

Appendix A

Table A1. Demographic Characteristics of Survey Sample Compared to Overall Puerto Rican Population

Household Demographic Variable		Survey Respondents ^a	Puerto Rico Population ^b
		n (%)	n (%)
Household Size			
	1-person household	47 (12.3%)	343,642 (29.4%)
	2-person household	98 (25.7%)	395,370 (33.8%)
	3-person household	122 (31.9%)	221,711 (18.9%)
	4-person household	69 (18.1%)	147,078 (12.6%)
	5+ person household	46 (12.0%)	63,181 (5.4%)
Household Composition			
	Households with members age 65+	102 (26.3%)	473,163 (40.4%)
	Households with children under age 18	162 (41.0%)	309,491 (26.4%)
Household Vehicles			
	No vehicle	26 (6.6%)	174,536 (14.9%)
	1 or more vehicles	365 (93.4%)	996,446 (85.1%)
Household Income			
	Less than \$10,000	100 (28.5%)	314,185 (26.6%)
	\$10,000 to \$19,999	69 (19.7%)	261,843 (22.4%)
	\$20,000 to \$29,999	48 (13.7%)	173,120 (14.8%)
	\$30,000 to \$39,999	41 (11.7%)	120,776 (10.3%)
	\$40,000 to \$49,999	22 (6.3%)	80,357 (6.9%)
	\$50,000 to \$59,999	14 (4.0%)	58,187 (5.0%)
	\$60,000 to \$99,99	37 (10.5%)	105,200 (9.0%)
	\$100,000 to \$149,999	12 (3.4%)	33,682 (2.9%)
	\$150,000 or more	8 (2.3%)	23,632 (2.0%)
	<i>Prefer not to respond</i>	34	
Disability ^c			
	Households with disability	124 (33.7%)	693,297 (21.5%)
	Households without disability	244 (55.3%)	2,537,553 (78.5%)
	<i>Prefer not to Respond</i>	27	
Education ^d			
	Grade School	7 (1.8%)	488,408 (21.2%)
	High School Diploma or GED equivalent	64 (16.1%)	648,146 (28.2%)
	Some College	104 (26.8%)	538,601 (23.4%)
	Bachelor's degree	140 (36.1%)	443,589 (19.3%)
	More than Bachelor's	70 (17.1%)	182,991 (8.0%)
	<i>Prefer not to Respond</i>	10	

Appendices from: Clark, S., Peterson, S., Rivera-Gutiérrez, R., Zambrana-Rosario, A. C., & Shelly, M. (2022). Impact of Infrastructure Disruptions on Puerto Rican Household Capabilities, Health, and Well-Being. *Natural Hazards Center Public Health Grant Report Series, 21*. Boulder, CO: Natural Hazards Center, University of Colorado Boulder.

Household Demographic Variable	Survey Respondents ^a	Puerto Rico Population ^b
Community Classification ^e		
Urban	182 (43.7%)	3,148,667 (95.8%)
Suburban	76 (19.7%)	NA
Rural	121 (31.4%)	137,207 (4.2%)
Other	6 (1.6%)	NA

^a N=395. Percent values are calculated based on the percent of respondents who responded to each question.

^b Source is the Census Bureau American Community Survey (ACS) 2020 5-year estimates, unless otherwise specified.

^c Survey participants were asked to report any physical, mental, and/or emotional disabilities in their household, while the ACS data provides estimates for disability at the individual level. (See the documentation for ACS Table S1810, 'Disability Characteristics', which specifically notes that 'island-wide estimates are based on the non-institutionalized civilian population'.) Given the difference in sampling frames (household vs. individual), the apparent differences in disability rates between our sample and the general Puerto Rican population are understandable, as respondents were answering on behalf of their whole family, not just themselves.

^d Note: Survey participants were asked to report the highest level of education in their household, while the ACS data (Table C15003) is based on the highest educational attainment of individuals aged 25 and older.

^e Note: Survey respondents were presented with four potential community classifications ('urban', 'suburban', 'rural', and 'other'), while the island-wide estimates are based on the two classifications ('rural' or 'urban') reported in the U.S. Department of Agriculture (USDA) Economic Research Service State factsheet for Puerto Rico, last updated in February 2022. The dichotomous classification of 'rural' or 'urban' in the USDA factsheet is the same as that used in the US Census and ACS estimates.

Appendix B

Survey Instrument

“Impact of Infrastructure Disruptions on Puerto Rican Household Capabilities, Health, and Well-Being”

This appendix provides a partial list of survey questions presented to respondents who participated in this study by Susan Spierre Clark, Sara Peterson, Ralph Rivera-Gutiérrez, Andrea C. Zambrana Rosario, and Michael Shelly. Only the questions pertinent to this report and its analysis are included here.

Note that the entire survey instrument was provided to respondents digitally through the Qualtrics survey platform and includes display logic, which means that the questions asked of each participant varied slightly based on how they answered some questions. The questions using display logic are noted using red, italicized text. For a full version of the survey instrument, please contact Dr. Susan Clark at sclark1@buffalo.edu.

1. SOCIAL CAPITAL

In this section of the survey, you will be asked to answer questions about your social connections and your community. Many people rely heavily on neighbors, friends, and family during emergencies. These questions are intended to help us better understand how having these kinds of social ties may help households cope during power outages, especially those lasting more than 4 hours.

