

What's Going On?

Checking In

Oooooooooops!

Minds on

Back in my day...

Action!

Statistical Indices

Consolidation

TSX Composite and The FPPI

Learning Goal - I will understand what a statistical index is and how they are used in the real world.

Checking In

Ooooooops!

To err is human, to forgive divine.

I dun messed up...

~ Alexander Pope

I said:

Percentile

The position of a score with a specific percentile is

~~$(n \times p) + 1$~~ if $n \times p$ is a whole number

$n \times p$ rounded up if $n \times p$ is a decimal

When I should have said:

The position of a score with a specific percentile is

The average of $n \times p$ and $(n \times p) + 1$ ✓

if $n \times p$ is a whole number

Let's see why.....

Checking In

Oooooops!

When I should have said:

The position of a score with a specific percentile is

The average of $n \times p$ and $(n \times p) + 1$
if $n \times p$ is a whole number

Let's see why...

Checking In

Ooooooops!

Determine the 80th percentile of the **ordered** list of scores below:

80% of people are below

35 44 50 52 65 73 77 82 85 90

$$n \times p$$

$$= 10 \times 0.8$$

$$= 8$$

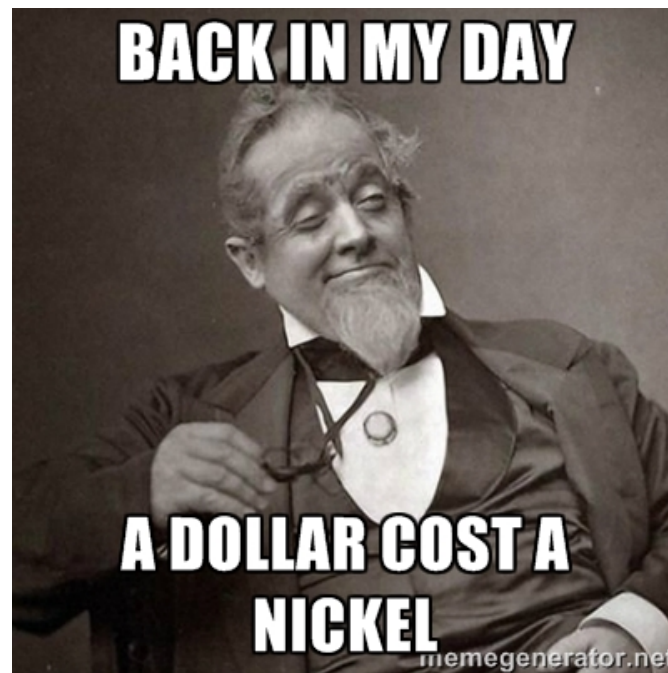
average

$$\frac{82 + 85}{2} = \underline{\underline{83.5}}$$

The 80th percentile
is a score of 83.5

Minds on

Back in My Day



Minds on

Back in My Day

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Minds on

Back in My Day



What is the percent increase in the price of a hamburger since McDonald's first opened?

$$\$0.15 \rightarrow \$1.39$$

$$\% \text{ change} = \frac{\text{new} - \text{old}}{\text{old}} \times 100$$

$$\frac{1.39 - 0.15}{0.15} \times 100$$

$$827\%$$

Action!

Statistical Indices

A statistical index is a number or a weighted mean that is used to show how the individual statistics or components of an index have changed as a whole. Indices are used to quantify trends. Most indices use a base value of 100 to make the figures easier to work with.

Action!

Statistical Indices

Some common examples of statistical indices are The Consumer Price Index, IQ, S&P TSX Composite Index, S&P 500, UV Index, Humidex, Air Quality Index and the BMI.

