

CMSC320 HW2

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1 Introduction

Between 2023 and 2025 academic years, Professors Fardina and Morawski have collected over 400 survey responses from students, evaluating how justified they found certain actions in a variety of scenarios. This report discusses the relationships between demographic data and student judgments. Personal political leaning and religiousness had moderate to strong effects on responses to certain questions, but had minimal influence on other scenarios. University year, age, parent/guardian political leaning, and gender had minimal impact.

2 Background

The surveys consisted of two sections. Section 1 asked about demographic information of respondents, and Section 2 presented scenarios where one party took an action or made a decision, and respondents were asked to judge the extent to which that party was justified in doing so. The demographic factors measured were university year, age, parent/guardian political leaning, personal political leaning, religiousness, and gender; a breakdown of possible answers is provided in Appendix 1.

In Section 2, students evaluated scenarios such as the following:

My girlfriend is a doctor. Lately she's been complaining about pain in her right knee and constantly taking TONS of ibuprofen to treat (like 15-20 pills a day). However, it's only gotten worse. I've told her she needs to see someone about it but she told me it was fine. So I told her that if this is how she treats herself, I'd be concerned about being her patient. She was shocked and told me that was uncalled for. Am I a jerk?

and were asked to rate how well they believed the subjects' actions were justified on a three-point scale: "Not a jerk", "Moderately a jerk", and "Strongly a jerk". The rest of the questions are provided in Appendix 2.

In total, four data science classes were surveyed over three semesters (two from Fall 2023 and one each from Fall 2024 & Spring 2025) and 473 responses were collected.

Starting Fall 2024, the genders used in each question were reversed¹—in the previous scenario, the doctor would be the subject’s boyfriend rather than their girlfriend. The Fall 2024 survey additionally included a priming question prior to Section 2, asking respondents to rate how compassionate they believed themselves to be. This priming question was not included in the other surveys.

2.1 Data Cleaning

Multiple incongruities existed in the data.

The Fall 2023 surveys asked about religiousness and spirituality, while the other two asked only about religiousness. For consistency across all four surveys, responses to these questions were combined, as they were measured on the same scale and differed only in wording.

Responses selecting "Famale" rather than "Female" for gender were combined under "Female".

Across all surveys, sophomore was misspelled as "Sophmore," which was corrected.

Ages were recorded as different formats across surveys, including integers, floats, and strings, and were standardized to strings.

The surveys did not enforce each question be answered, leading to a number of missing values in the data. Rows with four or more missing values were dropped, otherwise, missing values were interpolated using the mode of each question.

Due to the anonymous nature of the surveys, people were able to answer anything they liked for the demographic questions. To control for small sample sizes for certain questions (e.g., gender, political leaning) and possible trolling (e.g., unrealistic ages or university year), categories that comprised less than one-thirtieth of the sample were dropped. Further details on what was dropped can be found in Appendix 1.

Responses to one question were not considered due to a typo leading to different interpretations between surveys.

These processes resulted in a dataset of 360 responses, down from 473.

3 Findings

Differences were observed between different political leanings and certain questions. For the question:

Some of my relatives refuse to come to my wedding, since they don’t approve of our 'lifestyle'. I would like to donate the money I will save to an LGBTQ organization in their name. I’m hoping that I or the organization will be able to send them a receipt/thank you for the donation. Would I be a jerk?

¹For one question, the reversal was not performed correctly. See Appendix 2 for details.

