Terrorism Risk Perceptions and Proximity to Primary Terrorist Targets: How Close is Too Close?

Joshua Woods¹

Toby A. Ten Eyck

Stan A. Kaplowitz

Vladimir Shlapentokh

Michigan State University Department of Sociology East Lansing, MI

Abstract

A survey of Michigan residents (N = 1,003) conducted in 2005 found a positive relationship between people's closeness to a "primary" terrorist target and their judgments of the likelihood of a terrorist attack in their home communities in the next 12 months. This relationship was especially strong among female respondents and people with lower household incomes. Similarities and differences between this study and a previous study conducted by Fischhoff et al. (2003) immediately following the 9/11 terrorist events are discussed. Empirical results suggest that public perceptions of terrorism risk are being shaped more by the environment in which people reside than by other common predictors of risk perception.

Keywords: risk perception, terrorism, geography, gender, income

Introduction

According to polls conducted in the United States as late as 2006, almost half the population was still worried about becoming victims of terrorism.² In the years since 9/11, many researchers have scrutinized the underpinnings of these concerns. Some argue that public knowledge of terrorism is heavily influenced by news and other media, which amplify people's fears and make everyone feel like a target (Nacos 2003; Norris et al. 2003; Robertson, 2003; Picard 1993; Kasperson et al. 2003; Cohen 1983). Other authors implicate government officials in this process, pointing to the media's dependence on government-controlled information and the political incentives associated with elevating the public's concerns (Herman and O'Sullivan 1989; Stern 2004; Alterman 2004). A number of demographic characteristics, such as gender, race, age and education, are also thought to be associated with public perceptions of terrorism risk (Sjöberg 2005; Fischhoff et al. 2003).

Taking a psychological approach, still other researchers contend that people generally have a hard time interpreting the level of risk associated with any low probability-high consequence event, especially events such as terrorism that engage their emotions (Sunstein 2003; Kunreuther et al. 2001; Camerer and Kunreuther 1989). Each of these perspectives questions — directly or indirectly — the ability of ordinary people to estimate the risk of terrorism to themselves as well as the population at-large. Public risk perceptions may indeed be influenced by any number of factors, including media usage, politicians, a lack of knowledge, or strong attitudes and emotions. The present study, however, examines whether these perceptions are also guided by the assumption that some geographical locations are more at risk than others.

In several ways, this paper attempts to replicate a study conducted by Fischhoff et al. (2003) in November 2001. Their aim was to determine whether people's judgments of terrorism risk were influenced by their proximity to the former site of the World Trade Center. The study found that certain demographic groups (men, adults, whites and Republicans) living within 100 miles of the Twin Towers assessed the risk of terrorism as higher than similar people living outside this region.

Our first objective is to reinforce the empirical basis of this interesting assertion. We also wish to expand on this idea in several respects. In the previous study, the researchers used one theoretically high-risk target (New York City) as a reference point for evaluating lay theories of terrorism risk. The present study aims to show whether the proximity effect holds only in the vicinity of New York City, or in a number of different places located far from the sites of the 9/11 attacks. Specifically, we test a model that takes into account ten primary (or "high-profile") targets in the state of Michigan to determine whether Fischhoff et al.'s (2003) findings hold under different social, historical and geographical circumstances.

Going beyond the previous study, which used only one conceptualization of proximity (within 100 miles of the Twin Towers), we attempt to identify the outer bound of the proximity effect by separating respondents into three groups: those living within five miles of a designated target, those living between 5 and 15 miles of a target and those outside the 15-mile perimeter. In addition, our model controls for three important variables — education, household income and media consumption — that were not considered in Fischhoff et al. (2003).

We also attempt to determine whether the respondents' closeness to a potential target has a specific influence on judgments of local terrorism risk or a more global effect on a variety of risk perceptions. In particular, does closeness to a potential target induce a general state of fear that increases one's estimate of many risks or simply the risk of terrorism in one's own location?

Theories of Terrorism Risk

Government Officials

In their response to the events of 9/11, some politicians and government authorities have disagreed about which terrorism risk formula is most appropriate for estimating risk and to what extent it should guide homeland security spending.³ Nevertheless, there is some common ground among the various government assessments. Few officials have argued that the probability of a terrorist attack is equivalent in all regions of the country, or that all areas should receive equal security funding. Comprehensive reports by the Department of Homeland Security (2002) and the National Commission on Terrorist Attacks (2004) generally concur about the country's main vulnerabilities and high-risk targets. The reports stress three types of potential targets: 1) large urban centers, 2) critical parts of the nation's infrastructure such as nuclear power stations and major chemical plants, and 3) symbolic targets such as state and national monuments and government buildings. Though imperfect in many ways, we refer to the emphasis placed on these high-profile targets as an "expert assessment" of terrorism risk.

