What Influences the Decision to Have or Not Have Children?

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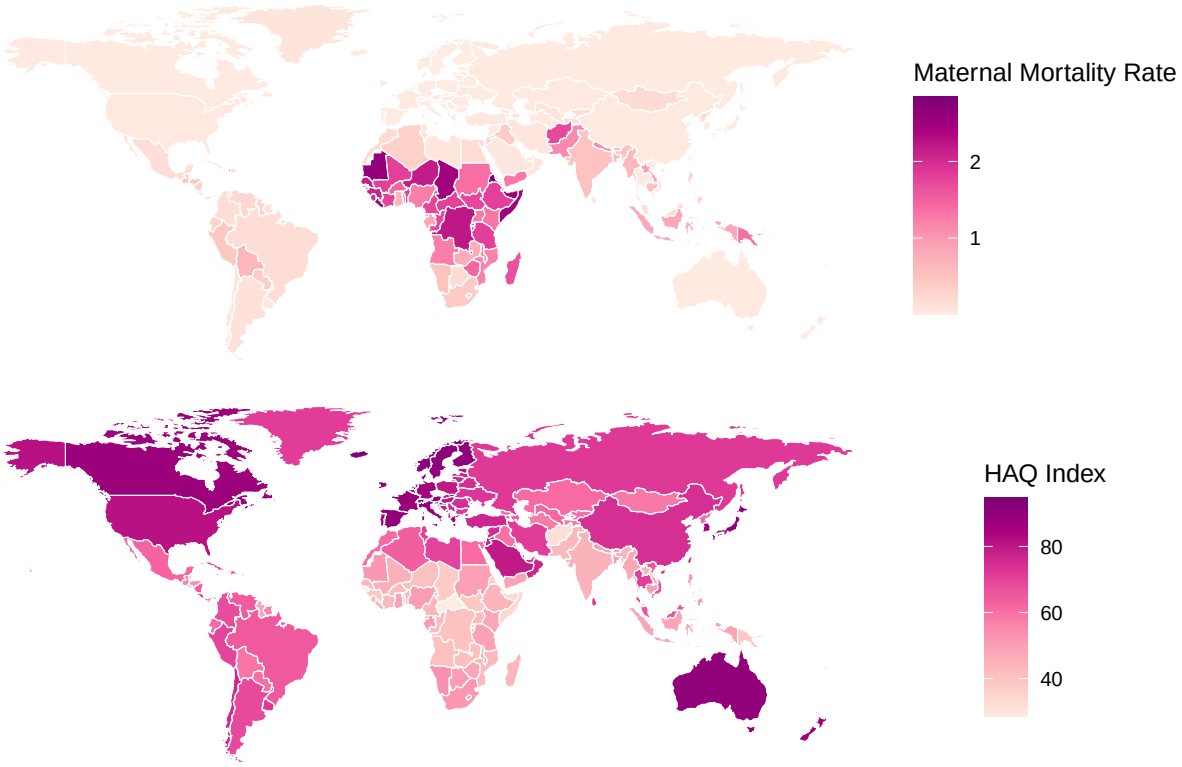
There are many reasons why women all over the world choose not to become pregnant and have children. Across different geographies, populations, and cultures, these reasons may be financial, social, physical or otherwise. This report aims to help visualize the reasons why women may not want to have children or become pregnant.

