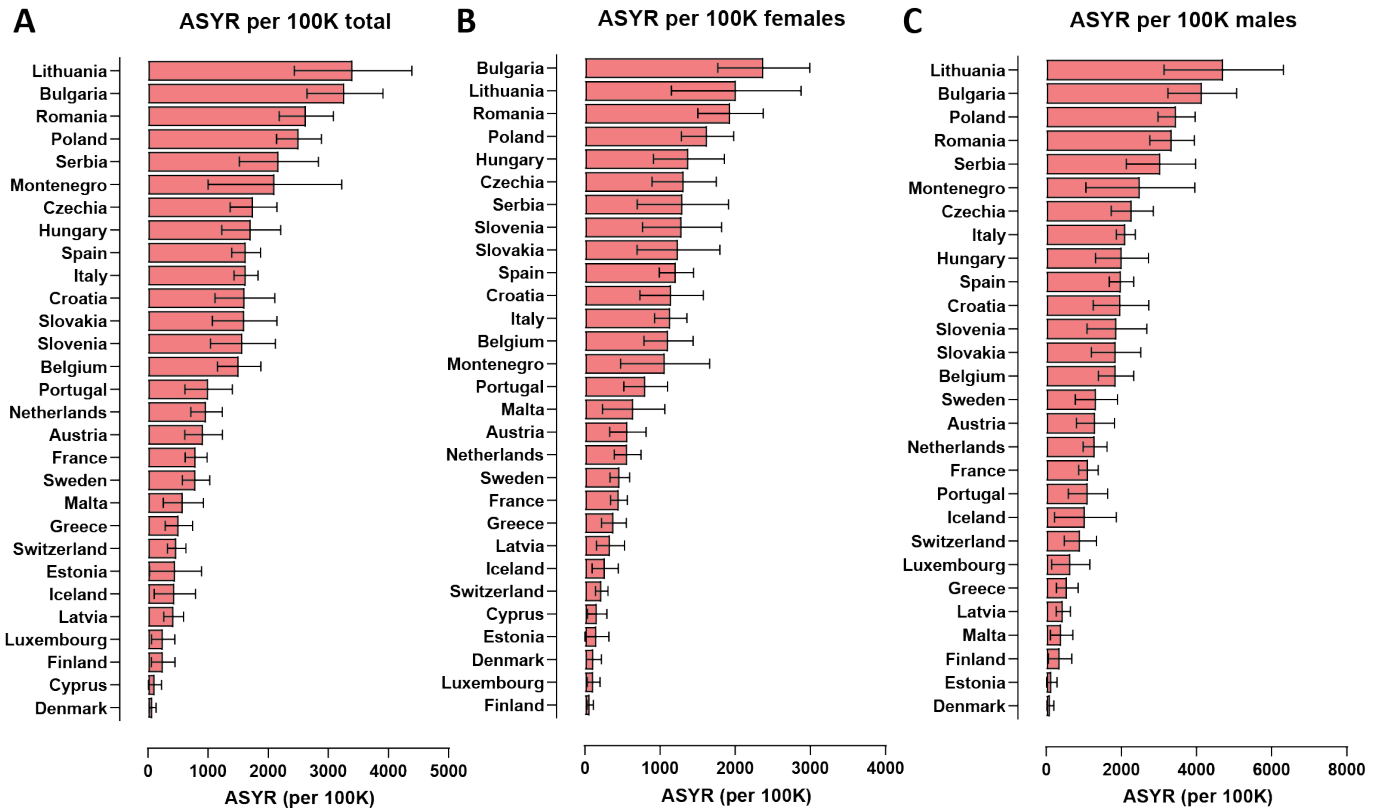
