Who Pays for *Unnatural* Disasters? Willingness to Pay Taxes and Voluntary Donations to Solve the Landfill Crisis

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Outline

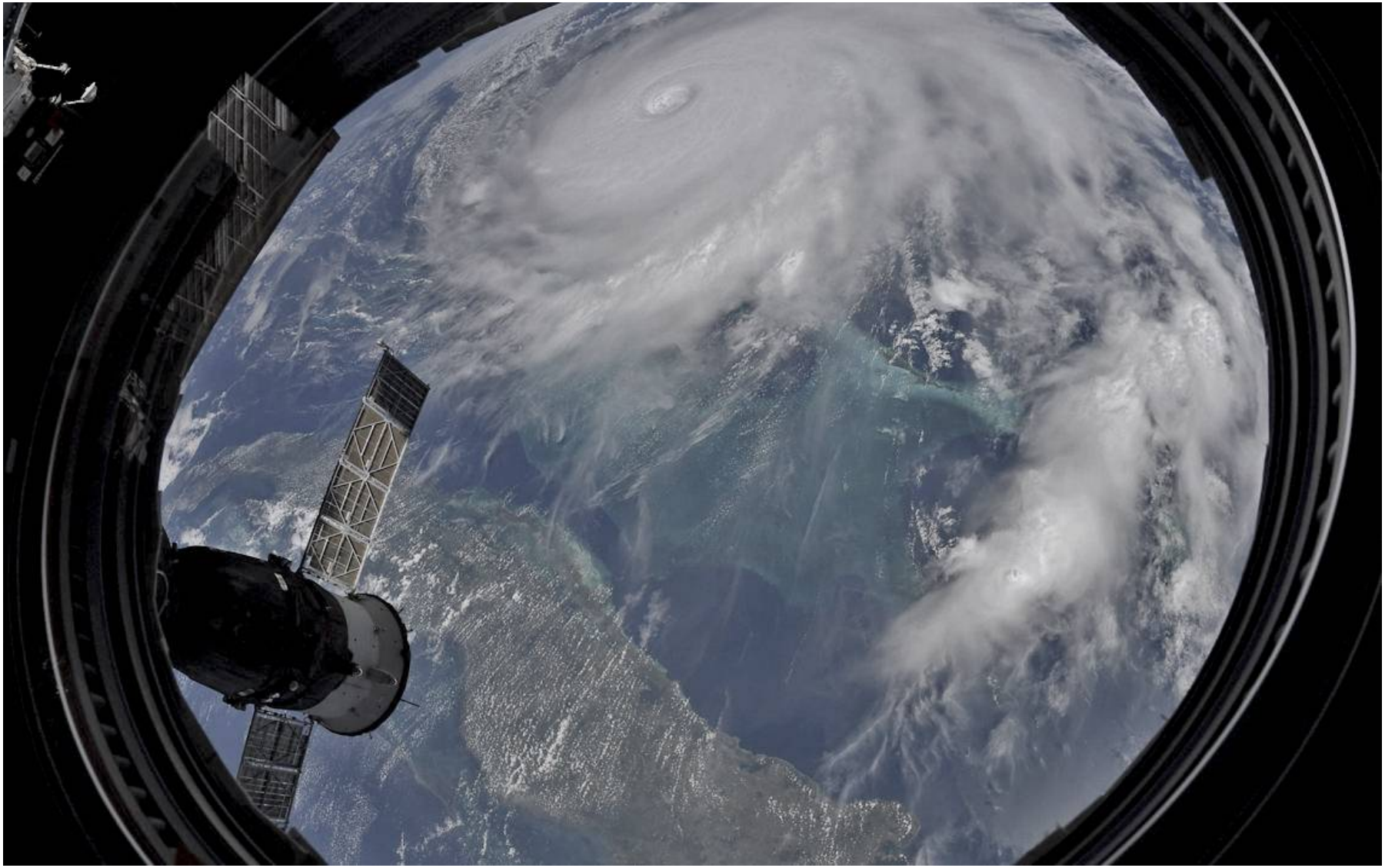

Photo: NASA

Community Impacts of Natural Disasters

Photo: JOSE JIMENEZ/GETTY

Q: How Should Government Intervene?

A balance between the goal of ensuring zero default risk and the demand for limited tax exposure (Charpentier & Le Maux, 2014)

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- spending on disaster relief but not spending on preparedness (Healy & Malhotra, 2009)
- political ideology, confidence in government's capacity, age, income, residential location (Kim, Soo & Jung, 2010)
- risk aversion and risk allocation (Zhai et al., 2006)

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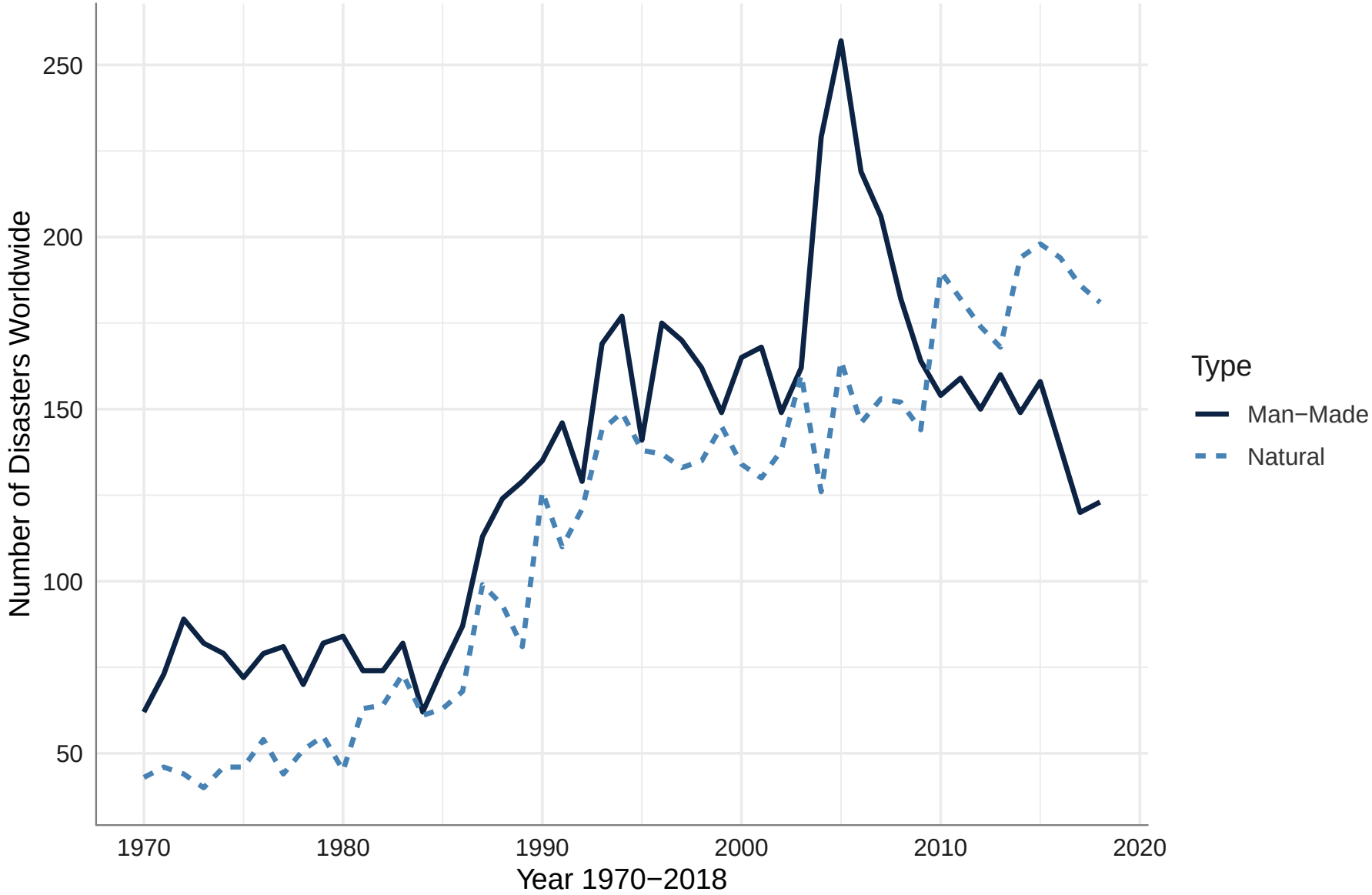
Willingness to give more donations:

