

Croatia – Population Trend 1990 - 2018

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Dataset(s)

For this project I used the following datasets:

- **World Development Indicators Dataset**

Data Source: [World Development Indicators, The World Bank](#)

File: The raw file, WDIData.csv, from downloaded archive was slightly transformed to the version that facilitate analytics, resulted in WDI_Indicators.csv

- **The GeoJSON file** for ex-Yugoslavia countries was built on this site: <https://geojson-maps.ash.ms/>. The country code for Kosovo, XKX, was used to manually update the sov_a3 code in the GeoJSON file.

Motivation

Being myself an emigrant from Croatia, I am interested in Croatian migration trends in last few decades. As one of ex-Yugoslav republics, in the last 30 years Croatia faced three events that could have an impact to its population:

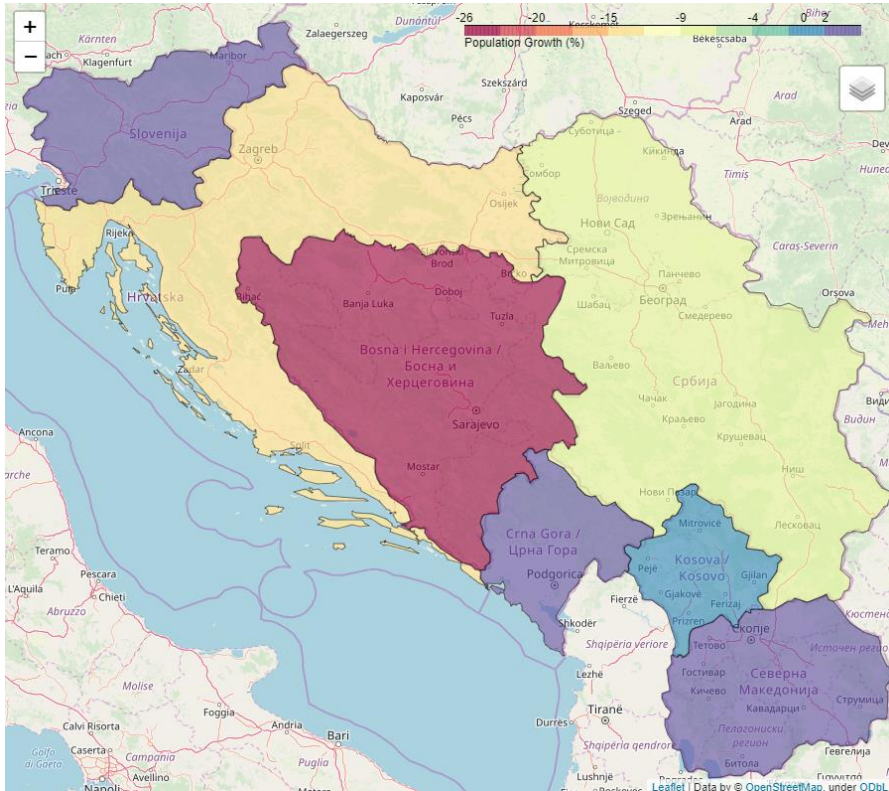
1. [Yugoslav wars \(1991 – 1995\)](#), led to the breakup of Yugoslavia
2. [Great Recession \(2008\)](#), with follow-up recessions shaking Croatia until 2014
3. [Integration to the EU \(2013\)](#), Croatsians acquired right to move and reside freely in other EU member states

This research is very personal to me. In addition to me emigrating (event #1) in 1995, my younger nephew emigrated in 2018 (event #3). So, let's start crunching the data.

Research Question(s)

Were the events, mentioned in the previous slide, impacting population of Croatia, and if yes, how much? Is there any relationship with GDP?