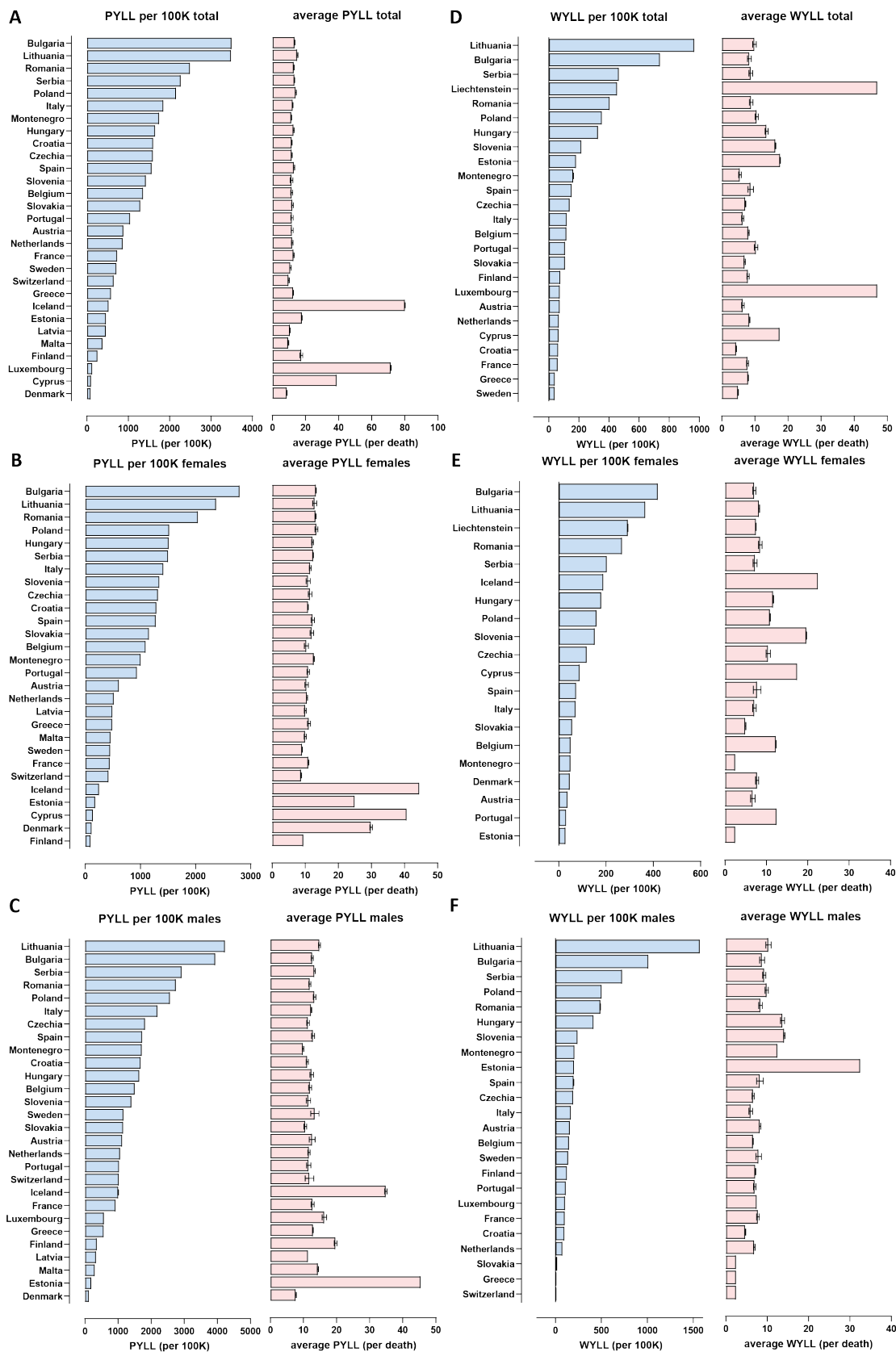


