

Supplement. Overview for Global Burden of Disease 2019

The Global Burden of Disease (GBD) is an approach to global descriptive epidemiology.¹ It is a systematic, scientific effort to quantify the comparative magnitude of health loss due to diseases, injuries, and risk factors by age, sex, and geography for specific points in time. IHME serves as the coordinating center for the GBD and affiliated projects. Published in *The Lancet* in October 2020, GBD 2019 provides, for the first time, an independent estimation of population for each of 204 countries and territories and for the globe using a standardized, replicable approach, as well as a comprehensive update on fertility and migration.¹ GBD 2019 incorporates major data additions and improvements and methodological refinements. Mortality and life expectancy estimates have expanded to a total of 990 locations at the most detailed level, and new causes have been added to the fatal and nonfatal cause lists, for a total of 369 diseases and injuries (<http://www.healthdata.org/gbd/about/protocol>). GBD 2019 estimated each epidemiological quantity of interest—incidence, prevalence, mortality, years lived with disability (YLDs), years of life lost (YLLs), and disability-adjusted life-years (DALYs)—for 23 age groups; males, females, and both sexes combined; and 204 countries and territories that were grouped into 21 regions and seven superregions. The GBD 2019 location hierarchy now includes all WHO member states. The GBD disease and injury analytical framework generated estimates for every year from 1990 to 2019. Diseases and injuries were organized into a levelled cause hierarchy from the three broadest causes of death and disability at Level 1 to the most specific causes at Level 4. Within the three Level 1 causes—communicable, maternal, neonatal, and nutritional diseases; noncommunicable diseases; and injuries—there are 22 Level 2 causes, 174 Level 3 causes, and 301 Level 4 causes (including 131 Level 3 causes that are not further disaggregated at Level 4). In total, 364 causes are nonfatal and 286 are fatal.¹

Data sources

The GBD estimation process is based on identifying multiple relevant data sources for each disease or injury, including censuses, household surveys, civil registration and vital statistics, disease registries, health service use, air pollution monitors, satellite imaging, disease notifications, and other sources. Each of these types of data is identified from a systematic review of published studies, searches of government and international organization websites, published reports, primary data sources such as the Demographic and Health Surveys, and contributions of datasets by GBD collaborators. A total of 86,249 sources were used in this analysis, including 19,354 sources reporting deaths, 31,499 reporting incidence, 1973 reporting prevalence, and 26,631 reporting other metrics. Each newly identified and obtained data source is given a unique identifier by a team of librarians and included in the Global Health Data Exchange (GHDx). The GHDx makes publicly available the metadata for each source included in GBD as well as the data, where allowed by the data provider. Additional metadata for each source are available in the online GBD citation tool, <http://ghdx.healthdata.org/gbd-results-tool>.

Modeling

For most diseases and injuries, processed data are modeled using standardized tools to generate estimates of each quantity of interest by age, sex, location, and year.¹ There are three main standardized tools: the cause of death ensemble model (CODEm), spatiotemporal Gaussian process regression (ST-GPR), and DisMod-MR. Previous publications provide more details on these general GBD methods.²⁻⁴ Briefly, CODEm is a highly systematized tool to analyze cause of death data using an ensemble of different modeling methods for rates or cause fractions with varying choices of covariates that perform best with out-of-sample predictive validity testing. DisMod-MR is a Bayesian meta-regression tool that allows evaluation of all available data on incidence, prevalence, remission, and mortality for a disease, enforcing consistency between epidemiological parameters. ST-GPR is a set of regression methods that borrow strength between locations and over time for single metrics of interest, such as risk factor exposure or mortality rates.¹

References

1. GBD 2019 Diseases and Injuries Collaborators. Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* 2020;396:1204-1222.
2. GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018;392:1789-1858.
3. GBD 2017 Causes of Death Collaborators. Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018;392:1736-1788.
4. GBD 2017 Diet Collaborators. Health effects of dietary risks in 195 countries, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2019;393:1958-1972.

Supplementary Table 1. The number of cases and deaths due to T1DM and T2DM, 1990-2019.

