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Funding Resilient Infrastructure in New Jersey: Attitudes Following a Natural Disaster

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FUNDING RESILIENT INFRASTRUCTURE IN NEW JERSEY: ATTITUDES FOLLOWING A NATURAL DISASTER

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16. Abstract

Recent major natural disasters in New Jersey have demonstrated the need to increase the resilience of transportation infrastructure. This research examines public attitudes toward revenue sources that can be dedicated to protecting vulnerable areas, most notably the transportation linkages on which the state depends. A statewide survey was conducted to gather data approximately four months following Superstorm Sandy, the costliest natural disaster in the state's history. The authors' objective was to sample public attitudes while the impacts of the disaster were still fresh. They found little support for temporary tax increases to improve resiliency, with the most positive support for taxing visitors (i.e., a hotel and recreational tax) and for a 30-year bond measure (i.e., taxing the future). This observation seemingly contradicts broad support for investing in new infrastructure, as well as maintaining and protecting existing infrastructure. Multivariate analysis to understand the underlying attitudes toward raising revenue found that more left-leaning or communitarian attitudes are associated with more support for gasoline, income, or sales taxes devoted to mitigating vulnerability. Those who supported investment in transit and protecting infrastructure also were more likely to support these taxes. There was no parallel finding of factors associated with taxing visitors or issuing bonds.

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EXECUTIVE SUMMARY

General consensus among transportation professionals claims that there is a dearth of funding available to invest in and maintain existing infrastructure. This is compounded by the increasing incidence of extreme weather events, which are exacerbated by a changing climate. Superstorm Sandy, which hit New Jersey in October 2012, is a case in point, as it caused widespread damage to the transportation network. This research seeks to understand public attitudes in New Jersey about funding more resilient infrastructure in the immediate aftermath of Superstorm Sandy.

A statewide survey was administered approximately four months after Superstorm Sandy. This survey instrument gathered data on attitudes about five potential temporary revenue-raising approaches for funding vulnerability mitigations. Data on attitudes about the importance of investing in transportation infrastructure were also gathered, as well as a set of attitudinal questions typically used to characterize political beliefs.

The results show little to no support for the revenue-raising policies proposed in the survey. Specifically, the majority of respondents did not support raising revenue by way of a five cent gasoline tax increase, a one percent income tax increase, or a one percent sales tax increase, all of which were presented with a five-year sunset provision. There was a small majority support for a hotel/recreational tax of one percent, again, with a five-year term, and a plurality of support for issuing 30-year bonds. The authors characterize these latter as policies that "tax others"—i.e., visitors and future generations—while the former policies are characterized as "tax myself." At the same time, the study find that a majority of respondents agree that it is important to invest in new roads, new transit, and maintenance and protection for existing transportation infrastructure.

Multivariate analysis of factor scores for these two characterizations of the revenue-raising policies find no demographic associations. The main finding is that those who are more "left-leaning" in their political beliefs are more likely to support taxing themselves. The authors also found that those who agree that investing in public transit and protecting infrastructure are important also support self-taxation policies. There are no parallel associations in the models for "taxing others," none of which pass standard tests of model fit.

The authors further examine the approximately 10 percent of the sample who, while disagreeing with all five revenue-raising policies, demonstrate majority support for the importance of investing in, maintaining, and protecting transportation infrastructure.

Even after the most costly disaster in New Jersey history, the New Jersey public deeply opposes tax increases—especially gasoline taxes—but still wants better infrastructure. Unfortunately, there is no way to have both.

I. INTRODUCTION

Nationally, a long-term funding crisis in transportation is due primarily to increased maintenance and infrastructure needs coupled with flat and declining revenue from the federal gasoline tax (National Surface Transportation Policy and Revenue Study Commission 2007). Some states have coped with this crisis by increasing their own state gasoline taxes, dedicating sales tax revenues to transportation projects, or issuing bonds to fund their own transportation trust funds. New Jersey is a case in point, with a transportation trust fund that is nearly insolvent, with no prospect of increasing what is now the second-lowest fuel tax in the nation, and with an extensive backlog of maintenance needs. Moreover, the state faces forecasts of increasing demand, especially on commuter rail links to New York City. A recent *New York Times* headline succinctly stated: "New Jersey Faces a Transportation Funding Crisis, With No Clear Solution" (Fitzsimmons 2015).

On top of these funding needs, the state has seen two recent natural disasters—Hurricane Irene in 2011, followed a year later by Superstorm Sandy. Sandy devastated communities along the New Jersey shore, while Irene delivered significant flooding along streams and rivers. These events are within recent memory, and both had a major destructive impact on the transportation network. These extreme adverse weather events underscore the need to increase the system's resilience as well as demonstrate first-hand the need to make various infrastructure repairs. The most notable damage to existing infrastructure, the degradation of the Hudson River tunnel to New York City, was due to salt water intrusion from flooding during Sandy (Higgs 2014). That tunnel is now forecasted to have a limited lifetime of less than 20 years (Strunsky 2014).

The objective of this research is to assess whether natural disasters and experience with damaged infrastructure affect views on whether public funding should be dedicated to protecting the vulnerability of communities. Survey data were collected via a random-digit dialing phone survey approximately four months after Superstorm Sandy with the explicit research purpose of gathering information on attitudes and opinions following a major disaster. This provides a unique opportunity to assess, under extreme events, whether the public supports increasing various tax revenues or floating a bond issue dedicated to reducing vulnerability.

To collect the necessary data, the questionnaire was authored to make clear to the respondent that transportation infrastructure is a substantial part of the state's vulnerability. The survey specifically probed whether there is any support for very small increases in income tax rates, sales taxes, hotel and recreation taxes, gasoline taxes, all with a five-year sunset provision, or a 30-year bond issue as potential revenue sources. In this analysis, the authors examine various attitudinal correlates with support for these five revenue-raising policies; in particular, they examine associations with attitudes toward the need to build, maintain, or protect transportation infrastructure.

Other work in this stream examined post-extreme weather event attitudes toward global climate change (Weiner 2014; Weiner 2015a), limiting the number of times homeowners can receive disaster relief (Greenberg, Weiner 2014), as well as support for public policies to reduce risk (Greenberg et al. 2014). The risk policy study found a strong preference to reduce risks to individuals, families, and communities, and yet an unwillingness to support

funding for that risk reduction. Rather than approaching the issue from the human risk reduction perspective, one can learn a great deal from the other side of the coin, i.e., the public's support for transportation infrastructure funding.

More than two years after Sandy, the funding situation for transportation in New Jersey has not changed. Despite an obvious demonstrated need for funding to maintain and protect infrastructure, why has no solution been found? Why does no credible plan appear in sight even at this writing? While the answers to these questions are likely political, why does the public tolerate, much less not protest, the current state of the infrastructure? To that point, an April 2015 Quinnipiac University Poll found for the first time a slim majority approval for a gasoline tax increase to fund highways and transit (50% approval vs. 47% disapproval) although the margin of sampling error was ±2.6% (Quinnipiac University Poll 2015). The same survey found that 89% of respondents believe that it was "very" or "somewhat" important that the Hudson Bay tunnel between New Jersey and New York City be repaired, and 68% had a similar belief in the need to construct a second rail tunnel. At this writing, Amtrak is planning a new tunnel, but funding for this has not been decided (Higgs 2014). This comes on the heels of the cancellation of a previous tunnel project by the Governor of New Jersey (Chris Christie) in 2010, one that would have been near completion as of this writing.

Prior New Jersey state-wide polls showed less support for gasoline tax increases. A 2014 Quinnipiac University Poll found only 33% support for raising the gasoline tax (by an unspecified amount) to balance the state budget (Quinnipiac University Poll 2014). A 2009 poll by Quinnipiac found that only 37% of those surveyed supported a gasoline tax for "road improvements and mass transportation" (Agrawal, Nixon 2014). Five years later, little had changed: A 2014 Rutgers-Eagleton Institute poll found 56% of New Jersey residents opposed an unspecified gasoline tax increase and only slightly more opposed a specified (25-cent per gallon) increase. Most respondents believed that state roads were in good shape (48%) or excellent shape (6%); likewise there was a plurality of support that local roads are in good or excellent shape (39%) (Rutgers Eagleton Institute of Politics 2014). This suggests that the infrastructure funding crisis perceived by some transportation professionals may not be perceived by the general public as critically important or, in some cases, at all.

A nationwide survey conducted by the Mineta Transportation Institute (Agrawal, Nixon 2014) found little support for raising taxes dedicated to general transportation spending. This ranged from 25% strongly or somewhat supporting a 10-cent per gallon increase in the gasoline tax, up to 49% strongly or somewhat supporting a half-cent national sales tax. There was a relatively high level of support (69%) for a gasoline tax with funds dedicated to maintenance of streets, roads, and highways.

While the research presented here poses a slightly different question than most transportation finance surveys, it found limited support to increase tax revenue. The analysis focuses on the correlates associated with supporting or not supporting the various policies that were presented to the survey respondents. Taxes that directly affect residents, such as gasoline, income, and sales taxes, had virtually no support. However, there was moderately more support for visitor taxes and bond financing. Correlates demonstrated that political party affiliation was a key factor.

