

# Comparison of Coles and Woolworths Product Prices

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Pat Edwards (s3646977), Tim Kirkbride (s3650791), Josh Grosman (s3494389)

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## Executive Summary

This report attempted to find if the prices at Coles and Woolworths are significantly different and, if they are, which supermarket has the cheaper average price. To find this, a large sample of groceries data was assessed with regards to the associated prices from both supermarkets. Data was obtained by scraping pages from <http://www.grocerycop.com.au/products> (<http://www.grocerycop.com.au/products>). The pages contained information on specific items that both Woolworths and Coles stocked, including the price and unit size of each. This sampling technique must be considered convenience sampling as our data collection did not rely on random sampling. We believe that this shortcoming in data collection is somewhat accounted for in the varied sample collected, which included a wide range of products and a wide range of prices.

The data which was collected was then visualised to find any potential outliers. This data visualisation also helped us to formulate the hypothesis which we would test. To test the hypothesis that there is a difference between product prices between Coles and Woolworths, a paired-samples t-test was used. This test was chosen as the observations made on one sample (i.e. the price of a good at Coles) will be inherently linked to an observation made on the other sample (i.e. the price of a good at Woolworths), as they are both related to the product in question.

We found that the average price at Coles supermarkets was statistically significantly higher than the average price at Woolworths supermarkets, as the p-value was less than 5% and the null mean (i.e. zero) did not fall within the 95% confidence interval. As such the null hypothesis was rejected.

Further investigation of the difference in the prices by category of groceries was also tested. We found that although the majority of categories followed the general mean and were more expensive in Coles, Fruits and Vegetables were less expensive in Coles supermarkets, and this difference was statistically significant. # Load Data and Packages

## Packages

```
library(readr)
library(car)
library(dplyr)
library(knitr)
library(ggplot2)
library(tidyr)
```