Supplementary Materials

Supplementary Figures

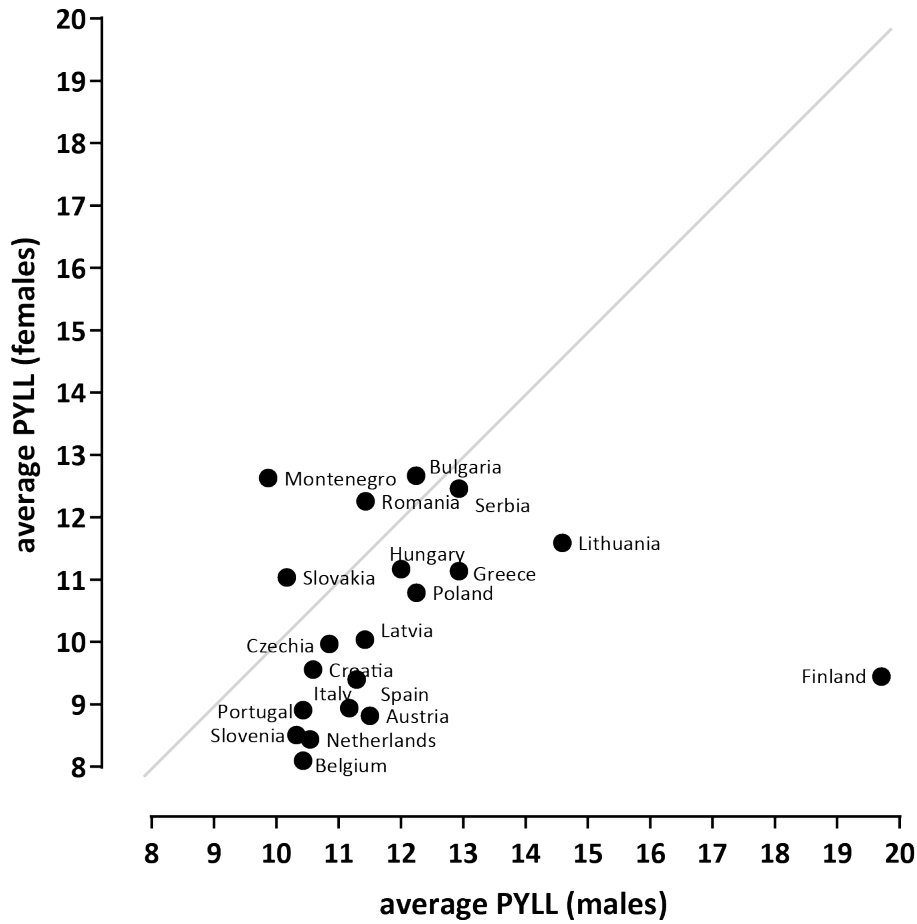


Supplementary Figure 1: Excess mortality-based ASYR values for European countries in 2020. Shown are the total (per 100K people) values. (A) ASYR values for the whole population; (B) ASYR values for females; (C) ASYR values for males.

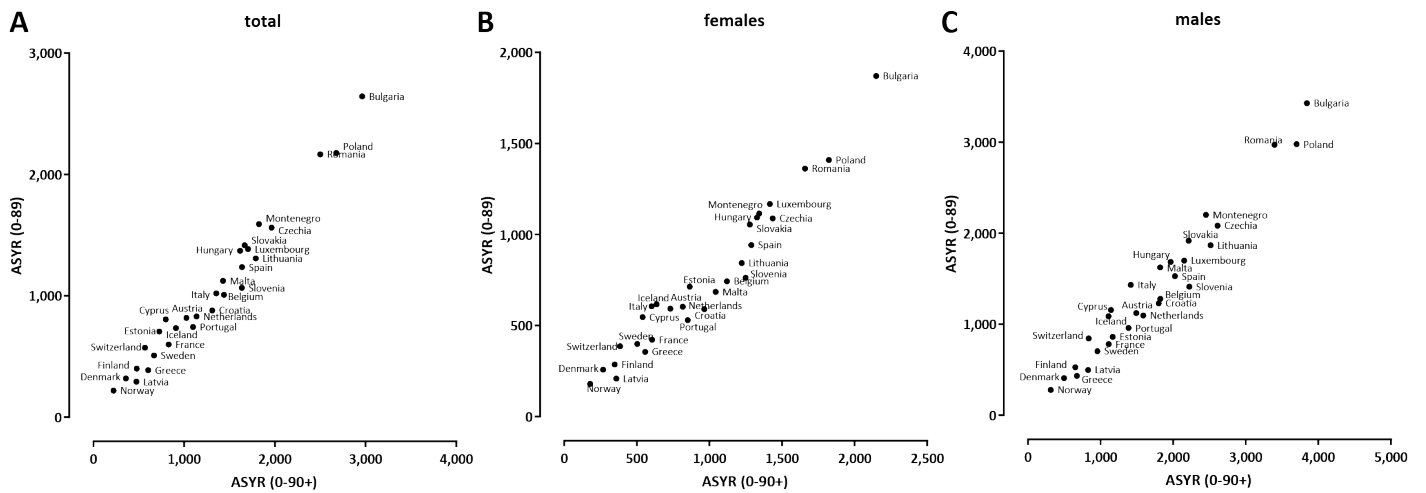


Supplementary Figure 2: Excess mortality-based PYLLs and WYLL values for EU countries in 2020. Shown are the total (per 100K people) and average (per death) values. (A) PYLL values for the whole population; (B) PYLL values for females; (C) PYLL values for males; (D) WYLL values for the whole population; (E) WYLL values for females; (F) WYLL values for males.

