Inflation's Impact on Grocery Stores: Can household groceries track inflation?*

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Inflation something.

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*Code supporting this analysis is available at: https://github.com/seb646/groceries-and-inflation

1 Introduction

Inflation is the pervasive and sustained increase in the cost of goods and services, and it has become a significant concern for economies worldwide. Inflation is most often observed as an impact on a currency's purchasing power, but it also has far-reaching effects on the affordability of household goods. In Canada, the inflation rate is tracked by the consumer price index, or CPI, which is an amalgamation of the cost of goods and services around the country. For example, if the price of energy increases, so too does the CPI, which in turn increases the rate of inflation. If the inflation rate becomes too high (or too low), it can indicate serious problems for a country's economy and has lasting financial implications for the country's population.

In 2022, Canada's average rate of inflation was 6.7% – a record high not seen since the 1980s. This reflected a rise in the price of goods and services, like energy and food, for Canadians. One of the areas where inflation rates are arguably most observable is daily grocery store purchases. In fact, one study shows that "household-level grocery price changes significantly shape[s] inflation expectations" (). It is important to note that the researchers specify expectations, rather than reality, as inflation is tracked by the larger CPI, which includes housing, energy, clothing, and other items in addition to food. Still, this perception influences how Canadians understand their country's economic situation. As food is a factor considered by the CPI, it is logical to draw a connection between the two factors.

This paper investigates whether grocery store items can track Canada's inflation rate. It uses data from Statistics Canada to measure the 5-year cost history of common grocery store items, including chicken breasts, bacon, milk, eggs, frozen peas, and pasta sauce. It also uses data from the Bank of Canada to graph the yearly averages of inflation rates from 2017 to 2022.By examining the percent increases in the cost of these food items, it explores the existence of a relationship between the cost of food and inflation to determine whether food is a useful indicator in tracking inflation.

Preliminary results indicate that food is not a reliable metric for tracking inflation, as the cost of food increased at rates beyond inflation during the observed period. While food cost certainly plays a role in the country's overall CPI and inflation rate. Canadians should not solely depend on the cost of food to assess the country's inflation rate.

2 Measurement

3 Inflation Rates and Grocery Products

3.1 Chicken Breasts (per 3 kilograms)

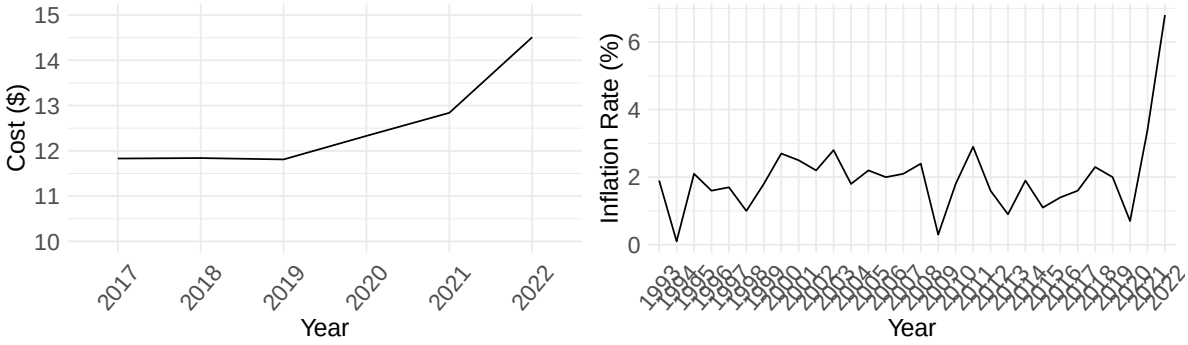

Figure 1: Inflation Rate vs. Cost of Chicken Breasts (since 2017)

Year	Chicken Cost	Chicken Cost Rate	Inflation Rate
2018	$11.84	0.08%	2.3%
2019	$11.81	-0.25%	2%
2020	$12.33	4.4%	0.7%
2021	$12.84	4.14%	3.4%
2022	$14.51	13.01%	6.8%

