

# Canada's Labour Market Insights by Industry

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## Project Overview

This project provides data-driven insights into Canada's labour market trends, focusing on industry-specific patterns with optional occupation filters. Through interactive visualizations, it enables job seekers and professionals to make informed career decisions by analysing key metrics such as median wages, wage growth trends, job tenure, and union coverage rates.

## Business Case

- **Challenge:** Job seekers face difficulties due to limited access to actionable labour market data.
- **Solution:** By analysing reliable data from Statistics Canada's Labour Force Survey (LFS) (Jan. 2020 – Sep. 2024), this project delivers clear insights into wage distribution, employment stability, and regional variations.
- **Value**
  - **Integrated filtering** enables users to drill down by occupation or region, setting this dashboard apart from general labour market tools.
  - Provides **reliable, data-driven insights** to help job seekers identify high-paying industries, assess employment stability, and track trends over time.
  - **Streamlines career planning** by reducing research time and offering actionable insights tailored to individual needs.

## Data Analysis and Visualization Process

### 1. Data Collection:

- Source: Labour Force Survey (LFS) by Statistics Canada (2020–2024).
- LFS was selected for its high credibility as an official dataset compiled by the Canadian government and for its microdata format, which allows for granular and detailed analysis.

### 2. Exploratory Data Analysis (EDA):

- Conducted using Python to detect outliers and anomalous distributions.
- Median values were prioritized over mean values for all numerical variables except job tenure, due to the presence of significant outliers.

### 3. Data Preprocessing:

- PostgreSQL was utilized for data preprocessing, including integration, column type conversions, and filtering.
- Focused on permanent, full-time employment data.
- Removed columns related to unemployment, worker details, and other regions to streamline the dataset.

### 4. Interactive Dashboard Design (Tableau):

- Key metrics visualized
  - Median Hourly Wage by Industry
  - Wage Growth Trends
  - Median Hourly Wage by Major Cities (CMAs)
  - Job Tenure by Industry
  - Union Coverage Rates by Industry
- Users can filter data by industry, occupation, and month.

## Key Insights

- **Best Overall Industry:** Utilities
  - Highest Median Wage City: Toronto
- **Top Industries Based on Wage Levels and Growth:** Mining, Professional Services
  - Highest Median Wage City: Quebec City (Mining), Ottawa (Professional Services)
- **Best Industries for Job Stability:** Public Administration, Education Services
  - Highest Median Wage City: Ottawa (Public Administration, Education Services)

## Technical Stack

- Data Analysis: Python
- Database Management: PostgreSQL

- Visualization: Tableau

## Repository Information

**GitHub:** <https://github.com/k-ella/MiraKim-portfolio/tree/main/1-canada-labour-market>

### Files:

- canada\_labour\_market\_eda.ipynb: Python script for Exploratory Data Analysis (EDA).
- canada-labour-market-sql-query.sql: SQL queries for data preprocessing.
- canada-labour-market-tableau-dashboard.PNG: Tableau dashboard visualizing industry and occupation insights.

## Data Licence

- **Data Source:** Statistics Canada - Labour Force Survey (Jan. 2020 – Sep. 2024, [Labour Force Survey: Public Use Microdata File](#)).
- **Usage:** Educational and personal use only under Statistics Canada's Open Licence Agreement.