

Vanier College

Continuing Education

Software Development: Secure Desktop, Mobile and Web Applications

Do Two Incomes Buy What One Did? The Purchasing Power Shift in Canada

420-960-VA Section 93428

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Capstone Project

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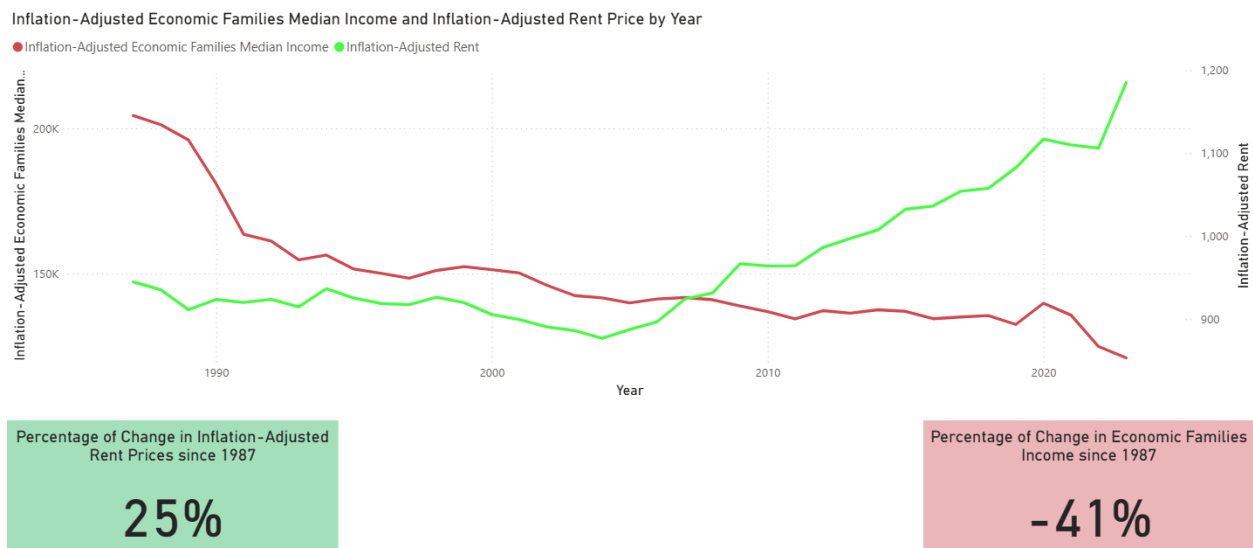
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Summary

This project examines how purchasing power and affordability in Canada have evolved from 1987 to 2023, focusing on real income, housing costs, and gender income disparities. Using data from Statistics Canada, income and rent values were inflation-adjusted to 2023 dollars using the Consumer Price Index (CPI).

The findings reveal a substantial erosion in purchasing power. While average rent nearly **tripled in nominal terms** (from approximately \$400 to \$1,100), after adjusting for inflation, this equates to only a **25% real increase**. In contrast, **real median single income decreased by 41%** over the same period, meaning housing costs grew faster than earnings even after accounting for inflation.



As a result, the share of income spent on rent rose from **15% in 1987 to 32% in 2023** for single earners. A dual-income household in 2023 spends around **12%** of its combined income on rent - nearly equivalent to what a single income could afford in 1987. These results support the often-cited claim that “two incomes today buy what one used to.”

Gender analysis from 2000 - 2023 indicates that while the **gender pay gap has narrowed**, women still earned roughly **26% less than men** in 2023. This persistent gap suggests ongoing systemic inequality in earnings, despite some progress.

Although the original scope included mental health and resilience factors, the analysis currently focuses on financial stress indicators. Future expansion will link these affordability trends with wellbeing and resilience metrics to explore the psychological dimension of economic strain.

Introduction

The goal of this capstone project is to quantify long-term affordability changes in Canada and assess how economic pressures - particularly rising housing costs and stagnating incomes - affect financial stress. In the future, the study will also expand on gendered resilience, acknowledging that women may exhibit higher self-reported job satisfaction despite lower pay and higher unpaid workload burdens.

Due to time and data limitations, this version focuses on quantifying the material side of financial stress: the relationship between **income, rent, and inflation**, along with **gender wage disparities**. The wellbeing and gendered resilience components are identified as an avenue for future research.