Please indicate whether you strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree with each of the following statements about you.

Note: the theme of each statement (community ties, social trust, or strength of association) is denoted in parentheses

	1 Strongly Disagree	2 Disagree	3 Neither agree not disagree	4 Agree	5 Strongly Agree
Q1.2.1 <i>I know my neighbors well (community ties)</i>					
Q1.2.2 <i>I regularly invite my neighbors to my house (community ties)</i>					
Q1.2.3 <i>I think people in this neighborhood watch after each other (community ties)</i>					
Q1.2.4 <i>I believe my neighbors would help me when I ask them for help (social trust)</i>					
Q1.2.5 <i>Religious events are an important part of my life (strength of association)</i>					
Q1.2.6 <i>Community events are an important part of my life (strength of association)</i>					

Q1.3 Please indicate whether you strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree with each of the following statements about your community.

	1 Strongly Disagree	2 Disagree	3 Neither agree not disagree	4 Agree	5 Strongly Agree
<p><i>Q1.3.1</i> In case of an emergency, community members would work together with each other to solve the problem <i>(social trust)</i></p>					
<p><i>Q1.3.2</i> My community has sufficient capability to address local problems on its own <i>For example, "This community is able to deal with many of its big issues without needing to rely on outside assistance"</i> <i>(social trust)</i></p>					

Q1.4 How frequently do you participate in religious activities? *(frequency of formal connection)*

- Never
- Less than once a year
- About once a year
- A few times per year
- About once a month
- A few times per month
- Once a week
- More than once a week
- Prefer not to answer

Q345 How frequently do you attend community or cultural events? *(frequency of formal connection)*

- Never
- Less than once a year
- About once a year
- A few times per year
- About once a month
- A few times per month
- Once a week
- More than once a week
- Prefer not to answer

Q1.6 How frequently do you volunteer within your community? (*frequency of formal connection*)

- Never
- Less than once a year
- About once a year
- A few times per year
- About once a month
- A few times per month
- Once a week
- More than once a week
- Prefer not to answer

2. HEALTH ASSESSMENT

The following set of questions asks about your health and the health of your household during 'normal' circumstances. This is important for us to understand your day to day health needs and access to healthcare services.

Q2.1 What kind of health insurance do members of your household have?

- Private (ex: through an employer)
- Public
- Other (please explain) : _____
- My household does not have health insurance
- Don't know

Q2.2 In general, how difficult is it for your household to access health services or care?

- Extremely difficult
- Moderately difficult
- Slightly difficult
- Neither easy nor difficult
- Slightly easy
- Moderately easy
- Extremely easy

Q2.3 In general, would you say your PHYSICAL health is:

- Excellent
- Very good
- Good
- Fair
- Poor

Q2.4 In general, would you say your MENTAL health is:

- Excellent
- Very good
- Good
- Fair
- Poor

Q2.5 Many families have members who face serious health problems, including chronic illnesses, injuries, or mental health problems. Does anyone in your household have a serious chronic illness, physical disability, mental disability, or mental illness/emotional disability? (Please check all that apply)

- No one has a serious disability in my household
- Chronic illness
- Physical disability
- Mental disability
- Emotional disability/ mental illness
- Prefer not to answer

Q2.6 Does anyone in your household require any kind of in-home medical device that requires electricity? (For example, a ventilator or an oxygen canister).

- No
- Yes
- Prefer not to answer

Q2.11 On a scale of 0-10, with 0 being "no impact" and 10 being "an overwhelmingly negative impact", how much would you say that power outages in the past 3 years have impacted your household's **overall physical health**?

Q2.12 On a scale of 0-10, with 0 being "no impact" and 10 being "an overwhelmingly negative impact", how much would you say that power outages in the past 3 years have impacted your household's **overall mental health**?

3. GENERAL BACKGROUND INFORMATION & PREPAREDNESS

The following set of questions asks you about the impacts of the most impactful power outage you have experienced in the past 3 years. Please think back to a power outage in the past 3 years that had the most significant consequences or impacts on your household. Please answer the following questions based on your experiences during that particular power outage.

Q3.4 How long did this particular power outage last?

- <1 hour
- 1-4 hours
- 4-8 hours
- 8-12 hours (i.e. about half a day)
- 12-16 hours
- 16-20 hours
- 20-24 hours (i.e. about a day)
- 24-36 hours (i.e. about a day and a half)
- 36-48 hours (i.e. about two full days)
- 2-3 days
- 3-4 days
- 4+ days

Q3.5 When did this power outage occur?

Month : _____

Year : _____

Q3.9 Did your household have a generator at this time of this impactful outage?

- Yes
- No
- Prefer not to answer

4. DISRUPTED ACTIVITIES

Please consider the experience of the particularly impactful power outage you identified in the last section to answer the following questions.

Q4.1 Please use the checklist below to indicate the utility services in your household that were disrupted during the outage. Please indicate all that apply.

Note: if you live in an apartment building, please indicate the services that were lost in your unit, even if they may have been present elsewhere in your building.

- Power
- Potable water (i.e. your household may have had water, but it was not safe to drink)
- All water (i.e. your household did not have any water)
- Natural gas
- Other (please explain) _____
- None of the above
- Prefer not to answer

Q4.2 The list below includes some important basic activities that may have been disrupted during the particular outage you identified at the beginning of the survey.