Year	Cases, n (95% UI)			Deaths, n (95% UI)		
	Total diabetes	T1DM	T2DM	Total diabetes	T1DM	T2DM
1990	1926228 (1755751-2119157)	23769 (18960-29675)	1902459 (1729905-2095092)	70089 (61639-79978)	6005 (4960-7041)	64084 (56365-73219)
1991	2034727 (1857989-2230965)	23780 (18966-29646)	2010947 (1832888-2207488)	70488 (62722-79836)	5963 (4936-6938)	64525 (57309-74425)
1992	2136345 (1951521-2336143)	23855 (19048-29726)	2112490 (1928619-2314343)	71969 (64219-82438)	6027 (4993-7003)	65942 (58733-76050)
1993	2229455 (2039243-2435723)	23968 (19115-29836)	2205486 (2015335-2413284)	74000 (66686-83784)	6082 (5120-6948)	67918 (61093-77252)
1994	2315447 (2117211-2524225)	24092 (19264-29940)	2291354 (2094336-2504019)	75643 (68689-85138)	6296 (5319-7181)	69347 (62779-78424)
1995	2385653 (2180671-2601556)	24205 (19352-30022)	2361448 (2155965-2577050)	77685 (70937-87217)	6521 (5526-7370)	71164 (64730-80851)
1996	2441412 (2241676-2658806)	24397 (19438-30192)	2417014 (2216941-2636452)	81040 (74285-90477)	6600 (5610-7471)	74440 (68209-83883)
1997	2481189 (2282304-2698014)	24741 (19619-30753)	2456448 (2256732-2675357)	84291 (77938-92176)	6636 (5717-7445)	77654 (71657-85668)
1998	2515445 (2313381-2740405)	25162 (19946-31537)	2490283 (2290774-2714189)	88550 (81543-96980)	6851 (5834-7682)	81699 (75110-90297)
1999	2556195 (2352436-2780803)	25583 (20243-32043)	2530611 (2328612-2754907)	94000 (86687-103173)	6985 (5942-7822)	87015 (80218-96295)
2000	2611787 (2406349-2839872)	25928 (20549-32585)	2585859 (2382299-2815851)	99174 (91595-109299)	6992 (5936-7846)	92182 (85050-101779)
2001	2717504 (2509879-2947133)	26393 (21005-33062)	2691111 (2484023-2921525)	104537 (96224-114448)	6879 (5958-7690)	97658 (89944-106907)
2002	2878083 (2662319-3108537)	27161 (21567-33875)	2850922 (2633782-3082377)	111371 (102525-121592)	6693 (5847-7470)	104678 (96300-114675)
2003	3064674 (2836363-3301456)	28100 (22182-35083)	3036573 (2810841-3276710)	117231 (108002-127857)	6500 (5790-7250)	110731 (101979-120899)
2004	3245091 (3013222-3487208)	29063 (22863-36362)	3216027 (2982910-3459216)	123931 (114284-134878)	6463 (5790-7194)	117468 (108303-127987)
2005	3383236 (3145818-3625111)	29892 (23496-37346)	3353343 (3116912-3594478)	128162 (117953-141062)	6259 (5665-6988)	121903 (112079-134373)
2006	3468919 (3229279-3711293)	30736 (24269-38622)	3438184 (3197915-3679835)	124587 (115509-134926)	6004 (5423-6707)	118583 (109880-128501)
2007	3525314 (3282877-3767382)	31718 (24970-39955)	3493596 (3249818-3738147)	123442 (114331-133496)	5777 (5277-6469)	117665 (108936-127393)
2008	3565832 (3318243-3812950)	32643 (25519-41214)	3533189 (3285759-3780483)	125045 (115549-135494)	5610 (5126-6259)	119436 (110326-129312)
2009	3605288 (3356352-3849965)	33324 (26004-42255)	3571965 (3324350-3816471)	128147 (118253-138245)	5409 (4945-6048)	122738 (113152-132376)
2010	3661027 (3409967-3906892)	33582 (26139-42767)	3627445 (3376383-3874908)	132114 (120530-142704)	5222 (4706-5853)	126892 (115631-136962)
2011	3737250 (3482700-3990154)	33407 (25969-42613)	3703843 (3448946-3957446)	134980 (122909-147283)	5002 (4511-5738)	129978 (118427-141815)
2012	3819554 (3558699-4080572)	33023 (25754-41975)	3786530 (3526486-4044334)	137073 (124779-148694)	4770 (4317-5433)	132303 (120351-143533)