Data and Methods

Data Sources

- **Income statistics by economic family type and income source (1976 - 2023)** - Statistics Canada Table 11-10-0190-01 (formerly CANSIM 206-0021)
- **Selected income characteristics of census families by family type (2000 - 2023)** - Statistics Canada Table 11-10-0009-01 (formerly CANSIM 111-0009)
- **Canada Mortgage and Housing Corporation, average rents for areas with a population of 10,000 and over (1987 - 2023)** - Statistics Canada Table: 34-10-0133-01 (formerly CANSIM 027-0040)

- **Consumer Price Index, annual average, not seasonally adjusted** - Statistics Canada Table: 18-10-0005-01 (formerly CANSIM 326-0021)

Processing and Cleaning

Data cleaning and inflation adjustment were completed in **Python (pandas)**.

- Retained and renamed relevant columns for clarity (e.g., *REF_DATE* → *year*).
- Pivoted tables for easier year-over-year analysis.
- Merged income, rent, and CPI datasets to compute **real (2023-adjusted)** values.
- Calculated **real income**, **real rent**, and **rent-to-income ratios** by year.

Power BI Visualization

Data was imported into **Power BI** for dashboard creation. Six pages were developed:

- Page 1: 1987 vs 2023 summary cards (real income, real rent, rent-to-income ratios).
- Page 2: Inflation-adjusted and nominal median economic families income over the years.
- Page 3: Male to Female Income Ratio.
- Page 4: Wage gap trends (line chart using gendered income data).
- Page 5: 1987–2023 income & rent trends (inflation-adjusted line graphs).
- Page 6: Social context interpretation (summary with key numbers).

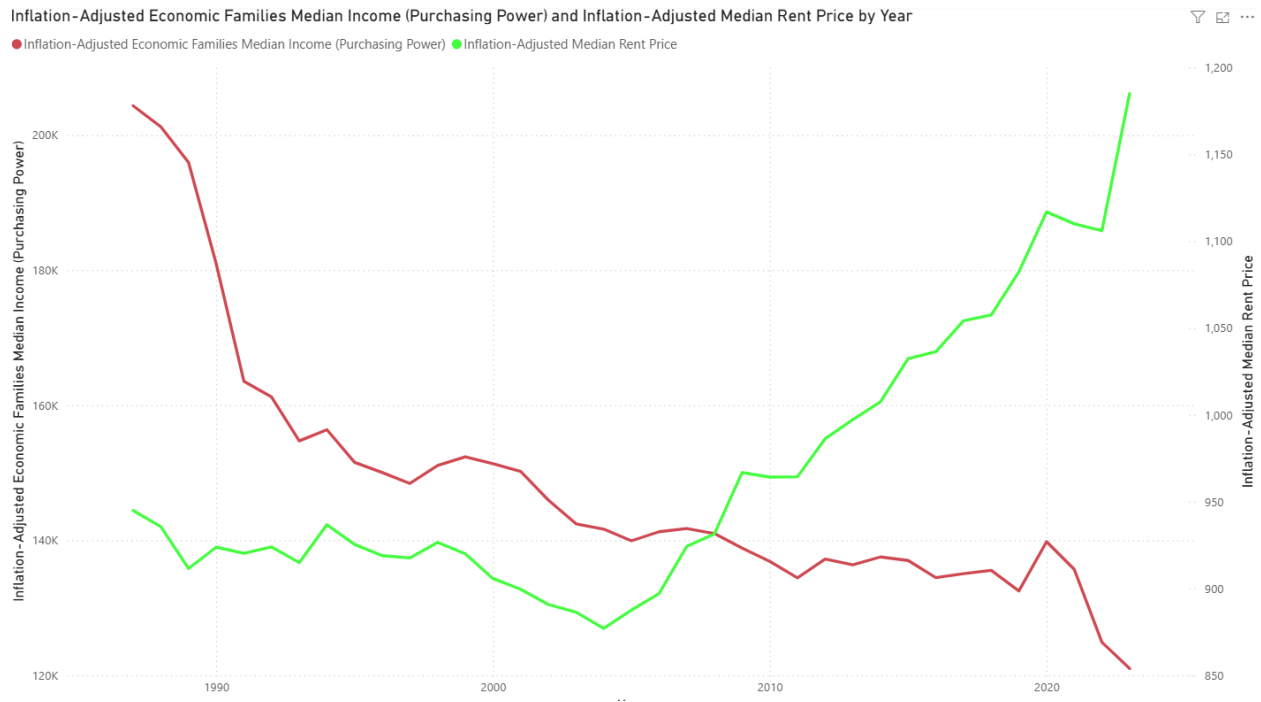
All dashboards were designed for interpretability and professional presentation. New calculated measures (such as `PctChangeRealIncomeSince1987`) were created in DAX to support the analysis.

