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# The state of health in the European Union in 2019

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# Background (I)

## European Union (EU) faces many challenges

- Population ageing
- Organisation of health systems

## Previous studies based on Global Burden of Disease (GBD) 2017 estimates

- Improving health outcomes over time
- Heterogeneity between EU countries

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**The state of health in the European Union (EU-28) in 2017: an analysis of the burden of diseases and injuries**

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**Background:** The Global Burden of Disease study has generated a wealth of data on death and disability in Europe. At a time of change for the European Union and European Region of WHO, with a new Health Commissioner and Regional Director, respectively, a review of health trends can contribute to identify outstanding needs and gaps. This paper reports a summary of the burden of disease in the European Union (EU) in 2017 (compared with 2007). **Methods:** For the whole EU and each country, mortality by causes of death, disability-adjusted life years (DALYs) and life expectancies are reported. **Results:** In 2017, the age-standardized mortality and DALY rates were of 452.6 and 19 663.3 per 100 000 inhabitants, respectively. The diseases contributing most to mortality were ischaemic heart disease (IHD), dementias and stroke, while low back pain and IHD accounted for the highest burden of DALYs. **Conclusions:** Overall, there was an improvement in the state of health in the EU but substantial differences between countries remain. Cardiovascular diseases still represent the major burden, although there have been substantial improvements. There are many opportunities for mutual learning among otherwise similar countries with different patterns of disease.

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ORIGINAL ARTICLE



### European Union state of health from 1990 to 2017: time trends and its enlargements' effects

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#### Abstract

**Objectives** We aimed to study health status' time trends in the European Union (EU) during 1990–2017 and its enlargements' impact.

**Methods** Using estimates from the Global Burden of Disease 2017 study and calculating age-sex-standardized rates, we have described time trends and analysed the differences between EU groups regarding the state of health. Interrupted time-series analyses were also performed in order to assess the enlargement impact in the EU state of health.

**Results** All age-sex-standardized rates (mortality, years of life lost, years lived with disability and disability-adjusted life years) declined (annualized rates of change of – 1.7%, – 1.52%, – 0.06% and – 1.01%, respectively) between 1990 and 2017 (except between 2014 and 2015). For EU-28, life expectancy and healthy life expectancy increased 5.9 and 4.6 years, respectively. With the EU-25 and EU-27 enlargements, all age-sex-standardized rates and life expectancies worsened (with statistical significance). The EU-28 enlargement revealed the same tendency, contrasting with the EU-15 one.

**Conclusions** Overall, the EU health status is improving, despite changes in its composition over the years. However, the average EU state of health declined with the 2004, 2007 and 2013 EU enlargements.

**Keywords** European Union · Health status · Public health · Burden of disease



## Background (II)

### GBD 2019 improvements

- Key demographic modelling steps
- Measurement methods and the Bayesian meta-regression tool
- More data sources and 12 new causes

### **Aim**

To analyse the GBD 2019 study estimates to describe the **health status in the EU**, focusing on deaths, years lived with disability (YLDs), years of life lost due to premature mortality (YLLs), disability-adjusted life years (DALYs), life expectancy, healthy life expectancy (HALE) over the 2010-2019 period

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## Methods (I)

Retrospective, observational and ecological study  
EU-28 countries, 2010-2019 estimates



### GBD 2019 study

- 369 diseases and injuries (286 causes of death)
- Cause-specific incidence, prevalence, mortality, YLDs, YLLs, DALYs, LE and HALE
- Cause fractions calculated using the Cause of Death Ensemble model (CODEm) and spatiotemporal Gaussian process regression



## Methods (II)

$$\text{DALYs} = \text{YLLs} + \text{YLDs}$$

YLLs

Number of deaths \* standard remaining LE (from the lowest observed death rate at any age group)

