***<Understanding Canada's Labor Landscape: An Analysis of Labor Characteristics >***

**<3/29/2024>**

*Prepared by*

<Vijay Laxmi Tyagi>

**<A01317295>**

**Executive Summary:** This project aims to analyze labor characteristics data in Canada using Tableau, focusing on key metrics such as employment rate, unemployment rate, and workforce composition. Through visualizations and analysis, the project highlights trends, disparities, and insights into Canada's labor market dynamics.

**Introduction:** As a data analyst, I embarked on this project to gain insights into the labor landscape of Canada and to provide valuable information for policymakers, researchers, and job seekers interested in labor economics. The initial questions driving this analysis revolve around understanding employment trends across different demographics, geographical regions, and industries.

I dive into Canada's job scene using data from Statistics Canada. This data tells us about jobs and education across the country. We're looking at things like where people work, how old they are, when they got their education, and if they're male or female. Our goal is to find out important trends and connections that affect jobs in Canada.

Data Sources: I’m using two main sets of data from Statistics Canada. The first one tells us about jobs - who's working, where, and what kind of work they're doing. The second set is all about education - who has what level of education, what they studied, and when they finished school.

Labour Characteristics Data: This data gives us a big picture of Canada's workforce. It tells us things like where people live, how old they are, and if they're working or not. We can also see if they work full-time or part-time, and what industry they work in. This helps us understand how jobs are spread out across the country and who's working where.

Education Attainment Data: This data helps us understand people's education levels. We can see who finished high school, who went to college or university, and what they studied. It helps us see if education affects people's job opportunities and how much money they make.

Analysis Approach: I’ve used Tableau software to look at all this data. I’ve made charts and graphs to help us see trends and patterns. By playing around with the data, I try to answer questions like: Do more educated people get better jobs? Are there more jobs in certain areas? And how does this change over time?

**Project Description:** The choice of labor characteristics data in Canada stems from its significance in understanding economic health and societal well-being. Analyzing this data can shed light on employment patterns, workforce participation rates, and challenges faced by different segments of the population. The project aims to uncover underlying trends and factors influencing labor dynamics in Canada.

**Data Source and Preparation:** The data used in this analysis originates from reputable source Statistics Canada. The preparation process involved data cleaning and transformation to ensure accuracy and consistency.

**Data Cleaning Steps in Tableau Prep:**

**Removing Punctuations and Numbers from North American Industry Classification System (NAICS) Attribute:**

To ensure consistency and readability in the NAICS attribute, all punctuations and numerical characters were removed using Tableau Prep's cleaning tools. This step helped standardize the format of NAICS codes across the dataset.

**Changing Data Type of Geo Attribute:**

By changing the data type of the Geo attribute to state/region identifiers and generating longitude and latitude coordinates, the dataset was effectively prepared for geographical mapping visualization in Tableau.

**Changing Data Type of Date Attribute:**

The Date attribute's data type was modified to ensure uniformity and compatibility with subsequent analysis. This step involved converting the Date attribute to the appropriate date format using Tableau Prep's data type conversion functionality.

**Removing Unnecessary Attributes:**

Irrelevant or redundant attributes were identified and removed from the dataset to streamline the analysis process and reduce clutter. This step helped focus on the essential variables required for the analysis.

Pivoting Labour Force Characteristics Data with Values:

**Pivot:-**

The Labour Force Characteristics data was pivoted to restructure the dataset and transform its format. This allowed for easier analysis and visualization of labour force attributes by consolidating multiple rows into columns. Labour force characteristics like employment, unemployment, part-time employment, full time employment etc were in rows I pivoted that against values.

**Joining Two Tables: Labour Characteristics and Education Attainment:**

Data from two separate tables, one containing labour characteristics and the other education attainment information, were joined using Tableau Prep. This integration facilitated comprehensive analysis by combining relevant attributes from both datasets.

By implementing these data cleaning steps in Tableau Prep, the dataset was prepared for analysis, ensuring data accuracy, consistency, and suitability for further exploration and visualization in Tableau Desktop.

**Visualizations and Analysis:** The project utilizes various Tableau visualizations to present key findings and insights. Visualizations include line charts showing employment and unemployment trends over time, stacked bar charts illustrating workforce composition by demographics and industries, and geographical maps depicting labor market disparities across regions. Analysis reveals notable disparities in employment rates among different demographic groups and regions, as well as shifts in workforce composition over time.

