LDA method description

March 2021

1 Selected Questions

a. Climate Knowledge

- Q13.2 "How often do you think or talk with people about climate change?"

- Q13.3 "What part of climate change do you think is due to human activity?"

b. Climate Attitudes

- Q14.1 "To what extent are the following groups responsible for climate change in the U.S.?"

- Q14.3 "To what extent do you think that it is technically feasible to stop greenhouse gas emissions "

- Q14.5 "How ambitious do you think public policies should be to halt climate change?"

- Q14.6 "How likely is it that human kind halt climate change by the end of the century?"

- Q14.7 "If we decide to halt climate change through ambitious policies, what would be the effects on the U.S economy and employment?"

- Q14.8 "If we decide to halt climate change through ambitious policies to what extent do you think it would negatively affect your lifestyle?"

- Q14.9 "To what extent would you be willing to adopt the following behaviors?" *Limit flying/Limit driving/Electric vehicle/Limit beef/ Limit heating or cooling*

- Q14.11 "How important are the factors below in order for you to adopt a sustainable lifestyle?" *Ambitious climate policies/Financial support/People changing behaviors/Most well-off changing behaviors*

c. Pref1: Emission Standards

- Q15.2 "Do you agree or disagree with the following statements? An emission limit for cars would..." *Reduce CO_2 emissions from cars/Reduce air polution/Large effect on the U.S. economy and employment/Negative effect on the U.S. economy and employment/Cost-effective to fight CC*

- Q15.3 "In your view, would the following groups win or lose if an emission limit for cars was implemented in the U.S.?" *Low-income/Middle class/High-income/People living in rural areas*

- Q15.4 "Do you think that financially your household would win or lose from an emission limit for cars?"

- Q15.6 "Do you agree or disagree with the following statement: "An emission limit for cars is fair"?"

- Q15.5 "Do you support or oppose an emission limit for cars?"

- Q15/7 "Do you support or oppose an emission limit for cars where alternatives such as public transports are made available to people?"

d. Pref 2: Green Investments

- Q16.2 'Do you agree or disagree with the following statements? A green infrastructure program would..." *Make electricity production greener/Increase the use of public transport/Reduce air pollution/Large effect on the U.S. economy and employment/Negative effect on the U.S. economy and employment/Cost-effective to fight CC*

- Q16.3 "In your view, would the following groups win or lose with a green infrastructure program?" *Low-income/Middle class/High-income/People living in rural areas*

- Q16.4 "Do you think that financially your household would win or lose from from a green infrastructure program?"

- Q16.6 "Do you agree or disagree with the following statement: "A green infrastructure program mainly financed by public debt is fair"?"

- Q16.5 "Do you support or oppose a green infrastructure program?"

- Q16.7 "What sources of funding do you find appropriate for a green infrastructure program? (Multiple answers are possible)" *Debt/Sale taxes/Wealth tax/Reduction in social spending/Reduction in military spending*

e. Pref 3: Tax and Dividend

- Q17.2 'Do you agree or disagree with the following statements? A carbon tax with cash transfers would..." *Encourage people to drive less/Encourage people and companies to insulate buildings/Reduce the use of fossil fuels/Reduce air polution/Large effect on the U.S. economy and employment/Negative effect on the U.S. economy and employment/Cost-effective to fight CC*

- Q17.3 "In your view, would the following groups win or lose under a carbon tax with cash transfers?" *Low-income/Middle class/High-income/People living in rural areas*

- Q17.4 "Do you think that financially your household would win or lose under a carbon tax with cash transfers?"

- Q17.6 "Do you agree or disagree with the following statement: "A carbon tax with cash transfers is fair.""

- Q17.5 "Do you support or oppose a carbon tax with cash transfers?"

f. Pref for Climate Policies

- Q18.3 "Do you support or oppose the following climate policies?" *Tax on flying/Tax on fossil fuels/Mandatory insulation/Ban of polluting vehicles in city-centers/Subsidies for low-carbon technologies/Contribution to a gobal climate fund*

- Q18.4 "Governments can use the revenues from carbon taxes in different ways. Would you support or oppose introducing a carbon tax that would raise gasoline prices by 40 cents per gallon, if the government used this revenue to finance..." *Cash transfers for constrained households/Cash transfers to poor people/Equal cash transfers/Reduction in PIT/Reduction in CIP/Tax rebates for affected firms/Funding environmental infrastructures/Subsidize low-carbon technologies/Reduction in public deficit*

g. International Burden-Sharing

- Q20.1 "At which level(s) do you think public policies to tackle climate change need to be put in place?" *Global/Federal/State/Local*

- Q20.3 "Do you agree or disagree with the following statement: "The U.S. should take measures to fight climate change.""