Please select ALL activities that were disrupted.

If there are other important activities that were affected, select "other" and use the text box to indicate the other activities that were disrupted.

Please be sure to indicate all activities that were disrupted.

- Accessing/ obtaining food
- Cooking food
- Accessing/ obtaining potable water
- Water-related sanitation activities (ex: washing yourself, using the toilet, washing dishes, etc.)
- Keeping food cool/ preventing food from spoiling
- Keeping medication cool/ preventing medication from spoiling
- Keeping your home cool/ keeping yourself cool
- Lighting your home
- Accessing important information
- Contacting/ communicating with friends and family
- Accessing medical care outside your home
- Using important medical equipment inside your home
- Other (explain) : _____
- None of the above

Q4.3 Of the interruptions you identified, please select the ones that had an impact on your **physical health**. Select all that apply.

(options carried forward from responses selected in Q4.2)

Q4.4 Of the interruptions you identified, please select the ones that had an impact on your **mental health**. Select all that apply.

(options carried forward from responses selected in Q4.2)

Q4.5 This question asks you to identify and rank the interrupted activities that had the greatest impact on your health and well-being. Which of the disrupted activities on the list had a significant impact on your health and well-being?

Please indicate these activities by dragging the disrupted activities on the left to the box on the right (“ACTIVITIES WITH GREATEST IMPACT ON HEALTH AND WELL-BEING”). We encourage you to select as many as apply.

A number will appear beside each of the activities placed in the box on the left. Please use these numbers to help you rank the activities in order of importance, with the #1 most significant activity at the top.

(options carried forward from responses selected in Q4.2)

ACTIVITIES WITH GREATEST IMPACT ON HEALTH AND WELL-BEING

- _____ Accessing/ obtaining food
- _____ Cooking food
- _____ Accessing/ obtaining potable water
- _____ Water-related sanitation activities (ex: washing yourself, using the toilet, washing dishes, etc.)
- _____ Keeping food cool/ preventing food from spoiling
- _____ Keeping medication cool/ preventing medication from spoiling
- _____ Keeping your home cool/ keeping yourself cool
- _____ Lighting your home
- _____ Accessing important information
- _____ Contacting/ communicating with friends and family
- _____ Accessing medical care outside your home
- _____ Using important medical equipment inside your home
- _____ Other (explain)
- _____ None of the above

Please note that in the subsequent sections of the survey, respondents are presented with sets of questions corresponding to the interrupted activities indicated in Q4.5 (above). Participants were asked to answer these in-depth sets of questions for only the top ranked disruptions indicated in Q4.5, but were not prevented from providing responses to other impactful disruptions if they chose to do so. The set of questions in section 8 of this appendix (below) is representative of the questions corresponding to each interrupted activity. For a full version of the survey instrument, please contact Dr. Susan Clark at sclark1@buffalo.edu

5. BEHAVIORS ASSOCIATED WITH INTERRUPTED ACTIVITIES

[example] ACCESSING / OBTAINING FOOD

Q5.1 How well were you prepared to handle the disruptions in accessing or obtaining food that you experienced as a result of the power outage?

- Not well at all
- Slightly well
- Moderately well
- Very well
- Extremely well
- Prefer not to answer

Q5.2 Please check ALL boxes below that reflect how the outage affected your efforts to access food.

If you select "other", use the text box to explain your answer.

- I could no longer access food at all due to the outage
- Visited centralized location (ex: community organization, religious group, city shelter) to get food
- Had food supplies delivered to you by organized group (such as community organization or religious group)
- Used alternative remedies (ex: ate food from garden rather than purchasing from store)
- Traveled farther to get food
- Traveled more frequently to get food
- Waited in longer lines to get food
- Relied on donations, aid, etc.
- Other (please explain) _____

Q5.3 About how much more time per week did you spend accessing or obtaining food during the blackout compared to before the power outage?

- No additional time
- < 1 hour
- 1-2 hours
- 2-3 hours
- 3-4 hours
- 5-6 hours
- 6-7 hours
- 7-8 hours
- 8-9 hours
- 9+ hours
- Prefer not to answer

Q5.5 About how much more money per week did you spend accessing or obtaining food during the blackout compared to before the power outage?

- No additional cost
- < \$10
- \$10-25
- \$25-50
- \$50-75
- \$100-125
- \$125-150
- \$150+
- Prefer not to answer

Q5.5 About how much more money per week did you spend accessing or obtaining food during the blackout compared to before the power outage?

- No additional cost
- < \$10
- \$10-25
- \$25-50
- \$50-75
- \$100-125
- \$125-150
- \$150+
- Prefer not to answer

Q5.6 On a scale of 0-10, with 0 being "no impact" and 10 being "an overwhelmingly negative impact", how much would you say that disruptions in accessing food impacted your household's overall physical health?

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Q5.7 (*Display if response to Q5.6 is 6,7,8,9 or 10*) Please use the space below to explain how the disruptions in accessing or obtaining food impacted your **physical health**: _____

Q5.8 On a scale of 0-10, with 0 being "no impact" and 10 being "an overwhelmingly negative impact", how much would you say that disruptions in accessing food impacted your household's overall mental health? _____

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

Q5.9 (*Display if response to Q5.8 is 6,7,8,9 or 10*) Please use the space below to explain how the disruptions in accessing or obtaining food impacted your **mental health**:

6. OUTAGE IMPACTS – WELLBEING

Q6.1 Overall, what were the most significant health concerns associated with this particular outage?
Please include details about both physical and mental health that are relevant to your situation.

