Supplementary Information for: Disparities in high fasting plasma glucose-related cardiovascular disease burden in China.

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Section 1. Study designs of CCDRFS, CNNSs and CHS

(1) the China Chronic Disease and Risk Factor Surveillance

The China Chronic Disease and Risk Factor Surveillance (CCDRFS)[1] was established in 2004, and six waves of nationwide surveys were carried out in 2004, 2007, 2010, 2013, 2015, and 2018. CCDRFS has also been incorporated into the national Disease Surveillance Points (DSPs) system since its establishment in 2004, and surveillance points were considered as the primary sampling unit (PSU) in a multistage sampling framework.

Participants were selected by multistage stratified cluster sampling within each PSU, and the eligibility criteria included: (a) age ≥18 years; (b) having lived in the address for more than 6 months in the past 12 months; (c) not pregnant; (d) without serious health condition or illness. Among 776 571 adults invited, a total of 746 020 participants completed the interview, with an average response rate of 96.1%. After data cleaning, 732 472 people were included in the database, including 32 987 in 2004, 50 717 in 2007, 98 120 in 2010, 176 534 in 2013, 189 605 in 2015 and 184 509 in 2018. Of note, biological sampling has been included in 2010, 2013 and 2018, and blood samples were obtained in the morning after an overnight fast for at least 10 hours, which was one of the data sources used in this current study to assess FPG exposure levels.

(2) the China National Nutrition Survey

The China National Nutrition Surveys (CNNSs)[2] are a series of nationally representative cross-sectional studies, and the routine national surveys started in 1959 (first) and were then conducted in 1982 (second), 1992 (third), 2002 (fourth), 2010–13 (fifth) and 2015–ongoing (sixth). The 2010 to 2013 CNNS included two surveys: the 2010 to 2012 CNNS for subjects aged 6 years and above, and the 2013 CNNHS for children aged 0 to 5 years, and former was used in our current study. Participants in the 2010 to 2013 CNNS were recruited using a stratified and multistage cluster random sampling method. Briefly, administrative units at the county-level in China were

divided into large and small-medium cities, rural areas and poor rural areas according to local economic condition. Then 34 survey sites (districts/counties) were selected from large cities, 41 from small-medium cities, 45 from rural areas, and 30 from poor rural areas. A total of 6 neighborhood (or village) committees were selected from each survey sites, and 75 households were selected by simple random sampling from each selected neighborhood (or village) committee district. All participants were invited for the physical examination and blood sample collection. In 2010 to 12, there were 151 938 participants who had glucose levels measured and 136 779 completed lipid measurements.

(3) the China Hypertension Survey

The China Hypertension Survey (CHS)[3] is a nationally representative population-based study, which recruiting ~0.5 million participants from 31 provinces between October 2012 to December 2015 in mainland China. In a sub-study based on CHS[4], 16 cities and 17 counties were selected using a simple random sampling method from eastern, central, and western regions according to their geographical location and economic level. Next, at least three communities or villages were randomly selected from each region. Then a given number of participants aged ≥ 35 years were selected from communities or villages. To meet the designed sample size of 35 000 participants aged ≥35 years and to take non-response into account in the survey, 56 000 subjects were randomly selected and invited. Among these, 34 994 responded positively with a response rate of 62.5%. Laboratory tests including TC, TG, HDL-C, LDL-C and FPG were detected by a central core laboratory (Beijing Adicon Clinical Laboratories, Inc., Beijing, China) by collecting venous blood for at least 8 hours fasting.

Section 2. CVD mortality data

(1) the National Mortality Surveillance System (NMSS)

Cardiovascular disease (CVD) mortality data were derived from the National Mortality Surveillance System (NMSS), a system that collects death records from surveillance locations to understand death patterns in China. The NMSS, established in 1978, has

been continuously monitoring the mortality levels and patterns of disease among the Chinese population. In 2004, the system was expanded to 161 surveillance points and began to provide annual cause-of-death surveillance results in the form of datasets. Subsequently, in 2013, there was a significant expansion, with surveillance points increasing from 161 to 605, distributed across 31 provincial-level administrative regions in mainland China. These surveillance points collectively cover a population of 324 million, approximately 24.3% of the total national population.[5,6] Strict quality control measures were implemented regularly in the National Mortality Surveillance System for both completeness and accuracy of cause of death identification by practitioners in the health facilities.

(2) Under-reporting survey

Underreporting field survey was conducted since 1990s for every three years periodically to ensure the utmost integrity and accuracy of cause-of-death data. The details of under-reporting field surveys have been reported previously.[7,8] Briefly, within each surveillance site, we designated one township (in rural areas) or street (in urban areas) with a crude death rate and economic level approximating the average, along with a population size at a moderate level, as potential survey locations. All residents within the chosen township/street were included and surveyed for demographic details, death-related information such as cause of death (COD), the highest level of hospital where the illness was diagnosed, and diagnostic criteria. To identify missed deaths, we initially cross-referenced death records between the field survey system and the routine online death cause surveillance system using an automated computer algorithm for verification. Any discrepancies were subject to further manual verification at the surveillance site level.

Missed death cases were subsequently identified following this comprehensive manual review process. Then, in this study, under-reporting rates (URR) annually were calculated from 2010 to 2018 based on capture-mark-recapture method. Finally, we obtained underreporting-adjusted all-cause mortality rate by age-sex for all points by dividing reported number of deaths by (1-URR).

(3) Garbage code redistribution and CVD mortality estimation

In this study, garbage codes include those 1) not the primary COD, 2) intermediate COD, and 3) having unknown actual COD. These codes were identified by consulting research from the Global Burden of Disease, Chinese death surveillance experts, and International Classification of Diseases code experts. They encompass not only uncategorized codes for symptoms, signs, and abnormal clinical and laboratory findings in the International Classification of Diseases-10th Revision (ICD-10), but also codes deemed insufficiently significant to yield practical implications for public health planning and the amelioration of health issues, such as I68.0- I68.8 (Cerebrovascular disorders in diseases classified elsewhere) in this study. Analysis of garbage codes serves as a metric for evaluating the quality of population surveillance data. Table S1 shows the garbage codes related to the CVD outcomes in this present study.

Garbage codes were grouped and assigned a target code for each group based on disease characteristics and established rules for inferring cause of death. The redistribution of garbage codes relied on the proportion of the target code, known coefficients from previous studies, or coefficients from the National Mortality Surveillance System.[9] This redistribution occurred through the following methods:

1) Redistribute garbage code based on the proportion of the target code

After stratifying data by sex and age, the summation of garbage codes within each group was calculated alongside the proportion of each target code in the total target code, determined by dividing its frequency by total deaths. The proportion of the target code in total deaths served as the coefficient. The following equation illustrates the calculation of frequency after redistribution:

Frequency after redistribution = Frequency before redistribution + total garbage code within each group * target code frequency before redistribution/total target code within each group

2) Redistribute garbage code based on known coefficients from previous studies

Garbage code pertaining to certain diseases is redistributed by leveraging established coefficients derived from prior research endeavors, such as those exemplified by the

Global Burden of Disease research.

3) Redistribute garbage code based on coefficients from NMSS

Redistribution coefficients were determined based on pragmatic associations between garbage code and target code. Subsequently, the garbage code is redistributed in accordance with these coefficients.

Consistently, negative correlations between garbage code and target code were identified. This suggests that, while maintaining the total count constant, a higher prevalence of garbage code is linked to a decreased incidence of target code, and vice versa.

The proportion of cause of death for each outcome by province-age-sex was calculated by the number of CVD cases after redistribution divided by the total number of deaths. Mortality rate of CVD by each year, province, sex, and age group was then calculated by multiplying all-cause mortality rate by proportion of CVD in all deaths.

Section 3. Overview of the comparative risk assessment

The Global Burden of Disease Study (GBD) comparative risk assessment method assesses how much of the disease burden observed in given year is related to past exposure to a certain risk. The related burden is estimated by comparing observed health outcomes to those that would have been observed if an alternative or counterfactual level exposure had occurred in the past. Specifically, the purpose of this study was to quantify how much the cardiovascular disease (CVD) burden could be decreased if FPG level to the theoretical-minimum-risk exposure level (TMREL), namely 4.8 to 5.4 mmHg. Comparative risk assessment theory mainly includes five steps:

1. determining the definition of risk factors and their causally affected diseases of interest;
2. estimating the current distribution of risk factors;
3. estimating the relative risk (RR);
4. determining the TMREL of risk factors;
5. estimating the population attributable fraction and disease burden attributable to the current suboptimal distribution of risk factors.

More detail can be obtained from Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019.

The population attributable fraction (PAF) of death burden attributable to high FPG in age group a, sex s, province p and year t for cause o was calculated using the following equation:

$$\mathrm{PAF}_{\mathrm{oaspt}} = \frac{\int_{\mathrm{l}}^{\mathrm{m}} \mathrm{RR}_{\mathrm{oas}}(\mathrm{x})\mathrm{P}_{\mathrm{aspt}}(\mathrm{x})\mathrm{dx} - \mathrm{RR}_{\mathrm{oas}}(\mathrm{TMREL})}{\int_{\mathrm{l}}^{\mathrm{m}} \mathrm{RR}_{\mathrm{oas}}(\mathrm{x})\mathrm{P}_{\mathrm{aspt}}(\mathrm{x})\mathrm{dx}}, \quad (1)$$

where $[\mathrm{l}, \mathrm{m}] = [2.22, 27]$ mmol/L, i.e., considering FPG level between 2.22 and 27 mmol/L, and the sum of the area under the whole range of bins would be equal to the PAF. The minimum and the maximum FPG level for this current study were determined based on the lowest and highest level observed in the above three national surveys.

Section 4. The Bayesian hierarchical model and estimation of FPG distribution

In current study, a temporal-spatial hierarchical Bayesian model was used to analyze spatial and temporal trends of mean FPG at provincial level. All analyses were done separately by sex. Specifically, the model included terms that allowed non-linear time trend, which was specified by a combination of a linear slope and a second order random walk. Besides, we used a cubic spline to allow non-linear age relationship, with one knot at 50 years. The mid-age $\mathrm{z_h}$ of age group h was used to calculate the age model term γ_i:

$$\gamma(\mathrm{z_h}) = \gamma_1 \mathrm{z_h} + \gamma_2 \mathrm{z_h^2} + \gamma_3 \mathrm{z_h^3} + \gamma_4 (\mathrm{z_h} - 50)^3, \quad (2)$$

Additionally, the model also included covariates that help predict FPG levels, including time-varying county-level per capita gross domestic product, urbanisation and time-varying province-level mean body mass index. Moreover, we explored models with alternative covariates which capture food consumption, specifically, a principal component analysis from grain, red meat, vegetables and fruits was used to summarize the food consumption. The first two components are included as provincial-level covariates.

Specifically, the hierarchical Bayesian temporal-spatial model used in the study was:

$$\eta_{it} = b_0 + A_i + B_t + C_{it} + X'_{it}\beta + \gamma(z_h), \quad (3)$$

where η_{it} was the mean FPG level;

b_0 was the intercept;

A_i was spatial component accounting for existent spatial autocorrelation;

B_t was time component accounting for fixed and random time effects;

C_{it} was space-time interaction term accounting for residual spatial variation not accounted for by the main time and space effects;

$X_{it}'\beta$ were covariates, which can be time varying or time-invariant at county or provincial level. where, X_{it} is the covariates matrix for county i and time t and β is a vector of regression parameters.

$\gamma(z_h)$ were age-group values.

The hierarchical Bayesian model was fitted using R-INLA package (https://www.r-inla.org/). R-INLA used the Integrated Nested Laplace Approximation (INLA) approach as an computationally more efficient alternative to MCMC to approximate the posterior distribution of mean FPG[10]. The posterior predictive distribution of mean FPG level in each province, age group and year was generated for males and females, respectively. In this study, we assume that the FPG levels are likely to change slowly and to show a degree of temporal correlation (e.g., to be similar in consecutive years), and we used random walk (RW) to specify the temporal correlation. Given a time ordered vector $Z_1,\ldots, Z_T$, a RW is a model defined by an order r so that Z_t only depends on the previous $t - r$ elements. The simplest RW model is defined when r = 1, so that the conditional distribution of Zt given all the other elements of the vector is:

$$Z_t|Z_{t-1} \sim \text{Normal}(Z_{t-1}, \sigma^2), \quad (4)$$

We include a RW of order 1 in our model to explain the residual temporal effect of FPG level. The cross-validation was used to examine the predictive performance of the fitted model by comparing the estimated mean FPG levels with their observed counterparts. Finally, predictive model checking was used to examine if the predictive distribution is coherent with the observed data and to detect the presence of possible outliers (section 7). The estimates of the FPG distributions were then propagated

through the Monte Carlo samples to obtain 1000 draws for each county or district, year, age, and sex.

The standard deviation of FPG distribution within a population was estimated at the county or district levels starting from age 25 using similar method. Then we calculated the standard deviation for each province using the following equation:

$$SD = \sqrt{\frac{1}{N}\sum_{k=1}^{K} N_k SD_k^2 + \frac{1}{N}\sum_{k=1}^{K} N_k(\eta_k - \eta)^2}, \quad (5)$$

where K means different counties in a province, k=1, …, K; η means mean FPG level; N means the total sample size for every province; and N_k are the sample size for each county or district with each province.

Section 5. Determining the risk-outcome pairs and their relative risks

Risk-outcomes pairs were included based on the World Cancer Research Fund (WCRF) grades of convincing or probable evidence.[11-13] Within this paradigm, compelling evidence comprises biologically plausible relationships between exposure and disease elucidated through numerous epidemiological investigations across diverse populations. Substantive evidentiary inquiries necessitate inclusion of prospective observational studies and, where applicable, randomized controlled trials (RCTs) of adequate magnitude, duration, and caliber, demonstrating consistent effects. Probable evidence is similarly based on epidemiological studies with consistent associations between exposure and disease but for which shortcomings in the evidence exist, such as insufficient available trials (or prospective observational studies). In this study, Following the criteria outlined by the World Cancer Research Fund, convincing evidence and probable evidence were included in the analysis. Taking into account data availability, finally, ischemic heart disease, ischemic stroke, and hemorrhagic stroke were included. Specifically, the definition of CVD-related death was based on the International Classification of Diseases 10th Revision.[9] Overall CVD mortality rates and mortality rates for its subgroups (ischaemic heart disease [I20-I22.9, I24.1-I24.9, I25.0-I25.1, I25.3-I25.9], ischaemic stroke [I63-I63.9, I65-I66.9, I67.2-I67.3, I67.5-I67.6, I69.3], hemorrhagic stroke [I60-I60.9, I69.0, I61-I62.9, I69.1-I69.2]) by each

year, province, sex, and age group in mainland China between 2010 and 2018 were used to evaluate the CVD burden attributable to high FPG.

The RRs in FPG for each outcome were consistent with GBD 2019, and methodological details of RR estimation are to be found in the Methods Appendix (Supplementary Appendix 1) of the 2019 GBD article: Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet 2020; 396: 1223–49.[13] Specifically, table S1 shows the RRs used by this current study. Moreover, to reflect the uncertainty in estimated RRs, 1000 draws of RRs were produced for age-, sex-, province-, and year-specific FPG levels in the population to calculate the PAF and its 95% uncertainty interval (UI). Specifically, We created 1000 draws of RRs for the standard GBD age groups (5 years interval) using the rand function in SAS DATA step[14], which was updated to have better random properties and can generate data from a wide variety of statistical distributions. 1000 draws of log(RRs) were obtained from a log-normal distribution with mean of log (RR) and standard deviation (SD) of the following equation:

$$\mathrm{SD} = (\text{Upper limit} - \text{Lower limit})/2 \times 1.96. \quad (6)$$

Section 6. The theoretical minimum-risk exposure level

The TMREL was established for high FPG as the lowest level of exposure within which its relationship with a disease outcome was not supported by the available evidence. In our study, the TMREL of high FPG was defined as a uniform distribution between 4.8-5.4 mmol/L across all age groups based on the GBD 2019 study,[13] and more details can be found in the Methods Appendix (Supplementary Appendix 1) of the 2019 GBD article: Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. Lancet 2020; 396: 1223–49. Furthermore, further investigations based on cohorts or pooled cohort studies are needed to determine whether we need to consider the difference of the theoretical minimum-risk exposure level for FPG across different age groups and what impact this will have on the estimation of health burden.

Section 7. Model checking and selection

The best model was selected based on the Deviance Information Criterion (DIC) with lower values indicating better fit[15]. DIC was developed especially for Bayesian model comparison, which is a generalization of the Akaike information criterion and proposed by Spiegelhalter et al (2002).[16] It is the sum of two components, one for quantifying the model fit and the other for evaluating the complexity of the model. The first component is measured through the posterior expectation of the deviance, given the data y with likelihood, $p(y|\theta)$, the deviance of the model is defined as: $D(\theta) = -2\log(p(y|\theta))$, where θ refers to the parameters of the likelihood. The second component is the model complexity, which is measured by the effective number of parameters. The combination with the lowest DIC was then identified.

Additionally, cross-validation was used to examine the predictive performance of the model by comparing the estimated FPG levels with their observed counterparts. Briefly, data y was divided into two groups, so that $y = (y_f, y_c)$, where y_f is used to fit the model and to estimate the posterior distribution of the parameters and y_c is used to examine the predictive performance of the fitted model based on y_f. Specifically, leave one out cross-validation was used in R-INLA runs, which assumes that $y_f = y_{-i}$ and $y_c = y_i$. Two measures were used for assessing the goodness of fit of the model:

(1) the conditional predictive ordinate[17]:$CPO_i = p(y_i^* \mid y_f)$;

(2) the probability integral transform (PIT)[18]: $PIT_i = p(y_i^* \leq y_i \mid y_f)$.

