

# Does Covid-19 have a more significant influence on the employments in the developing countries compare with the developed countries?

DH 100 Theory and Methods | Student: Jiayi Zhou (Joy) | June 12, 2021



**Course Title:** Digital Humanities 100  
**Instructor:** Dr, Adam Anderson  
**Student:** Jiayi Zhou(Joy)  
**Date:** 05/31/2021

## Project Descriptions:

Since the start of the Covid-19, there were debates that concentrated on how the health conditions of the developing countries are less influenced by the pandemic compare with the developed world, leading to their lower mortality rates. According to the report produced by International Labour Organization, such reversed health conditions are the results of demographic (younger population), geographic(large rural area), and technological(disconnectivty) factors.

While the developing countries seem to do better, would this pattern persist with the economic activities? **To find out the answer, this project would focus on the employment aspect by evaluating the percentage loss of weekly working hours in each country.**

## Dataset:

The main dataset used in this project is titled “Impact of Covid-19 on Employment- ILOSTAT,” which was found on Kaggle. I have added an additional dummy variable called “Developing Country” based on the country categorization published by the United Nation. The criteria of being included in the list of developed country is very strict in this project. All of the transitioning countries suggested by the United Nation are categorized as developing countries.

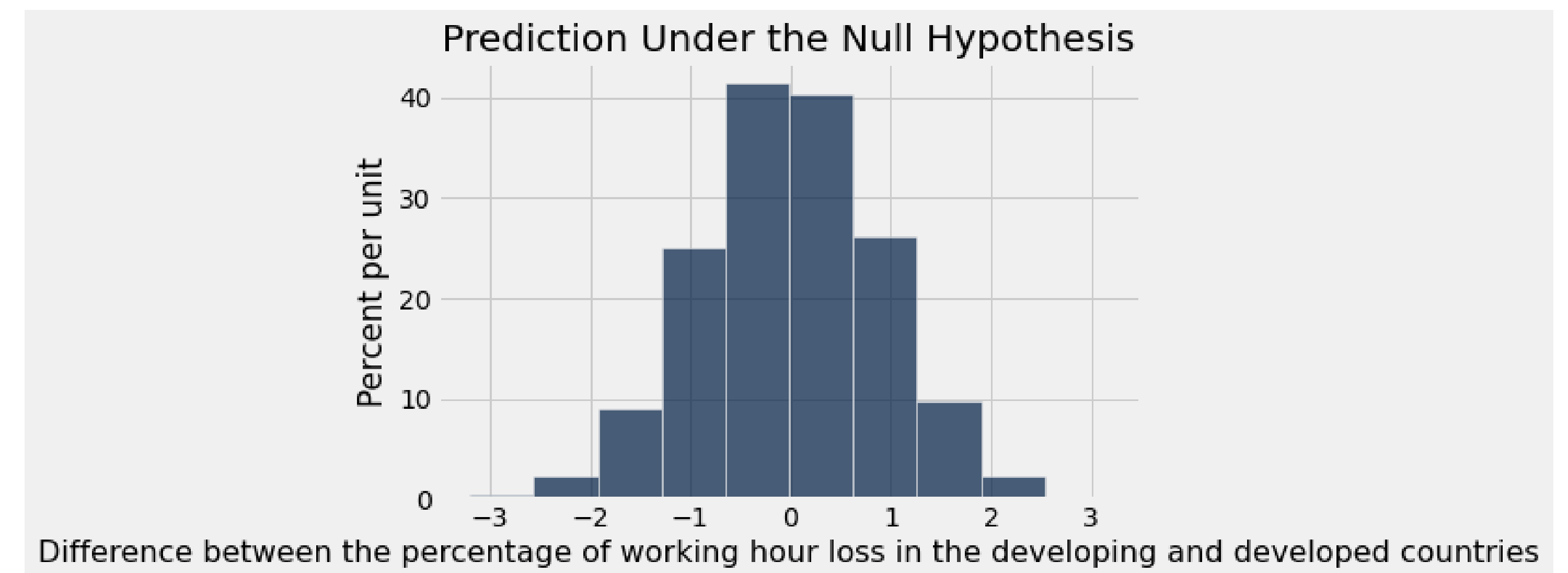
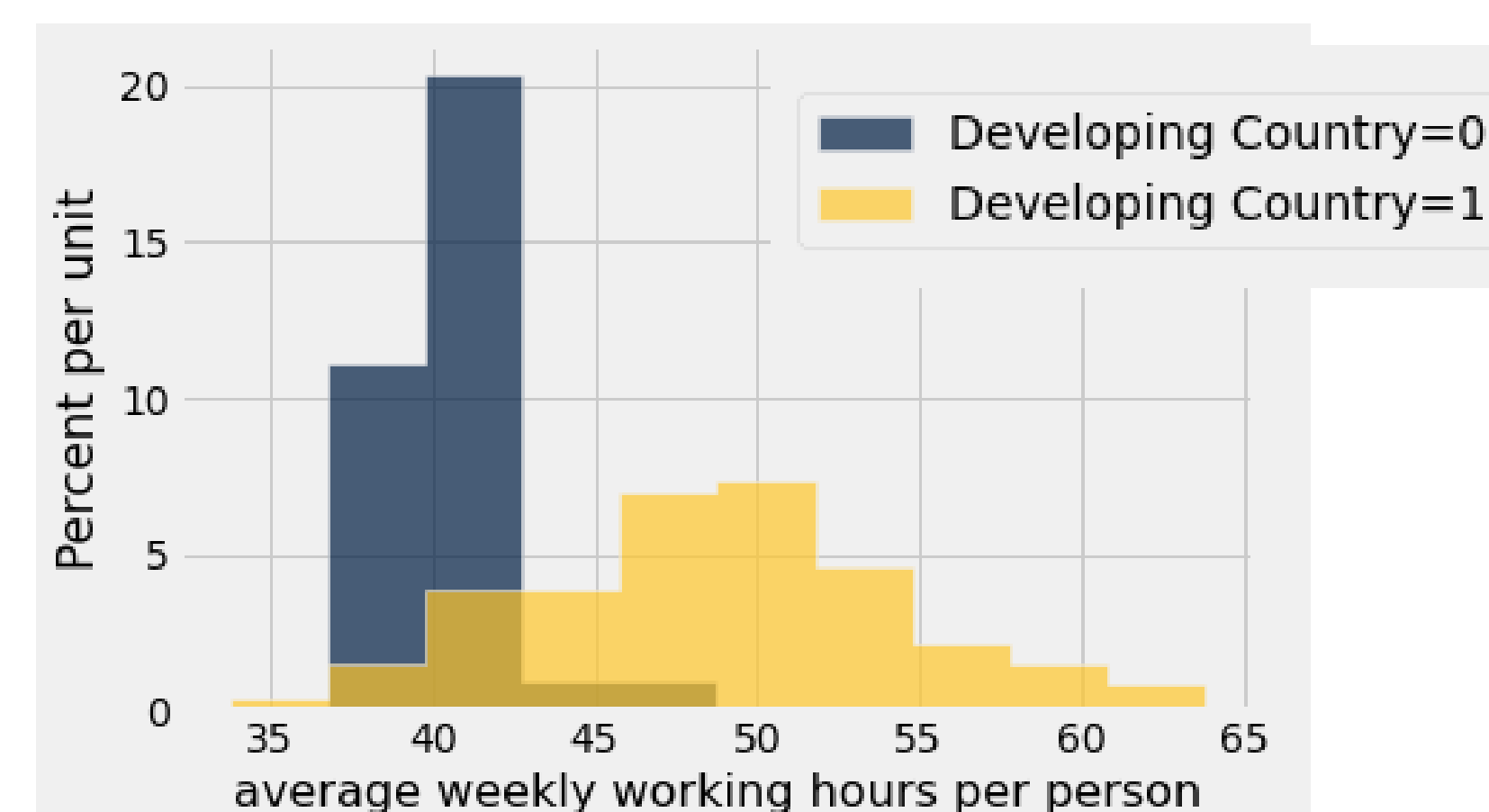
Link: <https://www.kaggle.com/vineethakkinapalli/impact-of-covid19-on-employment-ilo-stat>

## Workflow:

- Hypothesis Testing

