Public support for natural gas bans in the United States: Pre-Analysis Plan

Description

This study will evaluate which factors affect individuals' support for measures to ban natural gas hookups in newly constructed buildings.

Date registered

August 31, 2021

Date created

August 31, 2021

Study Information

Hypotheses

A respondent is more likely to support the (hypothetical) natural gas ban policy, (1) as the amount of consumer bill increases (costs), (2) as the natural gas industry is expected to benefit from this ban (industry), (3) as s/he agrees with the experts that the ban will reduce indoor air pollution from gas combustion (e.g., cardiovascular health in exposed children) (health), (4) as s/he agrees that the natural gas produces less greenhouse gas pollution that causes climate change (climate change), (5) as there is significant political support for the ban at the local level (political support). We can create the interaction of the five attributes. For example, we can select the most supportive case in terms of a combination of attributes from (1) to (5). An additional hypothesis is that compares the effect of attributes on the policy support. For example, we test if the health or climate change considerations in (3) and (4) are more important in determining the policy support than the cost consideration in (1). Lastly, we hypothesize that respondents are more likely to guess that Democrats / individuals who have children / the younger / people with a higher level of educational attainment / the richer are more likely to support the proposed natural gas ban policy.

Design Plan

Study type

Experiment - A researcher randomly assigns treatments to study subjects, this includes field or lab experiments. This is also known as an intervention experiment and includes randomized controlled trials.

Blinding

- For studies that involve human subjects, they will not know the treatment group to which they have been assigned.

Is there any additional blinding in this study?

No response

Study design

We designed a survey experiment for subjects in the United States to assess which type of information or factors shape public support for natural gas bans. Using a private polling company (Dynata), we recruited nationally representative samples of around 2,500 adults in the United States. The subjects will participate in an online survey in September 2021. Our survey experiment consists of two parts. First, to identify which characteristics of natural gas ban policy (i.e., costs, industry-level support, health effects, climate change framing, etc) affect public support for the natural gas ban policy, we employ a single conjoint design, in which

we simultaneously randomize key attributes (or “treatments”) of a hypothetical natural gas ban policy proposal to produce reliable estimates of each attribute as well as potential interactions between attributes. Then, respondents are asked to tell how much they support the policy proposal. Below, we present the attributes and values in each attribute (Note: the order of attributes will be randomized):

Attribute 1 (Costs) Value 1: Cost estimates suggest that all-electric new construction homes would likely see consumer bill savings. Value 2: Cost estimates suggest that all-electric new construction homes would likely see a consumer bill increase of less than $100 per year. Value 3: Cost estimates suggest that all-electric new construction homes would likely see a consumer bill increase of more than $100 per year. Value 4: No information

Attribute 2 (Industry) Value 1: The expected effect of the ban on the natural gas industry is negative, which leads to opposition from this industry. Value 2: The expected effect of the ban on the renewable energy industry is positive, which leads to support from this industry. Value 3: No information.

Attribute 3 (Health/Environment) Value 1: Regarding public health effects, experts expect that the ban will reduce indoor air pollution from gas combustion, including toxins such as nitrogen dioxide, which damages lung and cardiovascular health in exposed individuals. Value 2: Regarding public health effects, experts expect that the ban will reduce indoor air pollution from gas combustion, including toxins such as nitrogen dioxide, which damages lung and cardiovascular health in exposed children. Value 3: No information

Attribute 4 (Climate Change Framing) Value 1: When it comes to climate change effects, estimates show that an all-electric single-family home would reduce annual greenhouse gas emissions by 76 – 88% compared to a natural gas-fueled home, because burning natural gas creates greenhouse gas emissions, which cause climate change. Value 2: When it comes to climate change effects, estimates show that natural gas produces approximately 50% less emissions per unit of energy compared with coal, so burning natural gas instead helps to cut greenhouse gas emissions, which cause climate change. When it comes to climate change effects, some experts state that natural gas produces less greenhouse gas pollution than coal, while other experts argue that burning natural gas still creates greenhouse gas emissions, which cause climate change. Value 3: No information

Attribute 5 (Politician Support) Value 1: Politically, this type of gas ban receives significant political support at the local level. Value 2: Politically, this type of gas ban receives significant political support at the federal level. Value 3: No information. Second, to examine how respondents guess other people's preferences toward the proposed (hypothetical) gas ban policy, we employ a pairwise conjoint design, in which we simultaneously randomize key attributes (or “treatments”) of two hypothetical individuals.

Then, respondents are asked to tell how much each of hypothetical individuals support the policy proposal and who the respondents think is more likely to support the policy.

Again, below, we present the attributes and values in each attribute (Note: the order of attributes will be randomized): Attribute 1 (Age): 24 / 37 / 52 / 67 / 75 Attribute 2 (Race): White / African American / Asian / Hispanic / American Indian or Alaska Native / Native Hawaiian or Other Pacific Islander Attribute 3 (Education): Less than high school / High school or GED / Some college / College degree / Master's degree / Doctoral degree / Professional degree (e.g., JD or MD) Attribute 4 (Party Affiliation): Strong Republican / Moderate Republican /Independent / Moderate Democrat / Strong Democrat Attribute 5 (Region): Northeast / South / Midwest / West Attribute 6 (Income): $12,000 / $28,000 / $56,000 / $150,000 / $280,000

No files selected
Randomization

Simple randomization will be done at the individual respondent level.

Sampling Plan

Existing Data

Registration following analysis of the data
Explanation of existing data

No response
Data collection procedures

The survey will be conducted in the United States in September 2021, with more than 2,500 respondents from the adult population. The online survey samples collection as well as will be conducted via Dynata, and the role of the survey firm was to ensure the recruitment of a nationally representative sample and the overall seamless execution of the fielding of the survey.

No files selected
Sample size

Around 2,500 adults in the U.S.
Sample size rationale

No response
Stopping rule

No response

Variables

Manipulated variables

For the single conjoint experiment about natural gas ban policy, we manipulated (1) the expected costs of the hypothetical natural gas ban policy, (2) the industry either oppose or support the policy, (3) the effects of the policy on health outcome, (4) climate change framing (the implications of the policy implementation on climate change), and (5) political support (whether local or federal-level politicians support it). For the pairwise conjoint experiment in which we ask respondents to guess how presented hypothetical individuals may judge the proposed natural gas ban policy, we manipulated (1) age, (2) race, (3) education level, (4) party affiliation, (5) region, and (6) income of the hypothetical individuals.

No files selected
Measured variables

Respondents are asked to show how much they support or oppose the hypothetical natural gas ban policy. The answers to this question will be on a 1-7 scale provided to respondents with 1 marked as ‘strongly oppose’ and 7 is ‘strongly support.’ Respondents are asked to choose which individual with the hypothetical profile is more likely to support the proposed policy and how much she or he would like to support or oppose the hypothetical natural gas ban policy. The answers to this question will be on a 1-7 scale provided to respondents with 1 marked as ‘strongly oppose’ and 7 is ‘strongly support.’

No files selected
Indices

No response

No files selected

Analysis Plan

Statistical models

We estimate the linear regression models with standard errors clustered by the respondent, which is asymptotically equivalent to average marginal component effect (AMCE) estimators. The AMCE, which does not rely on functional form assumptions about the choice probabilities, captures causal average effects of each attribute value of natural gas ban policies over all possible combinations of other attributes on the probability that the natural gas ban policy will be supported.

No files selected

Transformations

No response

Inference criteria

No response

Data exclusion

No response

Missing data

No response

Exploratory analysis

No response

Other

Other

No response