Q6.2 *How would you say your overall life satisfaction changed as a result of the outage?*

- My satisfaction with life is MUCH LOWER now than before the outage
- My satisfaction with life is MODERATELY LOWER now than before the outage
- My satisfaction with life is SLIGHTLY LOWER NOW than before the outage
- My satisfaction with life is ABOUT THE SAME NOW as before the outage
- My satisfaction with life is SLIGHTLY HIGHER NOW than before the outage
- My satisfaction with life is MODERATELY HIGHER NOW than before the outage
- My satisfaction with life is MUCH HIGHER NOW than before the outage

Appendix C

Summaries of Multivariate Regression Analysis

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Dependent (Outcome) Variables:

- 1) Disrupted Activities (Count)
The number of household activities disrupted by outage (integers ranging from 0 to 13.)
- 2) Count of activities requiring additional time
The number of household activities that required additional time during the outage (integers ranging from 0-9). Note: respondents were asked to provide information about additional time for 3 disrupted activities, but some respondents chose to provide additional information about more disrupted activities.
- 3) Count of activities requiring additional money
The number of household activities that required additional time during the outage (integers ranging from 0-10) Note: respondents were asked to provide information about additional money for 3 disrupted activities, but some respondents chose to provide additional information about more disrupted activities.
- 4) Total additional time spent (per household)
The total amount of additional time each household reported spending in order to complete household activities during the outage (i.e., the sum of the additional time reported for each disrupted activity).
- 5) Total additional money spent (per household)
The total amount of additional money each household reported spending in order to complete household activities during the outage (i.e., the sum of the additional time reported for each disrupted activity).
- 6) Average additional time spent (per activity per household)
The mean additional time each household reported spending per activity during the outage.
- 7) Average additional money spent (per activity per household)
The mean additional money each household reported spending per activity during the outage.
- 8) Wellbeing (life satisfaction) change resulting from the outage
Integers ranging from -3 to 3 corresponding to 7-point Likert Scale responses regarding life satisfaction (e.g., -3 corresponding to satisfaction with life being “much lower” as a result of outage, 0 corresponding to satisfaction with life being “about the same”, and 3 corresponding to satisfaction with life being “much higher” as a result of outage).
- 9) Physical health impacts (0-10 scale, with 0 being no impacts and 10 being significant impacts)
The self-reported physical health impacts resulting from outages in the past 3 years, as reported on a scale of 0 (no impacts) to 10 (overwhelming impacts)
- 10) Mental health impacts (0-10 scale, with 0 being virtually no impacts and 10 being significant impacts)
The self-reported mental health impacts resulting from outages in the past 3 years, as reported on a scale of 0 (no impacts) to 10 (overwhelming impacts)

Independent (Predictor) variables:

Included in All Models

- Outage duration (midpoint of outage duration range, in hours)
- Community classification (rural/ suburban/ urban)¹
- Generator access (binary)
- Income (midpoint of reported income bracket, in dollars)
- Household poverty status (binary; calculated based on household income relative to US federal poverty thresholds for households of given size)
- Presence of people in household above age 65 (binary)
- Presence of people in household below age 18 (binary)
- Vehicle Access (binary)
- Member of household with some form of disability (binary)
- Member of household reliant upon an in-home medical device (binary)
- Mental health assessment (i.e., “overall, how would you rate your mental health prior to outage?”)
Integer ranging from 1 (poor) to 5 (excellent)
- Physical health assessment (i.e., “overall, how would you rate your physical health prior to outage?”)
Integer ranging from 1 (poor) to 5 (excellent)
- Strength of Association (SOA) mean
Mean of social capital questions reflecting the “Strength of Association” with community, ranging from 0 (low) to 5 (high)
- Community Ties (CT) mean
Mean of social capital questions reflecting “Community ties”, ranging from 0 (low) to 5 (high)
- Social Trust (ST) mean
Mean of social capital questions reflecting “Social Trust”, ranging from 0 (low) to 5 (high)
- Frequency of Formal Connection (FFC) mean
Mean of social capital questions reflecting “Frequency of Formal Connection” within community, ranging from 0 (never) to 7 (more than once a week)

Included in Some Models

- Count of Interrupted Activities [Models 2-10]
- Respondent Age [Models 8-10]
- Respondent Gender [Models 8-10]
- Highest Education Achieved in Household [Models 8-10]
Numeric category of highest education achieved in household, ranging from 0 (grade school) to 5 (more than a bachelor’s degree)

¹ Note: community type does not report the small number of respondents who declined to respond or responded ‘other’. The rural community type is not listed in the results because it is considered the default category for which the urban and suburban types are compared to.