II. DATA

The survey data were collected approximately four months after Superstorm Sandy devastated parts of the New Jersey shore. At the time of data collection, the disaster was fresh in people's memories. The survey was administered between February 15 and March 27, 2013 by Abt SRBI using random digit dialing for both landline and cell phone numbers. These were obtained from a dual-sample-frame of 65% landlines and 35% cell-phones provided by Survey Sampling International.

The survey design was a split sample under which roughly one-half of the respondents were randomly selected to answer one of two streams of questions. One set, not analyzed here, examined experiences with major hazard events generally. It specifically probed the respondents' Superstorm Sandy experiences. The other sample (analyzed here) probed about New Jersey shore development issues, including questions on attitudes toward transportation infrastructure investment, as well as views and attitudes on global climate change. Both sub-samples were asked standard demographic and socio-economic questions, as well as a set of standard attitudinal measures. The full text of the questionnaire is included in the Appendix.

In total, 1751 adults living in New Jersey were interviewed, 1138 of which were on a landline and 613 on a cell phone; interviews were conducted in both English and Spanish (3%). Cell phone respondents received a $10 incentive to complete the interview. A small pretest using just landline numbers was conducted to assess respondent understanding of the questions. Following the pre-test, minor changes were made to the questionnaire. At the completion of the field period, the combined dual-frame AAPOR3 response rate was 18.04%, with a companion cooperation rate of 34.95%.[1]

For the analysis, the authors used a sub-sample of these respondents who, when asked about priorities for the state, were "very" or "somewhat" concerned about "controlling auto traffic" in New Jersey in the near future. The text of this question is shown in Figure 1. This sub-sample was asked questions specifically about their attitudes toward providing transportation infrastructure and services, as well as their attitudes toward raising revenue to protect vulnerable areas against future disasters. Because it was anticipated that political party preference would be a meaningful predictor, respondents who indicated "no preference" were removed from the sample. The working sample size, then, is 605 respondents. While the margin of sampling error is ±2.78% for the full sample, that value for the working sample is ±3.96%, which varies in the analysis depending on item non-response. Table 1 compares the breakdown of key demographic variables and the difference between the sub-sample and the omitted sample. On most variables, the samples are comparable: the sub-sample used for analysis is marginally older, and it includes a few more of the wealthiest households. The authors focus the remainder of the analysis on this "controlling auto-traffic as a first priority" sub-sample.

Table 1.   Comparison of Sub-Sample with Omitted Sample

	Sub-sample		Omitted sample	
	Freq.	Percent	Freq.	Percent
Male	262	43.3	505	44.1
Female	343	56.7	641	55.9
Age: 18 to 34	91	15.1	231	20.4
Age: 35 to 54	225	37.3	421	37.2
Age: 55 to 74	228	37.8	384	34.0
Age: 75 and Over	59	9.8	95	8.4
White	458	80.2	845	81.6
Minorities	113	19.8	191	18.4
Republican/Other	147	25.3	228	21.1
Democrat/Green	201	34.6	389	36.1
Independent	233	40.1	343	31.8
No preference	0	0	119	11.0
Household income under $50,000	166	27.4	240	28.3
Household income $50,000 to $75,000	116	19.2	155	18.3
Household income $75,000 to $100,000	96	15.9	151	17.8
Household income $100,000 to $150,000	112	18.5	166	19.6
Household income over $150,000?	115	19.0	136	16.0

Great, thanks. Now let's start by thinking about some issues that New Jersey will face over the next five years. Please tell us how important it is to address each of the following, that is whether it is very important, somewhat important, neither important nor unimportant, not very important, or not important at all?

PROGRAMMER: RANDOMIZE A THROUGH F

A. Improving access to health care

B. Limiting property taxes

C. Improving education

D. Redeveloping areas of New Jersey devastated by Hurricane Sandy

E. Protecting open space

F. Controlling auto traffic

Figure 1.   Screening Questions on Concern with "Controlling Auto Traffic"

The key survey question solicited responses on funding options for "more funds to be dedicated exclusively for protecting vulnerable areas against future disasters." Obviously, this can be broadly interpreted, but most respondents would be familiar with the scale of devastation to infrastructure, either by firsthand observation or by the extensive media coverage the disaster received. Disruption to the transportation network along the shore and to rail networks throughout the state affected much of the population. The question that elicited this information is displayed in Figure 1 and was based on a five-point Likert scale from "strongly agree" to "strongly disagree".

Some people say even though New Jersey will receive funds from the federal government, insurance companies, and charitable organizations to help rebuild areas devastated by Hurricane Sandy, eventually New Jersey will need to generate even more funds to better protect our vulnerable areas against future disasters.

I'm going to read five proposals for generating more funds to be dedicated exclusively for protecting vulnerable areas against future disasters. As I read each proposal, please let me know whether you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree.

Do you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree…

PROGRAMMER: RANDOMIZE A THROUGH E

A. Raise state income taxes across the board by 1% for 5 years.

B. Raise state sales tax by 1% for 5 years.

C. Add a special additional tax of 1% on hotels, motels, airports, and recreation facilities for 5 years.

D. Approve a multi-billion dollar bond issue to be paid out over 30 years.

E. Add a 5-cents-per-gallon tax on gasoline sales in New Jersey for 5 years.

Figure 2.   Survey Question Used to Assess Willingness to Protect Vulnerable Areas

III. ANALYSIS

The working hypothesis is that familiarity with, or recent memory of, an extreme adverse weather disaster leads individuals to be more likely to support investment to increase transportation resilience and protect infrastructure. However, despite being hit by one of the most severe hurricanes in recent memory, most of the respondents in the sample do not support increasing state funding to increase resiliency. Table 2 shows the level of agreement with various funding options.

The results show a majority disagreement with most of the policies to increase revenue, in particular those taxes that directly affect residents, namely income, sales, or gasoline tax increases. The one exception is a small majority agreeing that a hotel, airport, or recreational tax would be acceptable. On the one hand, this would be perceived as falling more on those visiting the state than on residents; on the other hand, tourism and hospitality are, together, one of New Jersey's top employment sectors. Thus there might be an indirect negative impact on the state's economy. A thirty-year bond also has a large plurality of support, i.e., putting the responsibility on future generations to pay back the bonds.

These results are surprising given how small the proposed time-limited incremental tax increases are. As proposed, all measures are time-limited to five years, except the bond, which would be a 30-year term. The lack of support is also surprising, as the data were collected at a time when 96% of respondents reported having a clear memory of Superstorm Sandy, and many would have had first-hand experience with the disruption caused to infrastructure.

Table 2.   Attitude Toward Increasing Revenue for Protecting Vulnerable Areas

	1% income tax increase	1% sales tax increase	1% hotel, airport, recreational tax	30 year bond	5 cents a gallon gas tax
	Percent	Percent	Percent	Percent	Percent
Strongly agree	5.0	6.7	21.7	16.4	5.0
Somewhat agree	15.1	17.3	33.2	30.0	12.2
Neutral	11.6	11.2	13.4	25.1	7.6
Somewhat disagree	13.9	15.8	10.9	10.3	13.4
Strongly disagree	54.5	49.1	20.9	18.1	61.8
Total respondents	**604**	**601**	**599**	**590**	**604**

The authors also examined whether there is any difference in attitudes toward revenue-raising policies for those who live in counties along the New Jersey shore versus inland counties. Results are shown in Table 3 and are counter-intuitive to what one would expect. In a seeming contradiction, those who live in shore counties that experienced more severe storm impacts are less likely to support revenue-raising policies compared with those living in inland counties.

Table 3. **Attitude Toward Increasing Revenue for Protecting Vulnerable Areas for Shore Counties Versus Non-Shore Counties**

Percent	1% Income tax increase		1% Sales tax increase		1% Hotel, airport, recreational tax		30-Year bond		5 Cents a gallon gas tax	
	Non-shore county	Shore county	Non-shore county	Shore county	Non-shore county	Shore county	Non-shore county	Shore county	Non-shore county	Shore county
Strongly disagree	39.5	60.5	41.7	58.3	41.6	58.4	46.7	53.3	40.0	60.1
Somewhat disagree	47.1	52.9	40.3	59.7	41.3	58.8	40.5	59.5	45.7	54.4
Neutral	53.3	46.7	52.5	47.5	46.2	53.9	41.2	58.8	43.3	56.7
Somewhat agree	51.2	48.8	45.3	54.7	47.7	52.3	36.1	63.9	44.4	55.6
Strongly agree	53.3	46.7	52.5	47.5	46.2	53.9	41.2	58.8	43.3	56.7
Total respondents	**604**		**601**		**599**		**590**		**604**	

A simple cross-tab, however, is a blunt instrument that does not provide sufficient control to disaggregate this variation. Therefore, the authors estimated more detailed multi-variate models. They controlled for socio-economic factors using generalized ordinal logistic regression to estimate a partial proportional odds model that controls for any variables that violated the parallel lines/proportional odds assumption (Williams 2006). That is, the coefficient estimates for some variables are not constant for each ordinal level. Based on the chi-square measure, most of these models were not statistically significant. Specifically, the models for attitudes towards sales tax and hotel/recreational tax increases showed no association with any of the socio-economic variables. Models for the gasoline tax, income tax, and bond policies show some minor effects but returned very low pseudo-R^2 values. In addition, including the full set of control variables tended to violate the parallel lines assumption of ordered logit models. The authors attempted to estimate these models using a proportional odds model that can control for this, but these models would not converge. For this reason, they used a data reduction strategy that permitted a simpler modeling strategy.