2013	3896774 (3628339-4164936)	32596 (25398-41434)	3864178 (3597609-4130939)	140303 (127392-152814)	4633 (4133-5197)	135670 (123061-147795)
2014	3957794 (3685826-4232463)	32259 (25173-40963)	3925536 (3652308-4201609)	145136 (131437-159358)	4565 (4054-5256)	140571 (127275-154363)
2015	3992878 (3718838-4277709)	32117 (24927-40707)	3960762 (3683533-4242952)	149030 (133827-165421)	4471 (3927-5129)	144559 (129684-160542)
2016	3834680 (3572073-4132263)	32352 (25266-40914)	3802328 (3542938-4097252)	155700 (137669-175944)	4470 (3931-5213)	151230 (133476-170978)
2017	3664465 (3390977-3975232)	32932 (25741-41393)	3631534 (3358821-3943574)	161250 (141665-181054)	4445 (3834-5153)	156805 (137743-175978)
2018	3685635 (3410204-4007380)	34283 (26776-43001)	3651352 (3378977-3973733)	166694 (145202-190137)	4474 (3812-5311)	162220 (141401-185162)
2019	3775609 (3478762-4134575)	36488 (28496-45706)	3739121 (3440392-4096657)	172892 (147237-198952)	4504 (3786-5339)	168388 (143233-194030)
Change, %	96.0	53.5	96.5	146.7	-25.0	162.8

Note: Change denotes the numbers between 1990 and 2019. UI, uncertainty intervals.

Supplementary Table 2. Sex-specific relative risks of T1DM and T2DM incidence in China due to age, period, and cohort effects.