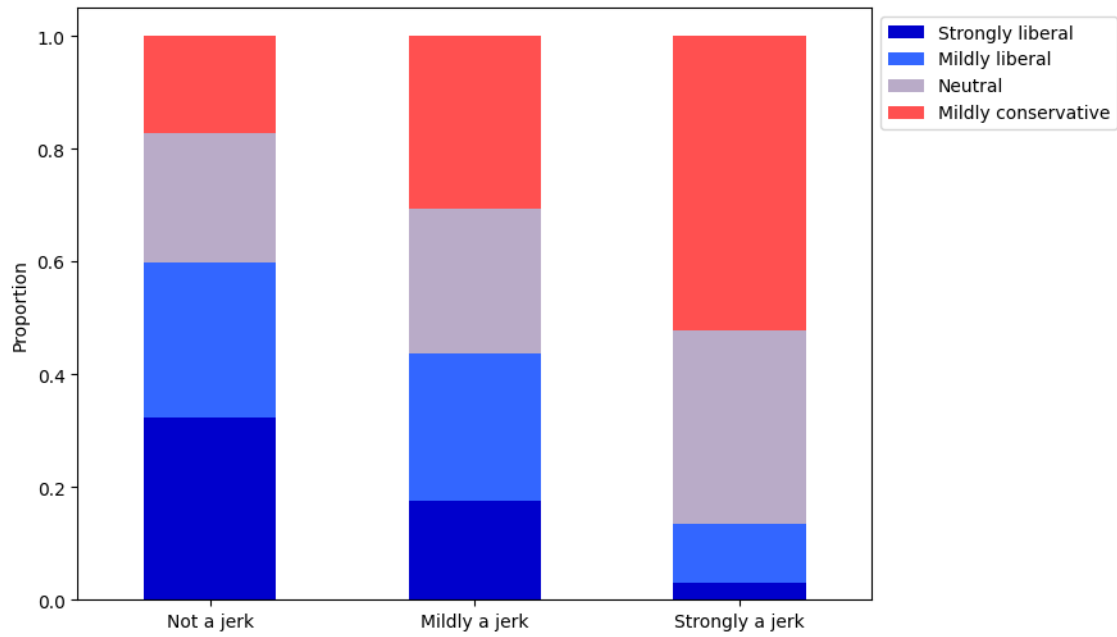


Figure 1. Distribution of political leanings across responses to the LGBTQ scenario

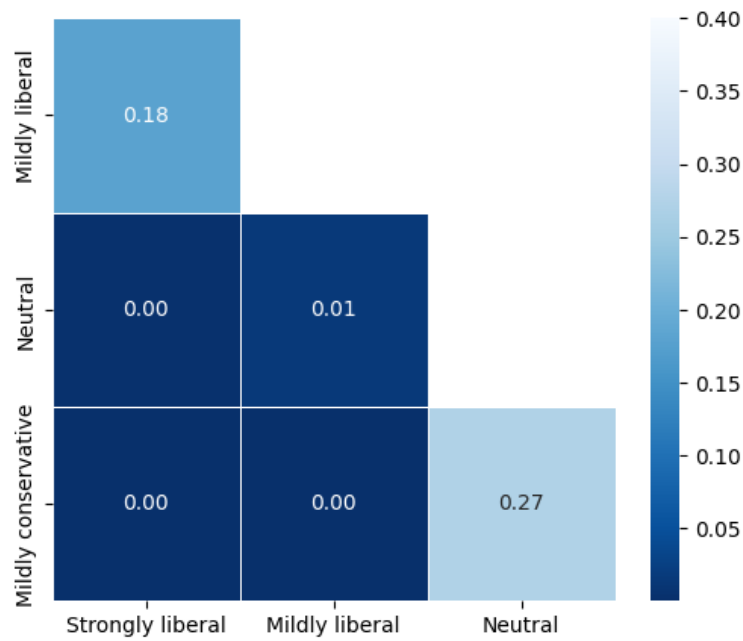


Figure 2. p-values of chi-squared tests between responses to the LGBTQ scenario for different political leanings

more conservative respondents tended to judge the subject more harshly in greater proportion than more liberal respondents, as seen in Figure 1. Chi-squared tests showed differences in response distributions across political leanings. As shown in Figure 2, the distribution of mildly conservative and neutral respondents' answers differed from mildly and strongly liberal respondents ($p \leq 0.01$, Figure 2)².

In response to the scenario:

My parents want us to come out for their anniversary, and bought my brother and I tickets on the same flight. My brother has two kids - a 6 month old and a 5 year old. He is currently separated from his wife so he would have to handle 2 children by herself on a 10 hour flight. He calls me up a week or so beforehand and asks me if I will be willing to help him take care of his kids on the flight, and something about taking shifts so we can both sleep. I tell him that I wasn't comfortable with that, but he says 'nephew loves you so much' so we can work something out on the flight and hangs up. When I got to the airport, I chose to upgrade my seat so I could sit by myself and didn't mention it until we were on the plane. My family freaked and told me I abandoned my brother. Am I a jerk?

strongly liberal respondents had different responses to other groups. As seen in Figure 4, strongly liberal students were more lenient than other leanings, having statistically significant differences with mildly liberal and neutral respondents ($p \leq 0.05$, Figure 4).