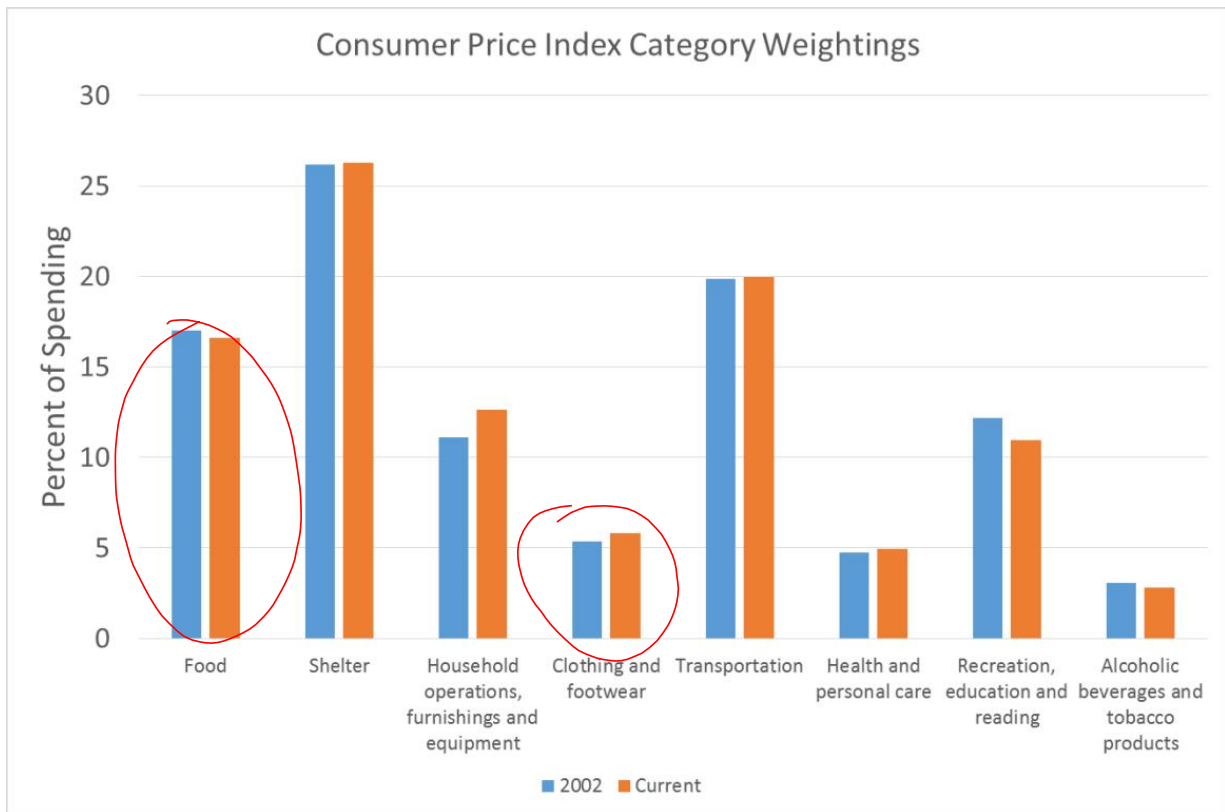
Action!

The Consumer Price Index

The Consumer Price Index (CPI) is a measure of the changes in price of a group of consumer goods and services used by Canadians, such as milk, telephone services, and transportation. It is a widely used indicator of inflation, which is the overall increase in prices over a period of time. The CPI was established in the early 1900s using the prices of 29 food items in major cities. Now, there are more than 600 items on the index.

Action!

The Consumer Price Index



Action!

The Consumer Price Index

1. Provide possible explanations as to why the weighting factor for alcoholic beverages and tobacco products has decreased since 2002.