The Media

The importance of big cities and government buildings as potential terrorist targets was clearly demonstrated by the 9/11 attacks. Given the intense media coverage of these events, a lay theory of future terrorist attacks may be especially likely to correspond with the expert assessment discussed above. In the years after the attacks, government officials continued to communicate this view directly to the public through speeches, press conferences, publications and other communications covered by the mass media. Members of the 9/11 Commission, for instance, frequently appeared in the media advocating the need to focus national security efforts on high-risk areas and base risk assessments on such factors as "population density" and the "presence of critical infrastructure" (National Commission on Terrorist Attacks 2004, 396).

Studies on the media, meanwhile, have shown that newspapers and television networks relied more on government sources than other sources, particularly in the months following the 9/11 crisis (Li and Izard 2003) and that "the press heavily favored pro-Administration and official U.S. viewpoints" (Project for Excellence in Journalism 2002, 2). It may be reasonable to assume, for these reasons, that a theory of terrorism risk that emphasizes particular geographical targets has been made available to the public.

The Effect of Media on the Public

All of this would make no difference if news consumers were unaware of this coverage. However, given the yearly anniversaries of the 9/11 attacks, the connections made between the wars in Iraq and Afghanistan and the "War on Terror," that are daily news fodder, we believe many people are exposed to the press coverage of these topics. This sets the agenda for the public (Dearing and Rogers 1996) and gives audience members something to discuss at work, home and with friends.

One explanation for the possible effects of geography on risk perceptions is that the media made the expert assessment of terrorism risk more available to the public than other rudimentary theories of terrorism. In turn, the high availability of this theory may have directly influenced lay theories of the risk (Tversky and Kahneman 1973, 1974).

Thus, this study asks two questions regarding the effects of the mass media. First, does closely following the news and information about terrorism in the media increase respondents' estimates of the risk? Such a link between perceived risk and media consumption has been shown in previous studies. A study by Frewer et al. (2002), for instance, showed that over time risk perceptions of genetically modified food increased and decreased in line with a rise and fall in the level of social and media discussion of the risk. A similar study found, among other things, that news stories effected public perceptions of nuclear risks (Flynn et al. 1998).

Second, does media use moderate the effect of proximity on risk perception? If the primary way that people learn the expert theory is through the mass media, we would expect the effect of proximity to be greater for those who have greater exposure to the mass media.

Other Influences on Risk Perceptions

It is worth noting that other social-psychological factors may influence public perceptions in a similar direction. First, given the public's desire for a sense of control over their lives (Brown and Siegel 1988), the expert assessment may be attractive because it conveys the idea that the government understands the risk and has it under control. In addition, the idea that the risk is unknown or that all regions of the country are equally in danger may be widely perceived as undesirable. People living far from primary targets may be especially receptive to this theory, because it asserts that their risk of being harmed is lower than people living in large cities.

Second, the public's moods and emotions should also be taken into account. People living near high-risk targets, particularly large urban centers, may experience similar moods or emotional states, which may, in turn, have a unifying effect on their local terrorism risk judgments, as well as a spillover effect on their perceptions of other types of danger (Fischhoff et al. 2003; Johnson and Tversky 1983; Zajonc 1980). As shown in a study of behavioral responses to terrorism (Greenberg et al. 2004, 171), people living in New York City "were more likely to be sad, scared, depressed, angry, and worried about another attack" than the American public at large.

At the same time, there are several reasons to question whether people's geographical location influences their perceptions of terrorism risk. First, it is not entirely clear that the expert assessment has been effectively disseminated to the public. In fact, officials have often warned of an increased risk of terrorism without identifying any particular city or region of the country (Friedman 2005; Zimbardo and Kluger 2003). Second, considering that people sometimes show unrealistic optimism about future life events (e.g., Weinstein 1980); those living in cities may wish to dismiss the theory because it highlights them as potential victims. Third, we should consider the differences in historical and geographical contexts between the present study, which is based on survey data from Michigan collected in late 2005, and Fischhoff et al.'s study (2003), which focused on residents of New York City in the aftermath of 9/11. It would stand to reason that the strong emotional response to 9/11 has diminished considerably in the four years separating the two studies. Moreover, compared to New York City, Michigan is a rather remote Midwestern state with relatively few primary targets. For these reasons, Michigan residents may almost universally rate the risk of a terrorist attack in their communities as low, resulting in little difference in perceptions across the state.