Findings

Income and Rent Trends

- **Nominal terms:** Since 1987, rent prices **nearly tripled** (from \$400 to \$1,100) while income only increased by about **36%** (from \$89,000 to \$121,000), illustrating that prices rose faster than earnings.

- **Real (CPI-adjusted) terms:** Rent increased by **25%**, but **real income fell by 41%** between 1987 and 2023.



- **Result:** The purchasing power of single earners has significantly eroded over the past three decades.

Affordability Ratios

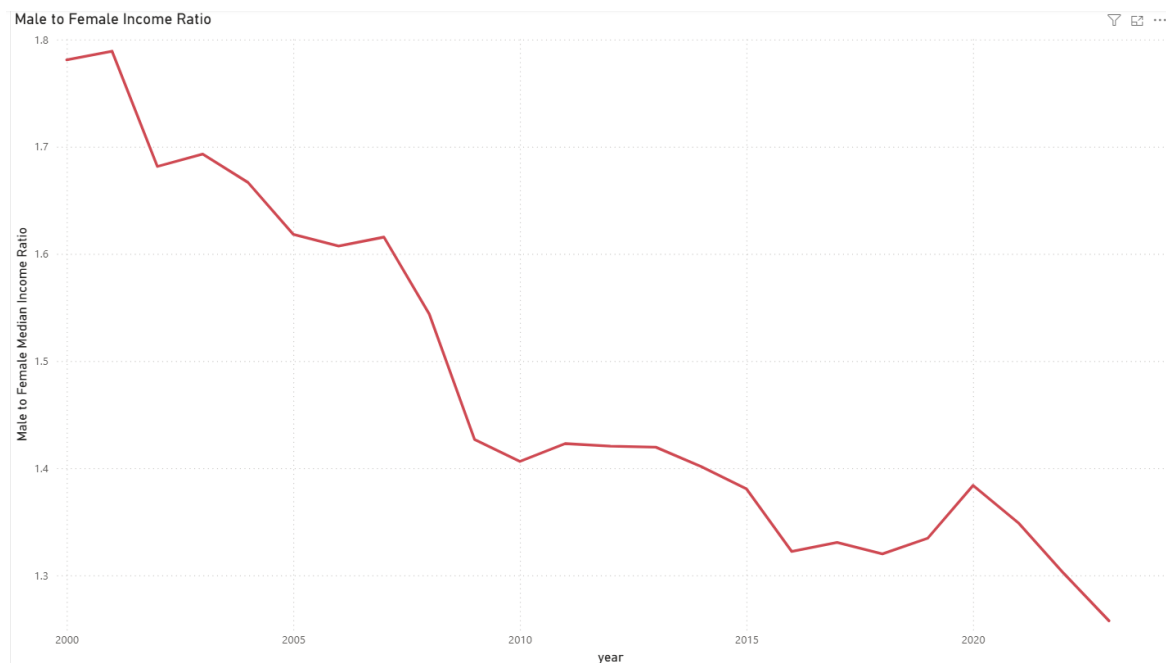
- In **1987**, single earners spent about **15%** of their income on rent (based on median real income).
- In **2023**, that share rose to **32%**, meaning over one-third of total earnings are now allocated to housing.
- For **dual-income households**, the ratio is approximately **12%**, similar to what single earners experienced in 1987 - underscoring how two incomes are now required to sustain a comparable standard of living.

| | | |
|--|---|-----------------------------------|
| Inflation-Adjusted Median Single Income in 1987 (2023 \$ value) | Inflation-Adjusted Annual Rent in 1987 (2023 \$ value) | Rent as % of Single Income (1987) |
| 75K | 11K | 15% |
| Inflation-Adjusted Median Single Income in 2023 (2023 \$ value) | Inflation-Adjusted Annual Rent in 2023 (2023 \$ value) | Rent as % of Single Income (2023) |
| 44K | 14K | 32% |
| Inflation-Adjusted Median Double Income in 2023 (2023 \$ value) | Inflation-Adjusted Annual Rent in 2023 (2023 \$ value) | Rent as % of Double Income (2023) |
| 121K | 14K | 12% |