- less smokers
- can't afford to smoke
- drinking at home

2. Food is more necessary than transportation. Why might it have a lower weighting factor than transportation?

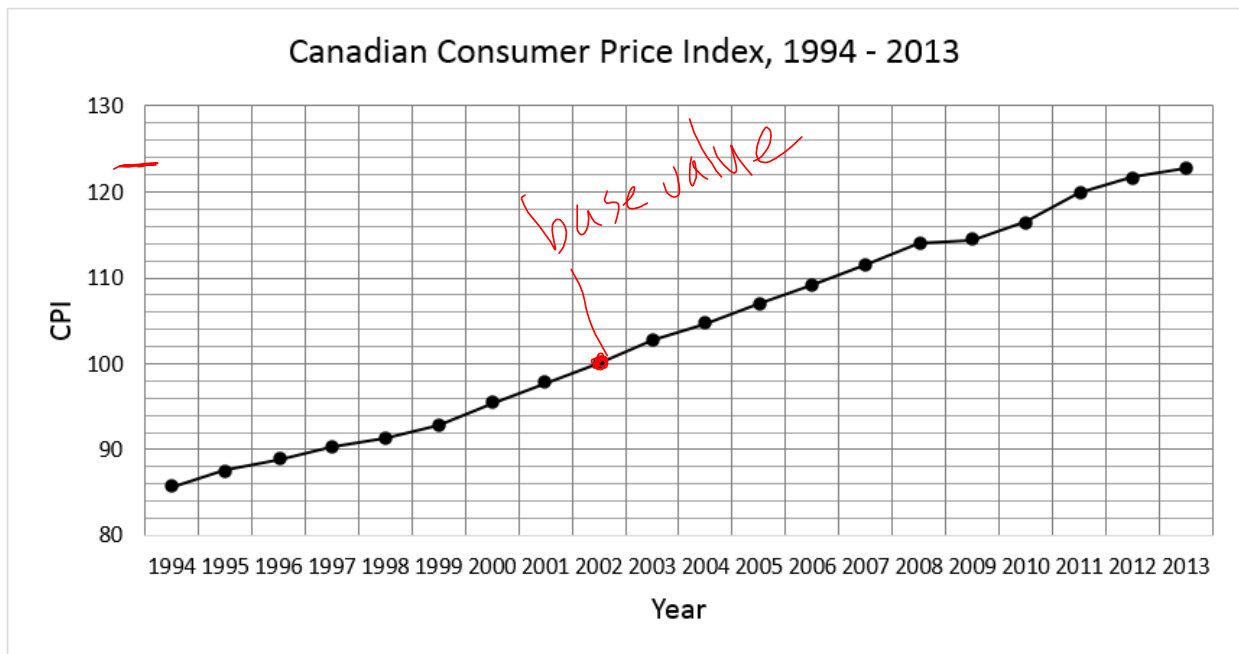
- gas prices
- tied together
- vehicles are expensive

3. How would the effects of a 10% increase in the overall cost of clothing and footwear compare to a 10% increase in the overall cost of food with respect to the CPI?

- increase in food would have a much higher effect than an increase in clothing

Action!

The Consumer Price Index



Action!

The Consumer Price Index

1. By what percent did prices increase between 2002 and 2013?

$$23\%!$$
$$\frac{123 - 100}{100} \times 100 = 23\%$$

2. Assuming that the CPI approximates inflation, what should someone who was earning a \$55,000 salary in 2002 be earning today?

CPI has increased 23%
Salary should increase 23%

$$55,000 \times 1.23 = \$67,650$$

Action!

The Consumer Price Index

The **real value** of an investment is the value of an investment less the effects of inflation.

* CPI increased 23%

3. If you invested \$2,000 in 2002, and your investment was worth \$2,500 in 2013, what was the **real value** of your investment at this time?

$$\frac{2500}{1.23} = \$2,032.52$$

our money is worth \$2032.52 in 2002 dollars.

Real value is \$2,032.52

$$\$2000 \times 1.23 = \$2,460$$

*this means it is worth MORE than when we started!

