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Public Perception of Power Restoration Priorities

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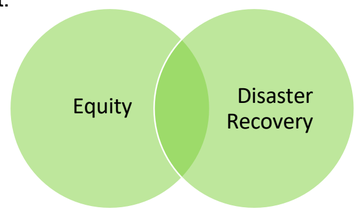
Introduction

Post-disaster infrastructure disruptions affect people differently. This study examined factors associated with the public's prioritization of six hypothetical recovery rules. Two rules were examined in detail: the rule “those who pay the most should get power and transport back first” (representing an inequitable plan) being ranked last (least preferred) and the rule “first restoring power and transport to essential services” being ranked first.



Objectives and Hypotheses

•Objectives

- Identify factors associated with the ranking of the rule that those who pay the most should get power and transport back first.
- Identify factors associated with the ranking of the rule that essential services should get power and transport back first.

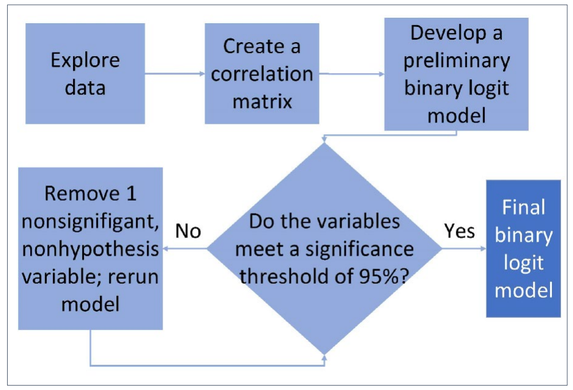
•Hypotheses

- H1: Income is not significantly associated with the decision to rank the priority of “those who pay the most should get power and transport back first” as last.
- H2: Backup power is not significantly associated with the decision to rank the priority of “those who pay the most should get power and transport back first” as last.
- H3: The number of children in a household is not significantly associated with the decision to rank the priority of “those who pay the most should get power and transport back first” as last.
- H4: A larger household size is not significantly associated with the decision to rank the priority of “those who pay the most should get power and transport back first” as last.
- H5: High School degree or GED equivalent are not significantly associated with the decision to rank the priority of “those who pay the most should get power and transport back first” as last.

Data and Methodology

•A survey was developed by a team of researchers from Clemson and Virginia Tech.

•The survey was distributed by the survey company Qualtrics.



Methodology Overview

Data Summary

Variable name and description		Number of observations	Range	Mean	Std. Dev.
Pay most Ranked 6	Priority six ranked 6th as 1 else 0	1706	[0,1]	0.4812	0.49979
EssentialSFirst	Priority three ranked 1st as 1 else 0	1706	[0,1]	0.432	0.4955
PortGen	Whether or not someone has a portable generator	1589	[0,1]	0.3109	0.463
WholeBatBack	Whether or not someone has a whole house battery backup	1567	[0,1]	0.1927	0.39456
Female	Whether or not a person is a female	1699	[0,1]	0.598	0.49045
WHomeDays	How many days a week someone works from home	1422	[0,7]	2.2215	2.08598
NumVehicles	The number vehicles someone has	1784	[0,3]	1.4518	0.83658
Condo	Whether or not the person has a condo	1690	[0,1]	0.084	0.27751
NotHispanic	Are they Hispanic or not	1702	[0,1]	0.755	0.43022
White	Are they White or not	1700	[0,1]	0.6641	0.47724
Hsize	Number of people in house	1707	[1,5]	2.8735	1.28401
IncCont	Income ranges	1695	[12500,225000]	82640.1	56690.4
HighScoolBelow	Whether the person got an equivalent or less than a high school degree	1702	[0,1]	0.2197	0.41419
ChildrenU18	Number of children under 18 in household	1438	[0,6]	1.0577	1.21296

Results

Binary logit model for those who pay the most should get power and transport back first

Model 1	B	S.E.	Sig.	Exp(B)
ChildrenU18	-0.149	0.059	0.011	0.862
PortGen	-0.482	0.150	0.001	0.617
WholeBatBack	-0.882	0.182	0.000	0.414
Female	0.505	0.138	0.000	1.657
WHomeDays	-0.091	0.033	0.006	0.913
NumVehicles	0.341	0.088	0.000	1.406
Condo	-0.640	0.269	0.018	0.527
NotHispanic	0.518	0.157	0.001	1.679
White	0.659	0.147	0.000	1.932
Constant	-1.035	0.246	0.000	0.355

		Predicted		
		pay most ranked 6		Percentage Correct
Observed		.00	1.00	
pay most ranked 6	.00	381	170	69.1
	1.00	179	300	62.6

Binary logit model for essential services to get power and transport back first

Model 2	B	S.E.	Sig.	Exp(B)
ChildrenU18	-0.183	0.057	0.001	0.833
WholeBatBack	-0.858	0.177	0.000	0.424
IncContByThousand	0.004	0.001	0.001	1.004
WHomeDays	-0.073	0.033	0.026	0.930
NumVehicles	0.277	0.087	0.002	1.320
NotHispanic	0.401	0.156	0.010	1.493
White	0.481	0.145	0.001	1.618
Constant	-1.269	0.226	0.000	0.281

		Predicted		
		EssentialSFirst		Percentage Correct
Observed		.00	1.00	
EssentialSFirst	.00	497	131	79.1
	1.00	238	202	45.9

Discussion

Based on model 1:

- Each additional child in the household decreases the likelihood of selecting this priority last by 13.8%.
- Households with a portable generator are 38.3%,
- People who live in a condo are 47.3%, and
- Those with a whole house battery backup are 58.6% less likely to rank this priority last.
- Each additional day that an individual works from home lowers the chance that the priority will be ranked last by 8.7%.
- Individuals who self-identify as females are 65.7%,
- Those who self-identify as not Hispanic are 69.7%, and
- Those who self-identify as White are 93.2% more likely to rank this priority last.
- Each additional vehicle increases the odds of the priority being ranked last by 40.6%.

Based on model 2:

- Each additional child in the household decreases the likelihood of ranking this priority first by 16.7%.
- Households with a whole-house battery backup are 57.6% less likely and
- People who work from home are 7% less likely to rank this priority first.
- For every additional thousand dollars in household income, a household is 0.4% more likely to rank this priority first.
- For each additional vehicle in a household, the likelihood of ranking the priority first goes up by 32%.
- Those who self-identify as not Hispanic are 49.3% more likely to rank this priority first.
- Those who self-identify as White are 61.8% more likely to rank this priority first.

Conclusions

- The H1, H4, and H5 variables were not statistically significant.
- H2 and H3 were rejected because a form of backup power and the number of children were influential in the decision to rank last the priority “those who pay the most should get power and transport back first”.
- The number of household vehicles had a statistically significant role in both models; individuals with a greater number of household vehicles were statistically more likely to rank the priorities more equitably.

Acknowledgements

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