Factor	T1DM				T2DM			
	Males		Females		Males		Females	
	RR (95% CI)	P value	RR (95% CI)	P value	RR (95% CI)	P value	RR (95% CI)	P value
Age								
0-4	0.99 (0.52-1.87)	0.973	1.36 (0.71-2.64)	0.356	N/A	N/A	N/A	N/A
5-9	2.32 (1.5-3.59)	<0.001	3.3 (2.08-5.21)	<0.001	N/A	N/A	N/A	N/A
10-14	2.14 (1.41-3.23)	<0.001	2.73 (1.74-4.27)	<0.001	N/A	N/A	N/A	N/A
15-19	1.61 (1.03-2.5)	0.035	1.59 (0.94-2.7)	0.085	0.35 (0.33-0.38)	<0.001	0.37 (0.34-0.4)	<0.001
20-24	1.6 (1.02-2.5)	0.039	1.3 (0.72-2.33)	0.38	0.66 (0.62-0.7)	<0.001	0.62 (0.58-0.66)	<0.001
25-29	1.42 (0.87-2.3)	0.156	1.04 (0.54-2.03)	0.899	0.65 (0.62-0.69)	<0.001	0.55 (0.51-0.59)	<0.001
30-34	1.02 (0.58-1.81)	0.937	0.7 (0.31-1.58)	0.39	0.81 (0.77-0.86)	<0.001	0.61 (0.58-0.66)	<0.001
35-39	0.95 (0.51-1.76)	0.867	0.68 (0.29-1.62)	0.39	1.14 (1.09-1.2)	<0.001	0.83 (0.78-0.88)	<0.001
40-44	0.85 (0.44-1.66)	0.638	0.66 (0.27-1.63)	0.371	1.43 (1.36-1.49)	<0.001	1.3 (1.23-1.36)	<0.001
45-49	0.73 (0.36-1.5)	0.398	0.63 (0.25-1.6)	0.331	1.64 (1.57-1.71)	<0.001	1.94 (1.86-2.02)	<0.001
50-54	0.64 (0.3-1.38)	0.253	0.61 (0.24-1.58)	0.31	1.54 (1.48-1.61)	<0.001	2.12 (2.04-2.2)	<0.001
55-59	0.58 (0.26-1.3)	0.185	0.62 (0.24-1.59)	0.322	1.25 (1.21-1.31)	<0.001	1.96 (1.89-2.03)	<0.001
60-64	0.57 (0.25-1.29)	0.179	0.68 (0.27-1.69)	0.402	1.17 (1.12-1.22)	<0.001	1.61 (1.55-1.67)	<0.001
65-69	0.61 (0.27-1.38)	0.24	0.79 (0.33-1.89)	0.591	1.24 (1.2-1.29)	<0.001	1.17 (1.13-1.22)	<0.001
70-74	0.7 (0.31-1.61)	0.403	0.93 (0.38-2.26)	0.876	1.08 (1.03-1.12)	<0.001	0.8 (0.76-0.84)	<0.001
Period								
1994	0.81 (0.57-1.16)	0.248	0.83 (0.55-1.28)	0.407	0.79 (0.77-0.82)	<0.001	0.8 (0.78-0.83)	<0.001
1999	0.81 (0.57-1.14)	0.223	0.88 (0.59-1.31)	0.524	0.9 (0.87-0.93)	<0.001	0.85 (0.83-0.88)	<0.001
2004	0.95 (0.69-1.3)	0.744	0.97 (0.68-1.4)	0.879	1.06 (1.03-1.09)	<0.001	1.06 (1.03-1.09)	<0.001
2009	1.15 (0.86-1.53)	0.352	1.06 (0.75-1.5)	0.752	1.09 (1.06-1.12)	<0.001	1.1 (1.07-1.14)	<0.001
2014	1.11 (0.82-1.49)	0.501	1.09 (0.76-1.55)	0.638	1.14 (1.11-1.18)	<0.001	1.15 (1.12-1.19)	<0.001
2019	1.27 (0.92-1.74)	0.143	1.22 (0.82-1.8)	0.328	1.07 (1.03-1.1)	<0.001	1.08 (1.05-1.12)	<0.001
Cohort								
1920-1924	0.6 (0.07-5.43)	0.647	0.58 (0.06-5.81)	0.645	1.4 (1.28-1.54)	<0.001	1.5 (1.34-1.67)	<0.001
1925-1929	0.67 (0.14-3.21)	0.612	0.66 (0.13-3.33)	0.61	1.56 (1.46-1.66)	<0.001	1.51 (1.4-1.63)	<0.001
1930-1934	0.73 (0.21-2.57)	0.619	0.75 (0.2-2.75)	0.662	1.5 (1.42-1.57)	<0.001	1.48 (1.4-1.56)	<0.001
1935-1939	0.77 (0.27-2.22)	0.625	0.8 (0.26-2.46)	0.698	1.33 (1.27-1.39)	<0.001	1.39 (1.33-1.46)	<0.001
1940-1944	0.82 (0.32-2.06)	0.667	0.83 (0.3-2.27)	0.711	1.18 (1.13-1.23)	<0.001	1.29 (1.23-1.34)	<0.001
1945-1949	0.85 (0.38-1.93)	0.7	0.84 (0.34-2.11)	0.71	1.05 (1.01-1.1)	0.012	1.16 (1.11-1.21)	<0.001
1950-1954	0.89 (0.39-2.03)	0.78	0.87 (0.33-2.29)	0.776	0.94 (0.9-0.98)	0.007	1.04 (1-1.09)	0.058
1955-1959	0.93 (0.41-2.08)	0.854	0.9 (0.33-2.42)	0.83	0.83 (0.79-0.87)	<0.001	0.92 (0.88-0.97)	0.001
1960-1964	0.97 (0.45-2.1)	0.94	0.93 (0.34-2.5)	0.882	0.75 (0.71-0.79)	<0.001	0.84 (0.79-0.88)	<0.001
1965-1969	1.01 (0.49-2.06)	0.981	0.95 (0.37-2.44)	0.908	0.71 (0.67-0.75)	<0.001	0.8 (0.76-0.85)	<0.001
1970-1974	1.06 (0.55-2.02)	0.87	0.98 (0.41-2.36)	0.97	0.71 (0.67-0.75)	<0.001	0.78 (0.73-0.83)	<0.001
1975-1979	1.14 (0.63-2.04)	0.666	1.06 (0.49-2.31)	0.878	0.74 (0.7-0.78)	<0.001	0.76 (0.71-0.81)	<0.001
1980-1984	1.24 (0.75-2.06)	0.406	1.22 (0.65-2.31)	0.538	0.8 (0.76-0.85)	<0.001	0.76 (0.71-0.82)	<0.001