Maternal Mortality Rate and HAQ* Index by Country



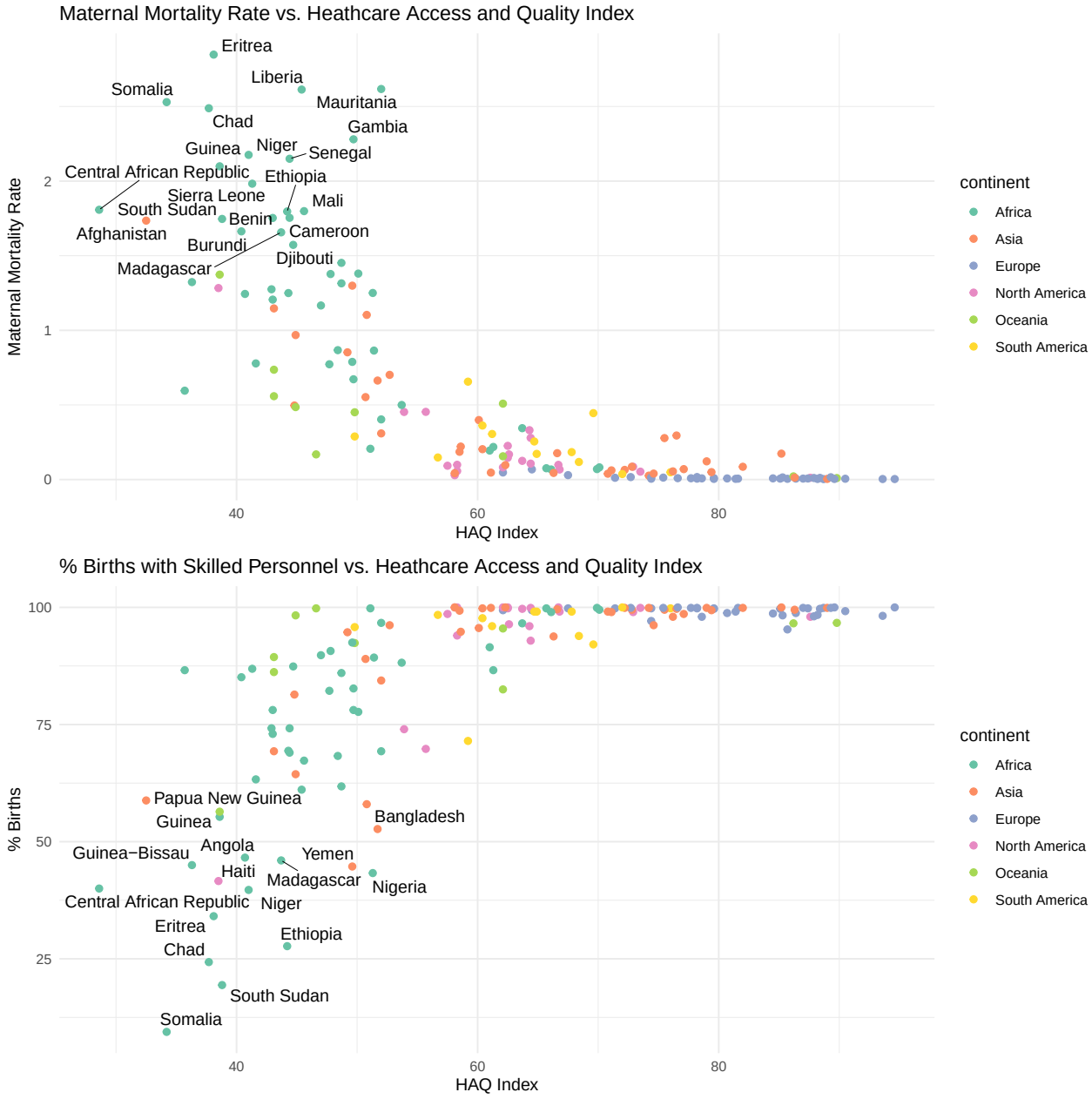
*HAQ stands for Healthcare Access and Quality

Access to Quality Healthcare

Though maternal health outcomes are improving by the day, huge disparity still exists in different areas of the world. Lower- and middle-income countries do not have the same access to quality healthcare facilities or medical professionals as upper-income countries.

There is an inverse relationship between the colors of the maps above. This means that countries with lower Healthcare Access and Quality (HAQ) Indexes typically also have higher maternal mortality rates. Clearly, access to and quality of healthcare is essential for healthy birth outcomes.

The relationship between HAQ Index and Maternal Mortality Rate is illustrated in the following scatterplot as well. Additionally, the relationship between HAQ Index and Birth Attendant Skill is explored. Birth Attendant Skill refers to the percentage of births that were attended by skilled medical professionals.



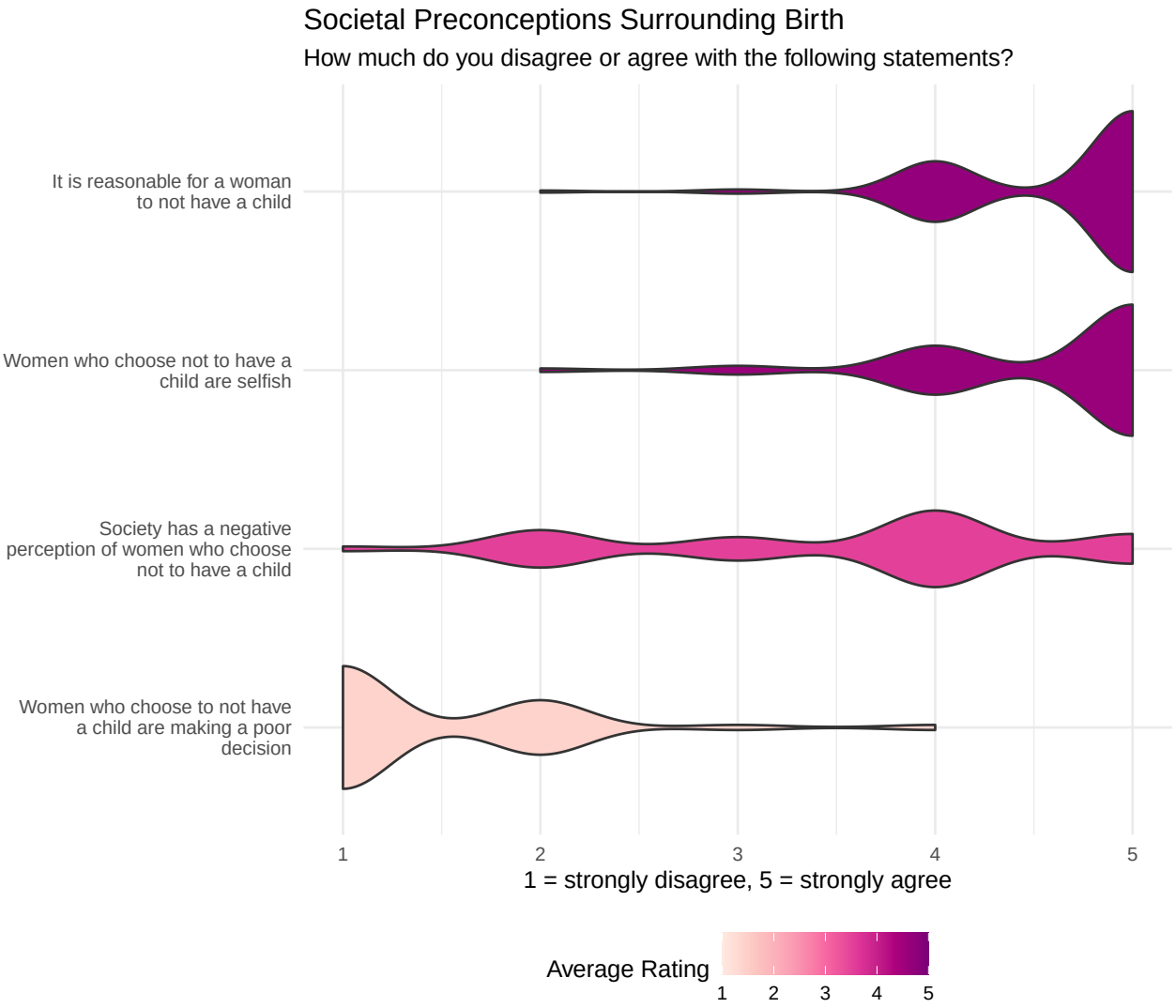
The first scatterplot confirms the relationship the maps were indicating. The second plot shows how the opposite relationship exists between healthcare quality and the presence of skilled birth attendants. There is a clear relationship between healthcare access/quality and both 1) factors influencing birth outcomes (% attended by skilled personnel) as well as 2) the outcomes themselves (maternal mortality).

