THE LANCET

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.
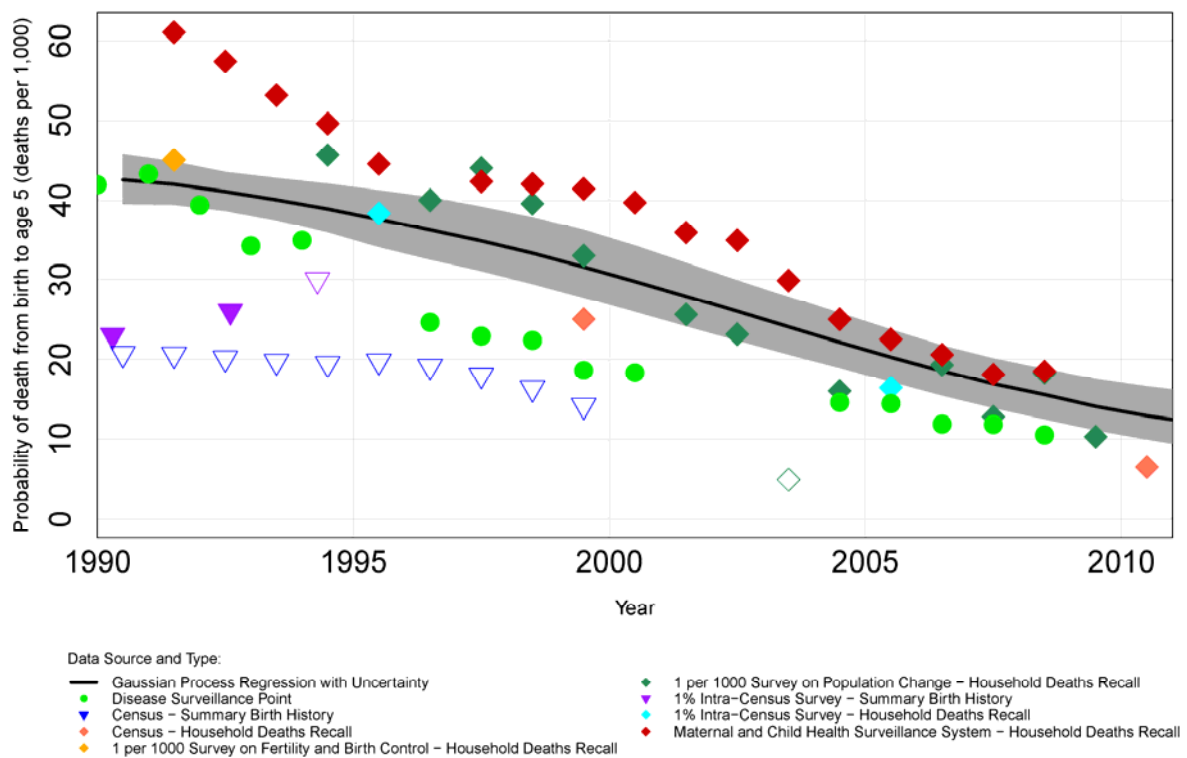
Appendix to Rapid health transition in China 1990-2010: findings from the Global Burden of Disease Study 2010

This appendix provides supplemental figures and a table as referred to in the paper:

Webappendix Figure 1: Details on each of the sources used for measuring the under-five mortality rate in China.

Web Appendix Figure 1: Child Mortality Rate in China, 1990−2011

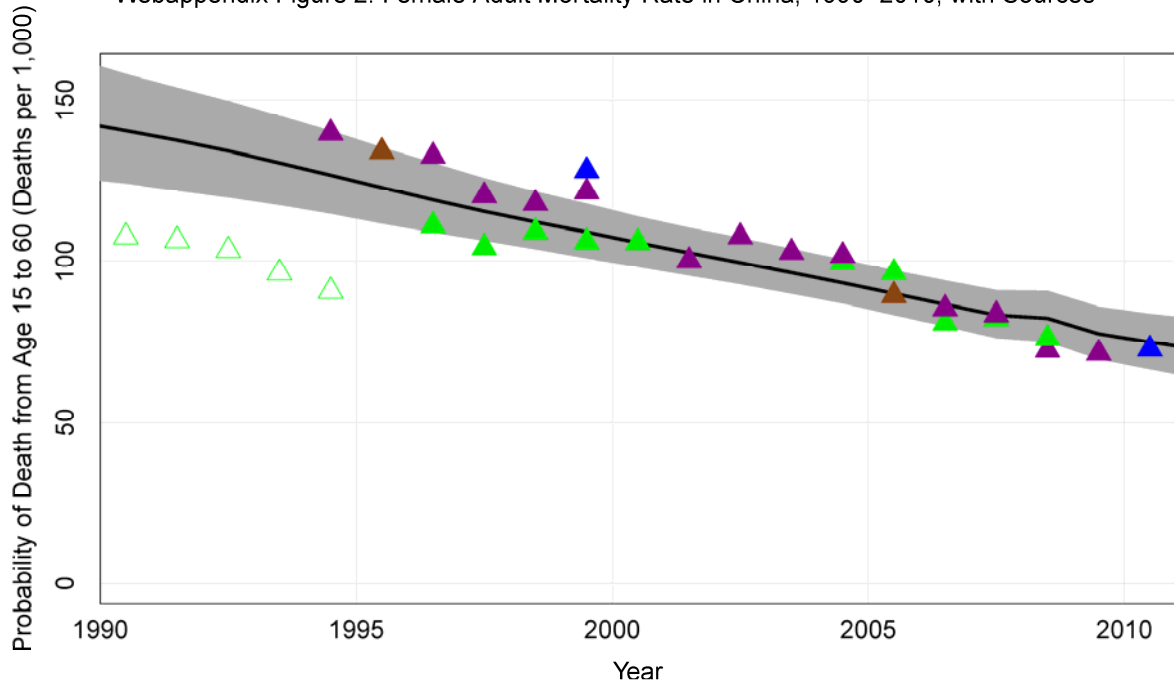*Hollow points indicate data excluded from the analysis