The primary goal of this test is to investigate whether the percentage of working hours lost in the developed countries come from the same underlying distribution with the developing countries. Our test-statistic would be the difference between the mean of percentage working hour loss in the developing countries and developed country. The null hypothesis would be these averages have no difference; while the alternative hypothesis would be the percentage working hour loss is higher in the developing countries. Positive test statistic favors the alternative hypothesis. The result of this test is shown by the graph on the top right (Prediction Under the Null Hypothesis).

- Average weekly working hours per person (shown on the color-coded graph below)



## Discussion and Result Interpretations:

The two-color histogram on the left displays different distributions of average weekly working hours per person in the developed and developing country. It is notable that the distribution of the developed country, coded as blue, concentrated significantly on the left. Compare with the developed countries, the workers in the developing countries tend to work more hours per week.

The blue histogram on the top displays the difference between the percentage of working hour loss in the developing and developed countries under null hypothesis. This hypothesis test has shuffled the dummy variable for country categorization, and repeated 5000 trials. The observed statistics is 1.85. Although the shuffling process has introduced randomness, the p-value was around 1.7% and was never greater than 2%. If we take 5% as the significance level, this hypothesis testing would reject the null hypothesis and conclude a statistically significant difference between the percentage of working hour loss in the developing and the developed countries.

