

# Croatia – Population Trend 1990 - 2018

Damir Zunic

# 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:

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

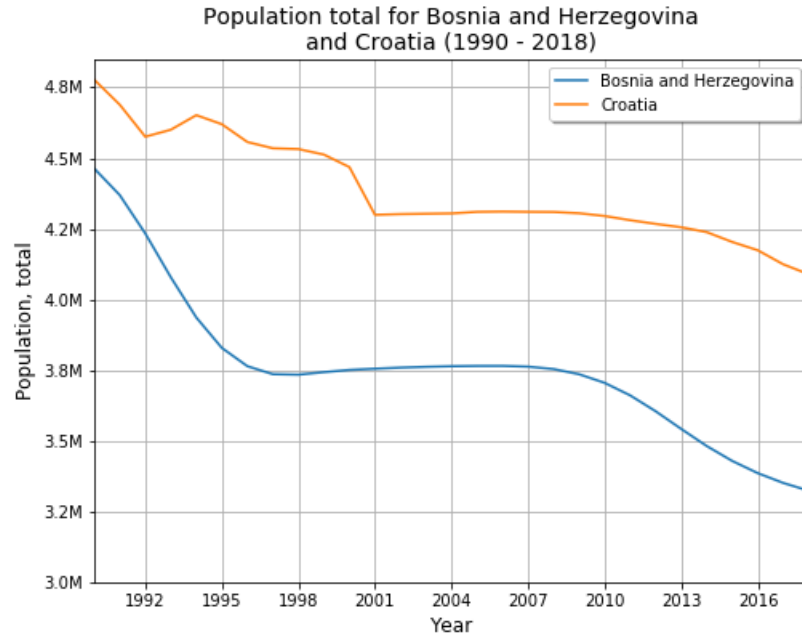
PR = Population Percent Growth rate

$V_{Past}$  = Past Value

$V_{Present}$  = Present Value

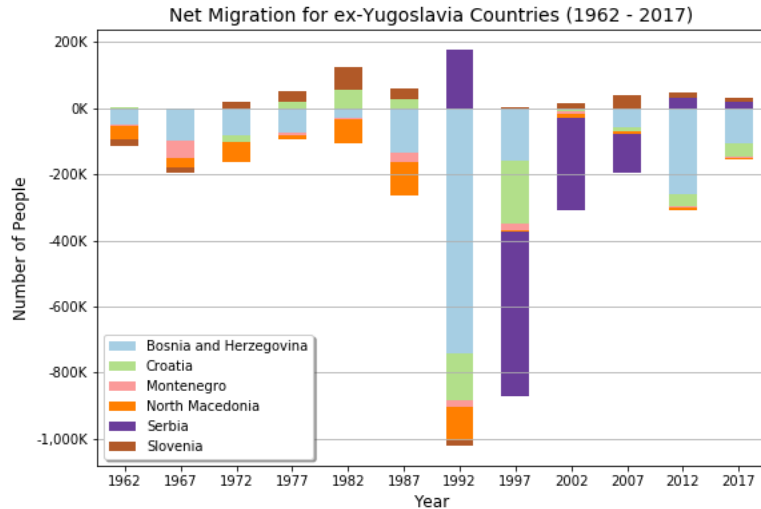
- Positive values mean growth and negative values mean decline in population.
- Of all ex-Yugoslavia countries Bosnia and Herzegovina (25.53%) and Croatia (14.40%) have the highest population decline rate.

## 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 for ex-Yugoslavia Countries (1962 – 2017)

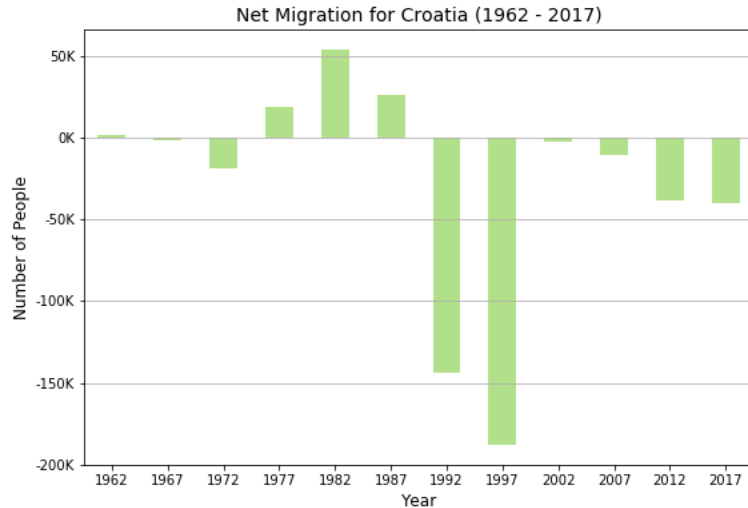


**net migration rate** = difference between  
number of immigrants and number of emigrants

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 for Croatia (1962 – 2017)