Using exploratory factor analysis, they generated dependent variables on revenue raising attitudes. Table 4 shows the unrotated factor scores for these variables and suggests that two factors can be extracted, the first of which can be designated the "tax myself" group (Factor 1), while the other can be designated as the "tax others" group (Factor 2)—the "others" being tourists, visitors, and future generations.

Table 4.   Unrotated Factor Scores for Revenue Raising Variables

	Factor 1, "Tax myself"	Factor 2, "Tax others"	Uniqueness
1% income tax increase	0.5378	-0.0874	0.7032
1% sales tax increase	0.6009	-0.0860	0.6316
1% hotel, airport, recreational tax	0.4337	0.1331	0.7942
30-year bond	0.3549	0.1641	0.8471
5 cents a gallon gas tax	0.4775	-0.0364	0.7707

The authors used factor scores estimated from this analysis as dependent variables in a series of ordinary least squares regression models. These scores place each respondent on a continuum of agreement-disagreement with the latent variables "tax others" and "tax myself." These models are shown in Table 5 and Table 6. Those with "tax others" as the dependent variable (Table 5) are statistically insignificant, based on the model F-test with very low adjusted-R^2. While there is more support for increasing hotel/recreational taxes or issuing a 30-year bond, the authors cannot isolate any factors associated with this preference and can only note that these two funding mechanisms have more support than the other tax funding mechanisms.

The models with "tax myself" as the dependent variable are shown in Table 6. The first model includes only socio-economic and demographic variables. The authors found that this model is not statistically significant (Prob > F = 0.2689) and has an adjusted-R^2 near zero.

They then added four variables for the importance that respondents attach to various transportation improvements. These variables are included in Table 7, showing that the majority of respondents believe that investment should be made in new roads, public transit, maintaining existing roads and transit, and protecting roads and transit from future disasters. The largest support (combining "somewhat important" with "very important") is for maintaining roads and transit, followed by protecting these assets, with the lowest support for investing in new roads. The regression results show an association between the willingness to increase taxes (on oneself) and the belief that it is important to invest in transit and to protect roads and transit from future disaster (second model in Table 6). The results also show a small effect that those self-reporting as Democrats are more likely to support tax policies. Other demographic and socio-economic indicators are not statistically significant.

The authors also added two "dummy variables" on whether respondents have a good memory of Hurricane Irene and Superstorm Sandy. While almost all respondents (96%) have strong memories of Sandy, only 57% report remembering many details about Irene. Both have positive coefficient values, but they do not pass standard tests of statistical significance (i.e., below 90%).

The third set of variables—attitudinal measures commonly collected in surveys to assess views on society and which tend to be correlated with political party self-identification—are included as model controls. Other studies that have used these variables include Greenberg et al. 2014, Kahan et al. 2007, and Leiserowitz 2006. These are shown in Table 8, and

a dummy variable is used for each in the models, combining "strongly" and "somewhat" agree. The model fit statistics are strongest with the inclusion of these variables, with an adjusted-R^2 of 0.12 and a statistically significant F test.

According to the authors, these attitudinal variables diminish the association with political party self-identification. All other demographic and socio-economic variables are not statistically significant, while the variables for attitudes toward investing in transit and protecting roads and transit remain robust with a positive association. The attitudinal variables themselves all have expected effects. Those views that tend to be more "liberal" or left leaning—i.e., the need for a better distribution of wealth and a belief that discrimination is still an issue—are more likely to support tax increases (i.e., "tax myself"). Likewise, the negative coefficient on those who believe that society does too much for some people has the expected sign. None of these variables added significance to the first set of models on "tax others" shown in Table 5.

Table 5.   OLS Regressions of Predicted Factor Score for "Tax Others"

	Tax others					
	coef.	t-stat	coef.	t-stat	coef.	t-stat
Age	0.00	-1.28	0.00	-0.98	0.00	-1.05
Party ID: Democrat	-0.02	-0.56	-0.02	-0.69	-0.02	-0.49
Party ID: Independent	-0.05	-1.68	-0.04	-1.56	-0.04	-1.30
Vehicles in household	0.01	0.98	0.01	0.95	0.01	0.94
Household income, 50 to 75K	0.02	0.60	0.01	0.40	0.02	0.52
Household income, 75 to 100K	0.00	-0.10	0.00	0.03	0.00	0.10
Household income, 100 to 150K	0.02	0.58	0.01	0.27	0.00	0.04
Household income, over 150K	0.03	0.91	0.02	0.65	0.02	0.47
Male	0.00	0.09	0.01	0.29	0.00	0.18
White (ref: minorities)	-0.04	-1.45	-0.05	-1.45	-0.05	-1.51
Shore county	0.02	0.89	0.02	0.69	0.02	1.00
Investing in new roads, very/somewhat important			0.05	1.58	0.05	1.57
Investing in new public transit, very/somewhat important			0.02	0.59	0.02	0.61
Maintaining roads and transit, very/somewhat important			-0.02	-0.20	-0.01	-0.09
Protecting roads and transit from future disasters, very/somewhat important			0.03	0.65	0.03	0.62
Memory of Sandy			0.04	0.61	0.05	0.78
Memory of Irene			0.03	1.13	0.03	1.30
Improve wealth distribution, agree					-0.03	-0.98
Discrimination problem, agree					-0.01	-0.26
Expect society to do, agree					-0.04	-1.26
_cons	0.07	1.27	-0.05	-0.40	-0.02	-0.14
N	532		516		512	
adj R^2	0.0043		0.0007		0.0392	
Prob > F	0.2785		0.4338		0.4587	

Table 6.   OLS Regressions of Predicted Factor Score for "Tax Myself"

	Tax myself					
	coef.	t-stat	coef.	t-stat	coef.	t-stat
Age	0.00	-0.96	0.00	-1.39	0.00	-1.47
Party ID: Democrat	0.25	2.58	0.17	1.76	-0.05	-0.50
Party ID: Independent	0.12	1.36	0.12	1.44	0.03	0.37
Vehicles in household	0.00	-0.15	0.00	0.01	0.00	0.06
Household income, 50 to 75K	-0.09	-0.80	-0.08	-0.78	-0.02	-0.23
Household income, 75 to 100K	0.10	0.86	0.07	0.62	0.08	0.77
Household income, 100 to 150K	-0.11	-0.97	-0.14	-1.28	-0.12	-1.10
Household income, over 150K	0.01	0.10	-0.03	-0.26	-0.02	-0.21
Male	0.00	-0.03	-0.01	-0.17	0.00	0.02
White (ref: minorities)	0.09	0.92	0.05	0.48	0.08	0.86
Shore county	-0.08	-1.16	-0.08	-1.22	-0.07	-1.07
Investing in new roads, very/somewhat important			0.12	1.35	0.13	1.49
Investing in new public transit, very/somewhat important			0.46	4.73	0.44	4.66
Maintaining roads and transit, very/somewhat important			0.08	0.35	0.13	0.56
Protecting roads and transit from future disasters, very/somewhat important			0.36	2.48	0.32	2.27
Memory of Sandy			0.25	1.34	0.23	1.25
Memory of Irene			0.11	1.55	0.10	1.45
Improve wealth distribution, agree					0.15	1.94
Discrimination problem, agree					0.34	4.08
Expect society to do, agree					-0.15	-1.76
_cons	0.02	0.12	-1.05	-3.06	-1.20	-3.44
N	532		516		512	
adj R²	0.0046		0.0747		0.1203	
Prob > F	0.2689		0.0000		0.0000	

Table 7.   Importance of Investing in Transportation

	Investing in new roads	Investing in new public transit	Maintaining roads and transit	Protecting roads and transit from future disasters
	Percent	Percent	Percent	Percent
Very important	39.1	46.2	79.1	69.7
Somewhat important	40.6	38.9	18.4	24.5
Neither important nor unimportant	5.4	3.8	1.0	3.2
Not very important	11.6	8.0	1.3	1.5
Not important at all	3.4	3.0	0.2	1.2
Total respondents	**596**	**599**	**603**	**601**

Table 8.   Responses to Attitudinal Questions

	Our society would be better off if the distribution of wealth was more equal	Discrimination against minorities is still a very serious problem in our country	Too many people expect society to do things for them that they should be doing for themselves
	Percent	Percent	Percent
Strongly agree	37.9	45.3	59.5
Somewhat agree	25.2	32.5	21.4
Neither agree nor disagree	6.3	4.5	3.8
Somewhat disagree	10.7	10.7	9.0
Strongly disagree	19.9	7.2	6.3
Total respondents	**599**	**601**	**602**

All told, the authors found a gross inconsistency: On the one hand, they observed very limited support for any revenue raising policies (Table 2); on the other hand, they observed substantial support for more investment in transportation infrastructure and its protection (Table 7). To further analyze this call for a "free lunch," they calculated how many of the respondents "strongly" or "somewhat" disagreed with all five revenue-raising policies. Effectively, 10% of the sample (about 60 out of 605) reported universal disagreement with all five policies (Table 9). The authors cross-tabulated this sub-sample of "disagreers" with their belief about the importance of investing in new roads and transit, maintaining existing infrastructure, and protecting infrastructure. These results, in Table 9, show strong support for investment, especially for maintaining existing infrastructure, with the lowest level of support (although still above 50%) for investment in new transit.