If the predicted distribution of y_i based on $y_f = y_{-i}$ is coherent with observed y_i, then observed PITs for all y_is is expected to follow a uniform distribution.

Section 8. Distribution of FPG in the population

Based on the distribution of individual data from the CHS survey, the normal distribution of FPG was determined.

Section 9. Years of life lost estimation.

The Years of life lost (YLLs) were obtained by multiplying the number of estimated deaths by the standard life expectancy at each age group. In the current study, the standard life expectancy was derived from the lowest age-specific mortality rates by

location and sex across all years of interest with a total of population of more than 5 million in 2016. The standard life expectancy was first established and used by GBD2017.[19] The theoretical minimum risk reference life table was presented in Table S3.

Table S1. List of garbage codes redistribution from NMSS cause list for CVD

Cause list	List of garbage codes (ICD-10)
Cardiovascular diseases	I10, I15, I15.0, I15.1, I15.2, I15.8, I15.9, I23, I23.0, I23.1, I23.2, I23.3, I23.4, I23.5, I23.6, I23.8, I24, I24.0, I25.2, I29, I32, I32.0, I32.1, I32.8, I39, I39.0, I39.1, I39.2, I39.3, I39.4, I39.8, I41, I41.0, I41.1, I41.2, I41.8, I41.9, I43, I43.0, I43.1, I43.2, I43.8, I52, I52.0, I52.1, I52.8, I64, I68, I68.0, I68.1, I68.2, I68.8, I79, I79.0, I79.1, I79.2, I79.8, I97, I97.0, I97.1, I97.2, I97.8, I97.9, I98, I98.0, I98.1, I98.2, I98.3, I98.8, I99

NMSS=National Mortality Surveillance System, CVD=cardiovascular disease

Table S2. Relative risk used by outcome and age for each 1 mmol/L increase in fasting plasma glucose.

Age group, year	**Ischaemic heart disease death**	**Ischaemic stroke**	**Intracerebral haemorrhage**	**Subarachnoid haemorrhage**
25-29	1.63 (1.17 to 2.31)	1.97 (1.44 to 2.60)	1.85 (1.40 to 2.59)	1.85 (1.40- 2.59)
30-34	1.47 (1.17 to 1.90)	1.82 (1.46 to 2.21)	1.77 (1.43 to 2.25)	1.77 (1.43 to 2.25)
35-39	1.32 (1.14 to 1.58)	1.67 (1.46 to 1.91)	1.69 (1.40 to 2.04)	1.69 (1.40 to 2.04)
40-44	1.23 (1.09 to 1.42)	1.57 (1.40 to 1.80)	1.63 (1.35 to 1.95)	1.63 (1.35 to 1.95)
45-49	1.21 (1.10 to 1.37)	1.53 (1.39 to 1.71)	1.57 (1.36 to 1.82)	1.57 (1.36 to 1.82)
50-54	1.19 (1.11 to 1.33)	1.49 (1.39 to 1.62)	1.52 (1.36 to 1.70)	1.52 (1.36 to 1.70)
55-59	1.18 (1.10 to 1.29)	1.45 (1.37 to 1.54)	1.47 (1.34 to 1.60)	1.47 (1.34 to 1.60)
60-64	1.16 (1.09 to 1.27)	1.41 (1.33 to 1.49)	1.41 (1.30 to 1.52)	1.41 (1.30 to 1.52)
65-69	1.14 (1.06 to 1.25)	1.36 (1.26 to 1.46)	1.36 (1.21 to 1.49)	1.36 (1.21 to 1.49)
70-74	1.13 (1.05 to 1.24)	1.33 (1.22 to 1.42)	1.32 (1.17 to 1.45)	1.32 (1.17 to 1.45)
75-79	1.12 (1.06 to 1.24)	1.30 (1.23 to 1.40)	1.28 (1.18 to 1.39)	1.28 (1.18 to 1.39)
80-	1.10 (1.04 to 1.28)	1.27 (1.13 to 1.44)	1.20 (1.11 to 1.37)	1.20 (1.11 to 1.37)

Table S3. Theoretical Minimum Risk Reference Life Table.

Age	Life Expectancy
0	87.885872
1	87.007248
5	83.035378
10	78.050774
15	73.069237
20	68.110138
25	63.157372
30	58.207291
35	53.27124
40	48.368408
45	43.49641
50	38.703121
55	33.98209
60	29.31563
65	24.73456
70	20.32095
75	16.09445
80	12.18093
85	8.7796783
90	6.0613198
95	3.8977709
100	2.2286451
105	1.6117361
110	1.363304

Table S4. The standard population in 2020 census used in the study.

Age group	Proportion
25-29	0.126992621
30-34	0.113309929
35-39	0.124927983
40-44	0.124348094
45-49	0.137093225
50-54	0.086122454
55-59	0.08600857
60-64	0.0687145
65-69	0.047476503
70-74	0.035744751
75-79	0.026394663
80-	0.022866709

Table S5. Distribution of 31 provinces/autonomous regions/municipalities in mainland China in 7 regions and different SDI levels.

Regions of mainland China	**Provinces**
Seven regions	
North China	Beijing, Tianjin, Hebei, Shanxi, Inner Mongolia
Northeast China	Liaoning, Jilin, Heilongjiang
Central China	Henan, Hubei, Hunan
East China	Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi, Shandong
Northwest China	Shaanxi, Gansu, Qinghai, Ningxia, Xinjiang
South China	Guangdong, Guangxi, Hainan
Southwest China	Chongqing, Sichuan, Guizhou, Yunnan, Tibet
SDI regions	
Low-middle SDI	Gansu, Guizhou, Tibet
Middle SDI	Anhui, Guangxi, Hainan, Henan, Hubei, Hunan, Jiangxi, Ningxia, Qinghai, Shanxi, Shaanxi, Sichuan, Xinjiang, Yunnan, Chongqing
High-middle SDI	Fujian, Guangdong, Hebei, Heilongjiang, Jilin, Jiangsu, Liaoning, Inner Mongolia, Shandong, Tianjin, Zhejiang
High SDI	Beijing, Shanghai

SDI= socio-demographic index.

Table S6. Deaths and YLLs for total CVD attributable to high FBG by age for male in China, 2010-2018 (95%UI).

	2010				**2018**			
	Deaths (thousands)	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**	**Deaths (thousands)**	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**
25-29	1.34(1.01 to 1.74)	2.42(1.82 to 3.13)	84.69(63.96 to 109.63)	152.55(115.21 to 197.47)	1.48(1.15 to 1.88)	2.76(2.15 to 3.49)	93.61(72.90 to 118.68)	174.10(135.59 to 220.73)
30-34	1.45(1.10 to 1.85)	2.90(2.19 to 3.70)	84.65 (63.86 to 107.73)	169.05(127.52 to 215.13)	1.53(1.21 to 1.88)	3.39(2.68 to 4.15)	89.15(70.54 to 109.15)	197.39(156.19 to 241.66)
35-39	2.64(2.17 to 3.21)	4.78(3.93 to 5.80)	140.65(115.74 to 170.79)	254.40(209.35 to 308.93)	3.26(2.76 to 3.82)	6.02(5.09 to 7.04)	173.77(146.90 to 203.38)	320.50(270.95 to 375.12)
40-44	4.18(3.46 to 5.02)	7.59(6.28 to 9.12)	202.14(167.21 to 242.92)	367.06(303.63 to 441.12)	4.97(4.20 to 5.83)	8.24(6.96 to 9.68)	240.18(202.94 to 281.98)	398.70(336.88 to 468.09)
45-49	9.09(7.71 to 10.54)	15.14(12.84 to 17.55)	395.51(335.47 to 458.49)	658.66(558.68 to 763.54)	10.61(9.27 to 11.95)	16.13(14.10 to 18.18)	461.30(403.36 to 520.00)	701.54(613.42 to 790.80)
50-54	9.86(8.47 to 11.27)	25.72(22.10 to 29.41)	381.67(327.84 to 436.32)	995.56(855.15 to 1138.11)	10.62(9.41 to 11.91)	26.19(23.19 to 29.37)	411.19(364.05 to 461.11)	1013.82(897.58 to 1136.89)
55-59	15.23(13.32 to 17.60)	40.39(35.32 to 46.69)	517.40(452.55 to 598.16)	1372.38(1200.36 to 1586.61)	18.24(16.34 to 20.49)	41.44(37.12 to 46.57)	619.75(555.16 to 696.36)	1408.32(1261.54 to 1582.42)
60-64	22.25(19.45 to 25.47)	73.41(64.19 to 84.06)	652.14(570.28 to 746.79)	2152.00(1881.86 to 2464.33)	23.32(20.74 to 25.93)	69.13(61.48 to 76.84)	683.78(608.11 to 760.06)	2026.62(1802.36 to 2252.70)
65-69	26.84(22.89 to 31.01)	130.09(110.94 to 150.34)	663.76(566.07 to 767.10)	3217.70(2744.13 to 3718.64)	31.99(27.98 to 35.98)	119.00(104.08 to 133.83)	791.24(692.05 to 889.84)	2943.45(2574.47 to 3310.26)
70-74	34.12(29.10 to 39.23)	222.91(190.16 to 256.30)	693.31(591.44 to 797.14)	4529.82(3864.25 to 5208.25)	43.68(38.23 to 49.20)	213.24(186.65 to 240.18)	887.62(776.92 to 999.76)	4333.30(3792.85 to 4880.77)

	2010				2018			
	Deaths (thousands)	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**	**Deaths (thousands)**	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**
75-79	36.59(30.89 to 42.48)	341.58(288.35 to 396.55)	588.86(497.09 to 683.61)	5497.62(4640.81 to 6382.20)	53.06(46.19 to 60.25)	342.44(298.07 to 388.84)	854.00(743.37 to 969.74)	5511.30(4797.34 to 6258.21)
≥80	36.25(25.50 to 48.68)	444.09(312.47 to 596.48)	441.50(310.65 to 593.01)	5409.40(3806.24 to 7265.69)	75.34(56.24 to 94.35)	588.37(439.26 to 736.86)	917.66(685.09 to 1149.26)	7166.89(5350.55 to 8975.62)
All ages	200.26(186.05 to 216.35)	45.81(42.56 to 49.49)	4856.43(4592.61 to 5143.80)	1110.94(1050.59 to 1176.68)	278.43(257.99 to 300.08)	58.85(54.53 to 63.43)	6230.75(5925.31 to 6565.38)	1316.97(1252.41 to 1387.69)

YLLs=years of life lost, CVD=cardiovascular disease, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals.

Table S7. Deaths and YLLs for total CVD attributable to high FBG by age for female in China, 2010-2018 (95%UI).

	2010				**2018**			
	Deaths (thousands)	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**	**Deaths (thousands)**	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**
25-29	0.34(0.24 to 0.48)	0.63(0.44 to 0.88)	21.58(14.96 to 30.26)	39.75(27.56 to 55.74)	0.31(0.23 to 0.40)	0.59(0.43 to 0.76)	19.86(14.47 to 25.55)	37.49(27.31 to 48.23)
30-34	0.46(0.34 to 0.59)	0.96(0.71 to 1.23)	26.68(19.72 to 34.34)	55.71(41.17 to 71.69)	0.46(0.36 to 0.57)	1.07(0.84 to 1.32)	26.74(20.97 to 33.19)	62.00(48.64 to 76.97)
35-39	0.71(0.57 to 0.88)	1.35(1.08 to 1.67)	37.94(30.20 to 47.04)	71.95(57.27 to 89.21)	0.72(0.59 to 0.85)	1.39(1.14 to 1.65)	38.35(31.45 to 45.51)	74.04(60.70 to 87.84)
40-44	1.26(1.03 to 1.54)	2.40(1.96 to 2.93)	60.95(49.65 to 74.34)	116.23(94.67 to 141.76)	1.30(1.09 to 1.53)	2.23(1.88 to 2.63)	62.64(52.81 to 73.81)	107.90(90.96 to 127.13)
45-49	2.98(2.51 to 3.54)	5.10(4.29 to 6.05)	129.83(109.24 to 153.84)	221.98(186.77 to 263.04)	2.80(2.42 to 3.21)	4.34(3.75 to 4.98)	121.81(105.44 to 139.78)	188.65(163.30 to 216.49)
50-54	3.54(3.02 to 4.09)	9.79(8.36 to 11.32)	136.91(116.95 to 158.22)	378.97(323.74 to 437.98)	3.19(2.82 to 3.58)	8.32(7.36 to 9.34)	123.48(109.18 to 138.57)	322.18(284.88 to 361.55)
55-59	6.49(5.63 to 7.38)	17.70(15.35 to 20.12)	220.48(191.19 to 250.72)	601.35(521.47 to 683.84)	6.66(5.98 to 7.37)	15.32(13.76 to 16.94)	226.38(203.35 to 250.39)	520.45(467.50 to 575.65)
60-64	10.89(9.53 to 12.21)	37.43(32.76 to 41.95)	319.36(279.51 to 357.94)	1097.14(960.24 to 1229.68)	10.18(9.07 to 11.10)	30.91(27.55 to 33.71)	298.43(265.98 to 325.43)	906.12(807.62 to 988.12)
65-69	15.12(13.24 to 17.12)	74.02(64.85 to 83.82)	373.87(327.55 to 423.39)	1830.83(1603.98 to 2073.35)	17.55(15.62 to 19.34)	65.29(58.13 to 71.98)	434.00(386.41 to 478.47)	1614.97(1437.87 to 1780.44)
70-74	22.87(19.97 to 25.86)	146.61(128.00 to 165.78)	464.79(405.79 to 525.55)	2979.34(2601.14 to 3368.87)	27.30(24.56 to 30.32)	131.33(118.15 to 145.85)	554.75(499.09 to 616.06)	2668.76(2400.99 to 2963.73)
75-79	29.04(24.64 to	239.77(203.49 to	467.34(396.62 to	3859.04(3275.06 to	39.45(35.26 to 44.23)	230.59(206.12 to	634.87(567.51 to	3711.19(3317.

	2010				2018			
	Deaths (thousands)	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**	**Deaths (thousands)**	**Mortality rate per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**
	33.49)	276.53)	538.97)	4450.57)		258.53)	711.79)	40 to 4160.84)
≥80	58.62(42.10 to 78.15)	504.97(362.68 to 673.15)	714.08(512.88 to 951.92)	6150.95(4417.80 to 8199.63)	110.39(84.48 to 139.54)	637.67(488.05 to 806.08)	1344.60(1029.09 to 1699.70)	7767.47(5944. 84 to 9818.80)
All ages	152.62(134.58 to 172.26)	35.70(31.48 to 40.30)	2975.21(2734.92 to 3231.48)	695.99(639.78 to 755.94)	220.59(194.21 to 250.18)	47.20(41.56 to 53.53)	3886.74(3562.69 to 4254.10)	831.63(762.30 to 910.24)

YLLs=years of life lost, CVD=cardiovascular disease, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals.

Table S8. YLLs, YLL rates, and age-standardised YLL rates for CVD attributable to high FBG by specific causes and sex in China, 2010-2018 (95%UI).

	2010			**2018**		
	YLL (thousands)	**YLL rate per 100 000**	**Age-standardised YLL rate (95% UI), per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**	**Age-standardised YLL rate (95% UI), per 100 000**
CVD						
Total	7847.76(7472.13 to 8210.73)	907.65(864.21 to 949.63)	907.65(864.21 to 949.63)	10120.38(9657.55 to 10618.35)	1076.09(1026.88 to 1129.04)	916.21(878.38 to 956.12)
Male	4856.43(4592.61 to 5143.80)	1110.94(1050.59 to 1176.68)	1144.11(1079.97 to 1213.76)	6230.75(5925.31 to 6565.38)	1316.97(1252.41 to 1387.69)	1183.05(1126.98 to 1245.44)
Female	2975.21(2734.92 to 3231.48)	695.99(639.78 to 755.94)	661.58(611.79 to 713.18)	3886.74(3562.69 to 4254.10)	831.63(762.30 to 910.24)	643.22(598.49 to 692.75)
Ischaemic heart disease						
Total	3621.93(3398.19 to 3850.49)	418.90(393.03 to 445.34)	418.90(393.03 to 445.34)	4880.60(4584.12 to 5198.85)	518.95(487.43 to 552.79)	440.92(416.60 to 465.90)
Male	2214.55(2072.19 to 2373.62)	506.59(474.03 to 542.98)	523.13(487.21 to 563.12)	2941.95(2754.06 to 3135.84)	621.83(582.11 to 662.81)	562.88(529.31 to 598.69)
Female	1401.70(1239.67 to 1577.22)	327.90(290.00 to 368.96)	308.55(276.11 to 343.44)	1936.15(1708.53 to 2214.43)	414.27(365.57 to 473.81)	314.29(283.41 to 351.75)
Ischaemic stroke						
Total	1671.32(1555.10 to 1804.55)	193.30(179.86 to 208.71)	193.30(179.86 to 208.71)	2510.27(2320.87 to 2720.83)	266.91(246.78 to 289.30)	218.57(203.94 to 235.68)
Male	999.15(914.80 to 1085.84)	228.56(209.27 to 248.39)	238.39(217.92 to 260.59)	1507.33(1384.65 to 1646.37)	318.60(292.67 to 347.99)	276.85(255.03 to 301.89)
Female	673.47(589.74 to	157.55(137.96 to	148.71(131.25 to 167.30)	1003.26(869.74 to	214.66(186.10 to 245.41)	160.66(142.53 to 180.32)

	2010			2018		
	YLL (thousands)	**YLL rate per 100 000**	**Age-standardised YLL rate (95% UI), per 100 000**	**YLL (thousands)**	**YLL rate per 100 000**	**Age-standardised YLL rate (95% UI), per 100 000**
	768.53)	179.78)		1146.97)		
Hemorrhagic stroke						
Total	2543.61(2428.41 to 2658.93)	294.19(280.86 to 307.52)	294.19(280.86 to 307.52)	2717.49(2603.60 to 2837.50)	288.95(276.84 to 301.71)	255.40(245.55 to 265.96)
Male	1643.58(1542.57 to 1744.93)	375.98(352.87 to 399.17)	382.79(358.73 to 406.38)	1776.67(1686.34 to 1873.74)	375.53(356.43 to 396.04)	342.65(325.50 to 360.95)
Female	899.36(836.58 to 970.70)	210.39(195.70 to 227.08)	204.21(190.88 to 219.10)	941.02(879.01 to 1010.32)	201.35(188.08 to 216.18)	166.99(157.44 to 177.15)

YLLs=years of life lost, CVD=cardiovascular disease, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals.