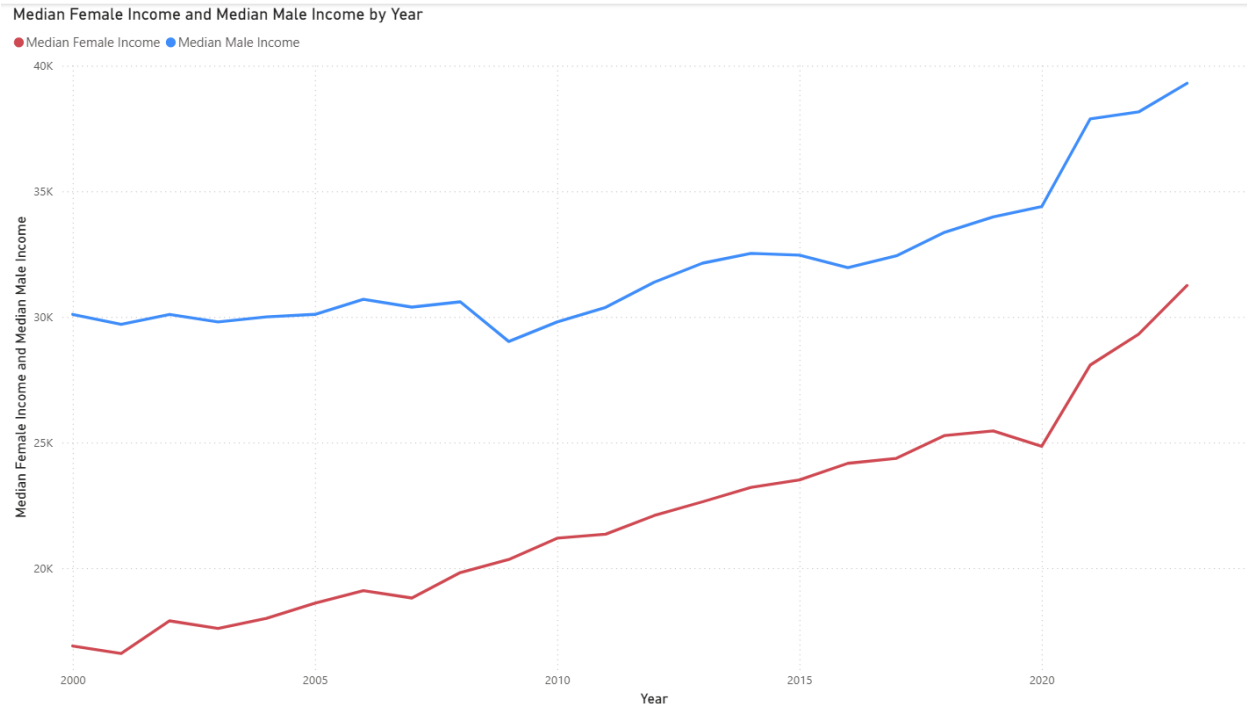
- These ratios are based on **total income**, implying that the **actual burden is even higher** once taxes are considered.

Gender Wage Gap

- From **2000 - 2023**, female median income grew faster than male income, narrowing the gap but not eliminating it.



- In 2023, women earned about **74 cents per dollar** earned by men - a **26% pay gap**.
- This persistent difference highlights ongoing structural inequality, even as affordability pressures affect all households.