Table 9.   Subset of Those Who Strongly and Somewhat Disagree with All Five Revenue-Raising Policies

	New roads		Transit		Maintain		Protect	
	Freq.	Percent	Freq.	Percent	Freq.	Percent	Freq.	Percent
Not important at all	5	8.2%	8	12.9%	0	0.0%	4	6.5%
Not very important	8	13.1%	10	16.1%	2	3.2%	4	6.5%
Neither important nor	6	9.8%	4	6.5%	1	1.6%	2	3.2%
Somewhat important	22	36.1%	22	35.5%	20	31.7%	19	30.6%
Very important	20	32.8%	18	29.0%	40	63.5%	33	53.2%
Total respondents	**61**		**62**		**63**		**62**	

IV. DISCUSSION

More than 96% of the survey sample has a strong recollection of Superstorm Sandy, which occurred just four months prior to the data collection. However, the analysis shows that New Jersey residents do not support even time-limited tax-based revenue-raising approaches for the dedicated purpose of protecting vulnerable areas against future disasters. There does not seem to be any credible claim for experiential learning. There is the least measurable support for taxation strategies that residents tend to pay for—namely income, sales, and gasoline taxes—even when these are very small increases and have a five-year sunset provision. To be sure, there is more support for either a hotel/recreation tax or simply using bond financing to generate funds, but these would tend to be paid either by visitors or future generations.

Indeed, there clearly seems to be—not just among New Jersey's political elites, but also among its mass public—a "kick the can down the road" attitude toward paying for infrastructure repair and maintenance. Given the American experience of maintenance deferral, which dates back to the Reagan era (Wilber, Jameson 1991), this is disturbing but not surprising. Indeed, these results are similar to previous surveys of New Jersey residents' attitudes toward raising taxes, especially gasoline taxes for transportation purposes, which have generally shown low levels of support.

Recent credible New Jersey statewide polls have shown support ranging from 37% up to 50% for gasoline taxes dedicated to transportation (Quinnipiac University Poll 2015, Rutgers Eagleton Institute of Politics 2014). However, the results from this survey for the gasoline tax showed substantially less support, at about 17% in favor. It may be a limitation of this study that the probes did not necessarily suggest dedicating the revenue exclusively to transportation, but more generally to protecting vulnerable areas. Respondents may not have understood that much of that protection involves making transportation systems more resilient. To be sure, respondents may not understand that transportation systems are, after the coordination of emergency rescue personnel, the most essential element to evacuation and, in turn, safety from disaster.

The survey's income tax and sales tax policies likewise had very low levels of support (20% and 24%), while the hotel/recreation tax and bonding had the most support (56% and 46%). The authors can delimit two groups: those who are ready to tax themselves and those who would prefer to tax others. The survey found non-zero but trivial demographic or socio-economic correlates associated with either grouping. However, those ready to bear the burden of own-taxation are more likely to be self-identified Democrats. This is not surprising. In fact, other transportation finance surveys find that self-identified Democrats are more likely to support gasoline tax increases (Agrawal, Nixon 2014, Quinnipiac University Poll 2015, Rutgers Eagleton Institute of Politics 2014).

These differences disappear when psycho-attitudinal variables as controls are included in the models. In other words, latent attitudes distinguishing a preference for personal responsibility as opposed to collectivism and communitarianism seem to subsume the effect of party identification. This finding is worthy of further investigation; New Jersey, unlike many states, permits voters to register as a non-party identifier, i.e., as "unaffiliated."

These are not true political party registrations and are often conflated with political party independence, which implies distance from the partisan system. That said, companion research on this dataset has shown that "those with 'no preference' seem to respond…[in] a way very similar to the way Democrats do [while] self-reported independents…seem to run in closer parallel with Republicans" (Weiner 2015b).

As a population, we find ourselves in a world where most—but not all—respondents want benefits without costs. What is even more interesting is the strong support for investing, maintaining, and protecting transportation infrastructure (Table 7). Those who agree that it is important to invest in public transit and to protect infrastructure agree that taxes that affect current residents should be increased. There is no similar correlation for investing in new roads or maintaining roads and transit, and likewise no associations with any of these variables with those who support taxing others. Paradoxically, those survey respondents most in opposition to any revenue-raising scheme feel strongly that it is important to invest in infrastructure (Table 9).

To be sure, the political calculus here is vexing. While most professional transportation experts and organizations argue that there is a pressing need for investment in transportation infrastructure (American Society of Civil Engineers 2013), and the public seems to agree, there is very little support for increasing revenue. And when there is support, it generally falls along unsurprising political lines.

Americans are caught in the "free lunch" zone. The data in this report were collected in the aftermath of the worst and most costly disaster in New Jersey history. One would expect a powerful public response for infrastructure improvements. However, the survey found how deeply opposed the New Jersey public is to tax increases, especially gasoline taxes, even in the face of statewide tragedy.

Unfortunately, there is no free lunch.

V. CONCLUSIONS

This report's primary contribution is that the survey was fielded shortly after Superstorm Sandy devastated coastal and other regions of New Jersey. Residents of the state were well aware of Sandy's damage, the need to fund repairs to infrastructure, and the enhanced risk of future natural disasters. The survey's key revenue and tax questions were focused on protecting vulnerable parts of the state, but it found little support for short-term (5-year) tax increases; there was more support for hotel/recreational taxes as well as issuing bonds as a revenue source. The latter is consistent with state transportation policy over the last couple of decades, as the state gasoline tax rate has not increased in more than 25 years, and the state trust fund will soon be bankrupt, existing only to service past bond debt.

Thus, this report finds little hope for comprehensive tax policies to fund resiliency, let alone those associated with transportation. The great irony is that this is presented against a perceived view that it is important to invest in, maintain, and protect roads and transit. Even respondents who universally oppose any revenue-raising scheme agree that these needs are important. The one silver lining in these results is that those who believe transit investments and protecting transportation assets are important also agree with the survey's self-taxation policies. The "touch of grey" in that silver lining is that this willingness to pay does not hold for funding "road maintenance." One potential caveat to the results is the way the question was framed; it is possible that support would be higher when survey questions provide more detail on specific transportation investments. Many regions have passed successful taxation referendums in this way. Future surveys might find different results if that approach is taken.

In fact, future research is needed to more fully understand the resistance to funding policies. Is this driven merely by political views, or are there more fundamental issues with how policy makers communicate funding requirements? Further research could investigate these issues in more depth at a national or regional level, the latter especially soon after any natural disasters that would identify problems with existing infrastructure and its resilience. If people could have their cake and eat it, too, this research would be moot. Unfortunately, roads, bridges, rail lines, and airports are high-cost items of a "First World" experience. If Americans want to dance—or drive, or take a plane, train, or light rail—we must pay the fiddler.

APPENDIX: SURVEY QUESTIONS

New Jersey Hurricane Impact Survey (Abt SRBI Study #5808)

INTRODUCTION:

Hello, my name is _____, and I am calling from the Bloustein School of Planning and Public Policy at Rutgers University. We're conducting an important public opinion survey of adults in New Jersey to understand your response to and concerns about the impact to New Jersey of Hurricane Sandy in late October 2012. These results will help planners and analysts understand how to improve responses to future similar events.

LANDLINE:

So that all types of people are represented in our survey, may I please speak to the person 18 years or older living in your household who last had a birthday? **(IF SELECTED RESPONDENT NOT AT HOME, ARRANGE A CALL-BACK).**

GO TO QA.1

CELL PHONE:

Your number has been selected at random and as a small token of our appreciation for speaking with us we can provide you with $10 for participating. If you are now driving a car or doing an activity requiring your full attention I need to call you back later.

(ASK CELL PHONE)

QA. Are you at least 18 years old?

　　1. Under 18

　　2. 18 or older

　　9. Refused

IF QA = 2 CONTINUE
IF QA = 1,9 THANK AND TERMINATE: This survey is limited to adults age 18 and over.

(ASK LANDLINE AND CELL)
QAx. Do you live in New Jersey?

　　1. Yes

　　2. No – Screen out QA1

　　9. Refused – Screen out QA1

QAx = 1 CONTINUE
QAx = 2, 9 THANK AND TERMINATE: This survey is limited to people who live in New Jersey.

[IF NECESSARY / RESPONDENT ASKS: The study is sponsored by Rutgers University and the Rockefeller Brothers Foundation]

Thank you. The interview will take an average of about 15-17 minutes to complete, and we are not selling anything nor asking for money. We do, however, need your help to make this study as accurate as possible. Your telephone number was chosen randomly, and your participation is important for the study's validity. We do not have your name or address, and your responses will not be linked to your phone number. All your answers are completely confidential.