Figure 2: Inflation Rate vs. Price of Chicken Breasts (since 2017)

3.2 Bacon (per 500 grams)

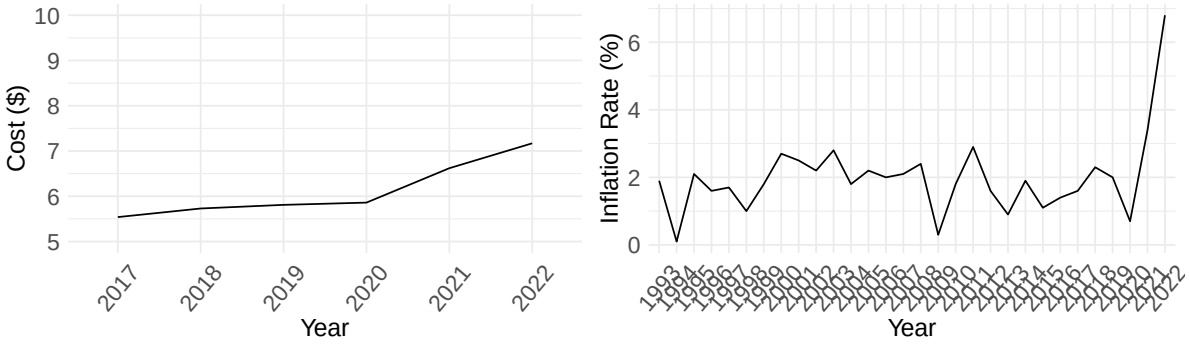

Figure 3: Inflation Rate vs. Cost of Bacon (since 2017)

Year	Bacon Cost	Bacon Cost Rate	Inflation Rate
2018	$5.73	3.43%	2.3%
2019	$5.81	1.4%	2%
2020	$5.86	0.86%	0.7%
2021	$6.62	12.97%	3.4%
2022	$7.17	8.31%	6.8%

Figure 4: Inflation Rate vs. Cost of Bacon (since 2017)

3.3 Milk (per 2 litres)

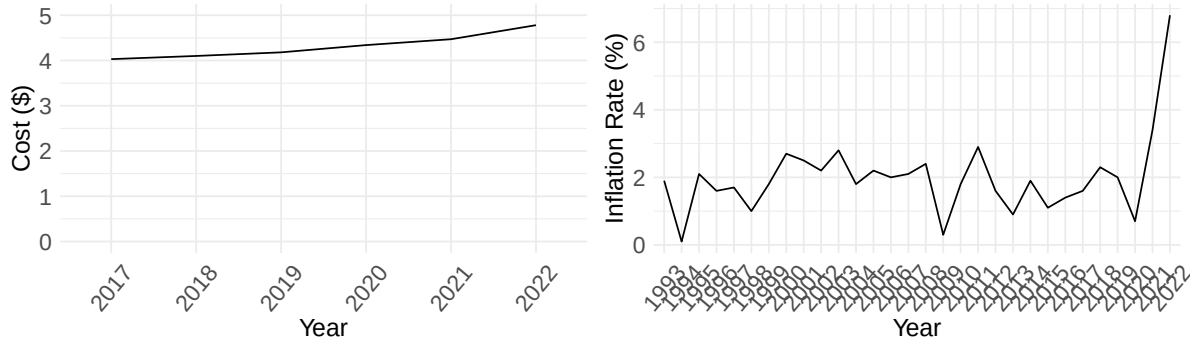

Figure 5: Inflation Rate vs. Cost of Milk (since 2017)

Year	Milk Cost	Milk Cost Rate	Inflation Rate
2018	$4.1	1.74%	2.3%
2019	$4.18	1.95%	2%
2020	$4.34	3.83%	0.7%
2021	$4.47	3%	3.4%
2022	$4.78	6.94%	6.8%

