

Hours Worked in 2020

Introduction

Work is an important part of life for many people. It is where they spend much of their time in order to make a living. However as time has gone on, the nature of work has changed as well. Throughout history, there have been labor movements organized to help increase wages and working standards for workers.

Despite all the advancements that have been made in the workplace, a large number of workers report being overworked and underpaid. This raises the question of how many hours are people spending at work and has that number changed over time. The world depends on workers to come to work everyday to keep society functioning for all, but growing evidence points that workers are being stretched too thin and are feeling the effects.

Literature Review

In the past, workers would spend much of their day working in harmful environments for little pay with little hope for upward mobility. Yet throughout history, workers organized to demand better working conditions, higher wages, and benefits from their employers (Ramey & Francis, 201). Over time, they were successful and legislation was passed to protect the rights of workers. As time went on and countries began to develop, workers were able to enjoy better pay and more leisure time than workers in the past (Costa, 163).

As workers began to receive higher wages, they were able to have more disposable income where they could afford non-essential goods and slowly experience upward mobility. Due to rising working conditions and better pay, trends such as overcrowding and spread of

infectious disease also started to drop (Bick et al., 1397). People were starting to experience a more healthy work-life balance and bring themselves out of poverty (Huberman & Minns, 543). The establishment of the 40 hour work-week in the United States allowed workers to not only spend time at work, but also have the leisure time to devote to personal growth (Bick et al., 174). All of this seemed unimaginable in the past where most of the population lived and worked in very poor conditions with little hope of ever rising above it.

Data

The data comes from the Total Economy Database created by The Conference Board. For every year since 1950, The Conference Board has gathered data for 180 countries around the world about their total hours worked, real & nominal GDP, and population size. By gathering all this data, The Conference Board is able to analyze the output of the global labor force and study it over a period of time. For this project, we will only be examining their 2020 data as that is the latest data that The Conference Board has released publicly.

Research Question & Hypothesis

For the project, there are 3 research questions that are being examined in relation to the data.

Research Question 1: How many hours did each country spend working last year?

As the dataset contains data from over 180 countries, we were curious to find how many hours each country spent working. We wanted to see which countries spent the most hours at work while which countries spent the least. Furthermore, we wanted to see if there were any geographical regions of the world that worked more hours than others.

Research Question 2: What was the Gross Domestic Product (GDP) of each country?

We wanted to find the GDP of each country as traditionally GDP has been used to determine the economic strength of a country. Furthermore, we wanted to see if certain geographical regions had higher GDPs than others.

Research Question 3: Is there a relationship between hours worked and GDP?

After finding out the answers to our first two research questions, we wanted to see if any relationship exists between the hours worked of a nation and its GDP.

To test our research question, we came up with the following hypothesis.

H1: If countries spend more hours than their GDP must increase thus leading to a positive relationship between hours worked and GDP.