Model 1. Interrupted Activities (Count)

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	4.563e+00	1.01E+00	4.527	8.58e-06	***
outage duration	1.255e-02	3.94E-03	3.183	0.00161	**
community type -- suburban	1.537e-01	4.23E-01	0.364	0.71641	
community type -- urban	2.884e-01	3.42E-01	0.843	0.39985	
generator access (binary)	-4.130e-01	3.09E-01	-1.335	0.18293	
household income	-1.864e-06	5.89E-06	-0.316	0.75186	
poverty status (binary)	2.453e-01	3.47E-01	0.707	0.48022	
1+ person(s) above age 65 (binary)	-7.825e-02	3.54E-01	-0.221	0.82520	
1+ person(s) under age 5 (binary)	-2.636e-01	4.83E-01	-0.546	0.58558	
1+ person(s) under age 17 (binary)	-3.093e-01	3.62E-01	-0.854	0.39378	
vehicle ownership (binary)	-7.440e-02	7.07E-01	-0.105	0.91621	
1+ person(s) with disability	9.954e-01	3.50E-01	2.843	0.00477	**
1+ person(s) reliant upon in-home health devices	2.952e-01	3.11E-01	0.950	0.34310	
mental health assessment	-1.201e-01	1.62E-01	-0.742	0.45885	
physical health assessment	2.919e-01	1.74E-01	1.674	0.09518	.
social capital -- frequency of formal connection	1.028e-01	1.11E-01	0.922	0.35702	
social capital -- strength of association	-1.051e-02	1.59E-01	-0.066	0.94721	
social capital -- social trust	-3.092e-01	1.83E-01	-1.694	0.09130	.
social capital -- community ties	-6.483e-02	1.92E-01	-0.337	0.73617	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-5.162 -1.900 -0.172 1.606 7.778

Residual standard error: 2.564 on 306 degrees of freedom
(69 observations deleted due to missingness)

Multiple R-squared: 0.1143, Adjusted R-squared: 0.05925

F-statistic: 2.077 on 19 and 306 DF, p-value: 0.005697

Model 2. Count of activities requiring additional time

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	-3.842e-01	5.65E-01	-0.680	0.4972	
outage duration	5.188e-03	2.18E-03	2.386	0.0176	*
count of interrupted activities	4.598e-01	3.10E-02	14.820	<2e-16	***
community type -- suburban	-1.003e-01	2.30E-01	-0.437	0.6625	
community type -- urban	-9.497e-02	1.86E-01	-0.511	0.6098	
generator access (binary)	-8.974e-02	1.68E-01	-0.533	0.5946	
household income	7.385e-06	3.20E-06	2.310	0.0216	*
poverty status (binary)	1.234e-01	1.89E-01	0.655	0.5131	
1+ person(s) above age 65 (binary)	-1.325e-01	1.92E-01	-0.690	0.491	
1+ person(s) under age 5 (binary)	2.857e-01	2.62E-01	1.090	0.2767	
1+ person(s) under age 17 (binary)	1.731e-01	1.97E-01	0.880	0.3797	
vehicle ownership (binary)	2.177e-01	3.84E-01	0.568	0.5706	
1+ person(s) with disability	1.896e-02	1.93E-01	0.098	0.9216	
1+ person(s) reliant upon in-home health devices	-1.744e-01	1.69E-01	-1.032	0.3028	
mental health assessment	1.148e-03	8.80E-02	0.013	0.9896	
physical health assessment	5.305e-02	9.51E-02	0.558	0.5773	
social capital -- frequency of formal connection	8.472e-02	6.05E-02	1.399	0.1627	
social capital -- strength of association	-5.418e-02	8.61E-02	-0.630	0.5294	
social capital -- social trust	1.795e-01	9.95E-02	1.803	0.0724	.
social capital -- community ties	-5.472e-02	1.04E-01	-0.524	0.6004	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-5.7482 -0.6852 0.1143 0.7752 3.6354

Residual standard error: 1.391 on 305 degrees of freedom

(69 observations deleted due to missingness)

Multiple R-squared: 0.4798, Adjusted R-squared: 0.4457

F-statistic: 14.06 on 20 and 305 DF, p-value: < 2.2e-16

Model 3. Count of activities requiring additional money

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	2.477e-01	5.56E-01	0.445	0.6564	
outage duration	4.891e-03	2.14E-03	2.285	0.023	*
count of interrupted activities	4.588e-01	3.05E-02	15.020	<2e-16	***
community type -- suburban	-1.893e-01	2.26E-01	-0.838	0.4028	
community type -- urban	-8.064e-02	1.83E-01	-0.441	0.6598	
generator access (binary)	-1.012e-01	1.66E-01	-0.610	0.5421	
household income	3.645e-06	3.15E-06	1.158	0.2478	
poverty status (binary)	2.032e-01	1.86E-01	1.095	0.2744	
1+ person(s) above age 65 (binary)	-1.742e-01	1.89E-01	-0.921	0.3579	
1+ person(s) under age 5 (binary)	-1.451e-03	2.58E-01	-0.006	0.9955	
1+ person(s) under age 17 (binary)	2.299e-01	1.94E-01	1.187	0.2363	
vehicle ownership (binary)	-1.865e-01	3.78E-01	-0.494	0.6216	
1+ person(s) with disability	-5.696e-02	1.90E-01	-0.301	0.7640	
1+ person(s) reliant upon in-home health devices	-1.692e-01	1.66E-01	-1.017	0.3099	
mental health assessment	9.571e-02	8.66E-02	1.105	0.2700	
physical health assessment	-3.314e-02	9.36E-02	-0.354	0.7235	
social capital -- frequency of formal connection	1.038e-01	5.96E-02	1.742	0.0825	.
social capital -- strength of association	-5.435e-02	8.47E-02	-0.642	0.5216	
social capital -- social trust	1.185e-01	9.80E-02	1.210	0.2272	
social capital -- community ties	-5.102e-02	1.03E-01	-0.497	0.6197	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-5.7017 -0.7883 0.0156 0.8474 3.8118