Table S9. PAFs for total CVD death attributable to high FPG by sex and province, 2010-2018 (% (95% UI)) .

	2010			**2018**		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
China	11.63(10.83 to 12.47)	12.38(11.50 to 13.37)	10.78(9.50 to 12.16)	13.26(12.34 to 14.20)	13.79(12.77 to 14.86)	12.67(11.15 to 14.37)
Anhui	11.36(8.34 to 15.17)	12.72(8.82 to 17.11)	9.92(5.73 to 16.17)	12.61(8.69 to 17.20)	11.61(8.07 to 16.68)	13.38(6.82 to 21.14)
Beijing	15.89(11.51 to 21.55)	16.45(11.37 to 24.07)	14.66(8.17 to 24.12)	17.04(12.51 to 23.53)	16.85(11.58 to 24.19)	17.39(9.28 to 27.36)
Fujian	10.59(7.23 to 15.15)	11.87(7.87 to 17.86)	9.18(4.85 to 16.25)	13.64(9.67 to 18.75)	13.94(9.35 to 19.89)	13.07(7.41 to 20.99)
Gansu	10.04(7.69 to 12.72)	10.42(7.13 to 13.92)	9.35(6.41 to 13.38)	12.22(9.52 to 15.55)	12.65(9.28 to 17.18)	11.18(7.17 to 16.58)
Guangdong	12.27(8.34 to 17.15)	13.68(9.25 to 19.14)	10.73(5.34 to 19.57)	14.32(9.38 to 20.78)	14.20(9.15 to 20.20)	14.25(6.18 to 25.14)
Guangxi	10.83(8.08 to 14.50)	12.83(9.11 to 17.55)	8.46(4.93 to 14.40)	11.97(9.13 to 15.43)	12.93(9.81 to 16.80)	10.69(6.60 to 16.88)
Guizhou	9.18(6.94 to 11.91)	10.00(6.76 to 13.37)	7.98(5.23 to 12.27)	10.26(7.55 to 13.74)	10.73(7.26 to 14.92)	9.41(5.93 to 15.95)
Hainan	12.44(8.61 to 17.38)	13.21(9.05 to 19.66)	11.27(5.47 to 19.68)	16.56(12.15 to 22.07)	16.34(11.95 to 21.92)	16.57(9.51 to 25.21)
Hebei	12.84(10.30 to 16.37)	13.74(10.23 to 18.02)	11.58(7.59 to 17.42)	15.03(11.55 to 19.16)	16.07(12.37 to 21.49)	13.53(8.62 to 20.86)
Henan	11.60(8.50 to 16.17)	12.25(8.88 to 16.88)	10.81(6.04 to 18.51)	14.25(10.23 to 18.82)	15.02(11.10 to 20.32)	13.17(7.61 to 20.45)
Heilongjiang	14.70(11.56 to 18.52)	15.51(11.64 to 20.01)	13.21(9.01 to 19.50)	16.38(13.09 to 20.30)	17.34(12.92 to 22.44)	14.96(10.27 to 21.72)
Hubei	11.02(8.22 to 14.69)	11.86(8.38 to 16.16)	9.91(6.08 to 16.19)	11.22(7.93 to 15.34)	11.67(8.20 to 16.20)	10.53(5.69 to 17.53)
Hunan	11.10(7.49 to 14.99)	11.67(7.89 to 16.77)	10.06(5.59 to 17.17)	12.76(9.59 to 17.17)	13.40(9.52 to 18.75)	11.87(6.96 to 19.01)
Jilin	14.07(11.13 to 17.92)	14.77(11.02 to 19.72)	12.79(8.43 to 19.34)	14.66(11.58 to 19.08)	14.93(11.01 to 20.52)	13.76(9.08 to 21.23)
Jiangsu	11.17(7.63 to 15.86)	12.06(7.70 to 18.30)	10.27(5.16 to 17.68)	13.76(9.48 to 19.02)	14.14(9.35 to 20.72)	13.30(6.89 to 22.09)
Jiangxi	10.22(7.45 to 13.60)	10.90(7.45 to 15.51)	9.10(5.30 to 14.48)	11.33(8.37 to 15.24)	11.36(7.89 to 15.90)	11.28(6.74 to 17.96)
Liaoning	13.93(10.63 to 18.14)	14.01(10.04 to 20.18)	13.41(8.19 to 21.34)	14.85(10.98 to 19.80)	15.29(10.90 to 21.38)	14.14(8.01 to 21.72)
Inner Mongolia	12.86(10.17 to 15.94)	13.35(9.88 to 17.57)	11.86(8.20 to 16.60)	14.41(11.48 to 17.82)	15.40(11.56 to 20.27)	12.55(8.29 to 18.28)
Ningxia	9.91(7.64 to 12.89)	10.23(6.94 to 14.75)	9.29(6.41 to 13.93)	10.61(7.91 to 13.89)	10.40(7.47 to 14.41)	10.64(6.62 to 16.99)

	2010			2018		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Qinghai	10.90(8.50 to 13.84)	12.22(8.86 to 16.29)	9.05(5.99 to 12.82)	14.55(12.11 to 17.40)	16.73(13.34 to 20.69)	11.50(8.50 to 15.84)
Shandong	11.68(8.22 to 16.33)	12.07(8.38 to 17.27)	11.27(6.24 to 18.68)	11.85(8.48 to 16.27)	12.73(9.01 to 18.43)	10.66(5.93 to 17.82)
Shanxi	12.66(9.62 to 16.22)	13.05(9.60 to 17.48)	11.95(7.34 to 17.71)	13.06(10.01 to 17.22)	13.98(10.23 to 18.65)	11.59(7.21 to 18.91)
Shaanxi	7.87(5.68 to 11.01)	8.23(5.09 to 12.26)	7.29(4.32 to 12.21)	10.46(7.51 to 14.02)	10.58(7.02 to 14.89)	9.94(5.85 to 16.94)
Shanghai	10.62(6.04 to 17.03)	11.57(5.95 to 20.99)	9.14(2.99 to 18.61)	13.64(7.93 to 20.82)	13.90(6.98 to 21.99)	13.06(4.56 to 26.04)
Sichuan	10.40(7.78 to 14.02)	11.22(7.54 to 15.59)	9.35(5.89 to 15.56)	12.61(9.18 to 16.46)	12.88(8.97 to 18.74)	12.02(7.29 to 18.65)
Tianjin	14.45(11.09 to 19.07)	14.93(10.90 to 20.31)	13.71(8.15 to 21.93)	15.39(11.57 to 20.21)	15.88(11.02 to 21.66)	14.32(8.15 to 21.98)
Tibet	5.38(4.00 to 7.00)	6.73(4.47 to 9.57)	3.95(2.45 to 6.29)	5.46(3.93 to 7.36)	6.63(4.59 to 9.39)	4.16(2.31 to 7.18)
Xinjiang	12.73(10.12 to 15.66)	12.76(9.42 to 16.66)	12.40(9.04 to 17.05)	14.67(12.09 to 17.87)	14.58(11.11 to 18.90)	14.65(10.51 to 20.38)
Yunnan	8.56(6.38 to 11.44)	9.08(6.21 to 13.17)	7.87(4.97 to 12.56)	9.20(6.94 to 12.06)	9.59(6.75 to 13.25)	8.59(5.70 to 13.61)
Zhejiang	8.90(5.95 to 13.02)	8.61(5.58 to 13.96)	8.82(4.72 to 16.19)	11.34(7.63 to 15.92)	10.88(6.66 to 17.49)	11.61(6.17 to 19.66)
Chongqing	9.70(7.03 to 13.61)	10.18(6.96 to 14.84)	8.78(5.04 to 15.26)	11.68(8.41 to 15.52)	11.70(8.05 to 16.63)	11.39(6.56 to 18.20)

PAF=population attributable fraction, CVD=cardiovascular disease, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals.

Table S10. PAFs for ischaemic heart disease death attributable to high FPG by sex and province, 2010-2018 (% (95% UI)) .

	2010			**2018**		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
China	12.21(11.06 to 13.43)	12.79(11.65 to 14.15)	11.47(9.52 to 13.66)	13.88(12.58 to 15.31)	14.38(13.03 to 15.92)	13.33(11.19 to 15.97)
Anhui	11.74(7.89 to 17.30)	13.04(8.60 to 19.31)	10.13(4.77 to 19.39)	13.40(7.36 to 20.86)	11.88(7.58 to 19.03)	14.41(4.65 to 27.37)
Beijing	16.48(10.83 to 24.04)	17.03(10.70 to 25.78)	15.37(6.73 to 28.00)	17.81(11.90 to 25.40)	17.54(11.07 to 26.55)	18.05(7.49 to 30.64)
Fujian	11.08(7.11 to 17.52)	12.34(7.95 to 19.76)	9.49(4.33 to 20.09)	14.56(9.00 to 22.01)	14.77(8.91 to 23.02)	14.18(5.62 to 26.19)
Gansu	10.16(7.52 to 13.60)	10.64(6.90 to 15.18)	9.16(5.65 to 15.25)	12.44(9.09 to 16.68)	12.87(9.05 to 18.88)	11.23(6.47 to 19.68)
Guangdong	12.97(8.14 to 20.16)	14.21(9.25 to 21.91)	11.38(4.57 to 22.83)	15.50(8.83 to 24.87)	15.16(8.74 to 23.74)	15.91(4.36 to 31.66)
Guangxi	11.27(7.79 to 16.13)	13.44(9.22 to 19.50)	8.79(4.50 to 17.46)	12.60(9.04 to 17.55)	13.43(9.56 to 19.14)	11.32(5.93 to 19.77)
Guizhou	9.04(6.62 to 13.18)	10.00(6.61 to 14.54)	7.81(4.39 to 14.33)	10.77(7.22 to 16.20)	11.17(7.20 to 17.05)	10.03(4.92 to 20.62)
Hainan	13.60(8.69 to 20.39)	14.48(9.29 to 21.85)	11.88(4.86 to 24.63)	18.11(11.62 to 26.03)	17.44(11.61 to 25.02)	18.73(7.14 to 31.85)
Hebei	13.31(9.72 to 17.96)	14.16(9.81 to 19.56)	11.98(6.80 to 20.15)	15.51(11.08 to 21.31)	16.58(11.73 to 23.61)	14.01(7.55 to 23.85)
Henan	12.11(8.00 to 18.90)	12.29(8.53 to 18.65)	11.46(4.95 to 24.10)	14.67(9.72 to 20.95)	15.38(10.21 to 22.97)	13.70(6.32 to 23.93)
Heilongjiang	14.24(10.42 to 19.49)	15.11(10.49 to 21.21)	12.94(7.61 to 21.87)	16.49(12.27 to 21.79)	17.66(11.81 to 24.63)	15.02(8.78 to 23.87)
Hubei	11.08(7.54 to 16.19)	11.74(7.65 to 17.80)	10.06(4.95 to 19.44)	11.21(7.03 to 17.64)	11.39(7.24 to 18.36)	10.97(4.33 to 21.89)
Hunan	11.21(6.97 to 16.76)	11.64(7.30 to 18.46)	10.29(4.68 to 20.12)	12.89(8.96 to 19.06)	13.37(8.60 to 20.41)	12.16(5.90 to 22.27)
Jilin	13.77(9.86 to 18.93)	14.35(9.76 to 21.40)	12.51(7.41 to 21.47)	14.43(10.09 to 20.46)	14.54(9.49 to 21.64)	13.79(7.83 to 24.26)
Jiangsu	11.86(7.11 to 19.12)	12.69(7.51 to 20.33)	10.71(4.27 to 22.82)	14.81(9.42 to 22.44)	14.95(8.55 to 24.28)	14.39(5.19 to 27.32)
Jiangxi	10.51(6.92 to 15.63)	10.97(7.09 to 17.09)	9.53(4.70 to 18.12)	11.82(7.96 to 17.22)	11.66(7.21 to 17.99)	11.69(5.40 to 21.39)
Liaoning	14.22(9.68 to 20.07)	14.12(9.31 to 23.13)	13.38(7.08 to 24.63)	14.89(9.84 to 21.37)	15.10(9.59 to 23.43)	14.29(6.47 to 24.92)
Inner Mongolia	12.99(9.79 to 16.87)	13.52(9.39 to 18.94)	11.82(7.33 to 19.06)	14.50(10.92 to 19.09)	15.78(11.12 to 21.74)	12.46(7.31 to 20.75)
Ningxia	10.09(7.21 to 14.13)	10.63(6.88 to 16.08)	9.11(5.54 to 15.58)	11.17(7.87 to 15.82)	10.95(7.47 to 16.01)	11.03(5.64 to 19.93)

	2010			2018		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Qinghai	10.62(7.66 to 14.71)	12.04(8.06 to 17.19)	8.66(5.05 to 15.27)	14.56(11.26 to 18.52)	16.88(12.14 to 22.61)	11.26(7.25 to 17.38)
Shandong	11.95(7.48 to 18.07)	11.93(7.56 to 19.18)	11.74(5.20 to 22.52)	11.74(7.65 to 18.13)	12.73(8.26 to 19.88)	10.60(4.65 to 20.74)
Shanxi	13.33(9.87 to 17.99)	13.65(10.04 to 19.62)	12.54(6.56 to 21.18)	13.62(9.69 to 19.21)	14.57(10.12 to 20.63)	11.88(6.34 to 22.52)
Shaanxi	7.93(5.14 to 11.98)	8.22(4.92 to 13.45)	6.95(3.77 to 14.49)	10.59(6.79 to 15.45)	10.46(6.66 to 16.84)	10.20(4.73 to 19.59)
Shanghai	11.16(5.42 to 19.97)	12.22(5.34 to 24.29)	9.62(2.05 to 23.06)	14.53(6.91 to 24.39)	14.54(5.41 to 26.98)	14.33(2.43 to 31.63)
Sichuan	10.68(7.39 to 15.78)	11.23(7.07 to 17.57)	9.71(5.21 to 18.57)	13.04(8.45 to 19.22)	13.57(7.81 to 22.61)	12.15(5.72 to 21.84)
Tianjin	14.79(10.24 to 20.94)	14.87(10.13 to 22.16)	14.06(6.74 to 25.35)	15.54(10.25 to 22.12)	15.90(9.97 to 24.27)	14.58(6.89 to 25.03)
Tibet	5.81(3.93 to 8.26)	7.84(4.91 to 11.78)	3.50(1.62 to 7.35)	6.23(4.37 to 8.79)	7.45(5.01 to 10.91)	4.43(2.36 to 8.19)
Xinjiang	13.02(9.83 to 16.81)	13.13(8.90 to 18.26)	12.53(8.07 to 18.79)	15.06(11.65 to 19.18)	14.94(10.74 to 20.49)	14.69(9.37 to 22.73)
Yunnan	8.94(6.27 to 12.74)	9.49(6.20 to 14.71)	8.04(4.70 to 15.16)	9.62(6.90 to 13.57)	9.94(6.84 to 14.69)	8.94(5.16 to 16.35)
Zhejiang	9.38(5.54 to 15.45)	8.96(5.39 to 16.29)	9.48(4.03 to 19.76)	12.52(7.51 to 19.16)	11.85(6.43 to 20.85)	12.97(5.24 to 24.38)
Chongqing	9.85(6.30 to 15.95)	10.28(6.42 to 17.32)	8.79(4.21 to 18.22)	11.76(7.23 to 18.28)	11.80(6.65 to 19.21)	11.43(4.88 to 22.20)

PAF=population attributable fraction, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals.

Table S11. PAFs for ischaemic stroke death attributable to high FPG by sex and province, 2010-2018 (% (95% UI)) .