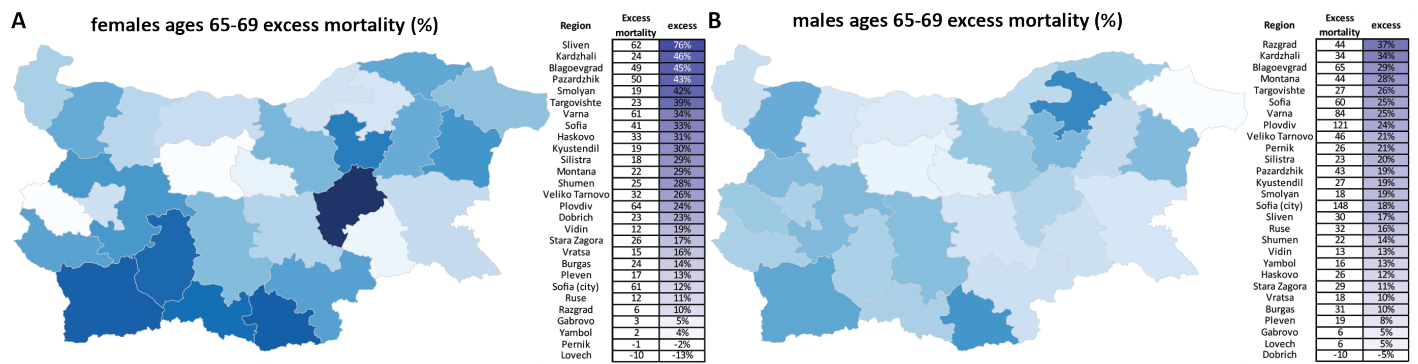
average PYLL males vs. females compressed