- Emigration was high at 90's, during and after the Yugoslav wars.
- The 2<sup>nd</sup> 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.

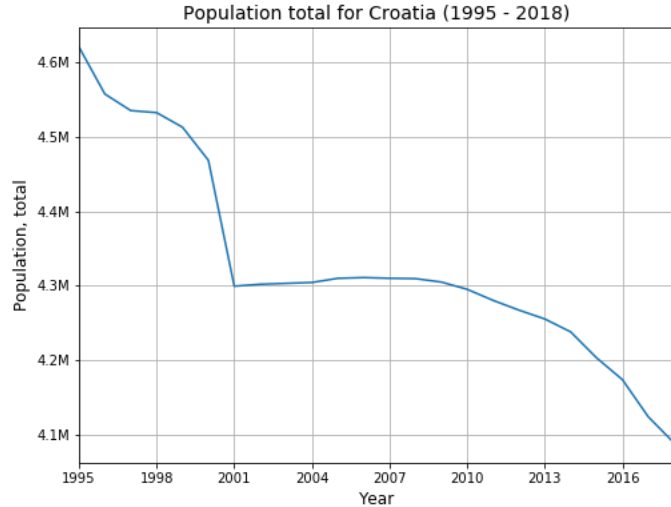
**net migration rate** = difference between  
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positive rate (+) → **immigration**

negative rate (-) → **emigration**

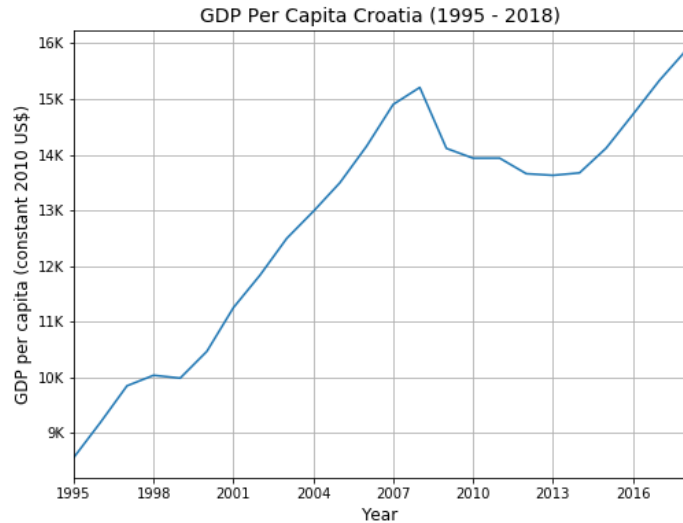


## 5. Total Population (1995 – 2018)



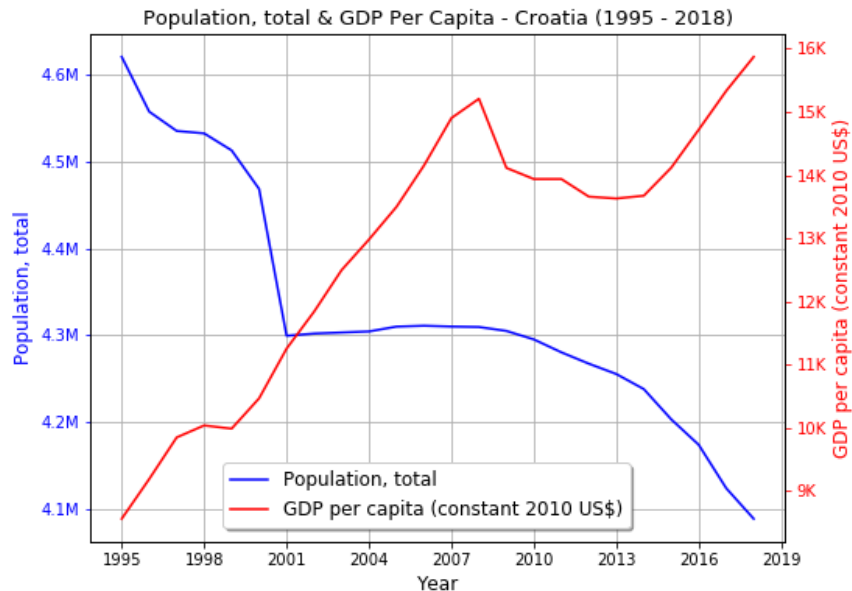
- GDP data for Croatia exist only from 1995. We will limit population data to the same period.
- After the war end, population is mostly declining.
- Population is getting stabilized around 2000 and it is stable almost until 2010.
- Another population decline starts around 2010. That corresponds, with 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)