The colors and select labels also corroborate the geographical trends illustrated by the maps. Countries in Africa and Asia (looking at the map, this is narrowed to South/Southeast Asia) tend to have lower HAQ Indexes, lower proportions of births with skilled personnel, and higher maternal mortality rates.

Social Attitudes Towards not Having Children

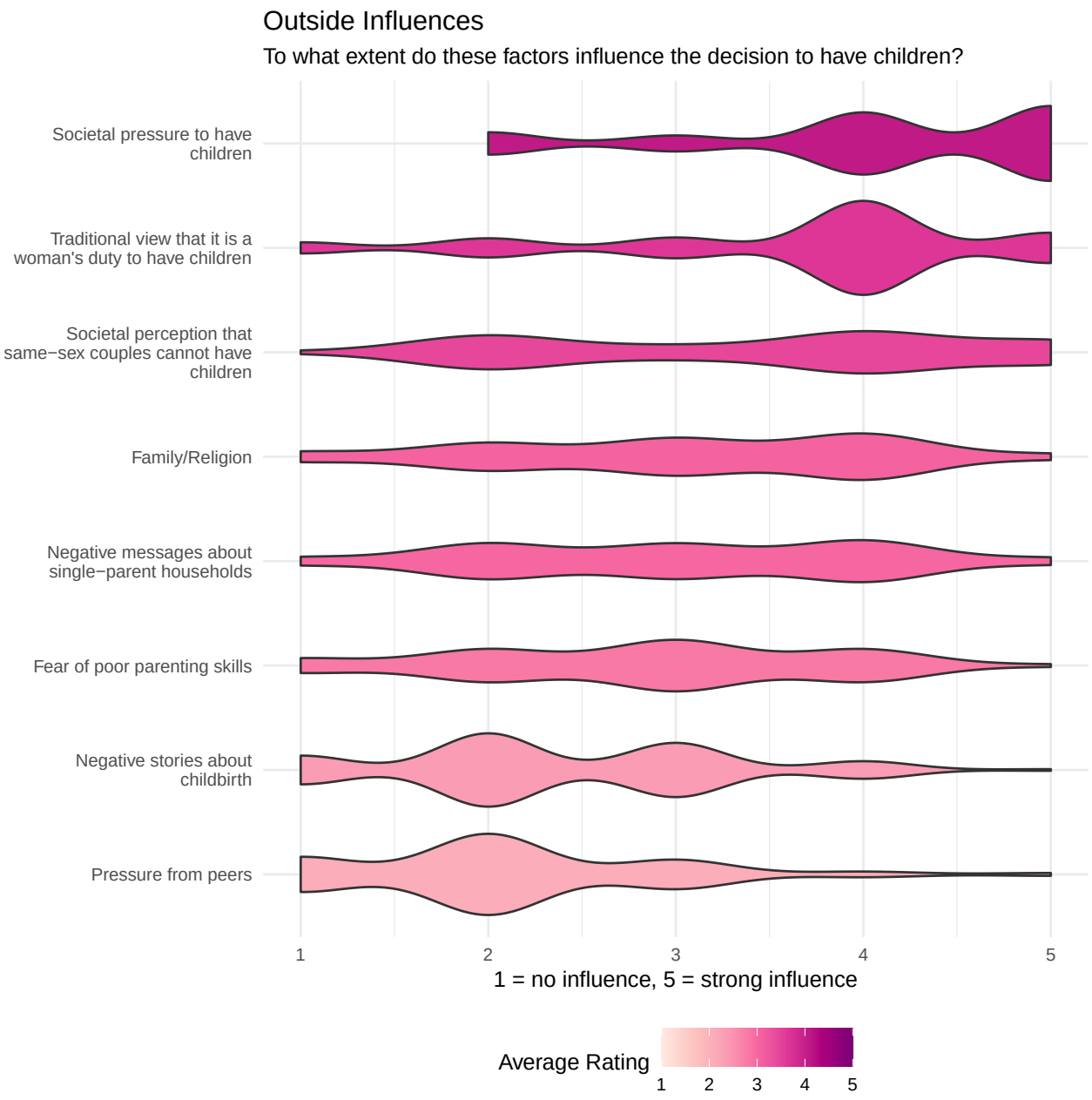
The Survey Data

The following graphs visualize data from surveys to track societal attitudes towards having children. The survey tracked how much women agreed with certain preconceptions about birth as well as to what extent they felt certain factors influenced the decision to have or not have children. Respondents were women living in New Jersey.