Possible Confounding Variables

Studies on risk perception have shown that there are several factors (besides proximity to high-profile targets) that may effect people's perceptions of terrorism risk. While testing the proximity effect, this study controls for seven of these factors: sex, race, age, political affiliation, education, household income and media consumption. Sex has been shown to predict perceived risk on a number of different dangers; women generally perceive a higher level of risk than men (Rovira et al. 2000; Marshall 2004; Hollander 2001; Wulfhorst 2000). Research on the relationship between age and risk perception has produced mixed results. Some studies have found that older people tend to give higher risk estimates than younger people (e.g., Lai and Tao 2003), others have demonstrated the opposite tendency (e.g., Floyd and Pennington-Gray 2004), while still others have found no relationship between age and risk perception (e.g., Hellesoy et al. 1998). As shown in the Fischhoff et al. (2003) study, sex and age, as well as race and political affiliation, were significant predictors of perceived risk. Previous studies have also shown that people with lower educations and lower incomes rate risks higher than their counterparts (e.g., Adeola 2004; Kanan and Pruitt 2002). Hence, we also examine the effects of these variables, along with media consumption as previously discussed.

Method

Data were collected through a telephone survey with 1,003 Michigan residents between October and December 2005, using a random digit dialing procedure. The survey was carried out by the Institute for Public Policy and Social Research (IPPSR) at Michigan State University.⁴ The contact rate was 89%, the refusal rate was 21% and the overall completion rate among eligible households for the study was 44%. The individual cases were differentially weighted to make the sample representative of the state's population. Weights were constructed and applied to the data by IPPSR personnel. Among the 1,003 respondents, 59% were females, 41% were males. The mean age was 53. Self-reported race/ethnicity was 82% white and 18% non-white. Seventy percent of the respondents reported having at least some college education. Roughly one quarter of the respondents reported their political affiliation as Republican (26%), another quarter as independent (27%), and approximately a third as Democrat (34%). Thirteen percent did not answer this question.

Following Fischhoff et al. (2003), respondents were asked to assess the likelihood of terrorist events occurring in the next 12 months. We linked these assessments to three different geographical contexts. First, we asked "how likely is it that a terrorist attack will occur somewhere in the United States?" We then repeated the question, but instead referred to an attack "somewhere in the state of Michigan" and finally to an attack "in your community." Since we were concerned whether perceived terrorism risk influenced other perceived risks, we also asked respondents to assess the chance that they would be involved in a car accident in the next 12 months. This question served as a proxy for concerns about risks in general.

The reason for asking the different risk perception questions was to see whether geography not only (logically) influenced perceived risk of terrorism to one's local community, but also (illogically) influenced one's perception of terrorism risks that do not vary by one's own community. Those are the risks to the entire state of Michigan and to the entire US. In addition, we wanted to see whether such terrorism risk perceptions generalized to other fears, as in the case of auto accidents.

Two different scales were used to measure these perceptions: a four-point word scale ("very likely, somewhat likely, somewhat unlikely, or very unlikely") and a numeric indicator with anchors of 0% (*there is no chance of an attack*) and 100% (*an attack is certain to happen*).

Responses to pairs of items measured on the two different types of scales were highly correlated, indicating a common underlying construct. Standardized Cronbach's alpha values were .75 for the variable *risk to US*, .70 for *risk to Michigan*, .63 for *risk to local community* and .70 for *risk of a car accident*. Standardized scores from the two scales were added together to produce our dependent variables.

Based on the "expert assessment" discussed above, we identified the ten most likely terrorist targets in Michigan, including the five largest cities⁵ (Detroit, Flint, Grand Rapids, Sterling Heights and Warren), the state capital (Lansing) as a symbolic target as well as a metropolitan area, three active nuclear power sites (Cook, Fermi and Palisades) and Midland, where the Dow Chemical Company is headquartered along with one of the largest chemical plants in the country. Using ArcView mapping software, we separated the respondents into three groups: those living within 5 miles of a designated target (318 respondents), those living between 5 and 15 miles of a target (121) and those living outside the 15-mile perimeter (564). The given zones reflect intuitive approximations of three levels of "closeness" to a terrorist target.

