

Supplementary Methods

Definition

1. CKD

Chronic kidney disease (CKD) is defined as a permanent loss of kidney function as indicated by the estimated glomerular filtration rate (eGFR) and urinary albumin to creatinine ratio (ACR). The CKD-EPI eGFR equation is considered our gold standard for those 18 years or older, and the Schwartz equation is our gold standard for those younger than 18. The Global Burden of Disease (GBD) study considers six stages of CKD as defined by a degree of loss of kidney function or receipt of kidney replacement therapy. The International Classification of Disease (ICD) -10 codes associated with CKD include N18.1- N18.9. Moreover, the clinical case definition for CKD is the following: a chronic, progressive condition of the kidney, lasting three months or more, with a loss in its key function to filtrate blood to produce urine. These definitions of the six stages can be found in following Table.

Quantity of interest	Measure	Reference or alternative	Definition
Stages 1 and 2 CKD	Prevalence	Reference	Albumin to creatinine ratio (ACR) of ≥ 30 mg/g and estimated glomerular filtration rate (eGFR) > 60 mL/min/1.73m ² as estimated using the CKD-EPI equation for individuals age > 18 and the Schwartz equation for those < 18 .
Stage 3 CKD	Prevalence	Reference	Estimated glomerular filtration rate (eGFR) 30-60 mL/min/1.73m ² as estimated using the CKD-EPI equation for individuals age > 18 and the Schwartz equation for those < 18 not on renal replacement therapy.
Stage 3 CKD	Prevalence	Alternative	Estimated glomerular filtration rate (eGFR) 30-60 mL/min/1.73m ² as estimated using the Modification of Diet in Renal Disease (MDRD) equation (or modifications thereof) for individuals age > 18 not on renal replacement therapy.
Stage 3 CKD	Prevalence	Alternative	Estimated glomerular filtration rate (eGFR) 30-60 mL/min/1.73m ² as estimated using the Cockcroft-Gault equation (standardized for body surface area) for individuals age > 18 not on renal replacement therapy.
Stage 4 CKD	Prevalence	Reference	Estimated glomerular filtration rate (eGFR) 15-30 mL/min/1.73m ² as estimated using the CKD-EPI equation for individuals age > 18 and the Schwartz equation for those < 18 not on renal replacement therapy.

Stage 4 CKD	Prevalence	Alternative	Estimated glomerular filtration rate (eGFR) 15-30 mL/min/1.73m ² as estimated using the MDRD equation (or modifications thereof) for individuals age >18 not on renal replacement therapy.
Stage 4 CKD	Prevalence	Alternative	Estimated glomerular filtration rate (eGFR) 15-30 mL/min/1.73m ² as estimated using the Cockcroft-Gault equation (standardized for body surface area) for individuals age >18 not on renal replacement therapy.
Stage 5 CKD	Prevalence	Reference	Estimated glomerular filtration rate (eGFR) <15 mL/min/1.73m ² as estimated using the CKD-EPI equation for individuals age >18 and the Schwartz equation for those <18 not on renal replacement therapy.
Stage 5 CKD	Prevalence	Alternative	Estimated glomerular filtration rate (eGFR) <15 mL/min/1.73m ² as estimated using the MDRD equation (or modifications thereof) for individuals age >18 not on renal replacement therapy.
Stage 5 CKD	Prevalence	Alternative	Estimated glomerular filtration rate (eGFR) <15 mL/min/1.73m ² as estimated using the Cockcroft-Gault equation (standardized for body surface area) for individuals age >18 not on renal replacement therapy.
End-stage renal disease after transplant	Incidence	Reference	Received a kidney transplant due to end-stage renal disease. Includes all kidney transplants due to ESRD, not just preemptive transplants.

2. CKD subtype

The CKD subtypes were classified by etiology of CKD. Primary kidney diseases of CKD patients defines the etiology. Individuals with CKD but with no history of a primary kidney disease ICD code were classified as having CKD of unknown subtype. In subsequent analyses, this group and other subtypes were categorized as "other and unspecified causes." The details of these subtypes are shown in following Table

CKD Subtype	ICD 9 Codes	ICD 10 Codes
Diabetes mellitus type 1	250.41, 250.43	E10.2, E10.21, E10.22, E10.29
Diabetes mellitus type 2	250.40, 250.42	E11.2, E11.21, E11.22, E11.29
Glomerulonephritis	581, 581.0, 581.1, 581.2, 581.3, 581.8, 581.81, 581.89, 581.9, 582, 582.0, 582.1, 582.2, 582.4, 582.8, 582.81, 582.89, 582.9, 583, 583.0, 583.1, 583.2, 583.4, 583.6, 583.7, 583.8, 583.81, 583.89, 583.9	N02, N02.0, N02.1, N02.2, N02.3, N02.4, N02.5, N02.6, N02.7, N02.8, N02.9, N03, N03.0, N03.1, N03.2, N03.3, N03.4, N03.5, N03.6, N03.7, N03.8, N03.9, N04, N04.0, N04.1, N04.2, N04.3, N04.4, N04.5, N04.6, N04.7, N04.8, N04.9, N05, N05.0,

		N05.1,N05.2, N05.3, N05.4, N05.5, N05.6, N05.7,N05.8, N05.9, N06, N06.0, N06.1, N06.2,N06.3, N06.4, N06.5, N06.6, N06.7, N06.8, N06.9
Hypertension	403, 403.0, 403.00, 403.01, 403.1,403.10, 403.11, 403.6, 403.9,403.90, 403.91, 404, 404.0,404.00, 404.01, 404.02, 404.03,404.1, 404.10, 404.11, 404.12,404.13, 404.9, 404.90, 404.91,404.92, 404.93	I12, I12.0, I12.1, I12.2, I12.9, I13, I13.0, I13.1, I13.10, I13.11, I13.2, I13.9
Other	589, 589.0, 589.1, 589.9, 753.0,753.1, 753.10, 753.11, 753.12,753.13, 753.14, 753.15, 753.16,753.17, 753.19, 753.2, 753.20,753.21, 753.22, 753.23, 753.29,753.3, 283.11, 710.0, 753.0,753.21, 753.22, 753.29	N07, N07.0, N07.1, N07.2, N07.3, N07.4,N07.5, N07.6, N07.7, N07.8, N07.9, N08,N08.0, N08.1, N08.2, N08.3, N08.4, N08.5,N08.8, N15.0, Q61, Q61.0, Q61.00, Q61.01,Q61.02, Q61.1, Q61.11, Q61.19, Q61.2,Q61.3, Q61.4, Q61.5, Q61.8, Q61.9, Q62,Q62.0, Q62.1, Q62.10, Q62.11, Q62.12,Q62.2, Q62.3, Q62.31, Q62.32, Q62.39,Q62.4, Q62.5, Q62.6, Q62.60, Q62.61,Q62.62, Q62.63, Q62.69, Q62.7, Q62.8,D59.3, M31.31, M32.14, M32.15, N11.9,N13.70, N13.8, Q60.2, Q63.8, N14.0, N14.1, N14.3, N25.89, N26.9, N28.0

3. Anemia

Anemia is defined as decreased hemoglobin (Hb) concentration, irrespective of underlying cause, red blood cell morphology, or red blood cell function. Mild, moderate, and severe anemia are categorized according to WHO Hb thresholds. Definitions of mild, moderate, and severe anemia based on blood hemoglobin concentration are shown in following Table. Stage 3-5 CKD and end-stage renal disease is defined as CKD in this part. The definition of CKD subtypes is consistent with the above definition.

Sex	Age	Mild	Moderate	Severe
Total	0 - 6 days	145 - 159 g/L	100 - 144 g/L	< 100 g/L
Total	7 - 27 days	120 - 134 g/L	85 - 119 g/L	< 85 g/L
Total	1 month - 4 year	100 - 109 g/L	70 - 99 g/L	< 70 g/L
Total	5 - 14 years	110 - 114 g/L	80 - 109 g/L	< 80 g/L

Male	15+ years	110 - 129 g/L	80 - 109 g/L	< 80 g/L
Female, non-pregnant	15+ years	110 - 129 g/L	80 - 109 g/L	< 80 g/L
Female, pregnant	15+ years	100 - 109 g/L	70 - 99 g/L	< 70 g/L

4. Definition of risk factors

High temperature and low temperature

The high and low temperature risk factor are defined as the same-day exposure to ambient temperature that is either warmer or colder than the temperature of minimum mortality risk. Specifically, the theoretical minimum risk exposure level (TMREL) for high and low temperatures was defined as the temperature associated with the lowest overall mortality attributable to this risk in a given location and year. Given varying exposure-response curves for different mean annual temperature zones, as well as the spatially and temporally varying cause of death composition, TMRELs were estimated by year and location and not a globally uniform TMREL. High temperature (heat) exposure is defined as exposure to temperatures warmer than the TMREL, and low temperature (cold) is defined as temperatures colder than the TMREL.

Lead exposure

Exposure to lead is defined in two different ways according to the currently known pathways of attributable health loss. Acute lead exposure, measured as micrograms of lead per deciliter of blood ($\mu\text{g/dL}$), is associated with IQ loss in children. Chronic lead exposure, measured as micrograms of lead per gram of bone ($\mu\text{g/g}$), is related to cardiovascular diseases, mediated by the impact of lead on increased systolic blood pressure.

Low physical activity

Low physical activity objectively measures total physical activity less than 3600 to 4400 MET-minutes per week. We assess physical activity performed by adults older than 25 years of age for a duration of at least ten minutes at a time across all domains of life (leisure/recreation, work, household, and transport). We use frequency, duration, and activity intensity to calculate total metabolic equivalent (MET)-minutes per week. MET is the working metabolic rate ratio to the resting metabolic rate. One MET is equivalent to 1 kcal/kg/hour and is equal to the energy cost of sitting quietly. A MET is also defined as the oxygen uptake in ml/kg/min with one MET equal to the oxygen cost of sitting quietly, around 3.5 ml/kg/min.

Diet high in red meat

Diet in red meat is defined as average daily consumption (in grams per day) of unprocessed red meat, including pork and bovine meats such as beef, pork, lamb, and goat, but excluding all processed meats, poultry, fish, and eggs. The optimal level or range of intake is 0–200 g/day.

Diet high in processed meat

Diet in processed meat is defined as average daily consumption (in grams per day) of meat preserved by smoking, curing, salting, or adding chemical

preservatives. The optimal level or range of intake is 0 g/day.

Diet high in sodium

Diet high in sodium is defined as average 24-hour urinary sodium excretion (in grams per day) greater than 1-5 grams.

Diet low in fruits

Diet in fruit is defined as average daily consumption (in grams per day) of fruit, including fresh, frozen, cooked, canned, or dried fruit, excluding fruit juices and salted or pickled fruits. The optimal level or range of intake is 340–350 g/day.

Diet low in whole grains

Diet in whole grains is defined as average daily consumption (in grams per day) of whole grains (bran, germ, and endosperm in their natural proportion) from breakfast cereals, bread, rice, pasta, biscuits, muffins, tortillas, pancakes, and other sources. The optimal level or range of intake is 160–210 g/day.

Diet high in sugar sweetened-beverages

Diet in sugar-sweetened beverages is defined as average daily consumption (in grams per day) of beverages with ≥ 50 kcal per 226.8 gram serving, including carbonated beverages, sodas, energy drinks, and fruit drinks, but excluding 100% fruit and vegetable juices. The optimal level or range of intake is 0 g/day.

Diet low in vegetables

Diet low in vegetables is defined as average daily consumption (in grams per day) of vegetables, including fresh, frozen, cooked, canned, or dried vegetables and excluding legumes and salted or pickled vegetables, juices, nuts, and seeds, and starchy vegetables such as potatoes or corn. The optimal level or range of intake is 306–372 g/day.

High systolic blood pressure

Brachial systolic blood pressure (SBP) in mmHg is higher than 115 mmHg

High body mass index

High body-mass index (BMI) for adults (ages ≥ 20 years) was defined in the GBD 2021 framework as BMI exceeding the theoretical minimum risk exposure level, which is a distribution between 20 and 23 kg/m²

High fasting plasma glucose

High fasting plasma glucose (FPG) is measured as the mean FPG in a population, where FPG is a continuous exposure in units of mmol/L. Since FPG is along a continuum, we define high FPG as any level above the theoretical minimum-risk exposure level (TMREL), which is 4.9–5.3 mmol/L.

Statistical analysis

Estimated annual percentage change (EAPC)

EAPC is a summary and widely used measure of the age-standardized rate (ASR) trend over a specified interval.[1, 2] A regression line was fitted to the natural logarithm of the rates i.e., $y = \alpha + \beta x + \varepsilon$, where $y = \ln(\text{ASR})$, and $x = \text{calendar year}$. The EAPC was calculated as $100 \times (\exp(\beta) - 1)$, and its 95% confidence interval (CI) can also be obtained from the linear regression model. The ASR was deemed to be in an increasing trend if the EAPC estimation and the lower boundary of its 95% CI were > 0 .

Hierarchical cluster analysis

A hierarchical cluster analysis was conducted to group countries and territories that exhibit similar patterns in changes to disease burden. We categorized the EAPC of ASR for each country into increasing, decreasing, and stable. Then, we further classified the extent of change into the top 50% and bottom 50%. After re-encoding these changes, hierarchical cluster analysis was performed using Euclidean distance and complete linkage.

YLDs to ratio

The ratio of years lived with disability (YLDs) to disability-adjusted life years (DALYs) is commonly used as an indicator of healthcare system efficiency for a given disease. A higher YLDs-to-DALYs ratio suggests better disease management, reflected by a reduction in premature mortality caused by the disease and its complications. In this study, we calculated the YLDs-to-DALYs ratio based on the mean values of GBD-estimated YLDs and DALYs. To further assess the quality of CKD management and care in China, we compared China's ratio with those of regions representing different socio-demographic index (SDI) levels. The SDI was used to estimate social development. The methods of SDI were detailed elsewhere.[3]

Decomposition analysis

The decomposition methods [4, 5] were used to decompose the absolute disease burden of CKD and anemia attributable to CKD. CKD prevalence, CKD incidence, anemia attributable to CKD prevalence, and anemia attributable to CKD YLDs were decomposed by population age structure, population growth, and epidemiologic changes. CKD mortality and CKD DALYs were decomposed by population age structure, population growth, prevalence change, and case fatality and disease severity. The contribution of each factor to the change in disease burden from 1990 to 2021 was defined by the effect of one factor changing while the other factors were held constant. Additionally, the changes in disease burden due to CKD subtypes were decomposed. The all-cause disease burden change equals the sum of changes in disease burden due to CKD subtypes. The proportion of change attributable to specific causes was calculated as the quotient of the change in cause-specific disease burden to the change in all-cause disease burden.

Supplementary Reference

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Supplementary Results

Table S1. All-age rate of prevalence, mortality and DALYs by sex and CKD subtype of CKD in China in 2021

	All-age rate per 100, 000 population			
	Prevalence	Incidence	Mortality	DALYs
Overall				
Total	8322.21 (7688.56, 8960.44)	233.57 (215.71, 250.17)	14.35 (11.58, 17.32)	430.71 (364.39, 506.64)
Male	7343.91 (6803.27, 7898.00)	198.16 (183.08, 213.43)	15.31 (11.39, 19.79)	450.68 (359.64, 556.65)
Female	9347.63 (8639.04, 10083.99)	270.70 (249.44, 289.76)	13.35 (10.46, 16.86)	409.78 (330.64, 498.27)
Subtype				
Diabetes mellitus type 1				
Total	34.66 (28.95, 41.01)	0.44 (0.28, 0.67)	1.45 (1.07, 1.90)	62.28 (46.87, 79.26)
Male	30.76 (26.10, 36.12)	0.55 (0.36, 0.82)	1.66 (1.12, 2.30)	71.85 (51.04, 96.55)
Female	38.75 (31.92, 46.55)	0.34 (0.19, 0.54)	1.24 (0.85, 1.75)	52.24 (37.89, 71.39)
Diabetes mellitus type 2				
Total	1469.80 (1348.41, 1588.86)	24.89 (22.58, 26.90)	7.57 (5.95, 9.42)	178.32 (143.69, 215.98)
Male	1389.41 (1275.08, 1502.86)	24.33 (22.20, 26.31)	7.82 (5.65, 10.38)	182.13 (140.86, 233.33)
Female	1554.07 (1420.34, 1690.24)	25.48 (23.15, 27.61)	7.30 (5.46, 9.24)	174.34 (134.97, 218.03)
Glomerulonephritis				
Total	113.18 (100.10, 126.22)	2.66 (2.33, 3.06)	0.37 (0.26, 0.50)	21.59 (17.02, 27.06)
Male	120.40 (108.95, 131.56)	3.52 (3.10, 4.00)	0.41 (0.27, 0.58)	23.47 (18.18, 30.23)
Female	105.61 (90.42, 122.56)	1.76 (1.48, 2.09)	0.34 (0.22, 0.47)	19.63 (15.03, 24.50)
Hypertension				
Total	311.85 (286.66, 339.91)	15.62 (14.29, 16.82)	4.59 (3.47, 5.80)	114.44 (91.39, 139.76)

Male	310.10 (285.35, 338.09)	15.28 (14.02, 16.52)	5.02 (3.52, 6.80)	126.09 (94.72, 162.54)
Female	313.68 (287.85, 343.20)	15.99 (14.59, 17.41)	4.14 (2.99, 5.52)	102.22 (78.44, 128.96)
Other and unspecified causes				
Total	6392.72 (5908.33, 6897.23)	189.95 (175.56, 203.71)	0.37 (0.27, 0.49)	54.08 (40.87, 68.50)
Male	5493.25 (5088.79, 5919.94)	154.48 (142.91, 166.60)	0.41 (0.28, 0.56)	47.14 (36.23, 59.13)
Female	7335.52 (6776.03, 7937.73)	227.13 (209.41, 243.11)	0.33 (0.23, 0.46)	61.35 (45.20, 78.17)

Data is mean (95% uncertainty interval).

Abbreviations: CKD, chronic kidney disease; DALYs, disability-adjusted life years.

