9	12	25	21	12	13	4.33
08 phone	12	8	7	14	16	13	30	4.73

[11 web vs. 10 web:  $p = .1220$ ]

**E101\_hier3** Society would be much better off if we imposed strict and swift punishment on those who break the rules.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	7	8	12	23	20	15	16	4.48
10 web	4	4	8	20	23	18	24	5.03
09 web	3	4	7	19	21	19	28	5.19
08 web	3	5	9	19	22	20	23	5.06
08 phone	7	4	10	13	19	12	35	5.08

[11 web vs. 10 web:  $p < .0001$ ]

**E102\_fatal3** For the most part, succeeding in life is a matter of chance.

%	Strongly Disagree						Strongly Agree	Mean
	1	2	3	4	5	6	7	
11 web	14	18	18	21	15	8	5	3.47

Different people rely on different sources of information about public issues. On average, approximately how many hours per week do you spend acquiring information on public issues from each of the following sources?

**E103\_srce1** Newspapers?

Trimmed Mean (50)

11 web	3.72
10 web	2.99
09 web	3.49
08 web	4.29
08 phone	3.87
07 web	4.70
06 web	4.23
06 phone	4.08

[11 web vs. 10 web:  $p = .0008$ ]

**E104\_srce2** Broadcast or cable television?

Trimmed Mean (50)

11 web	9.15
10 web	9.02
09 web	10.41
08 web	10.54
08 phone	8.26
07 web	10.41
06 web	9.49
06 phone	7.85

[11 web vs. 10 web:  $p = .7357$ ]

**E105\_srce3** The Internet, including news sources, blogs, discussion groups, etc.?

Trimmed Mean (50)

11 web	8.04
10 web	8.43
09 web	10.01
08 web	9.24
08 phone	4.61
07 web	8.56
06 web	7.67
06 phone	3.35

[11 web vs. 10 web:  $p = .2902$ ]

Please rate the degree to which each of the following four groups of statements describes your outlook on life, using a scale from zero to ten, where zero means *not at all* and ten means *completely*.

[CULTURE TYPES random order]

**E106\_H\_rate:** I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	93 5.9	47 3.0	84 5.3	114 7.2	154 9.7	347 22.0	212 13.4	225 14.2	160 10.1	60 3.8	84 5.3	5.33	
11 web (2) count / %	90 5.7	58 3.7	93 5.9	135 8.5	164 10.4	321 20.3	211 13.4	209 13.2	149 9.4	66 4.2	83 5.3	5.23	

**E106\_I\_rate:** Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	38 2.4	23 1.5	45 2.8	79 5.0	78 4.9	251 15.9	147 9.3	247 15.6	258 16.3	190 12.0	224 14.2	6.67	
11 web (2) count / %	37 2.3	36 2.3	57 3.6	95 6.0	88 5.6	228 14.4	140 8.9	235 14.9	256 16.2	190 12.0	217 13.7	6.55	

**E106\_E\_rate:** Much of society today is unfair and corrupt, and my most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	125 7.9	54 3.4	107 6.8	162 10.3	157 9.9	322 20.4	183 11.6	160 10.1	139 8.8	76 4.8	95 6.0	5.04	
11 web (2) count / %	129 8.2	70 4.4	110 7.0	182 11.5	160 10.1	286 18.1	184 11.7	160 10.1	135 8.5	69 4.4	94 6.0	4.92	

**E106\_F\_rate:** Life is unpredictable and I have little control. I have to live by lots of rules, but I don't get to make them. My fate in life is determined mostly by chance. I can't become a member of the groups that make most of the important decisions affecting me. Getting along in life is largely a matter of doing the best I can with what comes my way, so I focus on taking care of myself and the people closest to me.

%	<u>Not At All</u>										<u>Completely</u>		Mean
	0	1	2	3	4	5	6	7	8	9	10		
11 web (1) count / %	165 10.4	83 5.3	166 10.5	215 13.6	162 10.3	258 16.3	155 9.8	127 8.0	119 7.5	67 4.2	63 4.0	4.43	
11 web (2) count / %	149 9.4	95 6.0	183 11.6	215 13.6	170 10.8	240 15.2	144 9.1	126 8.0	125 7.9	67 4.2	65 4.1	4.42	

Now that you have rated how well each of the four groups of statements describes your outlook, we need you to rank them from the one with which you *most* agree to the one with which you *least* agree. It is OK if you do not completely agree or completely disagree with any of the four groups of statements. (When considering how to rank them, you may change the zero to ten rating you previously assigned if you want to do so.)

Please use the drop-down boxes to assign a number from four (*most* agree) to one (*least* agree) for each group of statements. You can use a ranking number only once, and you must assign a rank to each group of statements before you can advance to the next page.

**E106\_H\_rank:** I am more comfortable when I know who is, and who is not, a part of my group, and loyalty to the group is important to me. I prefer to know who is in charge and to have clear rules and procedures; those who are in charge should punish those who break the rules. I like to have my responsibilities clearly defined, and I believe people should be rewarded based on the position they hold and their competence. Most of the time, I trust those with authority and expertise to do what is right for society.

