## C. DETAILED OUTLINE

### I. Brief Overview

- 1-2 first sentences: General theory and overview of current labor markets (50 words)
- 3-4 next sentences: Background on unemployment in Country A (100 words)
- 3-4 next sentences: Background on unemployment in Country B (100 words)
- 1-2 last sentences: Summary of economic factors influencing unemployment (50 words)

**Example:**

- Theory of labor markets: Labor markets determine employment and wages based on supply and demand. Key metrics are labor force, employment rate, unemployment rate.
- Global labor markets discussion:
    + Global unemployment increased during COVID pandemic but has improved in many countries as restrictions eased.
    + Labor shortages in some sectors like services as workers reshuffle.
    + Factors influencing unemployment rates include economic growth, government policies, demographics, industry changes.
- Country A unemployment:

+ Economy historically dependent on agriculture, now transitioning to services.
+ Unemployment remained under 5% until the 1990s financial crisis caused a spike over 10%.
+ Current unemployment around 7% despite GDP growth due to skills mismatch.

- Country B unemployment:

+ Economy was fueled by manufacturing but hurt by competition and automation.
+ Unemployment gradually climbed from 3% to over 8% as factories cut jobs.
+ Current unemployment is still high at 7.5% as workers lack new skills for service jobs.

### II. Descriptive Analysis

1. **Line Graph**
2. 

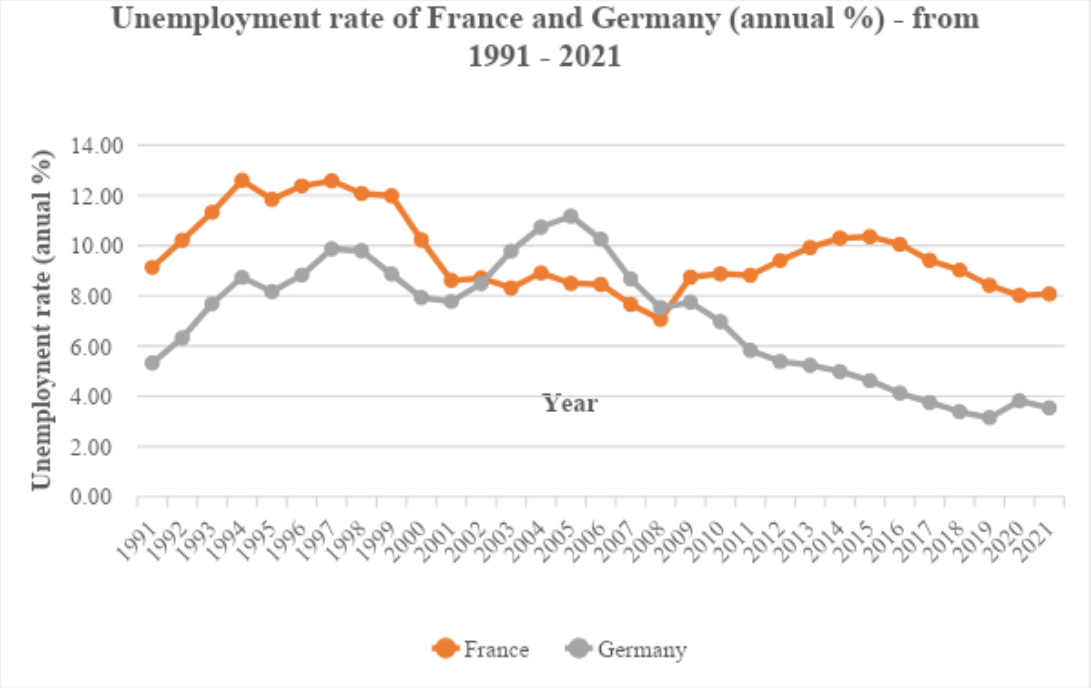
- How to create an effective line chart
    + After creating a line chart by using Excel or Google Sheets, customize your chart by adding labels, titles, and legends. Label the x-axis with time and the y-axis with the unemployment rate. Include a legend to distinguish between the two countries.
    + Adjust the color and style of the lines for each country to make the chart easy to interpret. You may also consider adding data labels to specific points on the lines.

