

Exploring Global Disparity in Freedom Indicators

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ABSTRACT

This body of research serves as an introductory and exploratory analysis of publicly available data on human freedom. It compares the data of different countries on various "freedom indicators." The overarching objective is to offer a data-driven approach for semantically discerning moral ideologies and to analyze how different cultures approach ethical decision-making, but this work simply serves to illustrate the biggest points of contention in the select set of human freedom indicators and to give means of comparing different nations' standings for different measures, with particular focus on women's security and safety and issues of press safety and media access.

1 INTRODUCTION

One of the biggest challenges remains finding a unanimous framework under which moral actions, and the notion of freedom, can be judged, since people of different religions, backgrounds, and nations have very different approaches to what freedom might even mean. We enter into a contentious grey area when public and private behavior become intermingled. Most places in the world have moved away from legal enforcement of actions that fall out of the public or political sphere, but some countries still have religious police and morality laws that dictate the private lives of their inhabitants. In philosophy, deontology is the set of ethical theories that places emphasis on the relationship between duty and the morality of human actions, and this research tries to touch on how external forces (like national moral laws e.g. in countries that are still under Sharia law) might influence the duties that people might feel they have.

1.1 Motivation

I hope that the visualizations in this work will help give perspective on the different elements of freedom and morality at play around the world. Since a primary objective in our field is to ensure our technologies serve as positive "forms of life" that make way for building order in the world, one of the biggest objectives for this work is to allow for users to explore different components of countries around the world in one unified visualization. Sometimes people will see some statistic about a country and immediately think the worst things about the place or make quick and hasty judgements about how uncivilized they are, without really understanding what might be the reasons behind that seemingly unusual statistic. This is a point I'd like to address.

2 RELATED WORK

While there has not been any related work that looks specifically to the problem that I am interested in, there has been some research from which I can draw inspiration from that touch on the same concepts. Along the same lines of the methodology I hope to carry out, Vaughan presented work on visualizing linguistic and cultural differences using web co-link data. [11] This work collected co-link data in ways that would reflect different views, the global view, the French Canada view, and the English Canada view, and he mapped

the results of the data sets to reflect the ways Canadians see universities and showed the linguistic and cultural differences within Canadian society. There also has been research that looks to such types of socio-political differences that can be expressed through text data that's available. Nay presents a model which discerns meaningful differences between government branches, learning representations for fine-grained word sources like institutional texts (things like Supreme Court rulings). [7]

Moreover, the European Commission's Pew Research Center's Global Attitudes survey asked 40,117 respondents in 40 countries what they thought about eight topics often discussed as moral issues: extramarital affairs, gambling, homosexuality, abortion, premarital sex, alcohol consumption, divorce, and the use of contraceptives. [2] For each issue, respondents were asked whether this is morally acceptable, morally unacceptable, or not a moral issue. Along similar lines, there are various infographics that present data from people from around the world expressing their opinions on things they value most in life. However, as we have developed an eye for when visualizations might mislead us, [9] I feel like these sorts of presentations of data are very reductionist and don't allow viewers to get any other information than what is provided from a single survey, when there are so many political nuances that factor into the answers people may provide.

Furthermore, since I was dealing with very human-centered data, it was important to acknowledge the influence of data that might get used to make decisions related to human pursuits, as well as their connections to ethical duties and what obligations we have when it comes to visualizations. [3] Correll, who is actually a researcher at Tableau which is the software I used, speaks in much more depth about the moral components of the design and use of visualizations and identifies some areas of visualization research with ethical dilemmas while proposing some potential moral obligations that those who make such visualizations (like me) might have.