Our analysis is divided into two parts. First, a comparison of the mean local risk judgments across the three zones will show whether terrorism risk generally increases as proximity to a terrorist target increases. A one-way ANOVA is used to determine whether the inter-zone differences are significant. A regression model is used to further test this relationship, controlling for the following variables: sex, race/ethnicity, age, political affiliation, education, income and media consumption. In addition, we test whether proximity to a likely target influences three related perceptions of terrorism risk: a) in one's home community, b) in the state of Michigan and c) in the entire United States. We also examined the effect of proximity to a likely target on car accident risk judgments. Considering these alternative risk contexts will show whether proximity has a general or specific effect on people's perceptions.

The second part of the analysis considers whether the relationship between proximity and local risk judgments holds for some demographic groups more than for others. Comparisons of means and regression analyses that account for interactions between proximity and the demographic variables are used to explore this issue.

Results

Proximity as the Leading Predictor of Local Terrorism Risk Judgments

Local terrorism risk judgments were highest among the 309 respondents living within 5 miles of a potential target (standardized mean = .56) and considerably lower for the 116 respondents in the 6 to 15 mile zone (.004) and the 549 respondents living outside the 15-mile perimeter (-.31). Using a one-way ANOVA, these differences were shown to be significant (F(2,971) = 26.95, eta square = .0526, p < .001).Using Tukey's HSD revealed that the difference in perceived risk between the closest zone and the second closest zone was significant (mean difference = .552, p = .007). The difference between the closest and farthest zone was even more so (mean difference = .870, p < .001). However, the difference between risk judgments in the second and outer zone was not significant (.318, p = .149). The risk perceptions of people living between 6 and 15 miles from a high-profile target were statistically the same as those living beyond the 15-mile threshold.

As shown in Table 1, a multiple regression model revealed that the respondents' proximity to one of the ten potential terrorist targets in Michigan is a stronger predictor of local risk judgments (Beta = .194; p < .001) than are other characteristics (note that "Beta" refers to standardized regression coefficients). The respondents' sex (Beta = .116; p < .001), race/ethnicity (Beta = .101; p < .01) and education (Beta = -.067; p < .05) were significant but less strong predictors of these perceptions. Nevertheless, females, nonwhites and respondents with fewer years of education tended to give higher risk estimates than did males, whites and respondents with more years of education. These results generally matched the findings of Fischhoff et al. (2003) with one exception. Unlike the previous study, political affiliation and age did not significantly effect public perceptions of local risk.

When we ran the same model using state-level risk judgments as the dependent variable, the effect of proximity was not significant (Beta = .029; p = .404). In the case of nation-

Table 1. Regression Model Showing Standardized Regression Coefficients for Eight Predictors of Local Terrorism Risk Judgments in Michigan

Independent Variables	Standardized Regression Coefficients
Sex	.116***
Race/ethnicity	.101**
Age	.062
Political affiliation	.016
Proximity to primary target	.194***
Education	067*
Household income	029
Follows news	060
R Square	.092

Notes. Sex was scored 0 = male and 1 = female; race/ethnicity was 0 = white and 1 = non-white; age was calculated from year born; political affiliation was 0 = non-Republican and 1 = Republican; proximity to primary target was 0 = outside 15 mile perimeter, 1 = 6-15 miles and 2 = 0-5 miles; education was 1 = grade school, 2 = high school graduate, 3 = some college, 4 = college graduate, 5 = some post-graduate or higher; household income was measured on an eight-point scale from 1 = \$10,000 or less to 8 = \$70,000 or more; and follows news was 1 = very close, 2 = somewhat close, 3 = not very close and 4 = not close at all. * = p < .05; ** = p < .01; *** = p < .001

al-level judgments, a weak, but significant, negative relationship between risk perception and proximity to a target was found (Beta = -.089; p = .011). A similar relationship was revealed when car accident risk was treated as the dependent variable (Beta = -.076; p = .028). The negative relationship shows that people near high profile targets actually perceive the risk from auto accidents to be slightly lower than do people living away from such targets.