Figure 6: Inflation Rate vs. Cost of Milk (since 2017)

3.4 Eggs (per 1 dozen)

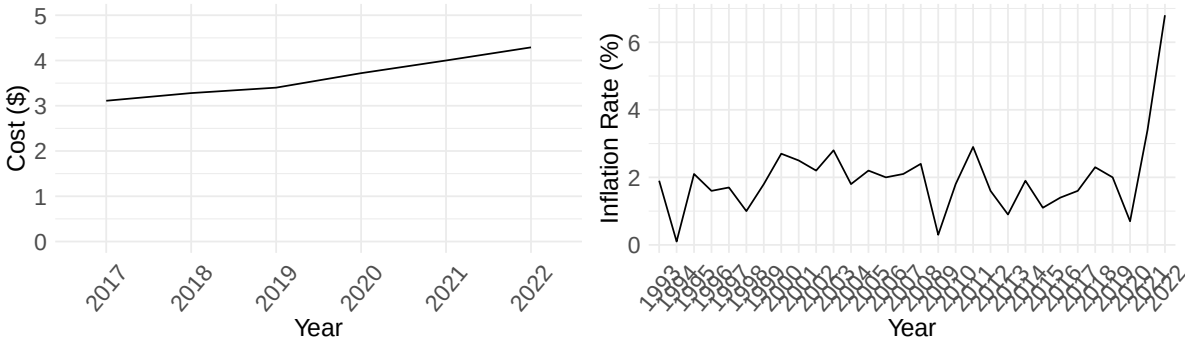

Figure 7: Inflation Rate vs. Cost of Eggs (since 2017)

Year	Eggs Cost	Eggs Cost Rate	Inflation Rate
2018	$3.28	5.47%	2.3%
2019	$3.4	3.66%	2%
2020	$3.72	9.41%	0.7%
2021	$4	7.53%	3.4%
2022	$4.29	7.25%	6.8%

Figure 8: Inflation Rate vs. Cost of Eggs (since 2017)

3.5 Frozen Peas (per 750 grams)

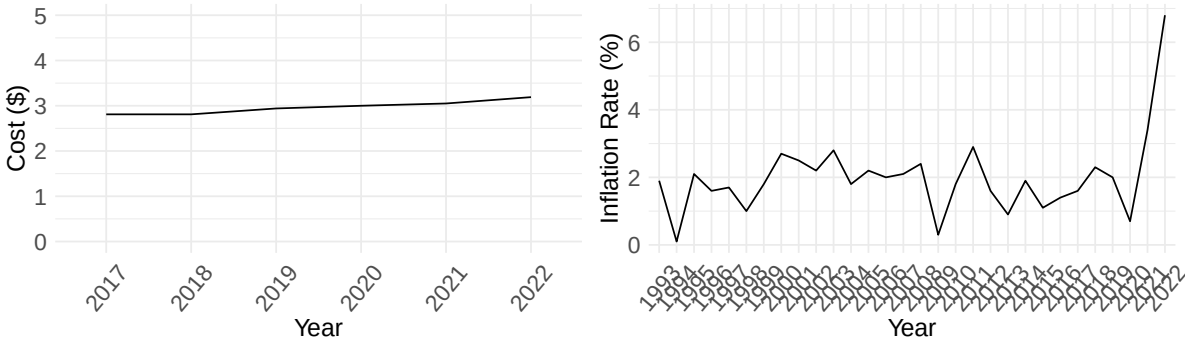

Figure 9: Inflation Rate vs. Cost of Frozen Peas (since 2017)

Year	Frozen Peas Cost	Frozen Peas Cost Rate	Inflation Rate
2018	$2.81	0%	2.3%
2019	$2.94	4.63%	2%
2020	$3	2.04%	0.7%
2021	$3.05	1.67%	3.4%
2022	$3.19	4.59%	6.8%

Figure 10: Inflation Rate vs. Cost of Frozen Peas (since 2017)