	2010			**2018**		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
China	10.85(9.75 to 12.07)	11.59(10.35 to 12.97)	10.03(8.30 to 12.04)	12.26(10.94 to 13.65)	12.67(11.26 to 14.31)	11.78(9.71 to 14.03)
Anhui	10.38(6.33 to 15.65)	11.22(6.37 to 18.46)	8.79(4.05 to 18.40)	11.17(5.80 to 18.60)	10.16(5.51 to 18.00)	11.80(3.87 to 24.28)
Beijing	14.45(8.93 to 21.76)	15.12(8.62 to 25.40)	12.84(5.65 to 25.65)	15.26(9.59 to 24.24)	15.04(8.80 to 25.31)	15.07(5.86 to 30.71)
Fujian	9.61(5.69 to 16.19)	10.76(5.79 to 19.25)	8.03(3.49 to 18.85)	12.51(6.97 to 19.68)	12.19(6.60 to 21.37)	12.14(4.48 to 23.83)
Gansu	9.43(6.37 to 13.54)	9.26(5.23 to 15.25)	9.12(5.35 to 15.17)	11.28(7.51 to 16.35)	11.60(6.87 to 18.54)	10.15(5.30 to 17.95)
Guangdong	10.86(6.31 to 17.74)	12.19(6.78 to 20.31)	9.26(3.70 to 20.23)	12.57(6.49 to 22.43)	12.62(6.17 to 21.93)	12.60(3.72 to 28.49)
Guangxi	9.91(6.14 to 15.29)	11.65(6.63 to 19.25)	7.34(3.49 to 16.12)	10.69(7.22 to 16.24)	11.49(7.33 to 17.60)	9.54(4.63 to 18.69)
Guizhou	8.93(5.83 to 12.71)	9.53(5.52 to 14.96)	7.66(3.83 to 14.04)	9.38(5.97 to 14.50)	9.79(5.59 to 15.95)	8.41(4.12 to 18.36)
Hainan	11.27(6.42 to 18.45)	11.73(6.53 to 21.10)	10.25(4.09 to 22.13)	14.94(8.05 to 24.17)	14.40(8.00 to 24.47)	15.02(4.90 to 30.72)
Hebei	11.69(8.24 to 16.95)	12.49(7.74 to 19.11)	10.48(5.78 to 19.89)	13.79(9.12 to 19.96)	14.56(8.95 to 22.85)	12.22(5.98 to 23.05)
Henan	10.16(6.35 to 17.57)	10.97(6.37 to 17.75)	8.80(4.33 to 21.45)	12.97(8.30 to 19.94)	13.47(8.12 to 21.84)	11.79(5.20 to 23.31)
Heilongjiang	14.22(10.21 to 19.31)	14.90(9.79 to 21.71)	12.77(7.45 to 20.86)	15.20(11.08 to 21.19)	15.59(10.10 to 23.59)	13.97(8.19 to 23.73)
Hubei	10.31(6.78 to 15.66)	10.93(6.72 to 16.50)	9.05(4.64 to 18.41)	10.23(6.18 to 15.59)	10.49(6.55 to 17.10)	9.39(4.12 to 19.17)
Hunan	10.13(6.57 to 15.65)	10.64(6.14 to 17.27)	9.01(4.29 to 18.06)	11.92(7.79 to 17.53)	12.42(7.50 to 19.98)	10.93(5.34 to 19.36)
Jilin	13.30(9.42 to 18.74)	13.75(8.90 to 21.07)	11.96(6.97 to 20.28)	13.96(9.86 to 19.98)	14.43(9.19 to 22.40)	12.80(7.10 to 22.32)
Jiangsu	10.29(5.91 to 17.06)	10.94(5.50 to 19.57)	9.57(3.69 to 19.44)	12.65(6.78 to 20.89)	12.74(6.65 to 22.87)	12.07(3.85 to 25.47)
Jiangxi	9.34(6.26 to 14.11)	10.08(6.03 to 16.39)	8.12(4.07 to 16.27)	10.34(6.30 to 15.75)	9.94(5.78 to 16.91)	10.37(4.54 to 19.29)
Liaoning	12.72(8.76 to 18.49)	12.74(7.63 to 21.13)	12.23(6.37 to 21.77)	14.03(9.44 to 19.98)	14.33(9.08 to 22.31)	12.85(6.53 to 22.24)
Inner Mongolia	11.88(8.13 to 16.50)	12.26(7.52 to 18.64)	10.91(6.18 to 17.97)	13.32(9.04 to 18.51)	13.92(8.57 to 22.16)	11.67(6.40 to 19.85)
Ningxia	9.27(6.07 to 13.80)	9.31(5.19 to 15.93)	8.97(5.06 to 15.25)	9.53(6.15 to 14.44)	9.17(5.26 to 15.37)	9.63(5.26 to 18.15)

	2010			2018		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Qinghai	9.92(6.59 to 13.88)	10.85(6.36 to 16.28)	8.42(4.62 to 14.32)	13.90(10.00 to 17.95)	15.76(9.95 to 22.48)	11.25(7.10 to 16.83)
Shandong	10.76(6.78 to 16.84)	11.05(6.66 to 18.72)	10.01(4.59 to 20.82)	11.01(7.26 to 17.31)	11.76(7.18 to 19.22)	9.94(4.69 to 19.55)
Shanxi	11.78(8.10 to 16.86)	12.11(7.47 to 18.55)	10.95(5.42 to 19.74)	11.89(7.97 to 17.35)	12.71(7.56 to 20.13)	10.44(5.07 to 20.20)
Shaanxi	7.34(4.66 to 11.62)	7.54(3.70 to 12.91)	6.70(3.17 to 13.99)	9.60(5.99 to 14.96)	9.55(5.46 to 15.70)	9.17(4.39 to 18.09)
Shanghai	9.51(4.29 to 17.92)	9.98(4.11 to 22.89)	8.03(2.01 to 20.59)	12.38(5.34 to 21.72)	12.46(4.27 to 24.45)	11.27(1.95 to 26.53)
Sichuan	9.87(6.41 to 14.79)	10.41(6.07 to 17.14)	8.75(4.43 to 18.10)	11.57(7.18 to 18.36)	11.48(6.34 to 20.75)	11.11(5.18 to 20.85)
Tianjin	13.61(9.02 to 19.73)	14.20(8.89 to 22.01)	12.16(6.17 to 24.07)	14.44(9.69 to 20.54)	15.03(9.09 to 22.93)	13.31(6.31 to 23.55)
Tibet	5.05(3.41 to 7.43)	5.74(3.20 to 9.53)	4.26(2.34 to 7.06)	5.39(3.47 to 8.35)	6.45(3.69 to 10.86)	4.14(1.96 to 8.15)
Xinjiang	11.09(7.68 to 15.89)	11.09(6.60 to 17.60)	10.72(6.06 to 18.68)	12.56(8.61 to 18.15)	12.08(7.67 to 19.18)	12.81(6.97 to 20.95)
Yunnan	7.78(5.22 to 12.14)	8.14(4.55 to 13.20)	7.01(3.83 to 14.24)	8.57(5.42 to 12.96)	8.84(5.06 to 14.79)	7.90(4.09 to 15.33)
Zhejiang	8.09(4.79 to 14.14)	7.59(4.10 to 15.20)	7.93(3.50 to 18.18)	10.33(5.60 to 16.70)	9.60(4.25 to 18.11)	10.69(3.71 to 21.37)
Chongqing	8.97(5.82 to 14.30)	9.47(5.32 to 15.92)	7.90(4.05 to 17.39)	10.92(6.75 to 16.45)	10.96(6.11 to 18.47)	10.54(4.78 to 20.57)

PAF=population attributable fraction, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals.

Table S12. PAFs for haemorrhagic stroke death attributable to high FPG by sex and province, 2010-2018 (% (95% UI)) .

	2010			**2018**		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
China	11.45(10.74 to 12.17)	12.41(11.49 to 13.32)	10.19(9.14 to 11.49)	13.21(12.45 to 14.01)	13.97(13.08 to 14.96)	12.15(10.94 to 13.50)
Anhui	11.41(8.59 to 15.02)	12.76(8.71 to 17.30)	9.63(6.16 to 16.21)	12.59(9.13 to 16.98)	12.69(9.29 to 17.47)	12.14(6.66 to 20.33)
Beijing	15.98(12.21 to 20.39)	16.92(12.16 to 22.43)	14.21(9.07 to 21.55)	17.73(14.28 to 22.43)	18.24(13.96 to 24.09)	16.58(11.18 to 24.58)
Fujian	10.43(7.35 to 15.10)	11.77(7.82 to 17.41)	8.56(4.97 to 16.81)	12.95(9.25 to 17.97)	13.90(9.52 to 19.20)	12.03(6.57 to 19.91)
Gansu	9.97(7.58 to 12.68)	10.42(7.01 to 14.11)	9.50(6.28 to 13.53)	12.40(9.74 to 15.45)	12.97(9.17 to 17.24)	11.47(7.79 to 16.16)
Guangdong	11.85(8.57 to 16.45)	13.52(9.38 to 18.99)	9.73(5.77 to 17.78)	13.37(9.16 to 18.70)	13.85(9.55 to 19.77)	12.40(6.34 to 22.30)
Guangxi	10.79(8.34 to 14.28)	12.72(9.32 to 17.51)	8.11(5.06 to 13.80)	12.21(9.37 to 15.45)	13.32(9.84 to 17.50)	10.52(6.80 to 16.50)
Guizhou	9.34(6.92 to 12.09)	10.08(6.40 to 13.90)	8.09(5.22 to 12.35)	10.33(7.53 to 13.87)	10.90(7.45 to 15.35)	9.07(5.96 to 15.24)
Hainan	11.66(7.97 to 16.85)	12.62(8.54 to 18.90)	10.13(5.34 to 18.48)	15.38(10.89 to 20.94)	15.95(11.70 to 22.19)	14.42(7.03 to 24.29)
Hebei	13.19(10.56 to 16.17)	14.04(10.54 to 18.25)	11.83(8.23 to 16.85)	15.37(12.56 to 18.80)	16.56(12.76 to 20.97)	13.48(9.68 to 18.86)
Henan	11.58(8.90 to 15.66)	12.91(9.36 to 17.29)	9.58(6.54 to 17.75)	14.58(11.30 to 18.45)	15.77(11.95 to 20.03)	12.74(8.39 to 20.19)
Heilongjiang	15.80(12.87 to 19.17)	16.65(12.62 to 21.26)	13.96(10.57 to 18.21)	17.97(14.87 to 21.12)	18.79(14.58 to 23.12)	16.52(12.89 to 21.24)
Hubei	11.35(8.67 to 14.52)	12.38(8.73 to 16.48)	9.72(6.54 to 15.09)	11.54(8.95 to 14.84)	12.33(9.17 to 16.59)	10.32(6.55 to 16.19)
Hunan	11.41(8.43 to 14.51)	12.27(8.77 to 16.12)	9.79(6.31 to 15.83)	13.15(10.43 to 16.51)	13.90(10.51 to 18.30)	11.86(7.88 to 17.76)
Jilin	15.59(12.84 to 18.77)	16.48(12.87 to 20.72)	13.73(10.05 to 18.29)	16.46(13.74 to 19.79)	17.16(13.59 to 21.58)	15.07(11.35 to 19.70)
Jiangsu	11.26(8.07 to 15.99)	12.29(8.44 to 17.62)	9.88(5.87 to 17.44)	14.01(10.15 to 18.66)	14.84(10.56 to 20.36)	12.76(7.21 to 21.67)
Jiangxi	10.09(7.29 to 13.41)	10.93(7.33 to 15.37)	8.83(5.38 to 13.90)	11.62(8.72 to 15.10)	11.91(8.58 to 16.28)	10.88(6.84 to 16.70)
Liaoning	14.61(11.68 to 18.03)	14.92(11.39 to 19.80)	13.77(9.82 to 19.24)	16.03(12.95 to 19.77)	16.68(12.72 to 21.39)	14.71(10.74 to 20.87)
Inner Mongolia	13.29(10.60 to 16.53)	13.88(10.06 to 18.29)	12.08(8.58 to 17.30)	15.14(12.28 to 18.37)	15.99(12.35 to 20.69)	13.39(9.59 to 17.79)
Ningxia	9.86(7.44 to 12.89)	10.04(6.51 to 14.37)	9.61(6.65 to 13.98)	10.38(8.06 to 13.55)	10.45(7.48 to 14.06)	10.07(6.82 to 15.47)

	2010			2018		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Qinghai	11.21(8.70 to 14.26)	12.52(8.74 to 16.71)	9.34(6.15 to 12.99)	14.72(12.02 to 17.94)	16.66(12.78 to 21.27)	11.69(8.56 to 16.05)
Shandong	11.92(8.92 to 15.82)	12.57(9.11 to 16.99)	10.86(6.92 to 17.99)	12.83(10.02 to 16.30)	13.98(10.79 to 18.39)	11.20(7.56 to 16.72)
Shanxi	12.12(9.14 to 15.71)	12.61(8.95 to 17.18)	11.15(7.30 to 17.06)	13.34(10.62 to 16.98)	14.37(10.74 to 19.04)	11.75(8.15 to 18.01)
Shaanxi	8.20(6.11 to 10.93)	8.50(5.31 to 12.59)	7.67(4.64 to 11.71)	10.84(8.22 to 13.95)	11.23(7.92 to 15.14)	10.12(6.82 to 15.81)
Shanghai	11.25(7.90 to 16.03)	12.70(8.51 to 19.45)	8.98(4.70 to 16.38)	12.74(8.35 to 18.59)	13.19(7.79 to 20.84)	11.77(5.59 to 21.38)
Sichuan	10.35(7.72 to 14.06)	11.19(7.67 to 15.97)	8.97(5.80 to 15.03)	12.45(9.22 to 16.26)	12.78(9.05 to 18.13)	11.80(7.21 to 17.83)
Tianjin	15.15(12.04 to 19.04)	15.94(12.04 to 20.87)	13.88(9.32 to 20.08)	16.68(13.46 to 20.35)	17.44(13.53 to 22.60)	15.28(11.09 to 21.19)
Tibet	5.32(3.95 to 7.10)	6.59(4.38 to 9.34)	3.97(2.48 to 6.30)	5.25(3.75 to 7.31)	6.42(4.29 to 9.12)	4.04(2.22 to 7.05)
Xinjiang	12.73(10.41 to 15.69)	12.61(9.31 to 16.66)	13.03(9.58 to 17.01)	15.40(12.87 to 18.66)	15.43(11.84 to 19.79)	15.48(11.90 to 19.97)
Yunnan	8.57(6.29 to 11.35)	9.03(6.07 to 12.84)	7.78(4.85 to 12.08)	9.27(7.12 to 11.88)	9.71(6.60 to 13.10)	8.60(5.76 to 12.80)
Zhejiang	8.76(5.87 to 12.48)	8.72(5.47 to 13.79)	8.31(4.61 to 15.97)	10.85(7.33 to 15.65)	10.81(6.87 to 17.31)	10.69(5.05 to 18.78)
Chongqing	9.69(7.06 to 13.17)	10.23(6.86 to 14.90)	8.66(5.35 to 15.09)	11.86(9.20 to 15.39)	12.07(8.46 to 16.66)	11.36(7.21 to 17.44)

PAF=population attributable fraction, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals.

Table S13. Total deaths and age-standardised mortality rates due to CVD attributable to high FPG, percentage change, and EAPC for male by province in China, 2010-2018.

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
China	200.26(186.05 to 216.35)	278.43(257.99 to 300.08)	39.03	48.36(44.68 to 52.58)	51.13(47.44 to 54.99)	5.72	-0.08(-4.95 to 5.03)
Anhui	9.25(6.42 to 12.45)	12.09(8.40 to 17.37)	30.67	45.44(30.40 to 63.71)	46.64(33.13 to 65.27)	2.66	0.08(-5.34 to 5.80)
Beijing	3.50(2.42 to 5.12)	4.76(3.27 to 6.84)	36.13	64.59(43.69 to 96.21)	55.79(39.79 to 78.72)	-13.63	-2.40(-5.38 to 0.68)
Fujian	3.59(2.38 to 5.40)	4.52(3.03 to 6.44)	25.82	35.38(23.10 to 54.11)	36.94(25.21 to 52.24)	4.42	-0.61(-5.58 to 4.61)
Gansu	2.98(2.04 to 3.98)	4.20(3.09 to 5.71)	41.26	38.33(24.77 to 55.82)	46.51(32.14 to 67.36)	21.36	1.14(-4.82 to 7.46)
Guangdong	10.94(7.40 to 15.31)	15.73(10.14 to 22.37)	43.82	47.59(31.77 to 67.06)	45.00(30.05 to 62.65)	-5.44	-1.02(-6.74 to 5.05)
Guangxi	7.41(5.26 to 10.13)	7.86(5.96 to 10.21)	6.12	49.07(34.86 to 67.99)	46.94(36.02 to 60.60)	-4.34	-0.60(-5.00 to 4.01)
Guizhou	4.44(3.00 to 5.93)	4.50(3.05 to 6.26)	1.44	39.29(26.15 to 54.14)	35.75(24.77 to 49.98)	-9.01	-1.94(-7.75 to 4.24)
Hainan	1.30(0.89 to 1.94)	1.73(1.26 to 2.31)	32.54	54.21(36.92 to 80.76)	63.85(47.06 to 84.89)	17.77	0.45(-5.72 to 7.02)
Hebei	13.75(10.24 to 18.04)	20.16(15.51 to 26.95)	46.59	63.89(46.16 to 87.04)	70.21(53.91 to 94.19)	9.89	0.20(-5.09 to 5.78)
Henan	16.48(11.94 to 22.70)	24.04(17.77 to 32.52)	45.92	58.70(41.70 to 83.96)	73.03(53.48 to 99.09)	24.40	1.31(-3.41 to 6.27)
Heilongjiang	10.75(8.07 to 13.86)	15.79(11.77 to 20.44)	46.90	88.61(63.91 to 120.62)	98.09(73.37 to 127.71)	10.71	0.80(-4.60 to 6.51)
Hubei	8.25(5.83 to 11.25)	9.59(6.74 to 13.31)	16.23	45.01(30.59 to 64.37)	39.88(27.58 to 56.62)	-11.41	-2.03(-6.49 to 2.64)
Hunan	8.44(5.70 to 12.12)	11.37(8.08 to 15.91)	34.75	37.81(25.39 to 55.86)	38.82(28.36 to 53.47)	2.66	-0.62(-6.58 to 5.72)
Jilin	7.07(5.27 to 9.44)	9.00(6.64 to 12.37)	27.35	79.60(57.18 to 111.88)	77.16(57.04 to 105.89)	-3.07	-0.77(-5.36 to 4.03)
Jiangsu	9.19(5.87 to 13.94)	13.34(8.82 to 19.54)	45.07	32.61(20.55 to 50.08)	36.33(24.62 to 52.10)	11.38	0.79(-4.55 to 6.42)
Jiangxi	4.59(3.14 to 6.54)	5.42(3.76 to 7.58)	17.95	37.34(24.60 to 55.18)	33.11(22.96 to 46.43)	-11.32	-2.38(-7.46 to 2.98)