Table S2. Prevalence, incidence, mortality and DALYs rate of CKD by age group and CKD subtype in China in 2021

	Rate per 100, 000 population			
	Prevalence	Incidence	Mortality	DALYs
Overall				
<5 years	24.06 (19.80, 28.98)	44.14 (35.26, 53.29)	0.19 (0.15, 0.25)	0.19 (0.15, 0.25)
5-9 years	98.36 (78.22, 126.00)	8.20 (3.38, 14.74)	0.18 (0.15, 0.23)	0.18 (0.15, 0.23)
10-14 years	360.57 (277.01, 459.47)	7.90 (3.05, 14.58)	0.22 (0.19, 0.27)	0.22 (0.19, 0.27)
15-19 years	1201.39 (912.02, 1533.96)	9.63 (3.78, 16.84)	0.56 (0.46, 0.69)	0.56 (0.46, 0.69)
20-24 years	2746.72 (2067.57, 3675.27)	11.52 (4.54, 20.48)	1.01 (0.79, 1.28)	1.01 (0.79, 1.28)
25-29 years	4483.82 (3395.84, 5723.12)	15.99 (6.88, 27.72)	1.23 (0.90, 1.52)	1.23 (0.90, 1.52)
30-34 years	6200.96 (4803.91, 7831.96)	26.98 (13.58, 41.16)	1.87 (1.43, 2.33)	1.87 (1.43, 2.33)
35-39 years	7163.66 (5541.99, 9150.83)	48.35 (29.70, 68.05)	2.79 (2.24, 3.44)	2.79 (2.24, 3.44)
40-44 years	7669.91 (5924.33, 9522.82)	77.09 (51.46, 105.91)	3.99 (3.16, 4.96)	3.99 (3.16, 4.96)
45-49 years	8669.31 (6970.86, 10953.93)	118.65 (81.86, 154.51)	4.90 (3.78, 6.25)	4.90 (3.78, 6.25)
50-54 years	9674.75 (7614.77, 11851.95)	194.04 (132.18, 264.27)	7.65 (5.79, 9.69)	7.65 (5.79, 9.69)
55-59 years	10985.68 (8903.58, 13410.58)	291.04 (215.63, 365.90)	11.92 (9.29, 15.27)	11.92 (9.29, 15.27)
60-64 years	12862.82 (10732.89, 15238.65)	449.69 (336.67, 575.38)	18.94 (14.86, 24.32)	18.94 (14.86, 24.32)
65-69 years	16274.96 (13566.63, 19069.17)	705.87 (537.80, 933.98)	31.21 (24.67, 38.27)	31.21 (24.67, 38.27)
70-74 years	22349.81 (19023.20, 25733.24)	1076.39 (849.83, 1356.28)	55.14 (44.84, 67.48)	55.14 (44.84, 67.48)
75-79 years	29148.47 (25263.43, 32766.28)	1381.25 (1062.66, 1702.73)	89.21 (71.31, 109.56)	89.21 (71.31, 109.56)
80-84 years	34415.23 (30263.66, 38436.98)	1554.83 (1133.92, 2008.07)	141.89 (111.75, 170.21)	141.89 (111.75, 170.21)
85 plus years	41887.33 (37403.06, 46274.57)	1499.03 (1152.40, 1881.82)	305.97 (244.78, 364.11)	305.97 (244.78, 364.11)

Subtype**Diabetes mellitus type 1**

<5 years	1.95 (1.02, 3.19)	4.32 (2.02, 7.71)	0.01 (0.01, 0.02)	0.99 (0.55, 1.58)
5-9 years	8.54 (4.77, 13.47)	0.64 (0.22, 1.39)	0.02 (0.01, 0.03)	1.56 (0.83, 2.73)
10-14 years	31.27 (19.95, 46.81)	0.50 (0.17, 1.07)	0.04 (0.02, 0.06)	2.85 (1.46, 4.90)
15-19 years	15.87 (9.97, 24.14)	0.08 (0.03, 0.18)	0.13 (0.07, 0.20)	9.39 (5.23, 14.48)
20-24 years	12.97 (8.49, 18.71)	0.03 (0.01, 0.07)	0.38 (0.23, 0.57)	26.26 (15.53, 38.72)
25-29 years	17.24 (12.08, 24.28)	0.03 (0.01, 0.06)	0.65 (0.42, 0.91)	41.59 (27.89, 57.76)
30-34 years	27.20 (20.27, 35.38)	0.05 (0.02, 0.09)	1.11 (0.78, 1.47)	67.12 (47.99, 87.20)
35-39 years	38 (29.36, 47.61)	0.10 (0.06, 0.14)	1.62 (1.14, 2.15)	91.32 (66.12, 119.59)
40-44 years	47.42 (35.82, 59.29)	0.14 (0.09, 0.21)	2.02 (1.38, 2.79)	105.40 (73.66, 143.30)
45-49 years	57.55 (44.67, 73.70)	0.19 (0.12, 0.26)	2.11 (1.32, 3.01)	103.36 (68.11, 144.26)
50-54 years	63.44 (45.97, 85.50)	0.23 (0.15, 0.34)	2.62 (1.52, 3.85)	116.32 (69.97, 165.88)
55-59 years	60.74 (42.07, 82.68)	0.26 (0.19, 0.36)	2.72 (1.48, 4.33)	107.84 (60.10, 167.35)
60-64 years	52.00 (35.41, 76.34)	0.30 (0.21, 0.41)	2.80 (1.40, 4.98)	94.41 (48.62, 164.30)
65-69 years	40.42 (27.49, 57.66)	0.32 (0.22, 0.44)	2.84 (1.36, 5.01)	78.94 (37.71, 136.08)
70-74 years	29.42 (21.13, 40.16)	0.31 (0.23, 0.40)	2.46 (1.04, 5.02)	55.12 (24.15, 111.73)
75-79 years	21.44 (15.91, 27.74)	0.23 (0.16, 0.31)	1.64 (0.69, 3.50)	29.05 (12.60, 60.70)
80-84 years	15.85 (11.19, 21.06)	0.15 (0.10, 0.21)	0.88 (0.38, 1.88)	12.11 (5.44, 25.24)
85 plus years	13.71 (8.70, 21.47)	0.07 (0.04, 0.11)	0.36 (0.13, 0.81)	3.79 (1.48, 8.40)

Diabetes mellitus type 2

15-19 years	98.08 (68.18, 142.65)	0.07 (0.02, 0.13)	0.00 (0.00, 0.00)	0.06 (0.03, 0.10)
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20-24 years	298.28 (213.52, 415.10)	0.15 (0.06, 0.27)	0.00 (0.00, 0.01)	0.42 (0.19, 0.94)
25-29 years	586.83 (424.95, 771.86)	0.35 (0.14, 0.62)	0.03 (0.01, 0.05)	2.10 (0.96, 4.00)
30-34 years	905.30 (669.45, 1184.67)	0.87 (0.45, 1.38)	0.12 (0.05, 0.22)	8.38 (4.09, 14.52)
35-39 years	1143.94 (863.95, 1490.74)	2.23 (1.38, 3.07)	0.35 (0.17, 0.63)	22.65 (12.30, 38.25)
40-44 years	1330.60 (1006.45, 1686.59)	4.87 (3.27, 6.75)	0.78 (0.37, 1.39)	47.42 (25.37, 78.67)
45-49 years	1621.54 (1264.99, 2096.12)	9.74 (6.58, 12.64)	1.29 (0.73, 2.09)	75.58 (48.12, 115.03)
50-54 years	1928.74 (1470.19, 2442.65)	19.45 (13.30, 26.78)	2.58 (1.56, 4.02)	135.84 (88.39, 192.95)
55-59 years	2294.78 (1826.17, 2845.06)	33.42 (24.66, 41.73)	5.15 (3.31, 7.26)	236.16 (165.06, 315.10)
60-64 years	2717.95 (2236.70, 3295.34)	56.04 (42.13, 72.73)	9.66 (6.77, 13.45)	368.28 (271.92, 481.93)
65-69 years	3289.44 (2700.62, 3911.54)	90.24 (68.83, 118.32)	17.81 (12.79, 23.57)	547.20 (417.99, 692.94)
70-74 years	4131.16 (3453.25, 4799.10)	133.20 (106.26, 167.13)	33.32 (23.70, 44.07)	813.26 (612.59, 1040.69)
75-79 years	4877.48 (4144.08, 5619.03)	154.60 (117.92, 192.67)	54.31 (41.30, 70.80)	1041.18 (800.20, 1312.04)
80-84 years	5077.08 (4363.92, 5782.31)	148.49 (109.30, 192.05)	84.50 (60.01, 108.74)	1235.51 (939.68, 1543.14)
85 plus years	4683.33 (4082.15, 5303.63)	100.06 (75.38, 129.09)	175.73 (127.90, 220.82)	1823.22 (1380.49,
Glomerulonephritis				
<5 years	5.66 (4.32, 7.41)	14.09 (10.07, 18.79)	0.05 (0.03, 0.07)	4.20 (2.82, 6.28)
5-9 years	16.79 (13.01, 21.81)	2.06 (0.82, 3.76)	0.05 (0.03, 0.08)	4.58 (2.53, 6.87)
10-14 years	29.68 (23.93, 36.62)	1.60 (0.60, 3.01)	0.07 (0.04, 0.11)	6.12 (3.59, 9.18)
15-19 years	51.06 (42.27, 63.78)	1.52 (0.57, 2.77)	0.15 (0.09, 0.23)	12.09 (7.47, 18.01)
20-24 years	79.51 (63.33, 100.26)	1.32 (0.52, 2.33)	0.19 (0.11, 0.31)	15.89 (9.79, 24.28)
25-29 years	109.42 (87.46, 141.93)	1.29 (0.54, 2.26)	0.15 (0.08, 0.26)	14.43 (9.07, 21.64)
30-34 years	137.14 (109.52, 172.23)	1.51 (0.78, 2.38)	0.14 (0.07, 0.24)	15.87 (10.12, 23.35)

35-39 years	149.45 (119.31, 185.32)	1.87 (1.12, 2.61)	0.15 (0.07, 0.25)	17.70 (11.54, 26.25)
40-44 years	151.23 (119.71, 186.42)	2.06 (1.37, 2.95)	0.17 (0.09, 0.30)	20.05 (12.88, 29.78)
45-49 years	155.15 (123.63, 190.03)	2.17 (1.45, 2.86)	0.18 (0.09, 0.33)	21.22 (13.91, 30.73)
50-54 years	152.84 (119.09, 187.34)	2.40 (1.61, 3.33)	0.25 (0.12, 0.46)	24.24 (15.16, 36.15)
55-59 years	146.85 (116.38, 182.09)	2.40 (1.73, 3.07)	0.37 (0.19, 0.64)	27.74 (18.87, 40.56)
60-64 years	139.08 (111.50, 170.62)	2.52 (1.88, 3.30)	0.54 (0.27, 0.99)	30.94 (20.07, 46.13)
65-69 years	137.45 (110.92, 167.52)	2.71 (2.00, 3.59)	0.83 (0.40, 1.45)	37.02 (23.79, 53.75)
70-74 years	145.18 (117.03, 178.17)	2.84 (2.19, 3.61)	1.32 (0.60, 2.34)	47.59 (30.11, 70.19)
75-79 years	154.32 (119.06, 195.66)	2.44 (1.83, 3.07)	1.80 (0.92, 3.05)	56.48 (37.16, 80.09)
80-84 years	155.58 (119.28, 206.76)	1.86 (1.34, 2.40)	2.51 (1.18, 4.18)	65.10 (42.14, 95.44)
85 plus years	204.50 (148.02, 281.35)	1.06 (0.76, 1.41)	4.48 (2.45, 7.39)	104.55 (69.57, 146.81)

Hypertension

15-19 years	11.91 (9.27, 15.12)	0.23 (0.09, 0.43)	0.10 (0.05, 0.17)	8.18 (4.86, 13.45)
20-24 years	23.42 (18.44, 30.18)	0.33 (0.12, 0.58)	0.22 (0.13, 0.37)	16.91 (10.48, 27.08)
25-29 years	40.54 (32.29, 50.68)	0.51 (0.22, 0.91)	0.27 (0.14, 0.46)	20.91 (12.84, 32.39)
30-34 years	63.30 (50.28, 79.19)	0.97 (0.49, 1.47)	0.39 (0.20, 0.61)	28.93 (17.96, 42.41)
35-39 years	88.84 (72.79, 109.47)	1.92 (1.19, 2.74)	0.58 (0.32, 0.96)	39.73 (25.04, 60.85)
40-44 years	121.45 (101.60, 143.53)	3.38 (2.27, 4.62)	0.92 (0.51, 1.51)	56.89 (35.80, 86.29)
45-49 years	173.17 (146.75, 202.96)	5.68 (3.90, 7.41)	1.22 (0.64, 1.92)	70.89 (45.52, 103.23)
50-54 years	241.94 (203.72, 283.38)	10.07 (6.94, 13.81)	2.05 (1.24, 3.17)	104.11 (70.68, 147.76)
55-59 years	334.65 (287.67, 384.86)	16.30 (12.02, 20.45)	3.46 (2.04, 5.30)	151.79 (103.88, 214.73)
60-64 years	479.38 (411.92, 556.38)	27.34 (20.28, 35.15)	5.58 (3.52, 8.55)	206.58 (143.16, 301.83)

65-69 years	755.59 (647.41, 875.03)	46.71 (35.41, 61.44)	9.09 (5.57, 14.08)	278.09 (189.24, 406.73)
70-74 years	1277.07 (1093.61, 1467.21)	77.80 (60.72, 98.14)	16.90 (9.68, 25.52)	411.31 (265.99, 571.55)
75-79 years	1937.13 (1677.23, 2204.64)	108.27 (83.22, 134.07)	29.55 (17.83, 42.78)	568.87 (380.08, 790.94)
80-84 years	2598.56 (2282.51, 2919.44)	132.74 (97.67, 171.59)	50.70 (32.82, 72.70)	760.12 (522.38, 1023.91)
85 plus years	3636.79 (3236.44, 4080.73)	147.96 (115.42, 187.12)	117.64 (79.01, 162.75)	1292.62 (921.53, 1699.28)
Other and unspecified causes				
<5 years	16.45 (13.15, 19.85)	25.72 (20.12, 31.99)	0.13 (0.10, 0.18)	12.95 (9.88, 17.05)
5-9 years	73.03 (56.10, 94.81)	5.50 (2.27, 10.02)	0.11 (0.08, 0.15)	11.37 (8.52, 14.78)
10-14 years	299.63 (226.67, 387.14)	5.81 (2.25, 10.90)	0.12 (0.08, 0.16)	12.24 (8.89, 16.57)
15-19 years	1024.46 (769.00, 1317.42)	7.71 (3.06, 13.56)	0.19 (0.11, 0.30)	18.91 (12.47, 27.58)
20-24 years	2332.55 (1751.97, 3095.11)	9.69 (3.83, 16.98)	0.21 (0.11, 0.33)	22.44 (14.63, 33.79)
25-29 years	3729.80 (2810.58, 4758.42)	13.80 (6.01, 23.90)	0.14 (0.07, 0.24)	21.09 (13.42, 30.23)
30-34 years	5068.03 (3933.48, 6427.64)	23.58 (11.89, 36.03)	0.11 (0.05, 0.20)	23.60 (14.24, 36.35)
35-39 years	5743.43 (4427.03, 7315.14)	42.23 (25.93, 59.64)	0.10 (0.05, 0.17)	27.17 (16.70, 42.36)
40-44 years	6019.21 (4639.74, 7485.31)	66.63 (44.40, 91.81)	0.11 (0.06, 0.20)	32.14 (20.16, 46.43)
45-49 years	6661.89 (5337.99, 8385.70)	100.87 (69.62, 131.41)	0.11 (0.06, 0.21)	37.87 (22.47, 55.33)
50-54 years	7287.79 (5749.69, 8880.00)	161.88 (110.03, 220.77)	0.15 (0.07, 0.28)	45.41 (26.58, 68.61)
55-59 years	8148.66 (6605.85, 9948.27)	238.65 (177.17, 300.54)	0.22 (0.10, 0.42)	57.12 (36.36, 86.38)
60-64 years	9474.40 (7875.61, 11250.96)	363.49 (272.11, 465.01)	0.37 (0.19, 0.65)	72.22 (47.64, 105.96)
65-69 years	12052.05 (10043.29, 14200.67)	565.90 (431.37, 749.72)	0.63 (0.33, 1.08)	96.85 (63.54, 136.54)
70-74 years	16766.98 (14215.26, 19356.09)	862.25 (681.01, 1085.60)	1.14 (0.56, 1.96)	148.75 (100.06, 205.26)
75-79 years	22158.09 (19097.88, 24976.93)	1115.72 (858.70, 1373.72)	1.91 (0.89, 3.37)	227.58 (153.07, 316.57)

80-84 years	26568.16 (23427.45, 29761.78)	1271.58 (926.88, 1640.14)	3.29 (1.69, 5.74)	344.80 (231.91, 476.14)
85 plus years	33348.99 (29856.14, 36906.09)	1249.87 (961.22, 1565.09)	7.76 (4.54, 12.36)	709.95 (512.90, 937.59)

Data is mean (95% uncertainty interval).

Abbreviations: CKD, chronic kidney disease; DALYs, disability-adjusted life years.

Table S3. Prevalence and YLDS rate of anemia attributable to CKD by age group and CKD subtype in China in 2021

	Rate per 100, 000 population	
	Prevalence	YLDs
Overall		
<5 years	2.85 (2.32, 3.49)	0.06 (0.04, 0.10)
5-9 years	6.10 (4.97, 7.38)	0.18 (0.11, 0.26)
10-14 years	8.03 (6.70, 9.38)	0.25 (0.16, 0.37)
15-19 years	21.80 (18.13, 25.80)	0.34 (0.20, 0.53)
20-24 years	35.99 (29.85, 42.48)	0.79 (0.48, 1.19)
25-29 years	52.04 (43.19, 62.59)	1.11 (0.67, 1.73)
30-34 years	75.95 (63.40, 91.60)	1.71 (1.06, 2.66)
35-39 years	106.02 (88.79, 125.12)	2.54 (1.57, 3.84)
40-44 years	163.43 (136.12, 195.44)	3.73 (2.31, 5.60)
45-49 years	224.45 (185.73, 270.95)	5.24 (3.23, 8.03)
50-54 years	322.99 (268.11, 388.83)	5.52 (3.25, 8.80)
55-59 years	498.51 (416.69, 595.79)	8.96 (5.62, 14.24)
60-64 years	756.80 (630.38, 897.24)	15.14 (9.33, 23.00)
65-69 years	1326.40 (1104.05, 1580.02)	27.38 (16.83, 41.18)
70-74 years	2397.37 (2000.02, 2902.60)	54.10 (33.70, 80.94)
75-79 years	3879.79 (3235.71, 4565.85)	91.11 (58.39, 137.57)
80-84 years	4940.77 (4199.77, 5772.95)	141.59 (92.46, 200.67)
85 plus years	9963.98 (8789.98, 11295.12)	300.21 (193.52, 427.41)

Subtype**Diabetes mellitus type 1**

<5 years	0.22 (0.10, 0.39)	0.00 (0.00, 0.01)
5-9 years	0.40 (0.20, 0.70)	0.01 (0.01, 0.02)
10-14 years	0.41 (0.23, 0.66)	0.01 (0.01, 0.02)
15-19 years	0.17 (0.11, 0.27)	0.00 (0.00, 0.00)
20-24 years	0.21 (0.14, 0.32)	0.00 (0.00, 0.01)
25-29 years	0.59 (0.36, 0.90)	0.01 (0.01, 0.02)
30-34 years	1.51 (0.93, 2.21)	0.03 (0.02, 0.06)
35-39 years	2.93 (1.97, 4.09)	0.07 (0.04, 0.12)
40-44 years	5.09 (3.38, 7.13)	0.11 (0.06, 0.19)
45-49 years	7.17 (4.79, 9.87)	0.16 (0.09, 0.27)
50-54 years	9.13 (5.79, 13.89)	0.14 (0.07, 0.25)
55-59 years	10.30 (5.91, 16.68)	0.17 (0.08, 0.29)
60-64 years	9.29 (5.04, 15.48)	0.17 (0.08, 0.31)
65-69 years	7.56 (4.24, 12.61)	0.14 (0.07, 0.27)
70-74 years	5.13 (2.92, 8.93)	0.11 (0.05, 0.22)
75-79 years	3.20 (2.05, 5.22)	0.07 (0.03, 0.13)
80-84 years	1.56 (1.06, 2.30)	0.04 (0.02, 0.08)
85 plus years	0.78 (0.57, 1.04)	0.02 (0.01, 0.04)

Diabetes mellitus type 2

15-19 years	0.14 (0.10, 0.18)	0.01 (0.00, 0.01)
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20-24 years	0.42 (0.32, 0.54)	0.01 (0.01, 0.02)
25-29 years	1.06 (0.84, 1.35)	0.03 (0.02, 0.05)
30-34 years	2.68 (2.11, 3.40)	0.08 (0.05, 0.13)
35-39 years	6.08 (4.86, 7.56)	0.19 (0.12, 0.29)
40-44 years	14.21 (11.00, 17.78)	0.43 (0.26, 0.65)
45-49 years	26.88 (21.37, 33.53)	0.81 (0.50, 1.25)
50-54 years	50.35 (39.94, 62.66)	1.37 (0.84, 2.15)
55-59 years	93.31 (74.39, 116.26)	2.54 (1.59, 3.85)
60-64 years	151.55 (122.86, 191.43)	4.36 (2.70, 6.40)
65-69 years	256.02 (210.50, 305.70)	7.78 (4.70, 11.68)
70-74 years	426.00 (343.92, 523.40)	13.74 (8.35, 20.62)
75-79 years	621.95 (508.51, 759.86)	20.42 (13.12, 30.92)
80-84 years	681.22 (566.45, 821.31)	23.31 (14.96, 33.32)
85 plus years	859.88 (741.53, 1000.91)	28.10 (17.99, 39.77)

Glomerulonephritis

<5 years	0.79 (0.59, 1.05)	0.02 (0.01, 0.03)
5-9 years	1.45 (1.06, 1.91)	0.04 (0.02, 0.06)
10-14 years	1.50 (1.18, 1.96)	0.05 (0.03, 0.07)
15-19 years	3.20 (2.50, 4.12)	0.04 (0.03, 0.07)
20-24 years	4.11 (3.20, 5.11)	0.08 (0.05, 0.13)
25-29 years	5.10 (3.85, 6.73)	0.10 (0.06, 0.16)
30-34 years	6.99 (5.05, 9.73)	0.15 (0.08, 0.25)

35-39 years	8.82 (6.44, 12.26)	0.20 (0.11, 0.32)
40-44 years	11.86 (8.31, 16.57)	0.25 (0.14, 0.41)
45-49 years	13.42 (9.16, 18.85)	0.28 (0.16, 0.49)
50-54 years	16.60 (10.72, 23.35)	0.24 (0.13, 0.43)
55-59 years	21.13 (13.79, 30.97)	0.32 (0.16, 0.57)
60-64 years	24.82 (16.94, 36.41)	0.42 (0.22, 0.72)
65-69 years	31.75 (22.09, 44.08)	0.56 (0.30, 0.97)
70-74 years	43.98 (29.16, 64.40)	0.85 (0.46, 1.50)
75-79 years	62.66 (39.89, 93.54)	1.28 (0.69, 2.30)
80-84 years	77.02 (49.10, 117.13)	2.10 (1.15, 3.54)
85 plus years	147.73 (94.74, 223.67)	4.80 (2.44, 8.05)

Hypertension

15-19 years	1.30 (0.91, 1.93)	0.02 (0.01, 0.03)
20-24 years	2.52 (1.77, 3.51)	0.05 (0.03, 0.09)
25-29 years	4.31 (3.02, 6.09)	0.09 (0.05, 0.15)
30-34 years	7.02 (5.00, 10.04)	0.15 (0.09, 0.26)
35-39 years	10.09 (7.47, 13.85)	0.23 (0.13, 0.38)
40-44 years	15.45 (11.43, 20.53)	0.33 (0.20, 0.53)
45-49 years	20.62 (16.00, 26.44)	0.45 (0.27, 0.73)
50-54 years	29.79 (22.85, 37.63)	0.44 (0.25, 0.74)
55-59 years	45.54 (35.33, 58.52)	0.70 (0.41, 1.13)
60-64 years	68.38 (55.46, 84.39)	1.18 (0.71, 1.82)

65-69 years	117.76 (96.44, 142.06)	2.08 (1.24, 3.17)
70-74 years	214.98 (177.00, 265.03)	4.18 (2.63, 6.50)
75-79 years	371.16 (304.08, 442.29)	7.58 (4.73, 11.27)
80-84 years	513.97 (429.00, 610.63)	13.67 (8.89, 19.56)
85 plus years	1124.59 (966.42, 1295.23)	33.51 (21.51, 47.41)
Other and unspecified causes		
<5 years	1.83 (1.41, 2.33)	0.04 (0.02, 0.06)
5-9 years	4.25 (3.37, 5.25)	0.12 (0.08, 0.19)
10-14 years	6.12 (5.04, 7.24)	0.19 (0.12, 0.29)
15-19 years	16.99 (14.17, 19.91)	0.27 (0.16, 0.43)
20-24 years	28.73 (24.18, 33.45)	0.63 (0.38, 0.97)
25-29 years	40.97 (34.53, 48.67)	0.87 (0.53, 1.36)
30-34 years	57.75 (48.36, 68.97)	1.30 (0.80, 1.98)
35-39 years	78.10 (65.69, 92.34)	1.86 (1.15, 2.77)
40-44 years	116.82 (98.07, 137.08)	2.60 (1.62, 3.91)
45-49 years	156.35 (130.18, 187.44)	3.54 (2.18, 5.35)
50-54 years	217.12 (180.25, 261.31)	3.32 (1.93, 5.33)
55-59 years	328.23 (273.50, 391.61)	5.23 (3.24, 8.34)
60-64 years	502.76 (417.44, 596.70)	9.01 (5.53, 14.04)
65-69 years	913.31 (754.57, 1093.80)	16.82 (10.21, 25.71)
70-74 years	1707.28 (1416.44, 2066.86)	35.22 (22.04, 53.61)
75-79 years	2820.83 (2369.54, 3347.48)	61.76 (39.70, 94.06)

80-84 years	3666.99 (3121.82, 4261.16)	102.46 (66.70, 146.69)
85 plus years	7831.00 (6887.55, 8958.46)	233.77 (151.21, 334.82)

Data is mean (95% uncertainty interval).