1. Population Growth Rate (%) (1990 - 2018)



The population growth rate:

$$PR = \frac{(V_{Present} - V_{Past})}{V_{Past}} \times 100$$

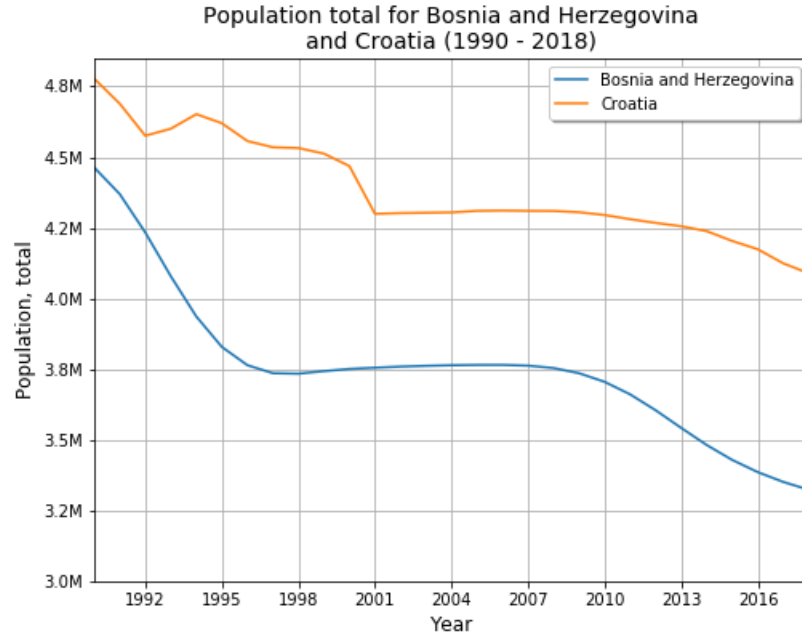
PR = Population Percent Growth rate

V_{Past} = Past Value

$V_{Present}$ = Present Value

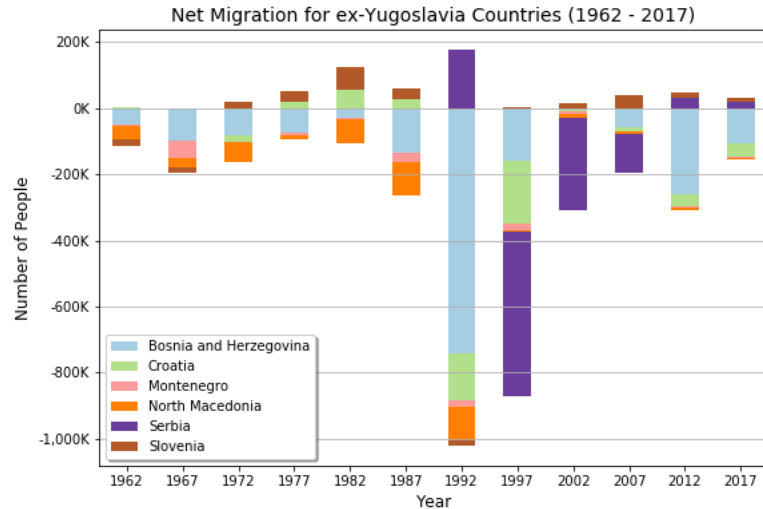
- Positive values mean growth and negative values mean decline in population.
- Of all ex-Yugoslavia countries Bosnia and Herzegovina (-25.53%) and Croatia (-14.40%) have the highest population decline rate.

2. Population Decline – Bosnia and Herzegovina and Croatia



- For both countries population declined during the war (1991 – 1995) and after the Great Recession (2008).
- Slight population incline for Croatia around 1993 could be explained by immigration from Bosnia and Herzegovina
- Population stabilized soon after the war for Bosnia and Herzegovina, and several years later for Croatia