3 DESIGN PROCESS

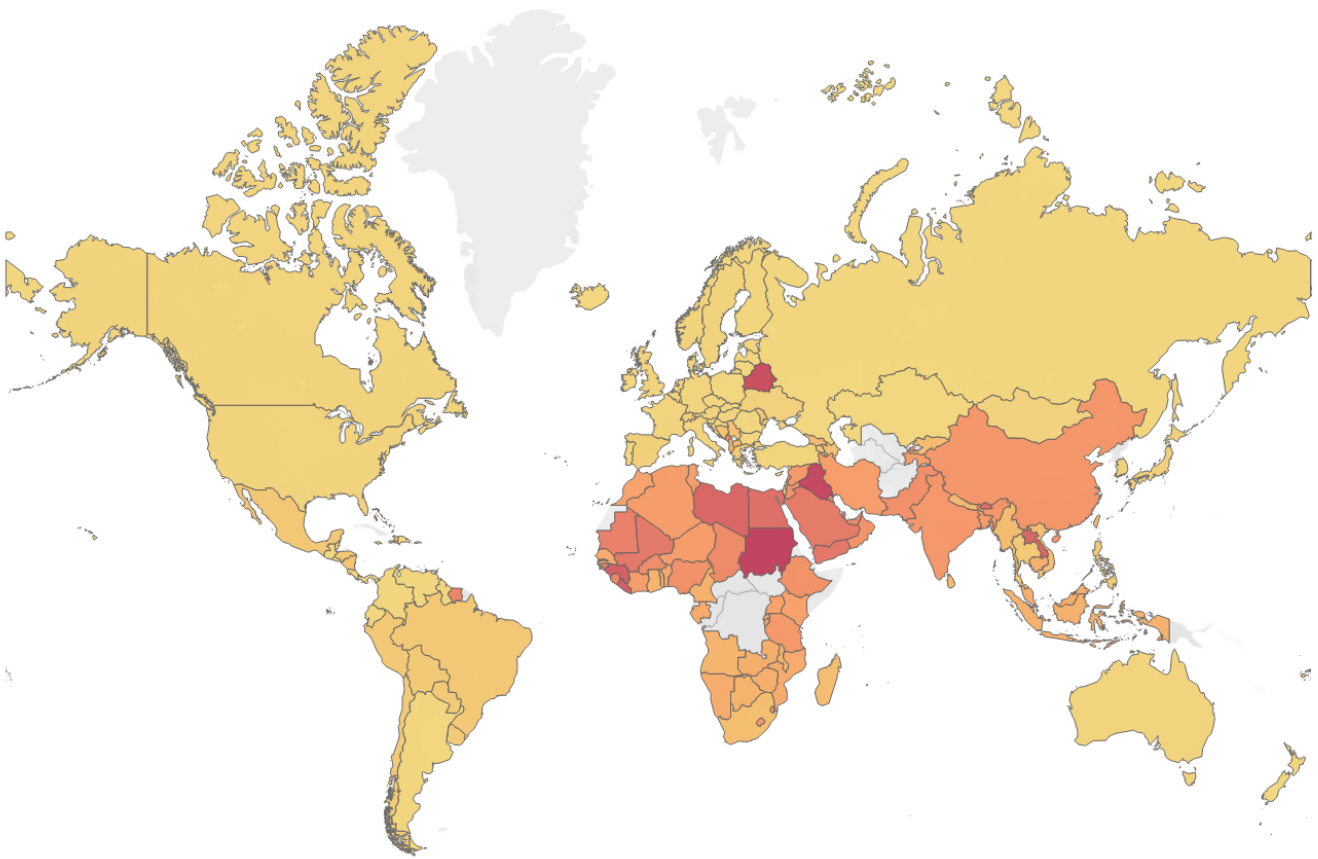
In order to explore the different assets that factor into individual perceptions around issues of freedom, I sought data that might reveal the significant differences. The data I used to drive this investigation was from the World Index of Moral Freedom[1], an international index which ranks one hundred and sixty countries on their performance on five categories of indicators. These categories include religious freedom, bioethical freedom, drugs freedom, sexual freedom, and family and gender freedom.