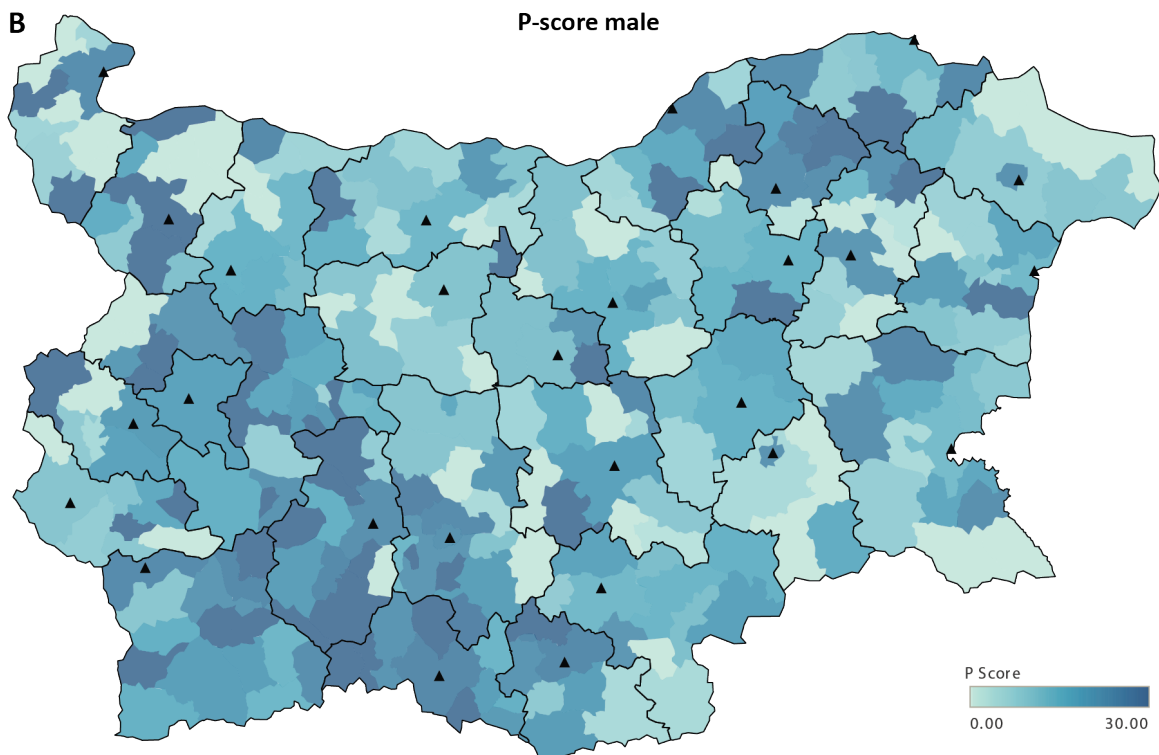
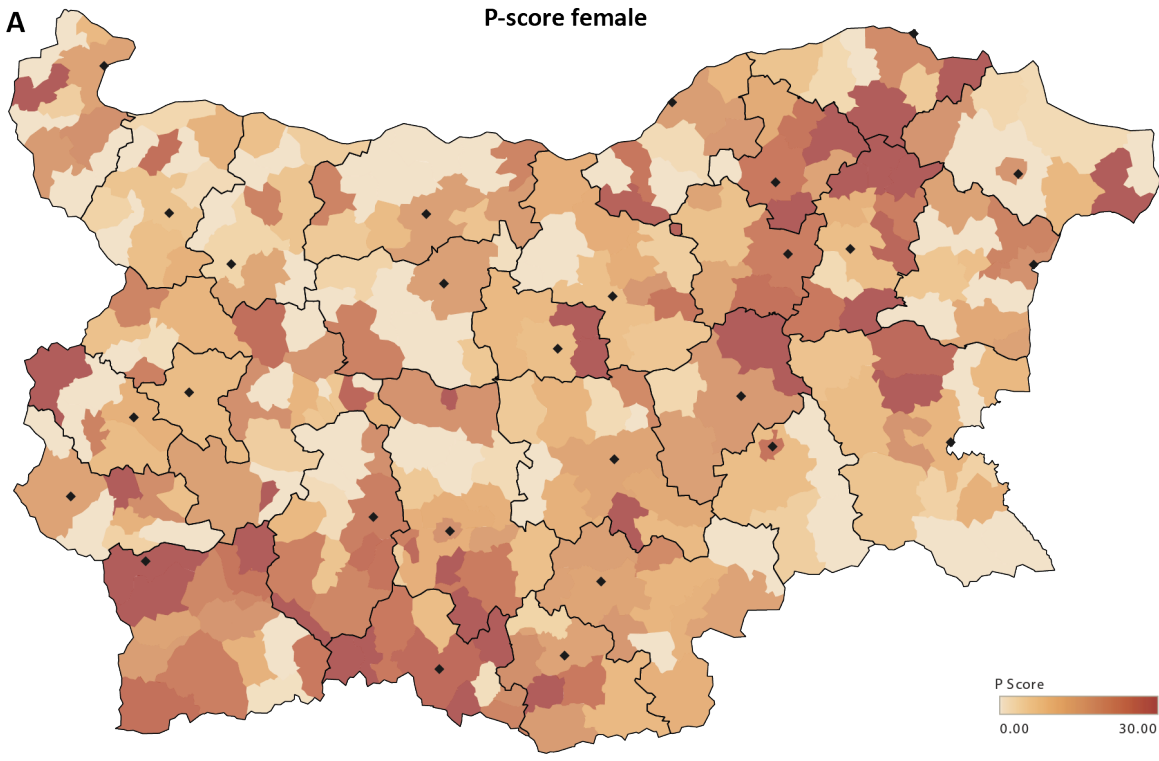
Supplementary Figure 3: Comparison between male- and female-specific average PYLL values in European countries. Shown are the average PYLL values per excess death.



