

Advanced R Homework 1

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Introduction

For this Homework assignment we will be working with the *economics* data set which is available in the *ggplot2* package. The data set tracks the monthly US economic indicators starting from the year 1967.

In this report we will analyze the how the increase in population affects the unemployment rate.

A quick view of the data set:

Table 1: First 6 rows of the economics dataset

date	pce	pop	psavert	uempmed	unemploy
1967-07-01	506.7	198712	12.6	4.5	2944
1967-08-01	509.8	198911	12.6	4.7	2945
1967-09-01	515.6	199113	11.9	4.6	2958
1967-10-01	512.2	199311	12.9	4.9	3143
1967-11-01	517.4	199498	12.8	4.7	3066
1967-12-01	525.1	199657	11.8	4.8	3018

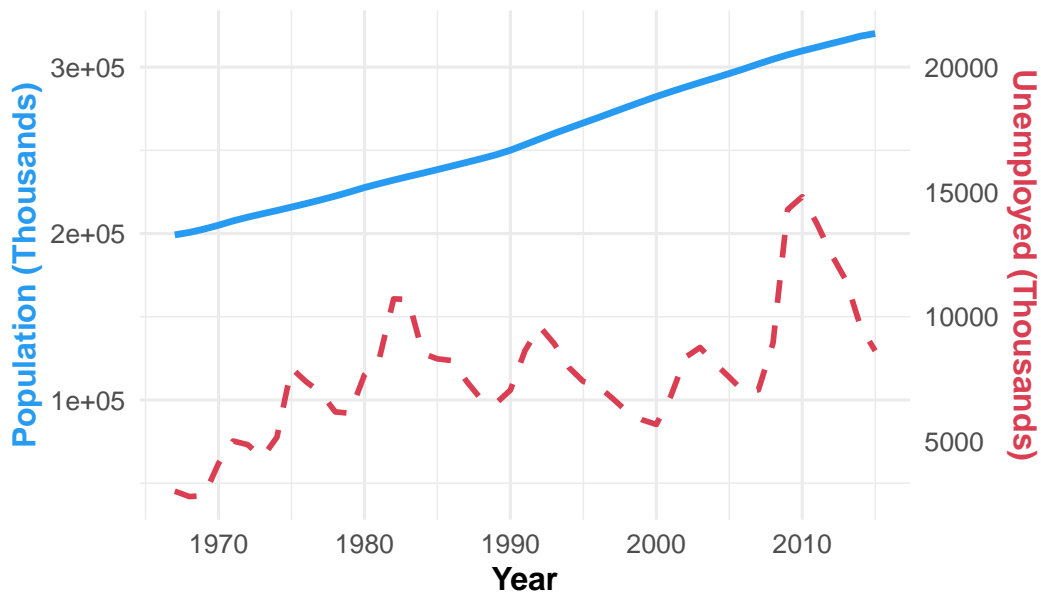
Descriptive Statistics

Table 2: Average Population and Unemployment (1967–1976)

year	avg_population	avg_unemployed
1967	199200.3	3012.333
1968	200663.8	2797.417
1969	202648.7	2830.167
1970	204982.3	4127.333
1971	207589.3	5021.667
1972	209837.6	4875.833
1973	211857.2	4359.333
1974	213814.8	5173.333
1975	215890.7	7939.583
1976	217999.2	7398.167

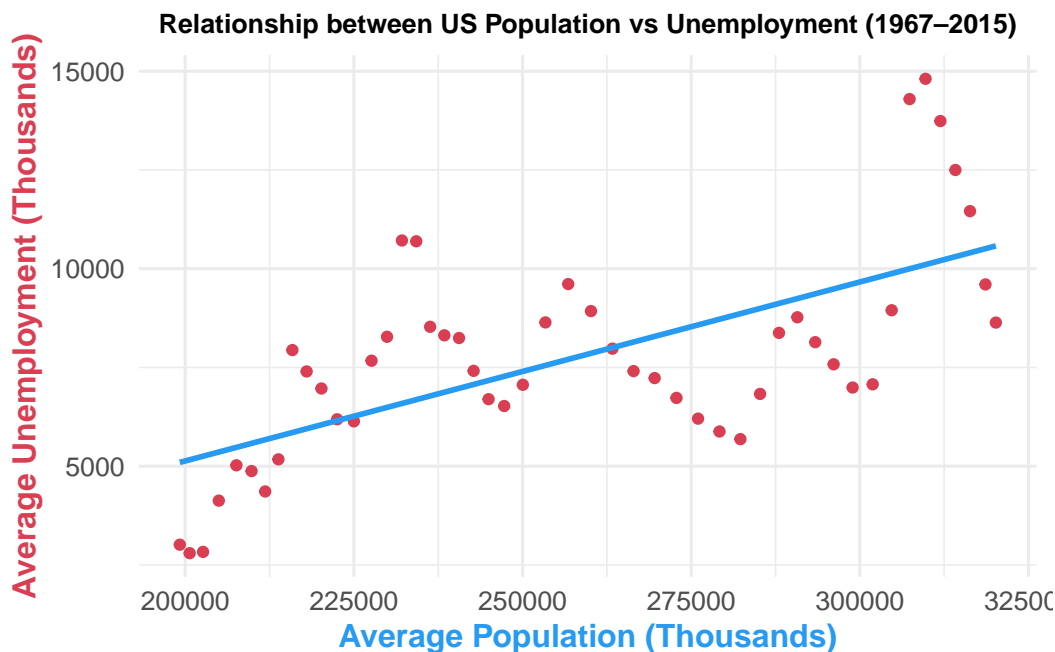
From the table we understand that while the population grows at a steady rate the unemployment differs from one year to another. We can see that the unemployment was the highest between 1974 and 1976. The highest unemployment was seen in the year 1975 with an average unemployment of about 7939.583 when the average population stood at 215890.7.

US Population vs Unemployment (1967–2015)



The plot shows that the population displays a steady and stable rise from 1967 to 2015. In contrast, unemployment shows spikes, and these spikes peak during major economic recessions. These recessions include the 1980s inflation crisis, the dot-com bubble crash, the 2008 financial crisis, and various other economic downturns during the period. In conclusion, we understand that population plays no direct role in the unemployment rate in the country. Instead, unemployment is more influenced by short-term economic shocks and recessions.

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`geom_smooth()` using formula = 'y ~ x'
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The plot confirms that there is not correlation between population and Unemployment in the US between 1967 - 2015.