1985-1989	1.33 (0.86-2.05)	0.2	1.36 (0.81-2.27)	0.244	0.94 (0.88-1.01)	0.076	0.83 (0.77-0.9)	<0.001
1990-1994	1.35 (0.9-2.02)	0.145	1.37 (0.86-2.17)	0.187	1.18 (1.1-1.27)	<0.001	1 (0.91-1.08)	0.92
1995-1999	1.27 (0.83-1.94)	0.28	1.3 (0.81-2.09)	0.284	1.16 (1.06-1.27)	0.001	0.94 (0.85-1.04)	0.245
2000-2004	1.17 (0.73-1.89)	0.508	1.26 (0.76-2.1)	0.37	0.83 (0.68-1.01)	0.059	0.63 (0.5-0.8)	<0.001
2005-2009	1.21 (0.71-2.07)	0.483	1.31 (0.74-2.3)	0.353	N/A	N/A	N/A	N/A
2010-2014	1.28 (0.65-2.51)	0.479	1.35 (0.66-2.74)	0.414	N/A	N/A	N/A	N/A
2015-2019	1.31 (0.37-4.6)	0.671	1.35 (0.36-5.03)	0.651	N/A	N/A	N/A	N/A
Deviance	1.19		0.92		132.18		88.6	
AIC	3.47		3.15		10.29		9.57	
BIC	-232.8		-233.07		-38.88		-82.47	

Notes: RR denotes the relative risk of incidence in a particular age, period, or birth cohort relative to the average level of all age, period, or birth cohort combined. RR, relative risk; CI, confidence interval; AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion.

Supplementary Table 3. Sex-specific relative risks of T1DM and T2DM mortality in China due to age, period, and cohort effects.

