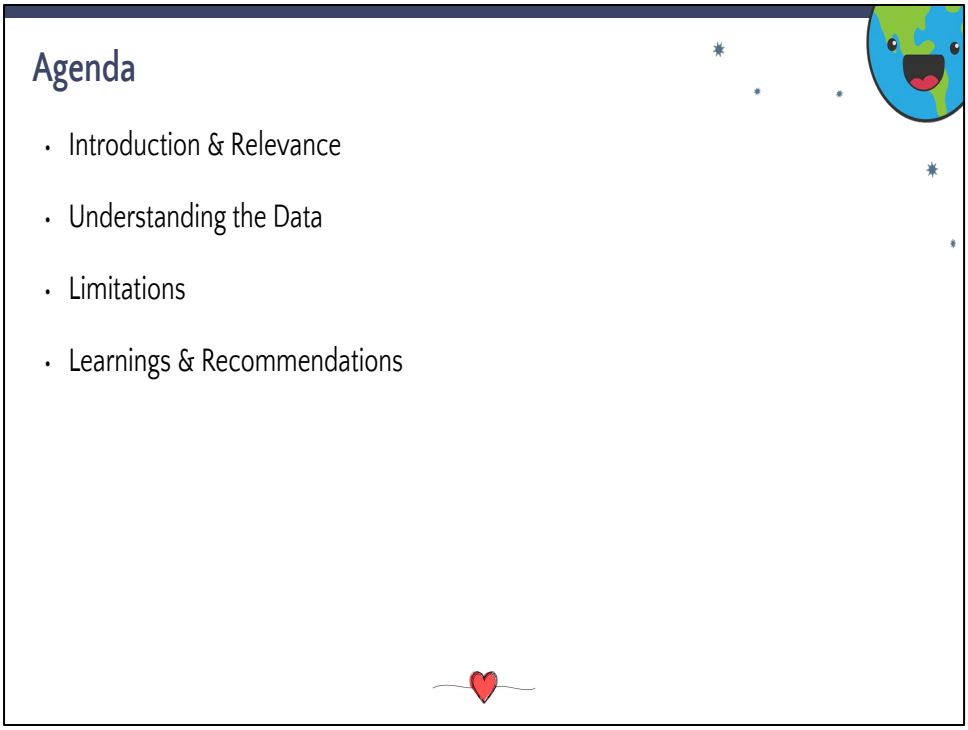
CHRIS

- Good Morning, I'm Chris, joined by Ryan and Khakali
- Here to present data from the World Happiness Report and share our findings about a topic we can all get excited about, can we optimize happiness?



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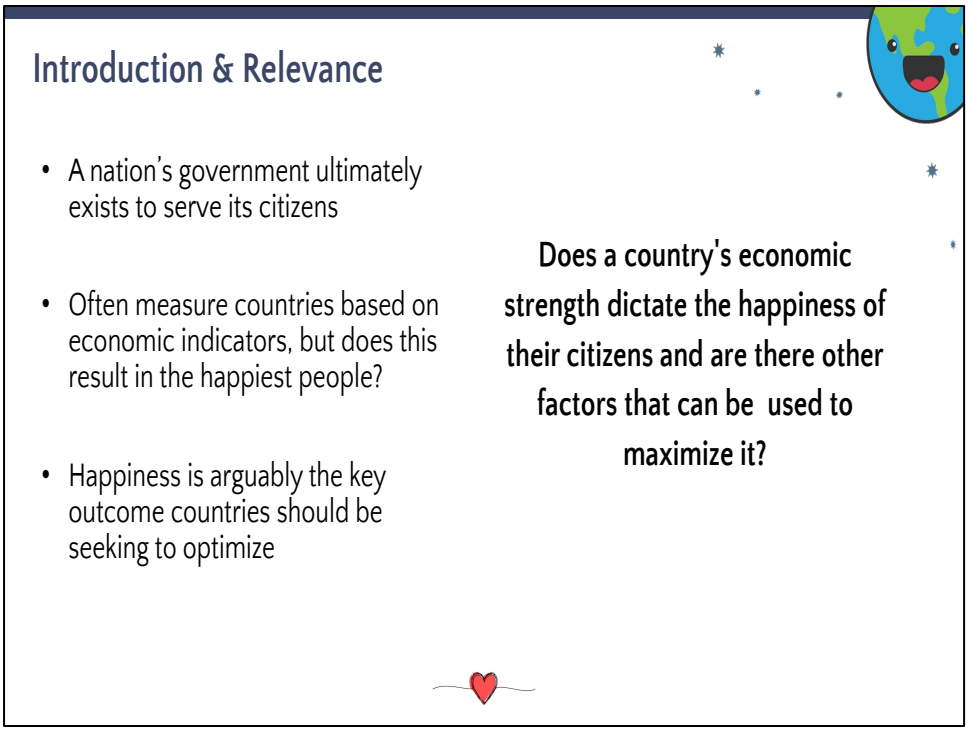
- Share what we will present