- trust in international relief organizations (Cheung & Chan, 2000)
- political ideology, minority status, education, income (Kim, Soo & Jung, 2010)
- risk aversion and risk allocation (Kunreuther, 2006)



Source: Catastrophes Data by Swiss Re Institute. A natural catastrophe is caused by natural forces. A man-made or technical disaster is triggered by human activities. More on Methodology

Willingness to Pay for Environment

Do you believe in climate change?

- polluters are truly willing to avoid man-made disasters (Brouwer, Brander & Van Beukering, 2008)
- perception of climate change as a threat (Cameron, 2001; 2005)
- public skepticism and opposition to market-based mechanisms
- trust (Fairbrother, 2016; 2017)

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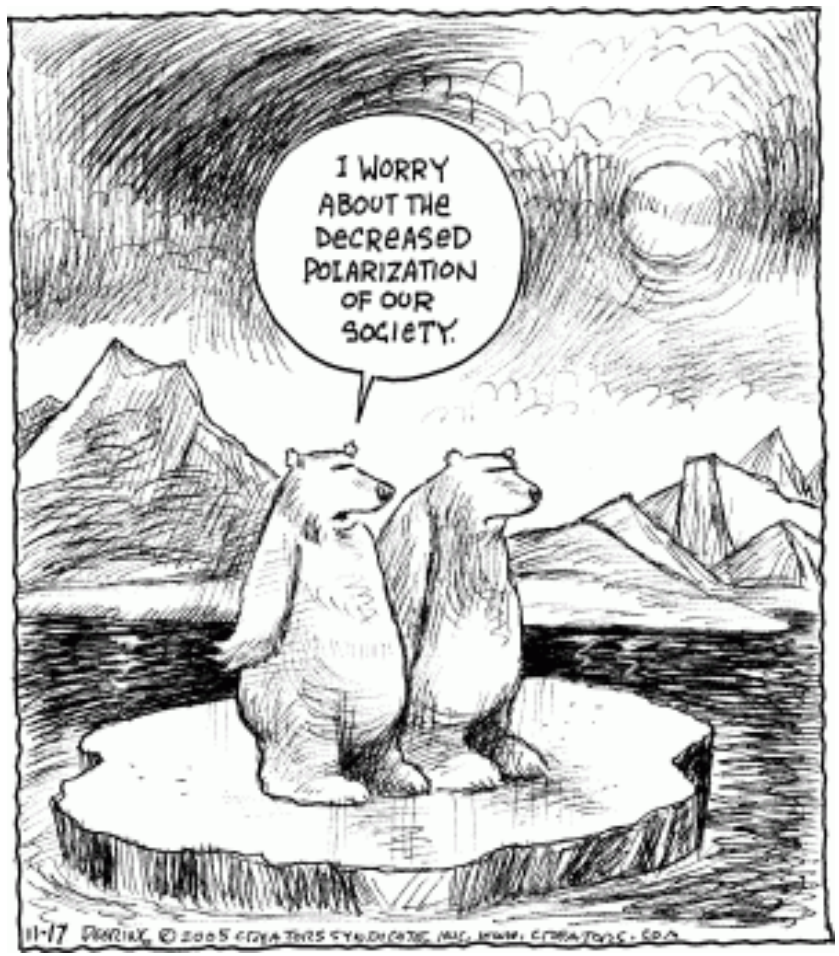
An Economist Walks Into a Bar

- Underestimation or ignoring probabilities (Oberholzer-Gee, 1998)



Moscow Renovation Campaign

Source: Agentstvo Gorodskikh Novostey "Moskva"

Moscow Landfill Crisis

Source: RIA Novosti/Stringer

Arkhangelsk Region

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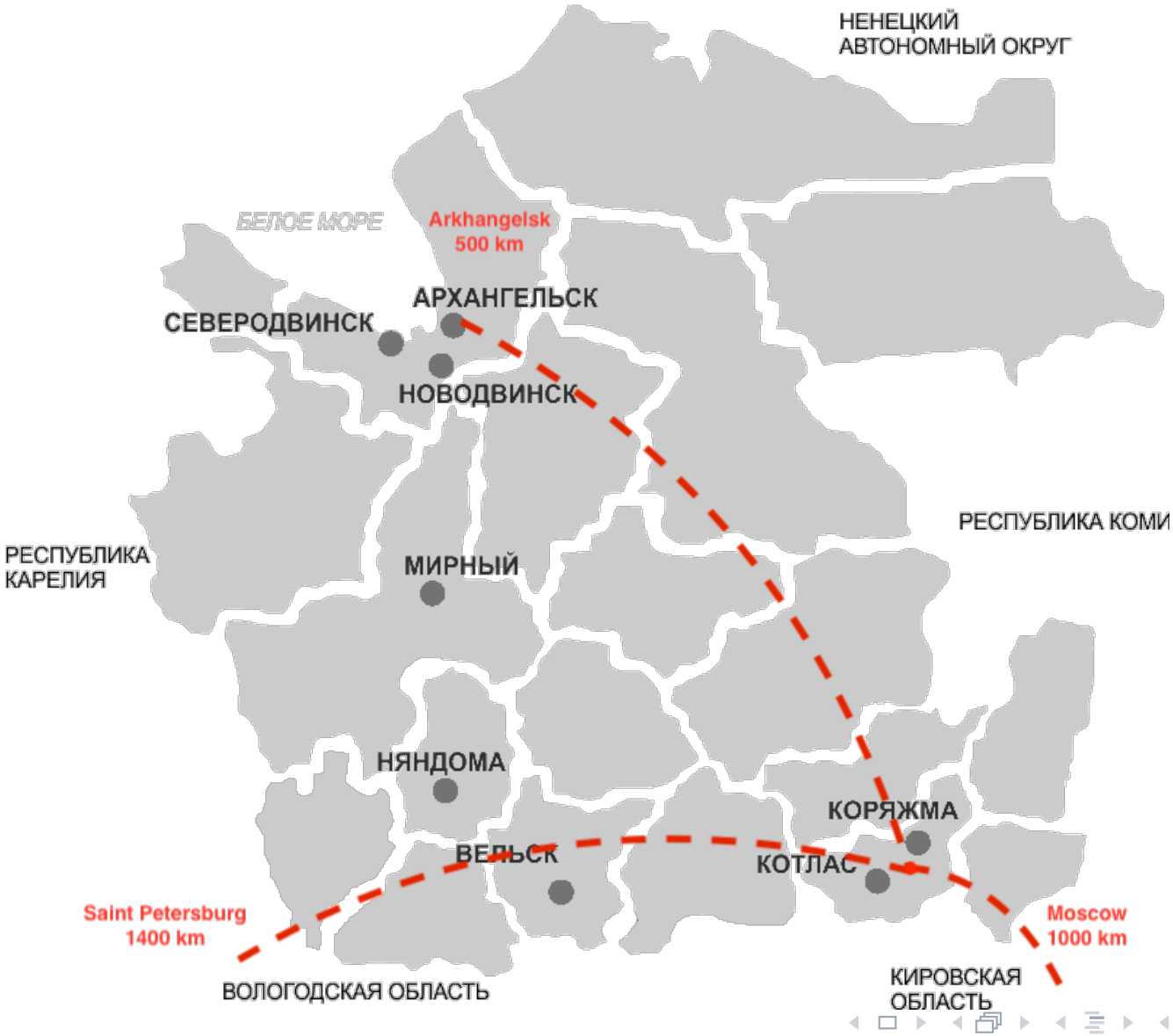
Arkhangelsk Region: Disaster on a Map



