

Problem Set 7

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1 APPLICATION 1: Getting Data by Using API

The question that I am interested is the relationship between GDP growth and infant mortality. I will concentrate on the founding EU member states: Belgium, Germany, France, Italy, Luxembourg, the Netherlands. I gathered the data from World Bank - World Development Indicators. The **Figure 1** shows the infant mortality rates between 1970 to 2015.

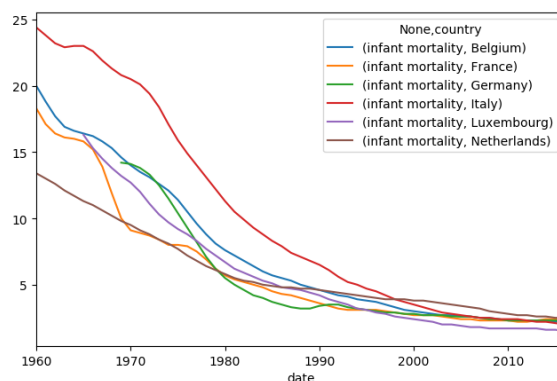


Figure 1: Infant Mortality Rates Across Selected EU Countries

Figure 1 shows that there is a sharp decline in the infant mortality rates in all of the 6 countries. Infant mortality rate of Italy fell gradually from 29.7 deaths per thousand live births in 1970 to 2.9 deaths per thousand live births in 2015. Between 1970 and 2015, infant mortality rate of Netherlands was declining at a moderating rate to shrink from 12.6 deaths per thousand live births in 1970 to 3.3 deaths per

thousand live births in 2015. Luxembourg has the lowest mortality rate; in 2015 the country has 2.1 deaths per thousand live births.

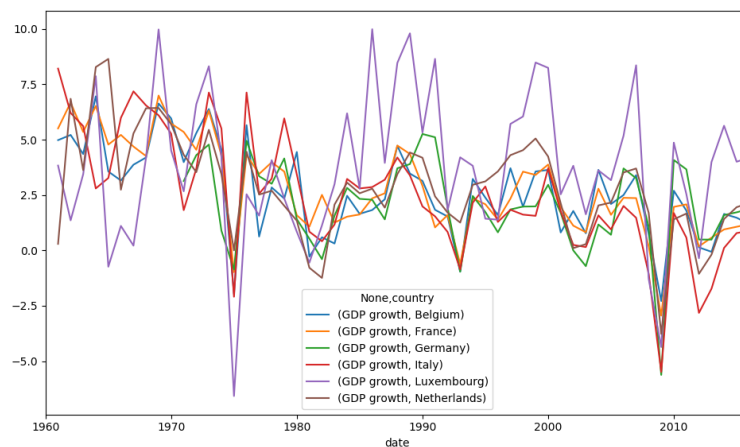


Figure 2: GDP Growth Rates Across Selected EU Countries

Figure 2 shows the growth rates of the countries. The purple line is Luxembourg, which shows that the country has experienced the maximum growth level and minimum growth level among others. In 1975, the rate of change of real GDP has declined to -6.57 percent whereas in 1986 with 9.98 percent the country reached its peak. The country with less fluctuation is Belgium. GDP growth rate in Belgium averaged 0.54 percent from 1980 until 2017, reaching an all time high of 15.80 percent in the beginning of 1995 and a record low of -2.10 percent in the end of 2008. GDP growth rate in Germany averaged 0.51 percent from 1970 until 2017, reaching an all time high of 4 percent in the second quarter of 1970 and a record low of -4.50 percent in the first quarter of 2009. All in all, in general, the growth pattern is similar among the first EU countries.

To analyze the relationship between mortality and economic growth, one might consider other factors, such as: life expectancy, health factors, education, population growth etc. One might also compare Developed countries with Developing Countries and Least Developed Countries.

Here, we do not observe the relationship clearly. But I assume that Western countries has well developed health-care system and we might notice this with declining infant mortality rates. We also observe from income levels that, in general these economies are going well.

2 APPLICATION 2: Getting Data by Using Web Scrapping

I want to analyze the distributions of The Internet Movie Database (IMDb) movie ratings in year 2015. IMDb is an online database of information related to films, television programs and video games.