- Q20.4 "How should U.S. climate policies depend on what other countries do?" *If other countries do more/If other countries do less*

- Q20.5 "Ideally, how should countries bear the costs of fighting climate change?" *In proportion to income/In proportion to current emissions/In proportion to past emissions/Richest pay all/Richest pay more to compensate*

- Q20.6 "Do you support or oppose establishing a global democratic assembly?"

- Q20.7 "Do you support or oppose global tax on GHG to fund a global basic income?"

- Q20.8 "Do you support global tax on millionaires to finance low-income countries?"

h. Bans vs. Incentives

- Q246 "Do you support or oppose subsidized insulation?"

- Q247 "Do you support or oppose subsidized and mandatory insulation?"

- Q21.4 "Do you support or oppose the following options to limit the consumption of cattle products?" *High tax on cattle products/Subsidies on organic and local products/Removal of subsidies for cattle farming/Ban of intensive cattle farming*

i. Trust, Perceptions of Institutions, Inequality, and the Future

- Q22.1 "Do you agree or disagree with the following statement: "Most people can be trusted.""

- Q22.2 "Do you agree or disagree with the following statement: "Over the last decade the U.S. federal government could generally be trusted to do what is right.""

- Q22.3 " Some people think the government is trying to do too many things that should be left to individuals and businesses. Others think that government should do more to solve our country's problems. Which come closer to your own view?"

- Q22.4 "How big of an issue do you think income inequality is in the U.S.?"

- Q22.5 "Do you think that overall people in the world will be richer or poorer in 100 years from now?"

2   Top answers per profile

Percentages in brackets are the entries of the β vector scaled-up following methodology from Draca and Schwarz (2020). Therefore they correspond to the probability of an answer to appear for a given profile.

2.1   Two Profiles

Profile 1 : X

- "An emission limit for cars would reduce CO_2 emissions from cars." [*79.2%*]

- "An emission limit for cars would reduce air pollution." [*78.9%*]

- "A green infrastructure program would reduce air pollution." [*77.9%*]

- "The U.S. should take measures to fight climate change." [*77.9%*]

- "A carbon tax with cash transfers would reduce air pollution." [*76.6%*]

- "A green infrastructure program would make electricity production greener." [*76.4%*]

Profile 2 : X

- "Funding a green infrastructure program with public debt is not appropriate." [*76.5%*]

- "Funding a green infrastructure program with a reduction in military spending is not appropriate." [*75.1%*]

- "Disagree that over the last decade the U.S. federal government could generally be trusted to do what is right." [*66.3%*]

- "It is unlikely that human kind halt climate change by the end of the century." [*65.8%*]

- "Public policies to tackle climate change should not be put in place at the State level." [*65.0%*]

- "Oppose a high tax on cattle products." [*64.6%*]

2.2 Three Profiles

Profile 1 : X

- "Support an emission limit for cars." [*78.6%*]

- "A carbon tax with cash transfers would encourage people and companies to insulate buildings." [*78.3%*]

- "A carbon tax with cash transfers would reduce the use of fossil fuels." [*78.2%*]

- "Support a policy where the U.S. federal government would make it mandatory for all residential buildings to have insulation that meets a certain energy efficiency standard before 2040 and would subsidize half of it." [*78.2%*]

- "Support a carbon tax, if the government uses this revenue for funding environmental infrastructure projects." [*77.9%*]

- "Support a green infrastructure program." [*77.4%*]

Profile 2 : X

- "Climate change is real." [*81.4%*]

- "Funding a green infrastructure program with an increase in taxes on the wealthiest is appropriate." [*79.5%*]

- "Funding a green infrastructure program with an increase in sales taxes is not appropriate." [*78.1%*]