Abbreviations: CKD, chronic kidney disease; YLDs, years lived with disability.

Table S4. Ratio of YLDs to DALYs of CKD by SDI-quintile group and CKD subtype in 2021

	Country or SDI region					
	China	High SDI	High-middle SDI	Middle SDI	Low-middle SDI	Low SDI
Overall						
Total	0.27	0.27	0.26	0.19	0.18	0.14
Male	0.23	0.25	0.23	0.17	0.16	0.12
Female	0.32	0.28	0.29	0.21	0.2	0.16
Subtype						
Diabetes mellitus type 1						
Total	0.09	0.24	0.12	0.06	0.04	0.03
Male	0.08	0.23	0.11	0.05	0.04	0.03
Female	0.12	0.25	0.14	0.06	0.04	0.03
Diabetes mellitus type 2						
Total	0.19	0.22	0.23	0.15	0.15	0.12
Male	0.16	0.21	0.21	0.14	0.14	0.11
Female	0.22	0.22	0.24	0.16	0.16	0.13
Glomerulonephritis						
Total	0.44	0.24	0.24	0.17	0.13	0.06
Male	0.43	0.24	0.24	0.18	0.13	0.06
Female	0.46	0.24	0.24	0.16	0.12	0.06

Hypertension

Total	0.20	0.19	0.19	0.12	0.12	0.09
Male	0.17	0.18	0.18	0.11	0.12	0.08
Female	0.23	0.2	0.21	0.12	0.12	0.1

Other and unspecified causes

Total	0.75	0.39	0.40	0.42	0.32	0.29
Male	0.69	0.36	0.35	0.38	0.28	0.25
Female	0.80	0.42	0.43	0.46	0.36	0.33

Data is mean (95% uncertainty interval).

Abbreviations: CKD, chronic kidney disease; YLDs, years lived with disability; DALYs, disability-adjusted life years; SDI, socio-demographic index.

Table S5. Change of all-age cases of prevalence, incidence, mortality, DALYs of CKD by sex and CKD subtype in China from 1990 to 2021

	All-age case change (%)			
	Prevalence	Incidence	Mortality	DALYs
Overall				
Total	75.68 (70.75, 81.29)	162.18 (142.62, 183.28)	98.81 (55.47, 147.94)	46.05 (20.74, 73.03)
Male	74.25 (69.21, 79.65)	148.04 (131.76, 166.41)	116.95 (42.87, 198.46)	53.67 (14.51, 98.08)
Female	76.87 (71.90, 82.99)	174.16 (150.96, 198.69)	80.66 (32.12, 143.72)	38.16 (9.75, 72.36)
Subtype				
Diabetes mellitus type 1				
Total	97.37 (76.84, 118.00)	-33.29 (-44.77, -15.13)	6.33 (-21.40, 38.67)	-3.35 (-26.79, 23.52)
Male	101.77 (82.63, 122.54)	-27.73 (-40.14, -9.32)	19.12 (-20.75, 67.12)	7.91 (-27.09, 47.63)
Female	93.85 (72.03, 116.87)	-41.05 (-51.98, -23.43)	-7.56 (-36.72, 31.16)	-15.99 (-40.56, 16.61)
Diabetes mellitus type 2				
Total	75.87 (66.44, 85.09)	177.64 (154.79, 205.51)	147.26 (89.29, 209.34)	106.01 (65.65, 148.70)
Male	71.06 (62.07, 79.62)	165.21 (145.46, 189.86)	179.88 (79.85, 284.10)	125.62 (58.72, 195.28)
Female	80.62 (70.03, 90.00)	191.30 (162.86, 224.97)	118.64 (54.37, 196.74)	88.11 (43.33, 144.58)
Glomerulonephritis				
Total	28.47 (21.20, 35.72)	-13.99 (-22.05, -5.25)	7.70 (-21.20, 40.52)	-12.81 (-27.98, 4.88)
Male	22.32 (16.07, 29.15)	-9.99 (-17.36, -1.95)	15.05 (-22.42, 65.64)	-9.19 (-28.61, 13.41)
Female	36.68 (28.00, 46.01)	-21.30 (-30.21, -11.15)	-0.34 (-32.74, 36.83)	-16.96 (-34.04, 2.69)

Hypertension

Total	99.86 (93.33, 105.98)	205.86 (181.16, 233.92)	125.26 (69.23, 185.54)	69.46 (35.00, 106.86)
Male	107.78 (100.73, 114.38)	190.65 (170.34, 217.36)	140.45 (56.66, 238.07)	76.13 (25.31, 134.92)
Female	92.26 (86.04, 98.71)	222.77 (193.48, 255.94)	108.54 (52.93, 186.49)	61.55 (24.68, 111.87)

Other and unspecified causes

Total	75.64 (70.79, 81.22)	166.58 (146.14, 188.96)	-9.24 (-32.66, 18.84)	4.80 (-10.93, 19.70)
Male	74.97 (69.89, 80.51)	154.14 (137.54, 174.12)	-5.67 (-36.86, 33.68)	-2.87 (-18.59, 14.66)
Female	76.16 (71.31, 82.10)	176.22 (153.02, 201.50)	-13.42 (-39.29, 20.82)	11.92 (-4.00, 27.40)

Data is mean (95% uncertainty interval).

Abbreviations: CKD, chronic kidney disease; DALYs, disability-adjusted life years.

Table S6. Change of age-standardized rate of prevalence, incidence, mortality, DALYs of CKD by sex and CKD subtype in China from 1990 to 2021

	Age-standardized rate change (%)			
	Prevalence	Incidence	Mortality	DALYs
Overall				
Total	-11.88 (-13.73, -10.37)	11.17 (4.03, 19.28)	-23.43 (-40.96, -5.69)	-31.10 (-43.23, -18.70)
Male	-10.35 (-11.84, -8.81)	8.00 (2.06, 15.18)	-13.91 (-44.33, 13.88)	-24.24 (-44.37, -3.60)
Female	-12.95 (-14.92, -11.21)	14.19 (5.76, 23.33)	-32.71 (-50.94, -10.87)	-37.89 (-50.10, -23.21)
Subtype				
Diabetes mellitus type 1				
Total	28.10 (19.09, 37.62)	-17.89 (-30.09, -2.79)	-41.23 (-55.51, -25.56)	-40.74 (-54.59, -25.42)
Male	27.91 (19.23, 36.17)	-12.31 (-24.15, 2.51)	-31.02 (-53.68, -2.57)	-30.89 (-52.05, -5.21)
Female	28.44 (18.25, 40.24)	-25.67 (-37.73, -9.82)	-51.91 (-66.55, -32.62)	-51.40 (-65.18, -33.30)
Diabetes mellitus type 2				
Total	-13.24 (-15.87, -10.93)	7.79 (-0.19, 17.80)	-17.41 (-37.39, 1.90)	-21.67 (-36.98, -5.72)
Male	-13.41 (-15.80, -11.28)	2.70 (-4.09, 11.33)	-6.84 (-40.14, 23.42)	-12.98 (-39.30, 12.67)
Female	-13.17 (-16.13, -10.47)	12.65 (2.66, 24.95)	-27.03 (-47.57, -2.82)	-29.58 (-45.84, -9.73)
Glomerulonephritis				
Total	-14.02 (-17.31, -10.29)	-15.37 (-20.03, -10.47)	-40.54 (-53.94, -25.86)	-42.81 (-51.02, -34.23)
Male	-15.47 (-18.42, -12.43)	-11.85 (-15.96, -7.57)	-33.23 (-54.85, -9.25)	-38.20 (-49.59, -24.75)
Female	-12.30 (-16.53, -7.52)	-22.10 (-27.93, -15.62)	-47.81 (-62.72, -30.87)	-47.73 (-57.12, -37.39)

Hypertension

Total	-22.88 (-25.02, -20.67)	17.10 (9.09, 26.04)	-20.44 (-39.87, -1.73)	-26.24 (-40.66, -11.39)
Male	-19.43 (-21.71, -17.10)	14.39 (7.41, 23.06)	-13.13 (-44.76, 15.61)	-20.20 (-43.88, 4.84)
Female	-26.53 (-28.77, -24.15)	22.09 (12.32, 32.73)	-28.56 (-47.38, -4.73)	-33.06 (-47.58, -13.76)

Other and unspecified causes

Total	-11.11 (-13.09, -9.47)	12.23 (4.98, 20.57)	-46.20 (-57.70, -33.42)	-42.32 (-47.66, -37.06)
Male	-9.03 (-10.79, -7.46)	9.25 (3.19, 16.83)	-39.08 (-56.42, -19.84)	-41.99 (-48.82, -34.36)
Female	-12.45 (-14.57, -10.55)	14.89 (6.37, 24.11)	-52.78 (-65.00, -38.18)	-42.88 (-48.72, -37.47)

Data is mean (95% uncertainty interval).

Abbreviations: CKD, chronic kidney disease; DALYs, disability-adjusted life years.

Table S7. Overall annual change and EAPC of prevalence and incidence rate of CKD by age group and CKD subtype in China from 1990 to 2021

	Prevalence Rate		Incidence Rate	
	Overall annual change (%)	EAPC (%)	Overall annual change (%)	EAPC (%)
Overall				
<5 years	-44.72 (-50.94, -38.89)	-2.25 (-2.39, -2.12)	-37.00 (-41.65, -32.61)	-1.13 (-1.39, -0.87)
5-9 years	-40.45 (-47.48, -33.53)	-1.77 (-1.87, -1.68)	-5.31 (-24.15, 12.77)	-0.11 (-0.20, -0.03)
10-14 years	-22.86 (-29.54, -17.37)	-0.88 (-0.92, -0.84)	-1.42 (-16.41, 17.43)	0.12 (0.06, 0.19)
15-19 years	-8.62 (-12.56, -5.14)	-0.25 (-0.29, -0.20)	-6.64 (-26.35, 12.41)	0.01 (-0.07, 0.08)
20-24 years	-2.86 (-6.15, -0.17)	0.00 (-0.08, 0.09)	-13.43 (-28.01, 5.66)	-0.18 (-0.28, -0.09)
25-29 years	-0.74 (-3.60, 1.27)	0.09 (-0.02, 0.21)	-13.01 (-26.89, -0.87)	-0.11 (-0.22, 0.00)
30-34 years	0.07 (-2.41, 2.21)	0.19 (0.04, 0.34)	-3.65 (-12.63, 9.37)	0.13 (0.03, 0.22)
35-39 years	-0.67 (-3.29, 1.52)	0.22 (0.05, 0.39)	4.99 (-6.83, 21.46)	0.29 (0.17, 0.41)
40-44 years	-2.13 (-5.07, 0.34)	0.16 (-0.02, 0.34)	5.44 (-8.14, 21.93)	0.32 (0.19, 0.45)
45-49 years	-3.62 (-6.76, -0.62)	0.10 (-0.09, 0.28)	4.69 (-13.22, 29.12)	0.37 (0.23, 0.52)
50-54 years	-6.89 (-10.53, -4.06)	0.03 (-0.15, 0.20)	8.57 (-10.78, 39.31)	0.57 (0.39, 0.75)
55-59 years	-10.81 (-14.84, -7.37)	-0.12 (-0.29, 0.05)	4.60 (-15.32, 36.09)	0.43 (0.26, 0.61)
60-64 years	-16.99 (-20.94, -13.05)	-0.36 (-0.52, -0.20)	-0.96 (-17.18, 27.54)	0.29 (0.14, 0.44)
65-69 years	-22.33 (-26.43, -18.42)	-0.57 (-0.73, -0.41)	-2.36 (-20.70, 24.79)	0.24 (0.13, 0.35)
70-74 years	-22.55 (-26.40, -18.94)	-0.57 (-0.72, -0.42)	9.34 (-8.23, 33.38)	0.50 (0.43, 0.57)
75-79 years	-20.58 (-23.56, -17.43)	-0.50 (-0.65, -0.36)	27.09 (4.62, 62.53)	0.84 (0.78, 0.89)

80-84 years	-19.42 (-22.45, -16.42)	-0.49 (-0.62, -0.36)	50.22 (22.60, 94.53)	1.23 (1.18, 1.28)
85 plus years	-16.51 (-18.84, -14.02)	-0.41 (-0.51, -0.30)	57.05 (31.79, 92.27)	1.38 (1.34, 1.41)
Subtype				
Diabetes mellitus type 1				
<5 years	-46.05 (-57.20, -32.91)	-2.36 (-2.51, -2.20)	-37.02 (-47.63, -23.01)	-1.11 (-1.37, -0.84)
5-9 years	-35.53 (-46.41, -21.44)	-1.52 (-1.61, -1.43)	-3.91 (-29.59, 23.49)	-0.07 (-0.15, 0.01)
10-14 years	-15.25 (-26.31, -4.32)	-0.55 (-0.58, -0.53)	0.84 (-19.94, 31.97)	0.19 (0.13, 0.25)
15-19 years	31.10 (0.99, 65.70)	1.03 (0.61, 1.45)	27.50 (-10.72, 79.68)	1.06 (0.70, 1.42)
20-24 years	8.45 (-12.09, 30.77)	0.22 (-0.36, 0.80)	-8.74 (-34.02, 20.78)	-0.23 (-0.74, 0.28)
25-29 years	15.40 (-1.31, 32.91)	0.50 (0.00, 1.00)	-3.95 (-27.06, 21.97)	0 (-0.47, 0.48)
30-34 years	30.86 (17.34, 46.16)	1.11 (0.75, 1.47)	22.49 (2.91, 49.33)	0.87 (0.50, 1.24)
35-39 years	45.34 (33.27, 58.39)	1.66 (1.40, 1.93)	61 (34.00, 96.64)	1.83 (1.58, 2.09)
40-44 years	52.26 (42.04, 63.83)	1.94 (1.71, 2.17)	83.75 (52.64, 123.56)	2.44 (2.22, 2.65)
45-49 years	49.80 (41.25, 59.98)	1.98 (1.73, 2.22)	82.50 (45.69, 136.61)	2.58 (2.29, 2.87)
50-54 years	44.81 (37.43, 54.85)	2 (1.71, 2.28)	85.39 (46.50, 145.06)	2.81 (2.44, 3.18)
55-59 years	44.22 (36.21, 56.44)	2.12 (1.78, 2.47)	92.10 (53.55, 155.11)	3.04 (2.67, 3.41)
60-64 years	45.86 (34.97, 62.87)	2.27 (1.88, 2.65)	104.02 (63.89, 170.72)	3.33 (2.96, 3.70)
65-69 years	51.34 (34.82, 73.05)	2.48 (2.06, 2.90)	124.71 (82.11, 188.40)	3.72 (3.31, 4.13)
70-74 years	73.03 (46.65, 107.65)	2.95 (2.51, 3.39)	187.47 (135.23, 261.68)	4.52 (4.07, 4.96)
75-79 years	112.63 (74.77, 154.99)	3.63 (3.19, 4.07)	263.53 (192.46, 360.54)	5.23 (4.77, 5.69)

80-84 years	168.79 (127.27, 218.87)	4.36 (3.94, 4.78)	374.38 (284.06, 505.93)	5.93 (5.49, 6.37)
85 plus years	267.85 (208.84, 333.76)	5.33 (4.92, 5.73)	425.11 (325.61, 571.63)	6.25 (5.83, 6.68)
Diabetes mellitus type 2				
15-19 years	-35.53 (-42.71, -23.22)	-1.58 (-1.75, -1.42)	-45.64 (-59.18, -27.32)	-2.06 (-2.27, -1.84)
20-24 years	-36.18 (-40.71, -28.66)	-1.55 (-1.62, -1.48)	-51.15 (-60.57, -38.70)	-2.30 (-2.41, -2.19)
25-29 years	-29.65 (-36.96, -18.97)	-1.09 (-1.22, -0.96)	-45.63 (-56.13, -32.17)	-1.73 (-1.82, -1.64)
30-34 years	-18.50 (-28.41, -11.68)	-0.49 (-0.68, -0.31)	-28.18 (-41.64, -14.57)	-0.87 (-1, -0.74)
35-39 years	-11.38 (-17.94, -7.05)	-0.16 (-0.37, 0.05)	-12.63 (-24.77, 4.04)	-0.36 (-0.51, -0.20)
40-44 years	-6.86 (-11.32, -3.46)	-0.01 (-0.21, 0.20)	-5.58 (-18.17, 10.33)	-0.09 (-0.24, 0.07)
45-49 years	-3.16 (-6.36, -0.55)	0.11 (-0.08, 0.30)	-0.97 (-17.94, 22.08)	0.15 (0.00, 0.30)
50-54 years	-3.70 (-6.52, -1.25)	0.14 (-0.04, 0.32)	4.87 (-13.81, 33.38)	0.42 (0.24, 0.59)
55-59 years	-6.22 (-9.35, -3.58)	0.05 (-0.11, 0.21)	1.54 (-17.21, 31.70)	0.32 (0.15, 0.48)
60-64 years	-11.27 (-14.82, -7.80)	-0.14 (-0.29, 0.01)	-3.59 (-19.21, 23.79)	0.18 (0.03, 0.33)
65-69 years	-16.06 (-19.77, -12.52)	-0.31 (-0.45, -0.18)	-4.98 (-22.53, 21.17)	0.13 (0.02, 0.24)
70-74 years	-16.70 (-20.61, -13.33)	-0.32 (-0.45, -0.19)	6.29 (-10.49, 29.65)	0.40 (0.33, 0.46)
75-79 years	-15.11 (-18.18, -12.05)	-0.26 (-0.38, -0.14)	22.76 (1.77, 56.91)	0.72 (0.67, 0.77)
80-84 years	-14.18 (-17.06, -11.29)	-0.26 (-0.36, -0.15)	45.06 (18.69, 86.67)	1.09 (1.05, 1.14)
85 plus years	-16.00 (-18.64, -13.43)	-0.38 (-0.46, -0.30)	41.38 (18.28, 73.47)	0.98 (0.94, 1.02)
Glomerulonephritis				
<5 years	-49.80 (-55.99, -42.77)	-2.60 (-2.78, -2.42)	-36.79 (-43.03, -30.40)	-1.10 (-1.36, -0.84)