Risk Allocation and Probabilities

Individuals are prone to underestimate risks:

- while distance from the risk (Zhai et al. 2006);
- overestimating low probabilities and ignoring appreciable ones;
- loss aversion (Kahneman & Tversky, 1979);
- $\rightarrow$ do not undertake loss prevention measures voluntarily (Kunreuther, 2006).

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Geography and Risk Allocation Hypothesis

A higher willingness to pay for solving ecological issues would be found among the inhabitants in the nearest to the landfill districts.

Rationalization of Risks

Effects of awareness and attitudes:

- Neoclassical Economic Theory;
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Rationalization Hypothesis

A higher willingness to pay for solving ecological issues would be found among the inhabitants who report pro-ecological behavior as well as proactive behavior against the construction of the landfill.

Bring the State Back In

Russian context for individual decisions:

- Federal vs Regional Levels;
- Centralization of power and resources;
- Center-Regional cleavages.

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ATE: Level of Authority Hypothesis

The willingness to pay taxes would be different depending on the level of authorities which propose the solution.

Pay Taxes or Donate: Both Could be Rational!

Harbaugh et al. (2007): both mandatory and voluntary transfers to charity show neural activity in the brain areas associated with reward processing with larger activations following voluntary transfers $\rightarrow$ both pure and impure forms of altruism.

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But! CATE or HTE

The level of authority would be more important when individuals are not willing to pay voluntary donations to ecological organizations.

Survey Data

Representative sample for the population of Arkhangelsk region of the Russian Federation 18 years of age and older:

- $N = 1,514$;
- CATI study with RDD sampling;
- July-August 2019;
- COOP1 35%, REF1 16%, RR5 30% (AAPOR).

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Willingness to Donate: Descriptive ☹

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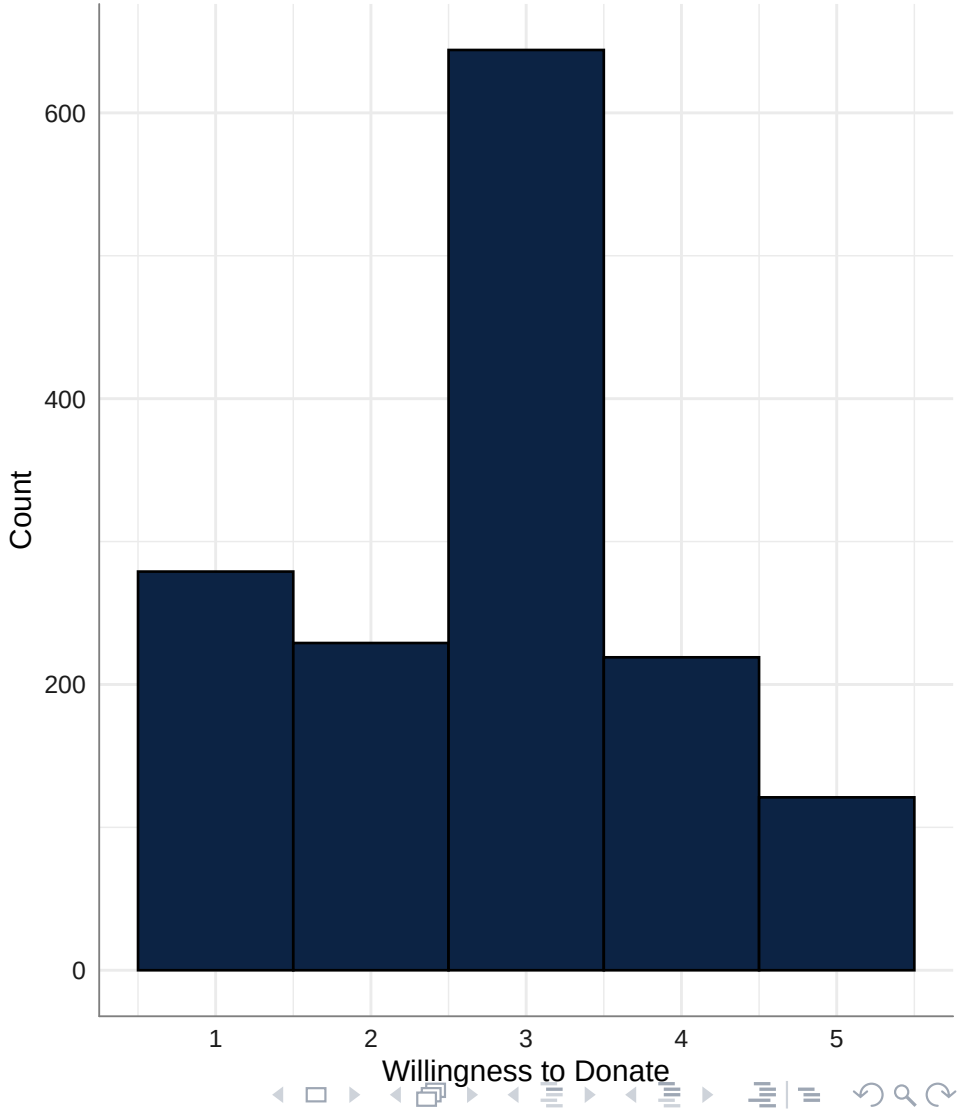
Willingness to Donate: Descriptive ☹
Willingness to Pay Taxes: Causal ☺

Dependent Variable: Voluntary Donations

- Voluntary donations: if respondents are willing to donate to ecological organizations, 5-point scale with 1 indicating "completely not willing to donate" and 5 - "completely willing to donate".
- M = 2.8 (SD = 1.2)
- 23% are willing to donate (4 or 5 on a 5-point scale)