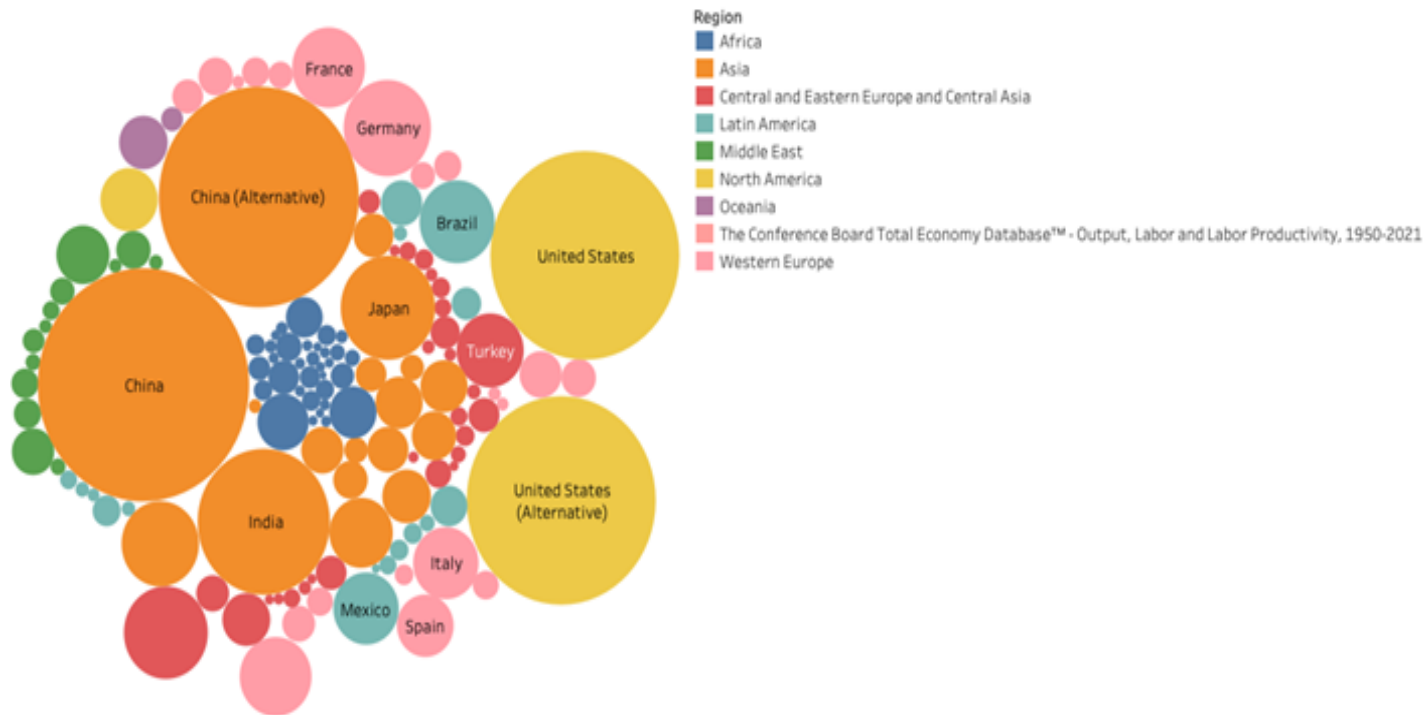
We hypothesize that the countries who work the most will also be the ones with the highest economic outputs or GDP.

Findings

In Figure 1, we find the total hours worked for all the countries in 2020. We find that China spent the most hours at work with the United States coming in 2nd place. We find that some of the Asian countries such as India and Japan also spent a considerable amount of time at work. Some other countries that spend a lot of time at work are Germany, Turkey, Russia, Brazil, Italy, Mexico, and France. For overall geographical trends, we find that the Asian countries tend to spend the most hours working while some of the African, Latin American, and Eastern European/Central Asian countries work the least. Furthermore, the China (alternative) stands for China including Hong Kong and Taiwan while the United States (alternative) stands for all 50 states and territories.

Figure 1

Total Hours Worked (Millions)