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- A nation's government is bestowed with authority and power and serve their citizens.
- We often measure and compare the strength and effectiveness of countries and their governments based on economic indicators like GDP, but is this the best measure?
- We believe that the happiness of the average citizen is arguably the key outcomes governments should be trying to optimize. Afterall, a dissatisfied nation brings instability and political turmoil but a happy population is a trademark of safety and prosperity
- Since the primary levers a government has are investments and policy decisions, we chose to research whether a country's economic strength dictate the happiness of their citizens and are there other factors that can be used to maximize it?
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Understanding the Data

- Our research is based on the 2021 United Nation's World Happiness Report
- Data in their report comes from the annual Gallup World Poll, which has been surveying people around the world since 2005
- Gallup participants were asked to answer a series of life evaluation questions based on a "Cantril ladder" scale
- 149 countries are present in the report, each country's data is based on 2,000-3,000 surveys between 2018 and 2020.

Cantril Ladder

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- To answer this question, we turned to the 2021 WHR
- Data comes from the Gallup World Poll which has been survey and collecting data around the world since 2005
- Gallup participation responded to questions on Cantril Ladder
- 149 countries were present in the 2021 report.

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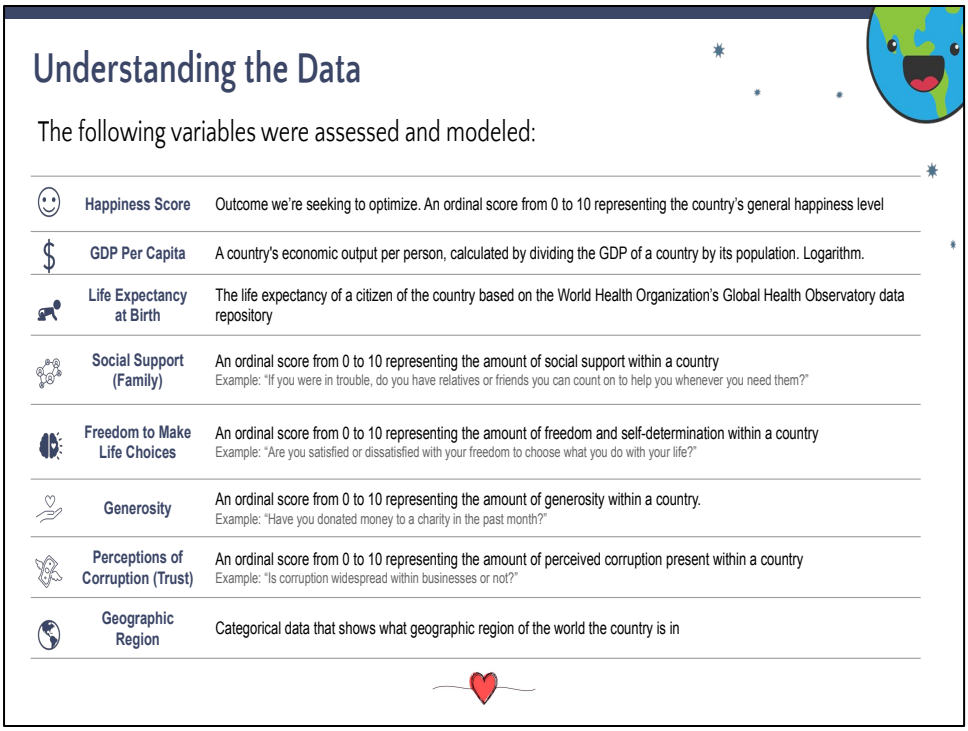
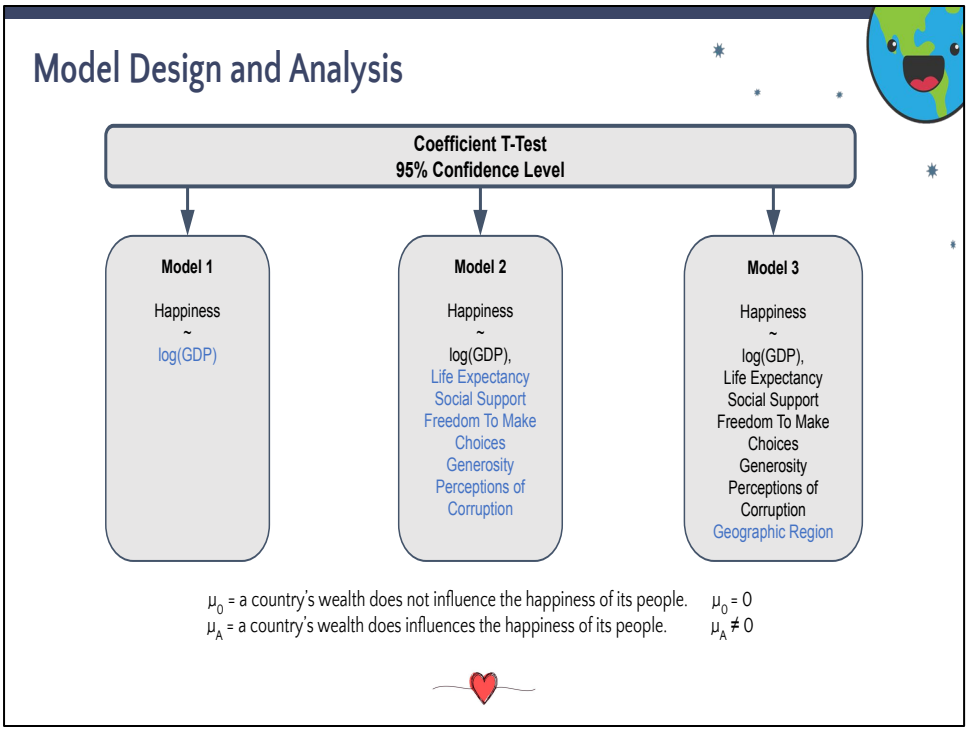