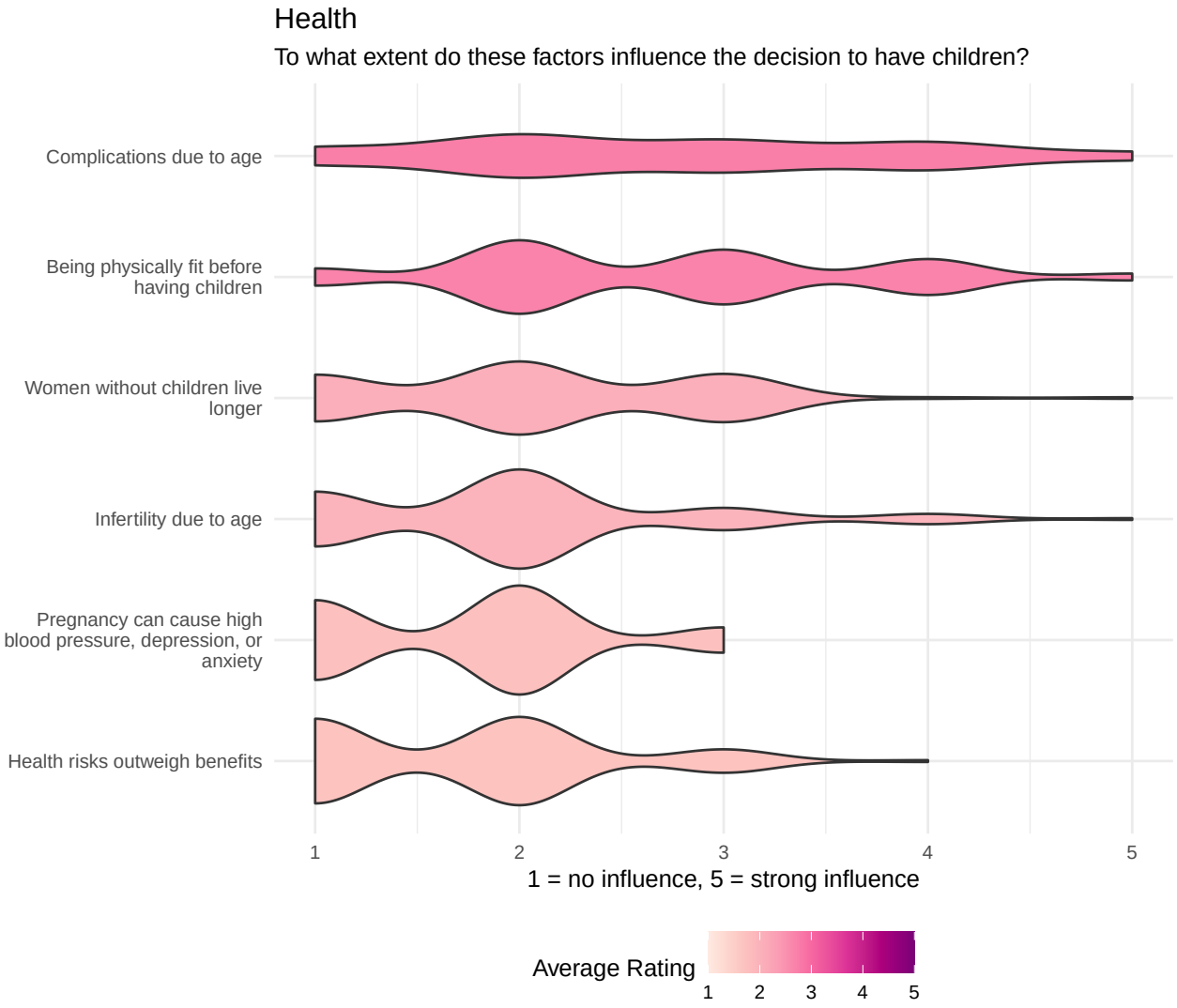


The survey questions regarding stereotypes and perceptions about women and motherhood show how respondents feel some sense of larger, societal pressure or duty to have children. Respondents largely agreed that women were selfish for not having kids, though they simultaneously valued a woman's choice to have or not have children as "reasonable." Many complex factors influence these opinions, which are explored in the following figures.