3.1 Design Elements and Considerations

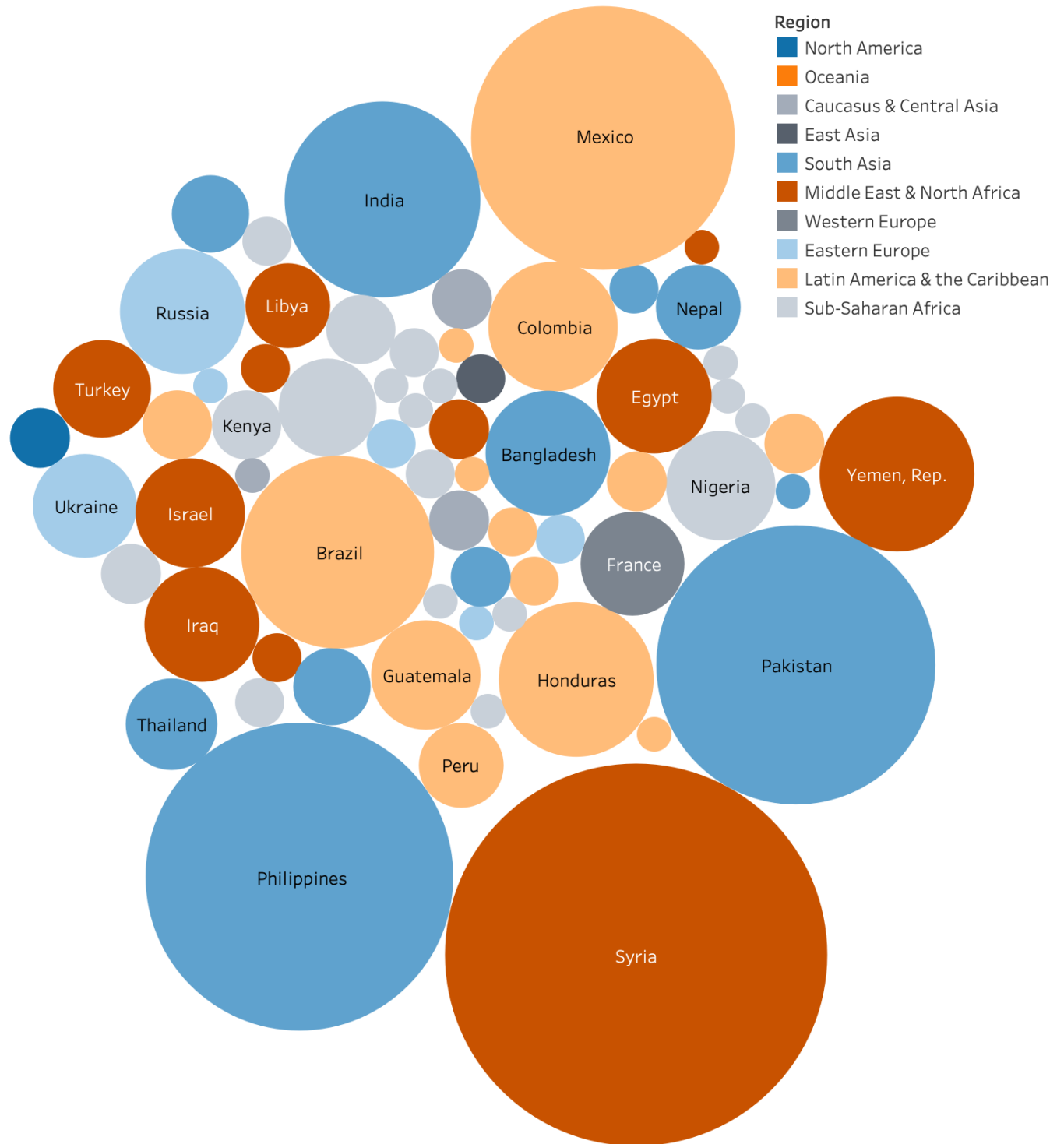
My design process started with sketching, as we learned was a very simple but useful first step for any kind of visualization. [10] This basic method allows for sketching and planning ideas to help express different possibilities and consider the potential effectiveness of my visualizations as solutions to the tasks at hand.

Another aspect I tried to focus on was the use of color in my visualizations. This was something that was heavily discussed [5], and so I sought to visualize the information I had in a way that was easily discriminable for any audience. In doing so, I also noticed that Tableau defaults to the colorblind setting often which I thought was quite useful. The colors were meant to be meaningful as well,

