

a) Introduction Section

Project Title: Analysis of Billionaire Statistics

Data Analyst: Patrick Engel

Project Overview:

This project aims to analyze a dataset containing information on billionaire characteristics and global statistics. The columns include data related to demographics, business information, and country economics.

Data Source:

- Link: <https://www.kaggle.com/datasets/nelgiriyeewithana/billionaires-statistics-dataset>
- Billionaire Statistics Dataset.csv

Dataset Overview:

- **Total Columns: 35**
- **Total Rows: 2640**

Total Usable Columns: Original dataset contains 35 columns.

Description of CSV Files:

Billionaire Statistics Dataset.csv:

- Total Columns: 35
- Total Rows: 2640
- This dataset contains information on billionaire characteristics and global statistics. The columns include data related to demographics, business information, and country economics.

Metadata for Selected Columns (10 most important):

Column Name	Description	Data Taxonomy Type	Data Type
rank	Wealth ranking	Ordinal	Integer
finalWorth	Current net worth	Continuous	Numeric
category	Category of business	Nominal	Categorical
personName	Billionaire full name	Nominal	Categorical
age	Age of billionaire	Ratio	Integer

country	Country where billionaire lives	Nominal	Categorical
city	City where billionaire lives	Nominal	Categorical
source	Source of billionaire's wealth	Nominal	Categorical
selfMade	True/False value for billionaire being self-made	Nominal	Boolean
cpi_country	Consumer price index for billionaire's country	Continuous	Numeric

b) Key Performance Indicators (KPI)

The aim is to explore the factors surrounding the statistics and data of billionaires using this dataset. Key performance indicators (KPIs) include:

- Wealth Distribution
 - Analyze the distribution of wealth among billionaires.
 - Identify any factors contributing to high wealth rankings.
- Demographic Analysis
 - Explore distribution of demographic factors such as age and gender to identify trends and wealth correlation.
- Geographical Patterns
 - Examining the distribution of billionaires across countries and cities.
 - Analyze the impact of country-specific factors (CPI, GDP, education enrollment, life expectancy) on wealth.
- Sources of Wealth
 - Investigate the sources of billionaires' wealth.
 - Identify industries that contribute significantly to billionaire net worth.
- Inheritance and Self-Made Analysis
 - Explore the proportion of self-made billionaires versus those who inherited their wealth.
 - Analyze the impact of inheritance on wealth status.
- Taxation Trends
 - Investigate the total tax rate and its correlation with the final net worth of billionaires.
 - Explore the relationship between tax revenue and wealth distribution across countries.

c) Insights

Page 1

Top 10 Countries with the Most Billionaires

KPI: Geographical Patterns

The wealth distribution of countries is undoubtedly obvious. The top two countries, United States and China, have billionaire counts in the multi hundreds. Any and all countries below them barely hold counts in the one hundreds range. While there are more than ten countries on this dataset correlated to billionaires, we find that most countries fail to hold their spot compared to the two dominating countries. Further, within the top two spots, the United States has a 231 person lead over China.

Billionaire Gender Distribution

KPI: Demographic Analysis

The donut chart depicting this visual gives a glimpse into who resides at the top for wealth. The percentages between male and female billionaires speaks volumes in the numbers. Of the 2,640 billionaires, only 12.77% of them are female. This means 2300 of those billionaires are male. This raises questions about the gender related challenges in wealth accumulation and investment for women entrepreneurs.

Billionaire by Age

KPI: Demographic Analysis

There looks to be a strong correlation of billionaires when comparing gender and age distributions. We find that there is a rather large group of billionaires that are 50+, especially 60 years old to be exact. When we analyze this along with the gender distribution, we find that most billionaires are 60 year old males.

Self-Made Billionaires

KPI: Inheritance and Self-Made Analysis

While a simple visual, this pie chart gives vital evidence of what kind of wealth the majority of billionaires retain. We find that 68.64% of billionaires are self-made. This is an interesting observation because of the 2,640 total, 1,810 billionaires achieved that status on their own. This visual gives highlight to the entrepreneurial spirit.

Top Industries of Wealth

KPI: Sources of Wealth

When looking at the top industries of wealth, it is no surprise that technology reigns the number one spot with a total billionaire value of \$1.88T. One trend to analyze is the value change per industry. When it comes to the top three (Technology, Fashion & Retail, and Finance & Investments), there is about a \$100b difference. However, after that there is a substantial decrease in industry value with the next highest being \$1.02T. This gives the top 3 industries at least a \$600b lead over the lower.

Page 2

Source Count and Total Net Worth Correlation

KPI: Sources of Wealth

This line chart showed the correlation between the sum of billionaires net worth and the number of sources they utilized. We find that the majority of wealth was based on billionaires that had 1 source of wealth and had a strong downward trend when sources increased.