5-9 years	-49.11 (-54.63, -43.14)	-2.33 (-2.48, -2.18)	-2.63 (-24.13, 18.14)	-0.04 (-0.11, 0.04)
10-14 years	-43.23 (-48.87, -37.19)	-1.96 (-2.06, -1.86)	1.88 (-16.30, 26.28)	0.23 (0.17, 0.29)
15-19 years	-32.06 (-39.28, -24.74)	-1.34 (-1.39, -1.29)	-1.90 (-23.68, 22.81)	0.16 (0.08, 0.23)
20-24 years	-20.67 (-28, -12.19)	-0.76 (-0.81, -0.71)	-8.42 (-26.53, 11.78)	-0.01 (-0.09, 0.07)
25-29 years	-12.84 (-19.84, -4.85)	-0.42 (-0.49, -0.35)	-9.08 (-25.01, 6.45)	0.03 (-0.07, 0.12)
30-34 years	-9.41 (-14.74, -2.92)	-0.23 (-0.33, -0.13)	-2.60 (-13.26, 12.04)	0.19 (0.07, 0.30)
35-39 years	-8.18 (-13.10, -2.54)	-0.16 (-0.28, -0.04)	5.83 (-6.01, 24.15)	0.32 (0.20, 0.44)
40-44 years	-7.96 (-12.49, -3.06)	-0.19 (-0.31, -0.08)	6.91 (-8.07, 26.11)	0.34 (0.21, 0.47)
45-49 years	-7.31 (-12.21, -2.70)	-0.19 (-0.30, -0.08)	5.88 (-11.85, 31.14)	0.35 (0.21, 0.49)
50-54 years	-7.41 (-12.33, -3)	-0.14 (-0.25, -0.02)	8.11 (-10.96, 38.70)	0.49 (0.32, 0.66)
55-59 years	-8.96 (-13.85, -3.87)	-0.13 (-0.25, -0.01)	3.05 (-15.45, 34.25)	0.36 (0.20, 0.52)
60-64 years	-12.44 (-17.81, -7.13)	-0.20 (-0.33, -0.07)	-2.44 (-18.16, 26.82)	0.21 (0.07, 0.36)
65-69 years	-14.69 (-19.98, -8.97)	-0.22 (-0.38, -0.07)	-3.96 (-21.55, 21.22)	0.16 (0.06, 0.26)
70-74 years	-9.26 (-14.62, -3.24)	0.04 (-0.15, 0.22)	7.79 (-8.75, 31.43)	0.46 (0.38, 0.54)
75-79 years	-2.96 (-8.74, 4.07)	0.29 (0.09, 0.49)	23.43 (2.44, 56.27)	0.78 (0.69, 0.86)
80-84 years	3.28 (-5.02, 11.93)	0.52 (0.31, 0.72)	47.41 (21.58, 88.74)	1.16 (1.09, 1.23)
85 plus years	14.89 (3.62, 27.46)	0.84 (0.67, 1.01)	46.71 (22.69, 80.58)	1.11 (1.06, 1.17)
Hypertension				
15-19 years	-32.49 (-39.62, -24.41)	-1.38 (-1.45, -1.31)	-5.41 (-24.65, 18.43)	0.05 (-0.03, 0.12)
20-24 years	-24.58 (-31.98, -15.68)	-0.93 (-1, -0.87)	-11.39 (-27.10, 8.63)	-0.10 (-0.20, -0.01)

25-29 years	-19.26 (-26.32, -9.77)	-0.68 (-0.75, -0.61)	-10.97 (-24.84, 3.46)	-0.03 (-0.14, 0.07)
30-34 years	-16.56 (-21.96, -10.67)	-0.53 (-0.61, -0.45)	-2.59 (-12.04, 12.08)	0.17 (0.07, 0.27)
35-39 years	-15.52 (-20.49, -10.70)	-0.48 (-0.57, -0.40)	5.98 (-6.14, 23.42)	0.32 (0.21, 0.44)
40-44 years	-15.77 (-19.95, -11.76)	-0.52 (-0.60, -0.44)	6.53 (-7.51, 24.34)	0.35 (0.22, 0.48)
45-49 years	-16.70 (-20.60, -12.99)	-0.55 (-0.64, -0.45)	5.47 (-12.46, 30.22)	0.38 (0.24, 0.52)
50-54 years	-18.66 (-22.68, -14.68)	-0.57 (-0.67, -0.46)	8.68 (-10.75, 39.74)	0.55 (0.38, 0.73)
55-59 years	-22.20 (-25.61, -18.38)	-0.65 (-0.78, -0.53)	4.32 (-15.34, 35.49)	0.42 (0.25, 0.59)
60-64 years	-27.43 (-30.98, -23.88)	-0.82 (-0.96, -0.68)	-1.22 (-16.99, 27.07)	0.27 (0.12, 0.42)
65-69 years	-30.22 (-33.46, -27.07)	-0.87 (-1.02, -0.72)	-2.66 (-20.64, 23.50)	0.22 (0.11, 0.33)
70-74 years	-26.93 (-30.39, -23.13)	-0.70 (-0.84, -0.55)	9.08 (-8.09, 32.93)	0.50 (0.43, 0.57)
75-79 years	-22.80 (-25.87, -19.15)	-0.53 (-0.67, -0.39)	26.20 (4.60, 61.24)	0.83 (0.76, 0.89)
80-84 years	-20.66 (-23.79, -17.32)	-0.47 (-0.60, -0.34)	49.68 (22.18, 92.70)	1.21 (1.16, 1.27)
85 plus years	-17.06 (-19.58, -14.10)	-0.34 (-0.46, -0.23)	63.27 (36.76, 100.80)	1.52 (1.48, 1.55)
Other and unspecified causes				
<5 years	-42.55 (-48.86, -35.73)	-2.11 (-2.24, -1.99)	-37.11 (-42.22, -31.99)	-1.15 (-1.40, -0.90)
5-9 years	-38.60 (-46.34, -30.89)	-1.66 (-1.75, -1.57)	-6.43 (-25.74, 12.40)	-0.15 (-0.24, -0.06)
10-14 years	-20.78 (-27.37, -15.39)	-0.79 (-0.82, -0.75)	-2.48 (-17.98, 15.48)	0.09 (0.02, 0.16)
15-19 years	-3.13 (-7.82, 0.97)	-0.02 (-0.08, 0.04)	-7.23 (-26.09, 10.72)	-0.01 (-0.08, 0.07)
20-24 years	5.21 (1.00, 8.71)	0.31 (0.21, 0.40)	-13.12 (-27.98, 6.18)	-0.16 (-0.26, -0.06)
25-29 years	6.79 (2.26, 11.16)	0.35 (0.23, 0.46)	-12.14 (-26.24, 0.71)	-0.07 (-0.18, 0.04)

30-34 years	4.76 (1.21, 9.46)	0.34 (0.20, 0.49)	-2.57 (-11.68, 10.36)	0.16 (0.07, 0.26)
35-39 years	2.07 (-0.98, 5.01)	0.32 (0.15, 0.49)	5.95 (-6.09, 22.45)	0.32 (0.21, 0.44)
40-44 years	-0.82 (-3.90, 1.84)	0.21 (0.04, 0.39)	6.14 (-7.42, 22.68)	0.35 (0.22, 0.48)
45-49 years	-3.54 (-6.93, -0.35)	0.10 (-0.08, 0.29)	5.12 (-12.88, 29.58)	0.39 (0.24, 0.54)
50-54 years	-7.53 (-11.29, -4.60)	0.01 (-0.17, 0.19)	8.96 (-10.65, 40.16)	0.59 (0.40, 0.77)
55-59 years	-11.78 (-16.17, -8.13)	-0.15 (-0.33, 0.02)	5.02 (-15.01, 36.90)	0.45 (0.28, 0.62)
60-64 years	-18.16 (-22.25, -14.12)	-0.41 (-0.58, -0.24)	-0.56 (-16.74, 27.98)	0.31 (0.15, 0.46)
65-69 years	-23.55 (-27.69, -19.55)	-0.63 (-0.80, -0.46)	-1.92 (-20.48, 25.40)	0.26 (0.14, 0.37)
70-74 years	-23.69 (-27.53, -19.98)	-0.63 (-0.79, -0.46)	9.83 (-7.94, 34.14)	0.52 (0.45, 0.59)
75-79 years	-21.64 (-24.63, -18.37)	-0.56 (-0.71, -0.40)	27.79 (5.08, 63.65)	0.85 (0.80, 0.90)
80-84 years	-20.36 (-23.38, -17.39)	-0.54 (-0.68, -0.40)	50.90 (23.10, 95.78)	1.24 (1.20, 1.29)
85 plus years	-16.69 (-19.07, -14.11)	-0.42 (-0.54, -0.31)	57.74 (32.41, 92.97)	1.40 (1.36, 1.43)

Data of overall annual change is mean (95% uncertainty interval), data of EAPC is mean (95% confidence interval).

Abbreviations: CKD, chronic kidney disease; EAPC, estimated annual percentage change.

Table S8. Overall annual change and EAPC of mortality and DALYs rate of CKD by age group and CKD subtype in China from 1990 to 2021

	Mortality		DALYs	
	Overall annual change (%)	EAPC (%)	Overall annual change (%)	EAPC (%)
Overall				
<5 years	-88.58 (-91.46, -82.95)	-7.21 (-7.56, -6.86)	-87.86 (-90.68, -82.25)	-7.06 (-7.39, -6.72)
5-9 years	-76.19 (-80.94, -67.37)	-4.87 (-5.11, -4.64)	-74.36 (-79.04, -65.81)	-4.64 (-4.85, -4.42)
10-14 years	-66.91 (-72.99, -58.33)	-3.79 (-4.06, -3.52)	-65.19 (-70.87, -57.58)	-3.63 (-3.86, -3.40)
15-19 years	-61.53 (-70.50, -50.76)	-3.81 (-4.11, -3.50)	-59.81 (-67.61, -49.92)	-3.57 (-3.83, -3.32)
20-24 years	-45.91 (-59.91, -28.42)	-2.74 (-3.06, -2.41)	-45.34 (-57.78, -30.61)	-2.56 (-2.81, -2.31)
25-29 years	-43.03 (-62.05, -27.13)	-2.28 (-2.51, -2.05)	-41.21 (-56.37, -27.82)	-2.04 (-2.21, -1.87)
30-34 years	-44.60 (-61.51, -28.87)	-2.37 (-2.63, -2.12)	-40.86 (-55.58, -27.69)	-2.03 (-2.21, -1.85)
35-39 years	-46.24 (-58.69, -30.93)	-2.70 (-3.03, -2.37)	-41.36 (-52.85, -28.16)	-2.25 (-2.50, -2.01)
40-44 years	-47.43 (-61.32, -31.82)	-2.52 (-2.75, -2.28)	-41.67 (-54.34, -28.97)	-2.10 (-2.28, -1.91)
45-49 years	-46.19 (-60.84, -28.48)	-2.04 (-2.18, -1.90)	-38.52 (-52.43, -24.22)	-1.62 (-1.71, -1.53)
50-54 years	-46.32 (-60.76, -27.95)	-2.28 (-2.49, -2.08)	-38.23 (-50.96, -22.86)	-1.75 (-1.92, -1.58)
55-59 years	-40.87 (-54.12, -21.06)	-1.92 (-2.08, -1.77)	-33.57 (-45.16, -18.32)	-1.44 (-1.59, -1.29)
60-64 years	-31.81 (-48.65, -10.08)	-1.15 (-1.24, -1.06)	-27.75 (-41.92, -11.96)	-0.89 (-1, -0.78)
65-69 years	-25.57 (-42.45, -5.48)	-0.89 (-1.04, -0.74)	-24.04 (-37.62, -8.77)	-0.71 (-0.87, -0.55)
70-74 years	-17.00 (-37.15, 6.43)	-0.52 (-0.64, -0.41)	-17.10 (-32.92, 0.24)	-0.41 (-0.56, -0.26)
75-79 years	-14.05 (-33.60, 10.09)	-0.31 (-0.41, -0.21)	-14.59 (-30.22, 2.69)	-0.24 (-0.38, -0.10)

80-84 years	-3.27 (-28.05, 19.46)	0.07 (-0.03, 0.17)	-7.09 (-25.48, 8.40)	0.04 (-0.09, 0.17)
85 plus years	-0.96 (-25.23, 20.14)	-0.09 (-0.21, 0.03)	-4.94 (-22.57, 10.24)	-0.08 (-0.20, 0.05)
Subtype				
Diabetes mellitus type 1				
<5 years	-88.30 (-91.41, -82.68)	-7.10 (-7.46, -6.75)	-88.17 (-91.24, -82.52)	-7.07 (-7.42, -6.72)
5-9 years	-74.71 (-79.62, -65.05)	-4.67 (-4.91, -4.42)	-74.62 (-79.52, -65.14)	-4.65 (-4.89, -4.42)
10-14 years	-64.94 (-71.56, -55.69)	-3.58 (-3.85, -3.30)	-64.85 (-71.32, -55.78)	-3.57 (-3.84, -3.30)
15-19 years	-59.47 (-68.76, -48.07)	-3.59 (-3.88, -3.30)	-59.25 (-68.28, -47.77)	-3.57 (-3.86, -3.28)
20-24 years	-43.22 (-57.75, -24.61)	-2.52 (-2.83, -2.21)	-42.95 (-57.45, -24.57)	-2.50 (-2.80, -2.19)
25-29 years	-40.96 (-60.63, -23.66)	-2.12 (-2.34, -1.89)	-40.37 (-59.75, -23.32)	-2.06 (-2.28, -1.85)
30-34 years	-43.27 (-60.72, -26.95)	-2.27 (-2.52, -2.02)	-41.79 (-59.26, -25.81)	-2.16 (-2.40, -1.92)
35-39 years	-45.60 (-58.29, -29.39)	-2.65 (-2.98, -2.33)	-43.45 (-56.16, -27.78)	-2.48 (-2.79, -2.17)
40-44 years	-47.21 (-61.06, -31.53)	-2.50 (-2.73, -2.26)	-44.49 (-58.13, -28.66)	-2.29 (-2.51, -2.06)
45-49 years	-46.12 (-60.60, -29.09)	-2.03 (-2.16, -1.89)	-41.98 (-56.61, -24.63)	-1.74 (-1.87, -1.62)
50-54 years	-46.26 (-60.34, -28.17)	-2.26 (-2.47, -2.06)	-41.39 (-55.65, -22.92)	-1.91 (-2.10, -1.71)
55-59 years	-40.81 (-54.31, -21.05)	-1.90 (-2.05, -1.74)	-35.55 (-48.56, -16.82)	-1.53 (-1.69, -1.37)
60-64 years	-31.51 (-47.97, -10.15)	-1.13 (-1.22, -1.04)	-27.11 (-43.44, -7.23)	-0.86 (-0.96, -0.76)
65-69 years	-25.54 (-42.28, -5.54)	-0.89 (-1.04, -0.74)	-22.47 (-38.07, -4.08)	-0.67 (-0.82, -0.51)
70-74 years	-17.12 (-37.58, 6.49)	-0.52 (-0.64, -0.40)	-14.60 (-32.79, 7.13)	-0.35 (-0.48, -0.22)
75-79 years	-13.92 (-33.72, 9.75)	-0.30 (-0.41, -0.19)	-12.14 (-30.66, 9.91)	-0.17 (-0.29, -0.06)

80-84 years	-2.78 (-27.16, 19.33)	0.11 (0.00, 0.21)	-1.52 (-25.34, 19.20)	0.21 (0.09, 0.32)
85 plus years	-9.82 (-30.55, 9.64)	-0.37 (-0.53, -0.20)	-8.49 (-27.98, 9.88)	-0.27 (-0.43, -0.11)
Diabetes mellitus type 2				
15-19 years	-59.32 (-68.73, -48.29)	-3.59 (-3.88, -3.30)	-70.85 (-77.59, -64.06)	-4.43 (-4.68, -4.18)
20-24 years	-43.29 (-58.10, -24.01)	-2.53 (-2.84, -2.22)	-56.86 (-67.91, -44.56)	-3.22 (-3.41, -3.02)
25-29 years	-40.97 (-60.60, -23.08)	-2.12 (-2.34, -1.89)	-47.44 (-62.15, -33.73)	-2.37 (-2.51, -2.22)
30-34 years	-43.04 (-60.68, -26.95)	-2.26 (-2.51, -2)	-43.09 (-58.42, -30.19)	-2.17 (-2.35, -1.98)
35-39 years	-45.72 (-58.29, -30.22)	-2.65 (-2.98, -2.33)	-43.18 (-54.68, -29.52)	-2.39 (-2.66, -2.13)
40-44 years	-47.23 (-60.86, -32.17)	-2.50 (-2.73, -2.26)	-43.09 (-56.14, -29.69)	-2.19 (-2.39, -2.00)
45-49 years	-46.05 (-60.46, -28.42)	-2.03 (-2.17, -1.89)	-39.68 (-53.18, -24.49)	-1.67 (-1.77, -1.57)
50-54 years	-46.23 (-60.70, -28.04)	-2.27 (-2.48, -2.06)	-38.96 (-52.30, -22.85)	-1.79 (-1.96, -1.61)
55-59 years	-40.75 (-54.54, -21.64)	-1.90 (-2.06, -1.74)	-33.99 (-45.80, -18.69)	-1.45 (-1.60, -1.30)
60-64 years	-31.78 (-47.78, -10.35)	-1.13 (-1.23, -1.04)	-27.27 (-41.88, -9.86)	-0.86 (-0.97, -0.75)
65-69 years	-25.56 (-42.26, -5.49)	-0.89 (-1.04, -0.74)	-22.80 (-37.52, -5.95)	-0.67 (-0.82, -0.51)
70-74 years	-16.87 (-37.46, 6.90)	-0.51 (-0.63, -0.40)	-15.04 (-32.39, 4.48)	-0.35 (-0.50, -0.21)
75-79 years	-13.96 (-33.43, 9.51)	-0.30 (-0.40, -0.19)	-12.69 (-30.05, 7.44)	-0.18 (-0.31, -0.05)
80-84 years	-2.82 (-27.25, 19.15)	0.10 (0.00, 0.20)	-3.68 (-25.31, 14.83)	0.14 (0.02, 0.26)
85 plus years	0.23 (-24.08, 21.17)	-0.03 (-0.16, 0.10)	-2.95 (-24.19, 15.97)	-0.07 (-0.20, 0.06)
Glomerulonephritis				
<5 years	-88.75 (-91.68, -83.01)	-7.26 (-7.61, -6.90)	-88.39 (-91.27, -82.64)	-7.18 (-7.52, -6.83)

5-9 years	-76.39 (-81.07, -67.38)	-4.90 (-5.14, -4.66)	-75.52 (-80.20, -66.79)	-4.79 (-5.01, -4.56)
10-14 years	-67.28 (-73.31, -58.90)	-3.84 (-4.11, -3.56)	-66.36 (-72.03, -58.76)	-3.75 (-4.00, -3.50)
15-19 years	-62.28 (-71.05, -51.93)	-3.87 (-4.18, -3.56)	-60.96 (-68.92, -51.22)	-3.70 (-3.97, -3.42)
20-24 years	-47.99 (-61.46, -31.20)	-2.87 (-3.19, -2.54)	-46.78 (-58.73, -32.66)	-2.64 (-2.89, -2.39)
25-29 years	-46.63 (-64.52, -30.97)	-2.50 (-2.74, -2.26)	-42.25 (-55.16, -30.53)	-2.05 (-2.19, -1.90)
30-34 years	-48.59 (-64.82, -32.94)	-2.63 (-2.89, -2.37)	-39.31 (-50.92, -26.96)	-1.85 (-1.97, -1.72)
35-39 years	-49.08 (-60.94, -34.60)	-2.89 (-3.22, -2.55)	-36.47 (-47.14, -24.33)	-1.83 (-1.99, -1.67)
40-44 years	-49.01 (-62.18, -33.10)	-2.62 (-2.86, -2.38)	-34.45 (-46.61, -21.43)	-1.67 (-1.80, -1.55)
45-49 years	-47.10 (-61.79, -29.93)	-2.11 (-2.25, -1.97)	-29.70 (-41.75, -16.46)	-1.32 (-1.40, -1.24)
50-54 years	-47.07 (-62.10, -29.57)	-2.34 (-2.55, -2.13)	-29.67 (-41.87, -15.98)	-1.34 (-1.48, -1.20)
55-59 years	-41.53 (-55.18, -21.69)	-1.97 (-2.13, -1.81)	-27.65 (-38.46, -14.52)	-1.12 (-1.27, -0.97)
60-64 years	-32.35 (-49.43, -10.90)	-1.17 (-1.26, -1.09)	-24.98 (-38.14, -11.71)	-0.77 (-0.91, -0.63)
65-69 years	-26.08 (-43.44, -5.64)	-0.90 (-1.05, -0.75)	-23.18 (-34.88, -9.91)	-0.65 (-0.83, -0.46)
70-74 years	-17.33 (-37.38, 5.99)	-0.52 (-0.64, -0.41)	-12.44 (-28.16, 3.26)	-0.19 (-0.38, 0.00)
75-79 years	-14.13 (-34.28, 9.76)	-0.31 (-0.41, -0.20)	-6.38 (-21.46, 8.95)	0.11 (-0.08, 0.29)
80-84 years	-3.88 (-29.05, 18.81)	0.05 (-0.05, 0.15)	3.63 (-12.39, 20.34)	0.46 (0.30, 0.62)
85 plus years	-3.84 (-26.19, 16.38)	-0.19 (-0.32, -0.06)	11.83 (-4.44, 27.30)	0.58 (0.45, 0.70)
Hypertension				
15-19 years	-61.45 (-70.87, -50.11)	-3.87 (-4.18, -3.56)	-60.36 (-68.59, -50.03)	-3.70 (-3.97, -3.43)
20-24 years	-46.54 (-61.37, -28.87)	-2.87 (-3.21, -2.53)	-46.11 (-59.18, -30.64)	-2.72 (-3.01, -2.44)