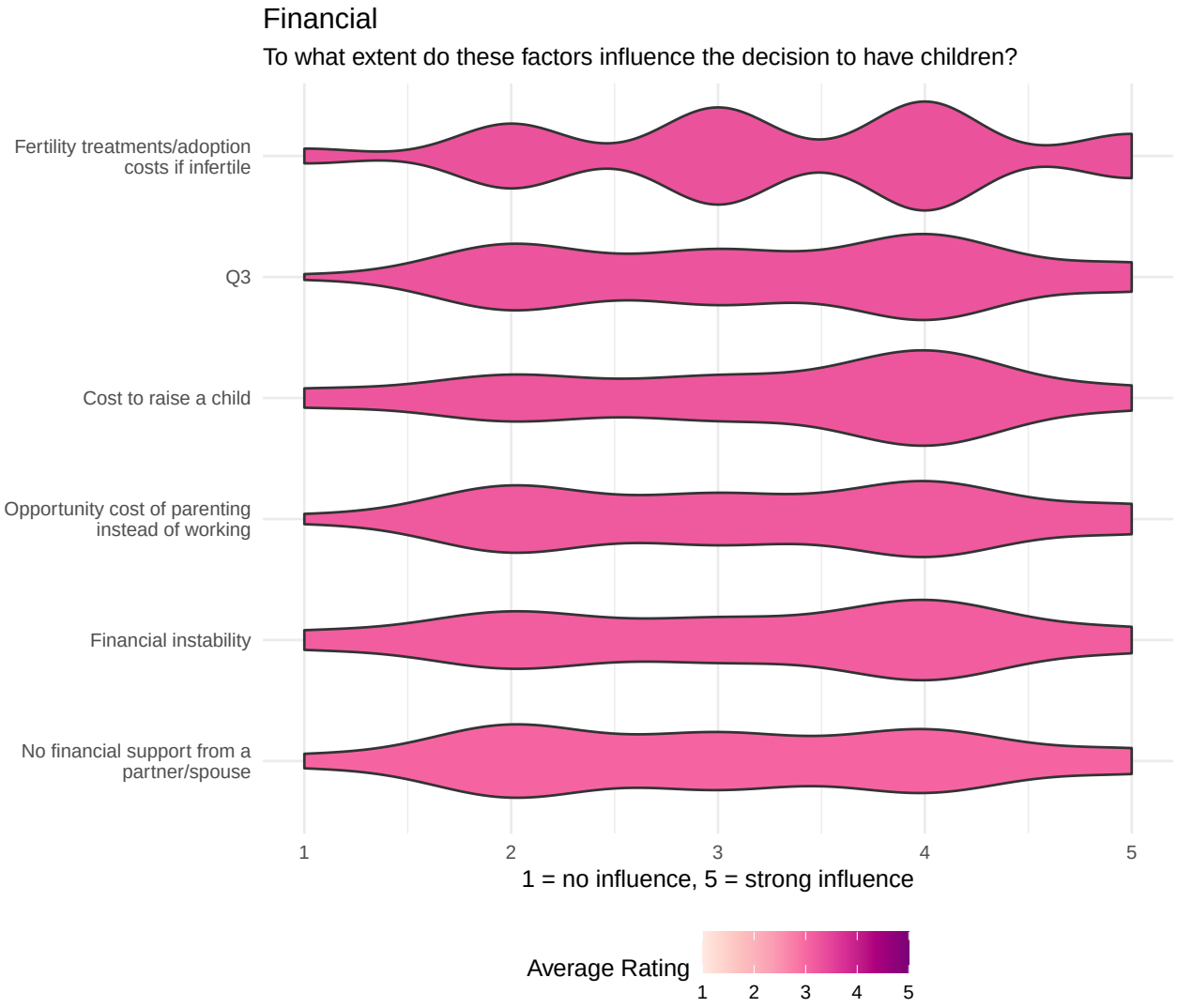
Factors Influencing the Decision to Have/Not Have Children



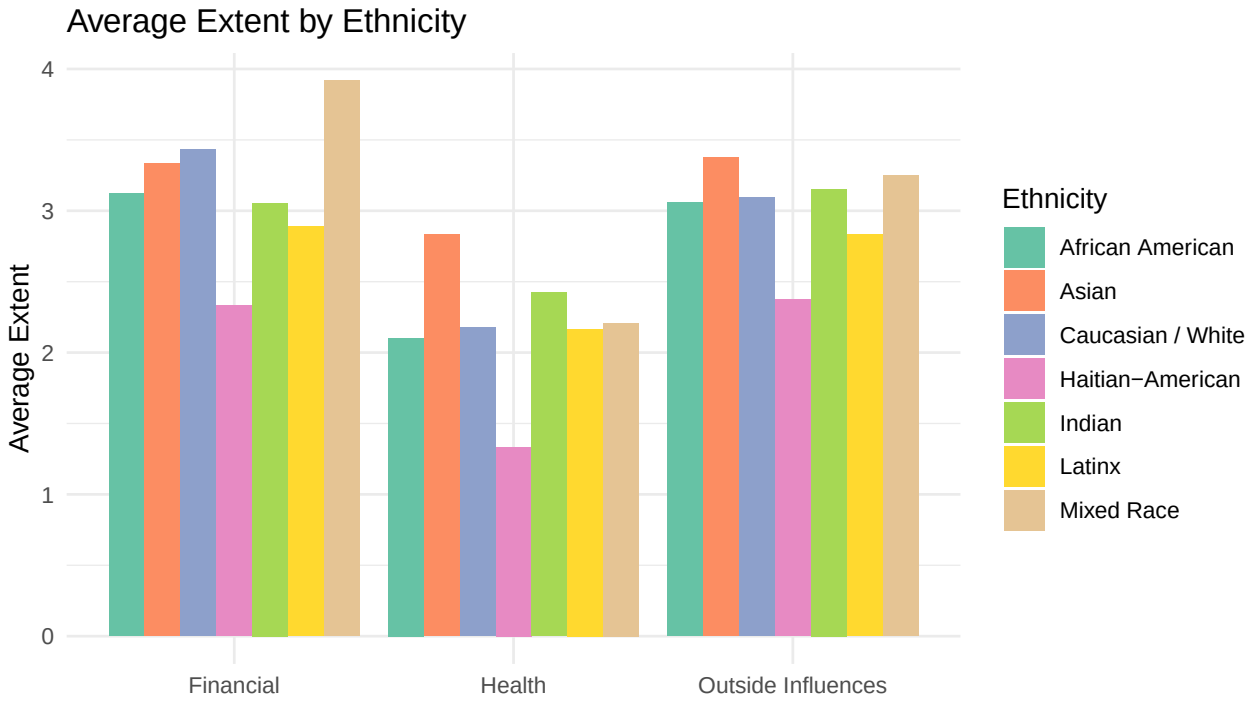
Societal pressure is a strong influence while more local, personal influences like peer pressure and negative childbirth stores are not.