Moderators of the Proximity Effect: Sex and Income

Sex clearly moderated the effect of proximity on respondents' local terrorism risk judgments. The mean ratings of terrorism risk by both men and women generally increased as proximity increased, but this relationship was much stronger for women. The mean judgment for women living outside the 15-mile perimeter was -.277 and for those living inside the 5mile perimeter, .888 (an increase of 1.165); for men the corresponding numbers were -.365 and .014 (an increase of only .379). Household income also interacted with proximity. The mean judgment for individuals outside the 15-mile perimeter in households making less than \$40,000 was -.252 and for those inside the 5-mile perimeter .921 (an increase of 1.173); the numbers for households making \$40,000 or more were -.440 and .429 (an increase of only .869).

No other variable showed the same degree of interaction with proximity. Multiple regression analysis revealed that the sex-proximity (p = .002) and income-proximity (p = .004) interaction terms were the only ones that had significant effects on local risk judgments.⁶ The interactions between proximity and race/ethnicity, proximity and age, proximity and political affiliation, proximity and education and proximity and "follows news about terrorism" were all found to be non-significant with p values equal or greater than .15. An incremental F test showed that even taking into account the fact that we added seven terms, the increment to R^2 (from .092 to .113) is statistically significant: F(7, 926. = 3.115) p = .003. When we included only the two significant interactions, R^2 was .108.

The two significant interaction terms became non-significant when state-level risk, nation-level risk and car-accident risk were substituted for local risk as dependent variables. These findings further illustrate the special link between respondents' proximity to potential terrorist targets and their perceptions of local terrorism risk.

Discussion

In late 2005, Michigan residents who lived within five miles of a high-profile terrorist target perceived the risk to their local communities as greater than residents who lived farther away. In contrast, people rated the risk of terrorism to the state of Michigan and the United States as roughly the same, regardless of where they lived. The same was true for the perceived risk of being in a car accident. Therefore, it cannot be said that those who were in highly populated areas were more afraid of all risks. This finding is interesting since high population areas (which translated in this study to places with high terrorism risk) are likely to have higher amounts of auto traffic, but this does not translate to being afraid of this type of risk. We would assume that car accidents would be more familiar and less dreadful than terrorist attacks, which could be at least a partial explanation for this finding (Margolis 1996).

The finding that proximity has an effect, even when controlling for other variables, supports our notion that people's perceptions of terrorism risk are influenced by the environment in which they reside. In other words, there seems to be some agreement between the lay theory of terrorism risk and the expert assessment discussed above. While those in areas that the expert assessment designates as having greater risk may not find this theory comforting, it should not surprise us that they none-the-less accept it. One of the most robust findings of communication research is that people are especially likely to believe messages that a) are minimally discrepant from their prior beliefs and messages (e.g., Aronson et al. 1963) and that b) come from sources whom the receiver regards as expert and trustworthy (e.g., Hovland and Weiss 1951). The expert assessment not only has a good deal of plausibility to many people but is also endorsed by people who appear to be interested in protecting us and seem to have no ulterior motives for advocating that theory.

Interestingly "follows news about terrorism" had no significant effect on risk perceptions. It had neither a significant main effect nor did it significantly modify the relationship between proximity and perceived risk. One explanation for this finding is that to the extent that people believe in the expert assessment it is less because of frequent inculcation by the media and more because such a view is congruent with the way that most people were already thinking.

Although most of our findings confirm the results of Fischhoff et al. (2003), the present study revealed two important contradictions. First, unlike the previous study, which was conducted shortly after the 9/11 events, proximity had some effect on all respondents regardless of their sex, race/ethnicity, age, political affiliation and other characteristics. Second, while both studies identified certain types of people as being particularly sensitive to proximity, the studies disagreed about who these people are. Fischhoff et al. (2003) found that adults, whites, men and Republicans were sensitive to proximity, whereas people with the opposite characteristics were not. The present study, conducted four years later, found that men and people with higher household incomes were significantly less sensitive to proximity than women and people with lower incomes.