Factor	T1DM				T2DM			
	Males		Females		Males		Females	
	RR (95% CI)	P value	RR (95% CI)	P value	RR (95% CI)	P value	RR (95% CI)	P value
Age								
0-4	1.18 (0.18-7.77)	0.863	1.06 (0.2-5.53)	0.942	N/A	N/A	N/A	N/A
5-9	0.25 (0.01-5.85)	0.388	0.32 (0.03-3.46)	0.349	N/A	N/A	N/A	N/A
10-14	0.3 (0.02-4.92)	0.397	0.36 (0.04-3.3)	0.366	N/A	N/A	N/A	N/A
15-19	0.49 (0.05-4.44)	0.523	0.44 (0.06-3.25)	0.419	0.05 (0-1.76)	0.098	0.07 (0-1.76)	0.107
20-24	0.84 (0.14-4.88)	0.846	0.73 (0.15-3.63)	0.698	0.1 (0.01-0.97)	0.047	0.15 (0.02-1.15)	0.068
25-29	1.07 (0.21-5.47)	0.931	0.86 (0.19-3.82)	0.838	0.14 (0.02-0.93)	0.042	0.16 (0.02-1.07)	0.059
30-34	1.45 (0.32-6.51)	0.629	0.94 (0.22-3.94)	0.931	0.38 (0.11-1.37)	0.139	0.23 (0.05-1.08)	0.062
35-39	2.12 (0.56-7.97)	0.267	1.25 (0.35-4.42)	0.73	0.59 (0.21-1.67)	0.321	0.33 (0.09-1.14)	0.079
40-44	3.48 (1.14-10.62)	0.029	1.98 (0.71-5.53)	0.194	0.9 (0.39-2.09)	0.812	0.55 (0.21-1.42)	0.215
45-49	0.45 (0.05-4.04)	0.472	0.59 (0.13-2.63)	0.488	1.8 (0.95-3.4)	0.071	1.49 (0.77-2.89)	0.24
50-54	0.72 (0.13-4.04)	0.71	1.04 (0.33-3.28)	0.942	2.6 (1.57-4.3)	<0.001	2.42 (1.45-4.05)	0.001
55-59	1.18 (0.3-4.69)	0.817	1.85 (0.74-4.65)	0.188	3.74 (2.46-5.69)	<0.001	3.87 (2.51-5.94)	<0.001
60-64	1.28 (0.34-4.92)	0.715	1.54 (0.57-4.19)	0.398	5.05 (3.33-7.65)	<0.001	6.7 (4.33-10.37)	<0.001
65-69	2.14 (0.64-7.11)	0.214	2.57 (1-6.57)	0.049	7.35 (4.52-11.96)	<0.001	9.97 (5.86-16.96)	<0.001
70-74	2.35 (0.63-8.8)	0.205	2.87 (0.98-8.37)	0.054	10.88 (5.91-20.01)	<0.001	15.14 (7.73-29.69)	<0.001
Period								
1994	1.13 (0.49-2.58)	0.778	1.44 (0.74-2.79)	0.285	0.64 (0.39-1.03)	0.068	0.85 (0.51-1.41)	0.526
1999	1.19 (0.55-2.56)	0.655	1.45 (0.8-2.64)	0.218	0.79 (0.58-1.08)	0.145	0.92 (0.66-1.26)	0.591
2004	1.12 (0.51-2.45)	0.773	1.22 (0.66-2.25)	0.517	1.03 (0.86-1.24)	0.749	1.13 (0.95-1.34)	0.179
2009	0.94 (0.41-2.18)	0.889	0.88 (0.44-1.78)	0.73	1.07 (0.88-1.29)	0.496	1 (0.83-1.21)	0.985
2014	0.84 (0.35-2.04)	0.7	0.69 (0.31-1.53)	0.36	1.24 (0.9-1.69)	0.182	1 (0.72-1.4)	0.984
2019	0.84 (0.33-2.13)	0.713	0.64 (0.27-1.53)	0.318	1.45 (0.92-2.31)	0.113	1.14 (0.69-1.87)	0.611
Cohort								
1920-1924	1.31 (0.13-13.33)	0.818	1.25 (0.22-6.95)	0.801	3.26 (1.23-8.65)	0.017	2.77 (1.05-7.32)	0.04
1925-1929	1.33 (0.25-7.1)	0.741	1.34 (0.38-4.65)	0.648	3.01 (1.32-6.87)	0.009	2.82 (1.26-6.34)	0.012
1930-1934	1.35 (0.31-5.81)	0.687	1.41 (0.48-4.12)	0.533	2.72 (1.33-5.55)	0.006	2.65 (1.33-5.26)	0.005
1935-1939	1.32 (0.34-5.14)	0.692	1.45 (0.56-3.79)	0.447	2.31 (1.22-4.41)	0.011	2.46 (1.34-4.52)	0.004
1940-1944	1.29 (0.34-4.94)	0.712	1.36 (0.52-3.58)	0.531	1.98 (1.06-3.68)	0.031	2.17 (1.21-3.9)	0.01
1945-1949	1.23 (0.32-4.76)	0.765	1.42 (0.54-3.76)	0.478	1.75 (0.92-3.33)	0.088	1.97 (1.06-3.67)	0.032
1950-1954	1.14 (0.3-4.38)	0.845	1.36 (0.48-3.87)	0.567	1.43 (0.69-2.96)	0.338	1.67 (0.81-3.44)	0.168
1955-1959	1.1 (0.26-4.68)	0.896	1.21 (0.36-4.06)	0.759	1.19 (0.51-2.79)	0.683	1.29 (0.54-3.09)	0.566
1960-1964	1.07 (0.23-4.95)	0.926	1.19 (0.32-4.47)	0.793	1.03 (0.38-2.78)	0.954	1.08 (0.38-3.09)	0.884
1965-1969	1.08 (0.22-5.4)	0.926	1.21 (0.29-5.13)	0.797	0.87 (0.27-2.77)	0.814	0.87 (0.25-3.04)	0.822
1970-1974	1.08 (0.21-5.63)	0.932	1.1 (0.23-5.25)	0.907	0.69 (0.18-2.65)	0.585	0.68 (0.15-3.06)	0.619
1975-1979	1.1 (0.21-5.87)	0.911	1 (0.19-5.34)	0.999	0.63 (0.13-3.01)	0.563	0.62 (0.1-3.71)	0.602
1980-1984	1.11 (0.17-7.42)	0.91	0.94 (0.14-6.2)	0.95	0.54 (0.09-3.42)	0.515	0.5 (0.06-4.53)	0.537