Table 1: **IMBd 2015 ranking**

	imdb	metascore	movie	year
0	7.8	68	The Hateful Eight	2015
1	6.1	42	Daddy's Home	2015
2	7.4	66	Avengers: Age of Ultron	2015
3	8.1	81	Star Wars: The Force Awakens	2015
4	4.1	46	Fifty Shades of Grey	2015
5	8.1	90	Mad Max: Fury Road	2015
6	7.3	64	Ant-Man	2015
7	6.9	41	Chappie	2015
8	7.1	82	The Lobster	2015
9	6	51	Love	2015
10	7.6	82	Sicario	2015
11	8.2	86	Room	2015
12	8	80	The Martian	2015
13	8	76	The Revenant	2015
14	6.8	60	Spectre	2015
15	6.5	38	Terminator Genisys	2015
16	7	67	Cinderella	2015
17	7.8	81	The Big Short	2015
18	7	59	Jurassic World	2015

IMDb registered users can cast a vote (from 1 to 10) on every released title in the database. IMDb takes all the individual votes cast by IMDb registered users and use them to calculate a single rating.

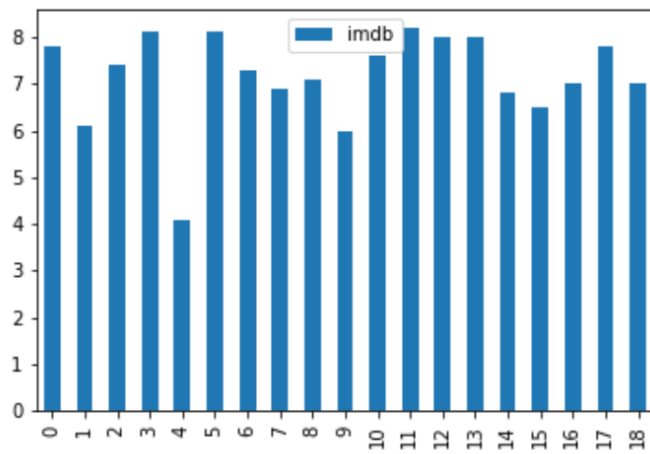


Figure 3: IMDb Ratings

Movie number 4, “Star Wars: The Force Awakens” has the lowest IMDb score in 2015 between the first 16 movies that I gathered. Movie number 15, “Room” has the highest IMDb score in 2015 between the first 18 movies that I gathered.

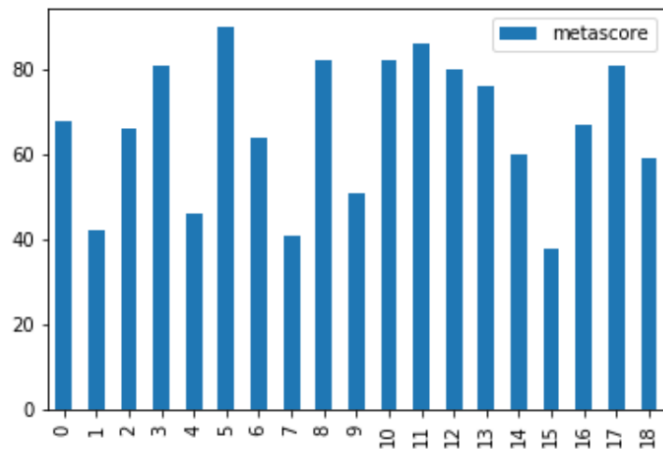


Figure 4: Metascore Ratings

Metascore is the score of the movie on the metacritic website. Usually, “very good” (critical favorites) movies have scores above 70. In this list “ Mad Max: Fury Road ” has the highest metascore, whereas “ Terminator Genisys” has the lowest metascore.

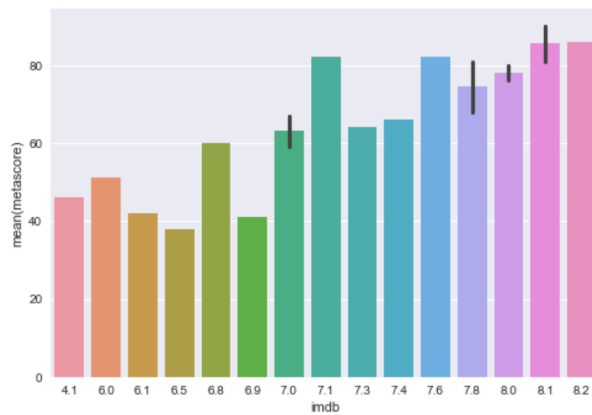


Figure 5: IMDb Ratings vs. Metascore Ratings

The IMDb score is generated by the IMDb users’ ratings while the Metascore

ratings are the scores from the website *Metacritic.com*. The two types of voters may have different preferences, but in general they vote similar.

For instance, the least choice of IMDb users is “Fifty Shades of Grey”, where this is the second least choice for Metascore users. Also for Metascore users “ Mad Max: Fury Road ” is the best movie, yet this is second-best for IMDb voters.