## Conclusions & Limitations

The hypothesis testing above has suggested that workers in the developing country tend to have a greater percentage of working hour loss compared with the developed country. This negative effect is even further amplified by the fact that people in the developing country were already working longer hours before the Covid-19 pandemic, introducing a larger wage loss and lower living standard.

Combining the analysis results all together, there is evidence to show that the employments in the developing world are more negatively influenced by the Covid-19 pandemic.

## Works Cited & Acknowledgements:

This project has referenced the employment studies in the report titled “Covid-19: Tracking the Jobs Crisis in the Least Developed Countries” produced by International Labour Organization. It also referenced codes and statistical knowledge from UC Berkeley Data 8 course demo, taught by Professor Ramesh Sridharan and Swupnil Sahai in Spring 2020.

- Links to the image used:

<https://voxdev.org/topic/infrastructure-urbanisation/spacial-structure-cities-developing-countries>

<https://www.information-age.com/advanced-smart-cities-world-123470745/>

Jupyter Notebook Link:  
[https://drive.google.com/file/d/1o1mLpyFI60bpnAccT9GVB\\_75UtvZgk8U/view?usp=s](https://drive.google.com/file/d/1o1mLpyFI60bpnAccT9GVB_75UtvZgk8U/view?usp=s)



# THIRD DRAFT: STORY BOARD

DIGHUM 100 | Student: Jiayi Zhou(Joy) | Date: 6/12/2021



**Course Title:** Digital Humanities 100

**Instructor:** Dr, Adam Anderson

**Student:** Jiayi Zhou(Joy)

**Date:** 05/31/2021

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While the developing countries seem to do better, would this pattern persist with the economic activities? **To find out the answer, this project would focus on the employment aspect by evaluating the percentage loss of weekly working hours in each country.**

Jupyter Notebook Link:  
[/drive.google.com/file/d/1o1mLpyFI60bpnAccT9GVB\\_75UtvZgk8U/view?usp=s](https://drive.google.com/file/d/1o1mLpyFI60bpnAccT9GVB_75UtvZgk8U/view?usp=s)

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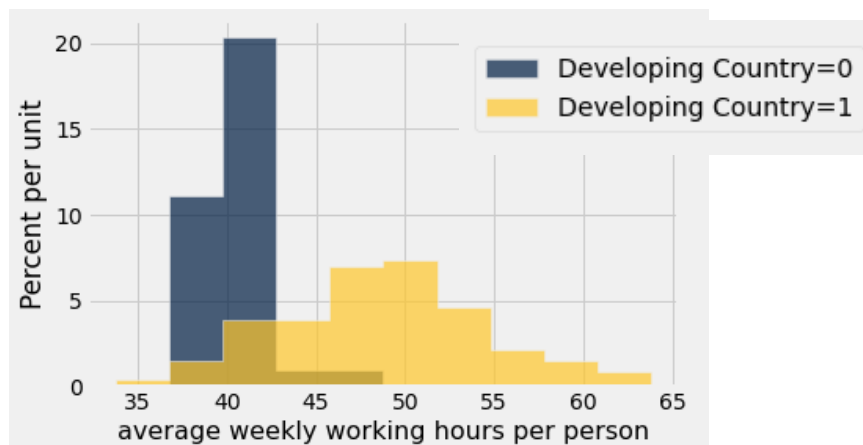
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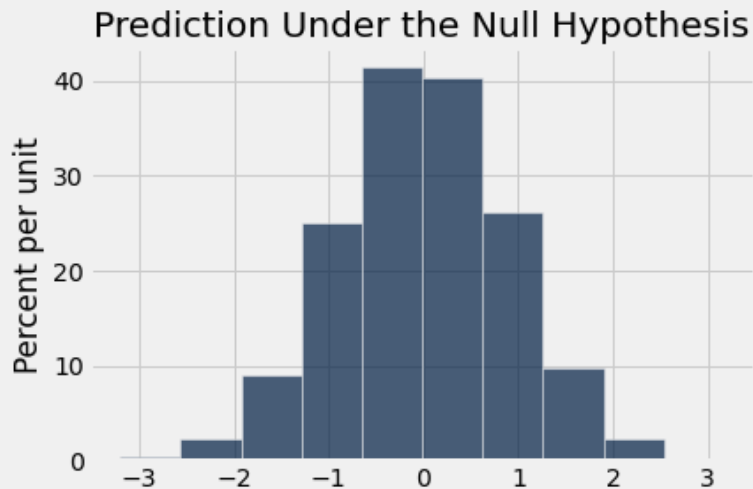
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Difference between the percentage of working hour loss in the developing and developed countries

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