- 4-5 first sentences: Structure for an effective comment on the graph
    + Start with a brief introduction to set the context for the chart. Mention the time period covered and the countries involved.
    + Begin your comment with an overarching observation about the general trend in unemployment rates for both countries.
    + Identify and discuss any major trends or patterns in the data
    + Make direct comparisons between the countries, emphasizing similarities or differences
    + Identify any anomalies or significant events that may have influenced the unemployment rates:

**Example:**

The line chart illustrates the fluctuation in unemployment rates for Country A and Country B over the past decade. Country A experienced a noticeable spike in unemployment in 2013, while Country B maintained a more stable rate during the same period. Interestingly, both countries showed a gradual decline in unemployment rates from 2015 onwards, with occasional fluctuations. The peak in Country A's unemployment in 2013 might be attributed to [insert reason], emphasizing the importance of considering external factors when analyzing economic indicators.

**Example:**




**3. Measures of Central Tendency**

(i) Calculation

- To calculate three measures of central tendency, you can utilize formula in Excel (Google Sheets)
    + Mean: =AVERAGE(range)
    + Median: =MEDIAN(range)
    + Mode: Excel doesn't have a direct mode function, so you might need to use a combination of functions. For example, you can use the following array formula for mode: =MODE.MULT(range)

- Then, build a table with columns for Country, Mean, Median, Mode

(i) Interpretation

- To determine the best measure, you have to detect outliers
    + Calculate the IQR, which is the range between the first quartile (Q1 =QUARTILE.INC(dataset, 1)) and the third quartile (Q3 =QUARTILE.INC(dataset, 3)). Points outside the range Q1 −( 1.5×IQR) to (Q3+1.5×IQR) are considered potential outliers.

- How to choose the best measure:

    + Mean: Use the mean when your data is approximately symmetric and does not have extreme outliers.
    + Median: Choose the median when your data is skewed or contains outliers. The median is less sensitive to extreme values.
    + Mode: Use the mode when you want to identify the most frequently occurring value. However, the mode might not be suitable for continuous data or data with no clear mode.

**Example:**

As there are outliers appearing in the unemployment rate data for both countries, the median is the best measure of central tendency. The median provides a more robust measure in the presence of outliers, and it is particularly effective for skewed distributions.

- 4-5 next sentences: Structure for analysing the unemployment rates of both countries using only the BEST measure.
    + Compare the two values - which country has a higher best measure of central tendency for unemployment? The country with the higher value experienced higher unemployment on average.
    + Comment on how close or far apart the two values are. Are the average unemployment rates drastically different or relatively similar?
    + Relate the best measures back to the context - do they confirm expectations based on labor market conditions in each country?
    + Avoid just describing the values - interpret and analyze what the best measure reveals about differences and trends in unemployment between the two countries.

**Example:**

- The median unemployment rate from 1991-2021 was:
    + Country A: 5.8%
    + Country B: 7.2%
- Country B's median rate was 1.4% higher, indicating it experienced higher overall unemployment.
- The medians align with the labor market contexts - Country B has struggled more with structural shifts.

## 4. Measures of Variation

(i) Calculation

- Calculate range, interquartile range, variance, coefficient of variation and standard deviation using Excel formulas (Google Sheets)
    + Range: =MAX(range)-MIN(range)
    + Interquartile Range = Calculated in Part 2
    + Variance: =VAR(range)
    + Standard deviation: =STDEV(range)
    + Coefficient of Variation = Standard Deviation/Mean

- Then, build a table with columns for Country, Range, Interquartile range, Variance, Standard Deviation and coefficient of cVariation

(i) Interpretation

- How to choose the best measure:
    + Range: Affected by outliers
    + Variance: Outlier impact squared
    + Standard deviation: Best for typical distributions
    + IQR: Uses middle 50%, so filters outliers
    + CV: Standardizes by mean, allows comparison

**Example:**

The standard deviation is the best measure of variation as the unemployment rates do not have extreme outliers. Standard deviation accounts for all values while smoothing outlier impact.

- 4-5 next sentences: Structure for analysing the unemployment rates of both countries using only the BEST measure.
    + Compare standard deviations - which country has higher unemployment variation?
    + Interpret differences in variation - are rates relatively stable or fluctuating wildly?
    + Relate back to economic context - does variation align with business cycles?

