

# DSCI 310: Historical Horse Population in Canada

Tiffany Timbers & Jordan Bourak

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## 1 Aim

This project explores the historical population of horses in Canada between 1906 and 1972 for each province.

## 2 Data

Horse population data were sourced from the Government of Canada's Open Data website Government of Canada (2017a) Government of Canada (2017b).

## 3 Methods

The R programming language R Core Team (2019) and the following R packages were used to perform the analysis: knitr Xie (2014), tidyverse Wickham (2017), and bookdown Xie (2016). *Note: this report is adapted from Timbers (2020).*

## 4 Results

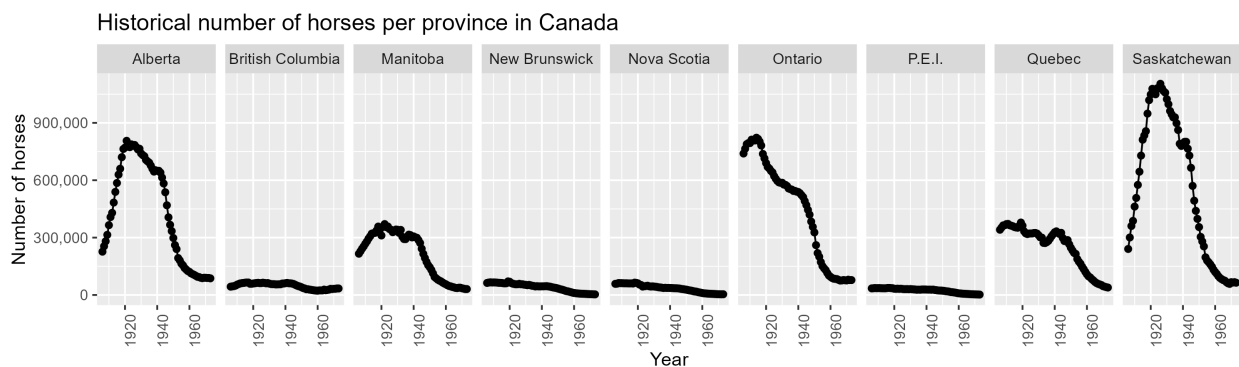


Figure 1 ??: Horse populations for all provinces in Canada from 1906 - 1972

We can see from Figure 1 ?? that Ontario, Saskatchewan and Alberta have had the highest horse populations in Canada. All provinces have had a decline in horse populations since 1940. This is likely due to the rebound of the Canadian automotive industry after the Great Depression and the Second World War. An interesting follow-up visualization would be car sales per year for each Province over the time period visualized above to further support this hypothesis.

Suppose we were interested in looking in more closely at the province with the highest spread (in terms of standard deviation) of horse populations. We present the standard deviations here:

Note that we define standard deviation (of a sample) as

$$s = \sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 / (n - 1)}$$

Additionally, note that in Table 1 ?? we consider the sample standard deviation of the number of horses during the same time span as Figure1 ??.

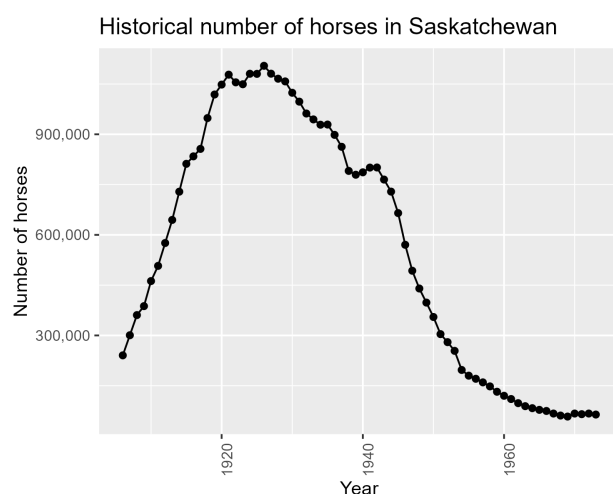


Figure 1: Horse Pop Plot Largest SD

Figure 2 1: Horse populations for the province with the largest standard deviation

In Figure 2 1 we zoom in and look at the province of Saskatchewan, which had the largest spread of values in terms of standard deviation.

## References

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