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Webappendix Figure 2: Details on each of the sources used for measuring the probability of death between age 15 and 60 in China.

Webappendix Figure 2: Male Adult Mortality Rate in China, 1990−2010, with Sources
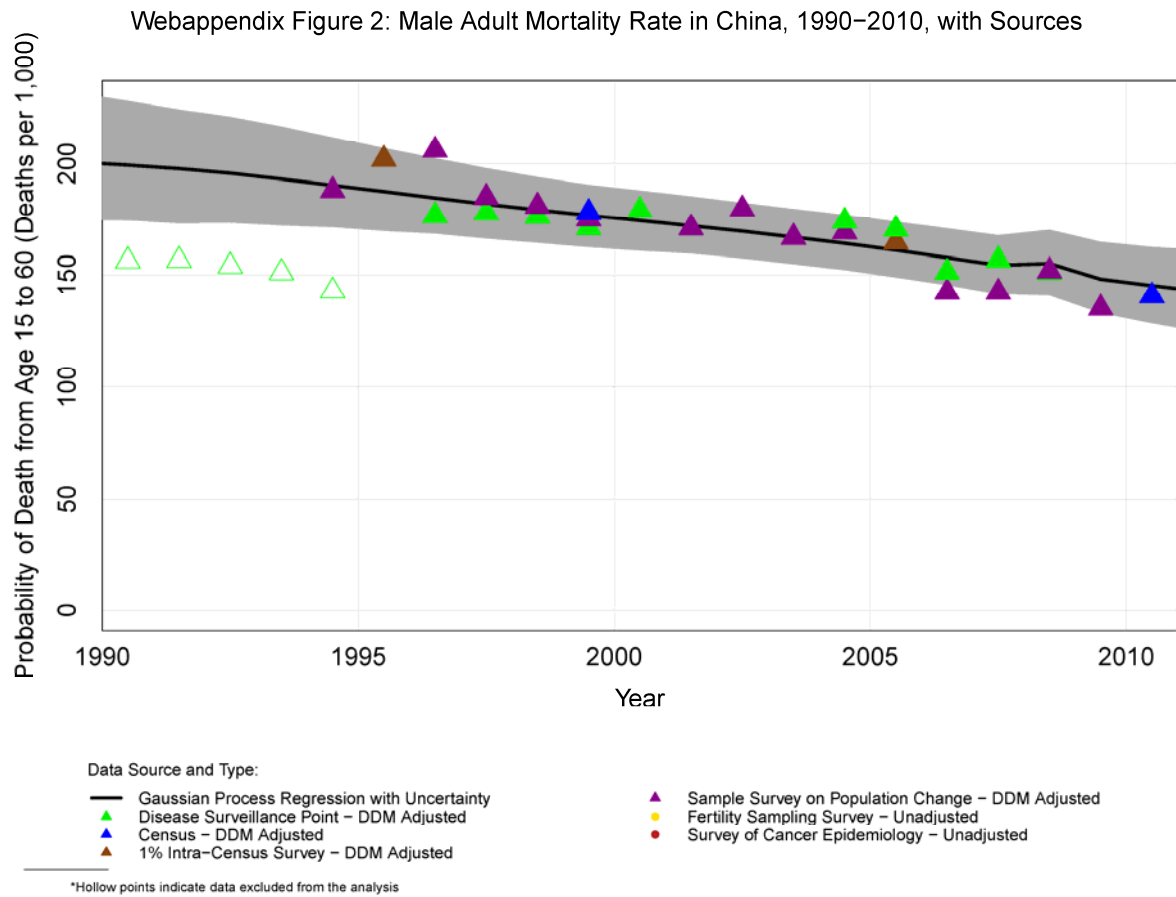
Webappendix Figure 2: Female Adult Mortality Rate in China, 1990−2010, with Sources

Data Source and Type:

— Gaussian Process Regression with Uncertainty
▲ Disease Surveillance Point − DDM Adjusted
▲ Census − DDM Adjusted
▲ 1% Intra−Census Survey − DDM Adjusted

▲ Sample Survey on Population Change − DDM Adjusted
▲ Fertility Sampling Survey − Unadjusted
● Survey of Cancer Epidemiology − Unadjusted

*Hollow points indicate data excluded from the analysis

Webappendix Figure 3: Distribution of deaths in adult age group 15-79 in 2010 by sources.