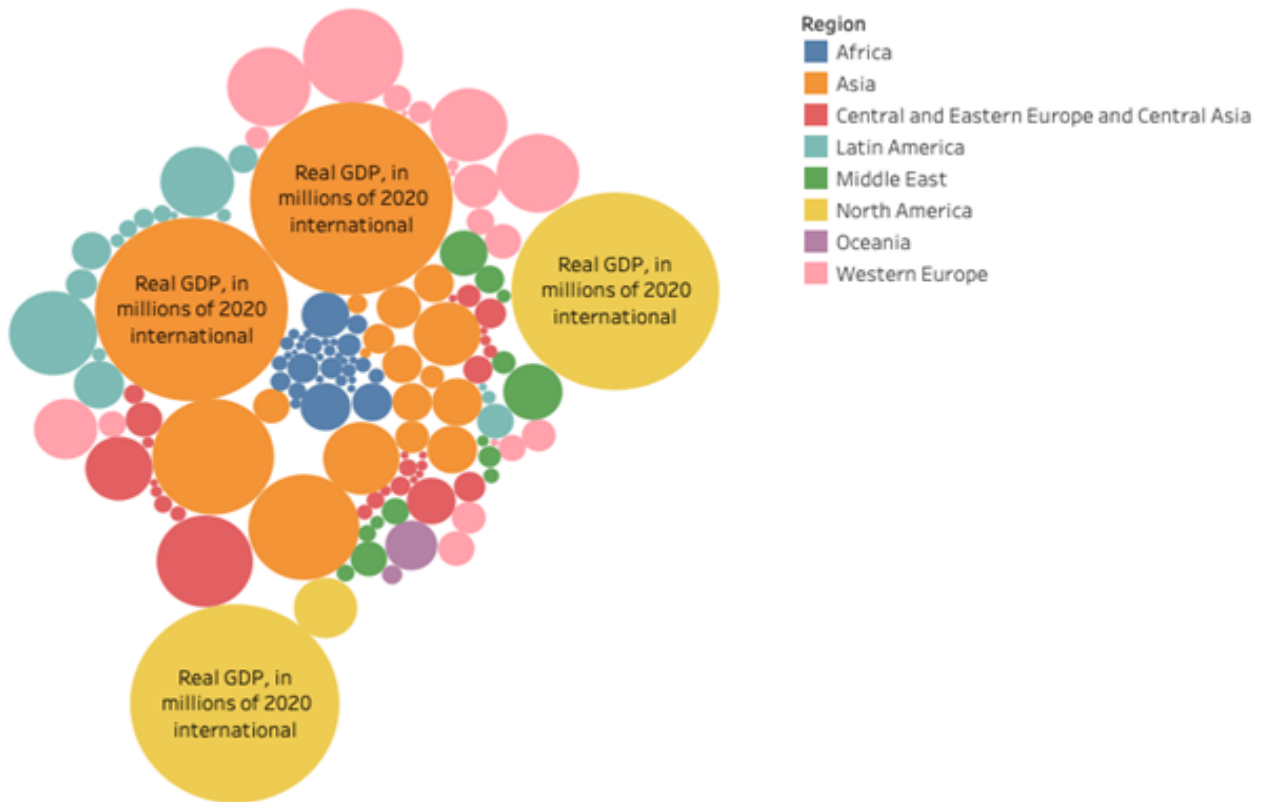


F3. Color shows details about Region. Size shows sum of F77. The marks are labeled by F3. The view is filtered on Region, which excludes For more information please refer to the 'CONTENTS' sheet, or the Total Economy Database website., Please cite the data as follows: The Conference Board Total Economy Database™, August 2021 and REGION.

In Figure 2, we find the real GDP of all the countries in 2020. We find that the United States, in yellow, has the largest GDP while China, in orange, comes in 2nd place. We find that some other countries with high GDPs include Russia, Germany, France, United Kingdom, India, Japan, Brazil, and Mexico. Unsurprisingly, we find that the countries that we had discovered to work the most also have the highest GDP. For geographical regions, the Asian countries tend to have the highest GDP while for North America, the United States has a high GDP. Once again, we also find that some of the African, Latin American, and Eastern European/Central Asian countries have the lowest GDP.

Figure 2

Real GDP (Millions)