QB. While we are hopeful you will answer all of the questions, you may decline to answer any particular question, and you may stop the interview at any time. All information you give us will be kept strictly anonymous and no individual answers will be reported. May I proceed?

    1. Yes, proceed

    2. Callback

    9. Refused (Soft Refusal QB)

POSSIBLE PROBES

[INTERVIEWER: IF RESPONDENT ASKS, SAY: If you would like additional information on this survey, please feel free to contact Dr. Marc Weiner, the project director, at 732-932-1900, x217.]

[IF "DON'T KNOW ENOUGH": There are no right or wrong answers. We are only interested in your opinions. They are just as important as anybody else's.]

[IF "NOT INTERESTED," "DON'T WANT TO": Please help us plan for New Jersey's future responses to emergencies like Hurricane Sandy. We could really use your cooperation, and we are interested in your experiences and what you think about responding to and preparing for disasters.]

LOCATION

Q1. So that we can make sure all areas of the study are represented please tell me what county you live in.

    1. Atlantic

    2. Bergen

    3. Burlington

    4. Camden

    5. Cape May

6. Cumberland

7. Essex

8. Gloucester

9. Hudson

10. Hunterdon

11. Mercer

12. Middlesex

13. Monmouth

14. Morris

15. Ocean

16. Passaic

17. Salem

18. Somerset

19. Sussex

20. Union

21. Warren

88. Don't know (VOL) **(SCREEN-OUT COUNTY Q.1: THANK & TERMINATE)**

99. Refused **(SCREEN-OUT COUNTY Q.1: THANK & TERMINATE)**

Q2. And, please tell me the zip code for where you live.

___ ___ ___ ___ ___

8. Don't Know

9. Refused

PROGRAMMER:

- **FOLLOWING Q1 AND Q2, WHICH ARE TO BE ADMINISTERED TO THE ENTIRE SAMPLE, WE WILL RANDOMLY SPLIT THE SAMPLE INTO TWO EQUAL GROUPS, SUCH THAT ONE-HALF OF LANDLINES AND ONE-HALF OF CELL PHONES ARE IN EACH GROUP.**

- **GROUP ONE SHOULD BE ADMINISTERED QUESTIONS: SR1 [page 4] THROUGH MHE2 [page 12]**

- **GROUP TWO SHOULD BE ADMINISTERED QUESTIONS T1 [page 11] THROUGH MHE9e [page 21]**

- ***NOTE: BOTH GROUPS GET QUESTIONS T1, MHE1, AND MHE2.***

- **THEN, THE FULL SAMPLE IS ADMINISTERED QUESTIONS QA1 [page 22] THROUGH TO END OF SURVEY.**

SECTION #1: SHORE REDEVELOPMENT

SR1. Great, thanks. Now let's start by thinking about some issues that New Jersey will face over the next five years. Please tell us how important it is to address each of the following, that is whether it is very important, somewhat important, neither important nor unimportant, not very important, or not important at all?

[IF NECESSARY AFTER EACH: IS THAT ISSUE VERY IMPORTANT, SOMEWHAT IMPORTANT, NEITHER IMPORTANT NOR UNIMPORTANT, NOT VERY IMPORTANT, OR NOT IMPORTANT AT ALL?]

PROGRAMMER: RANDOMIZE A THROUGH F

A. Improving access to health care

B. Limiting property taxes

C. Improving education

D. Redeveloping areas of New Jersey devastated by Hurricane Sandy

E. Protecting open space

F. Controlling auto traffic

RESPONSE CODES:

1. Very important

2. Somewhat important

3. Neither important nor unimportant

4. Not very important

5. Not important at all

8. Don't Know

9. Refused

IF SR1(F) > 2 SKIP TO SR2

Now, you told me you thought controlling auto traffic was important and I'd like to follow up on that a little.

SR1f. So, for each of these four ideas, please tell me whether you think it's very important, somewhat important, neither important nor unimportant, not very important, or not important at all to address?

PROGRAMMER: RANDOMIZE A THROUGH D

    A. Investing in new roads

    B. Investing in new public transit

    C. Maintaining existing roads and public transit

    D. Protecting roads and public transit from future disasters such as hurricanes, floods, and storm surges

RESPONSE CODES:

    1. Very important

    2. Somewhat important

    3. Neither important nor unimportant

    4. Not very important

    5. Not important at all

    8. Don't Know

    9. Refused

SR2. Some people are talking about efforts to try to reduce New Jersey's vulnerability to hurricanes. Here are some proposals that could be used in redeveloping the New Jersey shore. As I read each proposal, please let me know whether you strongly agree, somewhat agree, are neutral, somewhat disagree or strongly disagree.

[IF NECESSARY AFTER EACH: Do you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree?]

PROGRAMMER: RANDOMIZE A THROUGH G

    A. Allow local governments to prohibit housing in some areas.

    B. Allow local governments to require housing in some areas to be built in ways that make them highly resistant to natural disasters.

    C. Have the government give financial incentives to rebuild in ways that reduce future risk.

    D. Limit the number of times homeowners in high risk areas may receive financial disaster relief.

    E. Relocate water, sewer, natural gas, roads, and other infrastructure away from the most vulnerable areas of the state.

    F. Have the federal and state government purchase property in vulnerable areas and turn it into open space.

    G. Have the federal and state government identify areas, which cannot be developed because they provide natural buffers in the event of storms.

RESPONSE CODES:

1. Strongly agree

2. Somewhat agree

3. Neutral

4. Somewhat disagree

5. Strongly disagree

8. Don't Know

9. Refused

SR3. Some people say even though New Jersey will receive funds from the federal government, insurance companies, and charitable organizations to help rebuild areas devastated by Hurricane Sandy, eventually New Jersey will need to generate even more funds to better protect our vulnerable areas against future disasters. I'm going to read five proposals for generating more funds to be dedicated exclusively for protecting vulnerable areas against future disasters. As I read each proposal, please let me know whether you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree.

[IF NECESSARY AFTER EACH: Do you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree?]

PROGRAMMER: RANDOMIZE A THROUGH E

A. Raise state income taxes across the board by 1% for 5 years.

B. Raise state sales tax by 1% for 5 years.

C. Add a special additional tax of 1% on hotels, motels, airports, and recreation facilities for 5 years.

D. Approve a multi-billion dollar bond issue to be paid out over 30 years.

E. Add a 5-cents-per-gallon tax on gasoline sales in New Jersey for 5 years.

RESPONSE CODES:

1. Strongly agree

2. Somewhat agree

3. Neutral

4. Somewhat disagree

5. Strongly disagree

8. Don't Know

9. Refused

SECTION #2: GLOBAL CLIMATE CHANGE

GCC1. We would like your opinion about global climate change. I am going to read four statements and for each one, please tell me whether you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree with the statement.

[IF NECESSARY AFTER EACH: Do you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree?]

PROGRAMMER: RANDOMIZE A THROUGH D

   A. Global climate change is not occurring.

   B. Global climate change is mostly caused by human activity.

   C. Global climate change is a risk to New Jersey.

   D. Global climate change is a risk to me, my family, and my friends.

RESPONSE CODES:

   1. Strongly agree

   2. Somewhat agree

   3. Neutral

   4. Somewhat disagree

   5. Strongly disagree

   8. Don't know (VOL)

   9. Refused (VOL)

   Now I'd like to get your general opinion of the government officials, scientists and media who provide us with information about global climate change.

GCC2. So, for each statement I read, please tell me whether you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree.

[IF NECESSARY AFTER EACH: Do you strongly agree, somewhat agree, are neutral, somewhat disagree, or strongly disagree?]

PROGRAMMER: RANDOMIZE A THROUGH D

   A. The international scientific community understands the science behind global climate change.

   B. I trust the scientific community to truthfully report their findings related to climate change.

   C. Our state and local officials understand the implications of global climate change for my region.

D. The media I rely on communicate honestly with us about global climate change.

RESPONSE CODES:

1. Strongly agree

2. Somewhat agree

3. Neutral

4. Somewhat disagree

5. Strongly disagree

8. Don't know (VOL)

9. Refused (VOL)

GCC3. O.K., thanks. Now, we'd like to learn whether the recent hurricanes to hit New Jersey have influenced your opinion on global climate change. I am going to read four statements; please wait until I have finished reading them, and then please tell me which one most closely fits your viewpoint.

PROGRAMMER: RANDOMIZE STATEMENTS 1 THROUGH 4-SCRAMBLE, ie. 1-2-3-4 OR 4-3-2-1

1. I do not believe global climate change is occurring, and the recent hurricanes have not changed my belief.

2. I used to not believe global climate was occurring, but the recent hurricanes have made me question that belief.

3. I believe global climate change is occurring, but do not believe the recent hurricanes are related to it.

4. I believe global climate change is occurring, and the recent hurricanes have strengthened that belief.

8. Don't know (VOL)

9. Refused (VOL)

GCC4. Some people say that there are several specific risks that are predictable due to global climate change. I am going to read you a list of risks, and please rate each as to whether you believe it to be of the greatest concern, some concern, little concern, or no concern whatsoever.

[IF NECESSARY AFTER EACH: Is/are _____ of the greatest concern, some concern, little concern, or no concern whatsoever?]