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
Liaoning	11.99(8.60 to 17.27)	16.50(11.76 to 23.06)	37.56	74.15(52.96 to 109.59)	79.54(58.03 to 108.98)	7.27	0.05(-4.75 to 5.09)
Inner Mongolia	5.10(3.77 to 6.71)	6.54(4.91 to 8.61)	28.32	70.82(50.32 to 100.58)	69.77(51.07 to 93.94)	-1.47	-1.18(-6.69 to 4.66)
Ningxia	0.67(0.45 to 0.96)	0.94(0.68 to 1.30)	41.03	45.33(29.83 to 70.45)	46.90(32.31 to 69.00)	3.46	-0.21(-6.29 to 6.26)
Qinghai	0.52(0.38 to 0.70)	0.91(0.72 to 1.12)	73.27	39.21(27.02 to 56.57)	55.48(42.93 to 71.04)	41.49	3.15(-2.59 to 9.22)
Shandong	17.16(11.91 to 24.55)	26.81(18.97 to 38.81)	56.28	53.41(36.12 to 78.81)	58.16(42.89 to 82.29)	8.88	0.70(-3.84 to 5.46)
Shanxi	5.38(3.96 to 7.21)	7.80(5.71 to 10.41)	44.93	53.75(37.90 to 76.81)	57.82(41.54 to 78.38)	7.58	0.19(-5.08 to 5.75)
Shaanxi	4.60(2.85 to 6.85)	6.59(4.37 to 9.27)	43.26	39.15(23.38 to 63.12)	45.50(29.66 to 66.57)	16.23	0.15(-7.03 to 7.89)
Shanghai	2.08(1.07 to 3.78)	5.29(2.66 to 8.37)	154.12	28.56(15.29 to 50.44)	38.31(20.97 to 58.69)	34.16	1.99(-3.43 to 7.72)
Sichuan	10.92(7.33 to 15.16)	14.85(10.34 to 21.61)	36.06	35.85(23.72 to 51.02)	38.73(27.50 to 55.24)	8.03	-0.00(-5.15 to 5.42)
Tianjin	3.08(2.25 to 4.19)	4.32(3.00 to 5.89)	40.20	78.90(56.24 to 109.66)	70.32(49.81 to 95.15)	-10.87	-1.94(-5.43 to 1.66)
Tibet	0.17(0.11 to 0.24)	0.19(0.13 to 0.27)	12.84	28.80(18.43 to 42.45)	26.76(17.73 to 41.32)	-7.08	-2.38(-8.20 to 3.81)
Xinjiang	2.96(2.19 to 3.87)	3.61(2.75 to 4.68)	21.77	53.78(38.46 to 72.64)	54.04(40.63 to 72.72)	0.48	-0.84(-6.09 to 4.71)
Yunnan	3.82(2.61 to 5.54)	4.51(3.17 to 6.23)	18.01	30.64(20.58 to 46.36)	29.56(20.94 to 40.93)	-3.54	-1.06(-5.78 to 3.89)
Zhejiang	4.07(2.64 to 6.61)	7.03(4.30 to 11.30)	72.65	22.34(14.54 to 36.10)	25.36(16.65 to 38.60)	13.51	-0.55(-6.64 to 5.94)
Chongqing	3.70(2.53 to 5.39)	4.50(3.10 to 6.40)	21.72	32.75(22.32 to 49.26)	32.53(22.52 to 46.14)	-0.67	-1.14(-6.23 to 4.23)

CVD=cardiovascular disease, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals, EAPC=estimated annual percentage change.

Table S14. Total deaths and age-standardised mortality rates due to CVD attributable to high FPG, percentage change, and EAPC for female by province in China, 2010-2018.

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
China	152.62(134.58 to 172.26)	220.59(194.21 to 250.18)	44.53	32.98(29.35 to 36.91)	33.88(30.40 to 37.79)	2.72	-0.63(-5.89 to 4.92)
Anhui	7.22(4.17 to 11.77)	14.33(7.31 to 22.64)	98.57	32.06(19.42 to 50.65)	43.22(25.39 to 65.18)	34.82	1.55(-5.11 to 8.68)
Beijing	2.21(1.23 to 3.63)	3.16(1.69 to 4.98)	43.23	34.05(19.11 to 55.91)	30.42(17.08 to 46.92)	-10.64	-2.73(-5.79 to 0.42)
Fujian	2.98(1.57 to 5.27)	4.75(2.69 to 7.63)	59.44	24.76(14.69 to 40.69)	28.37(17.70 to 42.63)	14.58	-0.57(-6.79 to 6.07)
Gansu	1.93(1.32 to 2.76)	2.48(1.59 to 3.68)	28.49	25.57(16.86 to 41.51)	27.05(16.06 to 43.85)	5.78	-0.62(-7.58 to 6.87)
Guangdong	9.16(4.56 to 16.70)	15.71(6.82 to 27.72)	71.49	30.76(17.66 to 51.14)	34.19(18.18 to 55.57)	11.16	0.60(-5.63 to 7.25)
Guangxi	4.39(2.55 to 7.46)	5.77(3.56 to 9.11)	31.46	25.31(16.11 to 40.77)	28.66(19.27 to 42.12)	13.25	0.89(-3.76 to 5.76)
Guizhou	2.58(1.69 to 3.96)	2.98(1.87 to 5.05)	15.57	21.65(14.19 to 33.30)	21.40(13.66 to 35.69)	-1.17	-1.50(-8.36 to 5.87)
Hainan	1.11(0.54 to 1.94)	1.86(1.07 to 2.84)	67.49	36.44(20.84 to 58.45)	45.76(28.87 to 65.86)	25.58	1.21(-5.50 to 8.40)
Hebei	9.63(6.31 to 14.49)	14.11(8.99 to 21.75)	46.50	40.44(26.89 to 60.08)	40.93(28.12 to 60.37)	1.23	-1.01(-5.78 to 4.00)
Henan	14.52(8.11 to 24.87)	20.17(11.66 to 31.32)	38.86	44.34(26.67 to 72.62)	48.57(30.07 to 72.42)	9.52	0.07(-5.56 to 6.04)
Heilongjiang	5.94(4.05 to 8.77)	9.05(6.22 to 13.14)	52.33	51.14(32.49 to 79.83)	52.76(35.56 to 78.22)	3.18	-0.69(-6.89 to 5.94)
Hubei	5.85(3.59 to 9.55)	7.73(4.18 to 12.87)	32.24	29.94(18.51 to 48.81)	27.83(15.78 to 45.02)	-7.04	-2.39(-8.75 to 4.42)
Hunan	5.98(3.32 to 10.21)	8.43(4.94 to 13.51)	40.96	25.37(14.71 to 41.48)	25.59(16.27 to 38.65)	0.87	-0.64(-5.85 to 4.85)
Jilin	4.11(2.71 to 6.21)	5.70(3.76 to 8.80)	38.83	47.00(29.69 to 73.88)	45.38(30.33 to 69.38)	-3.45	-0.82(-6.60 to 5.31)
Jiangsu	8.86(4.45 to 15.25)	12.63(6.54 to 20.99)	42.64	24.87(14.00 to 40.23)	25.90(15.33 to 40.29)	4.13	-1.36(-6.68 to 4.28)
Jiangxi	3.25(1.89 to 5.17)	4.61(2.75 to 7.34)	41.94	24.32(14.53 to 37.71)	23.93(15.46 to 36.59)	-1.63	-1.31(-7.41 to 5.19)

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
Liaoning	8.67(5.29 to 13.79)	11.16(6.33 to 17.14)	28.74	50.20(30.90 to 79.50)	46.18(28.24 to 68.60)	-7.99	-1.87(-7.19 to 3.76)
Inner Mongolia	2.80(1.94 to 3.92)	3.27(2.16 to 4.76)	16.48	40.84(26.16 to 61.58)	34.78(22.32 to 52.78)	-14.83	-2.35(-7.78 to 3.40)
Ningxia	0.43(0.30 to 0.64)	0.58(0.36 to 0.93)	36.49	29.84(19.59 to 50.81)	29.65(16.45 to 51.37)	-0.63	-1.08(-8.10 to 6.46)
Qinghai	0.30(0.20 to 0.42)	0.47(0.34 to 0.64)	57.54	22.41(14.17 to 35.14)	26.69(18.93 to 39.37)	19.11	1.93(-4.02 to 8.25)
Shandong	16.32(9.03 to 27.05)	22.78(12.67 to 38.06)	39.54	41.33(25.05 to 65.29)	38.64(24.54 to 59.09)	-6.49	-1.07(-6.67 to 4.88)
Shanxi	3.70(2.27 to 5.48)	4.98(3.10 to 8.13)	34.64	36.93(22.48 to 55.38)	34.27(22.00 to 54.28)	-7.21	-0.67(-7.23 to 6.35)
Shaanxi	3.00(1.78 to 5.03)	4.58(2.70 to 7.80)	52.68	25.14(14.54 to 46.14)	30.31(17.49 to 53.44)	20.56	0.45(-7.47 to 9.06)
Shanghai	1.56(0.51 to 3.17)	3.71(1.29 to 7.39)	138.02	14.39(5.99 to 27.35)	17.67(7.42 to 33.06)	22.81	0.08(-5.05 to 5.50)
Sichuan	8.16(5.14 to 13.58)	12.66(7.68 to 19.64)	55.25	25.60(16.74 to 41.36)	29.20(19.15 to 42.87)	14.06	0.38(-5.78 to 6.94)
Tianjin	2.42(1.44 to 3.87)	2.69(1.53 to 4.13)	11.30	52.42(31.82 to 82.75)	40.71(25.02 to 60.50)	-22.33	-3.80(-6.54 to -0.98)
Tibet	0.10(0.06 to 0.16)	0.12(0.06 to 0.20)	16.14	15.54(9.70 to 25.41)	14.53(8.15 to 24.62)	-6.51	0.03(-7.35 to 8.00)
Xinjiang	1.65(1.20 to 2.26)	2.08(1.49 to 2.89)	26.11	34.22(23.21 to 50.26)	34.58(22.75 to 51.73)	1.04	-1.51(-7.49 to 4.87)
Yunnan	2.78(1.76 to 4.45)	3.39(2.25 to 5.37)	21.76	20.95(13.60 to 32.45)	20.14(14.08 to 30.16)	-3.85	-1.78(-7.52 to 4.32)
Zhejiang	3.79(2.03 to 6.96)	5.96(3.16 to 10.09)	57.05	18.22(10.80 to 31.00)	17.40(10.49 to 27.55)	-4.49	-2.58(-9.26 to 4.60)
Chongqing	2.79(1.60 to 4.84)	3.79(2.18 to 6.05)	35.96	23.90(14.33 to 39.85)	24.61(15.21 to 37.41)	2.94	-1.50(-7.89 to 5.32)

CVD=cardiovascular disease, FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals, EAPC=estimated annual percentage change.

Table S15. Total deaths and age-standardised mortality rates due to ischaemic heart disease attributable to high FPG, percentage change, and EAPC by province in China, 2010-2018.

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
China	166.12(150.43 to 182.66)	247.12(224.01 to 272.48)	48.76	19.21(17.40 to 21.13)	20.91(19.15 to 22.82)	8.85	0.20(-5.01 to 5.69)
Anhui	6.83(4.59 to 10.06)	11.24(6.17 to 17.51)	64.64	16.28(10.91 to 24.04)	19.25(11.65 to 28.45)	18.23	0.62(-5.66 to 7.32)
Beijing	3.27(2.15 to 4.77)	5.05(3.37 to 7.19)	54.23	27.68(18.16 to 40.63)	27.03(18.73 to 37.54)	-2.36	-1.22(-4.22 to 1.89)
Fujian	2.77(1.78 to 4.38)	4.35(2.69 to 6.58)	56.97	12.54(8.28 to 19.14)	15.06(9.95 to 21.81)	20.15	0.57(-4.91 to 6.35)
Gansu	2.19(1.62 to 2.93)	2.91(2.12 to 3.90)	32.97	14.62(10.22 to 21.22)	16.59(11.29 to 23.48)	13.53	0.23(-6.28 to 7.20)
Guangdong	11.11(6.97 to 17.26)	17.55(10.00 to 28.15)	57.97	21.21(13.89 to 31.71)	21.90(13.93 to 33.23)	3.22	-0.05(-5.88 to 6.15)
Guangxi	5.23(3.62 to 7.49)	5.68(4.07 to 7.91)	8.55	16.49(11.62 to 22.98)	15.74(11.83 to 21.14)	-4.50	-1.00(-5.49 to 3.70)
Guizhou	2.11(1.55 to 3.08)	2.43(1.63 to 3.66)	15.27	9.26(6.69 to 13.68)	9.40(6.41 to 14.07)	1.55	-1.02(-7.67 to 6.11)
Hainan	1.15(0.74 to 1.73)	1.75(1.12 to 2.51)	51.49	21.65(14.53 to 30.92)	26.14(17.88 to 36.36)	20.74	1.00(-5.25 to 7.67)
Hebei	11.40(8.32 to 15.38)	17.03(12.16 to 23.39)	49.37	25.42(18.24 to 34.64)	27.34(20.10 to 36.68)	7.55	-0.09(-5.15 to 5.24)
Henan	14.74(9.74 to 23.00)	22.90(15.17 to 32.69)	55.38	24.76(16.46 to 38.43)	31.17(21.44 to 43.60)	25.87	1.71(-3.83 to 7.56)
Heilongjiang	8.25(6.04 to 11.29)	13.26(9.86 to 17.52)	60.74	35.58(24.82 to 51.30)	40.40(29.84 to 53.66)	13.54	0.71(-5.18 to 6.97)
Hubei	6.04(4.11 to 8.82)	7.99(5.01 to 12.58)	32.32	16.28(10.83 to 24.49)	15.78(10.09 to 24.50)	-3.10	-1.40(-6.95 to 4.48)
Hunan	7.93(4.93 to 11.85)	10.07(6.99 to 14.88)	26.94	17.48(10.91 to 26.08)	16.27(11.68 to 23.20)	-6.87	-1.79(-7.15 to 3.88)
Jilin	5.65(4.05 to 7.77)	7.85(5.49 to 11.14)	38.92	32.66(22.24 to 46.55)	32.31(22.71 to 45.78)	-1.08	-0.63(-5.83 to 4.86)
Jiangsu	6.41(3.84 to 10.33)	10.55(6.71 to 15.98)	64.60	10.12(6.38 to 15.90)	12.46(8.49 to 17.87)	23.13	1.39(-3.79 to 6.86)
Jiangxi	3.30(2.17 to 4.91)	4.47(3.01 to 6.51)	35.45	13.04(8.50 to 19.59)	12.70(8.81 to 17.99)	-2.66	-1.56(-7.39 to 4.63)

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
Liaoning	10.61(7.22 to 14.98)	15.57(10.29 to 22.34)	46.71	32.17(21.76 to 45.62)	34.92(23.92 to 48.88)	8.53	0.42(-4.65 to 5.77)
Inner Mongolia	3.93(2.96 to 5.11)	5.25(3.95 to 6.91)	33.48	28.18(19.95 to 39.75)	28.29(20.65 to 38.34)	0.41	-0.69(-6.39 to 5.35)
Ningxia	0.59(0.42 to 0.82)	0.81(0.57 to 1.15)	38.61	20.31(13.91 to 30.78)	20.63(13.65 to 30.78)	1.58	-0.73(-7.26 to 6.26)
Qinghai	0.29(0.21 to 0.40)	0.53(0.41 to 0.67)	84.04	11.25(7.61 to 17.41)	16.04(11.82 to 21.57)	42.57	3.70(-2.43 to 10.22)
Shandong	18.30(11.46 to 27.66)	29.00(18.91 to 44.77)	58.52	25.96(16.68 to 38.45)	27.85(19.53 to 40.33)	7.28	0.62(-4.56 to 6.08)
Shanxi	4.32(3.20 to 5.83)	6.45(4.59 to 9.10)	49.35	21.81(15.44 to 30.54)	23.40(16.82 to 32.99)	7.31	0.67(-5.26 to 6.97)
Shaanxi	3.32(2.15 to 5.02)	5.06(3.24 to 7.37)	52.18	14.44(9.14 to 23.30)	17.70(11.01 to 26.46)	22.60	0.77(-7.13 to 9.33)
Shanghai	1.73(0.84 to 3.09)	5.16(2.45 to 8.66)	198.32	9.62(5.16 to 16.33)	14.87(7.89 to 24.00)	54.68	3.63(-1.28 to 8.78)
Sichuan	6.91(4.78 to 10.21)	10.99(7.12 to 16.20)	59.05	11.19(7.79 to 16.54)	13.43(9.09 to 19.14)	20.02	0.93(-4.97 to 7.20)
Tianjin	3.16(2.19 to 4.47)	4.09(2.70 to 5.82)	29.39	37.42(25.71 to 53.15)	32.20(21.95 to 44.61)	-13.96	-2.53(-5.86 to 0.92)
Tibet	0.05(0.03 to 0.06)	0.06(0.04 to 0.09)	38.09	3.64(2.45 to 5.31)	4.22(2.95 to 6.15)	16.12	0.84(-5.05 to 7.09)
Xinjiang	2.42(1.82 to 3.12)	3.23(2.50 to 4.12)	33.73	23.34(16.93 to 31.22)	25.32(19.00 to 33.71)	8.51	-0.22(-5.83 to 5.73)
Yunnan	2.88(2.02 to 4.10)	2.93(2.10 to 4.13)	1.83	11.26(7.88 to 16.23)	9.16(6.68 to 12.62)	-18.67	-3.51(-8.59 to 1.86)
Zhejiang	3.16(1.87 to 5.21)	5.31(3.19 to 8.13)	67.92	8.10(5.01 to 12.86)	8.72(5.73 to 12.59)	7.71	-1.17(-7.78 to 5.91)
Chongqing	2.73(1.74 to 4.41)	3.51(2.16 to 5.46)	28.8	12.09(7.76 to 19.44)	12.00(7.70 to 18.09)	-0.76	-1.43(-7.44 to 4.96)

FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals, EAPC=estimated annual percentage change.