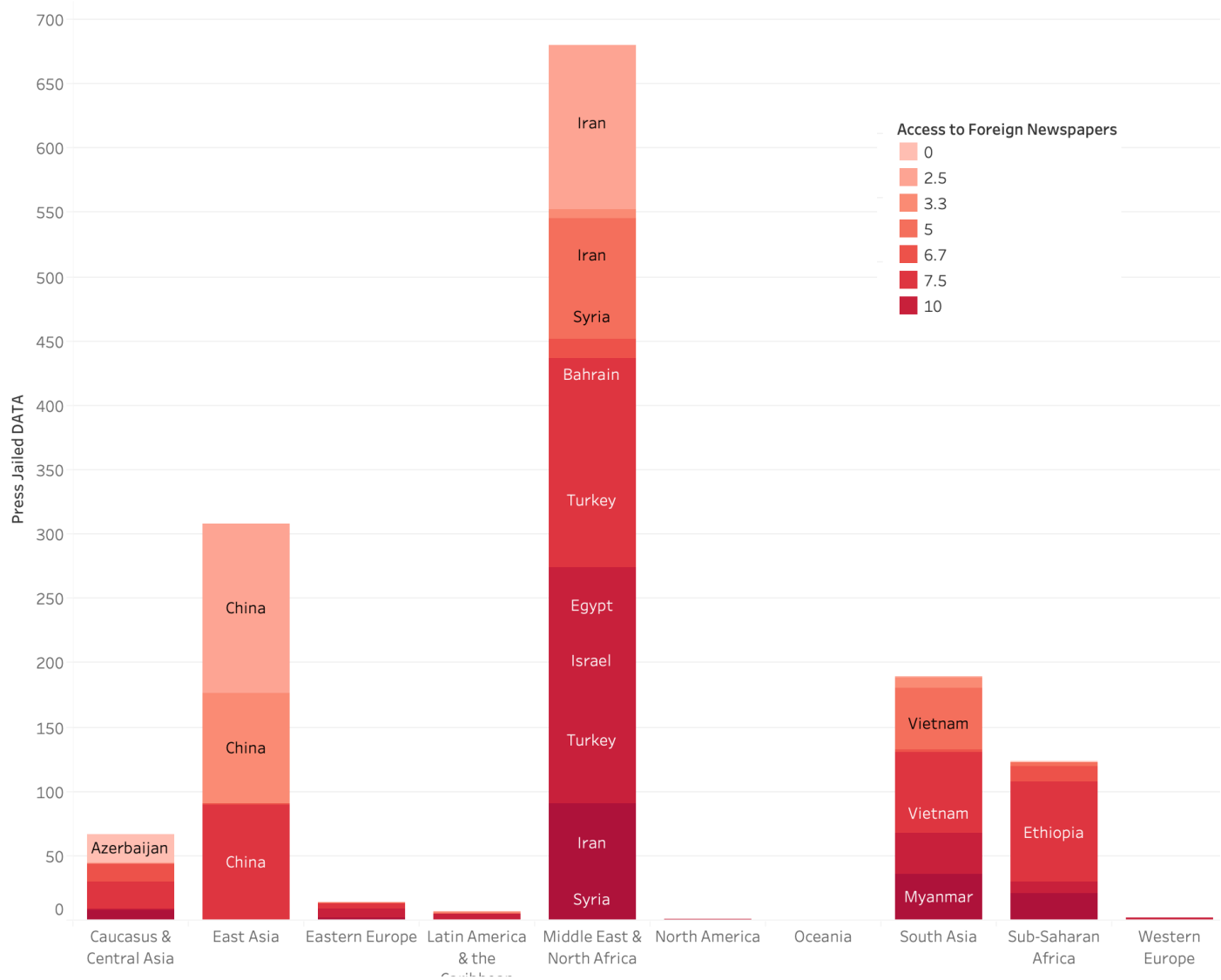
Women's International Security & Safety



Press Killed by Region & Country



Access to Foreign News & Press Killed by Region



for example on the woman security visualization, the red signifies lowest safety, so to bring your attention to those areas that have alarmingly low safety scores.

One other thing that I tried to take into consideration was the 'inhumanity of technical illustrations.' [4] Dragga and Voss discuss how conventional visualizations of human injuries and fatalities often ignore the misery behind that data, referring to it as "a pitiless depiction of statistical information." I did, as they suggested in their paper, try to adopt a "humanistic ethic of visual communication that considers both the sensitivity and efficiency of their illustrations." Upon making my bubble chart that depicted data on press killed, I tried to make one (the stacked bar chart) that would make viewers consider the circumstances behind that data. More discussion on this later on the paper.

The visualization tasks I considered involved thinking about what the task inputs and outputs were for what I wanted to accomplish. While we learned about typologies that allowed for complex tasks to be expressed as sequences of interdependent simpler tasks, [1], I was not in need of such concise and flexible descriptions. There could have been different approaches, but since I found my tasks to be pretty domain and data-specific, I oriented the process around what I wanted to learn more about and ways to make viewers ask questions about the data (ideally leading to dynamic queries on the viewer's part.)

All of my data was in a table, since that is what was provided by the makers of the dataset. The data I primarily chose to focus on was geospatial since it allowed me to address the highest level tasks (since I was creating this visualizations to allow for global differences to be revealed.) The middle level tasks were addressed when the visualizations were in Tableau, since users could click around and get more relevant statistics on particular countries and regions.