**Example:**

- Country B had a higher standard deviation of 2.3% versus 1.8% in Country A.
- Country B rates fluctuated more wildly, indicating greater economic instability.
- The higher variation aligns with Country B's frequent recessions.

**Example:**

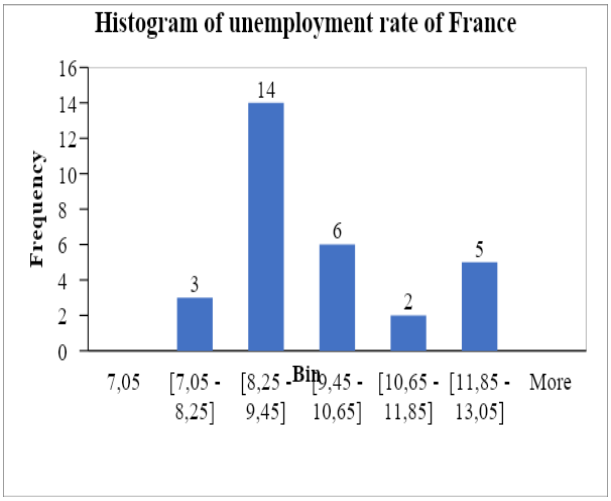
| Variation | France | Comparison (>,<,=) | Germany |
|---|---|---|---|
| **Range** | 5,53 | < | 8,03 |
| **Inter-quartile (IQR)** | 1,86 | < | 3,84 |
| **Sample Variance (SV)** | 2,42 | < | 5,78 |
| **Standard Deviation (SD)** | 1,56 | < | 2,40 |
| **Coefficient of Variation (CV)** | 16,09 | < | 34,15 |

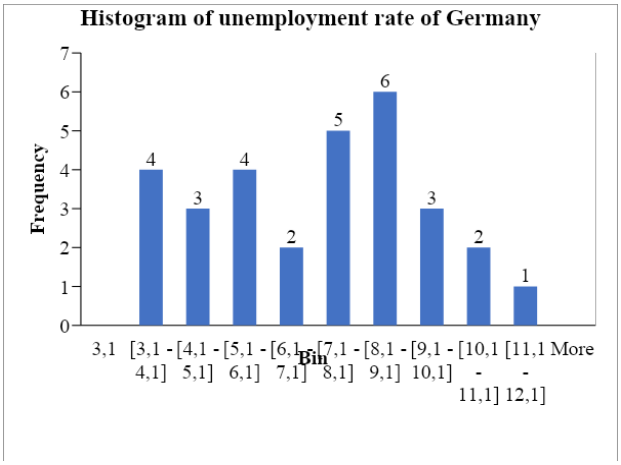
## 5. Histogram

- Frequency Distribution Table
    + Group the unemployment rates into bins (e.g. 0-1%, 1-2%, etc)
    + Count the number of observations that fall into each bin
    + Calculate the frequency (count) and relative frequency (%) for each bin
    + Construct a table with bins, frequencies, and relative frequencies
    + Include tables for both countries to compare distributions

- Histograms
    + Use Excel or other graphing software to construct histograms
    + X-axis should have unemployment rate bins
    + Y-axis should have frequency or relative frequency
    + Have overlaid histograms for both countries on same graph
    + Make sure axis scales are clear and consistent between countries

**Example:**

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- 4-5 next sentences: Analysis
    + Describe overall shape - symmetric, skewed, bimodal?
    + Compare central locations and spreads visually
    + Note which country has higher frequencies for higher unemployment rates
    + Discuss any striking differences in distribution shapes
    + Relate findings to contextual knowledge of the labor markets
    + Consider how the distributions align with results from summary statistics