Avg Net Worth by Source Count

KPI: Sources of Wealth

This visualization is a scatter plot that similarly correlates the net worth with the number of sources. The difference in this graph, however, is that it is not the sum of net worth, but rather the average. This is where we gain a deeper insight into billionaire wealth. While the previous graph showed the audience that billionaire wealth is led by having 1 source, it actually shows that a majority of billionaires utilized 1 source. What this new graph shows is that there is a drastic increase (23.76%) in average wealth of a billionaire when they go from 1 source to 2 and 3 sources. This suggests a potential impact of diversification of wealth.

Billionaire Count by Birthyear and Status

KPI: Inheritance and Self-Made Analysis / Demographic Analysis

This area chart compares to multiple characteristics of the billionaire. There are four colored lines on the graph. Self-made is the highest and Split Family Fortune is the lowest on the count. What we analyze from this graph is that most billionaires that are self-made were born in 1963, giving a strong range in the 1960's. This along with the other data provides a mountainous structure. However, we find a slight difference in the trend when we look at Inherited and Other where their numbers lead more heavily into the 1940' and 1950's.

Top 10 US Cities for Billionaire Count

KPI: Geographical Patterns

This is a bar chart that analyzes the top 10 US cities with the most billionaires. New York has a strong lead on this chart with a value of 99. What is interesting is there is a massive fall off of a

62 person difference. From there the graph ranges from the 30's to the 10's. It is obvious that New York, NY has a strong connection to billionaires with its imposed presence.

Education Enrollment vs Net Worth

KPI: Geographical Patterns / Wealth Distribution

This is a scatter plot that compares net worth and secondary education per country. When analyzing the data, we find that the United States comes on top with the highest summed net worth of \$4.5T. When comparing the highest percentage of secondary education enrollment, Greece takes the lead with 136.60%. A majority of the countries, however, all fall around a similar summed net worth even when increasing its secondary education enrollment.

Page 3

Self-Made Billionaires by Continent & Country

KPI: Inheritance and Self-Made Analysis / Geographic Patterns

This map visualizes the distribution of self-made billionaires across continents and countries. The color gradient represents continents, with larger bubbles indicating a higher count of self-made billionaires. Notably, the United States and China stand out as the top two countries with significant numbers of self-made billionaires—540 and 506, respectively.

Billionaire Count of Generating Wealth by Continent

KPI: Inheritance and Self-Made Analysis

The clustered bar chart displays the total count of billionaires by continent, distinguishing between those who are self-made and those who inherited wealth. In North America, an intriguing observation emerges with an equal number of billionaires being self-made and inheriting wealth (314 each). In Asia, the number of self-made billionaires is more than double those who inherited wealth.

Billionaire Count by Birth Year & Continent

KPI: Demographic Analysis / Geographic Patterns

This area chart presents the distribution of billionaires based on their birth years, segmented by continents. The chart reveals that in 1963, Asia had the highest number of billionaires born in a single year, totaling 51, indicating a concentrated peak in that particular year for the continent.

Multi-Row Card: Self-Made Billionaires Overview

KPI: Inheritance and Self-Made Analysis / Demographic Analysis

This multi-row card summarizes key metrics, starting with the count of self-made billionaires. It provides insights into the average age and average final worth of self-made billionaires across all continents. Notably, Europe stands out with the lowest average age at 64 years.

Page 4

Total Averages

KPI: Demographic Analysis / Wealth Distribution

This multi-row card titled "Total Averages" provides a snapshot of key demographic and wealth metrics. On average, billionaires in the dataset have an age of 65 years, a life expectancy of 78 years, and a final worth of 4.6 billion dollars. Notably, the average life expectancy implies an average of 13 years remaining for these billionaires.

Average Age Vs. Net Worth

KPI: Wealth Distribution / Demographic Analysis

The scatter chart "Average Age Vs. Net Worth" visualizes the relationship between the average age and average final worth of billionaires, with each person's name represented. An interesting observation is the presence of outliers like Elon Musk and Bernard Arnault, both having exceptionally high net worth (180 billion) while being in the middle of the age spectrum. For instance, Elon Musk, aged 51, has a notable net worth.

Average Age by State

KPI: Demographic Analysis / Geographic Patterns

The tree map titled "Average Age by State" displays each state and is sorted by the oldest average age for billionaires residing there. A noteworthy insight is that South Dakota has the highest average age at 87 years, while the U.S. Virgin Islands has the youngest average age at 57 years. This suggests a potential correlation between younger billionaires choosing locations with better tax incentives, though this correlation is theoretical and requires further evidence.

Average Age by Industries

KPI: Demographic Analysis / Sources of Wealth

The tree map labeled "Average Age by Industries" categorizes industries based on the oldest average age of billionaires working in each. An interesting finding is that the sports and gambling industry has the highest average age at 69 years, while the technology industry has the youngest billionaires with an average age of 57 years. This correlation aligns with expectations, indicating a progressive trend in younger billionaires gravitating towards the technology sector.

Page 5

Final Worth vs. Country Tax Rate

KPI: Wealth Distribution / Taxation Trends

This scatter plot, titled "Final Worth vs. Country Tax Rate," illustrates the relationship between the average total tax rate (%) on the x-axis and the average final worth of the country on the y-axis. An insightful observation is that Uzbekistan stands out with the highest average final worth at 14.4 billion and a favorable tax rate of 31.6%.