	<u>Least Agree</u>			<u>Most Agree</u>		Mean
	1	2	3	4		
11 web	23	26	28	23	2.52	

**E106\_I\_rank:** Groups are not all that important to me. I prefer to make my own way in life without having to follow other peoples' rules. Rewards in life should be based on initiative, skill, and hard work, even if that results in inequality. I respect people based on what they do, not the positions or titles they hold. I like relationships that are based on negotiated "give and take," rather than on status. Everyone benefits when individuals are allowed to compete.

	<u>Least Agree</u>			<u>Most Agree</u>		Mean
	1	2	3	4		
11 web	15	19	23	42	2.92	

**E106\_E\_rank:** Much of society today is unfair and corrupt, and my most important contributions are made as a member of a group that promotes justice and equality. Within my group, everyone should play an equal role without differences in rank or authority. It is easy to lose track of what is important, so I have to keep a close eye on the actions of my group. It is not enough to provide equal opportunities; we also have to try to make outcomes more equal.

	<u>Least Agree</u>		<u>Most Agree</u>		
	1	2	3	4	Mean
11 web	28	28	25	19	2.35

**E106\_F\_rank:** Life is unpredictable and I have little control. I have to live by lots of rules, but I don't get to make them. My fate in life is determined mostly by chance. I can't become a member of the groups that make most of the important decisions affecting me. Getting along in life is largely a matter of doing the best I can with what comes my way, so I focus on taking care of myself and the people closest to me.

	<u>Least Agree</u>		<u>Most Agree</u>		
	1	2	3	4	Mean
11 web	34	26	23	17	2.24

**E107\_zip** What is the five digit zip code at your residence? (verbatim)

**E108\_party** With which political party do you most identify?

	<u>Democratic</u>	<u>Republican</u>	<u>Independent</u>	<u>Other Party</u>
%	1	2	3	4
11 web	34	28	36	2
11 phone	36	37	25	2
10 web	35	28	36	2
10 phone	36	34	26	3
09 web	40	31	24	6
08 web	40	32	23	6
08 phone	41	37	16	6
07 web	37	34	23	6
06 web	36	34	22	8
06 phone	46	41	8	5

**E109\_iden** Do you completely, somewhat, or slightly identify with that political party?

	<u>Slightly</u>	<u>Somewhat</u>	<u>Completely</u>	
%	1	2	3	Mean
11 web	11	61	28	2.17
11 phone	11	48	42	2.31
10 web	10	58	32	2.23
10 phone	11	48	41	2.30
09 web	9	55	36	2.27
08 web	9	60	31	2.22
08 phone	14	50	36	2.23
07 web	14	60	26	2.12
06 web	13	62	25	2.12
06 phone	13	55	32	2.18

[11 web vs. 10 web:  $p = .0321$ ] [11 web vs. 11 phone:  $p = .0003$ ]

**E110\_ideol** On a scale of political ideology, individuals can be arranged from strongly liberal to strongly conservative. Which of the following best describes your views? Would you say that you are:

%	Strongly Liberal	Liberal	Slightly Liberal	Middle of the Road	Slightly Conserv.	Conserv.	Strongly Conserv.	Mean
	1	2	3	4	5	6	7	
11 web	4	11	12	37	13	17	6	4.18
11 phone	4	11	9	24	17	19	15	4.57
10 web	5	13	12	33	13	16	7	4.14
10 phone	5	11	11	24	14	19	17	4.56
09 web	6	14	11	36	10	15	7	4.04
08 web	6	14	12	34	14	14	6	4.04
08 phone	5	14	8	27	16	20	11	4.37
07 web	5	12	11	35	15	16	6	4.16
06 web	4	13	12	34	14	16	7	4.18
06 phone	5	12	11	25	16	20	11	4.36

[11 web vs. 10 web:  $p = .4387$ ] [11 web vs. 11 phone:  $p < .0001$ ]

**E111\_race** Which of the following best describes your race or ethnic background?

%	American Indian	Asian	Black	Hispanic	White	Something Else
	1	2	3	4	5	6
11 web	1	3	7	6	83	0
11 phone	2	2	5	3	87	1
10 web	1	4	6	3	85	1
10 phone	2	1	7	3	86	2
09 web	1	5	6	5	81	1
08 web	1	6	6	4	82	1
08 phone	3	2	5	3	85	1
07 web	1	3	4	2	89	1
06 web	1	3	5	4	86	1
06 phone	3	2	4	4	84	2

**E112\_inc** Please indicate which of the following income categories approximates the total estimated annual income for your *household* for the year 2010.