4 DISCUSSION

4.1 Women's Security and Safety

After seeing the data on women's security and safety visualized on a world map, my interest was piqued. It seemed really odd to me that there would be a country, like Belarus, that was surrounded by countries that were pretty liberal and didn't rank low for women's security. After a little bit of investigation, I couldn't find too much about why this ranking was, but did find that there are currently 181 occupations from which women in Belarus are banned. Sudan was another country that ranked very low, and I found that Sudan's public morality laws heavily discriminate against women via prescribing their dress code, limiting their participation in public life, and still imposing humiliating corporal punishments of lashing and stoning. Though I knew that women's safety in the Middle East was not good at all, I also tried to see why Iraq ranked so much lower than other countries around it too. I found that a Human Rights Watch's [12] visits to two Iraqi prisons revealed conditions that failed to meet international standards on women's detention, including no facilities for child care for the children who are frequently incarcerated with their mothers, poor hygiene, and overcrowding. Iraqi law allows for children under the age of four to remain in prisons with their mothers, but women reported that there have been instances of children remaining in prisons until they are 7-years-old. A prison employee told Human Rights Watch that in one instance a child who was incarcerated with his mother on death row remained in the prison for several weeks after she was executed.

4.2 Press Killed by Region

The first visualization I made to display the data on press killed was done to reveal geospatial information. I did a bubble map which gives information both at the regional and national level, since just glancing at it you see there's most burnt orange and the blue, which are the Middle East and North Africa and South Asia,

respectively. There's one little dark blue which is North America. After making the bubble chart and having new information revealed on what regions and countries had the highest number of press being killed, I was interested to see if lower access to foreign media like newspapers was related to the press jailed. The stacked bar chart I made was meant to address this task, and I think it showed basically what my hunch was - the higher the press jailed counts were, the lower the country's access to foreign newspapers was (I couldn't figure out why some of the countries were showing up in multiple categories of access however, Iran's data matched to lightest color of access.) However, this showed me that my visualizations themselves might be skewed and should all be taken with a grain of salt since I was making them to address the tasks I wanted to so was filtering data in ways that was inherently biased. Also, it showed me that while visualizations might look like they're legitimate displays of the data, sometimes the creators of them will unknowingly mislead themselves and viewers. [9]

4.3 Limitations

The goals of this project are lofty, and while I do hope it will act as a stepping stone for my future research, it is important to note the limitations.

4.3.1 Evaluation

While evaluation is a large and crucial component for any visualization artifact, it remains one of the biggest limitations for the work and something there was no time to accomplish for this project. I am still unsure of what the optimal method for evaluation would even be, as it poses the age-old problem of how to quantify an inherently qualitative topic. I like the idea of evaluating visualizations based on how well the visualizations generate insight. [8] A few people who looked at my visualization said it made them wonder and want to research Belarus, so that's along the lines of generated insight that I seek. A more specific method I found for going about evaluation for global visualizations (well the paper discusses models in general) are model cards. [6] Model cards are short documents accompanying (machine learning) models that provide benchmarked evaluation across different cultural, demographic, or phenotypic groups (e.g., race, geographic location, sex, Fitzpatrick skin type) and that are relevant to the intended application domains. While these model cards were designed for machine learning models, I think it would be an interesting approach for visualizations that present global or cultural data, so that we ensure that it doesn't seem wrong to people of different backgrounds before presenting it.

4.4 Future Work

There are still many unanswered questions that I am interested in exploring further, as well as extending the visualizations I've created to address different tasks.

4.4.1 Constructing a Better Dataset

Ideally, I'd like to make possible an approach which leverages social media data, in the form of Quora discussions around my topics of interest, to learn distributed representations of cultures and their ethical perspectives. The end goal is to extend this to create a comprehensive ethical-semantic map. Quora is a question-and-answer website where questions are asked, answered, and edited by Internet users, either factually or in the form of opinions. I'd like to create a corpus of Quora responses to a wide range of morality-related topics, since many Quora users include their locations on their profiles. Some of these questions have over 100-200 answers so it should be sufficient for creating a sufficiently-sized dataset). Examples of the types of questions I will sample from Quora include:

- What is right and what is wrong in life?
- How do we decide what is moral?

- Is gambling bad?
- What is your opinion on abortion?

This dataset will have inherent biases in the type of users it samples. Needless to say, the population of Quora users is a very specific demographic. For example, India makes up the largest user base at 38%, followed by the United States at 26%, but until I find a better source this is what I can use.

Furthermore, while the visualizations included here lack mechanisms for users to interact with the data, I'd like for it to allow users to click on a particular country on the map which will present them with some sort of hierarchical display of my findings.

5 CONCLUSION

This body of work is only the tip of the iceberg in the work that needs to be done to start understanding the different ideological frameworks that might influence freedom around the world. This is a challenging problem to address, but my end goal is to create an informative and interactive comprehensive ethical-semantic map.

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