25-29 years	-44.26 (-63.22, -28.41)	-2.44 (-2.70, -2.19)	-42.54 (-58.55, -29.17)	-2.22 (-2.41, -2.03)
30-34 years	-46.20 (-63.47, -30.12)	-2.52 (-2.79, -2.25)	-42.59 (-57.27, -28.74)	-2.19 (-2.38, -1.99)
35-39 years	-47.12 (-60.11, -32.23)	-2.78 (-3.11, -2.45)	-42.39 (-53.66, -29.41)	-2.35 (-2.61, -2.09)
40-44 years	-47.63 (-61.68, -32.39)	-2.55 (-2.78, -2.31)	-42.31 (-55.18, -28.16)	-2.16 (-2.35, -1.96)
45-49 years	-46.24 (-61.59, -28.86)	-2.06 (-2.20, -1.92)	-39.43 (-53.51, -24.23)	-1.67 (-1.77, -1.56)
50-54 years	-46.38 (-61.43, -27.80)	-2.32 (-2.52, -2.12)	-39.59 (-52.30, -22.87)	-1.85 (-2.03, -1.68)
55-59 years	-41.01 (-54.55, -21.64)	-1.96 (-2.12, -1.81)	-34.91 (-47.34, -17.20)	-1.55 (-1.70, -1.40)
60-64 years	-31.93 (-49.31, -9.79)	-1.18 (-1.26, -1.09)	-27.80 (-44.32, -9.44)	-0.91 (-1.02, -0.81)
65-69 years	-25.53 (-42.77, -4.51)	-0.90 (-1.05, -0.76)	-22.76 (-38.52, -5.49)	-0.68 (-0.83, -0.52)
70-74 years	-17.19 (-37.54, 5.99)	-0.54 (-0.65, -0.43)	-15.67 (-32.94, 3.71)	-0.39 (-0.52, -0.25)
75-79 years	-14.20 (-33.84, 9.55)	-0.33 (-0.43, -0.23)	-13.21 (-30.60, 6.65)	-0.22 (-0.34, -0.10)
80-84 years	-3.94 (-29.46, 19.09)	0.02 (-0.08, 0.12)	-5.00 (-26.45, 14.34)	0.06 (-0.05, 0.17)
85 plus years	-2.52 (-27.82, 19.25)	-0.17 (-0.29, -0.05)	-5.27 (-25.89, 12.40)	-0.17 (-0.28, -0.05)
Other and unspecified causes				
<5 years	-88.54 (-91.41, -82.81)	-7.21 (-7.56, -6.86)	-87.66 (-90.51, -82.05)	-7.02 (-7.35, -6.68)
5-9 years	-76.33 (-81.03, -67.54)	-4.89 (-5.13, -4.66)	-73.83 (-78.43, -65.68)	-4.57 (-4.78, -4.37)
10-14 years	-67.26 (-73.27, -58.79)	-3.82 (-4.10, -3.55)	-64.66 (-70.19, -57.31)	-3.58 (-3.80, -3.36)
15-19 years	-62.29 (-71.45, -51.56)	-3.87 (-4.17, -3.56)	-59.04 (-66.69, -49.93)	-3.44 (-3.67, -3.21)
20-24 years	-47.92 (-61.40, -31.25)	-2.86 (-3.19, -2.54)	-46.09 (-56.41, -34.86)	-2.43 (-2.61, -2.25)
25-29 years	-46.05 (-64.13, -29.78)	-2.48 (-2.72, -2.24)	-40.08 (-50.68, -29.36)	-1.78 (-1.91, -1.66)

30-34 years	-47.97 (-64.52, -32.27)	-2.61 (-2.87, -2.34)	-35.80 (-46.59, -25.58)	-1.53 (-1.65, -1.41)
35-39 years	-48.69 (-60.92, -34.13)	-2.87 (-3.20, -2.54)	-32.85 (-42.90, -23.04)	-1.49 (-1.61, -1.37)
40-44 years	-48.73 (-62.18, -32.99)	-2.60 (-2.84, -2.36)	-31.00 (-40.61, -20.95)	-1.44 (-1.55, -1.33)
45-49 years	-46.86 (-61.49, -29.62)	-2.08 (-2.22, -1.95)	-26.91 (-37.20, -16.14)	-1.20 (-1.29, -1.11)
50-54 years	-46.72 (-61.73, -28.61)	-2.32 (-2.52, -2.11)	-26.36 (-37.72, -13.42)	-1.15 (-1.28, -1.02)
55-59 years	-41.30 (-54.56, -21.07)	-1.95 (-2.11, -1.80)	-26.28 (-36.20, -15.53)	-1.01 (-1.16, -0.85)
60-64 years	-32.37 (-50.29, -10.68)	-1.17 (-1.26, -1.08)	-31.83 (-40.82, -22.74)	-1.06 (-1.24, -0.89)
65-69 years	-25.99 (-42.81, -5.70)	-0.90 (-1.05, -0.75)	-34.52 (-42.92, -25.61)	-1.06 (-1.27, -0.85)
70-74 years	-17.25 (-37.58, 6.32)	-0.52 (-0.64, -0.40)	-31.34 (-39.89, -22.00)	-0.87 (-1.09, -0.66)
75-79 years	-14.22 (-34.08, 9.17)	-0.30 (-0.41, -0.20)	-26.65 (-35.04, -17.53)	-0.64 (-0.85, -0.42)
80-84 years	-4.01 (-28.24, 18.28)	0.05 (-0.05, 0.15)	-22.36 (-30.34, -13.40)	-0.43 (-0.65, -0.20)
85 plus years	-1.54 (-25.64, 20.07)	-0.11 (-0.23, 0.02)	-11.01 (-18.40, -2.14)	0.00 (-0.20, 0.20)

Data of overall annual change is mean (95% uncertainty interval), data of EAPC is mean (95% confidence interval).

Abbreviations: CKD, chronic kidney disease; EAPC, estimated annual percentage change; DALYs, disability-adjusted life years.

Table S9. Change of all-age cases and age-standardized rate of prevalence and YLDs of anemia attributable to CKD by sex and CKD subtype in China from 1990 to 2021

	All-age cases change (%)		Age-standardized rate change (%)	
	Prevalence	YLDs	Prevalence	YLDs
Overall				
Total	42.74 (34.82,51.00)	12.44 (5.99,19.70)	-40.80 (-43.87, -37.70)	-56.52 (-59.32, -53.36)
Male	42.52 (31.38,54.55)	-5.88 (-15.25,5.17)	-40.14 (-44.15, -35.52)	-63.52 (-67.14, -59.41)
Female	42.94 (34.26,52.55)	24.03 (17.07,31.31)	-41.50 (-44.75, -38.12)	-51.69 (-54.57, -48.97)
Subtype				
Diabetes mellitus type 1				
Total	48.94 (31.80,64.74)	10.53 (-2.70,23.86)	-23.95 (-29.53, -18.95)	-42.04 (-47.18, -36.70)
Male	20.43 (3.78,37.44)	-42.97 (-54.35, -28.21)	-38.89 (-44.76, -32.47)	-69.86 (-74.80, -63.63)
Female	76.17 (56.98,95.88)	44.21 (29.00,58.52)	-9.77 (-16.86, -3.81)	-25.21 (-30.10, -20.02)
Diabetes mellitus type 2				
Total	63.42 (52.67,75.03)	46.03 (35.93,56.32)	-37.13 (-41.02, -33.29)	-44.75 (-48.74, -40.82)
Male	60.56 (46.92,75.85)	40.67 (28.20,54.59)	-37.23 (-42.33, -31.73)	-46.28 (-51.20, -40.95)
Female	66.49 (55.31,78.57)	52.06 (40.42,63.47)	-36.84 (-40.84, -32.94)	-43.01 (-47.20, -39.00)
Glomerulonephritis				
Total	-2.24 (-13.38,12.04)	-19.54 (-29.22, -8.96)	-45.62 (-50.40, -40.51)	-57.56 (-61.36, -53.26)
Male	-10.29 (-22.69,3.54)	-41.94 (-51.54, -31.51)	-48.71 (-54.21, -43.14)	-67.63 (-72.65, -62.55)
Female	7.64 (-4.57,22.96)	-2.82 (-13.89,10.26)	-40.29 (-44.88, -34.90)	-48.62 (-52.57, -44.17)

Hypertension

Total	67.63 (56.14,78.66)	23.83 (14.26,33.98)	-33.78 (-37.38, -30.18)	-54.87 (-58.48, -51.14)
Male	65.24 (51.34,79.30)	-3.04 (-15.56,10.83)	-33.82 (-38.29, -28.67)	-63.77 (-68.14, -59.09)
Female	70.19 (57.77,82.38)	43.48 (33.80,54.33)	-33.82 (-37.84, -29.81)	-47.05 (-50.48, -43.44)

Other and unspecified causes

Total	38.72 (31.09,47.02)	5.66 (-0.97,12.50)	-42.18 (-45.09, -39.20)	-58.94 (-61.84, -55.81)
Male	39.64 (29.02,51.47)	-18.52 (-28.45, -6.37)	-41.20 (-45.10, -36.72)	-67.39 (-71.21, -62.97)
Female	37.99 (29.34,47.12)	18.79 (11.91,25.74)	-43.26 (-46.36, -39.96)	-53.68 (-56.60, -51.11)

Data is mean (95% uncertainty interval).

Abbreviations: CKD, chronic kidney disease; YLDs, years lived with disability.

Table S10. Change of rate of prevalence and YLDs of anemia attributable to CKD by age group and CKD subtype in China from 1990 to 2021

	Prevalence		YLDs	
	Overall annual change (%)	EAPC (%)	Overall annual change (%)	EAPC (%)
Overall				
<5 years	-66.84 (-71.61, -60.72)	-3.90 (-4.07, -3.73)	-79.75 (-82.51, -76.27)	-5.64 (-5.89, -5.39)
5-9 years	-76.70 (-80.67, -72.26)	-4.93 (-5.12, -4.75)	-81.51 (-84.59, -78.14)	-5.73 (-5.96, -5.50)
10-14 years	-77.33 (-81.06, -73.31)	-5.03 (-5.20, -4.86)	-80.78 (-83.80, -77.57)	-5.57 (-5.75, -5.39)
15-19 years	-76.07 (-79.88, -72.07)	-4.82 (-4.92, -4.71)	-76.15 (-80.92, -70.51)	-4.86 (-4.99, -4.73)
20-24 years	-72.76 (-76.88, -68.01)	-4.31 (-4.38, -4.24)	-74.22 (-78.67, -69.59)	-4.48 (-4.57, -4.39)
25-29 years	-70.26 (-74.82, -64.76)	-3.95 (-4.03, -3.86)	-70.71 (-75.22, -65.33)	-3.96 (-4.04, -3.88)
30-34 years	-66.84 (-71.51, -61.28)	-3.69 (-3.79, -3.59)	-67.59 (-72.11, -62.71)	-3.76 (-3.84, -3.67)
35-39 years	-64.53 (-69.23, -59.05)	-3.48 (-3.61, -3.35)	-66.45 (-70.83, -61.92)	-3.66 (-3.76, -3.56)
40-44 years	-60.10 (-65.36, -54.56)	-3.14 (-3.26, -3.03)	-67.27 (-71.02, -63.14)	-3.80 (-3.92, -3.67)
45-49 years	-61.29 (-66.49, -55.35)	-3.22 (-3.37, -3.07)	-63.73 (-67.87, -59.17)	-3.47 (-3.60, -3.33)
50-54 years	-58.32 (-63.54, -52.68)	-2.96 (-3.10, -2.83)	-68.75 (-72.96, -64.45)	-3.96 (-4.14, -3.78)
55-59 years	-55.56 (-61.12, -48.77)	-2.66 (-2.81, -2.50)	-65.14 (-68.58, -60.83)	-3.53 (-3.71, -3.36)
60-64 years	-51.91 (-57.70, -44.99)	-2.28 (-2.43, -2.13)	-67.38 (-71.02, -63.61)	-3.64 (-3.81, -3.46)
65-69 years	-51.22 (-57.22, -44.91)	-2.14 (-2.28, -1.99)	-66.00 (-69.85, -61.56)	-3.40 (-3.57, -3.24)
70-74 years	-39.62 (-47.18, -30.88)	-1.40 (-1.52, -1.28)	-60.61 (-65.09, -55.12)	-2.89 (-3.02, -2.76)
75-79 years	-29.75 (-38.54, -19.92)	-0.91 (-1.02, -0.80)	-55.08 (-60.21, -49.16)	-2.47 (-2.59, -2.36)

80-84 years	-17.19 (-27.31, -5.97)	-0.34 (-0.46, -0.21)	-49.08 (-54.39, -43.48)	-2.08 (-2.19, -1.97)
85 plus years	4.11 (-6.47,14.97)	0.44 (0.33, 0.55)	-32.26 (-38.97, -25.39)	-1.12 (-1.20, -1.03)
Subtype				
Diabetes mellitus type 1				
<5 years	-66.33 (-74.43, -56.40)	-3.87 (-4.06, -3.69)	-80.43 (-85.30, -74.03)	-5.77 (-6.03, -5.51)
5-9 years	-77.40 (-83.26, -69.78)	-5.04 (-5.23, -4.84)	-82.48 (-86.41, -76.93)	-5.92 (-6.16, -5.68)
10-14 years	-78.73 (-84.27, -72.41)	-5.24 (-5.42, -5.06)	-82.54 (-86.84, -77.78)	-5.88 (-6.08, -5.69)
15-19 years	-67.44 (-76.85, -56.43)	-3.75 (-4.03, -3.47)	-68.63 (-77.49, -58.88)	-3.87 (-4.10, -3.63)
20-24 years	-60.13 (-68.62, -50.28)	-2.97 (-3.29, -2.65)	-62.39 (-69.71, -54.27)	-3.14 (-3.41, -2.86)
25-29 years	-43.93 (-52.40, -34.27)	-1.52 (-1.77, -1.26)	-44.70 (-53.47, -37.56)	-1.54 (-1.75, -1.32)
30-34 years	-33.27 (-42.55, -23)	-0.85 (-1.10, -0.60)	-34.64 (-42.23, -27.08)	-0.91 (-1.15, -0.67)
35-39 years	-27.18 (-36.35, -16.28)	-0.45 (-0.74, -0.17)	-30.60 (-38.17, -22.96)	-0.59 (-0.88, -0.30)
40-44 years	-18.44 (-27.76, -8.53)	-0.01 (-0.33, 0.32)	-32.49 (-39.54, -24.54)	-0.63 (-0.95, -0.30)
45-49 years	-21.67 (-31.05, -10.44)	-0.01 (-0.38, 0.37)	-24.00 (-32.26, -15.08)	-0.10 (-0.48, 0.27)
50-54 years	-19.45 (-30, -9.03)	0.17 (-0.25, 0.60)	-40.80 (-48.28, -32.50)	-0.92 (-1.32, -0.51)
55-59 years	-14.71 (-25.94, -2.82)	0.51 (0.04, 0.98)	-34.05 (-41.51, -25.89)	-0.44 (-0.89, 0.02)
60-64 years	-5.95 (-17.52,7.64)	0.94 (0.43, 1.45)	-40.38 (-47.67, -32.13)	-0.68 (-1.15, -0.20)
65-69 years	-6.31 (-17.75,9.87)	0.98 (0.47, 1.50)	-39.51 (-47.04, -30.21)	-0.57 (-1.05, -0.08)
70-74 years	12.33 (-3.91,38.89)	1.59 (1.06, 2.13)	-33.55 (-41.71, -20.63)	-0.26 (-0.74, 0.23)
75-79 years	36.79 (11.83,79.31)	2.23 (1.69, 2.77)	-23.24 (-34.11, -5.60)	0.19 (-0.30, 0.67)

80-84 years	83.34 (43.00,155.79)	3.22 (2.69, 3.75)	0.15 (-19.39,29.74)	1.03 (0.54, 1.52)
85 plus years	169.06 (102.50,255.46)	4.49 (3.96, 5.02)	54.59 (17.67,98.51)	2.42 (1.92, 2.92)
Diabetes mellitus type 2				
15-19 years	-86.73 (-89.42, -83.11)	-6.94 (-7.20, -6.67)	-86.78 (-89.54, -83.23)	-6.94 (-7.19, -6.68)
20-24 years	-85.54 (-88.21, -81.73)	-6.54 (-6.69, -6.40)	-85.65 (-88.22, -81.61)	-6.60 (-6.76, -6.44)
25-29 years	-81.79 (-85.30, -76.50)	-5.56 (-5.67, -5.46)	-82.66 (-85.93, -77.63)	-5.75 (-5.88, -5.63)
30-34 years	-74.80 (-79.55, -69.75)	-4.58 (-4.71, -4.46)	-76.23 (-80.73, -71.59)	-4.79 (-4.92, -4.66)
35-39 years	-68.90 (-73.47, -63.27)	-3.93 (-4.07, -3.79)	-70.92 (-75.28, -65.79)	-4.16 (-4.29, -4.02)
40-44 years	-61.33 (-66.83, -55.52)	-3.29 (-3.40, -3.17)	-64.68 (-70.07, -58.53)	-3.58 (-3.71, -3.46)
45-49 years	-59.91 (-65.37, -53.48)	-3.14 (-3.27, -3.01)	-63.39 (-68.83, -56.95)	-3.44 (-3.58, -3.29)
50-54 years	-54.67 (-60.73, -48.38)	-2.70 (-2.82, -2.57)	-61.03 (-67.91, -52.81)	-3.20 (-3.35, -3.06)
55-59 years	-50.57 (-57.26, -43.23)	-2.27 (-2.42, -2.12)	-57.29 (-63.42, -50.20)	-2.79 (-2.94, -2.64)
60-64 years	-46.07 (-53.07, -37.82)	-1.83 (-2.02, -1.65)	-54.11 (-60.16, -46.38)	-2.42 (-2.58, -2.26)
65-69 years	-46.14 (-53.57, -38.39)	-1.73 (-1.92, -1.54)	-51.85 (-58.46, -44.67)	-2.16 (-2.32, -2.01)
70-74 years	-34.50 (-42.52, -24.65)	-1.05 (-1.24, -0.85)	-41.90 (-49.42, -32.74)	-1.47 (-1.62, -1.31)
75-79 years	-24.58 (-34.65, -13.36)	-0.57 (-0.76, -0.39)	-33.78 (-42.36, -23.11)	-1.02 (-1.18, -0.87)
80-84 years	-12.00 (-23.65,0.01)	-0.02 (-0.20, 0.16)	-30.09 (-39.59, -19.37)	-0.85 (-1.01, -0.69)
85 plus years	-2.61 (-12.69,7.79)	0.32 (0.15, 0.49)	-23.00 (-32.31, -13.50)	-0.53 (-0.69, -0.37)
Glomerulonephritis				
<5 years	-65.81 (-71.92, -57.68)	-3.84 (-4.02, -3.65)	-80.55 (-83.82, -76.59)	-5.81 (-6.08, -5.54)