- "The middle class would neither win nor lose if an emission limit for cars was implemented." [*76.8%*]

- "My househould would neither win nor lose financially from an emission limit for cars." [*76.3%*]

- "The middle class would neither win nor lose with a green infrastructure program." [*74.7%*]

Profile 3 : X

- "Funding a green infrastructure program with public debt is not appropriate." [*87.7%*]

- "Disagree that over the last decade the U.S. federal government could generally be trusted to do what is right." [*85.2%*]

- "Oppose a high tax on cattle products." [*83.9%*]

- "Disagree that the richest countries should pay it all, so that the poorest countries do not have to pay anything." [*79.1%*]

- "Funding a green infrastructure program with a reduction in military spending is not appropriate." [*78.9%*]

- "Oppose a national tax on fossil fuels (increasing gasoline prices by 40cts per gallon)" [*77.5%*]

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2.3 Four Profiles

Profile 1 : X

- "Support a green infrastructure program." [*90.5%*]

- "An emission limit for cars would be cost-effective to fight climate change." [*89.3%*]

- "Support an emission limit for cars where alternatives such as public transports are made available to people." [*89.3%*]

- "Support establishing a global democratic assembly." [*88.0%*]

- "Support a contribution to a global climate fund to finance clean energy in low-income countries." [*87.6%*]

- "A green infrastructure program would be cost-effective to fight climate change." [*85.7%*]

Profile 2 : X

- "The middle class would neither win nor lose if an emission limit for cars was implemented." [*82.9%*]

- 'The middle class would neither win nor lose with a green infrastructure program." [*81.2%*]

- "My househould would neither win nor lose financially with a green infrastructure program." [*80.4%*]

- "My househould would neither win nor lose financially from an emission limit for cars." [*80.1%*]

- "My househould would neither win nor lose financially under a carbon tax with cash transfers." [*80.1%*]

- "People living in rural areas would neither win nor lose if an emission limit for cars was implemented." [*79.0%*]

Profile 3 : X

- "Oppose a high tax on cattle products." [*88.2%*]

- "Oppose a national tax on fossil fuels (increasing gasoline prices by 40cts per gallon)" [*82.6%*]

- "Not willing to limit heating or cooling her home." [*82.0%*]

- "Oppose the ban of intensive cattle farming." [*79.0%*]

- "It is unlikely that human kind halt climate change by the end of the century." [*78.8%*]

- "Oppose the removal of subsidies for cattle farming" [*78.6%*]

Profile 4 : X

- "An emission limit for cars would reduce CO_2 emissions from cars." [*96.4%*]

- "An emission limit for cars would reduce air pollution." [*96.1%*]

- "The U.S. should take measures to fight climate change." [*96.0%*]

- "A green infrastructure program would reduce air pollution." [*95.4%*]

- "Companies are a lot responsible for climate change in the U.S.." [*94.9%*]

- "Support mandatory insulation of buildings" [*94.4%*]

3 Optimal Number of Profiles

We assess the cohesion of models using the cohesion measure developed by Draca and Schwarz (2020). They use the Normalized Pointwise Mutual Information (NPMI) (Bouma, 2009) (which captures the frequence at which two features appear together on a $[-1, 1]$ scale). The NPMI are averaged over the B most important positions of a profile. Finally the cohesion of a model is defined as the average of the overall NPMI of each profile. As in Lau and Baldwin (2016) the measure of cohesion is calculated for different number of features $B \in (5, 10, 15, 20)$. Similarly to Draca and Schwarz (2020), the 4 type LDA specification performs best.