PROGRAMMER: RANDOMIZE A THROUGH K

A. Higher allergy and asthma rates

B. Spread of bugs and infectious disease

C. Drought

D. Heat waves

E. More extreme storms

F. Floods

G. More heavy winds

H. Damage to agriculture

I. School closings

J. Difficulty getting help from police, fire, and public health services

K. Difficulty getting food, medication and gasoline

RESPONSE CODES:

1. Of the greatest concern

2. Of some concern

3. Of little concern

4. Of no concern whatsoever

8. Don't know (VOL)

9. Refused (VOL)

SECTION #3: MISCELLANEOUS

MSC1. And have you ever personally experienced, by which I mean have you ever been in a hurricane, flood, earthquake, tornado, explosion, train derailment, mudslide, or major fire?

1. Yes

2. No

8. Don't know

9. Refused

PROGRAMMER: IF GROUP 2, START HERE.

SECTION #4: TRUST

T1. O.K., thanks. Now I am going to read you a list of four different groups that will be involved in the redevelopment and rebuilding of the New Jersey shore. Please wait until I finish reading the list, and then please tell me of those groups which group you most trust and which group you least trust.

PROGRAMMER: RANDOMIZE A THROUGH D. CATI: DO NOT DISPLAY ANSWER GIVEN IN T1a in T1b

    A. The federal government

    B. The state government

    C. Local governments

    D. Private developers

T1a. Which group do you most trust? (READ LIST)

    1. The federal government

    2. The state government

    3. Local governments

    4. Private developers

    8. Don't know

    9. Refused

T1b. And which group do you least trust? (READ LIST)

    1. The federal government

    2. The state government

    3. Local governments

    4. Private developers

    8. Don't know

    9. Refused

SECTION #5: MAJOR HAZARD EVENTS: RESPONSE AND PREPARATION

MHE1. We are interested in how well you recall certain events. I'm going to read a list of four events that have occurred since the year 2000. For each, please tell me how memorable it was to you. By memorable, I mean sitting here and talking now, how much can you remember about the event. The choices are that you "don't remember anything," that you "remember a few details," that you "remember many

details," or that you "remember many details <u>and</u> clearly remember where you were when it happened."

[IF NECESSARY AFTER EACH: How much do you remember about that event? AND IF NECESSARY: Is it "don't remember anything," "a few details," "many details," or do you remember "many details and know where you were when it happened"?]

PROGRAMMER: RANDOMIZE A THROUGH D

    A. The World Trade Center attack in New York City in 2001

    B. Hurricane Katrina in New Orleans in 2005

    C. Hurricane Sandy that struck the New Jersey coast in 2012

    D. Hurricane Irene that struck in 2011

RESPONSE CODES

    1. I don't remember anything about the event

    2. I remember a few details about the event

    3. I remember many details about the event

    4. I remember many details and I clearly remember where I was when it happened

    8. Don't know (VOL)

    9. Refused (VOL)

MHE2. Thank you. Now, please tell me ONE word for the first emotion that comes to mind when you remember Hurricane Sandy.

[PARTIALLY PRE-CODED // OPEN-ENDED RESPONSE: INTERVIEWER – PLEASE TYPE IN THE FIRST ONE WORD RESPONDENT GIVES—DO <u>NOT</u> READ LIST AND DO <u>NOT</u> PROMPT]

    1. Fear

    2. Anger

    3. Sorrow

    4. Loss

    5. Danger

    77. Other _____

    88. Don't know

    98. Refused

PROGRAMMER: IF GROUP 1, SKIP TO QA1.

MHE3a. We'd like to know if you've ever had direct personal experience with a disaster **prior to** Hurricane Sandy. How about Hurricane Irene in late August of 2011? Were you directly affected by Hurricane Irene?

    1. Yes

    2. No

    8. Don't know

    9. Refused

IF MHE3a > 1 SKIP TO MHE4a.

MHE3b. Were you evacuated or relocated from your home or work as the result of Hurricane Irene in late August of 2011?

    1. Yes

    2. No

    8. Don't know

    9. Refused

MHE4a. And, other than Hurricanes Irene or Sandy, have you ever personally experienced, by which I mean have you ever been in a hurricane, flood, earthquake, tornado, explosion, train derailment, mudslide, or major fire?

    1. Yes

    2. No

    8. Don't know

    9. Refused

IF MHE4a > 1 SKIP TO MHE5a.

MHE4b. Was that one time only, or more than once?

[IF NECESSARY ADD: "THAT YOU WERE IN A DISASTER EVENT"]

    1. Once (i.e., only one time)

    2. More than once

    8. Don't know

    9. Refused

MHE5a. O.K., thanks. Now, I'd like to talk about Hurricane Sandy in late October of 2012. Were you asked or directed to evacuate or relocate due to Hurricane Sandy?

(IF ASKED, INCLUDES BEFORE OR AFTER HURRICANE)

    1. Yes

    2. No

    8. Don't know

    9. Refused

IF MHE5a = 1 SKIP TO MHE5c.

MHE5b. Even though you weren't asked or directed to evacuate or relocate, did you leave your home and stay somewhere else due to Hurricane Sandy?

(IF ASKED, INCLUDES BEFORE OR AFTER HURRICANE)

    1. Yes

    2. No

    8. Don't know

    9. Refused

IF MHE5b >1 SKIP TO MHE6.

MHE5b1. Was that before, or after Hurricane Sandy that you left your home and stayed somewhere else?

    1. Before

    2. After

    8. Don't know

    9. Refused

MHE5b2. And was that during the day, or was that at night, when it was dark?

[IF NECESSARY ADD: "THAT YOU LEFT YOUR HOME AND STAYED SOMEWHERE ELSE?"].

    1. During the day

    2. At night / after dark

    8. Don't know

9. Refused

MHE5b3. And about what time was that?

[IF NECESSARY ADD: "AM or PM?"]

    1. _____

    8. Don't know
    9. Refused

SKIP TO MHE5c3a.

MHE5c. Did you then evacuate or relocate?

[INTERVIEWER: IF NECESSARY SAY, "PLEASE REMEMBER ALL RESPONSES ARE ANONYMOUS".]

    1. Yes
    2. No

    8. Don't know
    9. Refused

IF MHE5c > 1 SKIP TO MHE6.

MHE5c1. How soon after getting the evacuation order did you leave your home?

[INTERVIEWER: PROMPT ONLY IF NECESSARY]

    1. Immediately
    2. Within an hour or so
    3. Later that same day
    4. The next day
    5. After the following day

    8. Don't know
    9. Refused

MHE5c2. And was that during the day, or was that at night, when it was dark?

[IF NECESSARY ADD: "THAT YOU LEFT YOUR HOME AND STAYED SOMEWHERE ELSE?"]

    1. During the day

    2. At night / after dark

    8. Don't know

    9. Refused

MHE5c3. And about what time was that?

[IF NECESSARY ADD: "AM or PM?"]

    1. _____

    8. Don't know

    9. Refused

MHE5c3a. How did you evacuate?

[INTERVIEWER: PROMPT ONLY IF NECESSARY; PROBE FOR PRIMARY MODE OF TRANSPORTATION.]

    1. By private vehicle / my own car or truck

    2. By private vehicle / someone else's car or truck

    3. By public transportation

    4. By walking or bicycling

    77. By some other way [if so, please specify:_____]

    88. Don't know

    99. Refused

IF MHE5c3a ≠ 3 SKIP TO MHE5d

MHE5c4. What public transit did you take to evacuate?

[INTERVIEWER: PROMPT ONLY IF NECESSARY]

    1. Bus

    2. Train

    3. PATH

    4. Light rail or subway

    5. Taxi

    6. Special county transportation, such as NJ Transit Access Link

77. By some other way [if so, please specify:_____]

88. Don't know

99. Refused

MHE5c5. [**IF MHE5c4 > 77 QUESTION READS:** *O.K., then perhaps you remember where you got on public transit during the Hurricane Sandy evacuation, was it at…*]

[OTHERWISE, QUESTION READS: *And where did you get on public transit for that evacuation?*]

1. The nearest bus stop

2. The nearest train, PATH, or light rail station

3. I got picked up at my home

4. I went to a predefined evacuation pick up location

5. I went to a pick up location I was told to go when I got the evacuation order

77. Someplace else [if so, please specify:_____]

88. Don't know

99. Refused

MHE5d. And please tell me where you evacuated to? Did you go to a shelter, a relative or friend's home, a hotel or motel, a church, synagogue, or mosque, or somewhere else?

INTERVIEWER: "SHELTER" INCLUDES TEMPORARY SHELTERS SET UP IN SCHOOLS OR COMMUNITY CENTERS.

1. Shelter

2. Relative or friend's home

3. Hotel or motel

4. Church, synagogue, or mosque

77. Somewhere else, please specify:_____

88. Don't know

99. Refused

MHE6. I'm going to read a short list of things that happen to people during disasters. Please tell me if any of these things happened to you as a result of Hurricane Sandy.