5-9 years	-77.22 (-82.15, -71.71)	-5.03 (-5.24, -4.83)	-82.67 (-85.61, -78.62)	-5.97 (-6.22, -5.72)
10-14 years	-78.69 (-82.81, -74.36)	-5.24 (-5.42, -5.06)	-82.63 (-85.48, -79.21)	-5.91 (-6.10, -5.72)
15-19 years	-76.48 (-80.46, -71.27)	-4.91 (-5.03, -4.79)	-76.99 (-80.69, -72.67)	-5.00 (-5.14, -4.86)
20-24 years	-73.26 (-77.58, -68.63)	-4.43 (-4.52, -4.35)	-74.29 (-78.08, -70.03)	-4.53 (-4.64, -4.41)
25-29 years	-69.67 (-74.65, -63.60)	-3.93 (-4.02, -3.84)	-68.26 (-72.51, -63.32)	-3.72 (-3.88, -3.57)
30-34 years	-65.24 (-70.52, -59.24)	-3.55 (-3.65, -3.45)	-64.61 (-69.30, -59.52)	-3.46 (-3.62, -3.30)
35-39 years	-61.73 (-67.31, -55.52)	-3.31 (-3.41, -3.20)	-62.63 (-67.39, -57.30)	-3.37 (-3.52, -3.21)
40-44 years	-55.10 (-61.37, -48.43)	-2.91 (-3.04, -2.79)	-63.85 (-68.82, -58.57)	-3.63 (-3.78, -3.48)
45-49 years	-55.68 (-62.34, -47.88)	-2.96 (-3.09, -2.84)	-56.67 (-62.42, -50.44)	-3.07 (-3.23, -2.91)
50-54 years	-49.17 (-56.83, -40.09)	-2.48 (-2.65, -2.30)	-64.89 (-70.65, -58.52)	-3.77 (-3.96, -3.57)
55-59 years	-44.02 (-52.86, -34.12)	-1.97 (-2.17, -1.77)	-58.72 (-64.15, -51.55)	-3.07 (-3.29, -2.85)
60-64 years	-36.99 (-46.37, -25.02)	-1.38 (-1.65, -1.10)	-62.60 (-68.44, -55.36)	-3.19 (-3.45, -2.93)
65-69 years	-34.02 (-44.80, -22.35)	-1.06 (-1.36, -0.76)	-59.95 (-67.23, -51.89)	-2.81 (-3.09, -2.53)
70-74 years	-15.14 (-26.70, 1.07)	-0.14 (-0.48, 0.19)	-52.30 (-60.50, -43.06)	-2.14 (-2.44, -1.85)
75-79 years	0.89 (-13.86, 17.65)	0.47 (0.15, 0.80)	-44.24 (-54.14, -32.05)	-1.60 (-1.88, -1.32)
80-84 years	17.23 (-1.16, 37.98)	1.04 (0.75, 1.32)	-34.69 (-45.08, -21.42)	-1.07 (-1.34, -0.80)
85 plus years	32.74 (16.69, 50.78)	1.39 (1.19, 1.59)	-15.87 (-28.74, -1.07)	-0.29 (-0.47, -0.11)

Hypertension

15-19 years	-74.00 (-78.34, -69.04)	-4.56 (-4.68, -4.45)	-74.16 (-78.35, -69.76)	-4.60 (-4.75, -4.45)
20-24 years	-69.43 (-74.59, -63.50)	-3.91 (-4.03, -3.80)	-70.92 (-75.02, -66.25)	-4.06 (-4.21, -3.91)

25-29 years	-65.73 (-71.25, -59.13)	-3.45 (-3.57, -3.34)	-65.34 (-70.16, -60.16)	-3.39 (-3.55, -3.22)
30-34 years	-62.07 (-68.07, -54.97)	-3.22 (-3.32, -3.12)	-62.16 (-66.85, -56.90)	-3.22 (-3.35, -3.08)
35-39 years	-59.72 (-65.33, -52.99)	-3.09 (-3.19, -2.99)	-61.19 (-65.78, -55.98)	-3.21 (-3.32, -3.09)
40-44 years	-54.38 (-60.44, -48.27)	-2.77 (-2.87, -2.67)	-63.15 (-67.50, -58.50)	-3.48 (-3.60, -3.36)
45-49 years	-56.09 (-62.19, -48.94)	-2.84 (-2.96, -2.73)	-57.57 (-62.99, -51.07)	-2.99 (-3.10, -2.87)
50-54 years	-52.16 (-58.78, -45.01)	-2.50 (-2.63, -2.36)	-66.47 (-72.18, -60.50)	-3.74 (-3.91, -3.58)
55-59 years	-49.47 (-56.90, -41.36)	-2.17 (-2.33, -2.01)	-62.31 (-67.69, -55.98)	-3.23 (-3.41, -3.05)
60-64 years	-45.65 (-52.88, -37.06)	-1.78 (-1.98, -1.59)	-66.96 (-72.14, -61.53)	-3.52 (-3.72, -3.32)
65-69 years	-46.49 (-53.97, -38.89)	-1.74 (-1.93, -1.54)	-66.81 (-72.16, -61.08)	-3.41 (-3.60, -3.22)
70-74 years	-35.61 (-43.68, -25.84)	-1.10 (-1.29, -0.92)	-62.78 (-68.60, -56.50)	-3.01 (-3.18, -2.85)
75-79 years	-25.83 (-35.51, -14.09)	-0.64 (-0.81, -0.47)	-57.64 (-63.56, -50.37)	-2.60 (-2.75, -2.45)
80-84 years	-12.35 (-23.26, 0.34)	-0.06 (-0.23, 0.10)	-50.05 (-56.15, -43.13)	-2.07 (-2.22, -1.92)
85 plus years	7.72 (-3.47, 19.29)	0.64 (0.50, 0.78)	-32.60 (-39.72, -24.79)	-1.07 (-1.18, -0.95)
Other and unspecified causes				
<5 years	-67.32 (-72.17, -61.72)	-3.93 (-4.09, -3.77)	-79.31 (-82.20, -75.88)	-5.55 (-5.78, -5.31)
5-9 years	-76.45 (-80.31, -72.05)	-4.89 (-5.07, -4.71)	-80.99 (-84.37, -77.26)	-5.63 (-5.85, -5.41)
10-14 years	-76.86 (-80.61, -72.88)	-4.96 (-5.12, -4.79)	-80.14 (-83.78, -76.32)	-5.46 (-5.64, -5.28)
15-19 years	-76.04 (-79.78, -71.77)	-4.80 (-4.91, -4.70)	-75.81 (-81.03, -69.28)	-4.80 (-4.93, -4.67)
20-24 years	-72.67 (-76.91, -67.91)	-4.28 (-4.35, -4.21)	-74.05 (-78.87, -68.98)	-4.45 (-4.54, -4.36)
25-29 years	-70.46 (-75.04, -64.68)	-3.97 (-4.06, -3.87)	-70.84 (-75.85, -64.69)	-3.98 (-4.06, -3.90)

30-34 years	-67.47 (-72.16, -62.01)	-3.76 (-3.88, -3.64)	-68.11 (-73.08, -62.59)	-3.82 (-3.92, -3.73)
35-39 years	-65.63 (-70.19, -60.22)	-3.59 (-3.73, -3.44)	-67.49 (-72.24, -62.49)	-3.76 (-3.88, -3.65)
40-44 years	-61.86 (-66.75, -56.50)	-3.29 (-3.42, -3.15)	-69.07 (-73.07, -64.64)	-3.98 (-4.12, -3.84)
45-49 years	-63.33 (-68.33, -57.59)	-3.40 (-3.57, -3.23)	-65.71 (-70.09, -60.81)	-3.66 (-3.80, -3.51)
50-54 years	-61.06 (-66.13, -55.68)	-3.20 (-3.35, -3.04)	-72.07 (-76.21, -67.93)	-4.35 (-4.55, -4.14)
55-59 years	-58.61 (-63.91, -51.95)	-2.92 (-3.10, -2.75)	-68.98 (-72.72, -64.61)	-3.96 (-4.16, -3.76)
60-64 years	-55.01 (-60.26, -48.69)	-2.55 (-2.70, -2.39)	-71.79 (-75.33, -68.36)	-4.17 (-4.37, -3.97)
65-69 years	-53.58 (-59.21, -47.57)	-2.34 (-2.48, -2.20)	-70.22 (-73.97, -65.42)	-3.89 (-4.08, -3.71)
70-74 years	-41.72 (-48.73, -33.26)	-1.55 (-1.66, -1.44)	-64.96 (-69.15, -59.45)	-3.33 (-3.47, -3.19)
75-79 years	-31.76 (-40.15, -22.18)	-1.04 (-1.14, -0.94)	-59.29 (-64.17, -53.15)	-2.86 (-2.98, -2.73)
80-84 years	-19.22 (-28.87, -8.14)	-0.46 (-0.58, -0.33)	-52.14 (-57.19, -46.58)	-2.33 (-2.44, -2.22)
85 plus years	3.97 (-6.71, 15.25)	0.41 (0.30, 0.52)	-33.44 (-40.02, -26.39)	-1.20 (-1.28, -1.12)

Data of overall annual change is mean (95% uncertainty interval), data of EAPC is mean (95% confidence interval).

Abbreviations: CKD, chronic kidney disease; EAPC, estimated annual percentage change; YLDs, years lived with disability.

Table S11. Decomposition of changes in all-age cases of prevalence and incidence of CKD according to CKD subtype by GBD region from 1990 to 2021

Location	Prevalence					Incidence				
	Diabetes mellitus type 1	Diabetes mellitus type 2	Glomerulonephritis	Hypertension	Other and unspecified causes	Diabetes mellitus type 1	Diabetes mellitus type 2	Glomerulonephritis	Hypertension	Other and Unspecified causes
Global	3327853.32 (1.03%)	49454686.95 (15.32%)	4364926.80 (1.35%)	12755307.24 (3.95%)	252857611.85 (78.34%)	31538.11 (0.26%)	1258918.13 (10.37%)	113058.77 (0.93%)	818280.68 (6.74%)	9922537.19 (81.71%)
High SDI	431334.63 (0.90%)	7029051.01 (14.62%)	431556.86 (0.90%)	3157898.69 (6.57%)	37033621.13 (77.02%)	5092.64 (0.18%)	305316.73 (10.61%)	9361.57 (0.33%)	219422.34 (7.63%)	2337811.93 (81.26%)
High-middle SDI	578856.21 (1.18%)	7826393.75 (16%)	426230.24 (0.87%)	2046769.45 (4.19%)	38024742.34 (77.76%)	2997.94 (0.13%)	247188.24 (10.55%)	5005.56 (0.21%)	165765.06 (7.08%)	1921748.67 (82.03%)
Middle SDI	1086118.28 (0.94%)	18436913 (16.03%)	1508569.84 (1.31%)	4330219.96 (3.77%)	89641904.39 (77.95%)	6987.51 (0.16%)	453466.52 (10.58%)	32157.04 (0.75%)	278187.49 (6.49%)	3517000.75 (82.02%)
Low-middle SDI	792208.47 (1%)	11804318.53 (14.89%)	1347060.86 (1.70%)	2409805.37 (3.04%)	62919218.93 (79.37%)	8102.76 (0.40%)	201954.10 (9.98%)	35873.19 (1.77%)	122925.38 (6.07%)	1654903.08 (81.77%)
Low SDI	436744.62 (1.40%)	4327408.01 (13.83%)	649089.98 (2.07%)	801993.85 (2.56%)	25077654 (80.14%)	8325.70 (1.38%)	49797.79 (8.28%)	30559.19 (5.08%)	31219.12 (5.19%)	481720.77 (80.07%)
Western Europe	263664.49 (2.11%)	1465327.22 (11.72%)	87973.27 (0.70%)	962013.93 (7.70%)	9718893.47 (77.76%)	3316.62 (0.35%)	91785.38 (9.74%)	1891.36 (0.20%)	76338.83 (8.10%)	769437.10 (81.61%)
Central Europe	52252.13 (2.05%)	325554.99 (12.77%)	-3113.62 (-0.12%)	181590.95 (7.12%)	1992395.18 (78.17%)	411.27 (0.15%)	29227.62 (11.01%)	-8.86 (0%)	19265.13 (7.26%)	216452.22 (81.57%)
Eastern Europe	170142.78 (5.42%)	248055.57 (7.90%)	-9966.74 (-0.32%)	189101.49 (6.02%)	2541724.52 (80.97%)	975.48 (0.36%)	28066.92 (10.37%)	-636.93 (-0.24%)	18140.04 (6.70%)	224043.95 (82.80%)
High-income North America	127060.50 (0.73%)	2770993.58 (15.96%)	203510.45 (1.17%)	1167800.31 (6.73%)	13093984.09 (75.41%)	1439.03 (0.15%)	109008.75 (11.17%)	3386.39 (0.35%)	71241.11 (7.30%)	790733.13 (81.03%)

Global Market Performance Analysis - Q3 2023										
Region	North America					Europe				
	Market A	Market B	Market C	Market D	Market E	Market A	Market B	Market C	Market D	Market E
Central Latin America	52629.30	1977697	219931.43	666471.01	10556959.33	1451.09	81815.41	10631.11	47811.47	648154.95
	(0.39%)	(14.68%)	(1.63%)	(4.95%)	(78.35%)	(0.18%)	(10.36%)	(1.35%)	(6.05%)	(82.06%)
Andean Latin America	16796.37	353047.85	33646.27	84303.91	1790335.94	385.66	14659.20	1871.08	8996.47	115121.96
	(0.74%)	(15.50%)	(1.48%)	(3.70%)	(78.59%)	(0.27%)	(10.39%)	(1.33%)	(6.38%)	(81.63%)
Southern Latin America	28458.50	340621.12	23637.66	88568.36	1683501.98	169.79	15683.26	570.59	10678.05	119425.37
	(1.31%)	(15.73%)	(1.09%)	(4.09%)	(77.77%)	(0.12%)	(10.70%)	(0.39%)	(7.29%)	(81.50%)
Tropical Latin America	170797.09	1603834.81	132068.49	522134.09	8458705.30	1785.52	48359.56	3720.71	30784.61	384573.72
	(1.57%)	(14.73%)	(1.21%)	(4.80%)	(77.69%)	(0.38%)	(10.31%)	(0.79%)	(6.56%)	(81.96%)
Caribbean	8395.83	244226.72	21716.14	68735.91	1258394.17	179	10264.16	1092.19	6219.91	80714.53
	(0.52%)	(15.25%)	(1.36%)	(4.29%)	(78.58%)	(0.18%)	(10.42%)	(1.11%)	(6.32%)	(81.97%)
Western Sub-Saharan Africa	161908.33	1801679.20	312679.85	397594.72	10794977.51	5228.52	22615.31	19423.03	14137.10	238411.12
	(1.20%)	(13.38%)	(2.32%)	(2.95%)	(80.15%)	(1.74%)	(7.54%)	(6.48%)	(4.72%)	(79.52%)
Central Sub-Saharan Africa	33340.27	555538.52	93358.29	135033.02	3361453.44	901.42	4801.75	3437.35	2916.63	48189.90
	(0.80%)	(13.29%)	(2.23%)	(3.23%)	(80.44%)	(1.50%)	(7.97%)	(5.71%)	(4.84%)	(79.99%)
Eastern Sub-Saharan Africa	235234.87	1240387.48	175457.63	169562.62	7215597.64	2966.19	12101.58	8422.79	7668.71	118808.44
	(2.60%)	(13.73%)	(1.94%)	(1.88%)	(79.85%)	(1.98%)	(8.07%)	(5.62%)	(5.11%)	(79.22%)
Southern Sub-Saharan Africa	34213.18	428668.29	53094.07	117560.46	2394215.64	374.11	9251.48	1216.26	5532.71	73933.91
	(1.13%)	(14.16%)	(1.75%)	(3.88%)	(79.08%)	(0.41%)	(10.24%)	(1.35%)	(6.13%)	(81.87%)
North Africa and Middle East	236204.21	4739160.95	444934.07	805047.49	23704274.19	4875	154704.71	22720.57	90869.13	1232803.34
	(0.79%)	(15.83%)	(1.49%)	(2.69%)	(79.20%)	(0.32%)	(10.27%)	(1.51%)	(6.03%)	(81.86%)
Central Asia	60158.62	509590.56	65079.54	145552.82	3041814.70	858.34	9971.72	2141.60	5878.70	85152.62
	(1.57%)	(13.33%)	(1.70%)	(3.81%)	(79.58%)	(0.83%)	(9.59%)	(2.06%)	(5.65%)	(81.88%)
East Asia	260358.20	9351545.88	376784.34	2332212.72	40730461.22	-3094.66	239318.41	-5760.76	157687.16	1785750.53
	(0.49%)	(17.63%)	(0.71%)	(4.40%)	(76.78%)	(-0.14%)	(11.01%)	(-0.26%)	(7.25%)	(82.14%)
Southeast Asia	592401.20	6580118.79	585716.70	1244279.25	30790100.92	4116.25	113715.89	13284.67	66978.42	904206.67
	(1.49%)	(16.54%)	(1.47%)	(3.13%)	(77.38%)	(0.37%)	(10.32%)	(1.21%)	(6.08%)	(82.03%)

Oceania	2780.57 (0.59%)	71848.92 (15.29%)	9703.20 (2.07%)	12640.47 (2.69%)	372873.34 (79.36%)	105.45 (1.06%)	841.21 (8.45%)	481.53 (4.84%)	515.57 (5.18%)	8015.31 (80.48%)
High-income Asia Pacific	29767.79 (0.24%)	1702546.15 (13.73%)	42889.91 (0.35%)	875184.16 (7.06%)	9747727.12 (78.62%)	189.52 (0.03%)	73994.42 (10.41%)	478.38 (0.07%)	59576.35 (8.38%)	576636.04 (81.12%)
Australasia	35878.88 (2.54%)	184748.50 (13.09%)	14867.91 (1.05%)	81168.90 (5.75%)	1094373.18 (77.56%)	421.05 (0.43%)	10209.96 (10.39%)	459.46 (0.47%)	7397.21 (7.53%)	79753.16 (81.18%)
China	243285.79 (0.48%)	9020998.42 (17.69%)	356855.97 (0.70%)	2216796.45 (4.35%)	39167448.85 (76.79%)	-3154.05 (-0.15%)	226595.77 (11.02%)	-6161 (-0.30%)	149611.31 (7.28%)	1688750.15 (82.15%)

The data is absolute number (%). The percent is change of all-age cases of disease burden from 1990 to 2021.

Abbreviations: CKD, chronic kidney disease; GBD, Global Burden of Disease; SDI, socio-demographic index.

Table S12. Decomposition of changes in all-age cases of mortality and DALYs of CKD according to CKD subtype by GBD region from 1990 to 2021

Location	Mortality					DALYs				
	Diabetes mellitus type 1	Diabetes mellitus type 2	Glomerulonephritis	Hypertension	Other and unspecified causes	Diabetes mellitus type 1	Diabetes mellitus type 2	Glomerulonephritis	Hypertension	Other and Unspecified causes
Global	44719.45 (4.59%)	329302.62 (33.78%)	110827.65 (11.37%)	305375.47 (31.32%)	184740.75 (18.95%)	1648109.11 (6.95%)	7156016.10 (30.18%)	3208669.23 (13.53%)	6505831.91 (27.43%)	5195162.33 (21.91%)
High SDI	3579.98 (1.49%)	85133.33 (35.46%)	21103.92 (8.79%)	76376.16 (31.82%)	53865.11 (22.44%)	131532.05 (3.12%)	1509995.76 (35.80%)	414721.65 (9.83%)	1208358.94 (28.65%)	952681.81 (22.59%)
High-middle SDI	3302.38 (2.59%)	44817 (35.12%)	9300.28 (7.29%)	39836.28 (31.22%)	30344.96 (23.78%)	105860.05 (4.39%)	921131.59 (38.22%)	124991.59 (5.19%)	722025.96 (29.96%)	535861.99 (22.24%)
Middle SDI	19930.91 (5.94%)	126007.29 (37.53%)	32375.69 (9.64%)	115433.85 (34.38%)	42000.83 (12.51%)	705233.42 (8.14%)	2862961.99 (33.03%)	952618.78 (10.99%)	2634343.54 (30.39%)	1513653.10 (17.46%)
Low-middle SDI	13519.09 (6.81%)	56929.92 (28.66%)	29983.11 (15.10%)	54895.31 (27.64%)	43282.29 (21.79%)	521549.76 (8.81%)	1455041.97 (24.57%)	1004845.25 (16.97%)	1437082.84 (24.27%)	1502644.91 (25.38%)
Low SDI	4329.64 (6%)	16129.74 (22.36%)	17998.79 (24.95%)	18575.15 (25.75%)	15107.80 (20.94%)	181672.05 (7.33%)	400688.14 (16.17%)	709808.60 (28.65%)	498423.23 (20.12%)	687268.34 (27.74%)
Western Europe	142.80 (0.17%)	14326.82 (16.89%)	10534.22 (12.42%)	19981.97 (23.56%)	39833.42 (46.96%)	14217.15 (1.30%)	199042.34 (18.20%)	124863.07 (11.42%)	240653.25 (22%)	514999.88 (47.08%)
Central Europe	-16.70 (-0.23%)	1236.60 (16.94%)	329.83 (4.52%)	1859.51 (25.47%)	3891.27 (53.30%)	-977.57 (-1.39%)	25509.72 (36.27%)	-17298.30 (-24.59%)	26742.72 (38.02%)	36360.81 (51.69%)
Eastern Europe	479.21 (5.68%)	1942.45 (23.04%)	2565.64 (30.43%)	1330.16 (15.78%)	2114.40 (25.08%)	8736.31 (7.23%)	37202.37 (30.81%)	17417.68 (14.42%)	23764.98 (19.68%)	33640.48 (27.86%)
High-income North America	2502.58 (2.20%)	48950.76 (43.04%)	10777.18 (9.48%)	47109.28 (41.42%)	4390.19 (3.86%)	83209.56 (3.74%)	926748.22 (41.64%)	267521.24 (12.02%)	763383.74 (34.30%)	185023.09 (8.31%)