3. Net Migration rates for ex-Yugoslavia Countries (1962 – 2017)

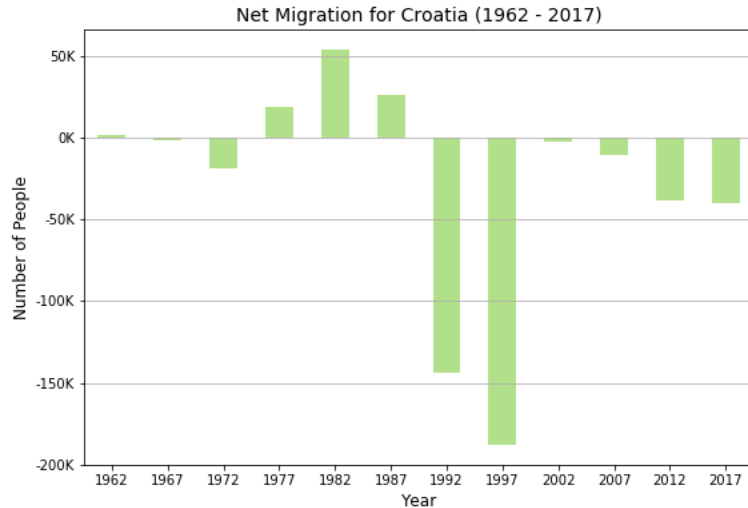


net migration rate = difference between
number of immigrants and number of emigrants

positive rate (+) → **immigration**
negative rate (-) → **emigration**

- Data is available since 1962 in 5 years steps.
- During the war (1991 – 1995) the highest emigration was from Bosnia and Herzegovina. Much less from Croatia and North Macedonia.
- During the same period we see high immigration to Serbia.
- After the war the highest emigration was from Serbia. People were still emigrating from Croatia and Bosnia and Herzegovina.
- The Great Recession (2008) mostly impacted Bosnia and Herzegovina and Croatia.

4. Net Migration rates for Croatia (1962 – 2017)



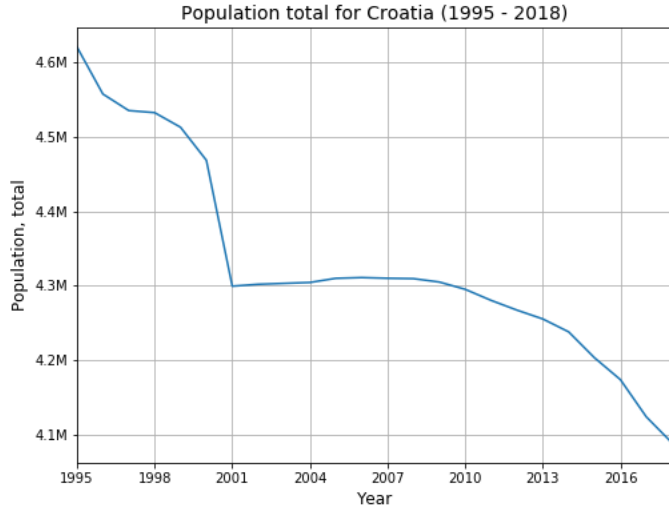
- Emigration was high at 90's, during and after the Yugoslav wars.
- The 2nd and smaller, but still significant increase in emigration rate, corresponds to the Great Recession and its aftershocks.
- The same trend continues in the next step after 2012. That coincides with Croatia's integration to the EU in 2013.

net migration rate = difference between
number of immigrants and number of emigrants