PROGRAMMER: RANDOMIZE A THROUGH I

A. The death of a family member, friend, or neighbor

B. Injury to you, a family member, friend, or neighbor

C. Damage to cars, trucks, boats, or other vehicles

D. Damage to your home or property

E. Loss of utility-company-supplied electrical power in your home

F. Loss of utility-company-supplied water in your home

G. Loss of utility-company supplied natural gas in your home

H. Loss of cell-phone coverage, meaning, you couldn't get a cell-phone signal

I. Lost your primary means of travel, whether by car or public transit

RESPONSE CODES

1. Yes

2. No

8. Don't know (VOL)

9. Refused (VOL)

REGARDLESS OF THE ANSWER VALUES FOR MHE6(A), MHE6(B), MHE6(C), MHE6(F), MHE6(G), MHE6(H) and MHE6(I), IF MHE6(D) = 2 AND MHE6(E) = 2, THEN SKIP TO MHE7.

IF MHE6(D) = 1, ASK MHE6d.
IF MHE6(D) = 2, AND MHE6(E) = 1, SKIP TO MHE6e.

MHE6d. Would you characterize the damage to your home or property as "major" or "minor"?

1. Major

2. Minor

8. Don't know

9. Refused

IF MHE6(E) = 1, ASK MHE6e.
IF MHE6(E) = 2, SKIP TO MHE7.

MHE6e. For how many days were you without utility-company-supplied electrical power in your home?

1-96 _____ **[INTERVIEWER: ENTER NUMBER OF DAYS; ROUND UP TO THE NEXT WHOLE DAY: FOR E.G., 1 AND ½ DAYS = 2 DAYS]**

97. (VOL) Less than half a day

98. Don't know

99. Refused

ASK IF MHE6e = 97

MHE6ea. For how many hours were you without utility-company-supplied electrical power in your house?

1-11 hours

98. Don't know

99. Refused

MHE6e1. Did you leave your home because the power was out?

1. Yes

2. No

8. Don't know

9. Refused

MHE6e2. How would you rate the job of your electric utility company in notifying you about how long it might take to restore power to your area? Were you… (READ LIST)

1. Very satisfied

2. Somewhat satisfied

3. Neither satisfied nor dissatisfied

4. Somewhat dissatisfied

5. Very dissatisfied

8. Don't Know

9. Refused

MHE6e3. Given the circumstances, how satisfied were you with the amount of time it took to restore power to your home? Were you…(READ LIST)

1. Very satisfied

2. Somewhat satisfied

3. Neither satisfied nor dissatisfied

4. Somewhat dissatisfied

5. Very dissatisfied

8. Don't Know

9. Refused

MHE7. Now, I'd like to ask you about your preparedness for a major disaster in your area. For each of the following questions, please just answer "yes" or "no."

PROGRAMMER: RANDOMIZE ITEMS A THROUGH F.

A. Are there fire extinguishers in your home?

B. Do you have a generator to produce backup electricity?

C. Has your household developed any plans for an extended stay-at-home in case of a disaster?

D. Do you have a family communication plan so that you will be able to contact family members or loved ones if you get separated in an emergency?

E. Has your family agreed on a place to meet in case an emergency prevents you from being home?

F. Do you have a disaster supply kit for your home with emergency supplies like water, food and medicine that is kept apart from everyday use?

RESPONSE CODES

1. Yes

2. No

8. Don't know (VOL)

9. Refused (VOL)

MHE8a. Has your community identified any shelter locations for disasters like Hurricane Sandy?

1. Yes

2. No

8. Don't know (VOL)

9. Refused (VOL)

IF MHE8a > 1 SKIP TO MHE9A

MHE8b. Do you know where they are?

[IF NECESSARY ADD: THE SHELTER LOCATION].

> 1. Yes
> 2. No
>
> 8. Don't know (VOL)
> 9. Refused (VOL)

MHE9a. O.K., now please tell me whether during or after either Hurricane Sandy or Hurricane Irene, not including monetary donations, you provided any aid, such as food, water, shelter, clothing, phone service, gas, or transportation to someone in your community who was affected by the hurricane?

> 1. Yes
> 2. No
>
> 8. Don't know (VOL)
> 9. Refused (VOL)

IF MHE9a > 1 SKIP TO QA1.

MHE9b. Please tell me what aid you provided?

PROGRAMMER/INTERVIEWER: CHECK ALL THAT APPLY. // INTERVIEWER: DO NOT READ LIST / DO NOT PROMPT

> 1. Food
> 2. Water
> 3. Shelter
> 4. Clothing
> 5. Phone service
> 6. Gas
> 7. Transportation
> 8. Electric service (including connection to portable generator)
> 9. First aid, medical
> 10. Emotional support
>
> 77. Other #1, please specify:_____
> 78. Other #2, please specify:_____
>
> 88. Don't know (VOL)

99. Refused (VOL)

MHE9c. And please tell me the longest period of time you provided this aid?

INTERVIEWER: if more than one kind of aid was used, get the "longest" period across all categories of aid given. If respondent gave aid during both hurricanes ask for the "longest" period of aid across both hurricanes.

    1-97 _____ **[INTERVIEWER: ENTER NUMBER OF DAYS; ROUND UP TO THE NEXT WHOLE DAY: FOR E.G., 1 AND ½ DAYS = 2 DAYS]**

    98. Don't know

    99. Refused

MHE9d. As you provided this aid, did you work with a group such as a community organization, an organized neighborhood group, an environmental commission, local citizens' board, a religious group or some other group?

    1. No, didn't work with an organized group

    2. Yes, a community organization

    3. Yes, an organized neighborhood group

    4. Yes, an environmental commission

    5. Yes, a local citizens' board

    6. Yes, religious group

    77. Yes, Other, please specify:_____

    88. Don't know

    99. Refused

IF MHE9d = 1 or 88 or 99, SKIP TO QA1.

MHE9e. And were you already a member of this group prior to working with it to provide aid after the hurricane?

    1. Yes

    2. No

    8. Don't know (VOL)

    9. Refused (VOL)

ATTITUDES

QA1. I am going to read you four statements. Please wait until I have read all four statements and then please tell me which of the statements best describes you.

PROGRAMMER: RANDOMIZE RESPONSE CODES 1-2-3-4 or 4-3-2-1

1. I am an active supporter of efforts to preserve and protect the environment.
2. I am a supporter of efforts to preserve and protect the environment, but not active.
3. I am neutral about environmental issues.
4. I am not concerned about environmental problems.

8. Don't Know (VOL)
9. Refused (VOL)

QA2. For each of the three statements I'm about to read, please tell me whether you strongly agree, somewhat agree, somewhat disagree, or strongly disagree.

[IF NECESSARY AFTER EACH: Do you strongly agree, somewhat agree, somewhat disagree, or strongly disagree?]

PROGRAMMER: RANDOMIZE ITEMS A through C

A. Our society would be better off if the distribution of wealth was more equal.
B. Discrimination against minorities is still a very serious problem in our country.
C. Too many people expect society to do things for them that they should be doing for themselves.

RESPONSE CODES:

1. Strongly agree
2. Somewhat agree
3. Neither agree nor disagree (VOLUNTARY ONLY)
4. Somewhat disagree
5. Strongly disagree

8. Don't know (VOL)
9. Refused (VOL)

QA3. Do you think that the environment in **[PIPE-IN COUNTY NAME FROM Q1]** County will be better, the same, or worse 25 years from now?

1. Better

2. Same

3. Worse

8. Don't Know

9. Refused

DEMOGRAPHICS

Now just a few final questions so that we can classify your answers.

D1a. First, how would you describe your overall state of health these days? Would you say it is excellent, very good, good, fair, or poor?

1. Excellent

2. Very Good

3. Good

4. Fair

5. Poor

8. Don't Know

9. Refused

D1b. And is there anyone in your household that has specific care needs, such as a medical condition, a mental and/or physical illness, visual or hearing impairment, mobility limitations, dependency on electricity for medical needs, dialysis or oxygen or other similar needs?

1. Yes

2. No

8. Don't know

9. Refused

D2. What is the last grade you completed in school?

1. 8th grade or less.

2. High school incomplete (Grades 9, 10 and 11).

3. High school complete (Grade 12).

4. Vocational/technical school, or, SOME COLLEGE.

5. Junior college graduate (2 Year, Associate's Degree).

6. 4-year college graduate (Bachelor's Degree).

7. Graduate work (Masters, Law/Medical School, Ph.D., Etc.).

8. Don't Know

9. Refused

D3. What was your age on your last birthday?

/___/___/ Enter age in years **[enter 97 for 97 and older]**.

98. Don't know

99. Refused

IF D3 < 98, SKIP TO D4.

D3a. Is it between...

1. 18 to 34

2. 35 to 54

3. 55 to 74

4. 75 and Over

8. Don't know

9. Refused

D4. Are you of Latino or Hispanic origin, such as Mexican, Puerto Rican, Cuban, Dominican, or some other Spanish-speaking background?

1. Yes

2. No

8. Don't know

9. Refused

D5. [**IF D4=1, display:** *"Many people of Latino or Hispanic origin also consider themselves to fit in to a racial category. How about you?"*] Do you consider yourself primarily white, black, Asian or Native American?