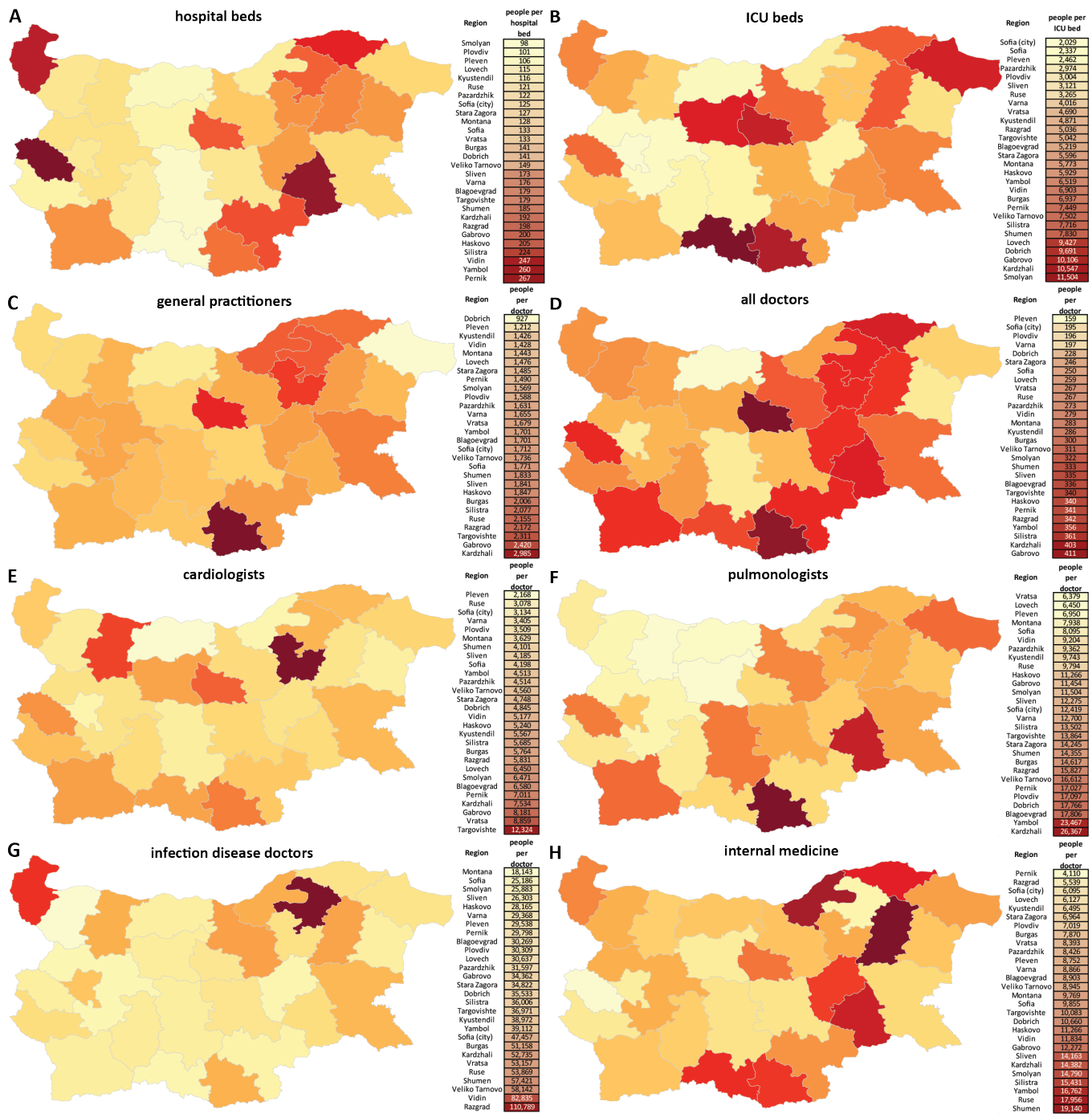
Supplementary Figure 4: ASYR values computed over the 0-89 age range and ASYR values computed over the whole population (with 90+ year-olds included) are consistent. (A) ASYR total; (B) ASYR females; (C) ASYR males.