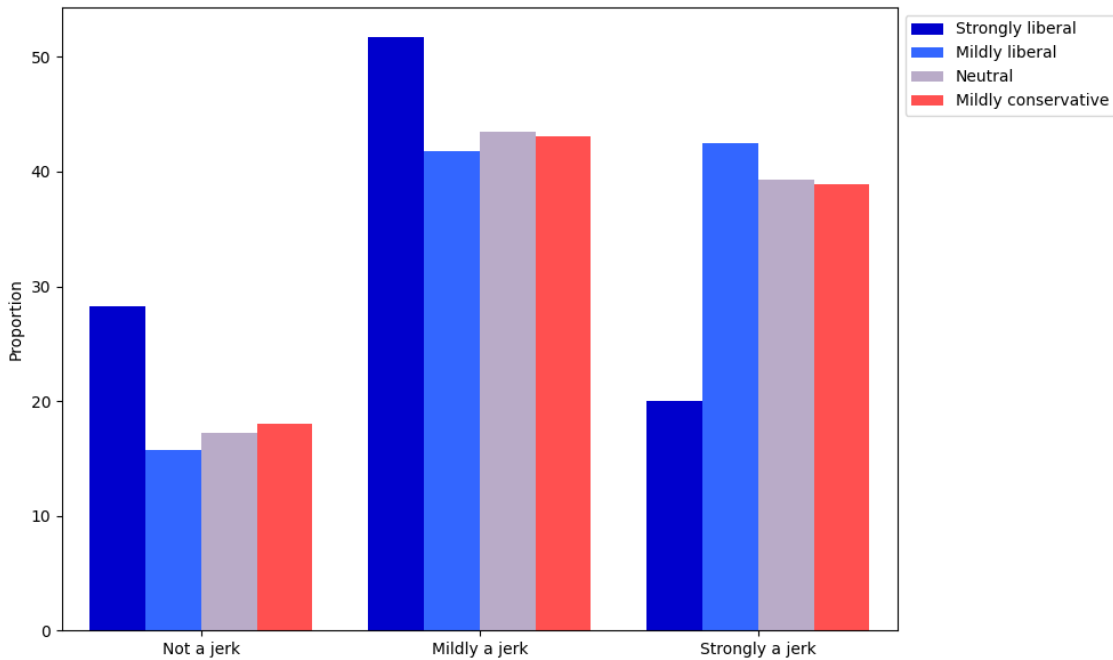


Figure 3. Distribution of political leanings across responses to the flight scenario (normalized to $n=100$ for each political leaning)

²For a demographic d and scenario s , H_0 is that d has no significant effect on responses to s and H_1 is that d does have a significant effect on responses to s

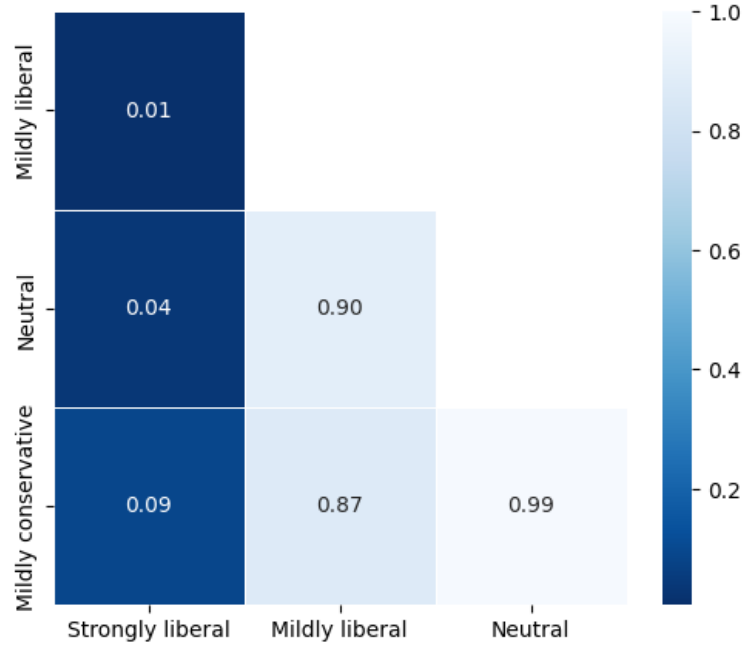


Figure 4. p-values of chi-squared tests between responses to the flight scenario for different political leanings