positive rate (+) → **immigration**

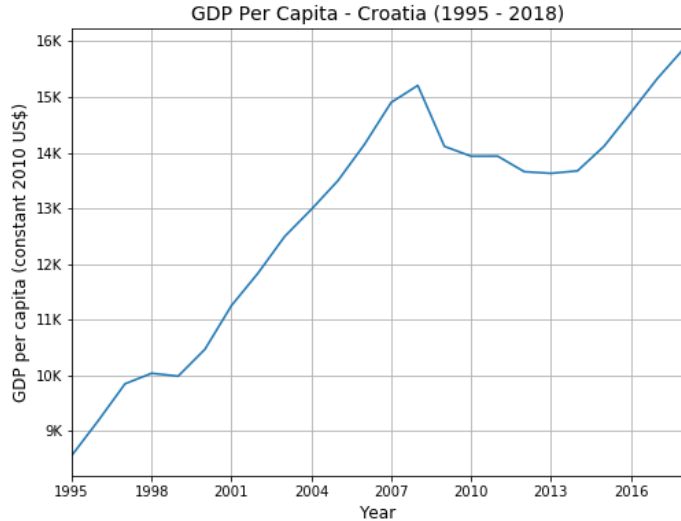
negative rate (-) → **emigration**

5. Total Population (1995 – 2018)



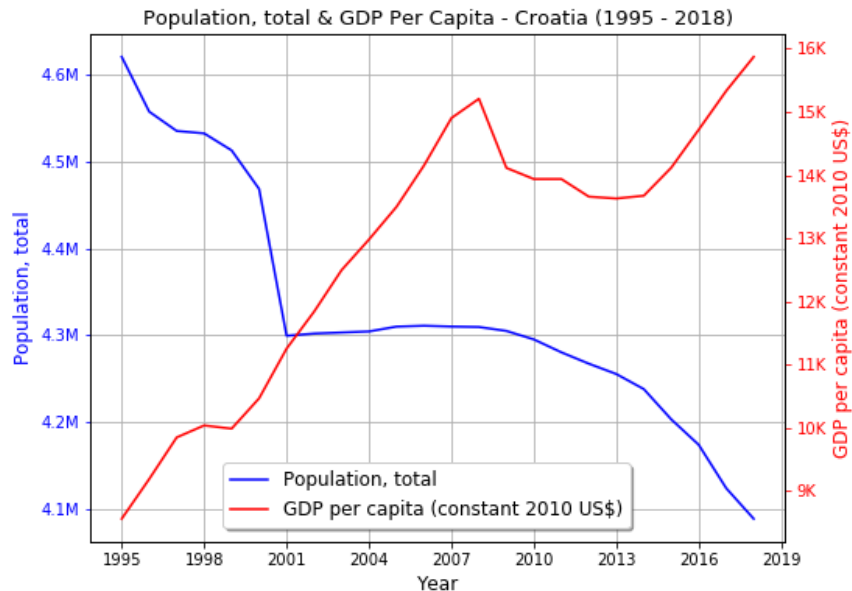
- GDP data for Croatia exist only from 1995. We will limit population data to the same period.
- After the war end, population is mostly declining.
- Population is getting stabilized around 2000 and it is stable almost until 2010.
- Another population decline starts around 2010. That corresponds, with the slight delay, to the impacts of the Great Recession in Croatia.
- Decline is continuing since then
- The steeper decline starts after 2013 that coincides with integration to the EU

6. GDP Per Capita (1995 – 2018)



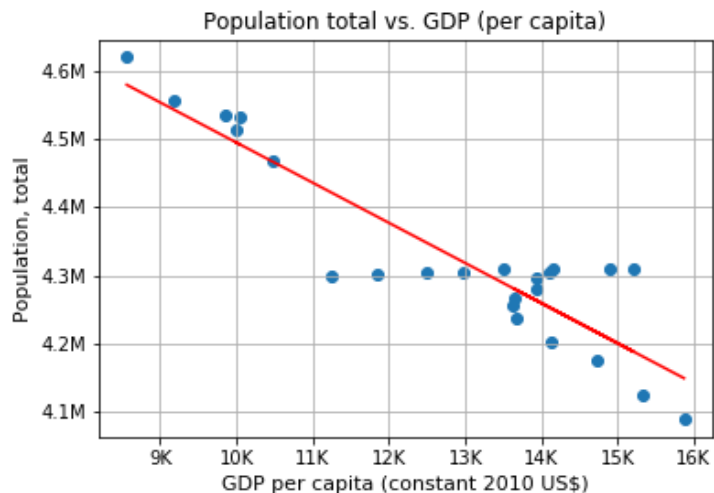
- GDP is increasing between 1995 and 2008
- After 2008 we can see a slight decrease in GDP, probably caused by the Great Recession.
- GDP stops decreasing around 2012
- A year after integration to the EU, GDP starts increasing again