Global Market Performance Analysis - Q3 2023										
Region	North America					Europe				
	USA	Canada	Mexico	Latin America	Caribbean	Germany	France	UK	Italy	Spain
Market Segment	Revenue	Profit	Units	Revenue	Profit	Revenue	Profit	Revenue	Profit	Revenue
	(M USD)	(M USD)	(M Units)	(M USD)	(M USD)	(M USD)	(M USD)	(M USD)	(M USD)	(M USD)
Central Latin America	4520.98	19693.29	19833.02	19077	19137.96	164844.83	466446.74	590077.58	444837.62	547684.24
	(5.50%)	(23.94%)	(24.11%)	(23.19%)	(23.26%)	(7.45%)	(21.07%)	(26.65%)	(20.09%)	(24.74%)
Andean Latin America	915.29	6501.01	1985.06	5408.75	1014.22	30842.98	124818.47	49113.11	101914.31	26570.96
	(5.78%)	(41.08%)	(12.54%)	(34.18%)	(6.41%)	(9.25%)	(37.45%)	(14.74%)	(30.58%)	(7.97%)
Southern Latin America	125.99	2335.30	828.58	3504.70	3533.04	4458.54	38808.50	14530.31	48878.51	53370.49
	(1.22%)	(22.61%)	(8.02%)	(33.94%)	(34.21%)	(2.79%)	(24.25%)	(9.08%)	(30.54%)	(33.35%)
Tropical Latin America	1631.17	13122.81	3514.39	11162.82	1970.69	56958.84	272218.54	76674.99	221663.14	89507.48
	(5.19%)	(41.79%)	(11.19%)	(35.55%)	(6.28%)	(7.94%)	(37.97%)	(10.69%)	(30.91%)	(12.48%)
Caribbean	804.07	4295.20	937.59	2826.60	271.09	29453.31	87300.44	30928.04	60736.43	15277.06
	(8.80%)	(47.02%)	(10.26%)	(30.94%)	(2.97%)	(13.17%)	(39.03%)	(13.83%)	(27.15%)	(6.83%)
Western Sub-Saharan Africa	1475.81	4691.31	9986.22	13759.80	6588.82	65121.90	128714.53	419173.14	357040.91	354589.39
	(4.04%)	(12.85%)	(27.36%)	(37.70%)	(18.05%)	(4.92%)	(9.72%)	(31.64%)	(26.95%)	(26.77%)
Central Sub-Saharan Africa	767.87	2148.60	3519.96	3609.85	2297.54	31629.16	58303.26	142378.08	100793.28	100666.91
	(6.22%)	(17.41%)	(28.52%)	(29.24%)	(18.61%)	(7.29%)	(13.44%)	(32.82%)	(23.24%)	(23.21%)
Eastern Sub-Saharan Africa	1815.55	7446.12	10791.17	5581.13	4668.89	77431.35	156865.73	387878.28	130782.61	177001.87
	(5.99%)	(24.57%)	(35.61%)	(18.42%)	(15.41%)	(8.33%)	(16.87%)	(41.71%)	(14.06%)	(19.03%)
Southern Sub-Saharan Africa	389.62	1412.23	2420.06	5160.13	2606.45	15806.36	39655.18	77959.39	126235.11	88832.35
	(3.25%)	(11.78%)	(20.19%)	(43.04%)	(21.74%)	(4.54%)	(11.38%)	(22.37%)	(36.22%)	(25.49%)
North Africa and Middle East	2246.04	22276.13	7270.42	33350.19	34071.85	93950.76	517372.71	221316.31	721488.66	878402.72
	(2.26%)	(22.45%)	(7.33%)	(33.61%)	(34.34%)	(3.86%)	(21.27%)	(9.10%)	(29.66%)	(36.11%)
Central Asia	172.46	1004.10	1003.54	321.45	4359.51	8891.26	34284.36	39209.89	15535.50	153420.06
	(2.51%)	(14.63%)	(14.63%)	(4.69%)	(63.54%)	(3.54%)	(13.64%)	(15.60%)	(6.18%)	(61.04%)
East Asia	1674.09	68976.45	498.56	38900.26	-408.71	-12743.27	1399715.83	-40573.03	716526.88	50632.87
	(1.53%)	(62.91%)	(0.45%)	(35.48%)	(-0.37%)	(-0.60%)	(66.23%)	(-1.92%)	(33.90%)	(2.40%)
Southeast Asia	12175.98	42069.85	3137.78	53959.77	808.40	485603.81	1054046.35	130703.28	1399030.17	225045.73
	(10.86%)	(37.51%)	(2.80%)	(48.11%)	(0.72%)	(14.74%)	(31.99%)	(3.97%)	(42.47%)	(6.83%)

Oceania	275.83 (26.10%)	559.95 (52.99%)	27.98 (2.65%)	115.02 (10.88%)	77.87 (7.37%)	12511.17 (29%)	15495.78 (35.92%)	2398.76 (5.56%)	4504.86 (10.44%)	8224.44 (19.07%)
High-income Asia Pacific	0.53 (0%)	15770.54 (38.25%)	518.29 (1.26%)	7832.35 (19%)	17104.29 (41.49%)	-1821.71 (-0.33%)	214555.04 (39.22%)	422.14 (0.08%)	101088.82 (18.48%)	232787.47 (42.55%)
Australasia	16.52 (0.40%)	395.89 (9.62%)	1004.38 (24.40%)	1183.45 (28.75%)	1516.13 (36.83%)	1333.35 (1.98%)	8754.90 (13.01%)	16219.25 (24.10%)	15612.42 (23.20%)	25368.13 (37.70%)
China	1231.14 (1.21%)	64114.65 (63.16%)	380.31 (0.37%)	36314.33 (35.78%)	-535.79 (-0.53%)	-30728.86 (-1.59%)	1305551.93 (67.56%)	-45142.88 (-2.34%)	667375.93 (34.54%)	35235.68 (1.82%)

The data is absolute number (%). The percent is change of all-age cases of disease burden from 1990 to 2021.

Abbreviations: CKD, chronic kidney disease; GBD, Global Burden of Disease; SDI, socio-demographic index; DALYs, disability-adjusted life years.

Table S13. Decomposition of changes in all-age cases of prevalence and YLDs of anemia attributable to CKD according to CKD subtype by GBD region from 1990 to 2021

Location	Prevalence					YLDs				
	Diabetes mellitus type 1	Diabetes mellitus type 2	Glomerulone phritis	Hypertension	Other and unspecified causes	Diabetes mellitus type 1	Diabetes mellitus type 2	Glomerulone phritis	Hypertension	Other and Unspecified causes
Global	184758.17 (0.59%)	4095328.34 (13.10%)	858959.39 (2.75%)	2994439.98 (9.58%)	23131914.47 (73.99%)	3402.83 (0.47%)	129747.27 (17.84%)	17696.14 (2.43%)	63852.66 (8.78%)	512442.39 (70.47%)
High SDI	18157.65 (0.30%)	722620.78 (11.83%)	85061.13 (1.39%)	662853.94 (10.86%)	4617607.09 (75.62%)	234.62 (0.23%)	22581.30 (21.98%)	1236.19 (1.20%)	9801.66 (9.54%)	68904.99 (67.06%)
High-middle SDI	22085.31 (0.66%)	443873.40 (13.33%)	35345.38 (1.06%)	362093.78 (10.87%)	2466545.03 (74.07%)	226.12 (0.45%)	12734.24 (25.16%)	62.38 (0.12%)	5040.06 (9.96%)	32552.84 (64.31%)
Middle SDI	62567.28 (0.60%)	1539161.95 (14.77%)	258134.41 (2.48%)	1008273.59 (9.67%)	7554722.94 (72.48%)	1026.29 (0.44%)	47195.28 (20.12%)	4639.29 (1.98%)	20885.60 (8.90%)	160850.80 (68.56%)
Low-middle SDI	52380.57 (0.63%)	1045209.09 (12.62%)	320908.09 (3.87%)	712819.72 (8.60%)	6152720.27 (74.27%)	1165.40 (0.48%)	35185.18 (14.45%)	7580.02 (3.11%)	20611.80 (8.46%)	178977.39 (73.50%)
Low SDI	29450.78 (0.95%)	341710.34 (11.02%)	159055.83 (5.13%)	246222.64 (7.94%)	2324237.49 (74.96%)	748.91 (0.79%)	11966.59 (12.56%)	4171.85 (4.38%)	7477.09 (7.85%)	70890.94 (74.42%)
Western Europe	6892.24 (0.50%)	105629.48 (7.65%)	14050.57 (1.02%)	168243.68 (12.18%)	1086294.13 (78.65%)	76.79 (0.38%)	3010.01 (15.05%)	215.91 (1.08%)	2146.69 (10.73%)	14557.08 (72.76%)
Central Europe	1143.98 (0.37%)	32406.19 (10.43%)	-2300.18 (-0.74%)	34561.16 (11.12%)	244974.96 (78.82%)	-8.17 (-0.22%)	1042.79 (28.11%)	-131.31 (-3.54%)	424.96 (11.46%)	2380.90 (64.19%)
Eastern Europe	3000.21 (0.71%)	38927.12 (9.18%)	-773.45 (-0.18%)	44590.33 (10.52%)	338304.98 (79.78%)	28.44 (0.68%)	1332.35 (31.65%)	-134.67 (-3.20%)	453.46 (10.77%)	2529.42 (60.10%)
High-income North America	8543.20 (0.36%)	346366.63 (14.41%)	51987.09 (2.16%)	252398.45 (10.50%)	1744737.29 (72.58%)	119.55 (0.32%)	10424.66 (27.64%)	720.29 (1.91%)	3285.70 (8.71%)	23170.96 (61.43%)

Global Market Performance Analysis - Q3 2023										
Region	North America					Europe				
	Market A	Market B	Market C	Market D	Market E	Market F	Market G	Market H	Market I	Market J
Central Latin America	2179.19	136555.07	27677.86	96351.46	749694.57	26.55	4465.20	432.80	1602.09	12584.84
	(0.22%)	(13.49%)	(2.73%)	(9.52%)	(74.05%)	(0.14%)	(23.36%)	(2.26%)	(8.38%)	(65.85%)
Andean Latin America	306.06	15118.79	2096.58	11294.58	81660.95	-0.81	469.68	-1.19	154.66	1057.53
	(0.28%)	(13.69%)	(1.90%)	(10.22%)	(73.92%)	(-0.05%)	(27.96%)	(-0.07%)	(9.21%)	(62.95%)
Southern Latin America	263.75	15770.75	1190.31	14991.86	99917.43	1.16	519.81	17.87	264.30	1762.93
	(0.20%)	(11.94%)	(0.90%)	(11.35%)	(75.62%)	(0.05%)	(20.26%)	(0.70%)	(10.30%)	(68.70%)
Tropical Latin America	8524.84	144715.77	21073.72	105682.02	850293.45	154.98	4490.62	333.58	1819.40	15080.64
	(0.75%)	(12.80%)	(1.86%)	(9.35%)	(75.23%)	(0.71%)	(20.52%)	(1.52%)	(8.32%)	(68.93%)
Caribbean	847.87	25320.46	5324.82	19543.15	149809.71	13.31	783.79	86.54	332.19	2586.31
	(0.42%)	(12.61%)	(2.65%)	(9.73%)	(74.59%)	(0.35%)	(20.61%)	(2.28%)	(8.74%)	(68.02%)
Western Sub-Saharan Africa	16640.59	187175.60	85990.10	135393.55	1344708.91	521.29	6269.47	2563.95	3845.51	40192.43
	(0.94%)	(10.58%)	(4.86%)	(7.65%)	(75.98%)	(0.98%)	(11.74%)	(4.80%)	(7.20%)	(75.28%)
Central Sub-Saharan Africa	3074.40	58382.34	22717.80	40449.72	419019.70	64.06	1970.26	470.36	889.92	9416.92
	(0.57%)	(10.74%)	(4.18%)	(7.44%)	(77.08%)	(0.50%)	(15.38%)	(3.67%)	(6.95%)	(73.50%)
Eastern Sub-Saharan Africa	10017.12	56578.41	30024.12	43643.10	389655.58	178.14	1777.92	576.62	906.27	8288.45
	(1.89%)	(10.68%)	(5.67%)	(8.24%)	(73.53%)	(1.52%)	(15.16%)	(4.92%)	(7.73%)	(70.68%)
Southern Sub-Saharan Africa	2197.01	39825.08	10129.40	25948.21	219437.14	57.37	1344.16	263.26	622.70	5526.90
	(0.74%)	(13.38%)	(3.40%)	(8.72%)	(73.75%)	(0.73%)	(17.20%)	(3.37%)	(7.97%)	(70.73%)
North Africa and Middle East	6074.10	221362.41	45843.20	156651.16	1452503.77	57.62	7526.62	635.25	3082.50	29671.19
	(0.32%)	(11.76%)	(2.44%)	(8.32%)	(77.16%)	(0.14%)	(18.37%)	(1.55%)	(7.52%)	(72.42%)
Central Asia	4758.47	62460.51	14613.23	40495.33	404765.88	107.75	1970.23	277.53	796.74	8871.63
	(0.90%)	(11.85%)	(2.77%)	(7.68%)	(76.79%)	(0.90%)	(16.39%)	(2.31%)	(6.63%)	(73.78%)
East Asia	21832.29	507930.37	-686.94	340189.30	1790075.17	146	13031.15	-1017.39	3857.28	10832.98
	(0.82%)	(19.10%)	(-0.03%)	(12.79%)	(67.31%)	(0.54%)	(48.53%)	(-3.79%)	(14.37%)	(40.35%)
Southeast Asia	25249.26	650255.28	112055.51	407150.26	2851590.63	399.77	19492.08	1890.58	7861.30	55168.30
	(0.62%)	(16.07%)	(2.77%)	(10.06%)	(70.47%)	(0.47%)	(22.98%)	(2.23%)	(9.27%)	(65.05%)

Oceania	572.16 (1.09%)	7018.41 (13.34%)	2717.49 (5.17%)	4522.23 (8.60%)	37766.84 (71.80%)	11.97 (0.95%)	212.55 (16.78%)	55.82 (4.41%)	104.94 (8.29%)	881.08 (69.58%)
High-income Asia Pacific	232.91 (0.01%)	201989.04 (10.21%)	8721.57 (0.44%)	211661.82 (10.70%)	1554906.63 (78.63%)	1.43 (0%)	7111.59 (18.57%)	199.99 (0.52%)	3770.42 (9.85%)	27211.61 (71.06%)
Australasia	697.97 (0.50%)	12775.40 (9.08%)	1845.60 (1.31%)	14897.90 (10.59%)	110418.89 (78.51%)	9.33 (0.41%)	422.38 (18.63%)	26.64 (1.18%)	212.60 (9.38%)	1595.88 (70.40%)
China	19174.27 (0.79%)	467488.26 (19.37%)	-5057.26 (-0.21%)	312855.97 (12.97%)	1618444.11 (67.07%)	107.17 (0.51%)	11858.19 (56.08%)	-1092.60 (-5.17%)	3261.27 (15.42%)	7009.58 (33.15%)

The data is absolute number (%). The percent is change of all-age cases of disease burden from 1990 to 2021.

Abbreviations: CKD, chronic kidney disease; GBD, Global Burden of Disease; SDI, socio-demographic index; YLDs, years lived with disability.

Table S14. Decomposition of changes in all-age cases of prevalence and incidence of CKD according to population-level determinants GBD region from 1990 to 2021

	Prevalence			Incidence		
	Population aging	Population growth	Epidemiological change	Population aging	Population growth	Epidemiological change
Global	131894968.90 (40.86%)	193687707.15 (60.01%)	-2822646.76 (-0.87%)	4524359.40 (37.25%)	5040940.38 (41.51%)	2579033.09 (21.24%)
High SDI	29456598.02 (61.26%)	20754713.49 (43.16%)	-2127910.10 (-4.43%)	1588645.89 (55.22%)	890843.26 (30.96%)	397516.05 (13.82%)
High-middle SDI	33757538.17 (69.03%)	20680167.46 (42.29%)	-5534719.11 (-11.32%)	1152434.31 (49.19%)	528585.33 (22.56%)	661685.84 (28.24%)
Middle SDI	61864927.76 (53.79%)	55227570.40 (48.02%)	-2088786.12 (-1.82%)	1868582.93 (43.58%)	1303504 (30.40%)	1115712.38 (26.02%)
Low-middle SDI	27793353.01 (35.06%)	52752430.94 (66.55%)	-1273439.78 (-1.61%)	531842.83 (26.28%)	966764.30 (47.77%)	525151.37 (25.95%)
Low SDI	2382418.83 (7.61%)	29311344.17 (93.67%)	-400881.60 (-1.28%)	504.60 (0.08%)	476074.76 (79.13%)	125043.20 (20.78%)
Western Europe	9747547.51 (77.99%)	4535647 (36.29%)	-1785322.12 (-14.29%)	594676.09 (63.08%)	228572.62 (24.24%)	119520.58 (12.68%)
Central Europe	3644064.50 (142.98%)	-841379.34 (-33.01%)	-254005.53 (-9.97%)	127283.25 (47.97%)	-26047.99 (-9.82%)	164112.12 (61.85%)
Eastern Europe	5686397.07 (181.15%)	-2357829.01 (-75.11%)	-189513.46 (-6.04%)	90248.67 (33.35%)	-37379.74 (-13.81%)	217720.53 (80.46%)
High-income North America	7964796.52 (45.87%)	9047099.77 (52.10%)	351443.61 (2.02%)	477841.33 (48.97%)	407369.12 (41.75%)	90597.95 (9.28%)
Central Latin America	6980272.35 (51.81%)	6184632.73 (45.90%)	308783 (2.29%)	309757.89 (39.22%)	248111.71 (31.41%)	231994.43 (29.37%)
Andean Latin America	867387.44 (38.07%)	1336279.35 (58.66%)	74463.57 (3.27%)	38854.88 (27.55%)	49346.21 (34.99%)	52833.26 (37.46%)
Southern Latin America	903056.25 (41.72%)	1144540.08 (52.87%)	117191.28 (5.41%)	50676.38 (34.58%)	50014.34 (34.13%)	45836.34 (31.28%)
Tropical Latin America	6001409.36 (55.12%)	5250054.60 (48.22%)	-363924.19 (-3.34%)	205955.75 (43.89%)	152548.30 (32.51%)	110720.08 (23.60%)
Caribbean	772709.11 (48.25%)	765959.21 (47.83%)	62800.46 (3.92%)	30918.12 (31.40%)	25939.59 (26.34%)	41612.09 (42.26%)
Western Sub-Saharan Africa	-418727.99 (-3.11%)	13714816.80 (101.83%)	172750.80 (1.28%)	-26366.51 (-8.79%)	258709.44 (86.29%)	67472.14 (22.50%)
Central Sub-Saharan Africa	216215.48 (5.17%)	4002390.09 (95.78%)	-39882.02 (-0.95%)	-1406.46 (-2.33%)	47421.88 (78.71%)	14231.62 (23.62%)
Eastern Sub-Saharan Africa	918564.71 (10.17%)	7829305.58 (86.64%)	288369.94 (3.19%)	-1808.47 (-1.21%)	125356.87 (83.59%)	26419.31 (17.62%)
Southern Sub-Saharan Africa	1172087.02 (38.71%)	1819537.49 (60.10%)	36127.12 (1.19%)	24708.77 (27.36%)	38092.14 (42.18%)	27507.56 (30.46%)
North Africa and Middle East	10157013.72 (33.94%)	19559921.81 (65.35%)	212685.39 (0.71%)	369113.76 (24.51%)	637479.48 (42.33%)	499379.51 (33.16%)
Central Asia	1420341.88 (37.16%)	2351204.41 (61.51%)	50648.04 (1.33%)	18838.97 (18.11%)	34988.37 (33.64%)	50175.64 (48.24%)

East Asia	46819251.25 (88.25%)	18246321.97 (34.39%)	-12014210.84 (-22.65%)	1526813.10 (70.23%)	436103.99 (20.06%)	210983.60 (9.71%)
Southeast Asia	17933114.80 (45.07%)	20675701.74 (51.96%)	1183799.40 (2.97%)	389503.95 (35.34%)	366891.41 (33.28%)	345906.53 (31.38%)
Oceania	74431.76 (15.84%)	378228.31 (80.50%)	17186.42 (3.66%)	1194.91 (12%)	6783.07 (68.11%)	1981.10 (19.89%)
High-income Asia Pacific	12606861.34 (101.68%)	1548628.05 (12.49%)	-1757426.03 (-14.18%)	615605.38 (86.60%)	58724.48 (8.26%)	36544.85 (5.14%)
Australasia	629883.12 (44.64%)	856437.08 (60.70%)	-75282.83 (-5.34%)	39891.68 (40.61%)	43835 (44.62%)	14514.15 (14.77%)
China	45255039.80 (88.73%)	17578026.99 (34.46%)	-11827681.31 (-23.19%)	1456001.96 (70.83%)	413368.98 (20.11%)	186271.24 (9.06%)

The data is absolute number (%). The percent is change of all-age cases of disease burden from 1990 to 2021.