Religion exhibited similar, though weaker, effects on the same questions, with more religiousness being correlated with more conservative leaning and less religiousness being correlated with more liberal leaning. This may be due to overlap between religion and political leaning, though a chi-squared test between the two factors resulted in p-value of 0.055, suggesting that this may or may not be statistically significant. Further data collection may be necessary to fully explore this relationship.

Political leaning and religion did not have a significant effect on other questions.

Analysis of other demographic factors resulted in few differences, though it is challenging to distinguish these from potential false positives—a possibility given the large sample size. No similar patterns were found between pairs of demographics apart from religion and personal political leaning.

4 Conclusion

This analysis investigated relationships between demographic factors and responses to various scenarios. Key findings indicate that political leaning has a significant effect on responses to certain scenarios, confirmed by chi-squared tests showing distinct differences responses between different political leanings.

Religiousness influenced responses to the same questions as political leaning, though to a lesser extent. A chi-squared test between religiousness and political leaning resulted in a p-value of 0.055, suggesting a potential relationship, though more data would be necessary to

confirm such a claim.

Other collected demographics, university year, age, parent/guardian political leaning, and gender, did not yield similar trends. While there were scenarios that yielded positive results under analysis, no scenarios were positive under more than one demographic other than political leaning and religiousness, indicating that these variables may not impact responses to the same extent.

Political leaning and religiousness appear to be the primary factors impacting survey responses, with further research being necessary to investigate relationships between the two. Future surveys could place more focus on these demographics to validate these findings.

Appendix 1

Grayed rows indicate sections that were fully dropped after cleaning.

Question	Answers	Count	After Cleaning
What year are you?	Freshman	5	
	Sophomore	124	110
	Junior	231	208
	Senior	72	42
	Graduate Student	25	
	Other	6	
How old are you?	Fill-in answer	n/a	n/a ³
You could describe the adults you grew up with as...	Strongly liberal	30	20
	Mildly liberal	125	104
	Neutral	88	70
	Mildly conservative	125	109
	Strongly conservative	42	28
	Don't know / It's complicated	37	29
You could describe yourself as...	Strongly liberal	83	64
	Mildly liberal	176	146
	Neutral	104	81
	Mildly conservative	57	49
	Strongly conservative	13	
	Don't know / It's complicated	27	20
How would you rate your religiousness?	Not religious at all	212	161
	Moderately religious	186	156
	Strongly religious	63	43
What bests represents your gender?	Male	391	276
	Female	115	84
	Non-binary / other	10	
	Prefer not to say	5	

³Values (counts) remaining were 19 (109), 20 (198), 21 (51)

Appendix 2

Q1

My girlfriend is a doctor. Lately she's been complaining about pain in her right knee and constantly taking TONS of ibuprofen to treat (like 15-20 pills a day). However, it's only gotten worse. I've told her she needs to see someone about it but she told me it was fine. So I told her that if this is how she treats herself, I'd be concerned about being her patient. She was shocked and told me that was uncalled for. Am I a jerk?

Q2

My daughter is getting married soon. I only learned about her a few years ago. We've been building a relationship the last few years though and I am lucky to have her in my life now. Recently, she asked me to walk her down the aisle and while I am honored I told her no. Her step-dad practically raised her from a baby and I think that he deserves it far more than me. She was really upset and hurt when I said no. Am I a jerk?

Q3

I'm a trust fund kid; I get a healthy 'allowance' from my parents, but I mostly sock it away since I don't really feel like I deserve it. I live with my girlfriend, who comes from a poor family, and we split things 50-50. Recently, she found out how much money my parents send me each month and freaked out, saying it wasn't fair that I was making her split things 50/50. I told her it was my money, and it only seems fair if we cover half the expenses. Am I a jerk?