YLDs

Prevalence \* disability weight



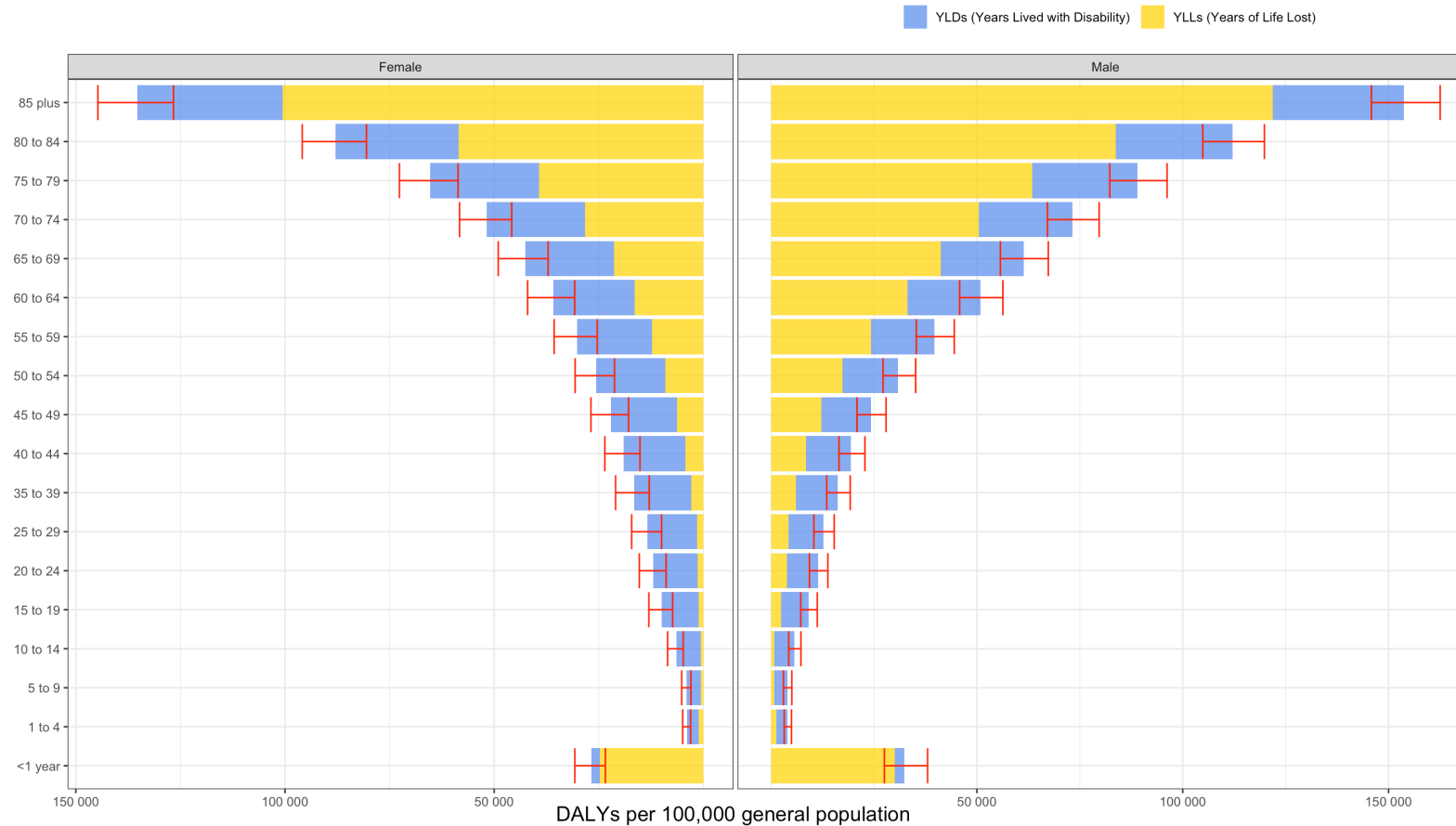
## Methods (III)