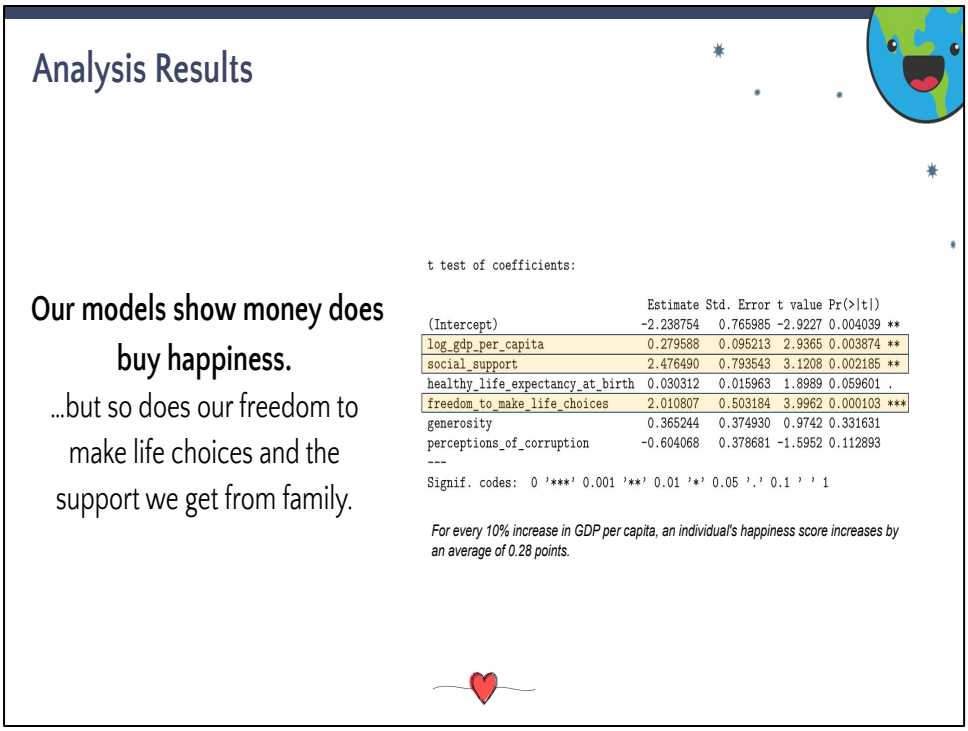
Hello, I'm Ryan, and I'm here to show you what data the WHR actually provided.