Survey Experiment: Question Wording

Two conditions randomly assigned:

- How much are you willing to pay higher taxes to solve the landfill problem in Arkhangelsk region if this was proposed **by the by the Government of Arkhangelsk region**?
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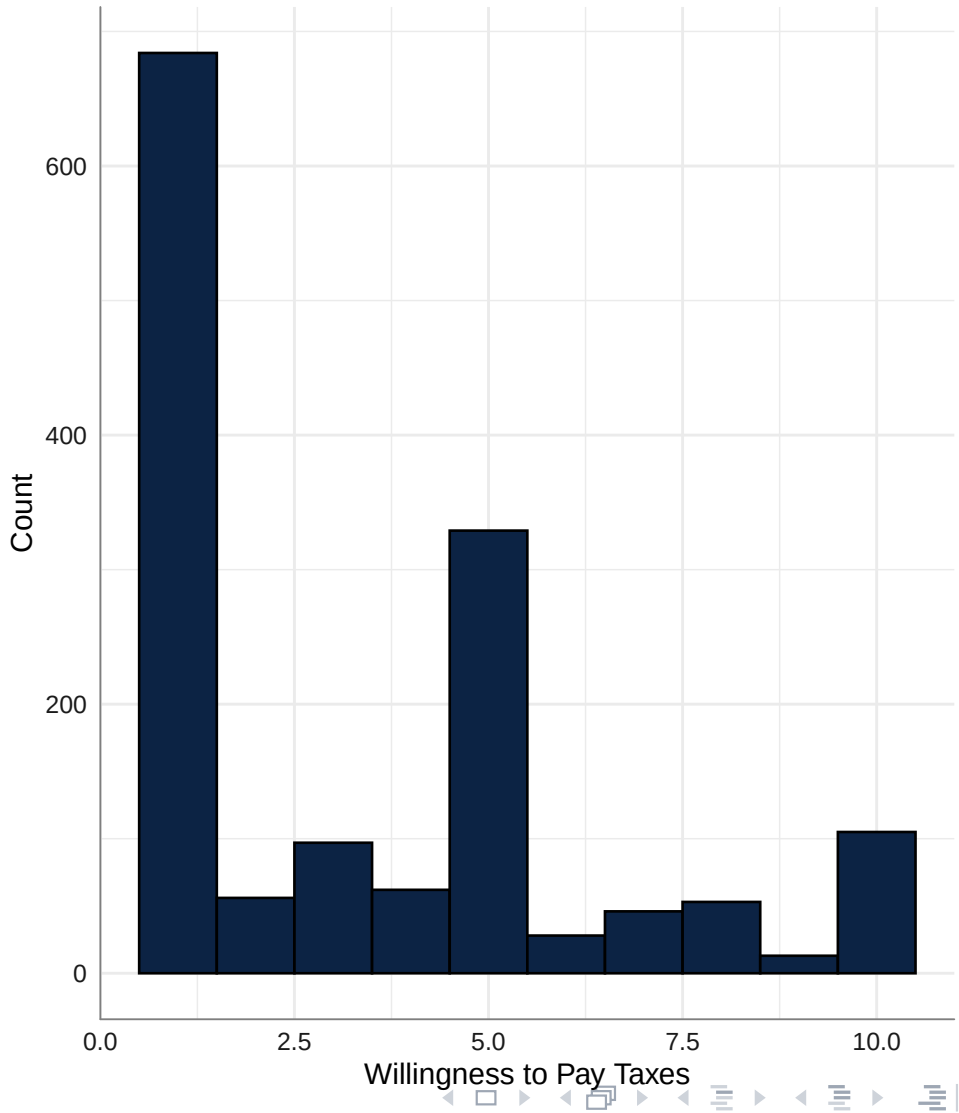
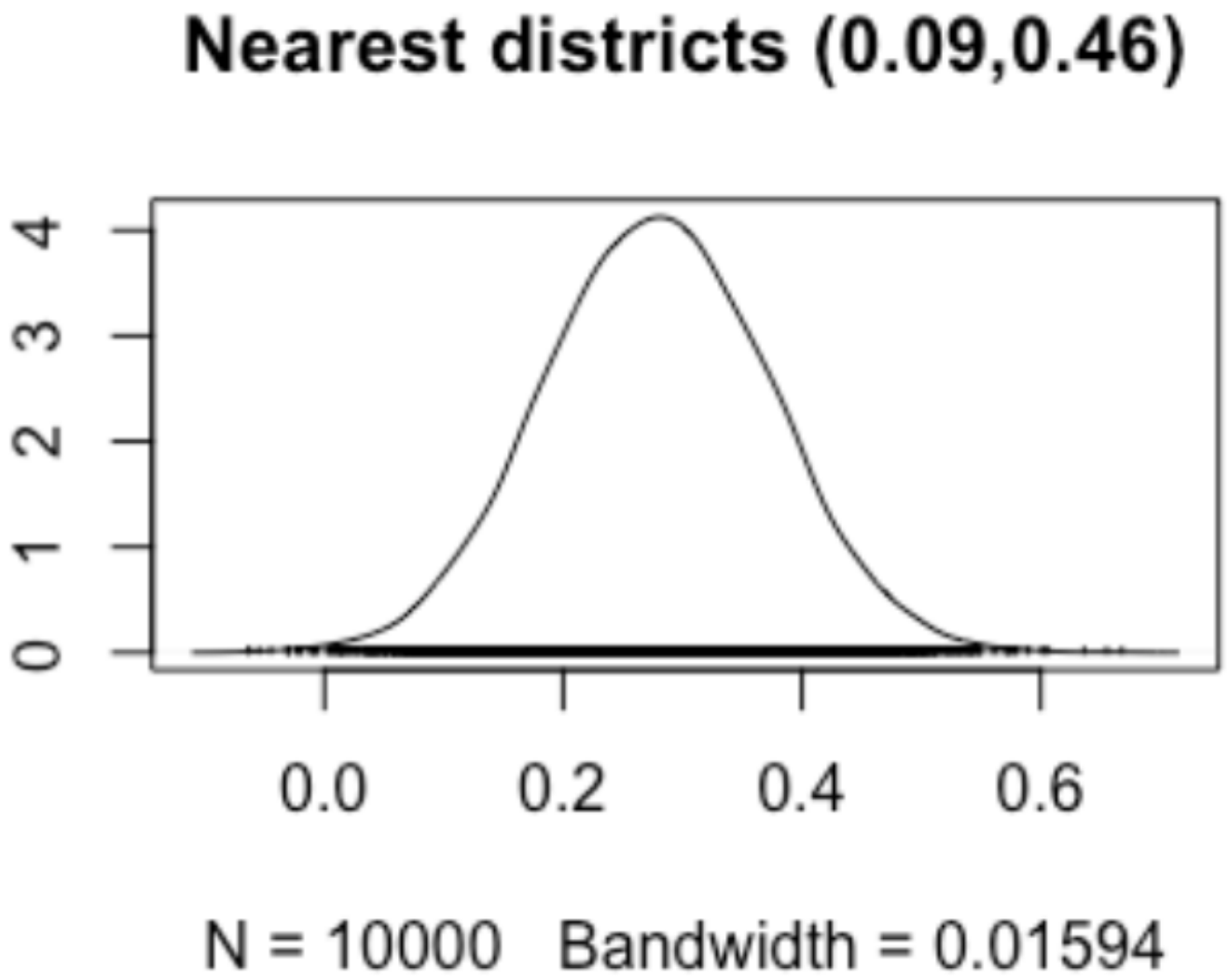
Note: $n_1 = 740$; $n_2 = 740$; small deviations in covariate balance due to missingness (41 observations).