FIGURE 1: AVERAGE COHESION OF PROFILES FOR DIFFERENT LDA MODELS
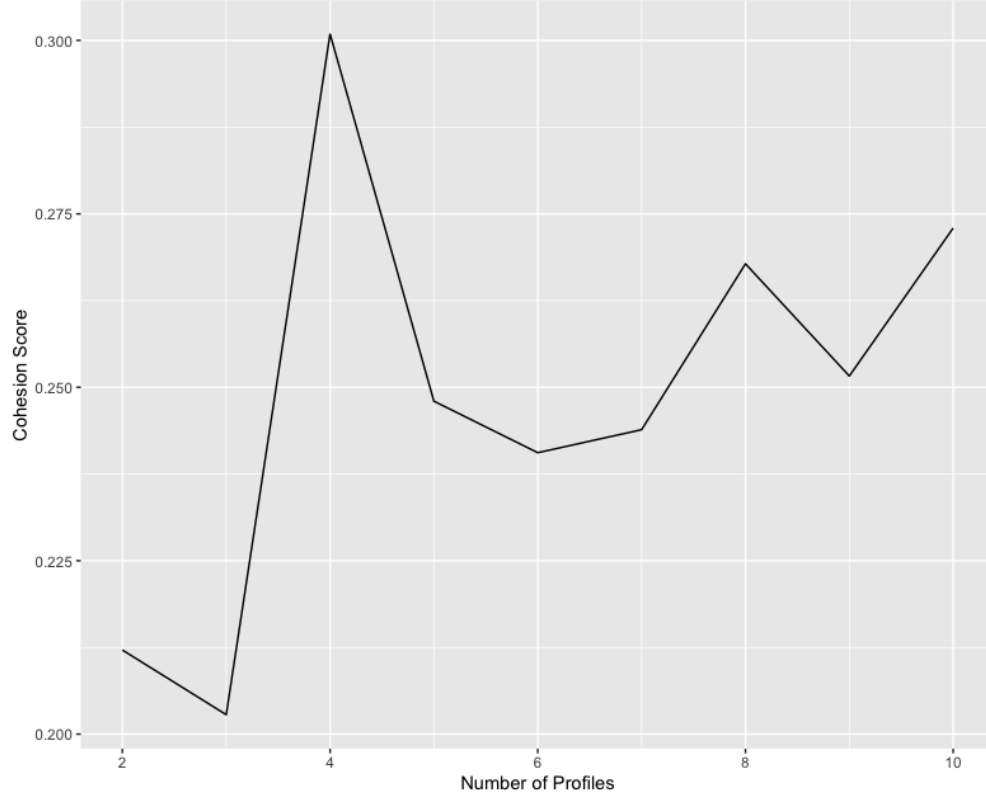
Note: Cohesion scores for models with $M \in [\![2, 10]\!]$. Topic cohesion is calculated as the average cohesion for score for features $B \in (5, 10, 15, 20)$.

FIGURE 2: AVERAGE COHESION FROM DRACA AND SCHWARZ (2020)
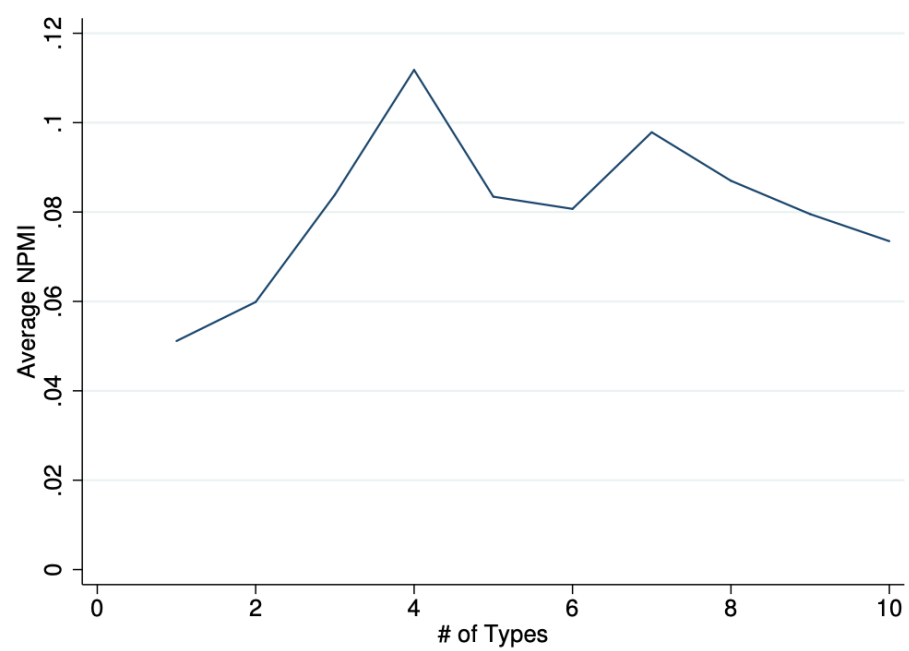
4 Regressions