Total Tax Revenue by Continent

KPI: Taxation Trends / Geographic Patterns

The stacked bar chart labeled "Total Tax Revenue by Continent" categorizes continents on the y-axis and showcases total tax revenue on the x-axis. Notably, Asia leads with the highest tax revenue, totaling 10,654 billion. This suggests a significant economic contribution from the continent in terms of tax revenue.

Total Tax Revenue by Country

KPI: Taxation Trends / Geographic Patterns

The stacked bar chart titled "Total Tax Revenue by Country" displays countries on the y-axis and represents total tax revenue on the x-axis. An interesting insight from the chart is that the United States leads with the highest tax revenue, amounting to 7,238.4 billion. This emphasizes the economic significance of the United States in terms of tax contributions.

Total Tax Revenue by State

KPI: Taxation Trends / Geographic Patterns

The stacked bar chart, "Total Tax Revenue by State," presents U.S. states on the y-axis and total tax revenue on the x-axis. The chart reveals that California surpasses other states with the highest tax revenue, reaching 1,708.8 billion. The noteworthy correlation is that California's tax revenue exceeds that of the entire continent of South America, which stands at 817 billion, indicating the economic prominence of California in the U.S.

Page 6

Average Final Worth by Country & Gross Tertiary Education Enrollment(%)

KPI: Wealth Distribution / Geographic Patterns

The map, titled "Average Final Worth by Country & Gross Tertiary Education Enrollment(%)," utilizes different colors for countries and bubble sizes based on average final worth. The legend provides information on gross tertiary education enrollment (%). An interesting insight from this map is that Uzbekistan stands out with an average final worth of 14.4 billion. However, its gross tertiary education enrollment is only 10.1%, suggesting a potential lack of correlation between final worth and tertiary education enrollment in this country.

Page 7

Average of Consumer Price Index, GDP, Final Worth, Life Expectancy, Self-Made Billionaires, and Total Tax Revenue by Country and Population

KPI: Wealth Distribution / Geographic patterns

The map, titled "Average of Consumer Price Index of the Country, GDP of the Country, Average Final Worth, Average Life Expectancy, Self-Made Billionaires and Total Tax Revenue by Country and Population," showcases countries with bubbles sorted by the highest Consumer Price Index (CPI), with larger bubbles representing higher values. Each country's bubble displays information such as population, average CPI, GDP, average final worth, average life expectancy, the number of self-made billionaires, and total tax revenue %. An intriguing observation from this map is that Egypt stands out with a large Consumer Price Index, and this correlates with other data points listed.

d) Recommended Course of Action

The top 5 most important insights of the visualizations are discussed below:

1. Top 10 Countries with the Most Billionaires

- a. **Importance:** Provides a macroeconomic overview, guiding global investment strategies.
- b. **Reasoning:** There can be significant gains from concentrating resources and efforts in nations where the number of billionaires is high. These countries often have potential for economic stability and market opportunities.
- c. **Action:** Understanding dynamics of local markets and consumer behaviors, investors and businesses should give top priority to market entry and expansion in the most competitive nations.

2. Billionaire Gender Distribution

- a. **Importance:** Draws attention to the differences in wealth between genders, affecting social and economic justice.
- b. **Reasoning:** There may be economic advantages to addressing gender-related obstacles to wealth accumulation in addition to being an issue of fairness. Increased economic stability may result from a more equitable distribution of wealth.

- c. **Action:** Proactive steps can be taken by businesses to encourage diversity and inclusion in leadership positions and financial choices. Initiatives like financial access and mentorship programs can also be put in place to assist female entrepreneurs.

3. *Self-Made Billionaires*

- a. **Importance:** Shows opportunities for innovation and economic expansion by reflecting the state of entrepreneurship.
- b. **Reasoning:** Considering the number of self-made billionaires, it is crucial to create an atmosphere that encourages entrepreneurship.
- c. **Action:** Policies that encourage startups and innovation should be implemented by governments and business associations to foster an atmosphere that is favorable to entrepreneurship.

4. *Total Averages*

- a. **Importance:** Provides a quick overview of important wealth and demographic indicators, impacting both strategic planning and wealth management.
- b. **Reasoning:** Long-term asset preservation is impacted by average life expectancy and wealth measurements. These metrics provide crucial information for succession strategies and estate planning.
- c. **Action:** Policy makers can support intergenerational wealth transfer initiatives and wealth management advisors should place a strong emphasis on thorough estate planning.

5. *Final Worth vs. Country Tax Rate*

- a. **Importance:** This insight explores the relationship between the average final worth of billionaires and the country's tax rate, giving insight on the convergence of taxation and wealth.
- b. **Reasoning:** Gaining an understanding of the relationship between net worth and tax rates might help one better understand the economic dynamics of different countries and how they affect the growth of wealth.
- c. **Course of Action:** In order to achieve a balance between raising revenue and encouraging wealth development, policymakers should be encouraged to adjust their tax policies.