Estimates included 95% uncertainty intervals

Age-standardised rates for 22 Level 2 causes were analyzed and compared to EU-28

Relative change between 2010 and 2019 were also used for assessing time trends

# Results (I)

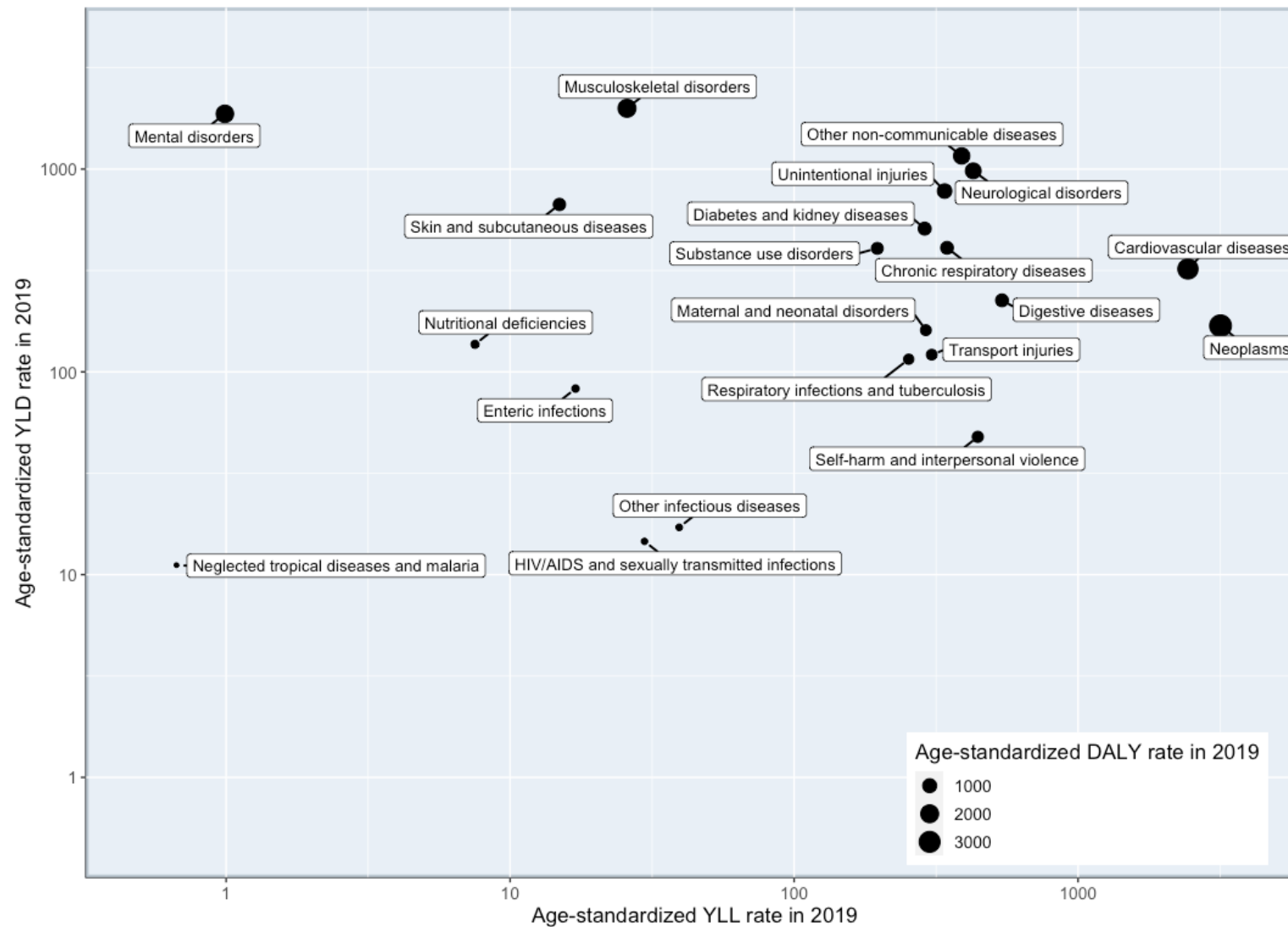


EU-28 2019

- 5.35 million deaths
- 157.88 million DALYs
- LE = 81.0 years
- HALE = 69.8 years