Webappendix Figure 3: Distribution of death among ages 15−79 by source, males
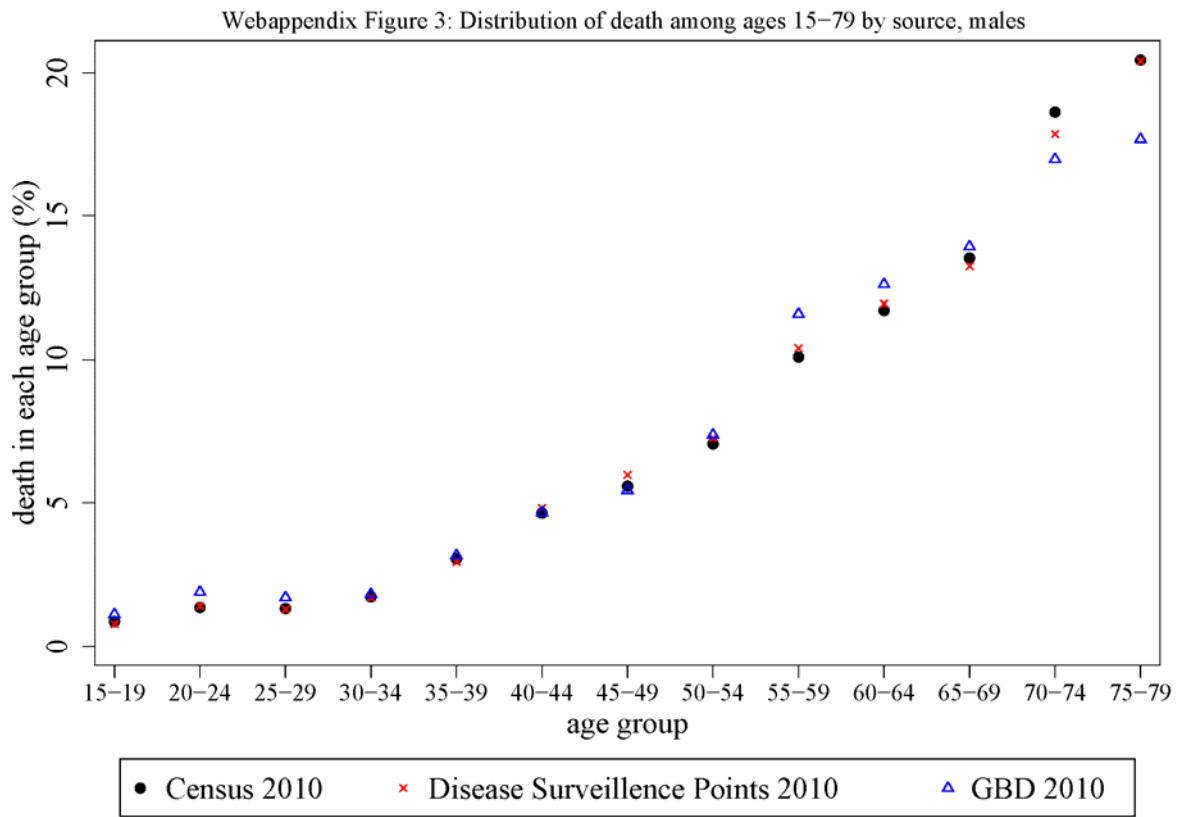
Webappendix Figure 3: Distribution of death among ages 15−79 by source, females
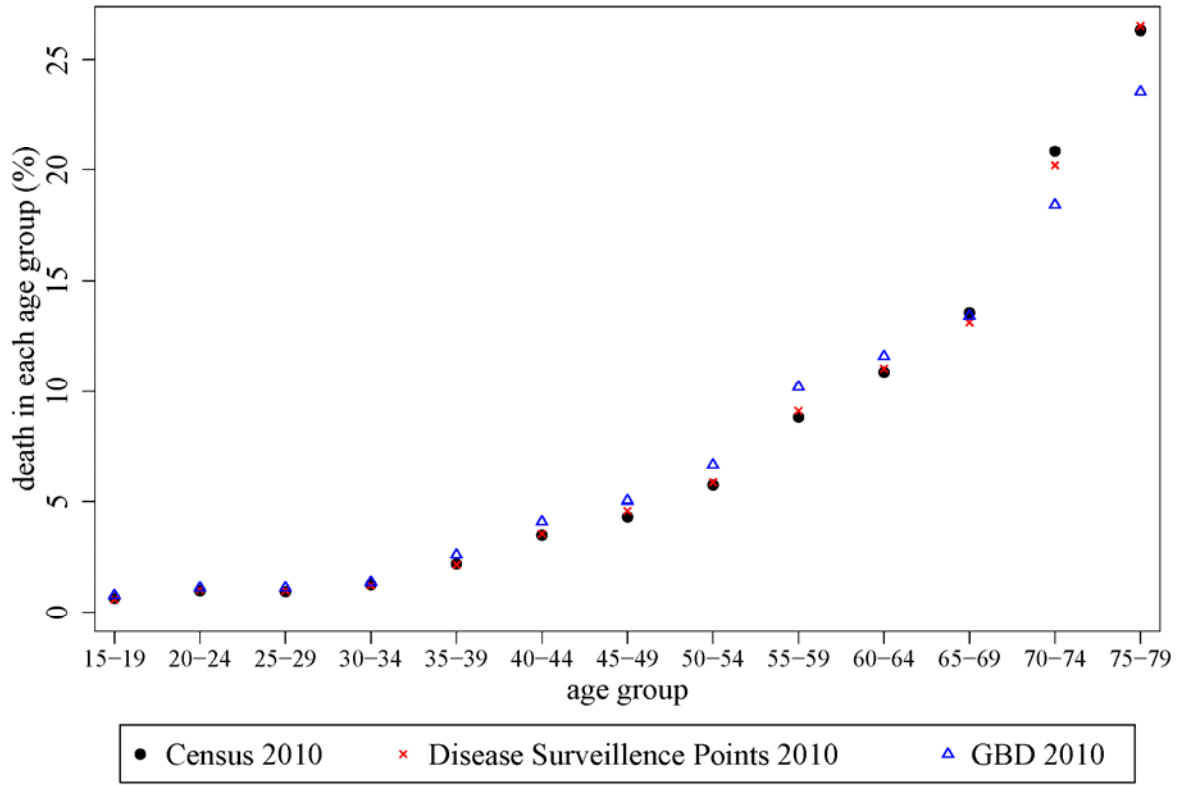
Webappendix Figure 4: Years lived with disability (YLDs) per person in 1990 and 2010 for all ages, by sex in China.

