

Final Project: Locus of Control and Life Satisfaction

Introduction:

My final project aims to answer the following research question: How does having an internal or external locus of control affect life satisfaction and well-being? I'm interested in answering this question because if there is a relationship between locus of control and life satisfaction, this would motivate further exploration and research about how people can attempt to shift their locus of control inward. Additionally, if there is a relationship at the country level, it might incentivise countries to adopt policies that foster an internal locus of control in their citizens. To answer this research question, I used data from the World Values Survey (2017-2022) and the World Happiness Report (2023).

Also, a note for Zihua and Professor Clipperton (who is already aware of this): my initial project from my proposal looked at the relationship between happiness and trust, not locus of control, but I discovered to my dismay a few days ago that I had made some mistakes when reading the codebook, and that the correlations that my project was based on no longer existed. Because of that, I decided to make a quick pivot and change my project, which is why it's now different! I unfortunately didn't have as much time to complete the project as would have been ideal, so I've included some notes throughout this paper with things that I might have implemented if I had time.

Methods:

For this section, I'll explain my design choices tab by tab.

Tab 1: Introduction

The purpose of this tab is to orient the reader by telling them what my question and datasets are. There is no visualization on this tab, but I did include an interactive element where readers can input their own answers to the relevant survey questions from the World Values Survey. Their response will later be plotted in Tab 4 so that they can see where they fall in the distribution. This interactive component serves two purposes: (a) to engage the reader and make them feel like a part of the story, and (b) to let them know exactly what the survey questions are so that they understand the later analyses.

Tab 2: Satisfaction Overview

This tab was part of my Assignment 4, but to recap, the purpose is to give the reader an understanding of how satisfaction varies globally and let them explore particular countries/regions of interest. I designed the visualization as a map, because (a) it is engaging for the reader, (b) it allows for the use of a color gradient to represent the different values on a continuous scale, and (c) it allows the reader to see geographic trends (e.g. which regions are happier than others). Since Assignment 4, this tab has been updated in the following ways:

1. The map now uses data from the World Values Survey instead of the World Happiness Report (the bulk of my project now uses World Values Survey Data), which is why there are more countries without data.
2. The map is now measuring “life satisfaction” as opposed to “happiness,” which is also why I changed the map to be only yellow as opposed to a gradient from blue (sad) to yellow (happy). I feel that this version is more accurate to the data and what it represents.
3. There is now an additional histogram which shows the distribution of average country satisfaction scores, as this wasn’t entirely evident from the map alone.

There were a few more things that I tried so very hard to implement on this tab, those being (a) including a “no data” section for the dark gray countries in my legend, and (b) having a feature where people can click on a country and the table will display info for that country. I spent a while trying to figure these out, but unfortunately, these elements were pushed further down on my priority list due to the last-minute shift in my project, and I wasn’t able to implement them in time.

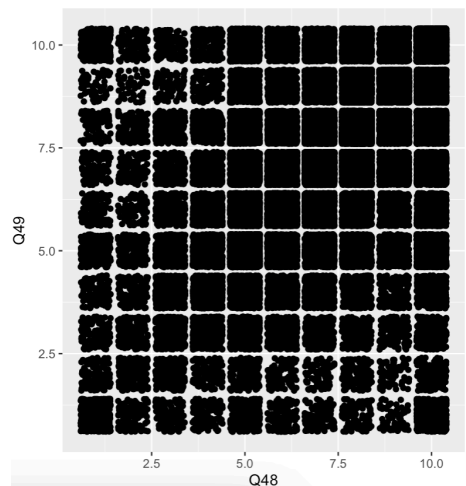
Tab 3: Freedom and Control Overview

This tab doesn’t require much additional explanation, as it is essentially the same as the previous tab. I used blue for this tab to represent “freedom,” and also because it fits well with the overall primary color scheme of my project.