3.6 Pasta Sauce (per 650 millilitres)

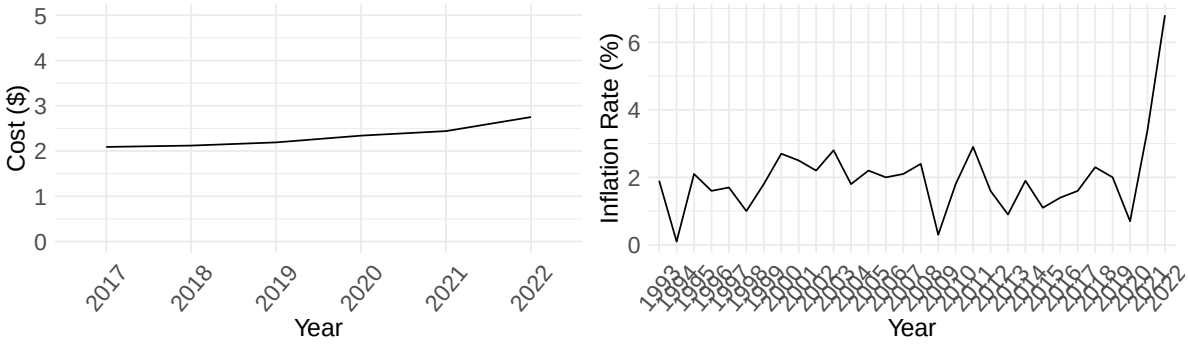

Figure 11: Inflation Rate vs. Cost of Pasta Sauce (since 2017)

Year	Pasta Sauce Cost	Pasta Sauce Cost Rate	Inflation Rate
2018	$2.12	1.44%	2.3%
2019	$2.19	3.3%	2%
2020	$2.34	6.85%	0.7%
2021	$2.44	4.27%	3.4%
2022	$2.75	12.7%	6.8%

Figure 12: Inflation Rate vs. Cost of Pasta (since 2017)

4 Results

5 Discussion

6 Inclusive Acknowledgements

Land Acknowledgement

We wish to acknowledge the land on which this data was analyzed. For thousands of years, it has been the traditional land of the Huron-Wendat, the Seneca, and the Mississaugas of the Credit. Today, this meeting place is still the home to many Indigenous people from across Turtle Island and we are grateful to have the opportunity to work on this land.

This statement was originally prepared in consultation with First Nations House and the Elders Circle for use at the University of Toronto (*Land Acknowledgement* n.d.).

Data Acknowledgement

The data used in this paper was obtained through Open Data Toronto, an initiative to provide openly accessible data about the city (*About City of Toronto Open Data* n.d.). This paper uses three data sets from Open Data Toronto, each provided by the Toronto Paramedic Services:

- Paramedic Services Incident Data[1]
- Land Ambulance Response Time Standard[2]
- Pre-Hospital Emergency Care Performance Metrics[3]

Resources Acknowledgment

The primary tool used to analyse data in this paper is R, an open-source statistical programming language (R Core Team 2022). The paper also uses a number of R packages, including: dplyr (Wickham et al. 2022), ggplot2 (Wickham 2016), here (Müller 2020), janitor (Firke 2021), kableExtra (Zhu 2021), knitr (Xie 2023), lubridate (Grolemund and Wickham 2011), opendatatoronto (Gelfand 2022), readr (Wickham, Hester, and Bryan 2022), RColorBrewer (Neuwirth 2022), scales (Wickham and Seidel 2022), and tidyverse (Wickham et al. 2019).

[1]Paramedic Services Incident Data is available at: https://open.toronto.ca/dataset/paramedic-services-incident-data

[2]Land Ambulance Response Time Standard is available at: https://open.toronto.ca/dataset/land-ambulance-response-time-standard

[3]Pre-Hospital Emergency Care Performance Metrics is available at: https://open.toronto.ca/dataset/pre-hospital-emergency-care-performance-metrics

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