Residual standard error: 1.37 on 305 degrees of freedom

(69 observations deleted due to missingness)

Multiple R-squared: 0.481, Adjusted R-squared: 0.447

F-statistic: 14.13 on 20 and 305 DF, p-value: < 2.2e-16

Model 4. Total additional time spent (per household)

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	-5.171e+00	4.20E+00	-1.232	0.218713	
outage duration	5.847e-02	1.61E-02	3.622	0.000342	***
count of interrupted activities	2.037e+00	2.30E-01	8.843	< 2e-16	***
community type -- suburban	2.473e-02	1.70E+00	0.015	0.988433	
community type -- urban	7.138e-01	1.38E+00	0.517	0.605387	
generator access (binary)	8.824e-01	1.25E+00	0.706	0.480929	
household income	4.141e-05	2.37E-05	1.744	0.082102	.
poverty status (binary)	1.656e+00	1.40E+00	1.183	0.237546	
1+ person(s) above age 65 (binary)	1.037e+00	1.43E+00	0.727	0.467682	
1+ person(s) under age 5 (binary)	1.042e+00	1.95E+00	0.535	0.592929	
1+ person(s) under age 17 (binary)	1.940e+00	1.46E+00	1.328	0.185323	
vehicle ownership (binary)	2.745e+00	2.85E+00	0.964	0.335739	
1+ person(s) with disability	8.594e-01	1.43E+00	0.601	0.548076	
1+ person(s) reliant upon in-home health devices	-6.183e-01	1.25E+00	-0.493	0.622440	
mental health assessment	-4.276e-01	6.53E-01	-0.655	0.513202	
physical health assessment	-1.181e-01	7.06E-01	-0.167	0.867260	
social capital -- frequency of formal connection	1.002e-01	4.50E-01	0.223	0.823682	
social capital -- strength of association	-1.573e-01	6.39E-01	-0.246	0.805622	
social capital -- social trust	4.141e-01	7.39E-01	0.560	0.575564	
social capital -- community ties	6.645e-04	7.75E-01	0.001	0.999316	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-24.289 -6.494 -1.931 4.743 57.445

Residual standard error: 10.33 on 305 degrees of freedom

(69 observations deleted due to missingness)

Multiple R-squared: 0.3067, Adjusted R-squared: 0.2612

F-statistic: 6.746 on 20 and 305 DF, p-value: 2.497e-15

Model 5. Total additional money spent (per household)

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	-7.782e+01	7.24E+01	-1.075	0.28335	
outage duration	7.676e-01	2.79E-01	2.755	0.00623	**
count of interrupted activities	3.326e+01	3.98E+00	8.365	2.18E-15	***
community type -- suburban	1.273e+01	2.94E+01	0.433	0.66544	
community type -- urban	2.550e+01	2.38E+01	1.071	0.28519	
generator access (binary)	-2.976e+00	2.16E+01	-0.138	0.89042	
household income	4.990e-04	4.10E-04	1.218	0.22417	
poverty status (binary)	3.983e+01	2.42E+01	1.649	0.10019	
1+ person(s) above age 65 (binary)	-6.161e+00	2.46E+01	-0.250	0.80257	
1+ person(s) under age 5 (binary)	2.731e+01	3.36E+01	0.813	0.41697	
1+ person(s) under age 17 (binary)	3.064e+01	2.52E+01	1.215	0.22529	
vehicle ownership (binary)	5.961e+01	4.91E+01	1.213	0.22603	
1+ person(s) with disability	4.018e+00	2.47E+01	0.163	0.87070	
1+ person(s) reliant upon in-home health devices	-2.191e+01	2.17E+01	-1.012	0.31240	
mental health assessment	2.697e+00	1.13E+01	0.239	0.81105	
physical health assessment	9.41E+00	1.22E+01	-0.024	0.98088	
social capital -- frequency of formal connection	1.314e+01	7.76E+00	1.694	0.0913	
social capital -- strength of association	-1.392e+01	1.10E+01	-1.262	0.20786	
social capital -- social trust	-6.730e+00	1.28E+01	-0.528	0.59804	
social capital -- community ties	8.454e+00	1.34E+01	0.632	0.52767	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-406.64 -109.57 -36.07 79.00 1024.28

Residual standard error: 178.3 on 305 degrees of freedom

(69 observations deleted due to missingness)

Multiple R-squared: 0.2874, Adjusted R-squared: 0.2407

F-statistic: 6.152 on 20 and 305 DF, p-value: 9.203e-14

Model 6. Average additional time spent (per activity per household)

Coefficients:

	Estimate	Standard error	F Statistic	P value
<i>intercept</i>	1.140e+00	8.762e-01	1.301	0.1944
outage duration	6.931e-03	3.370e-03	2.057	0.0406 *
count of interrupted activities	9.129e-02	4.909e-02	1.860	0.0639 .
community type -- suburban	-2.345e-01	3.487e-01	-0.672	0.5018
community type -- urban	1.602e-01	2.822e-01	0.567	0.5708
generator access (binary)	3.495e-01	2.553e-01	1.369	0.1721
household income	-2.449e-06	4.910e-06	-0.499	0.6183
poverty status (binary)	5.302e-01	2.876e-01	1.844	0.0663 .
1+ person(s) above age 65 (binary)	2.319e-02	2.955e-01	0.078	0.9375
1+ person(s) under age 5 (binary)	2.414e-01	3.959e-01	0.610	0.5425
1+ person(s) under age 17 (binary)	5.775e-02	2.987e-01	0.193	0.8468
vehicle ownership (binary)	6.704e-01	5.922e-01	1.132	0.2585
1+ person(s) with disability	3.453e-01	2.942e-01	1.174	0.2414
1+ person(s) reliant upon in-home health devices	-1.954e-01	2.579e-01	-0.757	0.4494
mental health assessment	1.909e-02	1.343e-01	0.142	0.8871
physical health assessment	-2.484e-02	1.442e-01	-0.172	0.8634
social capital -- frequency of formal connection	1.175e-01	9.266e-02	1.268	0.2057
social capital -- strength of association	-8.441e-02	1.318e-01	-0.641	0.5223
social capital -- social trust	-8.831e-02	1.505e-01	-0.587	0.5578
social capital -- community ties	9.705e-02	1.596e-01	0.608	0.5436

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-3.2373 -1.4976 -0.4123 1.0780 7.7897

Residual standard error: 2.07 on 290 degrees of freedom

(84 observations deleted due to missingness)

Multiple R-squared: 0.09946, Adjusted R-squared: 0.03735

F-statistic: 1.601 on 20 and 290 DF, p-value: 0.05125

Model 7. Average additional money spent (per activity per household)

Coefficients:

	Estimate	Standard error	F Statistic	P value
<i>intercept</i>	1.867e+01	1.479e+01	1.263	0.2076
outage duration	8.073e-02	5.697e-02	1.417	0.1576
count of interrupted activities	1.207e+00	8.285e-01	1.457	0.1462
community type -- suburban	-5.972e-01	5.896e+00	-0.101	0.9194
community type -- urban	3.753e+00	4.763e+00	0.788	0.4314
generator access (binary)	2.290e+00	4.308e+00	0.532	0.5954
household income	-5.063e-05	8.300e-05	-0.610	0.5424
poverty status (binary)	1.168e+01	4.861e+00	2.403	0.0169 *
1+ person(s) above age 65 (binary)	3.226e-01	4.998e+00	0.065	0.9486
1+ person(s) under age 5 (binary)	7.795e+00	6.687e+00	1.166	0.2447
1+ person(s) under age 17 (binary)	1.921e+00	5.033e+00	0.382	0.7029
vehicle ownership (binary)	1.335e+01	1.001e+01	1.333	0.1836
1+ person(s) with disability	2.868e+00	4.959e+00	0.578	0.5635
1+ person(s) reliant upon in-home health devices	-3.208e+00	4.355e+00	-0.737	0.4618
mental health assessment	1.322e+00	2.269e+00	0.583	0.5607
physical health assessment	-4.680e-02	2.427e+00	-0.019	0.9846
social capital -- frequency of formal connection	3.197e+00	1.567e+00	2.040	0.0423 *
social capital -- strength of association	-2.860e+00	2.228e+00	-1.284	0.2003
social capital -- social trust	-1.981e+00	2.541e+00	-0.780	0.4362
social capital -- community ties	1.433e+00	2.699e+00	0.531	0.5958

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-59.848 -25.440 -7.023 17.561 110.849

Residual standard error: 35.01 on 291 degrees of freedom

(83 observations deleted due to missingness)

Multiple R-squared: 0.1033, Adjusted R-squared: 0.04165

F-statistic: 1.676 on 20 and 291 DF, p-value: 0.03649

Model 8. Well-Being change from Before to During Outage

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	-1.622	0.8258	-1.964	0.05056	.
outage duration	0.0003741	0.002529	0.148	0.8825	
count of interrupted activities	-0.05557	0.03676	-1.512	0.1318	
community type -- suburban	0.3418	0.2768	1.235	0.21788	
community type -- urban	0.3076	0.2172	1.416	0.15784	
generator access (binary)	0.2832	0.1946	1.455	0.14682	
education level	0.0919	0.109	0.843	0.4001	
household income	-8.64E-07	0.000004175	-0.207	0.83621	
poverty status (binary)	0.2558	0.2219	1.153	0.25007	
gender-- male	-0.6444	0.2109	-3.056	0.00246	**
gender -- other/ prefer not to respond	-1.628	1.054	-1.544	0.12377	
age	0.006157	0.007257	0.848	0.39691	
1+ person(s) above age 65 (binary)	-0.03244	0.2284	-0.142	0.88718	
1+ person(s) under age 5 (binary)	-0.3679	0.3056	-1.204	0.22968	
1+ person(s) under age 17 (binary)	0.2692	0.2357	1.142	0.2543	
vehicle ownership (binary)	-1.03	0.4769	-2.16	0.03166	*
1+ person(s) with disability	0.09461	0.2231	0.424	0.67186	
1+ person(s) reliant upon in-home health devices	0.05824	0.1955	0.298	0.76602	
mental health assessment	0.05584	0.1027	0.544	0.58717	
physical health assessment	0.1104	0.1149	0.961	0.33762	
social capital -- frequency of formal connection	0.02858	0.07245	0.394	0.69358	
social capital -- strength of association	0.1476	0.101	1.462	0.14491	
social capital -- social trust	0.02862	0.1181	0.242	0.80873	
social capital -- community ties	-0.005643	0.1223	-0.046	0.96324	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-3.1314 -1.2312 0.0447 0.8912 4.3733