Webappendix Figure 4 − Years lived with disability (YLDs) per person in 1990 and 2010 for all ages, by sex in China

Legend:
- Males 1990
- Males 2010
- Females 1990
- Females 2010

Y-axis: YLDs per person
X-axis: Age group (years)
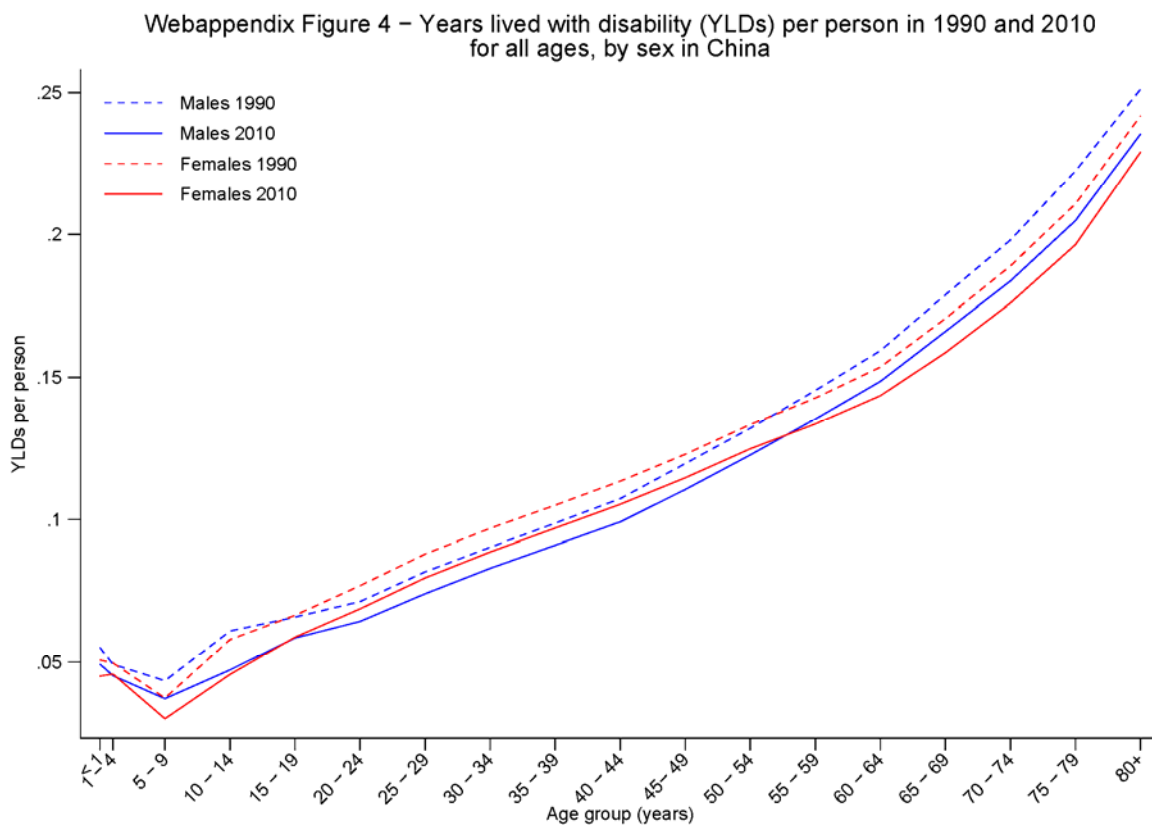
Webappendix Figure 5: Figure 5a – Age-standardised DALY rates relative to the 19 countries that are members of the Group of 20 and ranking by cause in 2010 for males. Figure 5b – Age-standardised DALY rates relative to the 19 countries that are members of the Group of 20 and ranking by cause in 2010 for females. *Numbers in cells indicate the ranks of each country for each cause, with 1 representing the best performing country. Countries have been sorted on the basis of age-standardised all-cause DALYs for that year. Causes are ordered by the 30 leading causes of DALYs in China. Colours indicate whether the age-standardised DALY rate for the country is significantly lower (green), higher (red), or indistinguishable (yellow) from the mean age-standardised DALY rate across comparator countries, with 95% confidence. DALYs=disability-adjusted life years. UI = uncertainty level. COPD=chronic obstructive pulmonary disease.*