Although we cannot give an authoritative explanation for these discrepancies, we can offer some interpretations of them. As Fischhoff et al. (2003, 147) suggested, the pattern of differential sensitivity to proximity may be explained by differences in "self-protective mechanisms." White men with higher incomes "might have greater feelings of personal control or trust in the social institutions managing risks" (Fischhoff et al. 2003, 147), a notion supported by several other studies as well (e.g., Greenberg et al. 2004). Under most circumstances, men may generally perceive the risk of terrorism as lower and as less worrisome than women, regardless of where they live; therefore they are generally less sensitive to proximity. From this perspective, the results from the Fischhoff et al. (2003) study represent a temporary change in the usual tendency. In the wake of 9/11, the tendency of men to be less sensitive to distance was overwhelmed (or "swamped," as Fischhoff et al. (2003) put it) by the recent intense experience of the 9/11 events, especially for those living closest to the World Trade Center (i.e., those most directly affected by the attacks). This would have resulted in a greater proximity effect in this group of people. Our findings, on the other hand, appear to show a return to "normalcy."

In addition to a shift in the emotional context, the political context may have changed as well. The proximity-sensitive group in the Fischhoff et al. (2003, 147) study has "demographics closer to those of our current national leadership than do other respondents." If, by late 2005, direct threats to the homeland played a smaller role in the administration's messages about terrorism — perhaps due to a shift in emphasis toward the war in Iraq — then we would expect a reduced effect of proximity on the terrorism risk perceptions of older, white, male Republicans. Moreover, in recent years, the congressional debate over homeland security funding was driven more by regional interests than traditional partisanship, which may have reduced the influence of political affiliation. To some extent, the debate has also shifted in favor of those who advocate a stricter formula that prioritizes high-risk targets. This may have made the expert assessment more widely available to Americans.

Methodological differences between the past and present studies may also account for the disparities. Using a nationally representative sample of Americans, the Fischhoff et al. (2003) study operationalized the respondents' "closeness" to a potential target by whether or not they lived within 100 miles of the former site of the World Trade Center. In our study, we found that the effects of proximity began to fade outside the 5-mile threshold. The optimal threshold for New York City — that is, the distance at which most people no longer feel "close" to a given target — is probably greater than five miles, but perhaps a more refined scale, or one that takes into account multiple targets and distances, may have revealed a more general proximity effect had it been applied in the previous study. The fact that being six or more miles away from a target is sufficient to substantially reduce fear may also be a result of the fact that the Fischhoff et al. (2003) study was focused on an area that had been a terrorist target, while our respondents have not experienced such a situation.

Consistent with Fischhoff et al. (2003), we did not find a spillover effect from perceptions of local terrorism risk to perceptions of other dangers. Assessments of state-level terrorism risk did not vary greatly between the respondents in the three proximity zones (0-5 miles, 6-15 miles and 16 miles or more), though there seems to be some change in concerns at the national level with those living beyond 15 miles seeing an attack on the US as somewhat more likely. The perceived risk of being involved in a car accident seems to behave the same way as concerns with state-level terrorism in that there is little difference between the groups that differ in proximity. While some (e.g. Johnson and Tversky 1983) have argued that moods and emotions tend to separate risk judgments from cognitive inferences, our findings suggest that perceptions were determined more by cognitive than by affective processes, though this may be partly due to the questions posed to the respondents.

The danger of terrorism is unlike most everyday hazards. The source of the threat itself does not exhibit explicit warnings. When assessing terrorism risk, the public and the government is left to imagine how terrorists think and guess which targets, if attacked, would result in the greatest human loss, economic damage or publicity. In this way, the risk of terrorism is not necessarily linked to particular cities, such as New York, but to any place that possesses New York-like characteristics. If terrorism risk perceptions are guided by such theories, the potential for high and persistent concerns is indeed great. One only need imagine a hypothetical difference in the richness of two targets to become concerned that one may be attacked. Although this study cannot offer direct evidence that Michigan residents have indeed adopted this rationalistic theory, it can confirm that proximity is a more powerful predictor of local terrorism risk perceptions than a number of demographic variables and other key characteristics, including political affiliation and mass media consumption.