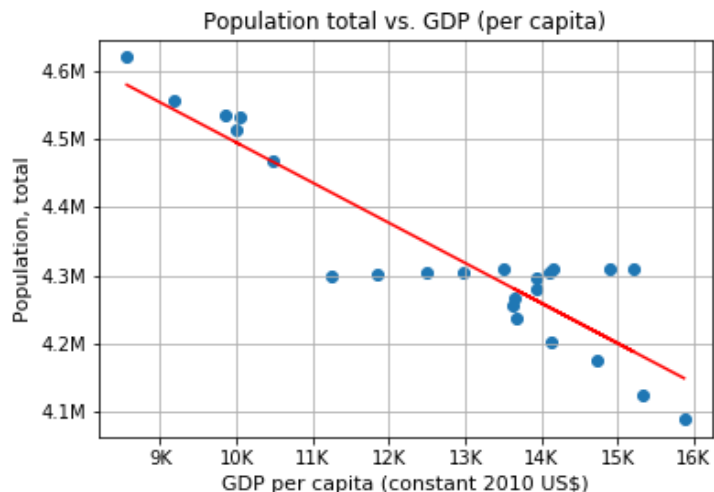
- GDP is increasing between 1995 and 2008
- After 2008 we can see a slight decrease in GDP, probably caused by the Great Recession.
- GDP stops decreasing around 2012
- A year after integration to the EU, GDP starts increasing again

## 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

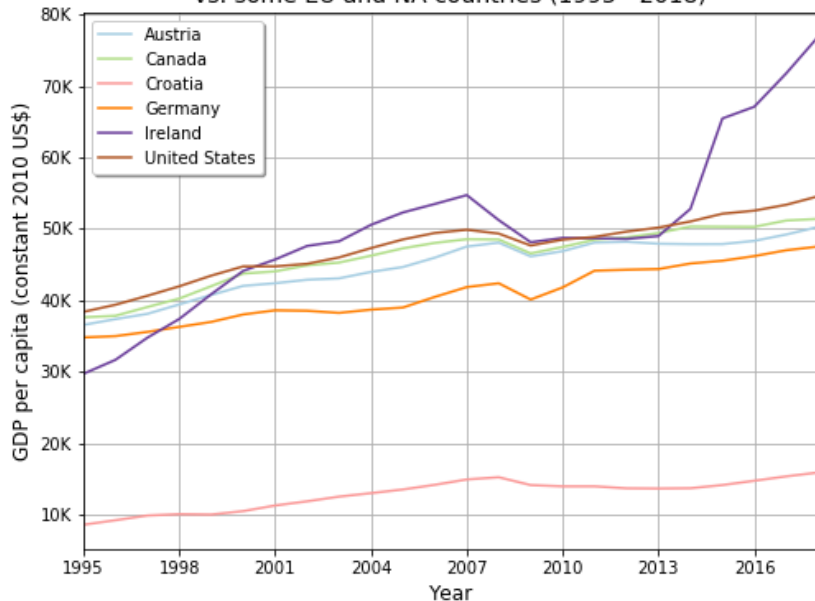


Correlation Matrix		
	Population	GDP
Population	1.0000	-0.9092
GDP	-0.9092	1.0000

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

## 9. GDP for Croatia vs. some EU and NA countries

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



- All countries had a significant deep in GDP after the Great Recession (2008).
- Croatia's 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 (~\$16000) is still well below \$50000 (Austria, Canada, US, Germany) and \$75000 (Ireland)

# 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's GDP is steadily increasing since 2014 but GDP in many EU countries is 4 - 5 times higher than Croatia's 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