TABLE 1: 2-PROFILES

	Profile 1	Profile 2
Mean	0.612	0.388
race: White only	0.012	−0.012
	(0.039)	(0.039)
Male	−0.046	0.046
	(0.036)	(0.036)
Children	0.073*	−0.073*
	(0.039)	(0.039)
No college	−0.010	0.010
	(0.042)	(0.042)
status: Retired	−0.013	0.013
	(0.073)	(0.073)
status: Student	−0.005	0.005
	(0.113)	(0.113)
status: Working	0.094*	−0.094*
	(0.057)	(0.057)
Income Q2	−0.166***	0.166***
	(0.053)	(0.053)
Income Q3	0.019	−0.019
	(0.054)	(0.054)
Income Q4	−0.029	0.029
	(0.055)	(0.055)
age: 25-34	0.106	−0.106
	(0.089)	(0.089)
age: 35-49	0.012	−0.012
	(0.084)	(0.084)
age: 50-64	−0.155*	0.155*
	(0.082)	(0.082)
age: 65+	0.029	−0.029
	(0.096)	(0.096)
age: below 18	−0.363	0.363
	(0.801)	(0.801)
vote: Biden	0.455***	−0.455***
	(0.056)	(0.056)
vote: Trump	0.015	−0.015
	(0.061)	(0.061)
Observations	582	582

Note: The dependent variables are indicator variables equal to one if the respondent has been assigned to this profile (generally because most of her responses belong to this profile). The *race: White only* indicator variable equals one if the respondent's self reported race is only "White." The regression includes controls for gender, having children and not having completed a college degree. The three *status* indicator variables indicate the difference in mean compared to a reference group of people not working (either unemployed or inactive). The *status: Working* indicator variable includes respondents who self-reported being either "Full-time employed", "Part-time employed", or "Self-employed". The three *Income* indicator variables indicate difference in mean compared to a reference group of people in the first quartile of household's annual income in 2019 (i.e. income < \$35,000). The five *age* indicator variables indicate difference in mean compared to a reference group of people aged between 18 and 24. The two *vote* indicator variables indicate difference in mean compared to a reference group of people who either did not vote in the 2020 Presidential election or voted for another candidate than Biden or Trump.
*p<0.1; **p<0.05; ***p<0.01

TABLE 2: 3-PROFILES

	Profile 1	Profile 2	Profile 3
Mean	0.595	0.207	0.199
race: White only	0.014	−0.018	0.003
	(0.039)	(0.038)	(0.033)
Male	−0.063*	0.008	0.056*
	(0.036)	(0.035)	(0.030)
Children	0.079**	−0.086**	0.008
	(0.040)	(0.038)	(0.033)
No college	−0.052	0.084**	−0.033
	(0.043)	(0.041)	(0.036)
status: Retired	0.0001	−0.077	0.077
	(0.074)	(0.071)	(0.062)
status: Student	−0.054	0.102	−0.048
	(0.114)	(0.110)	(0.096)
status: Working	0.068	−0.057	−0.011
	(0.057)	(0.055)	(0.048)
Income Q2	−0.127**	−0.005	0.132***
	(0.054)	(0.052)	(0.045)
Income Q3	0.018	−0.047	0.029
	(0.055)	(0.053)	(0.046)
Income Q4	−0.048	0.034	0.014
	(0.056)	(0.054)	(0.047)
age: 25-34	0.084	−0.063	−0.021
	(0.090)	(0.087)	(0.076)
age: 35-49	−0.043	0.055	−0.012
	(0.085)	(0.082)	(0.071)
age: 50-64	−0.213**	−0.001	0.215***
	(0.083)	(0.080)	(0.070)
age: 65+	−0.049	−0.032	0.081
	(0.097)	(0.094)	(0.082)
age: below 18	−0.346	0.515	−0.169
	(0.809)	(0.781)	(0.681)
vote: Biden	0.455***	−0.236***	−0.219***
	(0.057)	(0.055)	(0.048)
vote: Trump	0.006	−0.119**	0.113**
	(0.062)	(0.059)	(0.052)
Observations	582	582	582