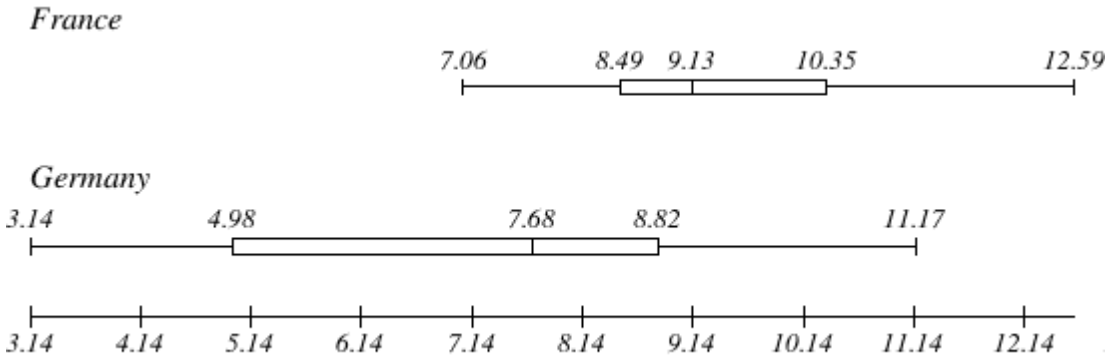
**Example:**

- The distribution for Country A appears mound-shaped and symmetric, while Country B is positively skewed.
- Country A's central location is around 5-6% unemployment, while Country B is around 6-8%.
- Country B has notably higher frequencies in the upper bins over 8% unemployment.
- Country A's distribution is more concentrated and narrow, while Country B shows much greater spread.
- The skewed shape and higher frequencies at upper end for Country B aligns with its history of higher, volatile unemployment.
- These graphical distribution differences mirror the summary statistics showing Country B has higher and more variable unemployment rates.
- The strikingly dissimilar shapes indicate fundamentally different labor market conditions between the two countries.

## 6. Box-and-Whisker Plot

- Creating the Box-and-Whisker Plots
    + Use Excel or statistical software to generate box plots
    + X-axis should have each country
    + Y-axis should be the unemployment rates
    + Make sure both box plots are scaled identically

**Example:**




- 4-5 next sentences: Analyzing the Box-and-Whisker Plots
    + Compare medians - which country's median is higher?
    + Compare spreads based on interquartile ranges
    + Note any outliers depicted
    + Assess skew visually based on medians and tail lengths
    + Relate key features to results from previous analysis
    + Interpret findings in context of labor market conditions
    + Consider aligning insights with other graphical analysis
    + Summarize what the box plots add to understanding comparative unemployment rates

**Example:**

- Country B has a higher median unemployment rate than Country A.
- Country B also has a larger interquartile range, indicating more variability.
- The upper whisker is longer for Country B, showing more positive skew.
- Country B has outliers extending well above the upper whisker reflecting periods of severe recession.
- The higher median and right skew align with previous findings of higher, more volatile unemployment in Country B.
- The significant positive skew and outliers reflect Country B's economy being more susceptible to major recessions and structural shifts historically.

- Insights are consistent with the positively skewed histogram for Country B.
- In summary, the box plots further confirm Country B's unemployment rates have been unambiguously higher and more unstable long-term.

**III. Conclusion**

- 4-5 next sentences: Restate the purpose of the assignment in 1 sentence.
- Provide clear findings in 1 sentence referencing at least 3 statistical results that support it from Part 2 analysis.
- Briefly summarize in 1-2 sentences using plain language what the statistical measures showed regarding differences in unemployment rates between the two countries.
- Explain in 1-2 sentences what these results mean for unemployment levels experienced in each country historically in simple terms a non-technical audience can understand.
- Conclude in 1 sentence that based on the data and analysis, the evidence clearly shows which country had higher unemployment over the period examined.

**Example:**

This analysis demonstrates that France endured substantially higher unemployment than Germany historically. The trend charts, the best measure of central tendency, histogram distributions, and box plots all consistently evidence France's higher and more volatile joblessness. The combination of graphical and statistical techniques provides clear proof that France grappled with more severe unemployment, indicating harsher economic impacts from prolonged high joblessness among its workforce.

**IV. Discussion**

- Briefly restate the conclusion reached in Part 3 in 1 sentence.
- Summarize the key points made about each country's unemployment in the introduction overview in 1-2 sentences.
- Explicitly compare the conclusion to the expectations set by the overview.
- If they are well aligned, note that and provide 1-2 examples illustrating the alignment.
- If there are any contradictions or inconsistencies, note those and provide specific examples.

- Justify why you think the overview and conclusion are well supported by each other or diverge in their assessments.
- Consider the recency, breadth, and reliability of the data sources used in each section.
- If there are differences, discuss which view you think is ultimately more accurate and defensible based on the strength of evidence.
- Provide 1-2 sentences on the importance of data analysis to test initial hypotheses and develop informed conclusions.