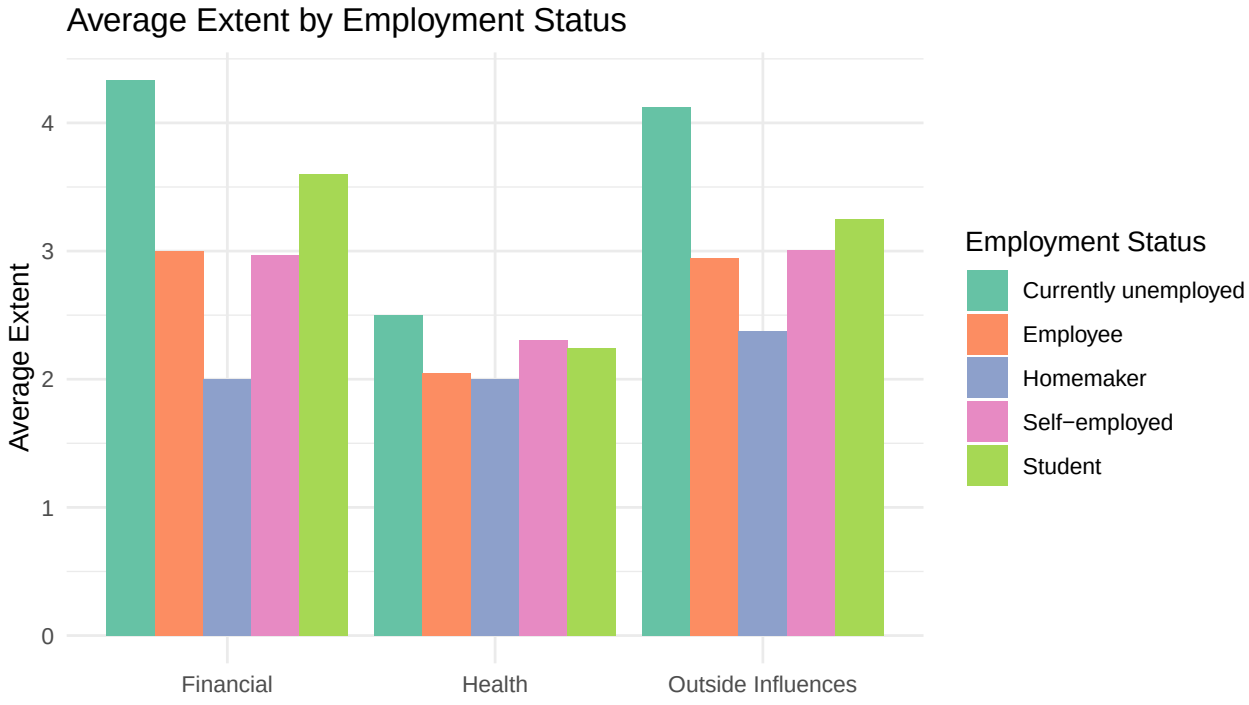


Respondents largely agreed that potential health risks were not strong influences in their decisions to have or not have children. It is important to remember that all respondents lived in New Jersey and therefore had access to a certain quality of healthcare that is not available in all areas of the globe.



Financial factors had very high variance in responses. This is likely due to differences in respondents' socioeconomic status.





It is important to consider how racial and socioeconomic background (based on employment status) may have played a role in how respondents answered these questions.