Webappendix Figure 5A - Ranking of leading age-standardized cause rates of disability-adjusted life years (DALYs) relative to comparator countries for males in 2010

Country	Stroke	Road injury	Ischemic heart disease	COPD	Low back pain	Lung cancer	Liver cancer	Falls	Stomach cancer	Diabetes	Major depressive disorder	Self-harm	Neck pain	Lower respiratory infections	Esophageal cancer	Alcohol use disorders	Drowning	Cirrhosis	Congenital anomalies	Colorectal cancer	Other musculoskeletal	Schizophrenia	Neonatal encephalopathy	Other hearing loss	Preterm birth complications
Japan	9	1	2	1	12	8	17	6	16	2	1	17	13	9	12	5	8	5	3	12	15	16	1	8	1
Italy	7	10	4	4	15	12	15	14	12	7	13	4	16	1	4	3	3	7	6	13	7	2	4	5	5
Australia	1	5	5	9	13	7	3	12	3	4	4	11	15	2	7	7	5	1	5	17	13	14	9	6	4
Canada	2	2	8	7	16	13	2	2	4	9	8	14	12	3	5	9	6	4	8	10	18	19	8	7	7
South Korea	11	7	1	2	6	10	18	11	19	14	2	16	17	6	10	14	10	14	1	11	16	17	2	10	2
Germany	4	4	11	5	19	15	7	16	9	6	14	10	14	5	9	13	1	12	4	16	10	6	3	1	6
United Kingdom	6	3	9	10	18	9	1	15	6	1	6	9	11	8	15	11	2	8	7	14	11	11	5	2	9
France	3	8	3	3	17	16	16	17	7	3	12	15	10	4	16	17	7	11	2	15	12	7	7	3	3
United States	5	11	13	12	2	14	11	3	2	12	10	12	18	7	8	12	9	10	9	9	19	18	6	4	11
China	**17**	**14**	**6**	**17**	**3**	**17**	**19**	**13**	**18**	**8**	**5**	**8**	**5**	**10**	**19**	**8**	**17**	**6**	**12**	**7**	**2**	**15**	**13**	**14**	**8**
Saudi Arabia	12	19	16	6	9	1	13	10	1	19	17	1	1	12	2	1	13	3	13	2	4	4	12	9	16
Mexico	8	13	10	8	1	2	10	4	8	18	3	5	6	13	3	15	14	19	18	3	9	12	14	15	12
Argentina	10	12	15	11	4	11	5	8	13	11	15	13	19	14	13	16	12	13	15	18	14	13	11	13	13
Turkey	16	6	18	15	11	19	12	9	15	10	19	7	2	11	1	2	4	2	19	8	5	5	10	11	14
Brazil	14	16	14	13	10	4	9	7	14	13	16	6	7	15	14	18	16	15	14	6	6	10	16	17	17
Indonesia	18	18	12	16	7	6	8	5	10	16	11	2	4	17	6	4	11	18	10	4	3	8	19	18	15
Russia	19	15	19	14	14	18	6	18	17	5	18	19	8	16	11	19	19	16	17	19	8	9	15	12	10
India	13	17	17	19	8	3	4	19	11	15	7	18	3	19	17	6	18	17	16	1	1	1	18	19	19
South Africa	15	9	7	18	5	5	14	1	5	17	9	3	9	18	18	10	15	9	11	5	17	3	17	16	18

| Ranking Legend	Lower than mean (95% confidence)	Indistinguishable from mean (95% confidence)	Higher than mean (95% confidence)

Webappendix Figure 5B - Ranking of leading age-standardized cause rates of disability-adjusted life years (DALYs) relative to comparator countries for females in 2010