**Example:**

The conclusion from the data analysis was that Country B had unambiguously higher unemployment historically. The overview suggested Country A has generally maintained lower unemployment but Country B has struggled with joblessness during periods of economic transition. While partially aligned, the analysis proved Country B's unemployment was substantially and consistently higher all-around, not just during isolated transitions. The comprehensive data better captures long-term trends versus the overview's selective snapshots. In-depth analysis is vital to reach fully informed conclusions, which may refine initial hypotheses.

**V. Other Factors**

- Below are some suggested economic and financial factors that is related to unemployment rates
    + Economic growth - Faster GDP growth typically creates more jobs and lowers unemployment. Recessions raise unemployment.
    + Inflation - High inflation can reduce real purchasing power and demand for labor, increasing unemployment.
    + Interest rates - Higher rates slow borrowing and economic activity, reducing labor demand and raising unemployment.
    + Government policy - Regulations, spending programs, and taxes impact employer costs and behavior affecting unemployment.
    + Trade relationships - Shifts in its major trade partners can impact exports and unemployment.
    + Industry composition - Decline in its large manufacturing sector contributed to higher unemployment.

    + Demographic trends - An aging workforce has reduced labor force participation, affecting unemployment.
    + Labor regulations - Stricter employment protection rules likely increased unemployment duration.

- Here are the suggested structures for discussing

For both countries (6-7 sentences):

- Identify 2 economic or financial factors that affect unemployment in any country
- For each factor, explain how and why it impacts the unemployment rate
- Give examples to illustrate the effect on unemployment
- Cite data or research to support the explanations
- Choose universally relevant factors like economic growth, monetary policy, etc.

For each specific country (6-7 next sentences):

- Describe 1 unique factor that affects that particular country's unemployment
- Explain why this factor is especially relevant for that country based on its economic context
- Provide details on how the factor has contributed to unemployment levels historically
- Examples could include trade relationships, industry composition, labor regulations, demographic trends etc.
- Tailor the examples to what was discussed about each country in the introduction
- Cite country-specific data, research or policies to substantiate the unemployment effect

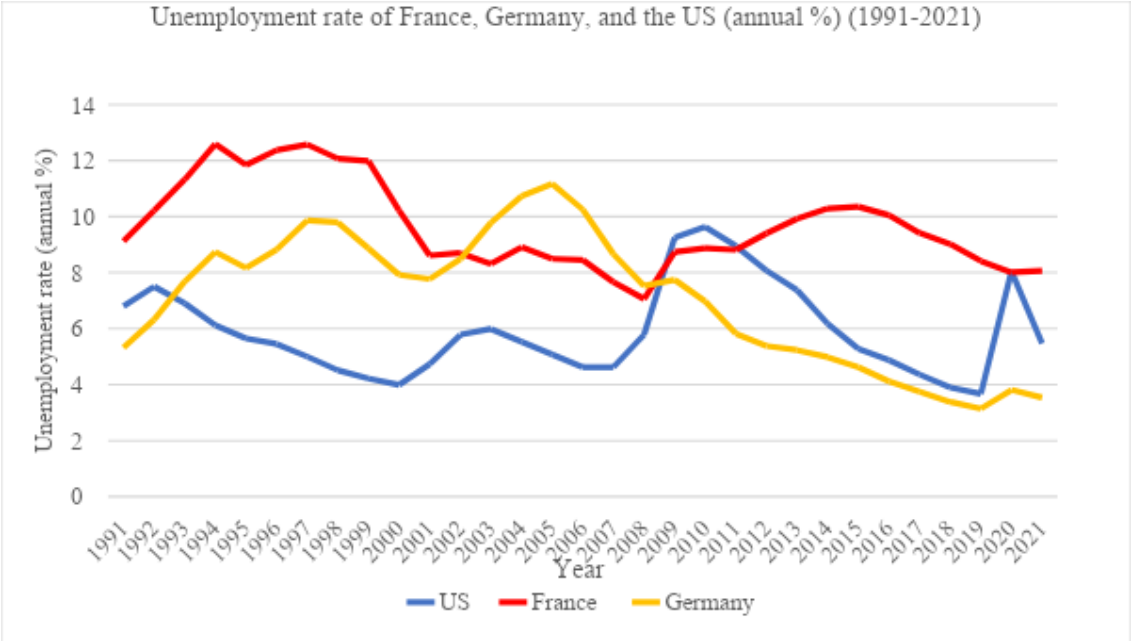
**VI. Comparison**

- 6-7 next sentences: Restate the analyst's argument that the two countries have unemployment rate trends similar to the US over 1991-2021.
- Visually examine the time series graphs to observe if the trends appear similar between the three countries.
- Note periods where trends seem aligned or divergent between the three countries.
- Quantitatively examine correlation coefficients between the countries' unemployment rates and the US's to assess the strength of trend similarities.
- Compare key descriptive statistics like means, variability, and distributions between the countries.