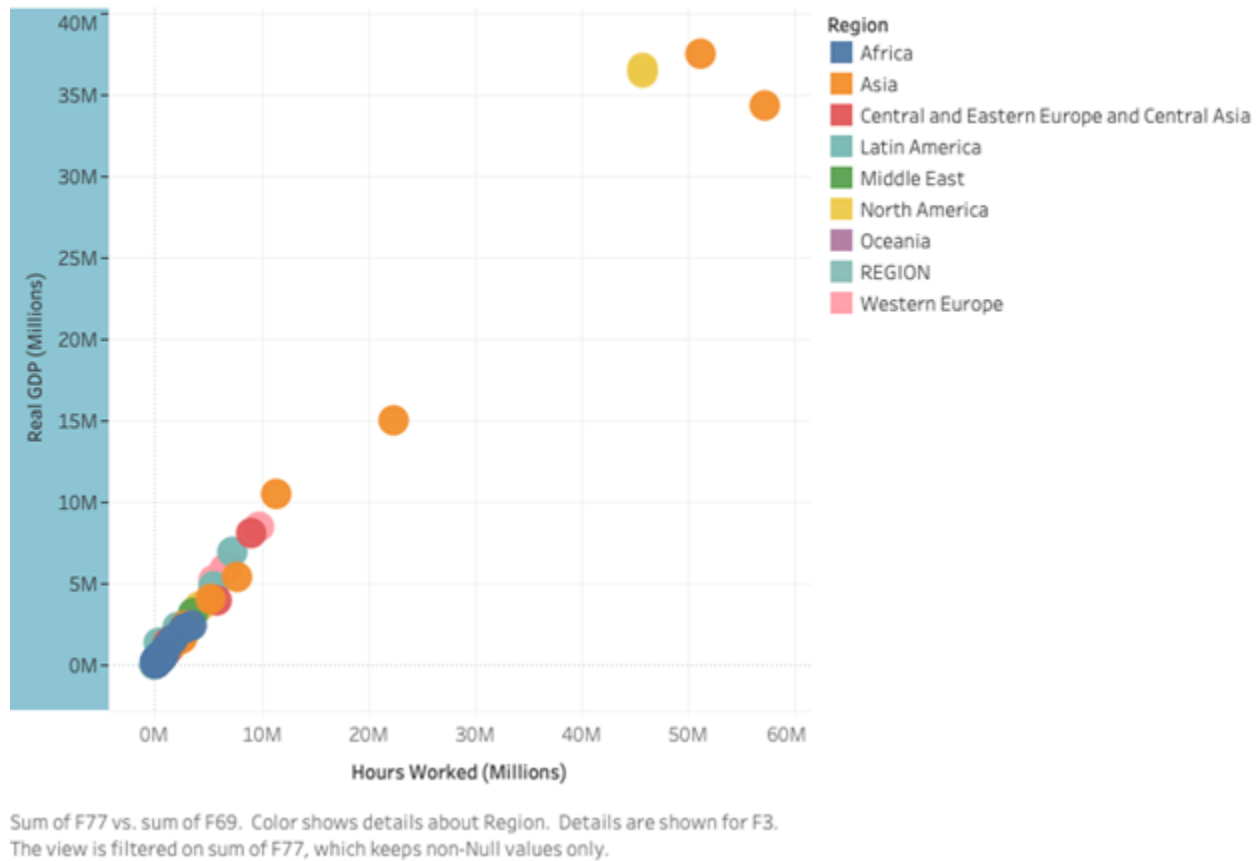


F5 and F3. Color shows details about Region. Size shows sum of F69. The marks are labeled by F5 and F3. The view is filtered on F5, which has multiple members selected.

In Figure 3, we take our previous findings, hours worked and real GDP, and put it in a scatter plot to determine if a relationship can be found between the two variables. On the y-axis is the real GDP while the x-axis is the hours worked. The scatter plot shows China, in orange, at the top of the plot with the United States, in yellow, in 2nd place. We find a few of the other Asian countries such as Japan and India significantly behind China and the United States yet still above most of the other nations. However, most of the countries remain at the bottom of the plot with the African nations in blue being at the very bottom. The results of the scatter plot confirm that our hypothesis was right as the countries who worked the most also had the highest GDP thus showing a positive correlation between hours worked and GDP.