Dependent Variable: Paying Taxes

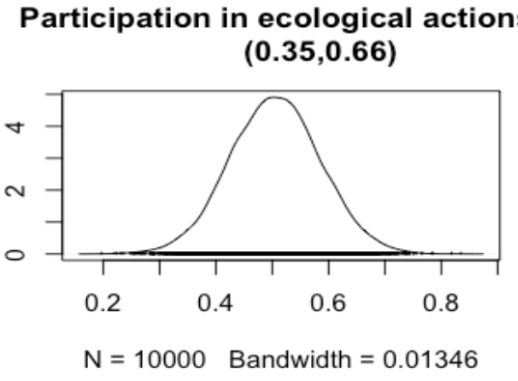
- 10-point scale from 1 - not willing to pay at all, 10 - completely willing to pay.
- M = 3.4 (SD = 2.8)
- 46% are not willing to pay at all (1 on a 10-point scale)

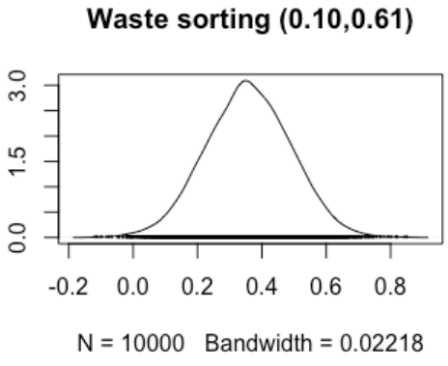


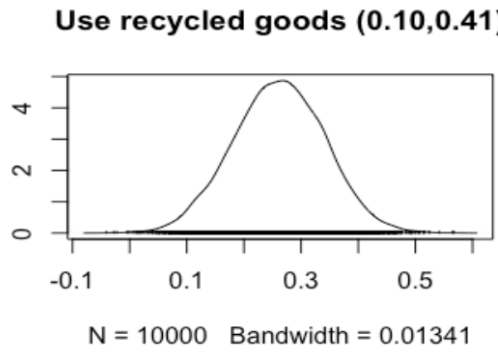
Donations: Risk Allocation Hypothesis

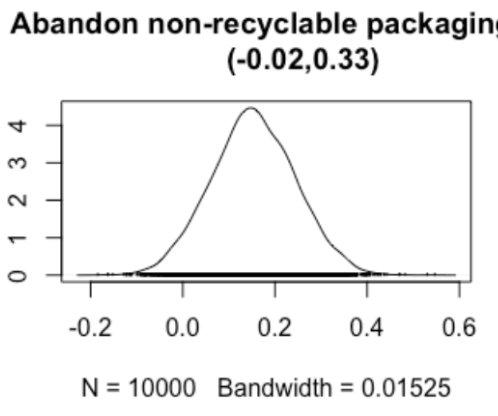


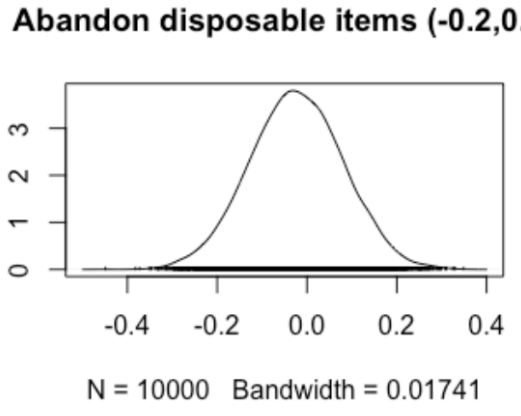
Donations: Rationalization Hypothesis (1)