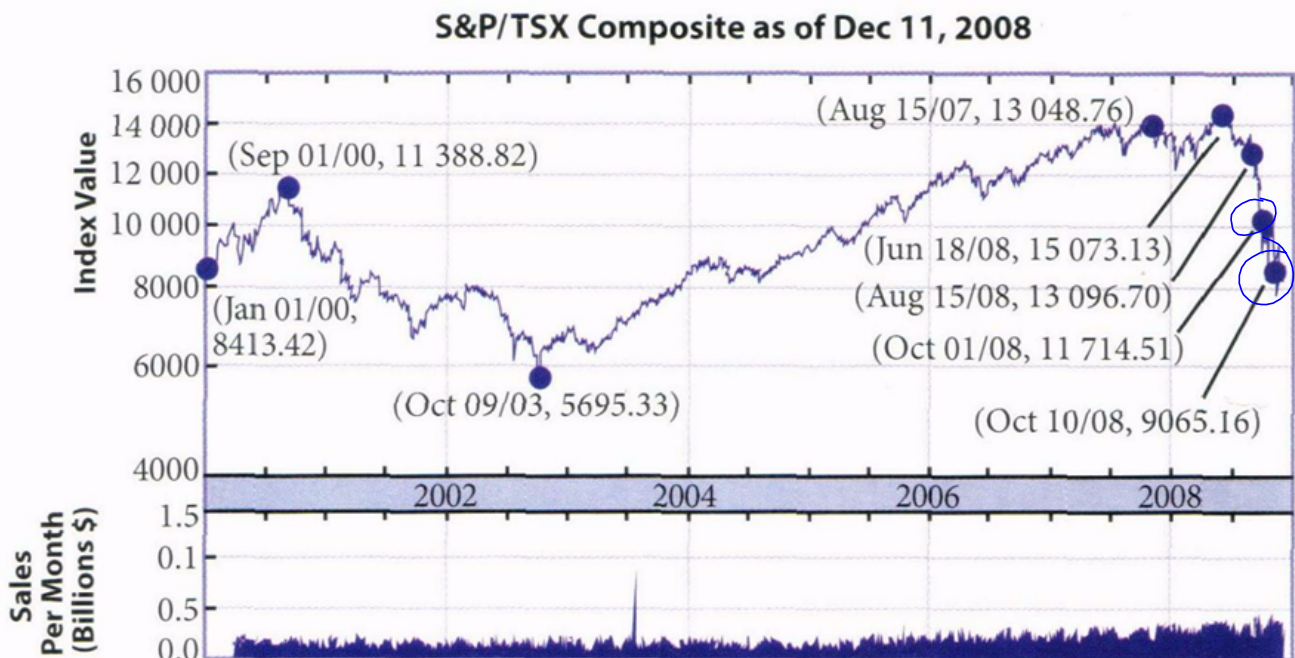
4. Using your answer from above, explain whether or not your investment is "ahead of inflation".

Well... if our \$2000 increased with inflation, it would have been worth \$2460, it's worth \$2,500... slightly ahead of inflation.

Action!

TSX Composite Index

The primary index for the Toronto Stock Exchange is known as the TSX Composite Index. The graph shows the TSX Composite Index from January 01, 2000 to August 15, 2008. The top portion of the graph shows the value of the index. The bottom portion shows the volume of sales, in billions of dollars per month.



Action!

TSX Composite Index

a) By what factor did the index fall from September 1, 2000 to October 9, 2002?

5695.33

11388.82

$$\frac{\text{new value}}{\text{old value}} = \frac{5695.33}{11388.82} = 0.5$$

b) What was the percent change in the index between October 1, 2008 and October 10, 2008?

$$\frac{9065.16 - 11714.51}{11714.51} \times 100$$

-22.6%

Action!

TSX Composite Index

c) If you invested \$7,500 on January 1, 2000 in a fund that mirrors the TSX Composite Index, what would your investment have been worth on

October 9 2003? — 5695.33

$$\% \text{ change of TSX} = \frac{5695.33 - 8413.42}{8413.42} \times 100$$

$$= -32\%$$

If we lose 32%... we will have 68% left! $7500 \times 0.68 = \$5100$

June 18, 2008? — 15073.13

$$\% \text{ change in TSX} = \frac{15073.13 - 8413.42}{8413.42}$$

$$= 79\% \text{ increase}$$

$$7500 \times 1.79$$

$$= 13,425$$

Action!

Farm Product Price Index

The Farm Product Price Index (FPPI) follows the prices farmers receive for their products. In April 2008, the FPPI (1997 = 100) stood at 119.7. Sub-index weightings for 2008 were Crops 45.4% and Livestock 54.6%. Each sub-index is broken down into basic-indices representing, for example, grain, fruit, cattle, eggs, and so on.

Action!

Farm Product Price Index

- a) Explain what is meant by 1997 = 100, and how it relates to 2008.
- b) In April 2008, the Crop sub-index had a value of 144.2 and the Livestock sub-index had a value of 99.4. Show how these values are used to determine the value of the FPPI.
- c) If the Crop sub-index increased by 1% from its April 2008 value and the Livestock sub-index decreased by 0.5% from its April 2008 value, calculate the new value of the FPPI.

Consolidation

Homework!

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1, 2, 6, 7