Country	Stroke	Low back pain	COPD	Ischemic heart disease	Major depressive disorder	Diabetes	Other musculoskeletal	Neck pain	Road injury	Lung cancer	Osteoarthritis	Self-harm	Falls	Liver cancer	Lower respiratory infections	Stomach cancer	Congenital anomalies	Anxiety disorders	Iron-deficiency anemia	Breast cancer	Schizophrenia	Migraine	Bipolar disorder	Colorectal cancer	Dysthymia
Japan	8	12	1	1	1	3	17	10	1	6	14	17	7	15	8	16	3	2	10	5	15	2	2	10	1
South Korea	11	8	2	3	2	12	16	11	8	10	11	18	8	17	6	19	1	11	6	2	17	17	4	8	2
Italy	5	15	4	4	12	6	9	17	9	9	2	4	15	10	1	12	6	8	1	16	2	18	1	15	5
Australia	1	14	11	5	4	4	15	12	10	14	3	9	13	1	2	3	5	13	9	11	14	19	6	18	11
France	2	17	3	2	11	2	11	16	7	11	1	14	19	8	3	5	2	19	3	17	6	7	5	12	6
Germany	3	19	5	8	13	5	10	15	3	15	4	10	16	4	4	9	4	12	4	14	5	9	3	13	9
Canada	4	16	10	7	8	7	18	18	4	18	10	13	2	5	4	8	5	7	15	19	11	9	14	17	
United Kingdom	6	18	13	6	5	1	12	14	2	17	8	6	17	3	9	6	7	15	5	19	11	15	7	16	7
China	**16**	**5**	**17**	**10**	**6**	**10**	**5**	**5**	**15**	**16**	**12**	**15**	**12**	**19**	**10**	**17**	**12**	**1**	**11**	**3**	**16**	**1**	**14**	**7**	**19**
United States	7	2	16	14	10	11	19	19	13	19	7	12	4	6	7	2	9	16	2	12	18	5	8	11	16
Mexico	9	1	7	13	3	18	13	6	12	2	17	3	1	16	14	14	18	3	8	6	9	8	19	3	4
Argentina	10	4	9	12	15	8	14	13	11	8	6	11	6	11	15	10	16	14	13	18	13	4	10	17	10
Saudi Arabia	14	9	8	16	17	16	4	1	18	1	19	1	10	12	13	1	13	17	15	1	3	3	12	1	4
Brazil	12	10	12	15	16	15	7	8	14	7	18	5	5	13	16	13	15	10	12	8	8	13	11	9	12
Turkey	17	11	14	18	19	13	2	3	6	12	16	7	9	7	12	15	19	18	17	9	4	10	15	5	3
Russia	18	13	6	19	18	9	6	7	17	4	13	16	11	9	11	18	14	4	14	13	10	12	16	19	15
Indonesia	19	6	15	11	14	17	3	4	19	13	9	8	14	18	17	8	10	7	16	10	12	14	18	6	18
India	13	7	19	17	7	14	1	2	16	3	5	19	18	5	19	11	17	6	19	4	1	16	17	2	13
South Africa	15	3	18	9	9	19	8	9	5	5	15	2	2	14	18	7	11	9	18	7	7	6	13	4	14

Ranking Legend	Lower than mean (95% confidence)	Indistinguishable from mean (95% confidence)	Higher than mean (95% confidence)

Webappendix Figure 6: Burden of disease attributable to the 14 dietary risk factors for both sexes in 2010, expressed as a percentage of China disability-adjusted life-years.

Percent of China DALYs, 2010, Both Sexes

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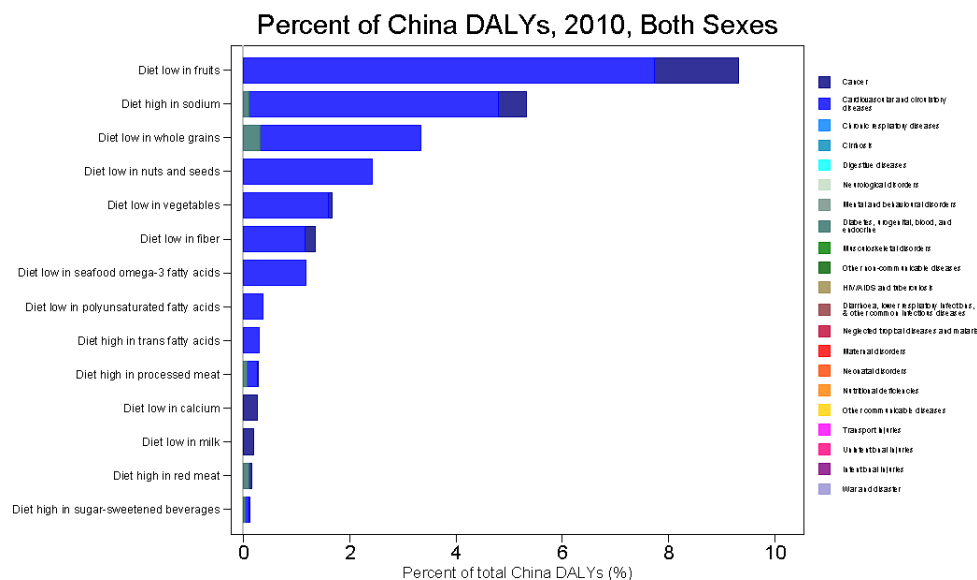
Webappendix Figure 7: Age-standardised DALY rates relative to the 19 countries that are members of the Group of 20 and ranking by risk factor in 2010 for both sexes combined. *Numbers in cells indicate the ranks of each country for each risk factor, with 1 representing the best performing country. Countries have been sorted on the basis of age-standardised all-cause DALYs for that year. Risk factors are ordered by the 25 leading causes of DALYs in China. Colours indicate whether the age-standardised DALY rate for the country is significantly lower (green), higher (red), or indistinguishable (yellow) from the mean age-standardised DALY rate across comparator countries, with 95% confidence (gray indicates that a country was not ranked due to lack of DALYs). DALYs=disability-adjusted life years. UI = uncertainty level.*

Webappendix Figure 7 - Ranking of leading age-standardized risk rates of disability-adjusted life years (DALYs) relative to comparator countries for both sexes in 2010