Figure 3

Plot of Real GDP vs. Hours Worked

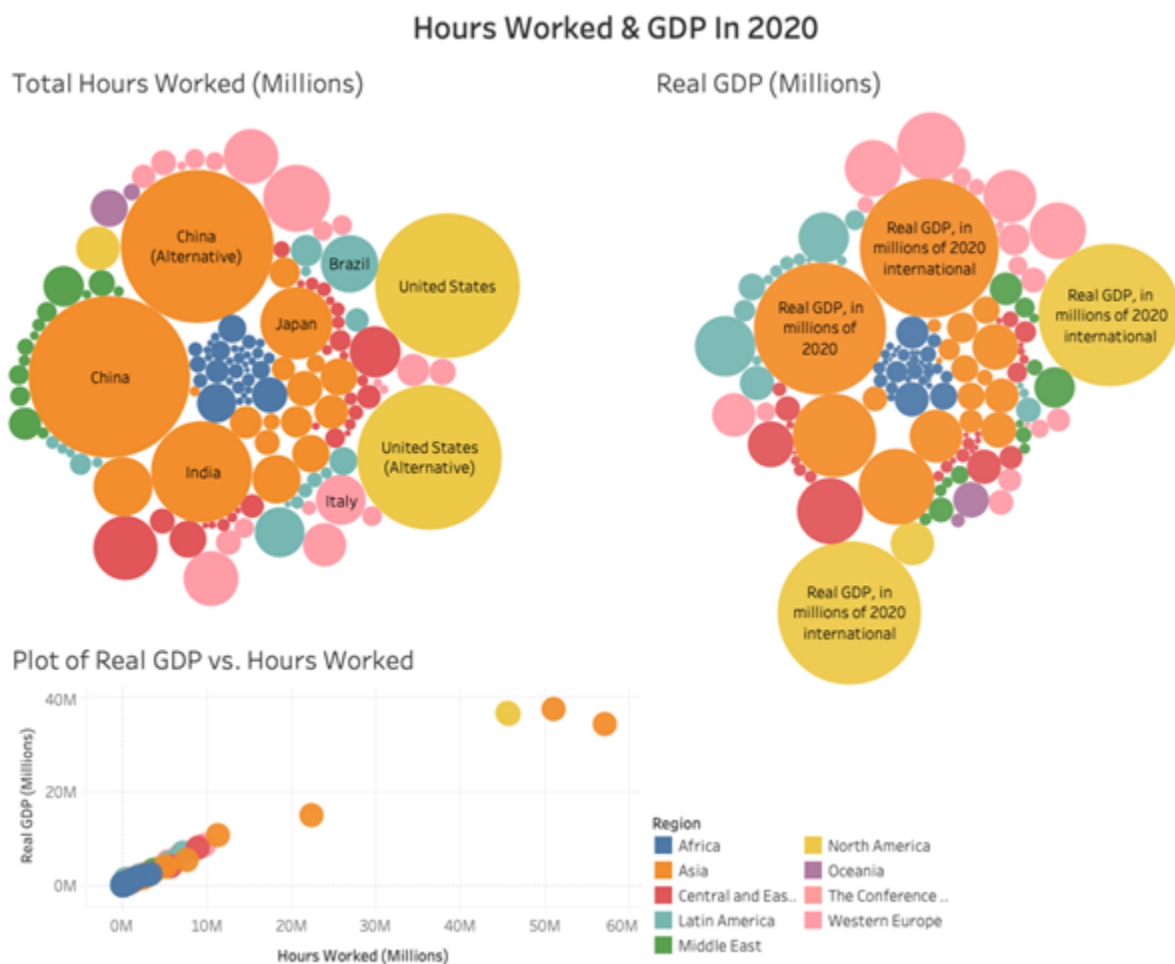


In Figure 4, our entire dashboard is shown showing our visualizations for hours worked, GDP, and scatter plot with an accompanying key to distinguish between geographical regions. In the visualizations, it has become apparent that the United States, China, along with a handful of other Asian countries such as India and Japan lead the world in hours spent at work. This could be a result of societal norms where there is the expectation that an individual must work hard in order to be successful such as phenomena like the American Dream. Also, these countries also have large populations in particular China, India, and the United States so it would be natural that they also log in more hours at work. In terms of GDP, since the end of World War II many countries around the world began to industrialize thus leading to GDP growth. China in

particular has seen massive GDP growth due to the rapid development the country is experiencing.

The African and former Soviet countries of Eastern Europe & Central Asia on average tend to have less hours worked and lower GDP. One reason for this could be due to the communist past of Eastern Europe & Central Asia where there was not much of an incentive to work hard. Also in the African countries, there are higher rates of child mortality and lower life expectancies which affects the hours spent working and ultimately the GDP.