**Figure 1.** All-cause YLL, YLD and DALY rates in EU-28 in 2019 by age group and sex.

## Results (II)



**Figure 2.** Age-standardised YLL, YLD and DALY rates in 2019 for the level two causes in EU-28.

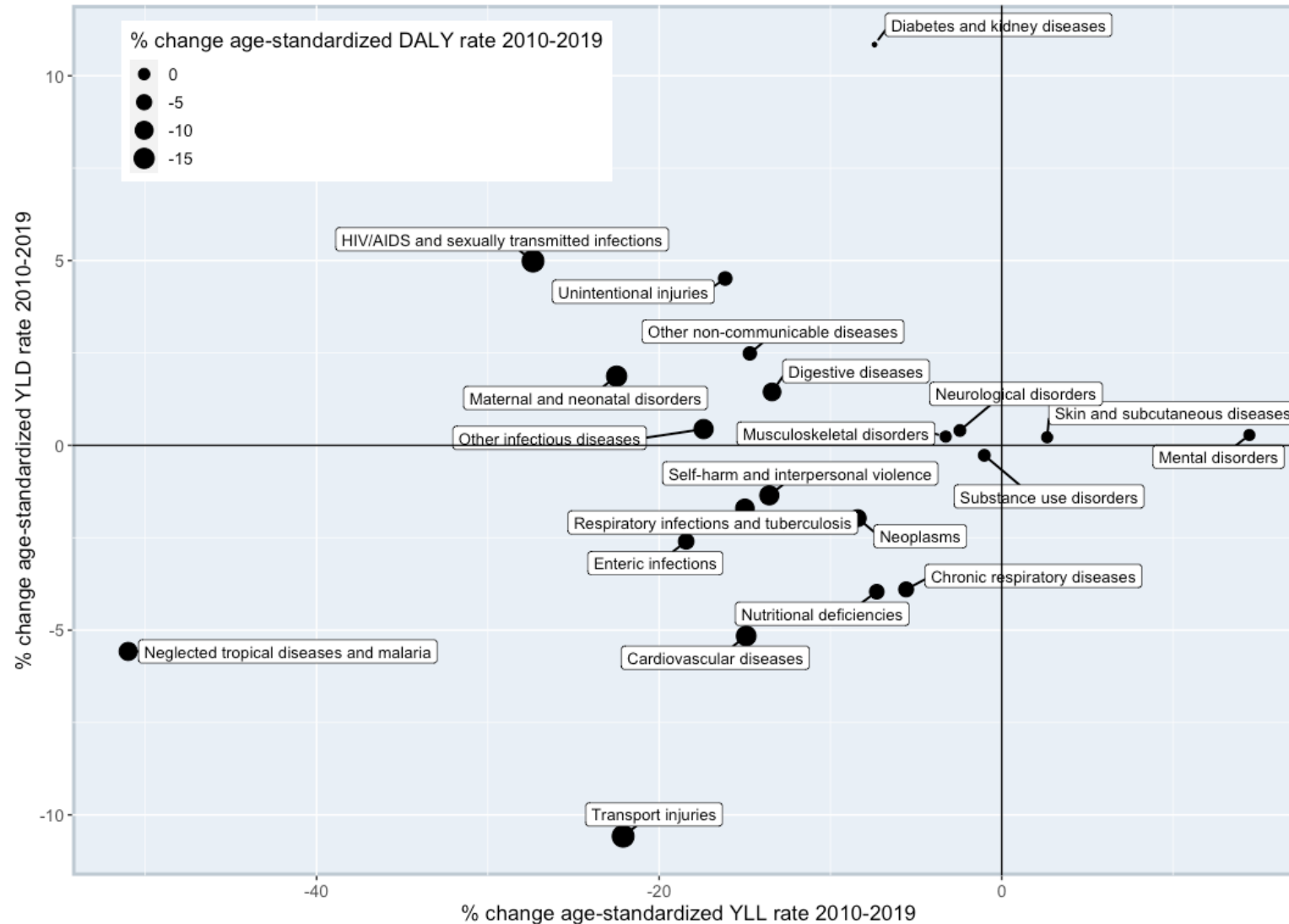


## Results (III)

	All causes	Neoplasms	Cardiovascular diseases	Musculoskeletal disorders	Mental disorders	Other non-communicable diseases	Neurological disorders	Unintentional injuries	Diabetes and kidney diseases	Digestive diseases	Chronic respiratory diseases	Skin and subcutaneous diseases	Substance use disorders	Self-harm and interpersonal violence	Sense organ diseases	Maternal and neonatal disorders	Transport injuries	Respiratory infections and tuberculosis	Nutritional deficiencies	Enteric infections	Other infectious diseases	HIV/AIDS and sexually transmitted infections	Neglected tropical diseases and malaria
EU-28	20251	3342	2759	2020	1874	1550	1408	1118	797	765	754	684	603	491	484	452	427	369	144	100	56	44	12
Spain	18033	2977	1834	1831	2192	1472	1350	910	789	551	752	698	469	309	538	380	349	281	125	84	54	66	20
Italy	18186	2976	2032	2184	1954	1532	1472	784	814	644	539	733	344	284	530	413	422	225	145	59	47	51	4
France	18782	3311	1628	2055	2045	1602	1426	1279	463	565	554	843	567	609	402	419	418	278	149	72	56	40	2
Luxembourg	18634	2933	1981	2141	1850	1496	1366	1091	804	610	787	728	664	467	380	347	389	275	117	108	71	28	4
Sweden	18069	2672	2329	2036	2017	1386	1321	1010	615	466	786	692	692	591	340	311	241	265	123	110	46	18	3
Malta	18983	2604	2511	2224	1903	1740	1329	1075	919	429	674	748	466	311	405	670	316	394	111	58	55	26	13
Austria	19104	2820	2408	1971	1905	1932	1326	1083	790	674	651	711	659	552	392	412	332	208	103	77	49	33	17
Finland	19569	2606	2864	2037	1887	1484	1396	1396	685	788	618	748	925	734	388	267	323	198	100	68	43	10	3
Ireland	19401	3049	2193	2273	2202	1666	1404	936	622	465	969	728	824	474	397	360	236	373	95	69	46	17	2
Portugal	19674	3135	2150	2256	2317	1428	1291	780	980	624	861	733	477	422	413	374	422	527	136	74	54	199	21
Netherlands	18888	3614	1883	2001	2069	1663	1414	874	637	438	977	721	428	480	371	477	251	321	109	74	60	24	2
Slovenia	19135	3341	2546	1521	1462	1337	1249	1694	697	864	505	451	621	665	568	366	635	277	127	143	42	14	8
Belgium	20170	3256	2021	2042	1875	1788	1579	1267	694	641	879	730	601	769	409	415	440	404	126	131	69	35	2
Denmark	19929	3494	1968	2485	1794	1709	1282	926	678	686	1030	776	890	423	374	459	289	347	109	127	53	28	3
Germany	20075	3221	2601	2211	1898	1692	1539	970	894	742	749	717	618	477	393	442	315	287	122	109	45	29	3