Q4

My wife and I have separate finances, but I pay for almost everything. My son starts school next year, and I'm planning on sending him to a private school. My wife's son currently goes to a much less nice public school. My wife says I'm a jerk for not paying for her daughter to go to private school as well.

Q5

I saw a poster for a lost cat advertising a 500 dollar reward. I saw the cat, tracked it down, and called the owner. When I met with them, they said there wasn't actually a reward, they had just listed one because they thought it would motivate people to find the cat. I kept the cat until they coughed up the reward money. Am I a jerk?

Q6

My sister's nine year old daughter is poorly behaved. One day, my sister dropped the daughter off on my doorstep without my consent and drove off, texting me that she needed me to watch her daughter for the day. The daughter complained of being hungry, so I gave her the

leftovers I had. She said she didn't like them, but I told her that's all there was. She put them in the microwave until they burned, then told me she couldn't eat them and we would have to go out and get food. I told her that was what there was to eat, and if she ruined it she'd have to wait for her mom to get back. Later, everyone yelled at me for 'starving' a child. Am I a jerk?

Q7

My parents want us to come out for their anniversary, and bought my sister and I tickets on the same flight. My sister has two kids - a 6 month old and a 5 year old. She is currently separated from her husband so she would have to handle 2 children by herself on a 10 hour flight. She calls me up a week or so beforehand and asks me if I will be willing to help her take care of her kids on the flight, and something about taking shifts so we can both sleep. I tell her that I wasn't comfortable with that, but she says "nephew loves you so much" so we can work something out on the flight and hangs up. When I got to the airport, I chose to upgrade my seat so I could sit by myself and didn't mention it until we were on the plane. My family freaked and told me I abandoned my sister. Am I a jerk?

Q8

I'm a single mom with four kids, one of whom has a different father from the other three. I get a lot of child support for one of them, and none for the other 3. 2/3rds of the child support for the eldest go towards his expenses and college fund. The other third goes towards my other children. My friend recently found out and told me it was inappropriate to use the child support intended for the one on the other three. Am I a jerk?

Q9

I have a child with a mother who never wanted anything to do with them. I make enough money to cover my expenses, but I constantly check up on the child's mother to make sure she's paying adequate child support. Periodically I either hire an investigator or her mom just tells me she got a raise and I go to court to adjust the child support accordingly. The last time I did this, she didn't show up for court and I apparently overestimated how much her raise was and I got a default judgment. She called me up and practically pleaded with me to lower her payments after I said no she insulted me and my son. Am I a jerk?

Q10

One of my children wants to go to an expensive school to become a dentist. I told them I'd be fine paying for it. The other one wants to go to a similarly expensive school to become a teacher. I told her that I wouldn't pay for her schooling unless she picked a career path that will make at least 100,000 a year. Am I a jerk?

Q11⁴

I was in a conflict with my mother-in-law's boyfriend, in which I made a snide comment about he's never paid child support to his ex. Later, he called me and told me if I ever said anything like that ever again he'd sue me for defamation. I took the threat seriously, as he is a lawyer, and uninvited him for our wedding and told my family I couldn't be around him anymore. Am I a jerk?

Q12

Some of my relatives refuse to come to my wedding, since they don't approve of our 'lifestyle'. I would like to donate the money I will save to an LGBTQ organization in their name. I'm hoping that I or the organization will be able to send them a receipt/thank you for the donation. Would I be a jerk?

Q13

My wife has decided that since she can't drink because she is pregnant that I can't either. I planned to take my annual leave from work to take us (and pay for) a trip abroad. I asked my wife would the drinking rule still be in effect and she said of course. I've now decided I won't be paying for us to take this trip. Am I a jerk?

Q14

My sister is going to be a bridesmaid at my wedding. Her hair was dyed, but she recently decided to grow it out, so parts of it are bleached and part are not. I told her it wouldn't look good in the pictures, and offered to pay for her to dye it. She said no, and I said she couldn't be in the wedding party. Am I a jerk?

⁴For this question, the genders were switched, but the gender pronouns were not, giving the interpretation that the girlfriend would be obligated to pay for the father-in-laws' child support, not her own.