Table S16. Total deaths and age-standardised mortality rates due to ischaemic stroke attributable to high FPG, percentage change, and EAPC by province in China, 2010-2018.

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
China	83.72(75.23 to 93.19)	135.83(121.17 to 151.16)	62.24	9.68(8.70 to 10.78)	11.34(10.22 to 12.55)	17.14	1.09(-4.00 to 6.45)
Anhui	3.60(2.20 to 5.43)	7.91(4.11 to 13.18)	119.8	8.44(5.13 to 12.88)	13.31(7.52 to 21.15)	57.66	4.87(-1.28 to 11.40)
Beijing	1.62(1.00 to 2.45)	2.16(1.36 to 3.43)	33.14	13.68(8.44 to 20.71)	11.49(7.43 to 17.70)	-16.03	-2.99(-5.78 to -0.11)
Fujian	1.69(1.00 to 2.84)	2.66(1.48 to 4.19)	57.78	7.77(4.80 to 12.46)	9.29(5.69 to 14.05)	19.67	0.62(-4.90 to 6.46)
Gansu	0.80(0.54 to 1.14)	1.54(1.03 to 2.24)	93.64	5.29(3.37 to 8.33)	8.29(5.32 to 13.14)	56.87	4.31(-2.21 to 11.26)
Guangdong	4.68(2.72 to 7.64)	8.82(4.56 to 15.75)	88.71	9.16(5.64 to 14.16)	11.18(6.40 to 18.71)	22.00	1.99(-3.63 to 7.95)
Guangxi	2.96(1.83 to 4.56)	3.82(2.58 to 5.81)	29.22	9.19(5.88 to 13.80)	10.43(7.24 to 15.21)	13.44	1.40(-3.11 to 6.13)
Guizhou	1.55(1.01 to 2.21)	2.17(1.38 to 3.35)	39.50	6.70(4.39 to 9.70)	8.07(5.24 to 12.49)	20.40	1.42(-5.12 to 8.41)
Hainan	0.70(0.40 to 1.14)	1.02(0.55 to 1.65)	46.68	12.80(7.72 to 20.17)	15.23(9.00 to 23.71)	18.96	0.34(-6.33 to 7.49)
Hebei	5.84(4.12 to 8.48)	9.17(6.06 to 13.27)	56.87	13.16(9.11 to 19.37)	14.40(9.73 to 20.52)	9.47	0.11(-4.99 to 5.48)
Henan	6.33(3.96 to 10.95)	10.91(6.99 to 16.77)	72.19	10.65(6.72 to 18.30)	14.80(9.68 to 22.04)	38.94	2.72(-2.46 to 8.17)
Heilongjiang	4.06(2.92 to 5.51)	7.05(5.14 to 9.83)	73.68	17.31(11.86 to 24.48)	21.03(15.03 to 29.57)	21.45	2.06(-3.66 to 8.12)
Hubei	2.99(1.97 to 4.54)	3.91(2.36 to 5.95)	30.65	8.01(5.12 to 12.55)	7.60(4.65 to 11.55)	-5.10	-1.41(-6.54 to 4.01)
Hunan	3.41(2.21 to 5.26)	5.28(3.45 to 7.76)	54.88	7.47(4.87 to 11.55)	8.44(5.73 to 12.07)	13.00	0.55(-4.98 to 6.40)
Jilin	2.75(1.95 to 3.87)	4.13(2.92 to 5.91)	50.30	15.83(10.80 to 22.95)	16.86(12.02 to 24.10)	6.51	0.32(-4.69 to 5.59)
Jiangsu	6.87(3.94 to 11.40)	10.22(5.47 to 16.87)	48.63	10.85(6.41 to 17.37)	11.89(6.96 to 18.77)	9.60	0.02(-5.09 to 5.40)
Jiangxi	1.38(0.93 to 2.08)	2.57(1.56 to 3.91)	86.05	5.46(3.64 to 8.30)	7.23(4.54 to 10.81)	32.38	2.58(-2.83 to 8.29)

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
Liaoning	5.46(3.76 to 7.93)	7.38(4.96 to 10.51)	35.17	16.50(11.18 to 24.05)	16.35(11.37 to 22.72)	-0.91	-1.15(-6.09 to 4.04)
Inner Mongolia	1.73(1.18 to 2.40)	2.23(1.51 to 3.10)	29.08	12.62(8.25 to 18.34)	11.80(7.84 to 16.92)	-6.51	-1.63(-7.04 to 4.09)
Ningxia	0.22(0.14 to 0.33)	0.37(0.24 to 0.55)	65.83	7.74(4.84 to 12.48)	9.13(5.52 to 14.93)	18.09	1.42(-5.08 to 8.37)
Qinghai	0.08(0.05 to 0.11)	0.19(0.14 to 0.25)	152.84	2.98(1.90 to 4.53)	5.73(4.11 to 7.79)	92.47	7.72(1.70 to 14.10)
Shandong	7.64(4.82 to 11.96)	12.19(8.04 to 19.16)	59.49	10.92(7.10 to 16.65)	11.72(8.08 to 17.54)	7.31	0.75(-4.27 to 6.04)
Shanxi	2.36(1.62 to 3.38)	3.68(2.46 to 5.36)	55.54	12.12(8.12 to 17.83)	13.10(8.79 to 19.16)	8.09	0.63(-5.26 to 6.88)
Shaanxi	1.66(1.06 to 2.63)	3.17(1.98 to 4.95)	91.03	7.13(4.37 to 11.84)	10.68(6.53 to 17.18)	49.78	3.54(-4.10 to 11.78)
Shanghai	1.43(0.65 to 2.70)	3.14(1.36 to 5.51)	119.57	8.05(4.05 to 14.37)	9.39(4.77 to 15.60)	16.67	0.02(-5.10 to 5.43)
Sichuan	3.17(2.06 to 4.74)	5.34(3.32 to 8.48)	68.72	5.09(3.31 to 7.58)	6.48(4.16 to 9.89)	27.18	1.87(-3.72 to 7.79)
Tianjin	1.42(0.94 to 2.07)	2.08(1.39 to 2.96)	45.85	16.99(11.27 to 24.66)	16.65(11.42 to 23.10)	-2.05	-0.95(-4.48 to 2.71)
Tibet	0.03(0.02 to 0.04)	0.04(0.03 to 0.06)	57.61	2.12(1.40 to 3.23)	2.75(1.73 to 4.27)	29.77	2.38(-3.07 to 8.15)
Xinjiang	0.65(0.45 to 0.93)	0.97(0.67 to 1.40)	48.98	6.51(4.30 to 9.77)	7.75(5.11 to 11.72)	19.00	0.90(-4.96 to 7.11)
Yunnan	1.53(1.03 to 2.38)	2.31(1.46 to 3.50)	51.34	6.06(4.04 to 9.45)	7.20(4.67 to 10.61)	18.84	1.15(-4.09 to 6.67)
Zhejiang	2.11(1.25 to 3.68)	4.85(2.63 to 7.84)	130.14	5.44(3.32 to 9.09)	7.79(4.63 to 11.74)	43.23	2.54(-4.10 to 9.63)
Chongqing	1.22(0.79 to 1.95)	2.13(1.32 to 3.21)	74.52	5.34(3.47 to 8.53)	7.26(4.63 to 10.74)	35.93	2.56(-3.25 to 8.71)

FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals, EAPC=estimated annual percentage change.

Table S17. Total deaths and age-standardised mortality rates due to hemorrhagic stroke attributable to high FPG, percentage change, and EAPC by province in China, 2010-2018.

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
China	103.29(96.91 to 109.75)	115.36(108.74 to 122.35)	11.69	11.95(11.21 to 12.69)	10.26(9.74 to 10.83)	-14.09	-2.61(-7.10 to 2.09)
Anhui	6.01(4.52 to 7.91)	7.11(5.15 to 9.58)	18.32	14.22(10.71 to 18.73)	13.32(10.14 to 17.00)	-6.35	-1.64(-6.72 to 3.72)
Beijing	0.84(0.64 to 1.07)	0.70(0.56 to 0.89)	-16.27	7.04(5.38 to 9.04)	4.06(3.34 to 4.98)	-42.25	-7.55(-9.96 to -5.08)
Fujian	2.10(1.48 to 3.04)	2.28(1.63 to 3.16)	8.44	9.83(7.04 to 13.75)	8.42(6.30 to 11.18)	-14.31	-3.62(-8.64 to 1.69)
Gansu	1.92(1.46 to 2.44)	2.28(1.79 to 2.84)	18.62	12.21(9.12 to 16.45)	12.08(9.22 to 15.77)	-1.04	-1.21(-6.76 to 4.67)
Guangdong	4.34(3.14 to 6.03)	5.02(3.44 to 7.02)	15.60	8.69(6.47 to 11.75)	6.92(5.08 to 9.08)	-20.36	-3.04(-7.62 to 1.76)
Guangxi	3.59(2.78 to 4.75)	4.14(3.18 to 5.24)	15.27	11.53(9.00 to 14.97)	11.88(9.30 to 14.71)	3.04	0.07(-4.14 to 4.47)
Guizhou	3.35(2.48 to 4.34)	2.88(2.10 to 3.87)	-14.10	14.53(10.83 to 18.89)	11.10(8.27 to 14.78)	-23.63	-4.11(-9.64 to 1.76)
Hainan	0.59(0.40 to 0.85)	0.82(0.58 to 1.12)	38.96	11.40(8.19 to 16.00)	12.91(9.61 to 16.88)	13.25	0.23(-5.43 to 6.22)
Hebei	6.28(5.03 to 7.70)	8.22(6.72 to 10.05)	30.82	13.78(10.94 to 17.11)	13.60(11.29 to 16.44)	-1.26	-1.06(-5.40 to 3.49)
Henan	9.82(7.55 to 13.29)	10.65(8.26 to 13.48)	8.46	16.54(12.72 to 22.32)	15.25(12.00 to 18.94)	-7.82	-2.27(-6.41 to 2.05)
Heilongjiang	4.39(3.57 to 5.33)	4.46(3.69 to 5.24)	1.49	17.27(13.92 to 21.31)	13.58(11.25 to 15.95)	-21.38	-3.42(-7.81 to 1.18)
Hubei	5.12(3.91 to 6.55)	5.33(4.13 to 6.85)	4.05	13.46(10.16 to 17.46)	10.60(8.27 to 13.50)	-21.24	-3.52(-7.85 to 1.01)
Hunan	3.13(2.31 to 3.98)	4.42(3.50 to 5.54)	41.25	6.94(5.17 to 8.81)	7.58(6.19 to 9.28)	9.24	0.36(-4.68 to 5.67)
Jilin	2.85(2.34 to 3.43)	2.92(2.44 to 3.51)	2.55	15.26(12.38 to 18.56)	12.58(10.52 to 14.93)	-17.53	-2.78(-7.24 to 1.90)
Jiangsu	4.69(3.36 to 6.66)	5.23(3.79 to 6.97)	11.43	7.66(5.61 to 10.57)	6.75(5.12 to 8.60)	-11.86	-2.71(-7.18 to 1.98)
Jiangxi	3.20(2.31 to 4.25)	3.01(2.26 to 3.91)	-5.83	12.56(9.06 to 16.83)	8.86(6.82 to 11.26)	-29.47	-5.07(-9.63 to -0.28)

	All-age deaths, No. in thousands (95% UI)			Age-standardised mortality rate (95% UI), per 100 000			
	2010	**2018**	**Change, %**	**2010**	**2018**	**Change, %**	**EAPC (95%UI)**
Liaoning	4.78(3.82 to 5.89)	4.76(3.84 to 5.87)	-0.40	14.21(11.36 to 17.64)	11.18(9.17 to 13.53)	-21.31	-3.56(-7.81 to 0.89)
Inner Mongolia	2.26(1.81 to 2.81)	2.35(1.91 to 2.86)	4.03	15.37(11.92 to 19.54)	12.38(10.00 to 15.17)	-19.49	-3.37(-8.16 to 1.67)
Ningxia	0.29(0.22 to 0.38)	0.36(0.28 to 0.46)	22.80	9.71(7.20 to 13.27)	8.57(6.44 to 11.67)	-11.71	-2.02(-7.46 to 3.74)
Qinghai	0.46(0.35 to 0.58)	0.65(0.53 to 0.80)	43.2	16.67(12.89 to 21.95)	19.05(15.27 to 23.74)	14.29	0.85(-4.33 to 6.31)
Shandong	7.49(5.61 to 9.95)	8.53(6.66 to 10.83)	13.76	10.88(8.25 to 14.20)	9.04(7.38 to 11.05)	-16.91	-2.54(-6.95 to 2.07)
Shanxi	2.40(1.81 to 3.11)	2.73(2.18 to 3.48)	14.10	11.95(8.86 to 15.90)	9.96(7.92 to 12.57)	-16.63	-2.77(-7.80 to 2.54)
Shaanxi	2.66(1.98 to 3.55)	2.98(2.26 to 3.84)	12.00	11.08(8.07 to 15.20)	9.97(7.56 to 13.01)	-9.98	-2.71(-8.89 to 3.90)
Shanghai	0.51(0.36 to 0.72)	0.71(0.47 to 1.04)	40.53	3.20(2.35 to 4.34)	2.51(1.86 to 3.37)	-21.36	-4.50(-8.34 to -0.50)
Sichuan	9.08(6.78 to 12.34)	11.22(8.31 to 14.66)	23.53	14.72(11.02 to 19.80)	14.20(10.91 to 18.06)	-3.54	-1.25(-6.07 to 3.82)
Tianjin	0.97(0.77 to 1.22)	0.89(0.71 to 1.08)	-9.13	11.42(9.03 to 14.40)	7.28(5.92 to 8.78)	-36.29	-6.13(-8.84 to -3.33)
Tibet	0.20(0.15 to 0.27)	0.20(0.15 to 0.29)	2.92	16.13(11.77 to 21.97)	13.75(9.69 to 19.61)	-14.78	-2.74(-8.46 to 3.35)
Xinjiang	1.54(1.26 to 1.90)	1.50(1.25 to 1.82)	-2.62	14.46(11.58 to 18.27)	11.33(9.39 to 13.85)	-21.67	-3.85(-8.63 to 1.19)
Yunnan	2.20(1.61 to 2.91)	2.69(2.07 to 3.45)	22.64	8.63(6.32 to 11.39)	8.58(6.66 to 10.79)	-0.54	-0.83(-5.64 to 4.23)
Zhejiang	2.68(1.79 to 3.81)	2.88(1.95 to 4.15)	7.54	7.10(4.88 to 9.98)	5.14(3.73 to 6.90)	-27.68	-5.44(-10.56 to -0.03)
Chongqing	2.59(1.89 to 3.53)	2.65(2.05 to 3.43)	1.96	11.46(8.41 to 15.48)	9.40(7.47 to 11.96)	-18.00	-3.43(-8.05 to 1.41)

FPG=fasting plasma glucose, 95% UI=95% uncertainty intervals, EAPC=estimated annual percentage change.

Table S18. Mortality rates and YLL rates for total CVD attributable to high FPG by age and SDI in China, 2018 (95%UI).