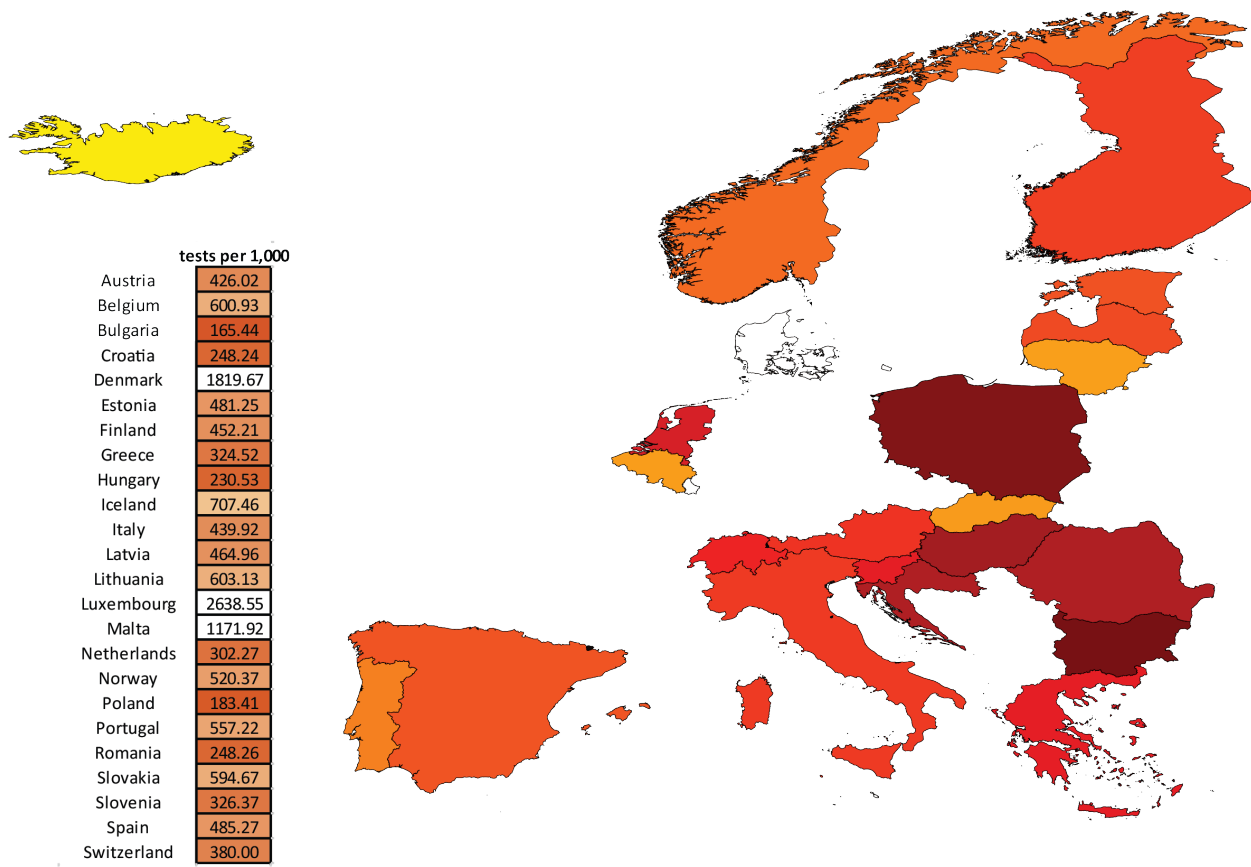
Supplementary Figure 5: Excess mortality in the 65-69 age range in Bulgarian regions. (A) females, P-scores; (B) males, P-scores.