Note: The dependent variables are indicator variables equal to one if the respondent has been assigned to this profile (generally because most of her responses belong to this profile). The *race: White only* indicator variable equals one if the respondent's self reported race is only "White." The regression includes controls for gender, having children and not having completed a college degree. The three *status* indicator variables indicate the difference in mean compared to a reference group of people not working (either unemployed or inactive). The *status: Working* indicator variable includes respondents who self-reported being either "Full-time employed", "Part-time employed", or "Self-employed". The three *Income* indicator variables indicate difference in mean compared to a reference group of people in the first quartile of household's annual income in 2019 (i.e. income < \$35,000). The five *age* indicator variables indicate difference in mean compared to a reference group of people aged between 18 and 24. The two *vote* indicator variables indicate difference in mean compared to a reference group of people who either did not vote in the 2020 Presidential election or voted for another candidate than Biden or Trump.
*p<0.1; **p<0.05; ***p<0.01

TABLE 3: 4-PROFILES

	Profile 1	Profile 2	Profile 3	Profile 4
Mean	0.441	0.22	0.207	0.132
race: White only	0.001	−0.010	0.023	−0.015
	(0.043)	(0.039)	(0.034)	(0.032)
Male	0.056	−0.040	0.086***	−0.102***
	(0.039)	(0.036)	(0.031)	(0.029)
Children	0.079*	−0.071*	0.040	−0.048
	(0.043)	(0.039)	(0.034)	(0.033)
No college	−0.088*	0.098**	−0.016	0.006
	(0.046)	(0.042)	(0.036)	(0.035)
status: Retired	0.009	−0.068	0.111*	−0.052
	(0.080)	(0.073)	(0.063)	(0.060)
status: Student	−0.044	0.099	−0.062	0.007
	(0.124)	(0.114)	(0.098)	(0.094)
status: Working	0.092	−0.053	−0.042	0.004
	(0.062)	(0.057)	(0.049)	(0.047)
Income Q2	−0.151***	0.041	0.112**	−0.001
	(0.058)	(0.054)	(0.046)	(0.044)
Income Q3	0.032	−0.072	0.062	−0.021
	(0.059)	(0.055)	(0.047)	(0.045)
Income Q4	−0.046	0.072	0.036	−0.062
	(0.060)	(0.055)	(0.048)	(0.046)
age: 25-34	−0.0002	−0.050	−0.034	0.084
	(0.098)	(0.090)	(0.077)	(0.074)
age: 35-49	−0.130	0.023	−0.024	0.132*
	(0.092)	(0.084)	(0.072)	(0.070)
age: 50-64	−0.307***	−0.030	0.187***	0.150**
	(0.090)	(0.082)	(0.071)	(0.068)
age: 65+	−0.090	−0.032	0.018	0.104
	(0.105)	(0.096)	(0.083)	(0.080)
age: below 18	−0.396	0.580	−0.219	0.035
	(0.876)	(0.804)	(0.692)	(0.664)
vote: Biden	0.309***	−0.173***	−0.257***	0.121***
	(0.062)	(0.056)	(0.049)	(0.047)
vote: Trump	−0.007	−0.066	0.076	−0.003
	(0.067)	(0.061)	(0.053)	(0.051)
Observations	582	582	582	582

Note: The dependent variables are indicator variables equal to one if the respondent has been assigned to this profile (generally because most of her responses belong to this profile). The *race: White only* indicator variable equals one if the respondent's self reported race is only "White." The regression includes controls for gender, having children and not having completed a college degree. The three *status* indicator variables indicate the difference in mean compared to a reference group of people not working (either unemployed or inactive). The *status: Working* indicator variable includes respondents who self-reported being either "Full-time employed", "Part-time employed", or "Self-employed". The three *Income* indicator variables indicate difference in mean compared to a reference group of people in the first quartile of household's annual income in 2019 (i.e. income < \$35,000). The five *age* indicator variables indicate difference in mean compared to a reference group of people aged between 18 and 24. The two *vote* indicator variables indicate difference in mean compared to a reference group of people who either did not vote in the 2020 Presidential election or voted for another candidate than Biden or Trump.
*p<0.1; **p<0.05; ***p<0.01

References

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