- The World Happiness Report offered data on several interesting fields of interest for this study.
    - Happiness was our outcome variable, and it was scored on a Cantril Ladder ordinal scale from 1-10.
    - GDP per capita was our variable of interest, being used as a proxy for average individual wealth.
        - Do note that this variable was transformed with a logarithm to normalize the distribution and its extreme values.
- There were also additional control variables as well:
    - Life Expectancy at Birth
    - Social Support
    - Freedom to Make Life Choices
    - Generosity
    - Perceptions of Corruption
    - Geographic Region
- It should be noted that Life Expectancy was given as a continuous value, and Geographic Region had categorical values.
- All other variables used the same 0-10 Cantril Ladder scale.



Ryan

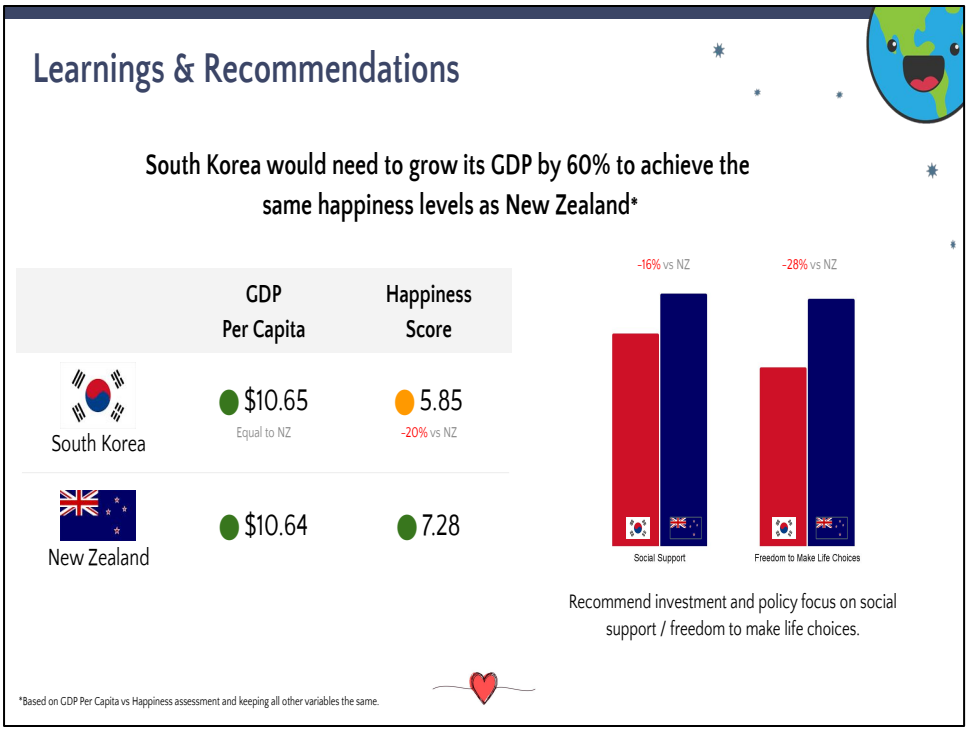
- In order to answer our research question, our plan was to build set of linear models, do a coefficient t-test, and then analyze the results for significance at a 95% confidence level.
- Using the variables mentioned beforehand, we built three linear models:
    - Model 1 maps Happiness from GDP per capita
    - Model 2 maps Happiness from GDP per capita and the other control variables except for geography.
    - Model 3 maps Happiness from GDP per capita, all other control variables, and indicator variables for geographic region.



Ryan

- After running our analysis, we came to a result that is either surprising, or not surprising at all:
  - The influence of wealth in the form of the logarithm of GDP per capita consistently had a statistically significant effect on a nation's happiness.
  - All three models provided strong evidence to reject the null hypothesis. This indicates that a country's wealth does indeed influence its peoples' happiness.
- Our data suggests that, on average: for every 10% increase in GDP per capita, an individual's happiness score increases by an average of 0.28 points.
- However, it should be noted that wealth was't the only influence in happiness, and it wasn't even the most influential factor either.
  - The variables for social support and the freedom to make life choices were both statistically significant and far more influential.