Country	Dietary risks	High blood pressure	Smoking	Ambient PM pollution	Household air pollution	High fasting plasma glucose	Alcohol use	Occupational risks	High body-mass index	Physical inactivity	High total cholesterol	Drug use	Iron deficiency	Intimate partner violence	Lead	Suboptimal breastfeeding	Low bone mineral density	Childhood sexual abuse	Radon	Ozone	Childhood underweight	Sanitation	Zinc deficiency	Unimproved water	Vitamin A deficiency
Japan	3	3	2	9		2	4	2	1	1	2	6	8	5	2		8	8	3	6	9	11	12	6	9
Italy	4	6	6	8		5	2	3	7	5	7	11	2	4	6		15	10	17	13	1	6	4	7	2
South Korea	7	5	5	13	9	8	15	5	3	4	1	7	7	7	10		13	11	13	3	3	14	10	8	10
Australia	1	2	4	1		4	5	8	8	3	6	15	10	3	7		11	15	2	1	2	5	2	5	7
Canada	5	1	9	4		7	7	7	10	9	9	14	6	8	1		3	16	8	9	4	1	8	1	1
Germany	8	9	8	10		6	8	14	11	7	16	9	4	6	5		16	12	12	10	7	4	7	3	8
France	2	4	7	6		1	13	11	6	2	4	4	3	10	3		18	6	19	7	6	8	1	4	5
United Kingdom	6	8	11	7		3	10	10	9	8	11	18	5	1	9		12	14	11	11	8	3	5	2	6
United States	9	7	13	11		9	11	1	12	10	13	19	1	11	4		2	18	14	16	5	2	6	12	3
China	**15**	**12**	**12**	**18**	**17**	**10**	**9**	**16**	**4**	**6**	**5**	**1**	**11**	**12**	**12**	**13**	**17**	**4**	**18**	**18**	**13**	**15**	**13**	**15**	**12**
Mexico	10	10	3	12	15	18	16	4	15	12	12	5	9	2	14	16	5	3	5	15	16	9	16	14	15
Saudi Arabia	13	15	1	17	11	19	1	6	18	18	15	10	15	9	8	11	9	2	1	12	15	7	11	16	14
Argentina	11	11	14	2	10	11	12	13	14	11	14	12	12	13	15	12	4	13	9	2	12	10	3	10	11
Turkey	16	16	18	16	13	12	6	15	16	17	18	8	16	16	13	14	7	9	16	17	11	13	15	11	13
Brazil	14	14	10	3	14	13	17	17	13	13	17	13	14	15	16	15	10	7	10	4	14	16	14	13	16
Indonesia	18	18	17	14	18	14	3	18	5	16	8	2	17	14	17	17	14	1	6	5	18	18	18	19	17
Russia	19	19	19	15	12	16	19	12	19	19	19	16	13	17	11		6	17	15	8	10	12	9	9	4
India	17	13	16	19	19	15	14	19	2	14	10	3	19	19	19	18	19	19	4	19	19	19	19	18	18
South Africa	12	17	15	5	16	17	18	9	17	15	3	17	18	18	18	19	1	5	7	14	17	17	17	17	19

Ranking Legend	Lower than mean (95% confidence)	Indistinguishable from mean (95% confidence)	Higher than mean (95% confidence)

Webappendix Figure 8: Burden of disease attributable to the 25 leading risk factors for both sexes in 1990 and 2010, expressed as a percentage of China deaths. Figure 8a – Percent of total China deaths in 1990. Figure 8b – Percent of total China deaths in 2010.