Abbreviations: CKD, chronic kidney disease; GBD, Global Burden of Disease; SDI, socio-demographic index.

Table S15. Decomposition of changes in all-age cases of mortality and DALYs of CKD according to population-level determinants by GBD region from 1990 to 2021

	Mortality				DALYs			
	Population aging	Population growth	Prevalence	Case fatality and disease severity	Population aging	Population growth	Prevalence	Case fatality and disease severity
Global	410181.15 (42.07%)	373392.78 (38.30%)	-36826.47 (-3.78%)	228218.47 (23.41%)	8906443.14 (37.56%)	8906443.14 (37.56%)	-616791.53 (-2.60%)	3361700.13 (14.18%)
High SDI	110049.14 (45.84%)	43550.69 (18.14%)	-4180.72 (-1.74%)	90639.39 (37.76%)	1852300.43 (43.92%)	1852300.43 (43.92%)	-104305.00 (-2.47%)	1441330.30 (34.18%)
High-middle SDI	89383.47 (70.05%)	31808.21 (24.93%)	-15679.76 (-12.29%)	22088.98 (17.31%)	1901884.61 (78.92%)	1901884.61 (78.92%)	-359125.65 (-14.90%)	-78459.88 (-3.26%)
Middle SDI	197315.09 (58.77%)	112119.17 (33.39%)	-18322.61 (-5.46%)	44636.92 (13.29%)	4803798.53 (55.41%)	4803798.53 (55.41%)	-384130.43 (-4.43%)	471707.14 (5.44%)
Low-middle SDI	67533.35 (34%)	96045.84 (48.36%)	-3626.06 (-1.83%)	38656.59 (19.46%)	1776908.33 (30.01%)	1776908.33 (30.01%)	-119231.66 (-2.01%)	671175.76 (11.34%)
Low SDI	3971.19 (5.50%)	77298.84 (107.15%)	-1490.05 (-2.07%)	-7638.87 (-10.59%)	74221.19 (3.00%)	74221.19 (3%)	-39706.60 (-1.60%)	-517066.39 (-20.87%)
Western Europe	49079.79 (57.86%)	10952.18 (12.91%)	-4132.03 (-4.87%)	28919.30 (34.10%)	713730.03 (65.25%)	713730.03 (65.25%)	-84820.66 (-7.75%)	238503.56 (21.81%)
Central Europe	10143.69 (138.94%)	-1477.38 (-20.24%)	-439.49 (-6.02%)	-926.31 (-12.69%)	203491.12 (289.31%)	203491.12 (289.31%)	-15230.41 (-21.65%)	-76566.24 (-108.86%)
Eastern Europe	3938.96 (46.72%)	-1212.92 (-14.38%)	-165.76 (-1.97%)	5871.59 (69.64%)	140126.30 (116.04%)	140126.30 (116.04%)	-7097.36 (-5.88%)	40428.21 (33.48%)
High-income	28540.87 (25.10%)	20752.31 (18.25%)	1773.63 (1.56%)	62663.17 (55.10%)	540612.67 (24.29%)	540612.67 (24.29%)	33196.65 (1.49%)	1155535.44 (51.91%)
North America								

Central Latin America	35328.60 (42.95%)	23172.51 (28.17%)	721.81 (0.88%)	23039.34 (28.01%)	827893.56 (37.40%)	827893.56 (37.40%)	28668.29 (1.29%)	654942.22 (29.58%)
Andean Latin America	6213.49 (39.27%)	6550.61 (41.40%)	340.77 (2.15%)	2719.47 (17.19%)	123903.65 (37.18%)	123903.65 (37.18%)	6872.62 (2.06%)	24328.68 (7.30%)
Southern Latin America	6894.31 (66.76%)	4952.02 (47.95%)	379.33 (3.67%)	-1898.05 (-18.38%)	111181.79 (69.47%)	111181.79 (69.47%)	8995.71 (5.62%)	-71184.71 (-44.48%)
Tropical Latin America	19144.86 (60.97%)	11394.15 (36.28%)	-417.57 (-1.33%)	1280.42 (4.08%)	452607.11 (63.12%)	452607.11 (63.12%)	-27647.04 (-3.86%)	-67945.83 (-9.48%)
Caribbean	3853.12 (42.18%)	2541.53 (27.82%)	105.60 (1.16%)	2634.31 (28.84%)	80203.01 (35.85%)	80203.01 (35.85%)	5224.49 (2.34%)	62313.23 (27.86%)
Western Sub-Saharan Africa	-4877.98 (-13.36%)	41392.95 (113.40%)	-250.39 (-0.69%)	237.38 (0.65%)	-103898.97 (-7.84%)	-103898.97 (-7.84%)	8787.22 (0.66%)	-171714.21 (-12.96%)
Central Sub-Saharan Africa	276.26 (2.24%)	12718.02 (103.03%)	-158.81 (-1.29%)	-491.64 (-3.98%)	6683.92 (1.54%)	6683.92 (1.54%)	-10359.45 (-2.39%)	-55953.68 (-12.90%)
Eastern Sub-Saharan Africa	1822.51 (6.01%)	35647.75 (117.64%)	850.18 (2.81%)	-8017.59 (-26.46%)	47650.16 (5.12%)	47650.16 (5.12%)	31376.21 (3.37%)	-401954.68 (-43.22%)
Southern Sub-Saharan Africa	2931.82 (24.46%)	4340.72 (36.21%)	137.23 (1.14%)	4578.72 (38.19%)	92232.93 (26.47%)	92232.93 (26.47%)	4181.83 (1.20%)	104874.71 (30.09%)
North Africa and Middle East	34392.26 (34.66%)	51257.43 (51.66%)	274.08 (0.28%)	13290.86 (13.40%)	778056.73 (31.99%)	778056.73 (31.99%)	-13472.61 (-0.55%)	166615.50 (6.85%)
Central Asia	971.50 (14.16%)	1748.78 (25.49%)	1.64 (0.02%)	4139.15 (60.33%)	48310.89 (19.22%)	48310.89 (19.22%)	710.71 (0.28%)	110490.38 (43.96%)
East Asia	126317.25 (115.21%)	30851.43 (28.14%)	-29865.75 (-27.24%)	-17662.28 (-16.11%)	3074606.56 (145.47%)	3074606.56 (145.47%)	-839840.45 (-39.74%)	-1158085.86 (-54.79%)
Southeast Asia	50847.12 (45.34%)	41929.96 (37.39%)	2397.67 (2.14%)	16977.02 (15.14%)	1412143.28 (42.86%)	1412143.28 (42.86%)	55766.22 (1.69%)	295472.48 (8.97%)

Oceania	170.76 (16.16%)	680.19 (64.37%)	21.11 (2.00%)	184.59 (17.47%)	5575.28 (12.93%)	5575.28 (12.93%)	976.55 (2.26%)	6492.58 (15.05%)
High-income Asia Pacific	47135.90 (114.34%)	2895.53 (7.02%)	-2327.17 (-5.64%)	-6478.26 (-15.71%)	697391.36 (127.49%)	697391.36 (127.49%)	-60601.47 (-11.08%)	-148850.68 (-27.21%)
Australasia	2137.82 (51.93%)	1486.62 (36.11%)	-218.16 (-5.30%)	710.08 (17.25%)	32200.96 (47.86%)	32200.96 (47.86%)	-2877.27 (-4.28%)	6352.03 (9.44%)
China	119105.17 (117.34%)	29139.55 (28.71%)	-28919.35 (-28.49%)	-17820.75 (-17.56%)	2920360.46 (151.13%)	2920360.46 (151.13%)	-816183.95 (-42.24%)	-1157323.16 (-59.89%)

The data is absolute number(%). The percent is change of all-age cases of disease burden from 1990 to 2021.

Abbreviations: CKD, chronic kidney disease; GBD, Global Burden of Disease; SDI, socio-demographic index; DALYs, disability-adjusted life years.

Table S16. Decomposition of changes in all-age cases of prevalence and YLDs of anemia attributable to CKD according to population-level determinants by GBD region from 1990 to 2021

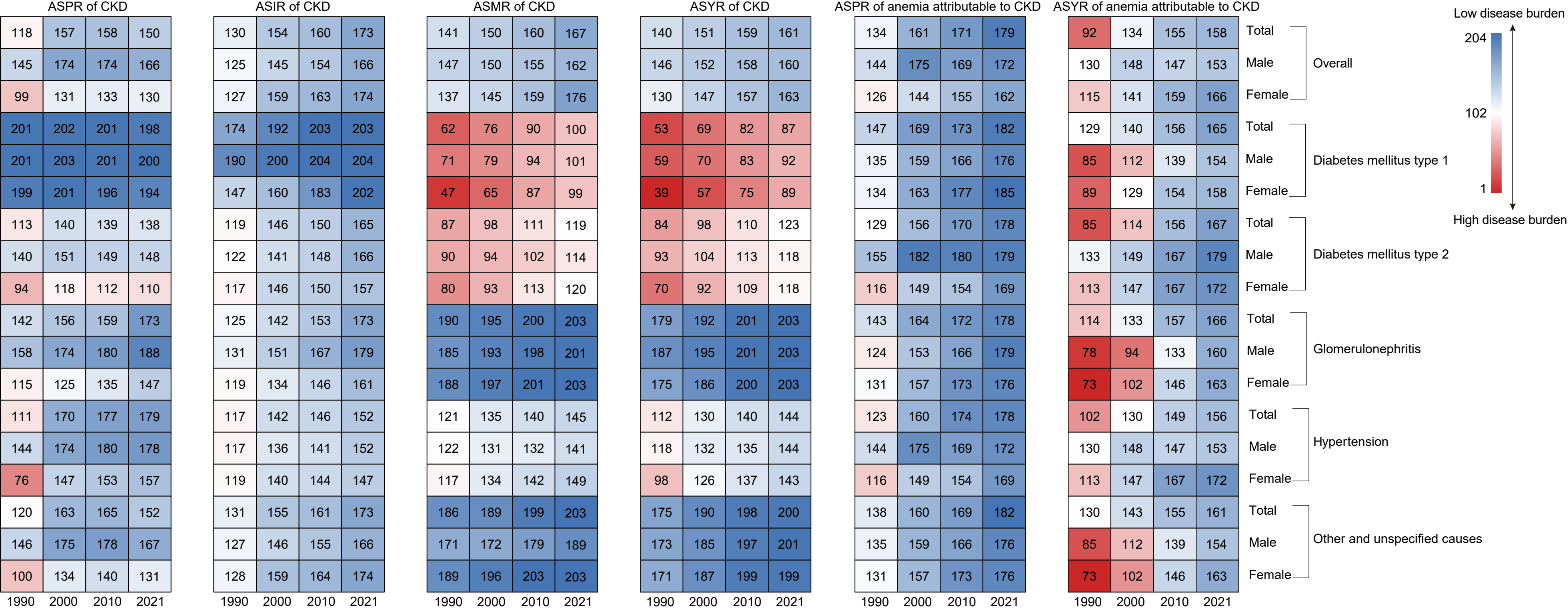
	Prevalence			YLDs		
	Population aging	Population growth	Epidemiological change	Population aging	Population growth	Epidemiological change
Global	18029206.44(57.67%)	18217274.81(58.27%)	-4981080.89(-15.93%)	504193.81(69.34%)	515032.60(70.83%)	-292085.12(-40.17%)
High SDI	4651343.31(76.17%)	2105510.98(34.48%)	-650553.71(-10.65%)	86686.52(84.36%)	36028.55(35.06%)	-19956.31(-19.42%)
High-middle SDI	4269389.25(128.21%)	1687322.87(50.67%)	-2626769.20(-78.88%)	102084.84(201.69%)	39348.56(77.74%)	-90817.75(-179.43%)
Middle SDI	8340793.19(80.02%)	5162440.58(49.53%)	-3080373.60(-29.55%)	248068.37(105.74%)	147861.51(63.03%)	-161332.61(-68.77%)
Low-middle SDI	3448554.88(41.63%)	5177703.84(62.50%)	-342220.97(-4.13%)	136950.65(56.24%)	199650.16(81.99%)	-93081.01(-38.22%)
Low SDI	183688.03(5.92%)	3057698.75(98.61%)	-140709.70(-4.54%)	7469.55(7.84%)	121955.68(128.03%)	-34169.86(-35.87%)
Western Europe	1707173.81(123.61%)	448322.75(32.46%)	-774386.47(-56.07%)	30970.22(154.80%)	7505.30(37.51%)	-18469.05(-92.32%)
Central Europe	493612.71(158.83%)	-87207.15(-28.06%)	-95619.45(-30.77%)	12173.99(328.21%)	-1957.94(-52.79%)	-6506.88(-175.43%)
Eastern Europe	865647.13(204.14%)	-206593.43(-48.72%)	-235004.51(-55.42%)	18401.50(437.19%)	-4401.37(-104.57%)	-9791.12(-232.62%)
High-income North America	1060486.97(44.11%)	874370.08(36.37%)	469175.59(19.52%)	17916.17(47.50%)	14325.05(37.98%)	5479.93(14.53%)
Central Latin America	655302.47(64.72%)	440697.26(43.53%)	-83541.57(-8.25%)	13970.53(73.10%)	9224.36(48.27%)	-4083.40(-21.37%)
Andean Latin America	78516.26(71.07%)	102646.13(92.91%)	-70685.43(-63.98%)	1756.93(104.59%)	2292.55(136.47%)	-2369.62(-141.06%)
Southern Latin America	98845.80(74.81%)	87645.14(66.33%)	-54356.83(-41.14%)	2280.83(88.88%)	1585.42(61.78%)	-1300.18(-50.67%)
Tropical Latin America	956136.12(84.59%)	599201.98(53.01%)	-425048.29(-37.61%)	20989.42(95.93%)	13381.64(61.16%)	-12491.84(-57.09%)
Caribbean	122948.82(61.22%)	86155.23(42.90%)	-8258.04(-4.11%)	2758.26(72.55%)	1823.99(47.97%)	-780.12(-20.52%)
Western Sub-Saharan Africa	-122254.08(-6.91%)	1856369.43(104.89%)	35793.39(2.02%)	-3838.13(-7.19%)	65249.18(122.21%)	-8018.40(-15.02%)
Central Sub-Saharan Africa	22466.29(4.13%)	562529.93(103.47%)	-41352.26(-7.61%)	788.15(6.15%)	18537.45(144.69%)	-6514.08(-50.85%)
Eastern Sub-Saharan Africa	45601.76(8.61%)	549959.49(103.78%)	-65642.92(-12.39%)	1472.51(12.56%)	17165.57(146.37%)	-6910.69(-58.93%)
Southern Sub-Saharan Africa	136685.64(45.94%)	197036.24(66.22%)	-36185.04(-12.16%)	3855.47(49.34%)	5600.44(71.67%)	-1641.52(-21.01%)

North Africa and Middle East	884227.59(46.97%)	1518289.73(80.66%)	-520082.66(-27.63%)	23234.16(56.71%)	40043.44(97.73%)	-22304.42(-54.44%)
Central Asia	195715.15(37.13%)	320825.59(60.87%)	10552.68(2%)	6196.89(51.54%)	9637.53(80.15%)	-3810.54(-31.69%)
East Asia	5557304.18(208.97%)	1430883.38(53.81%)	-4328847.38(-162.78%)	170586.04(635.33%)	40086.03(149.30%)	-183822.04(-684.63%)
Southeast Asia	2411529.99(59.60%)	1955663.09(48.33%)	-320892.16(-7.93%)	61908.45(72.99%)	48884.03(57.64%)	-25980.46(-30.63%)
Oceania	9844.48(18.72%)	40931.37(77.82%)	1821.29(3.46%)	282.67(22.32%)	1099.71(86.84%)	-116.02(-9.16%)
High-income Asia Pacific	2492060.22(126.02%)	182991.99(9.25%)	-697540.25(-35.27%)	47954.70(125.22%)	2997.01(7.83%)	-12656.66(-33.05%)
Australasia	98010.41(69.69%)	72859.39(51.81%)	-30234.03(-21.50%)	1772.51(78.19%)	1252.54(55.26%)	-758.21(-33.45%)
China	5313687.45(220.22%)	1361711.45(56.43%)	-4262493.54(-176.65%)	163676.59(774.12%)	38307.07(181.18%)	-180840.05(-855.29%)

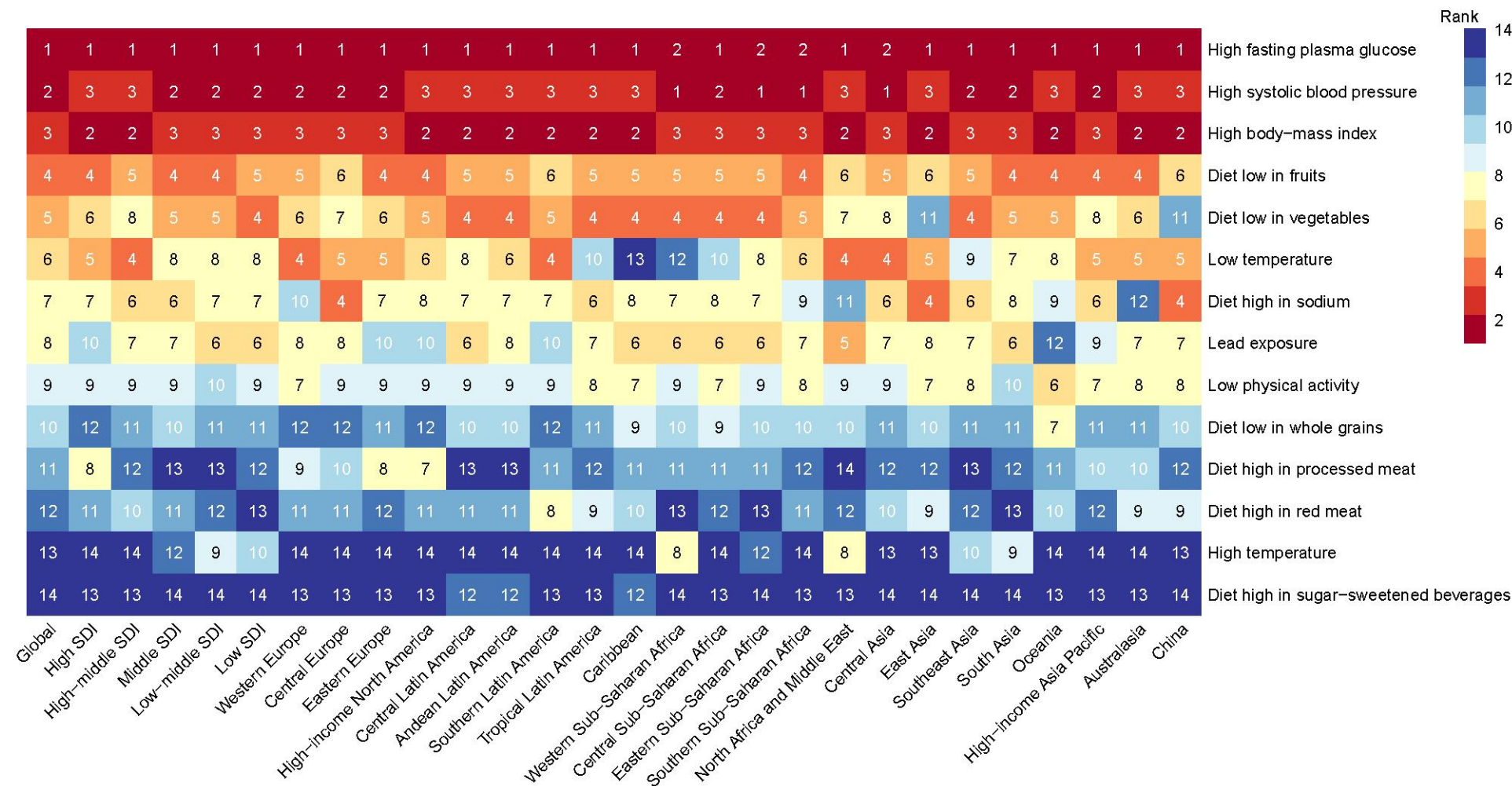
The data is absolute number(%). The percent is change of all-age cases of disease burden from 1990 to 2021.

Abbreviations: CKD, chronic kidney disease; GBD, Global Burden of Disease; SDI, socio-demographic index; YLDs, years lived with disability.

Supplementary Figure S1. Rank of China of age-standardized rate of prevalence (ASPR), incidence (ASIR), mortality (ASMR), and disability-adjusted life years (ASDR) of chronic kidney disease (CKD) and prevalence, years lived with disability (ASYR) of anemia attributable to chronic kidney disease among 204 countries and territories



Supplementary Figure S2. Rank of different risk factor of mortality for chronic kidney disease by Global Burden of Disease region in 2021



Supplementary Figure S3. Rank of different risk factor of disability-adjusted life years for chronic kidney disease by Global Burden of Disease region in 2021