And now I'll hand it off to Khakali to tell us what we can learn from these findings.



- My name is Khakali Olenja and I will be discussing our learnings and recommendations
- To highlight what our research showed, we contrasted two countries South Korea and New Zealand
- By and Large their GDP is almost identical, but we see a 20% decline in overall happiness
- In order for South Korea to achieve the same level of happiness their GDP would have to grow by 60% (keeping all other variables constant)
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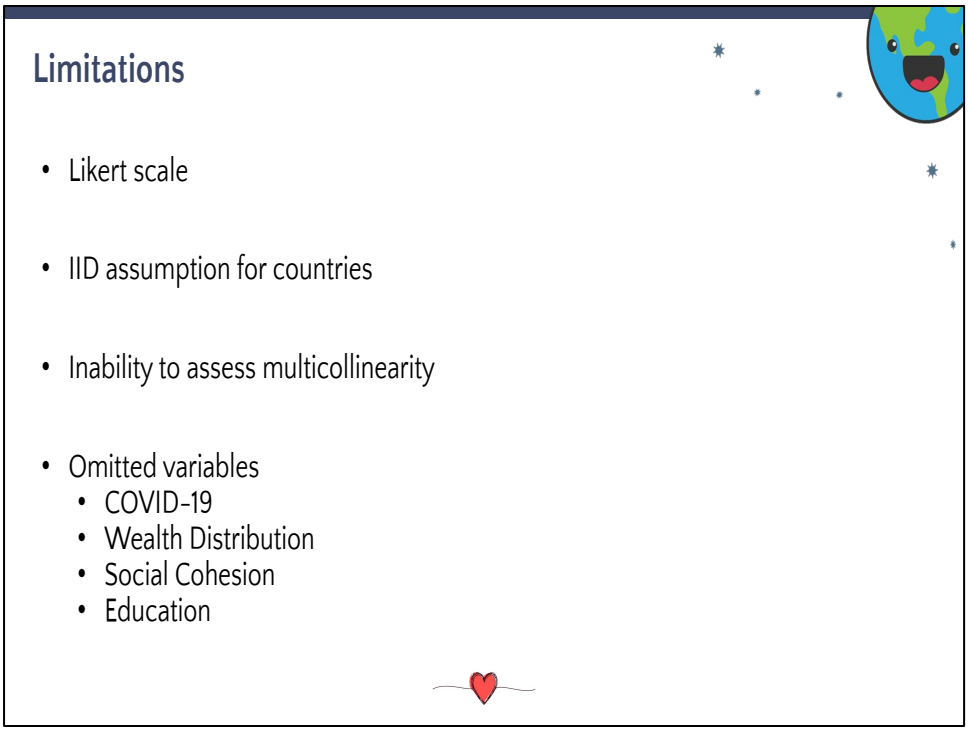

- Some of the limitations of our research included the use of the Likert Scale
  - Which is subject to bias as the respondents to agree on showed statements
  - Difficult to parse Neither agree or disagree statements
- IID Assumptions for countries
  - Countries may not be truly independent of each other due to geographic proximity, shared culture, trade, etc.
- Variables such as:
  - COVID-19
  - Wealth Distributions
  - Social Cohesion
  - Education are omitted
- The inability to identify what variables are highly correlated could introduce noise into our models and increase the variability of our estimators
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Conclusions

- Wealth is a key contributor to happiness so a focus on growing GDP is good policy but its not the only factor.
- Freedom to make life choices and social support were *more* influential than economic drivers.
- Governments can achieve better outcomes for their population and maximize their happiness by implementing policies to strengthen family support and programs to empower their citizens.

- In spite of these limitations, this data provides the most complete data set with the clearest indicators connecting happiness and its influences, and thus our findings are still meaningful and valuable.
- The models we ran ultimately concluded that GDP is a significant indicator of a countries happiness
- However, this is not the only indicator that is relevant
- In fact, over time it became clear that, freedom to make life choices is one of the most important indicators regarding a countries happiness
- Further research is needed to better understand the root causes of why each factor influences happiness.

Questions?