THE DEMOGRAPHICS OF COVID-19 IN THE EUROPEAN UNION

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This paper looks at the demographic impact of the COVID-19 in the European Union (EU). My interest is policy oriented. Never before in history world population was so large, so old, so much travelling across the globe and so interconnected via technology. Over the last centuries, these population upsurges have occurred in the midst of (a) catastrophic wars, (b) famines, and (c) natural disasters. The latter include lethal contagious diseases. But as Malthus (1798, p. 110) remarked these did not affect the population because of "… the greatest proportion of births to burials, was in the five years after the great pestilence". In other words, population losses were recovered in few years.

The same was highlighted by Thucydides in his book *The Peloponnesian War*. Ten years after the plague, which hit Athens in the summer of 430 BCE, the plague was forgotten, population rose sufficiently to support with fresh fighters a military expedition to Sicily and the public coffins of the Athenian city-state were full again.

Statistic	Population (2020 estimate)	Deaths	Cases	Deaths per Million People	Cases per Million People	Deaths per Cases
Mean	16579	4741	41208	169	2002	0.069
Median	8921	524	9230	57	1234	0.047
Maximum	83270	33340	239600	819	6359	0.194
Minimum	516	7	616	5	274	0.011
Std. Dev.	22300	9603	70915	221	1757	0.049
Skewness	2	2	2	2	1	1.059
Kurtosis	5	6	5	4	3	3.006

Figure 1. Deaths per Capita and Total Population

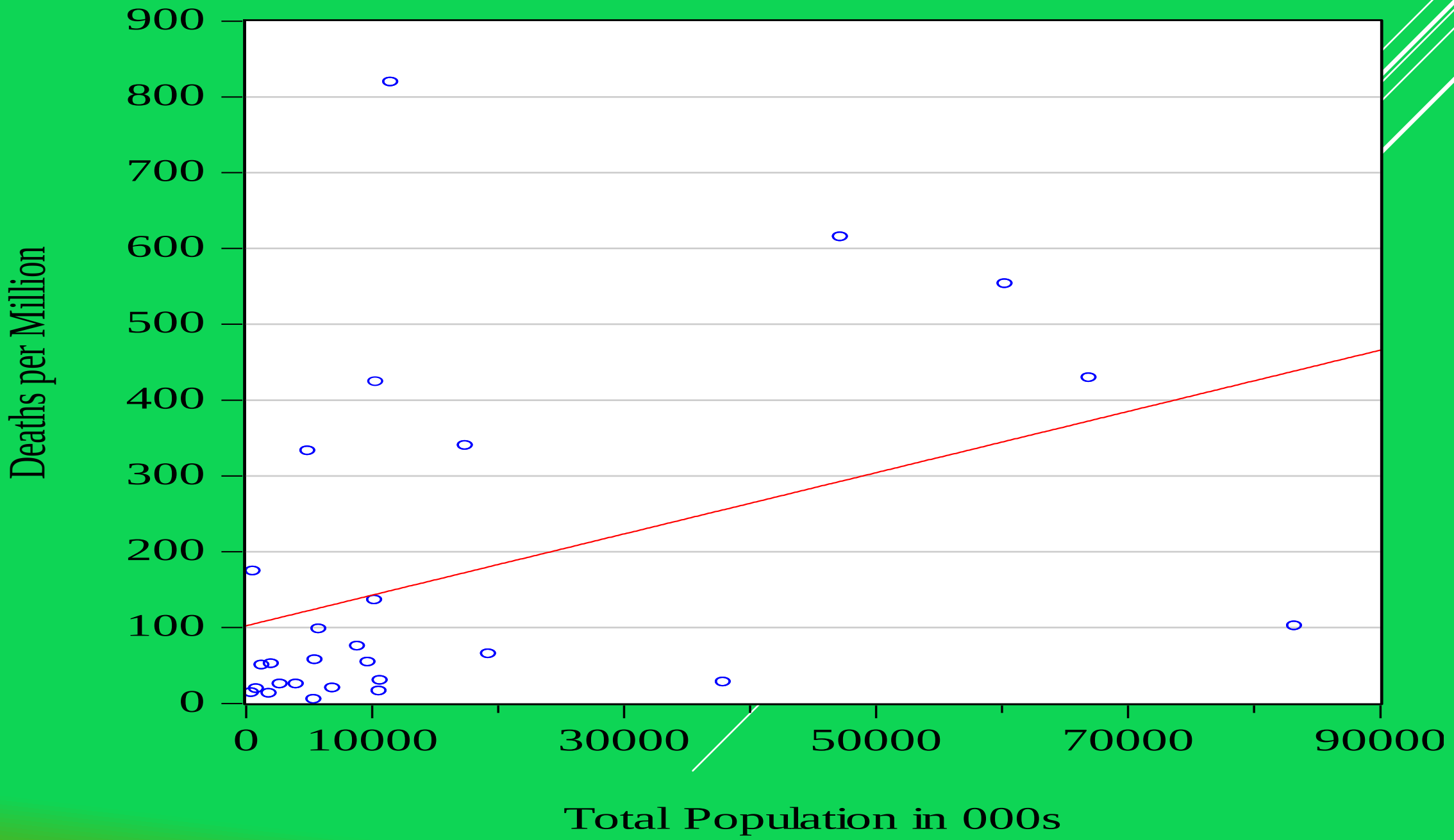

Table 3. Regression Results of Deaths per Million

Explanatory Variables	Log (Deaths per Capita) (1)	Deaths per Capita (2)	Deaths per Capita (3)
Constant	-0.044 (-0.02)	-720.6 (-0.67)	23.93 (0.54)
Log (Population)	0.49 (3.0)		
Population		0.3294 (2.74)	0.017 (2.21)
(Population)^2			-1.73E-07 (-1.8)
Adjusted R-squared	0.2029	0.1334	0.2253
F-statistic	7.62	5.01	4.78
Prob(F-statistic)	0.01	0.03	0.02

Table 5. Regression Results of Deaths per Population of an Extended Model

Dependent Variable: Deaths per Million of Population

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	564.2439	462.4751	1.220052	0.2354
Per Capita GDP	11.66524	5.934804	1.965564	0.0621
(Per Capita GDP)^2	-0.092133	0.051239	-1.798094	0.0859
Social Spending (% of GDP)	-9778.335	4636.092	-2.109176	0.0465
(Social Spending-% of GDP)^2	34110.32	13076.45	2.608532	0.0160

R-squared	0.416792	F-statistic	3.930602
Adjusted R-squared	0.310754	Prob(F-statistic)	0.014827
		Prob (Wald F-statistic)	0.000002

Table 6. Comparative Summary Statistics of EU, U.K., Canada and USA

Area or Country	Population	Deaths	Cases	Deaths per Million of People	Cases per Million of People
EU	449641	128007	1112611	285	2474
U.K.	67192	38376	272830	571	4060
Canada	36475	6996	89741	192	2460
USA	333245	101567	1716078	305	5150

Conclusions

1. Population size and the economy do play a role in explaining variations in deaths due to Covid-19 in EU countries.
2. A one percent increase in population size is associated with 0.49% increase in the number of deaths per capita. But the relationship is non-linear. More populated countries were hit harder by Covid-19 but the rate of impact decreases as population size increases.
3. On the other hand, the economy does matter. The richer the country, the higher the deaths per capita. On the other hand, the higher the social spending as a share of GDP, the lower the ratio of deaths to population.
4. It seems that social policy does work and EU countries should consider coordinate and consolidate a common policy.