	Mortality rates, per 100,000				**YLL rates, per 100,000**			
	High SDI	**High-middle SDI**	**Middle SDI**	**Low-middle SDI**	**High SDI**	**High-middle SDI**	**Middle SDI**	**Low-middle SDI**
25-29	0.68(0.11 to 1.28)	1.87(1.32 to 2.47)	1.61(1.19 to 2.09)	1.55(0.69 to 2.76)	42.84(7.20 to 81.12)	117.98(83.66 to 156.16)	101.59(75.27 to 131.82)	98.06(43.44 to 174.13)
30-34	0.25(0.13 to 0.39)	2.48(1.90 to 3.13)	2.20(1.60 to 2.83)	2.68(1.37 to 4.28)	14.41(7.77 to 22.43)	144.41(110.74 to 182.21)	128.22(93.28 to 164.95)	155.94(79.59 to 249.14)
35-39	1.66(1.02 to 2.45)	4.41(3.61 to 5.32)	3.41(2.73 to 4.13)	2.78(1.27 to 4.61)	88.70(54.33 to 130.67)	235.08(192.46 to 283.40)	181.42(145.60 to 220.00)	147.93(67.54 to 245.68)
40-44	2.43(1.42 to 3.67)	5.76(4.61 to 7.01)	5.09(4.27 to 6.02)	4.56(2.57 to 7.03)	117.53(68.53 to 177.48)	278.77(223.13 to 339.25)	246.30(206.69 to 290.96)	220.50(124.34 to 339.80)
45-49	5.81(3.87 to 8.08)	11.37(9.67 to 13.12)	9.74(8.26 to 11.30)	8.50(5.61 to 12.53)	252.82(168.49 to 351.58)	494.68(420.78 to 570.86)	423.50(359.47 to 491.56)	369.66(243.90 to 544.96)
50-54	7.84(5.58 to 10.52)	18.92(16.42 to 21.53)	16.97(14.61 to 19.29)	15.44(10.46 to 21.17)	303.46(216.10 to 407.18)	732.18(635.40 to 833.36)	656.72(565.34 to 746.65)	597.59(404.96 to 819.17)
55-59	13.02(9.89 to 16.86)	31.16(27.52 to 35.29)	27.44(23.68 to 31.25)	24.34(15.60 to 32.66)	442.32(336.20 to 572.97)	1059.02(935.10 to 1199.23)	932.45(804.55 to 1061.93)	827.23(530.03 to 1109.70)
60-64	24.94(18.93 to 31.42)	53.55(47.12 to 60.92)	48.87(42.88 to 55.19)	46.46(32.90 to 61.69)	730.99(555.06 to 921.18)	1569.85(1381.22 to 1785.86)	1432.69(1256.93 to 1618.07)	1361.88(964.42 to 1808.61)
65-69	51.34(37.52 to 65.07)	99.46(85.82 to 112.38)	89.05(77.03 to 100.48)	83.45(55.28 to 111.78)	1269.88(928.08 to 1609.43)	2460.12(2122.80 to 2779.58)	2202.73(1905.21 to 2485.39)	2064.07(1367.30 to 2764.71)
70-74	111.47(79.82	187.57(163.35 to	163.18(14	151.75(104.26	2265.15(1621.98	3811.66(3319.34	3316.03(2917.04	3083.64(2118.72

	to 146.57)	215.21)	3.55 to 185.17)	to 206.21)	to 2978.51)	to 4373.24)	to 3762.88)	to 4190.43)
75-79	212.97(152.20 to 265.73)	311.78(270.78 to 353.77)	267.31(232.67 to 300.50)	225.57(140.37 to 307.14)	3427.67(2449.57 to 4276.71)	5017.94(4358.08 to 5693.70)	4302.17(3744.65 to 4836.41)	3630.38(2259.13 to 4943.19)
≥80	750.73(408.59 to 1122.15)	674.75(511.76 to 854.23)	554.72(423.07 to 711.78)	315.11(127.89 to 581.54)	9144.63(4976.98 to 13668.82)	8219.05(6233.66 to 10405.26)	6757.01(5153.36 to 8670.18)	3838.29(1557.84 to 7083.71)
All ages	50.44(36.21 to 65.70)	59.04(53.19 to 65.89)	48.87(44.30 to 53.69)	35.61(29.48 to 42.73)	830.26(651.45 to 1016.43)	1186.33(1108.21 to 1279.40)	1009.75(945.61 to 1080.41)	809.31(702.48 to 934.42)
Age-standardised	34.17(25.74 to 42.80)	46.53(42.45 to 51.23)	39.91(36.47 to 43.58)	31.91(26.19 to 38.68)	623.18(514.04 to 737.48)	999.27(941.37 to 1065.97)	866.08(815.81 to 920.31)	737.12(642.43 to 849.80)

YLLs=years of life lost, CVD=cardiovascular disease, FPG=fasting plasma glucose, SDI=socio-demographic index, 95% UI=95% uncertainty intervals.

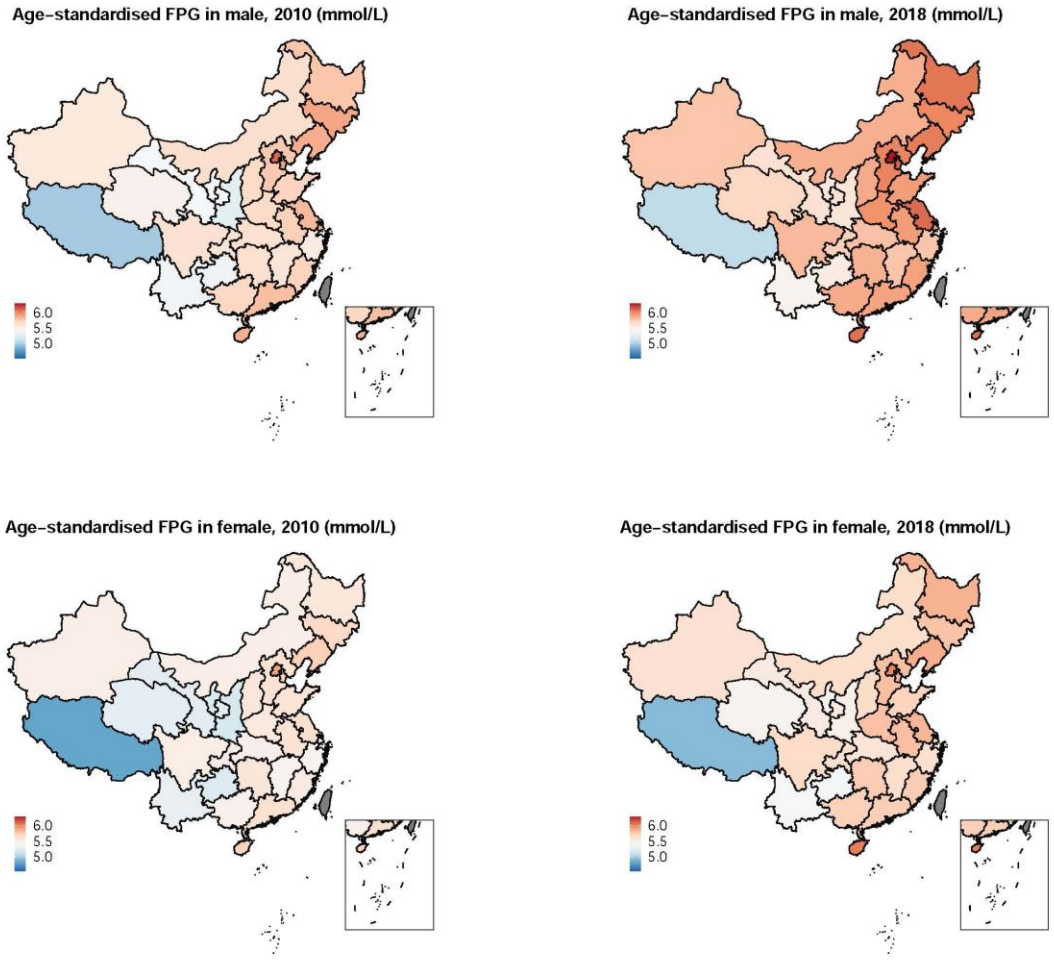

Fig S1. Age-standardised average fasting plasma glucose levels by sex in provinces of China, 2010 and 2018.

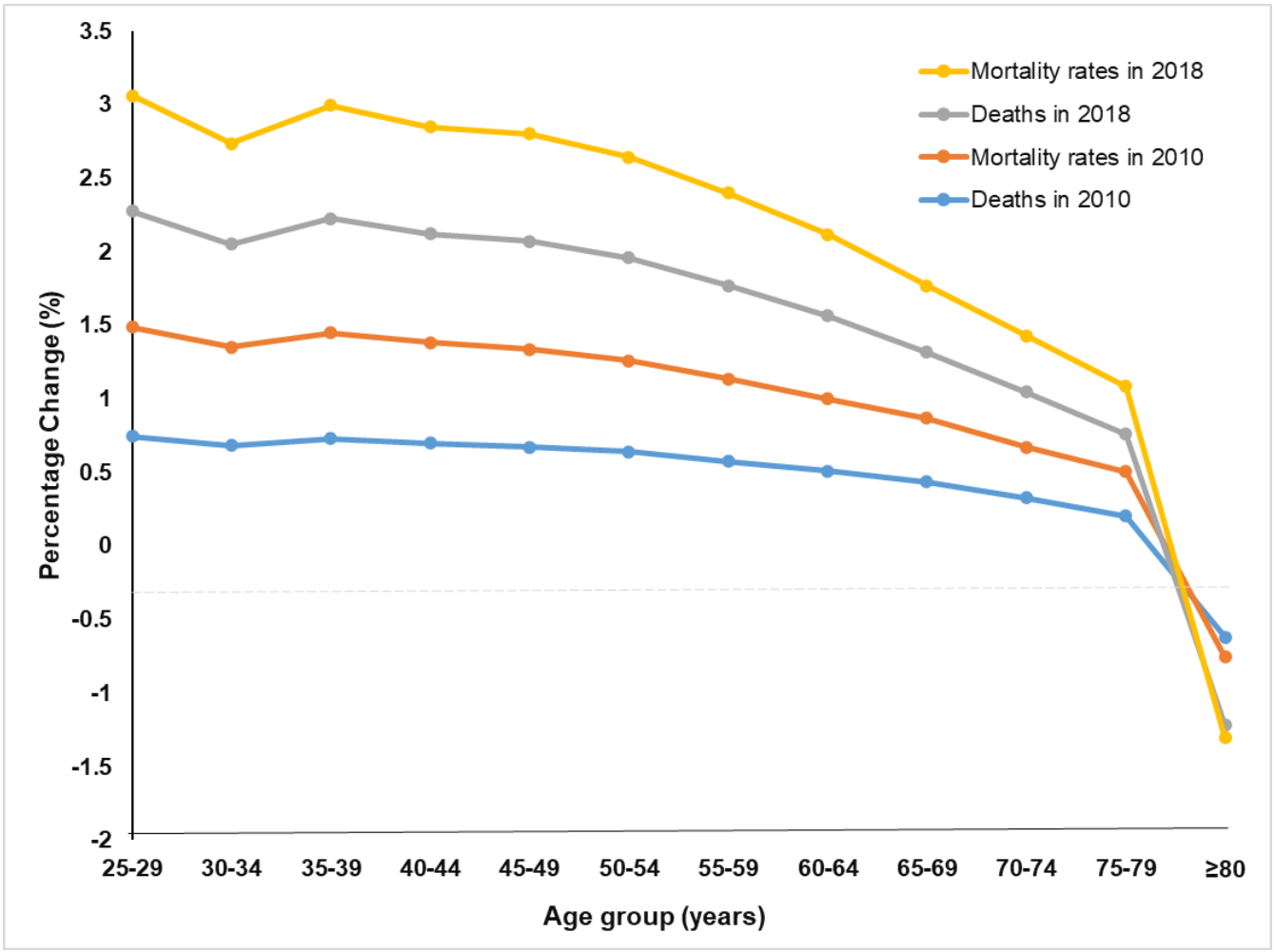

Fig S2. Percent change for CVD deaths and mortality rates attributable to high FPG between male and female across different age group in 2010 and 2018.

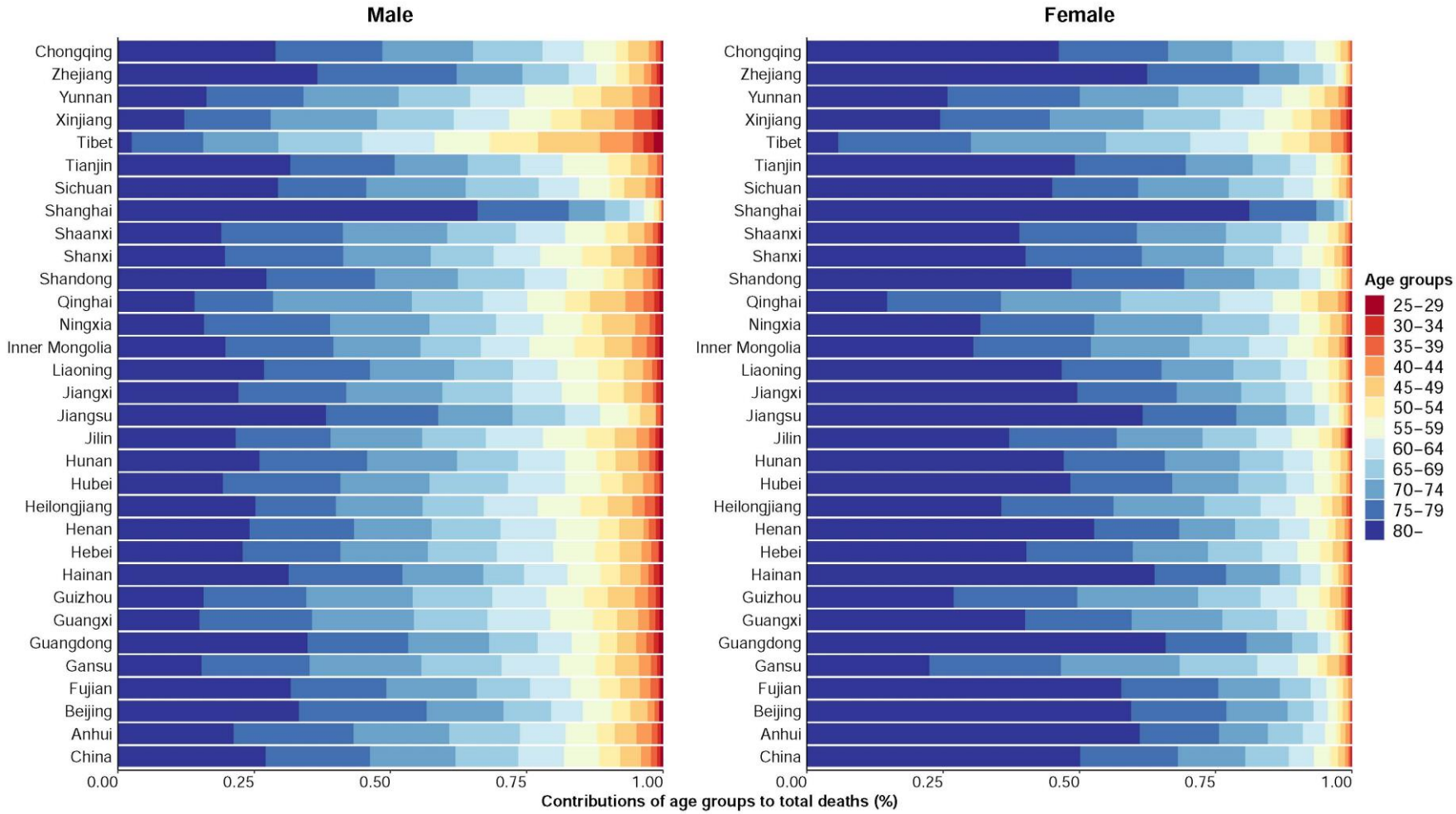

Fig S3. The twelve age groups as percentages of total CVD deaths attributable to high FPG nationaly and in 31 provinces by sex, in 2018. (CVD=cardiovascular disease, FPG=fasting plasma glucose)

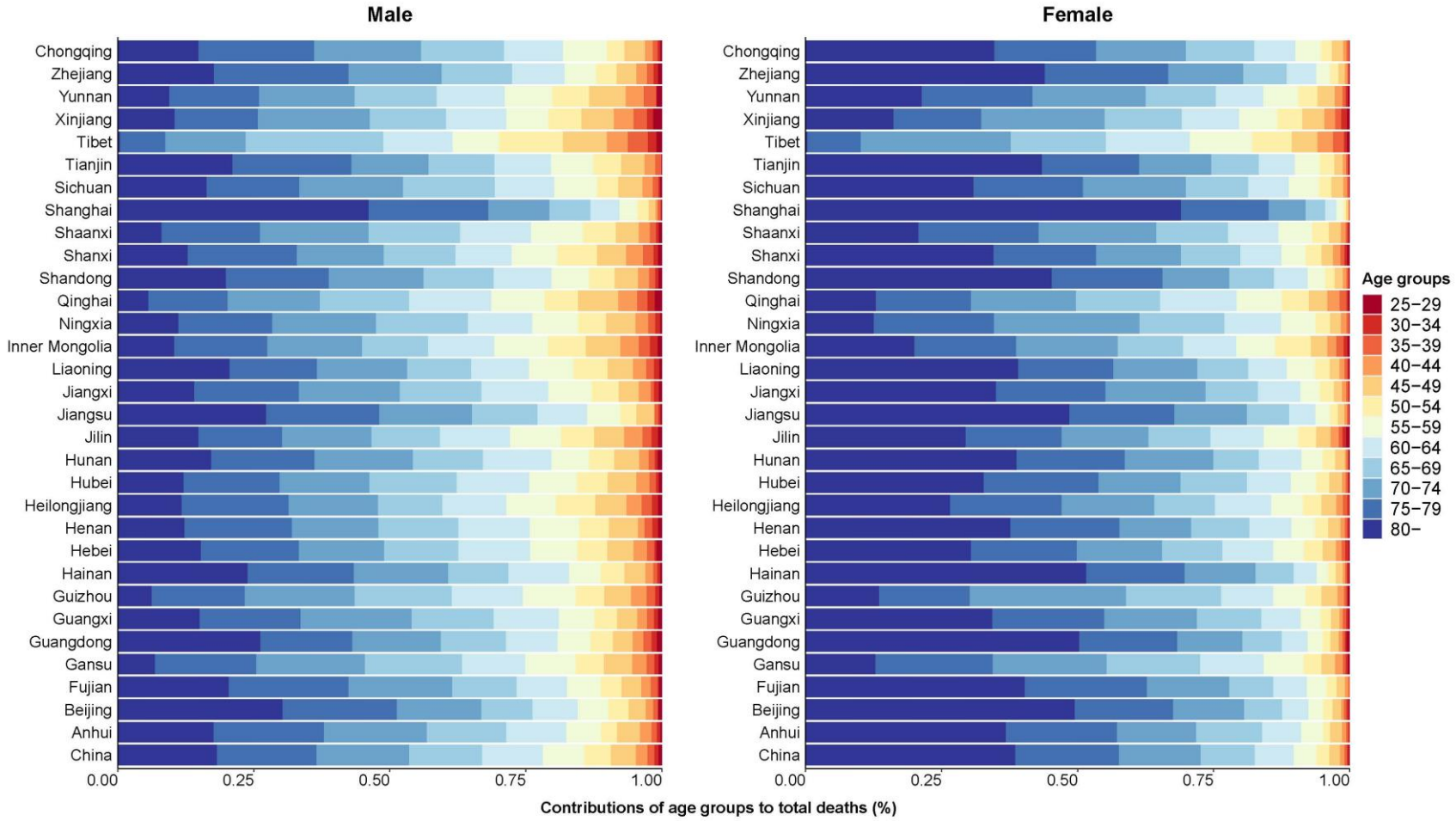

Fig S4. The twelve age groups as percentages of total CVD deaths attributable to high FPG nationaly and in 31 provinces by sex, in 2010. (CVD=cardiovascular disease, FPG=fasting plasma glucose)