Residual standard error: 1.531 on 273 degrees of freedom

(97 observations deleted due to missingness)

Multiple R-squared: 0.1126, Adjusted R-squared: 0.03461

F-statistic: 1.444 on 24 and 273 DF, p-value: 0.08627

Model 9. Physical health impacts (0-10 scale)

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	0.1525	1.495	0.102	0.91878	
outage duration	-0.004939	0.004791	-1.031	0.30342	
count of interrupted activities	0.2186	0.06966	3.138	0.00187	**
community type -- suburban	-1.081	0.5138	-2.104	0.03623	*
community type -- urban	-0.4373	0.4135	-1.058	0.29112	
generator access (binary)	-0.4812	0.37	-1.301	0.19435	
education level	0.1071	0.2062	0.519	0.60392	
household income	-7.51E-06	0.000008013	-0.937	0.34935	
poverty status (binary)	0.08137	0.4169	0.195	0.84538	
gender – male	1.086	0.4023	2.699	0.00734	**
gender – other/ prefer not to respond	-1.517	2.017	-0.752	0.45266	
age	-0.00905	0.01383	-0.654	0.51333	
1+ person(s) above age 65 (binary)	-0.1784	0.4319	-0.413	0.67986	
1+ person(s) under age 5 (binary)	1.324	0.5793	2.286	0.02297	*
1+ person(s) under age 17 (binary)	0.1529	0.4458	0.343	0.73182	
vehicle ownership (binary)	1.323	0.8507	1.555	0.12098	
1+ person(s) with disability	0.7802	0.4266	1.829	0.06842	.
1+ person(s) reliant upon in-home health devices	-0.1585	0.3776	-0.42	0.67495	
mental health assessment	-0.166	0.1959	-0.847	0.39746	
physical health assessment	0.3089	0.2166	1.426	0.15481	
social capital -- frequency of formal connection	0.0856	0.1381	0.62	0.53594	
social capital -- strength of association	0.342	0.1938	1.765	0.07866	.
social capital -- social trust	-0.3672	0.2205	-1.666	0.09684	.
social capital -- community ties	0.2114	0.2318	0.912	0.3625	

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-5.3581 -2.2841 -0.5653 1.8880 8.3697

Residual standard error: 3.031 on 298 degrees of freedom

(72 observations deleted due to missingness)

Multiple R-squared: 0.1613, Adjusted R-squared: 0.09375

F-statistic: 2.388 on 24 and 298 DF, p-value: 0.0003875

Model 10. Mental health impacts (0-10 scale)

Coefficients:

	Estimate	Standard error	F Statistic	P value	
<i>intercept</i>	1.223	1.482	0.825	0.409984	
outage duration	0.002783	0.004742	0.587	0.557708	
count of interrupted activities	0.2366	0.06888	3.435	0.000676	***
community type -- suburban	-0.4467	0.5077	-0.88	0.37965	
community type -- urban	0.2041	0.4091	0.499	0.618245	
generator access (binary)	-0.5715	0.3657	-1.563	0.119162	
education level	0.1704	0.2044	0.834	0.405147	
household income	-1.14E-05	0.000007917	-1.433	0.152865	
poverty status (binary)	-0.1913	0.4127	-0.463	0.64339	
gender – male	0.7219	0.3975	1.816	0.070341	.
gender – other/ prefer not to respond	-0.6124	1.993	-0.307	0.758806	
age	-0.02263	0.01366	-1.656	0.098731	.
1+ person(s) above age 65 (binary)	0.148	0.4266	0.347	0.728842	
1+ person(s) under age 5 (binary)	1.353	0.5731	2.361	0.018868	*
1+ person(s) under age 17 (binary)	-0.03607	0.4424	-0.082	0.935083	
vehicle ownership (binary)	1.734	0.841	2.062	0.04008	*
1+ person(s) with disability	1.053	0.4222	2.493	0.013212	*
1+ person(s) reliant upon in-home health devices	-0.5406	0.3733	-1.448	0.148588	
mental health assessment	-0.6023	0.1938	-3.108	0.002068	**
physical health assessment	0.4473	0.214	2.09	0.037457	*
social capital -- frequency of formal connection	0.1588	0.1365	1.164	0.245339	
social capital -- strength of association	0.004179	0.1918	0.022	0.982634	
social capital -- social trust	-0.2883	0.2178	-1.324	0.186623	
social capital -- community ties	0.5056	0.2293	2.205	0.028207	*

Significance codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1

Residuals:

Min 1Q Median 3Q Max
-6.1791 -2.1590 -0.3164 1.7287 7.8982

Residual standard error: 2.994 on 297 degrees of freedom

(73 observations deleted due to missingness)

Multiple R-squared: 0.2337, Adjusted R-squared: 0.1718

F-statistic: 3.775 on 24 and 297 DF, p-value: 3.01e-08