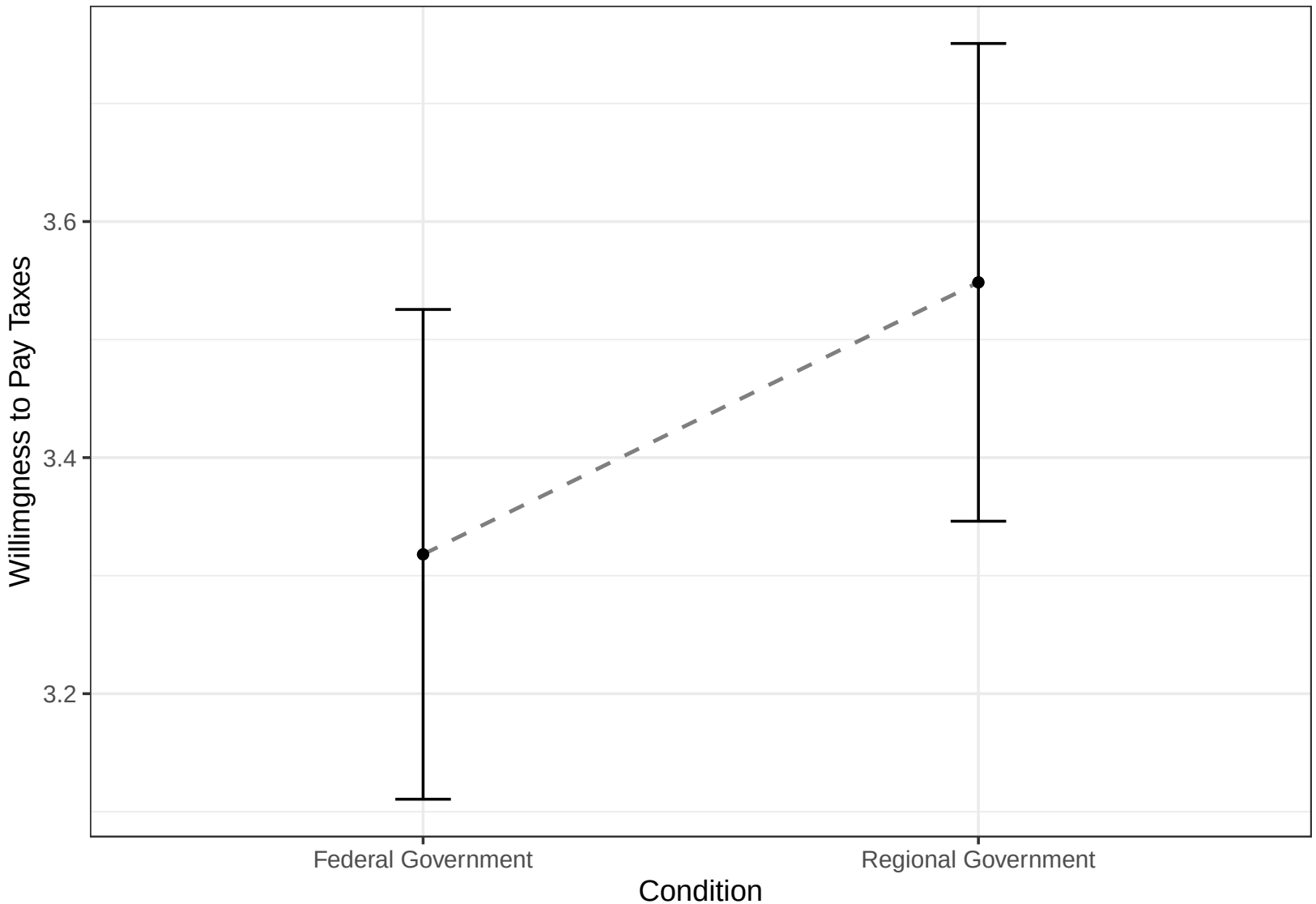




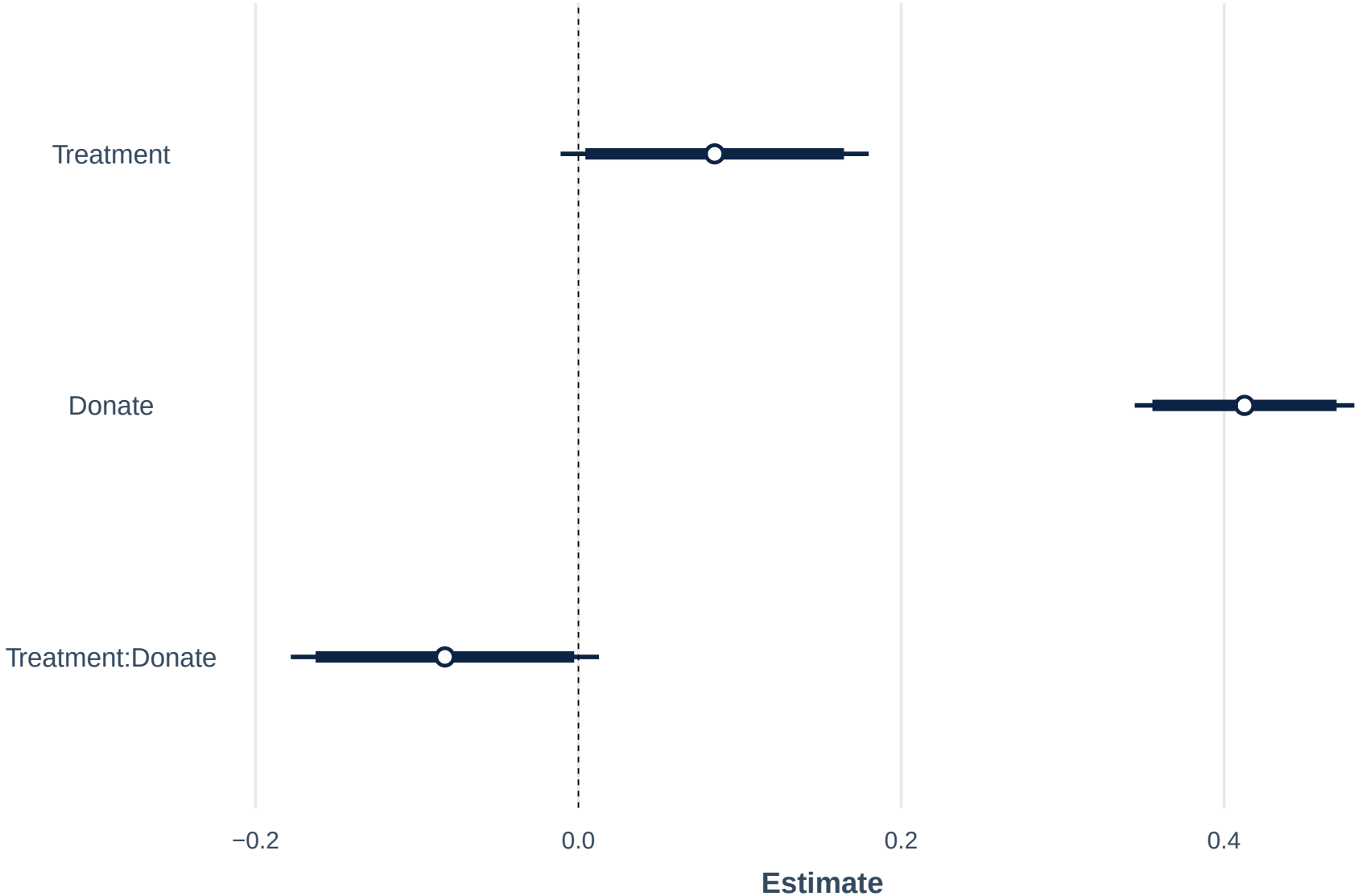


Pro-ecological behaviour hypothesis (controlling for a number of variables)

Taxes: Comparison of Means



T-Test: not significant ($p = 0.1$); Wilcoxon: significant ($p = 0.04$)

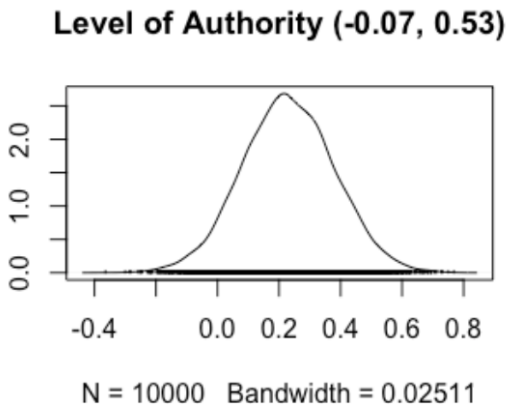


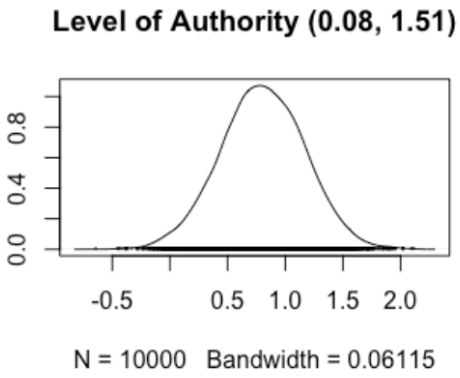
Adjusted $R^2 = 0.14$

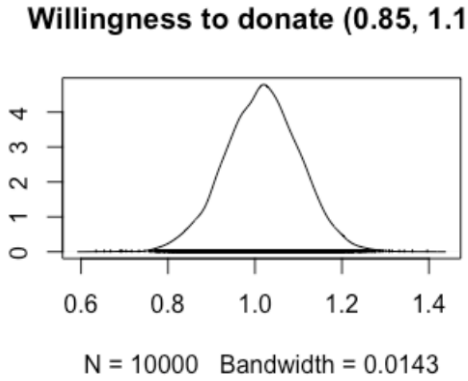
Taxes: Level of Authority Hypothesis

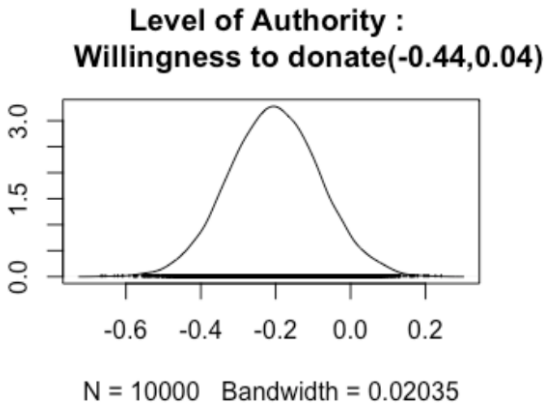
Model 1

Model 2 (with interaction)