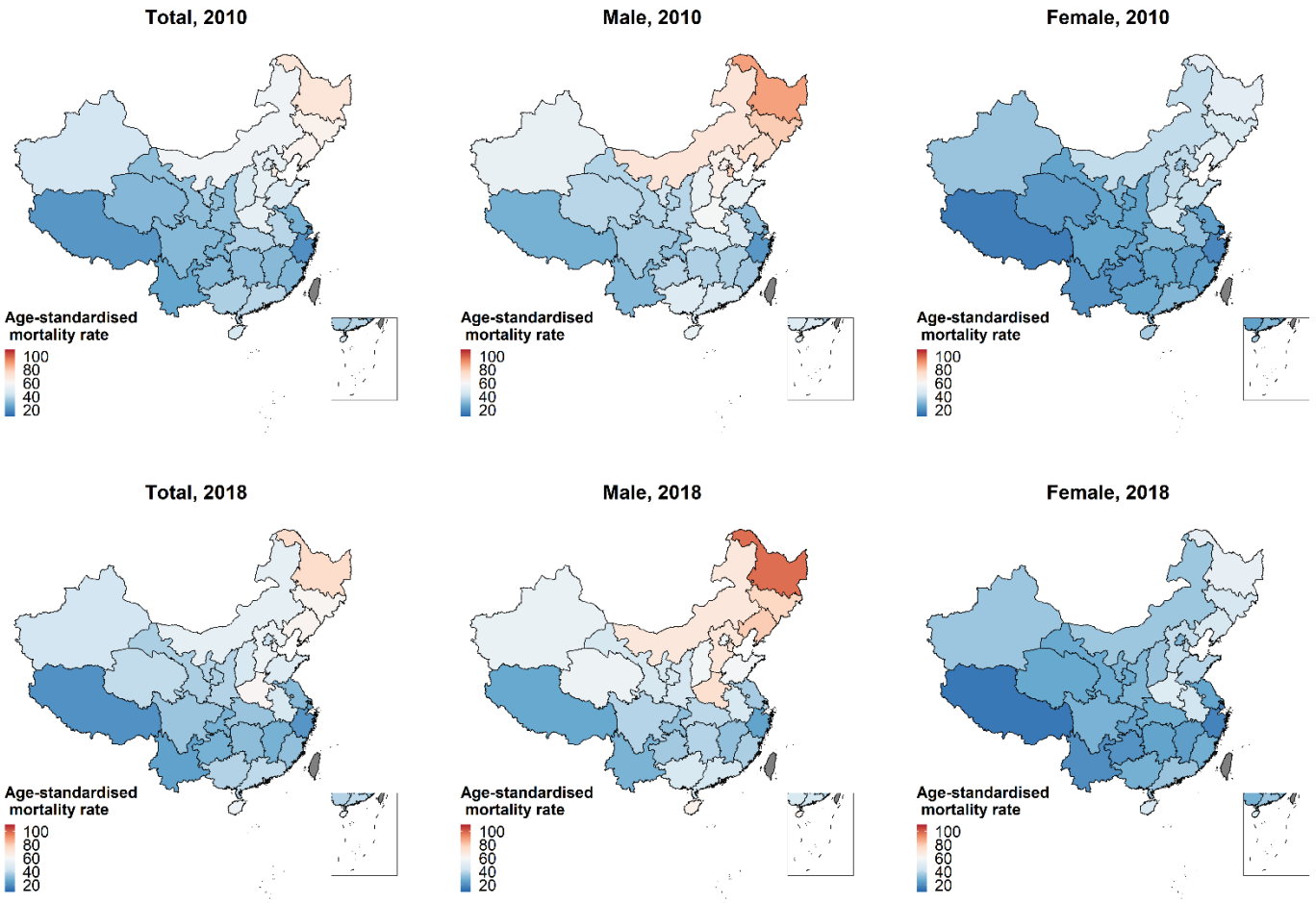

Fig S5. Age-standardised mortality rates for CVD attributable to high FPG by sex in provinces of China, 2010 and 2018. (FPG=fasting plasma glucose, CVD= cardiovascular disease)

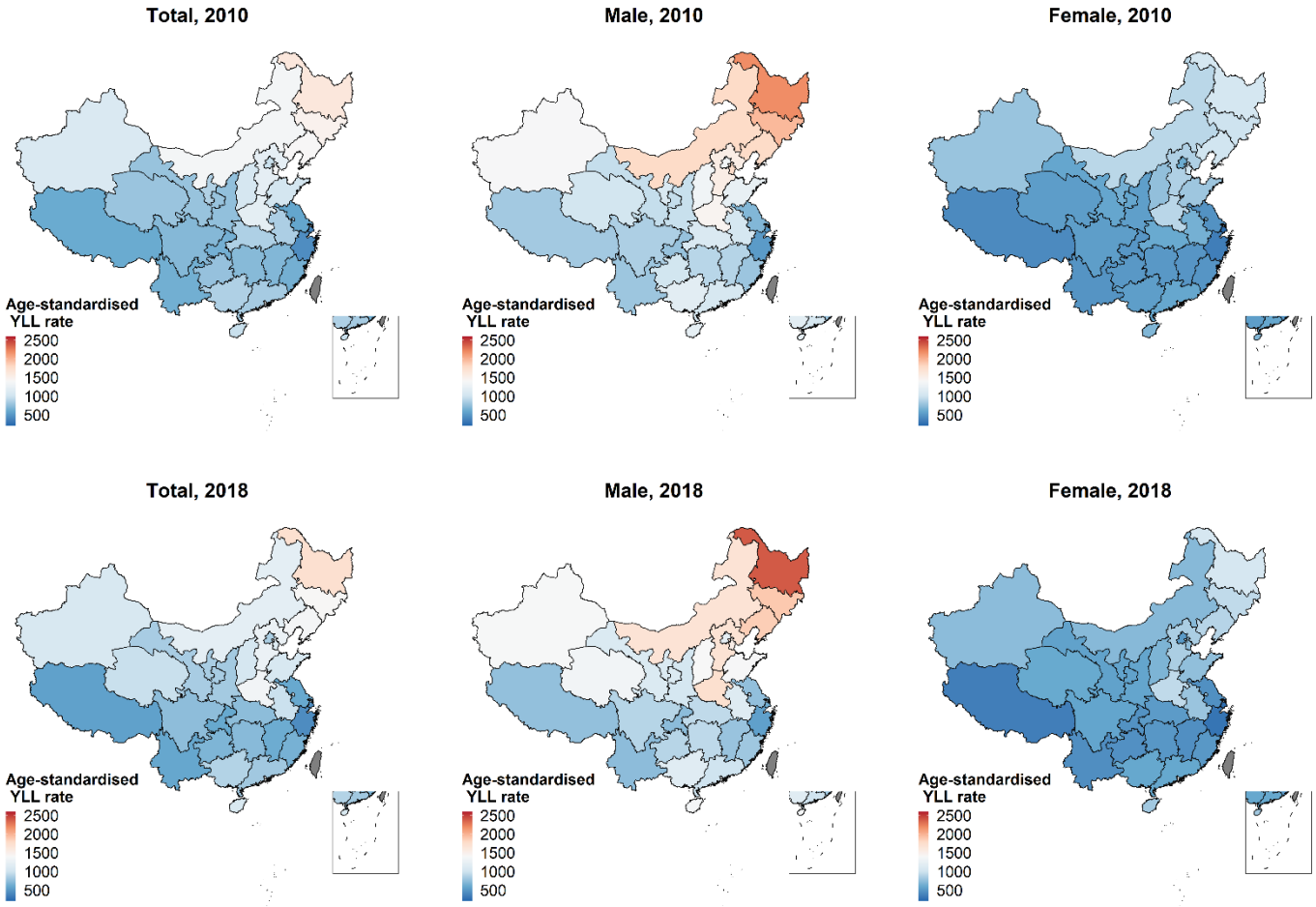

Fig S6. Age-standardised YLL rates for CVD attributable to high FPG by sex in provinces of China, 2010 and 2018. (YLL= year of life lost, CVD=cardiovascular disease, FPG=fasting plasma glucose)

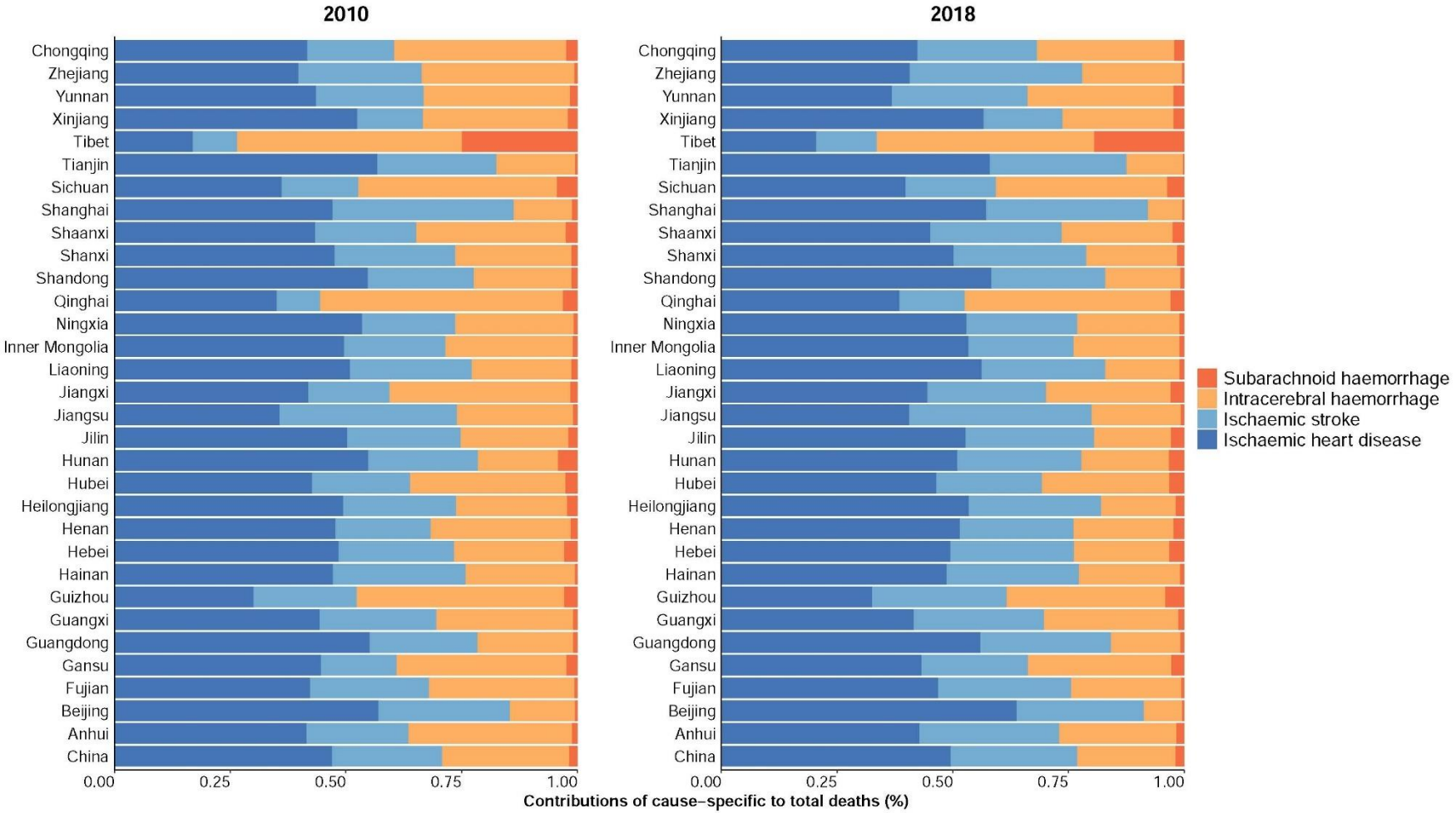

Fig S7. The CVD subtypes as percentages of total CVD deaths attributable to high FPG nationaly and in 31 provinces in 2010 and 2018. (CVD=cardiovascular disease, FPG=fasting plasma glucose)

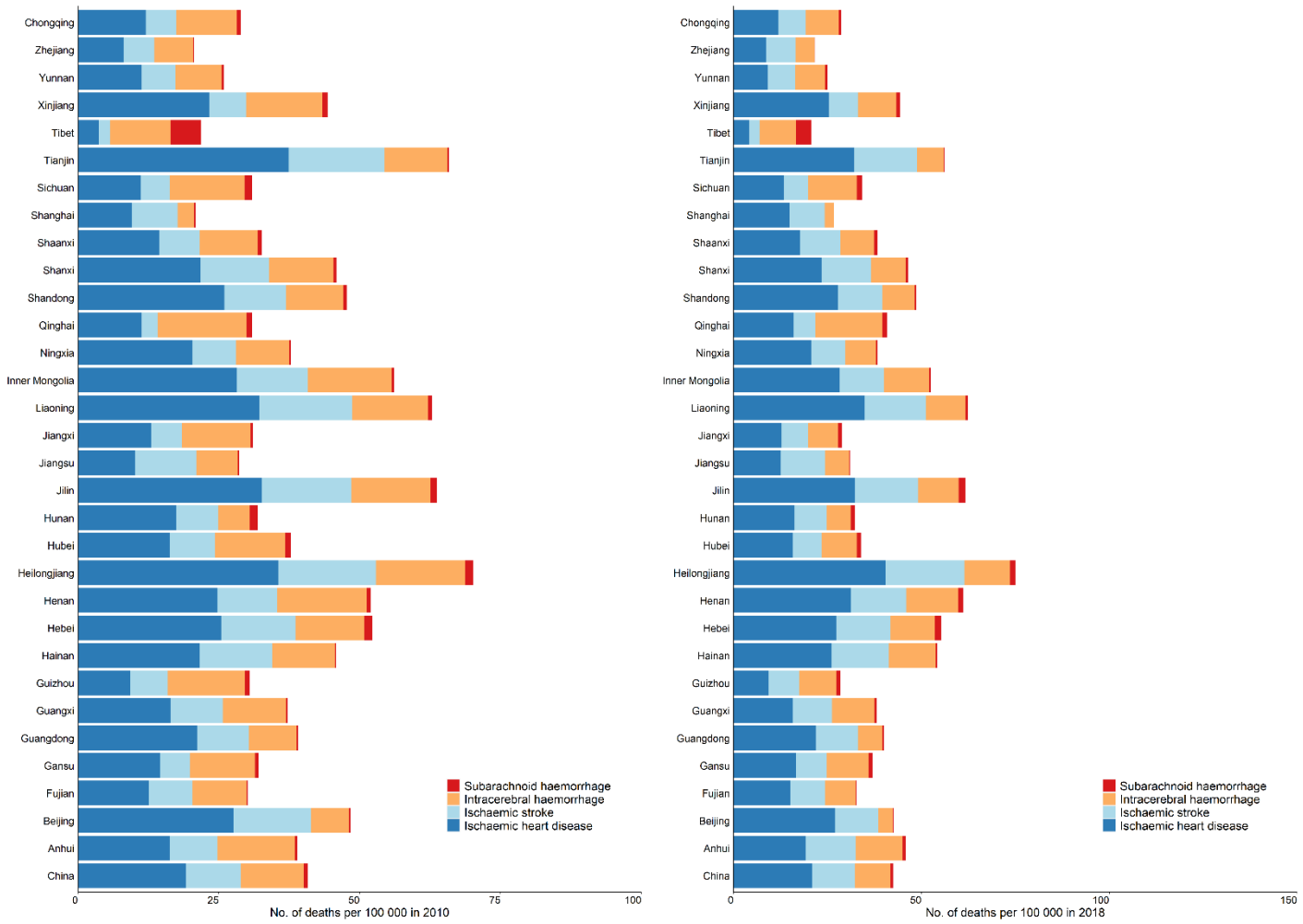

Fig S8. Age-standardised CVD mortality rates attributable to FPG by Chinese province and cause, 2010 (A) and 2018 (B). (CVD=cardiovascular disease, FPG=fasting plasma glucose)

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