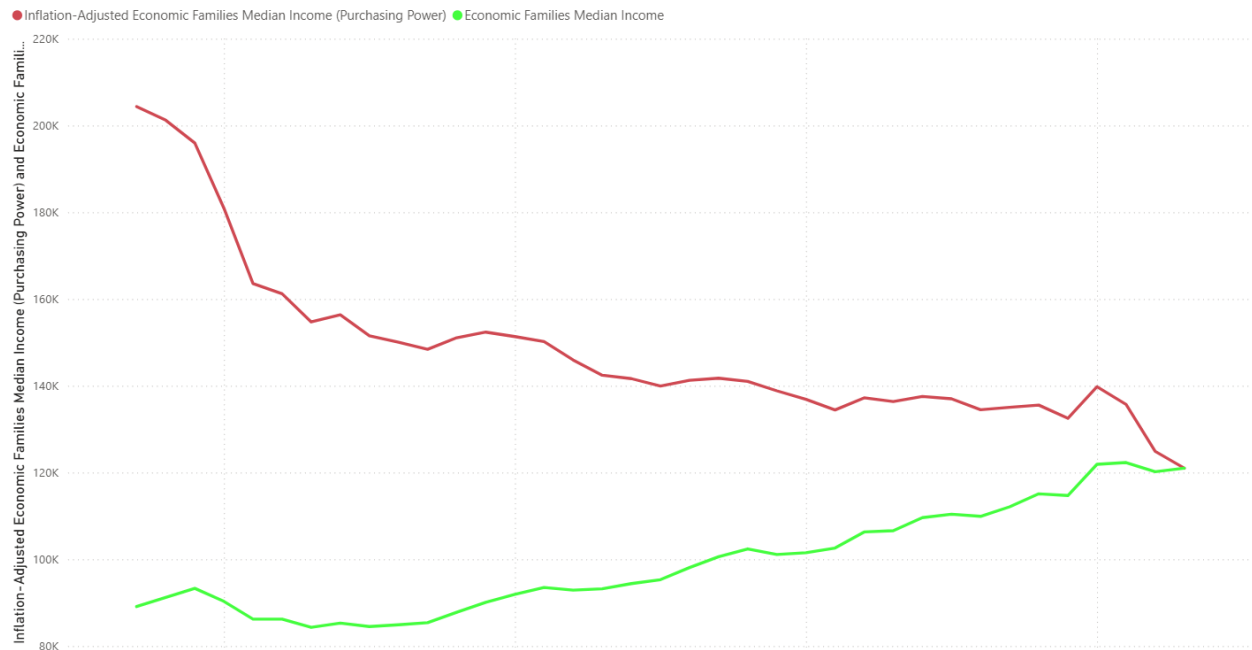


Discussion

The findings clearly demonstrate a **decoupling of wages and living costs** in Canada over the last four decades. Despite rising nominal incomes, inflation-adjusted figures reveal declining purchasing power.

From an analytical perspective, the project demonstrates the importance of **distinguishing nominal vs. real values**. Without CPI adjustment, the data would suggest growth in income. Once adjusted, however, it becomes evident that real income has shrunk while essential costs have risen.

Inflation-Adjusted Economic Families Median Income (Purchasing Power) and Economic Families Median Income by Year



Conclusion and Next Steps

This analysis provides quantitative evidence of declining affordability in Canada from 1987–2023. Key insights include:

- Rent prices have **tripled nominally** but **increased 25% in real terms**.
- Median single-earner income has **declined 41% in real terms**.
- Rent burden for single earners increased from **15% to 32%** of income.
- **Dual incomes now nearly replicate the purchasing power of one income in 1987.**
- The **gender wage gap** remains significant at **26%**, underscoring persistent inequality.

Future extensions of this project will incorporate **mental health, wellbeing, and resilience indicators**, linking financial stress to psychological outcomes.

Tools and Skills Demonstrated

- **Python:** Data cleaning, merging, and CPI adjustment using pandas and matplotlib.
- **Power BI:** Dashboard design, DAX calculations, and visualization.
- **Data Analysis:** Trend comparison, ratio computation, inflation adjustment, and gender gap evaluation.
- **Communication:** Translating statistical evidence into policy-relevant insights.

References

- Statistics Canada. (2024). *Income statistics by economic family type and income source, 1976–2023* (Table 11-10-0190-01; formerly CANSIM 206-0021).
- Statistics Canada. (2024). *Selected income characteristics of census families by family type, 2000–2023* (Table 11-10-0009-01; formerly CANSIM 111-0009).
- Statistics Canada; Canada Mortgage and Housing Corporation. (2024). *Average rents for areas with a population of 10,000 and over, 1987–2023* (Table 34-10-0133-01; formerly CANSIM 027-0040).
- Statistics Canada. (2024). *Consumer Price Index, annual average, not seasonally adjusted* (Table 18-10-0005-01; formerly CANSIM 326-0021).

GITHUB

<https://github.com/cecurakristina/canadian-housing-and-income-trends.git>