Endnotes

- 1. Author to whom correspondence should be directed: <u>E-mail: woodsjos@msu.edu</u>
- 2. A Gallup poll conducted in January 2006 found that 43% of Americans were "very" or "somewhat" worried that they would become a victim of a terrorism (Terrorism in the United States 2006; see also Moore 2004). In the two decades prior to 9/11, "terrorism" had never made the list of America's "most important problems," according to Gallup. After 9/11, terrorism became a top concern (mentioned by 46% of respondents in an October 2001 poll; see Gillespie 2001) and stayed on the list up through the time this paper was written in 2006.
- See, for instance, reports in the *New York Times* on the controversy involving terrorism risk assessment and national security spending (Kean and Hamilton 2005; Collins and Lieberman 2005; "Votes in Congress" 2005).
- More information about the survey can be found at the following website <u>www.ippsr.msu.edu/Documents/SOSSArchive/Method%20</u> report%20PDF/soss40_meth.pdf
- As suggested earlier, population density is likely to contribute to perceived risk; we recognize that a community's total population is an imperfect measure of its population density.
- 6. These interaction effects are not included in Table 1. This is because that table contains standardized regression coefficients and the standardized coefficients of interaction terms can vary greatly by merely changing the scale of a predictor via additive constants (see e.g. Aiken and West 1991, 40).

Acknowledgements

This research was funded by a grant provided to Vladimir Shlapentokh and Toby A. Ten Eyck from Michigan State University's Applied Public Policy Research (MAPPR) program facilitated by the Institute for Public Policy and Social Research (IPPSR).

References

Adeola, F.O. 2004. Environmentalism and risk perception: Empirical analysis of black and white differentials and convergence. *Society* and Natural Resources 17, 10, 911-939.

- Aiken, L.S. and S.G. West. 1991. *Multiple Regression: Testing and Probing Interaction Effects*. Newbury, CA: Sage.
- Alterman, E. 2004. Fear: What is it good for? Social Research 71, 4, 997-1015.
- Aronson, E., J.A. Turner and J.M. Carlsmith. 1963. Communicator credibility and communication discrepancy as determinants of opinion change. *Journal of Abnormal and Social Psychology* 67, 3136.
- Brown, J.D. and J.M. Siegel. 1988. Attributions for negative life events and depression: The role of perceived control. *Journal of Personality and Social Psychology* 54, 316-322.
- Camerer, C. and H. Kunreuther. 1989. Decision processes for low probability events: Policy implications. *Journal of Policy Analysis and Management* 8, 4, 565-592.
- Cohen, B. 1983. Nuclear journalism: Lies, damned lies, and news reports. *Policy Review* 26, 70-74.
- Collins, S.M. and J.I. Lieberman. 2005. Steps to protect our homeland. *New York Times*, July 19, p. 20.
- Dearing, J.W. and E.M. Rogers. 1996. *Agenda-Setting*. Thousand Oaks, CA: Sage.
- Department of Homeland Security. 2002. *The National Strategy for Homeland Security*. Released on July 16 (online at: http://www.whitehouse.gov/homeland/book).
- Fischhoff, B., R.M. Gonzalez, D.A. Small and J.S. Lerner. 2003. Judged terror risk and proximity to the World Trade Center. *Journal of Risk* and Uncertainty 26, 2/3, 137ñ51.
- Floyd, M.E. and L. Pennington-Gray. 2004. Profiling risk perceptions of tourists. Annals of Tourism Research 31, 4, 1051-1054.
- Flynn, J., E. Peters, C.K. Mertz and P. Slovic. 1998. Risk, media, and stigma at Rocky Flats. *Risk Analysis* 18, 6, 715-727.
- Frewer, L.J., S. Miles and R. Marsh. 2002. The media and genetically modified foods: evidence in support of social amplification of risk. *Risk Analysis* 22, 4, 701-11.
- Friedman, B. 2005. Homeland security. Foreign Policy 149 (July/August), 22-28.
- Gillespie, M. 2001. Terrorism reaches status of Korean and Vietnam Wars as most important problem. Economy ranks a distant second. *Gallup News Service*, November 19.
- Greenberg, M., P. Craighill and A. Greenberg. 2004. Trying to understand behavioral responses to terrorism: Personal civil liberties, environmental hazards, and U.S. resident reactions to the September 11, 2001 attacks. *Human Ecology Review* 11, 2, 165-176.
- Hellesoy, O., K. Gronhaug and O. Kvitastein. 1998. Profiling the high hazards perceivers: An exploratory study. *Risk Analysis* 18, 3, 253-272.
- Herman, E.S. and G. O'Sullivan. 1989. *The "Terrorism" Industry: The Experts and Institutions that Shape our View of Terror.* New York: Pantheon Books.
- Hollander, J.A. 2001. Vulnerability and dangerousness: The construction of gender through conversation about violence. *Gender & Society* 15, 1, 83-109.
- Hovland, C. and W. Weiss. 1951. The influence of source credibility on communication effectiveness. *Public Opinion Quarterly* 15, 635-650.
- Johnson, E.J. and A. Tversky. 1983. Affect, generalization, and the perception of risk. Journal of Personality & Social Psychology 45, 1, 20-31.
- Kanan, J.W. and M.V. Pruitt. 2002. Modeling fear of crime and perceived victimization risk: The (in)significance of neighborhood integration. *Sociological Inquiry* 72, 4, 527-548.