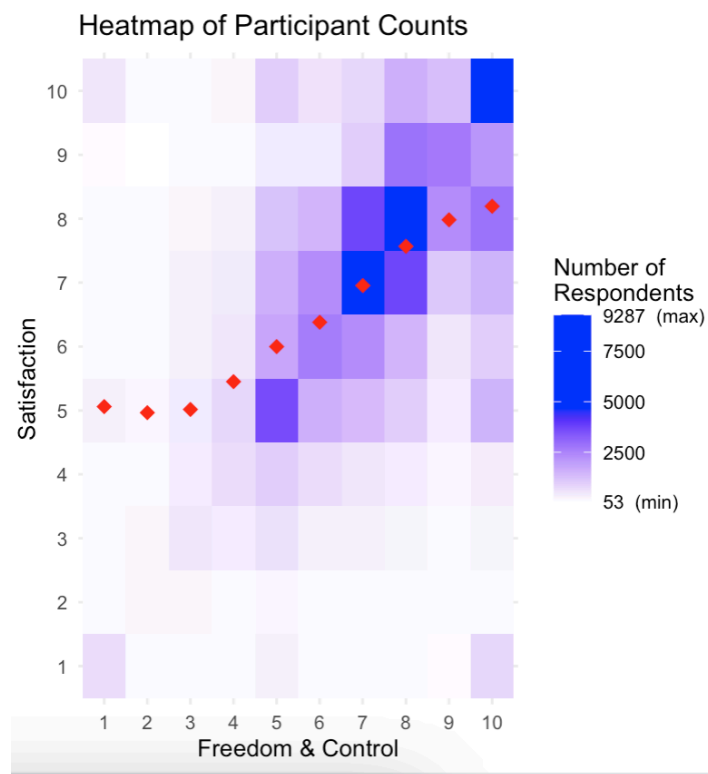
Tab 4: Analysis

This tab is dedicated to examining the relationship between the two variables, both at a country and individual level. I chose green as the theme color for this tab, as it is a mixture of yellow and blue, and I also labeled the axes of each graph with yellow and blue to align with the colors that represent my variables. The first visualization is a scatterplot of control vs. satisfaction at a country level. There is an interactive component where readers can click on a point in the graph to see the scores, which allows readers to look at which countries are outliers or other points of interest to them.

The second graph was the trickiest one to conceptualize—since each variable is on a discrete scale from 1-10, a scatterplot wasn’t an option. I attempted a scatterplot with `geom_jitter()`, but since the dataset contains over 90,000 data points, the result was atrocious:



I also tried to demonstrate the correlation through a heat map (with the mean values of satisfaction for each of the 10 levels of control plotted on top), but the result was too confusing—Professor Clipperton and I had a long conversation about this plot in office hours and were both confused by the other’s explanation for a solid five minutes.



Ultimately, it seemed like a chart of boxplots was the most straightforward way to demonstrate the relationship.

In this plot, I also added the reader's scores that they input on the first page so they could see where they fall within the distribution of individuals.

Tab 5: Beware of Your Data

The purpose of this tab isn't to directly answer my research question, but to provide evidence of the limitations of the data in answering the question. In my original project, I was using well-being data from the World Happiness Report, before realizing that the World Values Survey had a very similar measure and that it would make more sense to observe two variables from the same dataset. However, although these two variables are measuring essentially the same thing on the same scale, the distributions are different. The map shows the difference in the two measures by country. The scatter plot shows two data points for each country, one from the World Values Survey and one from the World Happiness Report. We can see from the plot that the two distributions are different. I decided to use country codes to provide more context for which country was which (since this graph doesn't have an interactive feature like the previous scatterplot), and although the `geom_jitter()` wasn't able to overcome all of the overlap, I still think that `geom_text()` is better than `geom_point` in this context because it provides more information. Had I had time, I would have made the graphs on this tab interactive as well.

Results/discussion:

Is it truthful? Yes, so much so that the project had to be redone... I think that the project is especially truthful because it has the "Beware of Your Data" tab, which directly addresses the limitations of the data.

Is it functional? Yes. The visualizations clearly demonstrate the relevant trends, and the interactive components give the reader extra control and allow for a deeper understanding of the data.

Is it beautiful? Yes. I took care in choosing the color scheme for each tab, as well as the Shiny app as a whole, and I organized the app in the most aesthetic way possible. The maps also add a particular beauty. If given more time, I would have attempted to utilize CSS to change the colors of the Shiny Dashboard itself (the blue bar at the top is clashing with my color scheme).

Is it insightful? Yes. There is a clear relationship demonstrated between the two variables, which is made quite clear by the visualizations on Tab 4. The other tabs are also insightful, as they show overall trends in the variables.

Is it enlightening? Yes. Now that we know that locus of control and life satisfaction correlate, this motivates more research in the area of what causes an internal locus of control. Governments may be more inclined to figure out why their citizens have a more internal or external locus of control and figure out how to shift the locus inward through culture or policy.