Screenshots for worksheets is as follows:-

A graph showing different colored lines

Description automatically generated

A graph showing different colored lines

Description automatically generated

A map of the united states

Description automatically generated

A map of canada with different states

Description automatically generated

A graph showing the number of employment

Description automatically generated

A screen shot of a chart

Description automatically generated

A screenshot of a graph

Description automatically generated

A screen shot of a graph

Description automatically generated

A graph of a number of different colored numbers

Description automatically generated with medium confidence

A graph of percentages on a white background

Description automatically generated

A map of the united states with percentages

Description automatically generated

A map of the united states with percentages

Description automatically generated

**Screenshots for Dashboards is as follows:-**

**Employment/Unemployment Rate Dashboard:-**

This dashboard presents a comprehensive geographical visualization and trend analysis based on Employment and Unemployment Rates. It combines the power of mapping to provide spatial insights with the analytical depth of trend line projections, offering a dual perspective on labor market dynamics.A screenshot of a computer screen

Description automatically generated

**Employment/ Unemployment Rate Comparison with Previous Year:-**

This dashboard is dedicated to comparing current Employment and Unemployment Rates with those of the previous year, providing a clear picture of labor market trends over time.

A screenshot of a graph

Description automatically generated

**Male Vs. Female Employment/Unemployment Rate Dashboard:-**

The dashboard visually segments data by gender, enabling users to easily compare employment and unemployment rates between males and females within the same geographic region.

A screenshot of a map

Description automatically generated

**Employment/ Unemployment Rate as per North American Industries:-**

Utilizes the NAICS framework to segment the labor market into distinct industries, enabling users to assess and compare employment and unemployment rates across sectors.

A screenshot of a graph

Description automatically generated

**Employment Rate as per Education:-**

This dashboard categorizes the population by various levels of educational attainment, such as above bachelor’s degree, Bachelor’s degree, high school graduate, University degrees etc. offering insights into employment rates associated with each educational level.

A screenshot of a graph

Description automatically generated

**Employment/Unemployment Rate Forecast:-**

Utilizing historical data on employment and unemployment rates, I have conducted a forecast for the upcoming two years.

A graph showing the growth of unemployment rate

Description automatically generated

A graph showing the number of employment rate

Description automatically generated

**Tableau Components:** Tableau features incorporated in the project include parameter controls for dynamic filtering, dashboard actions for interactivity between visualizations, calculated fields for customized metrics, and annotations for highlighting key insights.

**Recommendations/Conclusions:**

**Analysis of labor characteristics data in Canada reveals several notable trends:**

1. **Gender Disparity in Employment:** The analysis indicates a significant gender gap in employment, with a higher proportion of males being employed compared to females. This observation underscores existing gender disparities within the labor market, highlighting the need for targeted interventions to promote gender equity in employment opportunities.
2. **Impact of COVID-19 on Unemployment**: In 2020, there were a lot of people who couldn't find jobs, mainly because of the COVID-19 pandemic. The pandemic caused a lot of problems for businesses, with many of them having to shut down temporarily or even permanently. This meant that a lot of people lost their jobs, which made the unemployment rate go up by a lot.
3. **COVID-19's Influence on Employment Rates:** On the other hand, in 2021, fewer people were able to find jobs compared to before. This was because the effects of the pandemic were still lingering, making it hard for businesses to hire new workers. Even though the economy was slowly getting better, it was still tough for many people to find work, which meant that the overall number of people with jobs went down.
4. **Sectoral Employment Patterns:** Analysis of employment by industry sectors reveals that service-producing sectors emerged as the primary providers of employment opportunities in Canada.
5. **Least Employed Sector:** In contrast, the fishing, hunting, and trapping sector exhibited the lowest levels of employment.

**Additional Notes:** This project report serves as a comprehensive overview of the analysis conducted on labor characteristics data in Canada. It provides valuable insights into the country's labor market dynamics and highlights the significance of leveraging data analytics tools such as Tableau for informed decision-making.

**References:**

<https://www.statcan.gc.ca/>

Youtube- Sqlbelle