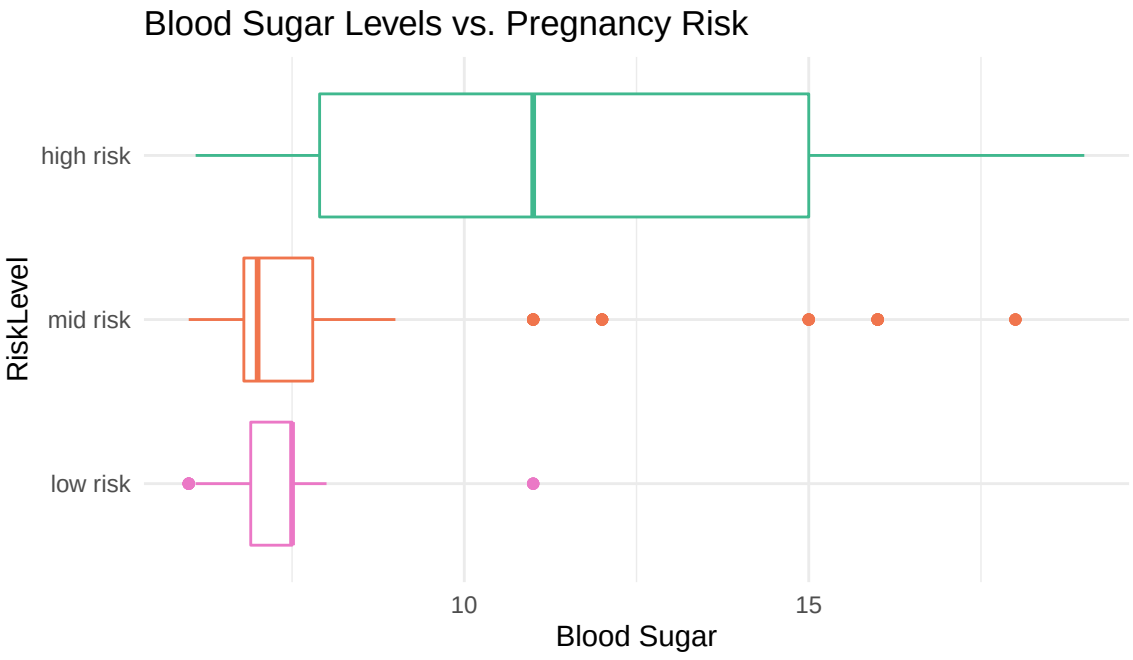
Health Risks Associated with Pregnancy

We examine how each factor is correlated in the matrix below.

```
##                     Age  SystolicBP DiastolicBP         BS    BodyTemp
## Age          1.00000000  0.41729214   0.3982341  0.4732994 -0.25663966
## SystolicBP   0.41729214  1.00000000   0.7871984  0.4254390 -0.28636626
## DiastolicBP  0.39823412  0.78719835   1.0000000  0.4238029 -0.25770201
## BS           0.47329943  0.42543897   0.4238029  1.0000000 -0.10376457
## BodyTemp    -0.25663966 -0.28636626  -0.2577020 -0.1037646  1.00000000
## HeartRate    0.06772672 -0.01832823  -0.0515417  0.1493514  0.09774947
## RiskLevel    0.26561788  0.39776788   0.3468261  0.5700965  0.16317726
##                HeartRate RiskLevel
## Age          0.06772672 0.2656179
## SystolicBP  -0.01832823 0.3977679
## DiastolicBP -0.05154170 0.3468261
## BS           0.14935140 0.5700965
## BodyTemp     0.09774947 0.1631773
## HeartRate    1.00000000 0.1903341
## RiskLevel    0.19033410 1.0000000
```

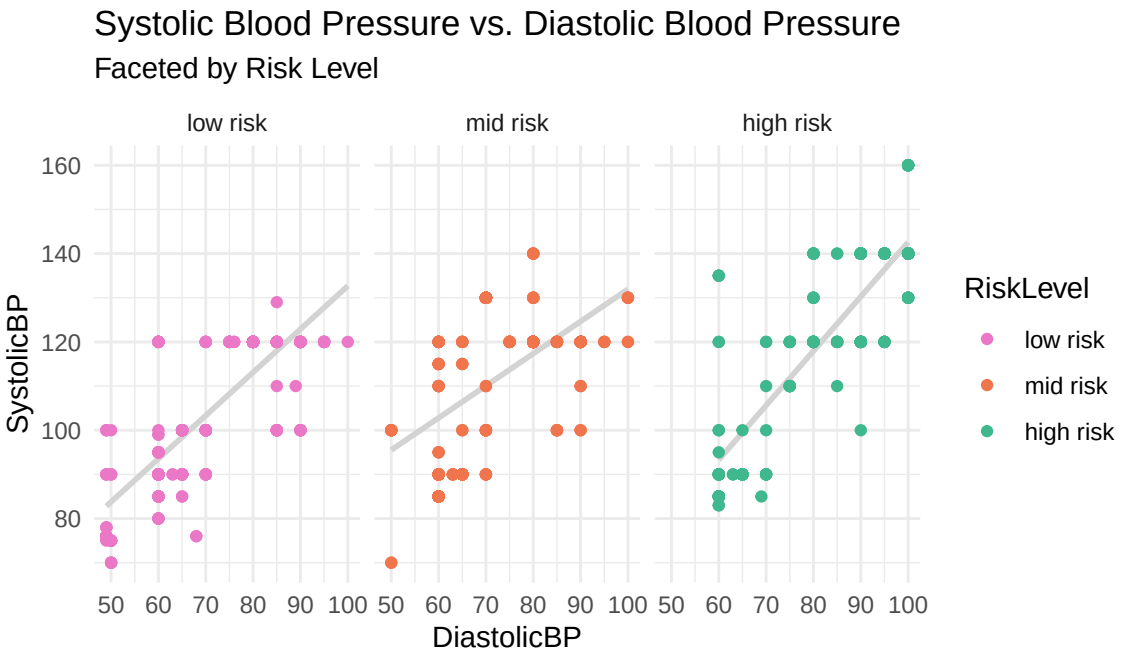
Since we are exploring what may influence maternal risk levels, we choose the three factors with the strongest relationships with risk as indicated by the correlation matrix: blood sugar, systolic and diastolic blood pressure, and age. We explore each of these relationships below.