1985-1989	1.1 (0.13-9.15)	0.931	0.96 (0.13-7.09)	0.967	0.47 (0.05-4.55)	0.513	0.41 (0.03-6.39)	0.524
1990-1994	1.09 (0.15-7.78)	0.934	0.97 (0.16-5.66)	0.969	0.38 (0.01-10.3)	0.568	0.35 (0.01-11.98)	0.559
1995-1999	0.99 (0.1-9.85)	0.996	0.87 (0.11-6.83)	0.891	0.32 (0-30.41)	0.624	0.3 (0-31.51)	0.612
2000-2004	0.77 (0.04-14.75)	0.862	0.68 (0.05-9.72)	0.778	0.23 (0-7834.43)	0.781	0.25 (0-4505.13)	0.782
2005-2009	0.62 (0.01-26.4)	0.803	0.58 (0.02-17.07)	0.753	N/A	N/A	N/A	N/A
2010-2014	0.5 (0.01-49.31)	0.77	0.5 (0.01-35.36)	0.751	N/A	N/A	N/A	N/A
2015-2019	0.37 (0-232.92)	0.763	0.39 (0-197.54)	0.766	N/A	N/A	N/A	N/A
Deviance	0.05		0.26		0.37		1.02	
AIC	1.95		2.2		3.85		3.76	
BIC	-233.94		-233.73		-170.7		-170.05	

Notes: RR denotes the relative risk of mortality in a particular age, period, or birth cohort relative to the average level of all age, period, or birth cohort combined. RR, relative risk; CI, confidence interval; AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion.

Supplementary Table 4. The number of T1DM and T2DM death changes associated with population aging, population growth, and mortality change from 1990 to 2019.

Year	Population aging				Population growth				Mortality change			
	T1DM		T2DM		T1DM		T2DM		T1DM		T2DM	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1991	26	39	487	572	32	41	364	423	-49	-130	-450	-957
1992	46	73	1010	1172	62	80	713	827	-58	-181	-573	-1292
1993	67	103	1556	1814	90	117	1044	1224	-78	-222	-620	-1184
1994	76	130	2168	2507	116	156	1359	1603	-87	-100	-620	-1754
1995	99	169	2838	3250	140	195	1667	1973	-79	-8	-226	-2422
1996	111	195	3617	4117	162	231	1968	2373	-77	-27	348	-2067
1997	122	219	4475	5026	182	266	2259	2777	-88	-70	892	-1859
1998	131	247	5412	6061	202	306	2552	3204	-63	24	1690	-1304
1999	139	275	6481	7251	220	342	2849	3672	-32	35	2679	-1
2000	150	303	7602	8450	236	373	3141	4131	-21	-55	3715	1060
2001	169	344	8833	9767	248	399	3426	4599	-78	-209	4658	2291
2002	202	396	10176	11188	261	416	3731	5108	-113	-474	6028	4363
2003	246	467	11488	12671	271	431	4001	5593	-176	-744	6811	6083
2004	298	552	13058	14303	282	450	4319	6045	-232	-892	8381	7278
2005	342	621	14508	15840	288	463	4589	6415	-342	-1118	9167	7300
2006	382	682	15459	17001	294	471	4672	6567	-459	-1372	6785	4014
2007	412	730	16702	18320	301	480	4833	6762	-549	-1602	5517	1448
2008	428	762	18207	19859	308	490	5073	7017	-602	-1781	5436	-241
2009	426	781	19917	21645	313	499	5344	7326	-674	-1941	5717	-1295
2010	425	805	21664	23498	318	508	5633	7656	-745	-2093	6352	-1996
2011	424	828	23299	25436	319	516	5881	7979	-848	-2242	6297	-2998
2012	425	844	25069	27096	323	522	6184	8248	-930	-2419	6613	-4991
2013	426	859	26796	29113	330	533	6483	8624	-963	-2556	6626	-6056
2014	429	881	28807	31453	340	543	6818	9058	-956	-2678	6942	-6590

2015	428	903	30707	33576	349	556	7176	9481	-980	-2790	7181	-7646
2016	428	937	32900	36273	362	578	7646	10099	-989	-2851	7817	-7588
2017	423	975	34891	38931	374	598	8069	10702	-1004	-2925	7832	-7704
2018	428	1028	36988	41612	385	617	8449	11238	-1006	-2983	7863	-8015
2019	441	1092	39496	44479	393	634	8845	11747	-1023	-3039	8183	-8446

Note: The decomposition was conducted using the number of deaths in 1990 as the reference for each year.