Leading risk factors, percent of total Deaths, 1990
China

Leading risk factors, percent of total Deaths, 2010
China
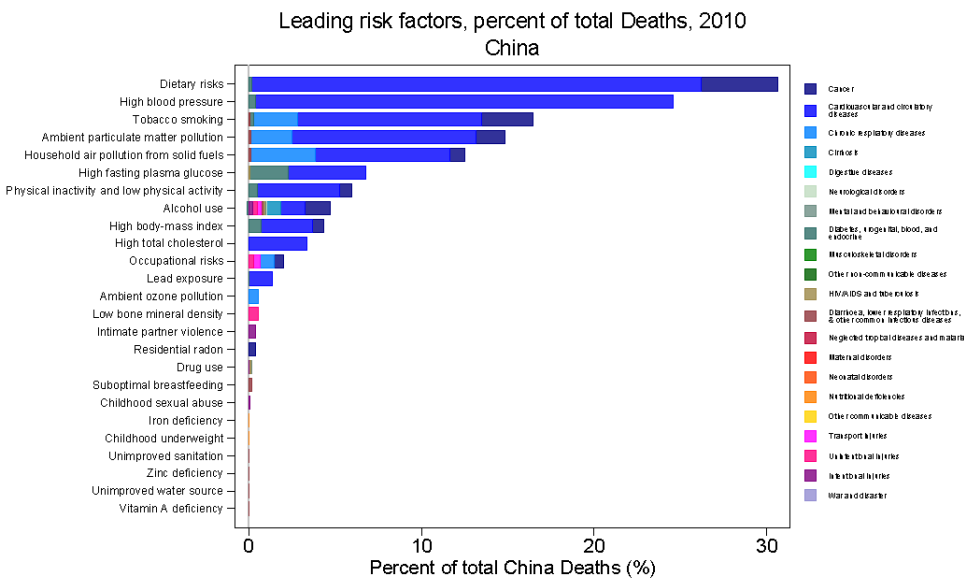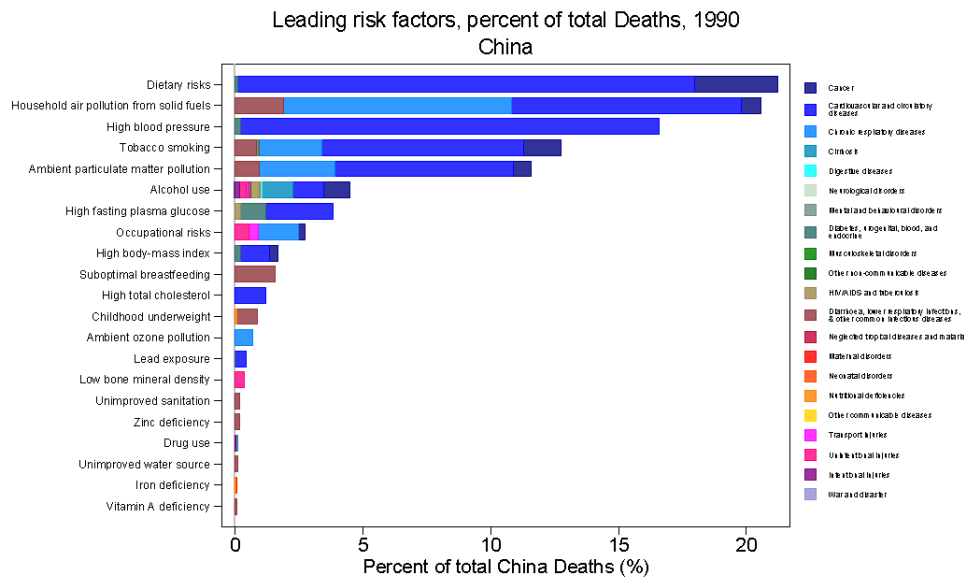
Webappendix Table 1: A list of the major sources of information used to assess causes of death in China including population-based cancer registry data.

Webappendix Table 1 - Sources of information used to assess causes of death in China including population-based cancer registry data			
Source Type	Geographic Coverage	Study Time Period	Citation
VA National	National	2004-2005	China Third Retrospective Survey on mortality. , 2004.
Surveillance	National	1989-2011	Chinese Center for Disease Control and Prevention (CCDC). China Disease Surveillance Points.
VA Subnational	Qingzhen County, Zhenning Autonomous County of Bouyei and Miao Nationalities, Ziyun Autonomous County of Miao and Bouyei Nationalities (Guizhou Province)	1985-1987	Huang W, Yu H, Wang F, Li G. Infant mortality among various nationalities in the middle part of Guizhou, China. Soc Sci Med 1997; 45: 1031–40.
Cancer Registry	Subnational	1980-2007	Institute for Health Metrics and Evaluation. Institute for Health Metrics and Evaluation Cancer Registry Database. [Unpublished].
VA Subnational	66 hospitals in 11 cities, Jiangsu Province	1980-1981	Liu BL, Zhang DZ, Tao HQ, Huang P. Perinatal mortality rate in 11 Jiangsu cities. Chin Med J 1985; 98: 157–60.
VR	National	2002-2007	Ministry of Health (China). China Vital Registration – Deaths. [Unpublished]
Surveillance	National	1970-2008	Ministry of Health, Ministry of Public Security, Ministry of Agriculture, State Food and Drug Administration. China the status of rabies prevention and control. , 2009.
Surveillance	National - Child Mortality (Ages Under 5)	1991-2008	The Ministry of Health Maternal and Child Health and Community Health Division. Annual Report of the National Maternal and Child Health Monitoring and Communication. , 2009.
Surveillance	National - Maternal Mortality (Ages 15 - 49)	1989-2008	The Ministry of Health Maternal and Child Health and Community Health Division. Annual Report of the National Maternal and Child Health Monitoring and Communication. , 2009.
Police Records	National	1981-1982, 1984-1986 2002-2008	UNODC. Homicide Statistics. 2011.http://www.unodc.org/unodc/en/data-and-analysis/homicide.html (accessed 21 Dec2011).
VA Subnational	14 DSP sites	2002-2004	Wang L, Yang G, Jiemin M, et al. Evaluation of the quality of cause of death statistics in rural China using verbal autopsies. J Epidemiol Community Health 2007; 61: 519–26.
VR	National	1987-2000	World Health Organization (WHO). WHO Mortality Database. Geneva, Switzerland: World Health Organization (WHO).
Surveillance	National	2002-2009	Zhang F, Dou Z, Ma Y, et al. Effect of earlier initiation of antiretroviral treatment and increased treatment coverage on HIV-related mortality in China: a national observational cohort study. Lancet Infect Dis 2011; 11: 516–24.
Police Records	National	2000-2005	Zhang W. Road safety in China: challenges and opportunities. 2008. http://deepblue.lib.umich.edu/handle/2027.42/60474 (accessed 26 Jul2012).