Figure 4



Style & Design

For the data visualizations, we chose to use Tableau. For the visualizations about hours worked and GDP, we chose to use the packed bubbles design. This design put each country into its own bubble. The countries that had the highest values would get the largest bubbles while countries with lowest values would get the smallest bubbles. This contrast in shape really helped visualize the differing values between countries.

Furthermore, we chose to color-code countries by geographical region so Africa became dark blue, Asia became orange, Central & Eastern Europe & Central Asia became red, Latin America became light blue, Middle East became green, North America became yellow, Oceania became purple, while Western Europe was pink. These vibrant colors make the bubbles stand and easier to read. Also some of the bubbles are labeled by the country that they represent, but due to overcrowding and lack of space not all countries were labeled. However, hovering over each bubble in Tableau will tell the viewer the country name, hours worked, and GDP.

When designing the scatterplot, the bubbles were made translucent so that the bubbles on front would not hide the bubbles in the back. Also all visualizations included a title, key, and labeled axis when appropriate to guide a viewer on their understanding of the visual.

Limitations

While the dataset contains an expansive amount of data spanning several decades, it does have some limitations. Firstly, the data does not give any demographic data. For example, the dataset does not tell us how many workers are in the labor force for each country, how many workers are female, how many workers are child workers, etc. It simply tells us raw numbers

such as total hours worked in a country, their GDP, etc. Therefore it becomes quite difficult to examine any deeper sociological trends within the data.

Covid-19

In this project, we only examined 2020 data. In early 2020, the world went into lockdown due to the Covid-19 pandemic. As a result of the pandemic and lock-down, many workers lost their jobs as businesses could no longer afford to pay their workers. High unemployment was rampant around the world as so many people suddenly found themselves without a job.

Therefore, it must be said that the data from 2020 could be skewed due to the pandemic and lock-down. As so many people around the world became unemployed then their hours spent at work dropped to zero. This mass unemployment affects the total hours worked for each country. Furthermore, due to Covid-19 and resulting unemployment, companies had to cut down their production lines and many people found themselves strapped for cash so they were forced to curb their spending. This can result in lower GDP as businesses are not producing as many goods and consumers not having the money to purchase them.

Further Considerations

One consideration for future research into this field is the rise of 4 day workweeks equaling 32 hours which is being seen in some developed countries. Historically, full-time in many developed countries has been 5 days a week totaling 40 hours for the entirety of the week. Yet, there is a growing push amongst some industrialized countries to reduce the hours spent at work claiming that it will allow workers more time for activities outside of work while also being beneficial for their well-being. Proponents claim that a 32 hour work week will deliver the

same rates of productivity that is seen during 40 hour weeks. Yet opponents of the proposal fear that it will harm GDP. All in all, it will be fascinating to see what effect reducing work hours will have on societal and economic matters.

Another consideration for future research is the impact of Covid-19 on work. At the beginning of the pandemic, many people lost their jobs entirely or had their hours cut back. As the world slowly tries to rebuild after the initial shock of Covid-19, many people have re-entered the labor force into the jobs they once had or found a new job. These new jobs could very well come with higher pay and better benefits thus eliminating the need for some workers to work with more than one job. Yet the United States has seen a trend called the Great Resignation as many Americans have quit their jobs after feeling dissatisfaction and burn-out at their current work. The isolation brought on by the pandemic caused many people to re-evaluate their life and decide that they do not wish to spend all their time at a job that gives them no satisfaction or meaning. This has caused them to leave their jobs and seek alternative employment. Furthermore, there is the growing popularity of the anti-work movement as many of the workers at the bottom of the labor force are furious about stagnant wages, little benefits, micromanagement, and rising inflation that they are organizing strikes and walk-outs. Overall, Covid-19 had a pivotal role in influencing the decisions of workers.

Conclusion

Work plays a pivotal role in human life. It is where people earn a living to support themselves, develop an identity, and spend considerable amounts of their life at. However, not all countries spend the same amount of time at work and oftentimes the time spent working helps the economy grow and flourish as well leading to societal change.

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