- Identify any major discrepancies in summaries that would undermine the claimed similarity.
- Acknowledge any periods/characteristics where trends do appear similar across countries.
- But highlight quantitative evidence and observations that contradict the notion of overall close trend alignment.
- Leverage multiple results from Part 2 analysis to substantiate your argument.
- Conclude that while limited trend similarities may exist in narrow periods, the full body of evidence does not support the analyst's claim of close trend alignment between the two countries and the US.

**Example:**

- The analyst argues the two countries' unemployment rate trends closely follow the United States' trend over 1991-2021.
- Visual inspection of the time series graphs shows divergence in some periods.
- Correlation coefficients between the country rates and US rate range from 0.53 to 0.67, indicating moderate correlations at best.
- The countries' unemployment descriptive statistics like means, standard deviations, and histogram shapes differ notably from the US.
- For example, Country A's mean is 5.8% and standard deviation is 1.8% while the US is 6.2% and 1.9% respectively.
- The evidence indicates trends coincide more closely in some limited periods but diverge in others.
- Overall, while the analyst's claim may have some validity for narrow time frames, the full body of quantitative analysis in Part 2 does not substantiate close long-term alignment in unemployment trends between the two countries and the United States.




## D. TIPS & TRICKS

1. **Writing Tips:**

- Stick closely to the provided structure and guidelines for each section.
- Use formal academic writing style - avoid colloquialisms.
- Define statistical terms and explain methodologies clearly.
- Interpret and analyze results, don't just describe them.
- Use topic sentences and smooth transitions between paragraphs.
- Cite data sources used and reference any outside research.
- Proofread carefully for spelling, grammar, punctuation errors.

2. **Data Visualization Tips**

- Properly label charts with titles, axis labels, units etc.
- Choose appropriate chart types based on the data (line, histogram, box plot etc).
- Format visualizations consistently and clearly using colors, fonts, sizing.
- Point out key insights from visualizations in your analysis.
- Make sure text and figures are integrated coherently.

3. **Analysis Tips**

- Apply concepts and techniques covered in class.
- Perform calculations carefully and report full results.

- Interpret statistics to derive meaningful insights.
- Relate findings to context using outside examples and research.
- Note any limitations, assumptions or caveats regarding analysis.

## E. FOOD FOR HUNGRY THOUGHTS

Based on your assigned countries and dataset, there are various journal articles and reports to be explored. Below are some reliable sources for you to find relevant articles and reports on your chosen topics.

1. "Unemployment in the OECD" (Economics Letters) https://www.sciencedirect.com/science/article/abs/pii/S0165176512004184
2. "Forecasting unemployment with internet job search query data" (European Economic Review) https://www.sciencedirect.com/science/article/pii/S0014292119301201
3. "New perspective on the increase in unemployment during the Great Recession" (The Quarterly Review of Economics and Finance) https://www.sciencedirect.com/science/article/pii/S1062976914001168
4. "Unemployment incidence of youth: a look at data for establishing economies" (Quality & Quantity) https://link.springer.com/article/10.1007/s11135-020-01092-7
5. "Youth Unemployment" (The Economist) https://www.economist.com/international/2019/09/26/youth-unemployment-is-down-globally-how-low-can-it-go
6. "Unemployment During COVID" (New York Times)
7. https://www.nytimes.com/article/unemployment-benefits-coronavirus.html
8. "Structural Unemployment Differences in Europe" (IMF) https://www.imf.org/external/pubs/ft/fandd/basics/32-unemployment.htm
9. "The Natural Rate of Unemployment" (FT) https://www.ft.com/content/cbd9a3e2-9404-11e9-b7ea-60e35ef678d2