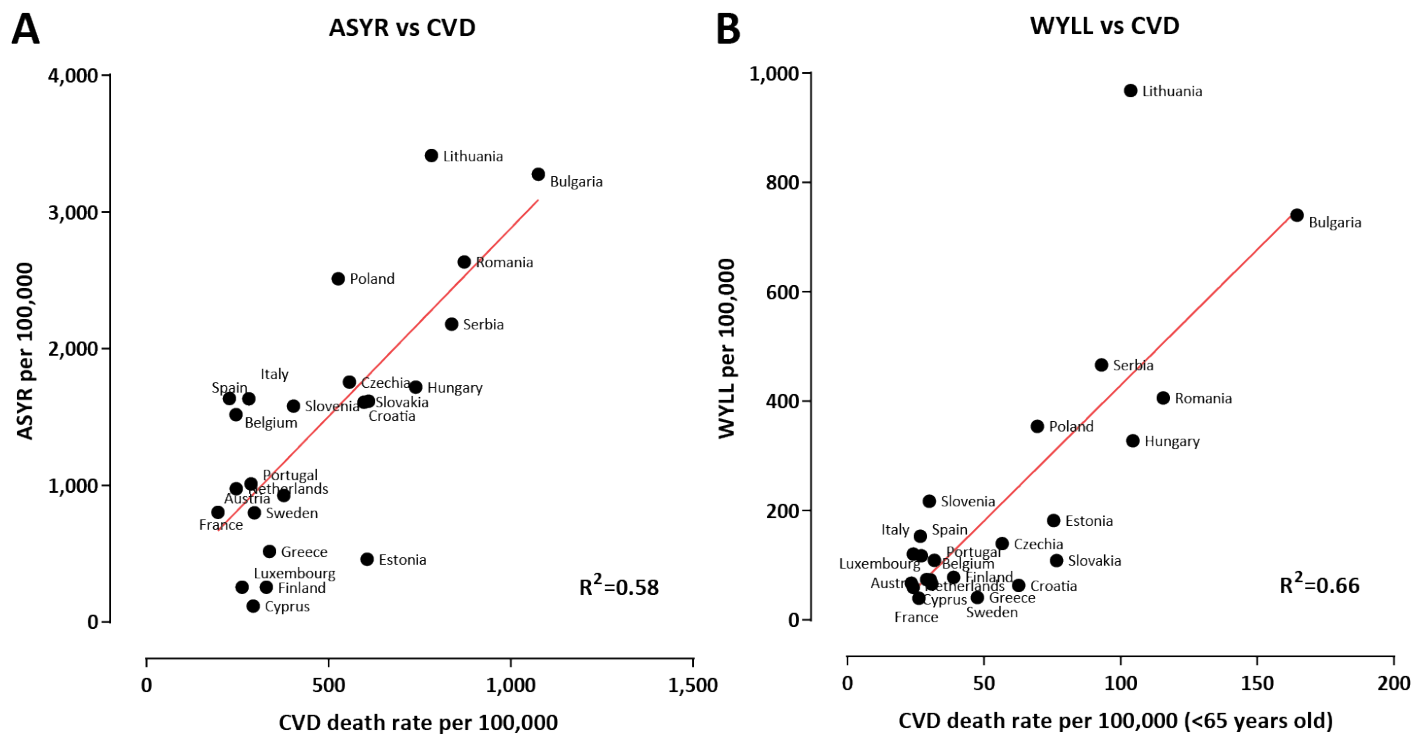
Supplementary Figure 6: Regional disparities in the impacts of the COVID-19 pandemic in Bulgaria at the county/municipality level. (A) Female excess mortality in Bulgaria at the county/municipality level; (B) Male excess mortality in Bulgaria at the county/municipality level; Regions are demarcated in black, regional centers are shown as black dots.



Supplementary Figure 7: Availability of medical resources in Bulgarian regions. (A) Overall hospital beds (in units of people per bed); (B) ICU beds; (C) Total doctors; (D) General practitioners; (E) Cardiologists; (F) Pulmonologists; (G) Infection disease specialists; (H) Internal medicine specialists. Data from the Bulgarian National Statistical Institute (<https://www.nsi.bg/bg>)



Supplementary Figure 8: COVID testing in European countries. Shown is the number of tests per 1,000 population for the period up to December 31st 2020. Data from <https://ourworldindata.org/coronavirus>



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Correlations*	Pearson R2	Pearson P-value	Spearman r	Spearman P-value
P-Score ~ CVD	0.14775	0.49085	0.0561	0.79458
Excess Mortality ~ CVD	0.52584	0.00831	0.34522	0.0985
PYLL ~ CVD	0.60926	0.00158	0.43304	0.03454
ASYR ~ CVD	0.58387	0.00274	0.42	0.04102
WYLL ~ CVD<65	0.66024	0.00045	0.46522	0.02198

Supplementary Figure 9: Correlation between death rates due to cardiovascular disease (CVD) and ASYR and WYLL values. (A) CVD death rates per 100K population (based on Eurostat data from 2018) and ASYR values per 100K standardised population; (B) CVD death rates per 100K population (age < 65) and WYLL values per 100K working age population. (C) Correlation coefficients and *p*-values between CVD death rates and excess mortality metrics (*p*-score, EMR, PYLL, ASYR, WYLL). No adjustments were considered for the Spearman *p*-values in this multiple comparison because the years-of-life-lost metrics involved in three of the five hypothesis tested are closely related to each other (Spearman correlation between each pair of ASYR, WYLL and PYLL is > 0.69).