%	<\$10K	\$10-20K	\$20-30K	\$30-40K	\$40-50K	\$50-60K	\$60-70K
	1	2	3	4	5	6	7
11 web	9	12	14	12	10	11	9
11 phone	2	7	11	8	7	9	11
10 web	8	14	14	14	11	11	8
10 phone	3	6	11	8	10	9	8
09 web	6	10	13	11	10	12	10
08 web	7	10	12	10	9	12	10
08 phone	5	7	10	9	9	8	10
07 web	5	9	13	11	8	13	12
06 web	5	8	13	12	11	14	10
06 phone	3	7	11	10	11	11	10

	<u>\$70-80K</u>	<u>\$80-90K</u>	<u>\$90-100K</u>	<u>\$100-110K</u>	<u>\$110-120K</u>	<u>\$120-130K</u>	<u>\$130-140K</u>
%	8	9	10	11	12	13	14
11 web	6	3	4	2	1	2	1
11 phone	7	6	7	3	4	3	1
10 web	6	4	3	2	2	1	1
10 phone	7	5	3	7	3	3	2
09 web	8	4	3	3	2	3	1
08 web	7	5	3	3	2	2	2
08 phone	9	6	3	4	3	3	3
07 web	6	5	5	4	2	2	1
06 web	7	5	3	3	2	2	1
06 phone	8	7	4	3	3	3	2

	<u>\$140-150K</u>	<u>\$150-160K</u>	<u>\$160-170K</u>	<u>\$170-180K</u>	<u>\$180-190K</u>	<u>\$190-200K</u>	<u>&gt;\$200K</u>
%	15	16	17	18	19	20	21
11 web	1	1	0	0	0	1	1
11 phone	2	1	2	2	1	0	6
10 web	1	0	0	0	0	0	1
10 phone	1	3	1	2	1	1	5
09 web	1	1	0	1	0	0	1
08 web	1	1	0	0	0	0	3
08 phone	2	1	1	1	0	2	4
07 web	1	0	0	0	0	1	1
06 web	2	1	0	0	0	1	1
06 phone	1	1	1	1	0	1	3

%	Median
11 web	\$40-50K
11 phone	\$60-70K
10 web	\$30-40K
10 phone	\$60-70K
09 web	\$50-60K
08 web	\$50-60K
08 phone	\$60-70K
07 web	\$50-60K
06 web	\$50-60K
06 phone	\$50-60K

**E113\_web** Shifting now to a different topic, about how often do you access the Internet using a computer or some sort of a smartphone, like a Blackberry or iPhone??

	<u>Never</u>	<u>&lt; Once/</u>	<u>Several Times/</u>	<u>Once/</u>	<u>Several Times/</u>	<u>Once or</u>	<u>Several Times/</u>
%	0	<u>Month</u>	<u>Month</u>	<u>Week</u>	<u>Week</u>	<u>Twice/Day</u>	<u>Day</u>
		1	2	3	4	5	6
11 web	NA	14	2	2	8	20	54
11 phone	16	2	2	5	8	14	53
10 web	NA	0	1	2	7	26	63
09 web	NA	0	1	3	6	20	69
08 web	NA	0	1	2	7	22	67
08 phone	15	4	3	4	9	14	50
07 web	NA	0	1	1	8	25	64
06 web	NA	0	1	2	10	28	59
06 phone	11	10	4	7	14	18	37

**E114\_purp:** What is your single biggest reason for accessing the Internet?

	<u>Shopping</u> 1	<u>Researching Products</u> 2	<u>Social Networking</u> 3	<u>News</u> 4	<u>Email</u> 5	<u>Something Else</u> 6
11 web	3	3	16	14	51	12
11 phone	1	1	7	14	45	32

**E115\_FB** About how often do you use Facebook?

%	<u>Never</u> 0	<u>&lt; Once/ Month</u> 1	<u>Several Times/ Month</u> 2	<u>Once/ Week</u> 3	<u>Several Times/ Week</u> 4	<u>Once or Twice/Day</u> 5	<u>Several Times/ Day</u> 6
11 web	27	10	6	8	13	17	20
11 phone	43	11	8	10	10	10	8

**E116\_goog** About how often do you use Google?

%	<u>Never</u> 0	<u>&lt; Once/ Month</u> 1	<u>Several Times/ Month</u> 2	<u>Once/ Week</u> 3	<u>Several Times/ Week</u> 4	<u>Once or Twice/Day</u> 5	<u>Several Times/ Day</u> 6
11 web	7	10	12	7	20	19	26
11 phone	6	10	11	9	22	14	28

**E117\_twit** About how often do you use Twitter?

%	<u>Never</u> 0	<u>&lt; Once/ Month</u> 1	<u>Several Times/ Month</u> 2	<u>Once/ Week</u> 3	<u>Several Times/ Week</u> 4	<u>Once or Twice/Day</u> 5	<u>Several Times/ Day</u> 6
11 web	81	6	2	3	2	2	3
11 phone	92	3	2	0	1	1	1

**E118\_Ipnl** How many Internet survey panels do you belong to?

	<u>Mean</u>
11 web	5.16

**E118\_Ipnl** Do you currently belong to any type of Internet survey panel that asks you to participate in on-line surveys?

	<u>No</u>	<u>Yes</u>
11 phone	92	8

**E119\_pnlfreq** About how often do you answer surveys on the Internet?

%	<u>Never</u> 0	<u>&lt; Once/ Month</u> 1	<u>Several Times/ Month</u> 2	<u>Once/ Week</u> 3	<u>Several Times/ Week</u> 4	<u>Once or Twice/Day</u> 5	<u>Several Times/ Day</u> 6
11 web	NA	3	7	9	25	23	33
11 phone	63	30	5	1	1	0	0

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