1. White

2. Black

3. Asian

4. Native American

8. Don't know

9. Refused

D6. Generally speaking, do you usually think of yourself as a Republican, a Democrat, an independent, or what?

1. Republican
2. Democrat
3. Independent
4. Tea Party (VOL)
5. Green Party (VOL)
6. Other party (VOL)
7. No preference (VOL)
8. Don't Know (VOL)
9. Refused (VOL)

D7. What type of residence do you live in?

1. Single family house
2. Two family house
3. Apartment building with less than ten units
4. Apartment building with more than ten units

8. Don't Know (VOL)
9. Refused (VOL)

D8. And do you own or rent your home?

1. Own
2. Rent
3. Live with parents or other relatives (VOL)
4. Other (VOL)

8. Don't Know (VOL)
9. Refused (VOL)

D9a. Including yourself how many adults 18 years of age or older live in your household?

_____ Number of adults (1-7)

D9b. How many children under the age of 18 live in your household?

_____ Number of children under 18 (0-7)

   8. Don't Know (VOL)

   9. Refused (VOL)

D10. How many motorized vehicles are available for use by members of your household? Please be sure to include motorcycles, mopeds and RVs.

_____ Number of motorized vehicles (0-7)

   8. Don't Know (VOL)

   9. Refused (VOL)

D11. If you work outside the home, how do you usually travel to work?

[INTERVIEWER: PROMPT ONLY IF NECESSARY]

   1. Do not work outside my home

   2. Work at home (VOLUNTARY)

   3. Car, truck, or van

   4. Motorcycle

   5. Bus

   6. Light rail or street car

   7. PATH or subway

   8. Train

   9. Ferry

   10. Bicycle

   11. Walk

   12. Other method (specify) _____

   88. Don't know

   99. Refused

D12. So that we can group all answers, what was your total annual family income before taxes for 2012? Was it….

INTERVIEWER: READ ANSWER VALUE TEXT

   1. Under $50,000?

   2. From $50,000 to $75,000?

   3. From $75,000 to $100,000?

   4. From $100,000 to $150,000?

5. Over $150,000?

8. Don't know (VOL)
9. Refused (VOL)

D13. INTERVIEWER: FROM OBSERVATION, ENTER SEX OF RESPONDENT

1. Male
2. Female

[IF NECESSARY, SAY, "I AM RECORDING THAT YOU ARE MALE / FEMALE"]

PHONE USAGE QUESTIONS

PROGRAMMER: ASK ONLY IF LL SAMPLE

W1. Now thinking about your telephone use, do you have a working cell phone?

1. Yes (has a cell phone)
2. No (does not have a cell phone)

8. Don't know (VOL)
9. Refused (VOL)

PROGRAMMER: ASK ONLY IF CELL SAMPLE

W2. Is this cell phone your ONLY phone, or do you also have a regular landline telephone at home?

1. Cell phone is ONLY phone
2. Have landline telephone at home
3. This is a landline (VOL)

8. Don't know (VOL)
9. Refused (VOL)

PROGRAMMER: ASK ONLY IF CELL SAMPLE AND W2 = 2

W3. Of all the telephone calls that you receive are…

1. All or almost all calls received on cell phones
2. Some received on cell phones and some on regular phones
3. Very few or none on cell phones
8. Don't know (VOL)
9. Refused (VOL)

PROGRAMMER: ASK ONLY IF CELL SAMPLE

MONEY10 Finally, we'd like to send you $10 for your time. Can I please have your full name and a mailing address where we can send you the money? **INTERVIEWER NOTE:** If R does not want to give full name, explain we only need it so we can make the $10 check out to them personally.

1. [ENTER FULL NAME] – INTERVIEWER: PLEASE VERIFY SPELLING
2. [ENTER MAILING ADDRESS – STREET NUMBER AND STREET NAME]
3. [ENTER CITY NAME]
4. [CONFIRM STATE IS NEW JERSEY]
5. [ENTER ZIP / CONFIRM ZIP]

9. Respondent declines the incentive (VOL)

END SCREEN: Thank you. You've been extremely helpful and we're very grateful for your time.

LANGUAGE OF INTERVIEW

1. English
2. Spanish

ENDNOTES

1. The American Association for Public Opinion Research (AAPOR) specifies standard methods of calculating response rates (American Association for Public Opinion Research 2015). The AAPOR3 methods are:

$$RR3 = \frac{I}{[(I + P) + (R + NC + O) + e(UH + UO)]}$$

$$e = \frac{(I + P + R + NC + O)}{[(I + P + R + NC + O) + NE]}$$

where *I*=complete interviews (and screen-outs); *P*=partial interviews; *R*=refusals and break-offs; *NC*=non-contacts; *O*=other; *e*=the estimated eligibility of unknowns; *UH*=unknown households; and *UO*=unknown other; and *NE*=not eligible.

BIBLIOGRAPHY

Agrawal, A.W. & H. Nixon. 2014. *What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Five of a National Survey.* San José, CA: Mineta Transportation Institute, June 2014. http://transweb.sjsu.edu/PDFs/research/1328-road-tax-public-opinion-poll-2014.pdf.

American Association for Public Opinion Research. 2015. *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 8th edition*. AAPOR.

American Society of Civil Engineers. 2013. "2013 Report Card for America's Infrastructure." http://www.infrastructurereportcard.org/ (Accessed June 15, 2015).

Fitzsimmons, E.G. 2015. "New Jersey Faces a Transportation Funding Crisis, with No Clear Solution." *New York Times.* May 28.

Greenberg, M.R. & M.D. Weiner. 2014. "Pain of Sustainability: Limiting the Number of Times Homeowners Can Receive Disaster Relief." *Sustainability* 6 (7): 4369-4385.

Greenberg, M.R., M.D. Weiner, R. Noland, J. Herb, M. Kaplan, M. & A.J. Broccoli. 2014. "Public Support for Policies to Reduce Risk After Hurricane Sandy." *Risk Analysis* 34 (6): 997-1012.

Higgs, L. 2014. "New Hudson River Rail Tunnels Needed so Old Tunnels can be Repaired." NJ.com.

Kahan, D.M., D. Braman, J. Gastil, P. Slovic, & C. Mertz. 2007. "Culture and Identity-Protective Cognition: Explaining the White-Male Effect in Risk Perception." *Journal of Empirical Legal Studies* 4 (3): 465-505.

Leiserowitz, A. 2006. "Climate Change Risk Perception and Policy Preferences: The Role of Affect, Imagery, and Values." *Climatic Change* 77 (1-2): 45-72.

National Surface Transportation Policy and Revenue Study Commission. 2007. *Transportation for Tomorrow.* http://transportationfortomorrow.com/final_report/ (Accessed November 5, 2015).

Quinnipiac University Poll. 2014. "New Jersey Voters Back Wage Freeze, Nix Gas Tax Hike, Quinnipiac University Poll Finds; Voters Split on Recreational Marijuana." http://www.quinnipiac.edu/news-and-events/quinnipiac-university-poll/search-releases/search-results/release-detail?ReleaseID=2031&What=&strArea=4;0;&strTime=28 (Accessed June 8, 2015).

Quinnipiac University Poll. 2015. "New Jersey Voters Go 50 - 47 Percent for Gas Tax Hike, Quinnipiac University Poll Finds; Support Almost 2-1 For Millionaires' Tax to Pay Pensions." http://www.quinnipiac.edu/news-and-events/quinnipiac-university-poll/search-releases/search-results/release-detail?ReleaseID=2220&What=&strArea=4;0;&strTime=28 (Accessed June 5, 2015).

Rutgers Eagleton Institute of Politics. 2014. "New Jersey Gas Tax Hike: Significant Opposition Persists." http://eagletonpoll.rutgers.edu/rep-gas-tax-dec2014/ (Accessed June 10, 2015).

Strunsky, S. 2014. "Amtrak Chief Gives Aging Hudson Rail Tunnels 20 Years to Live, Tops." http://www.nj.com/news/index.ssf/2014/05/amtrak_chief_gives_hudson_rail_tunnels_20_years_to_live_tops.html.

Weiner, M.D. 2014. "The Propensity to Accept Reality: Attitude Formation and Global Climate Change." Presentation at the American Association for Public Opinion Research Meeting, Anaheim, California, May 2014.

Weiner, M.D. 2015a. "Trumping the Evidence: Political Conformity, Attitude Formation, and Global Climate Change Policy." Presentation at the Association for Public Policy Analysis Research Meeting, Miami, Florida, November 2015.

Weiner, M.D. 2015b. "A Natural Experiment: Inadvertent Priming Effects in a Split-Sample Survey", *Survey Practice*, 8(5)

Wilber, C.K. & K.P. Jameson. 1991. *Beyond Reaganomics: A Further Inquiry into the Poverty of Economics*. University of Notre Dame Press.

Williams, R. 2006. "Generalized Ordered Logit/Partial Proportional Odds Models for Ordinal Dependent Variables", *Stata Journal* 6 (1): 58-82.

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PEER REVIEW

San José State University, of the California State University system, and the Mineta Transportation Institute (MTI) Board of Trustees have agreed upon a peer review process required for all research published by MTI. The purpose of the review process is to ensure that the results presented are based upon a professionally acceptable research protocol.

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