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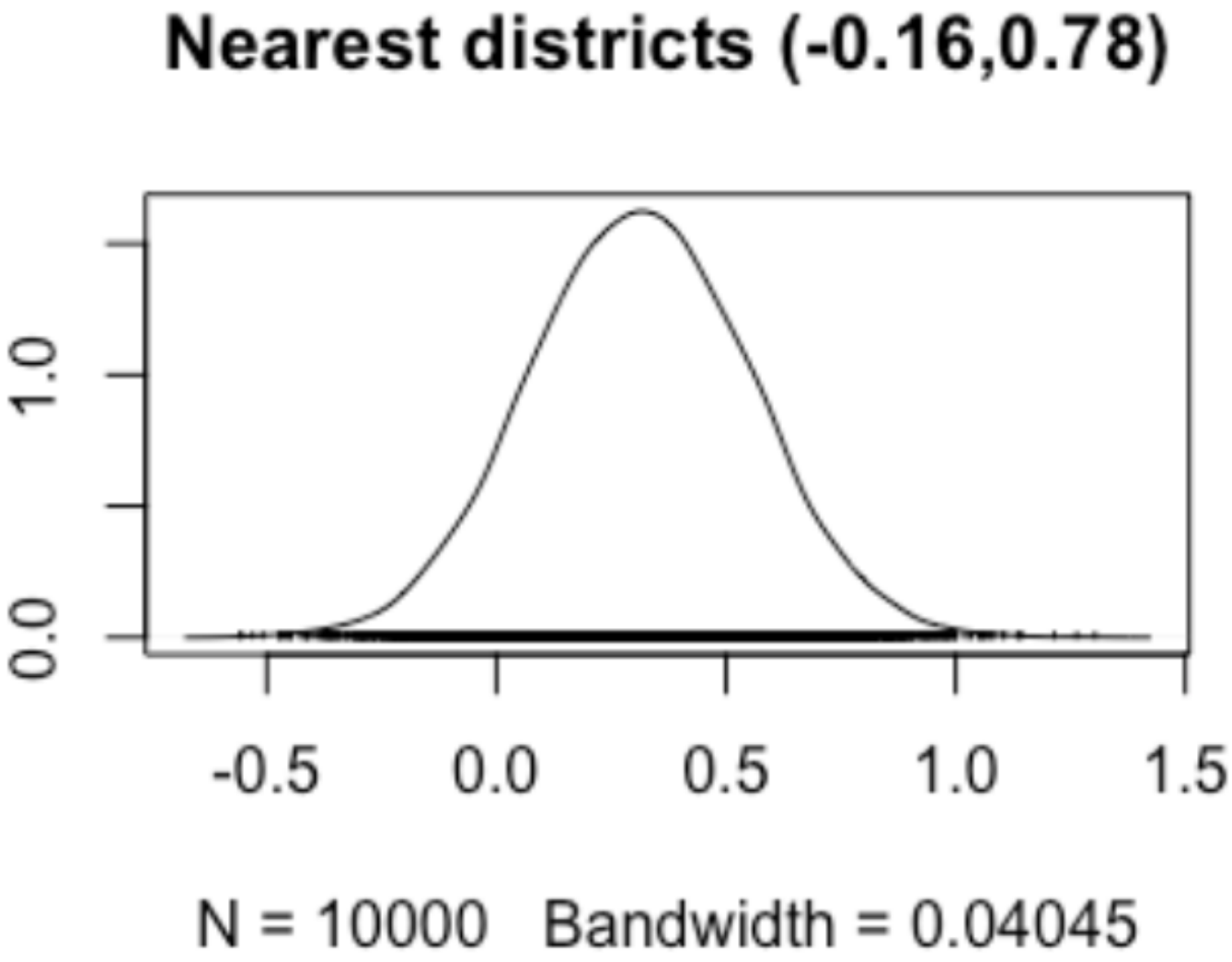
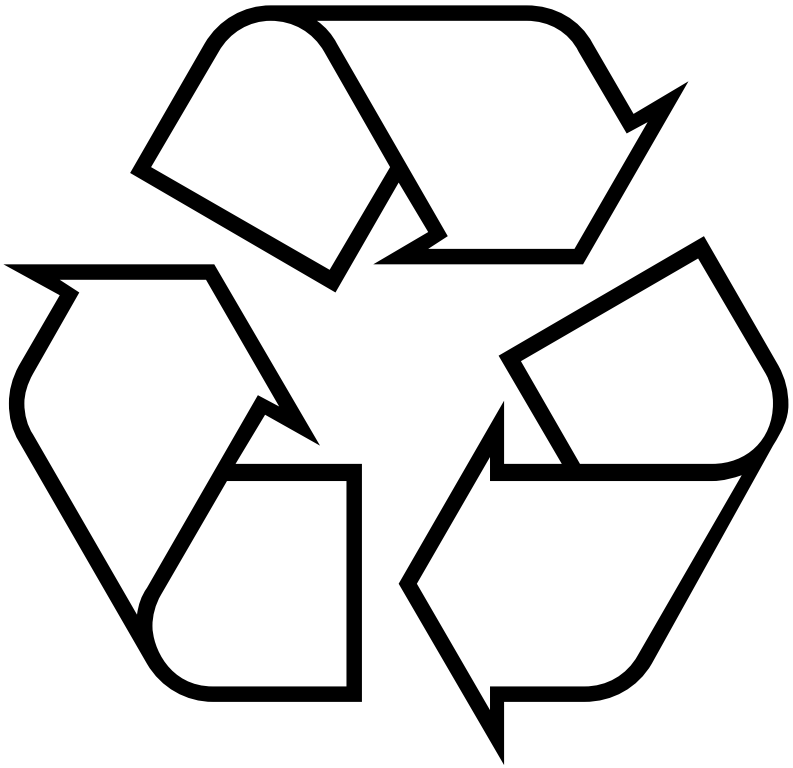


Who Pays?



A natural catastrophe is caused by natural forces:

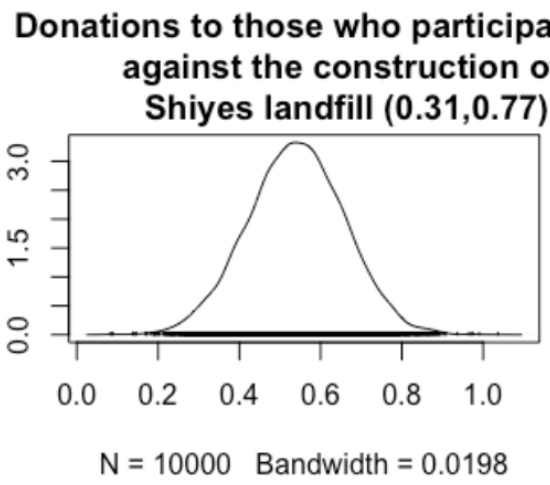
- generally results in a large number of individual losses involving many insurance policies;
- floods, storms, earthquakes, droughts/forest fires/heat waves, cold waves/frost, hail, tsunamis, and other natural catastrophes.