To examine blood sugar values associated with the three levels of risk, we create a box plot.



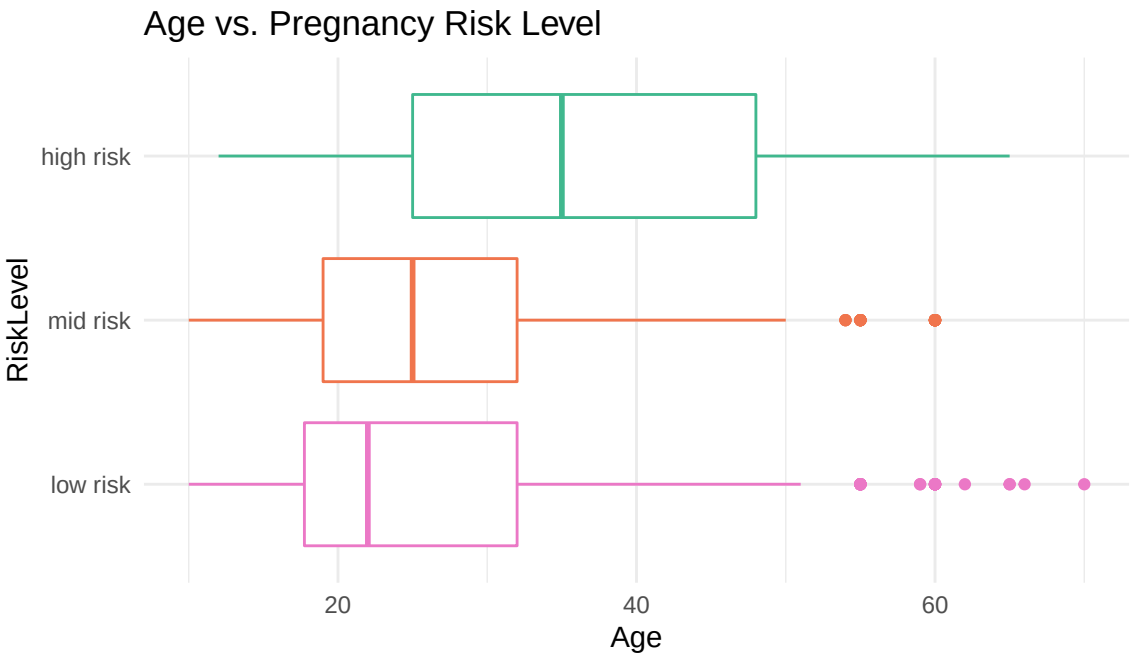
It is clear that higher blood sugar levels are correlated with higher pregnancy risk levels, as the high risk box plot has a much larger average and variance. This does not necessarily indicate cause, but does confirm the relatively large correlation value between blood sugar and risk level (0.47329943) seen in the correlation matrix.

Next, we examine blood pressure (both Systolic and Diastolic) and risk.



It is again clear that high values of these indicators correlates with increased pregnancy risk, though this correlation appears to be slightly weaker than blood sugar. This also confirms the direct relationship between Systolic and Diastolic blood pressure levels predicted in the correlation matrix, as indicated by the trend lines.

Finally, we examine age.



Age appears to be directly correlated with risk level. This is expected, as it is commonly assumed that older mothers are likely to have riskier pregnancies. There are some major outliers, however, that indicate that age is not the sole cause of increased risk. For example, there are several mothers over the age of 60 who are still classified as low risk.

It is important to consider how age might correlate with the other factors recorded in this data set, as it likely influences the other factors. In the above correlation matrix, age is positively correlated with every factor except body temperature, which we previously found to be of little influence on risk. Thus, age on its own may not be a cause of higher-risk pregnancies, but rather an older age is often linked with high values of other factors (blood sugar, blood pressure, etc.) that can increase maternal risk.

Conclusion

Overall, we saw that there were multiple aspects that relate to a woman's decision not to have a child. One major factor is accessibility to healthcare. A lot of women don't have proper access to healthcare which makes it difficult for them to seek proper medical help in relation to birth. Another major factor is the financial and societal aspects of pregnancy. Outside influences such as societal pressures and financial factors like fertility treatment and adoption costs have an impact on a woman's decision to become pregnant. Health factors are also a major influence, including high blood pressure and age, which can make pregnancy riskier and correlate with women deciding not to get pregnant and have children.

It's important to consider that there are certain limitations with out survey data, considering that its population is from New Jersey. This accounts for the specific racial distribution and employment status distribution that we see.

These visualizations can be useful aids to help women better understand the factors to consider when considering getting pregnant.

Visualizing these different factors is also a very relevant issue, considering the current discussions relating to the leaked decision to overturn Roe v. Wade. These are different aspects that can factor into a woman's decision when it comes to pregnancy and birth and our visualizations aid in understanding these influences.

If given the opportunity to develop this project, we would like to add survey data from other areas to be more representative of women in general. We would also like to consider other factors such as pregnancy and birth education for women in different areas. These visualizations can be used as an educational tool for women and considering the access that women have to other resources like this can have an affect on decisions about pregnancy and birth.

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