United Kingdom	20957	3302	2362	2314	1959	1609	1434	920	780	889	1187	736	924	402	503	523	253	501	161	75	68	47	6
Greece	20201	3300	3198	2031	2260	1591	1330	947	790	470	724	677	432	242	419	476	672	408	83	69	45	18	19
Cyprus	19743	2648	2939	2225	1915	1556	1330	1064	1165	483	864	719	358	311	397	457	773	264	112	99	38	22	3
Czechia	21153	3405	3909	1548	1385	1271	1269	1561	1251	896	628	454	515	577	595	434	656	395	142	189	49	17	8
Poland	22749	4192	4183	1629	1259	1216	1337	1570	951	1033	651	460	765	743	637	437	768	478	196	121	55	27	42
Estonia	23061	3522	4651	1510	1573	1345	1337	1580	752	987	354	553	1646	773	642	317	517	424	130	186	62	167	31
Croatia	21886	3770	4267	1600	1451	1513	1289	1449	981	898	632	444	523	558	606	558	752	228	122	150	45	17	33
Slovakia	23352	3762	5134	1541	1373	1564	1281	1792	848	1242	476	451	477	572	606	544	653	559	162	182	76	22	36
Lithuania	25648	3573	5824	1496	1716	1619	1242	2020	547	1447	424	441	1053	1354	688	369	693	574	164	190	78	104	32
Hungary	24500	4551	5420	1605	1394	1399	1260	1517	1020	1269	947	489	490	659	614	526	574	265	152	237	56	23	33
Latvia	26016	3631	6603	1531	1614	1554	1260	1933	746	1069	391	419	1056	1042	691	471	732	502	161	187	89	300	31
Romania	26044	3998	6644	1579	1368	1405	1249	1777	781	1501	714	421	361	506	623	673	775	1083	211	190	85	59	41
Bulgaria	29375	4368	9570	1544	1349	1503	1313	1726	1265	1282	693	454	384	603	617	674	784	680	215	181	115	39	16

Figure 3. Age-standardised DALY rates (per 100 000 inhabitants) by the level 2 causes for EU-28 and each country in 2019.

## Results (IV)



**Figure 4.** Age-standardised YLL, YLD and DALY rates changes (in %) between 2010 and 2019 for the level two causes in EU-28.



## Results (IV)

### EU-28 2019

- 8.8% decrease of age-standardised death rate
- 5.8% decrease of age-standardised DALY rate
- 1.8% increase of LE
- 1.2% increase of HALE

Min LE = 73.3 years (Bulgaria); Max LE = 83.1 years (Spain/Italy)

Min HALE = 64.6 years (Bulgaria); Max HALE = 71.6 years (Spain)



## Conclusions (I)

- Cardiovascular and neoplasms account for most of burden in EU 2019
- East-West burden of diseases gap still persists
- Important improvements (e.g. transport injuries) vs. increasing diabetes

## Limitations

- Same disability weights and same severity distributions
- Morbidity data availability and quality



## Future work (I)

- Specific diseases or country studies
- Opportunities for mutual learning among countries
- Health information systems improvement

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