- Kasperson, J.X., R.E. Kasperson, N. Pidgeon and P. Slovic. 2003. The social amplification of risk: Assessing fifteen years of research and theory. In N. Pidgeon, R.E. Kasperson and P. Slovic (eds.), *The Social Amplification of Risk*, 13-46. Cambridge: Cambridge University Press.
- Kean, T.H. and L.H. Hamilton. 2005. A formula for disaster, New York Times, December 5, p. 23.
- Kunreuther, H., N. Novemsky and D. Kahneman. 2001. Making low probabilities useful. *Journal of Risk and Uncertainty* 23, 2, 103-120.
- Lai, J.C. and J. Tao. 2003. Perception of environmental hazards in Hong Kong Chinese. *Risk Analysis* 23, 4, 669-84.
- Li, X., and R. Izard. 2003. 9/11 attack coverage reveals similarities, differences. Newspaper Research Journal 24, 1, 204-219.
- Margolis, H. 1996. *Dealing with Risk*. Chicago: University of Chicago Press.
- Marshall, B.K. 2004. Gender, race and perceived environmental risk: The "white male" effect in cancer alley, LA. *Sociological Spectrum* 24, 453-478.
- Moore, D.W. 2004. Terrorism, spread of weapons of mass destruction most critical threats. Few partisan and socioeconomic differences on rankings of threats. *Gallup News Service*, March 8.
- Nacos, B.L. 2003. Terrorism as breaking news: Attack on America. *Political Science Quarterly* 118, 1, 23-52.
- National Commission on Terrorist Attacks. 2004. 9/11 Commission Report. Released on July 22 (available online at: <u>http://www.gpoaccess.gov/911/index.html</u>).
- Norris, P., M. Kern and M. Just (eds.). 2003. *Framing Terrorism: The News Media, the Government, and the Public*. New York: Routledge.
- Picard, R.G. 1993. *Media Portrayals of Terrorism: Functions and Meaning* of News Coverage. Ames, Iowa: Iowa State University Press.

- Project for Excellence in Journalism. 2002. Return to Normalcy? How the Media have Covered the War on Terrorism. January 28. (online at: <u>http://www.journalism.org/resources/research/reports/normalcy/</u> default.asp).
- Robertson, L. 2003. High anxiety. American Journalism Review 25, 3, 18-25.
- Rovira, J., W.K. Viscusi, F. Antoñanzas, J. Costa, W. Hart and I. Carvalho. 2000. Smoking risks in Spain: Part II — Perceptions of environmental tobacco smoke externalities. *Journal of Risk and Uncertainty* 21, 2-3, 187-212.
- Sjöberg, L. 2005. The perceived risk of terrorism. Risk Management: An International Journal 7, 43-61.
- Stern, J. 2004. Fearing evil. Social Research 71, 4, 1111-1126.
- Sunstein, C. 2003. Terrorism and probability neglect. Journal of Risk and Uncertainty 26, 2/3, 121-136.
- Terrorism in the United States. 2006. Gallup Poll News Service, April 25.
- Tversky, A. and D. Kahneman. 1974. Judgment under uncertainty: Heuristics and biases. *Science* 185, 1124-1130.
- Tversky, A. and D. Kahneman. 1973. Availability: A heuristic for judging frequency and probability. *Cognitive Psychology* 5, 207-232.

Votes in Congress. 2005. New York Times, July 17, p. 31.

Weinstein, N.D. 1980. Unrealistic optimism about future life events. Journal of Personality and Social Psychology 39, 806-820.

- Wulfhorst, J.D. 2000. Collective identity and hazardous waste management. *Rural Sociology* 65, 2, 275-294.
- Zajonc, R.B. 1980. Feeling and thinking: Preferences need no inferences. *American Psychologist* 35, 2, 151-185.
- Zimbardo, P. and B. Kluger. 2003. Phantom menace: Is Washington terrorizing us more than Al Qaeda? *Psychology Today* 36, 3, 34-36.