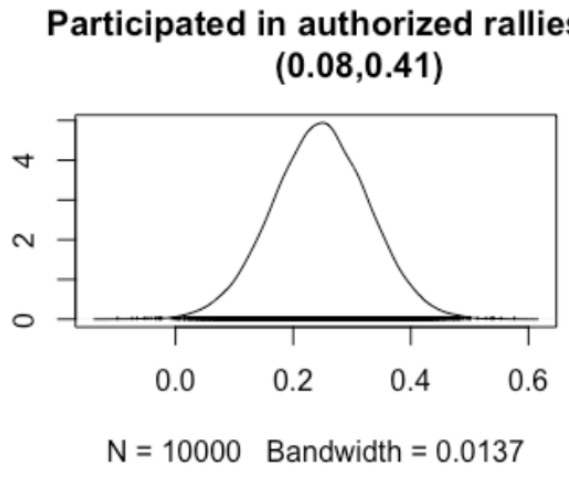
A man-made or technical disaster is triggered by human activities:

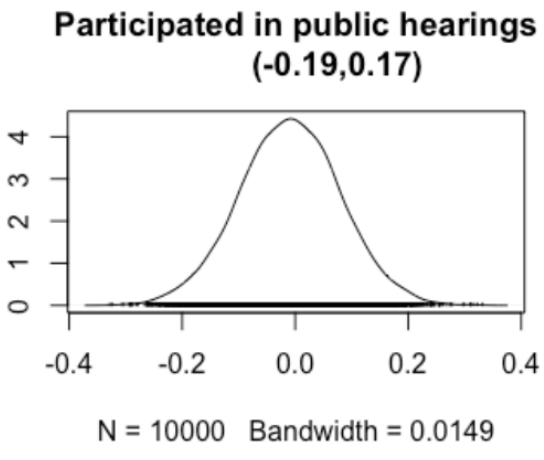
- a large object in a very limited space is affected, which is covered by a small number of insurance policies;
- war, civil war, and war-like events are excluded;
- major fires and explosions, aviation and space disasters, shipping disasters, rail disasters, mining accidents, collapse of buildings/bridges, and miscellaneous (including terrorism).

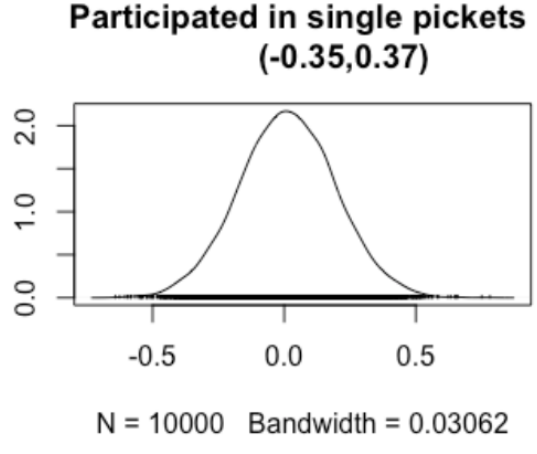
Back to Unnatural Disasters Section.

Donations: Rationalization Hypothesis (2)

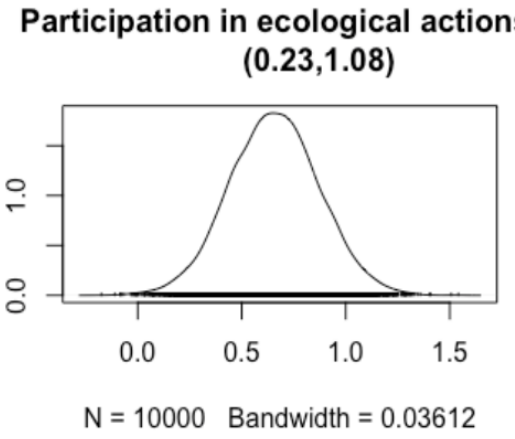


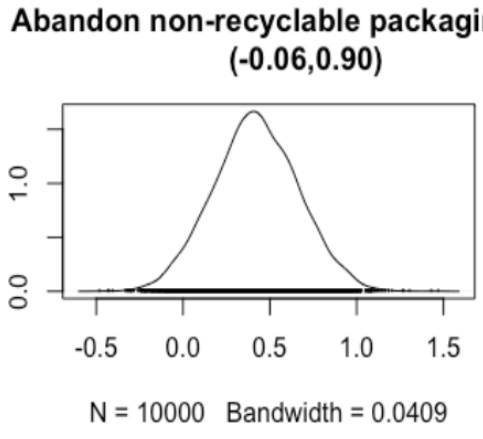


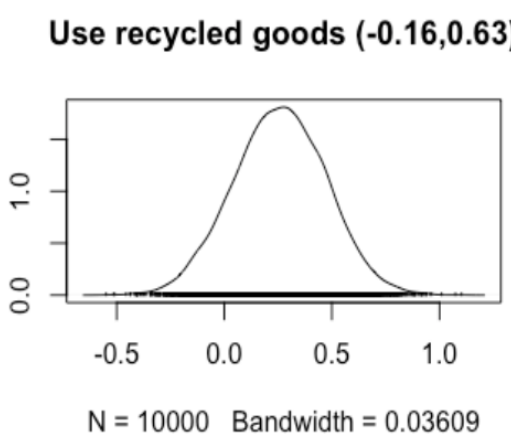


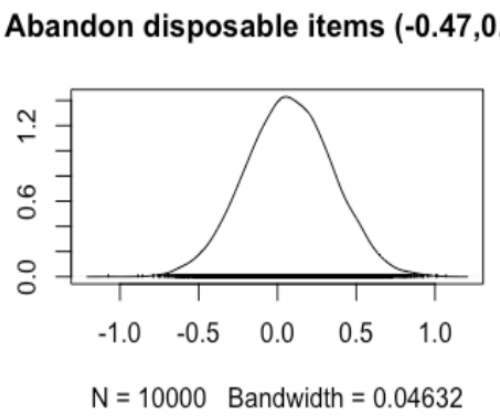


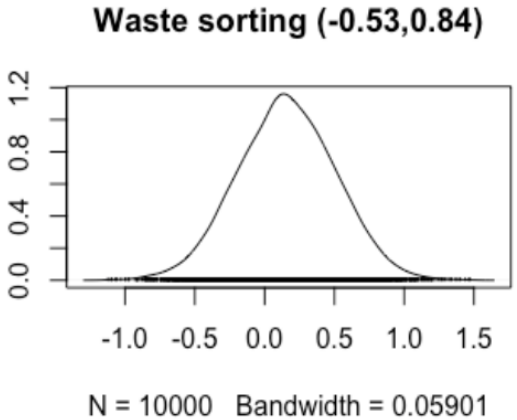
Taxes: Rationalization Hypothesis (2)











Taxes: Rationalization Hypothesis (3)