7. Population Total & GDP Per Capita (1995 – 2018)



- The Yugoslav wars heavily impacted population of Croatia for almost a decade, but there was no significant impact to GDP
- The Great Recession had a smaller but still significant negative impact to both, GDP and population, that lasted for many years
- Croatia joined the EU in 2013 and since then GDP is increasing.
- At the same time population is declining even faster than before. This is probably due to freedom of movement and residence of persons in the EU.

8. Population - GDP Correlation

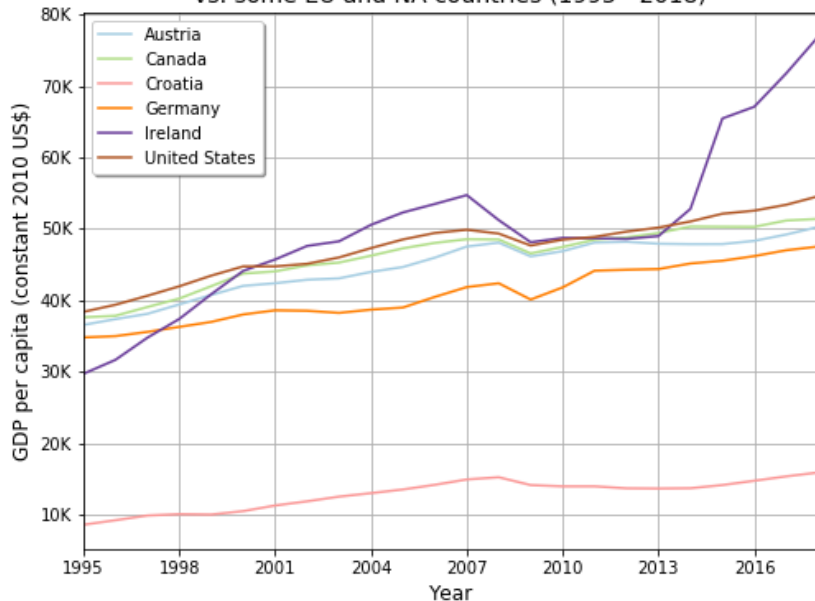


Correlation Matrix		
	Population	GDP
Population	1.0000	-0.9092
GDP	-0.9092	1.0000

- There is strong negative correlation (-0.9092) between GDP and population growth, but there is no causation
- Looking only at GDP of Croatia, it is hard to believe that people would emigrate when GDP is increasing.
- There should be something else. We should compare Croatia GDP to other countries.

9. GDP in Croatia vs. some EU and NA countries

GDP per Capita in Croatia
vs. some EU and NA countries (1995 - 2018)



- All countries had a significant deep in GDP after the Great Recession (2008).
- Croatia GDP fell about 10% following the Great Recession. It completely recovered since 2014 with steady growth of 3% - 4% per year.
- Increasing GDP in Croatia (~\$16,000) is still well below GDP in Austria, Canada, US, Germany (~\$50,000) and Ireland (~\$75,000).

10. Summary

- The Yugoslav wars heavily impacted population of Croatia for almost a decade
- The Great Recession had a smaller but still significant impact that lasted for many years
- I believe from experience that joining EU caused continuous population decline. A significant number of young people is leaving Croatia every year.
- There is no direct relationship between GDP and population decline.
- Croatia GDP is steadily increasing since 2014 but GDP in many EU countries is 4 - 5 times higher than Croatia GDP. This, combined with right to move and reside freely throughout the EU, is probably the main reason for population decline in the last decade.

References

1. [Net Migration Rate Definition](#), Wikipedia
2. [Calculating Growth Rates](#), University of Oregon
3. [Great Recession](#), Wikipedia
4. [Yugoslav Wars](#), Wikipedia