

## Supplementary Materials

### ICD Cerebrovascular diseases I60–I69

---

#### I60 Nontraumatic subarachnoid hemorrhage

I60.0 Nontraumatic subarachnoid hemorrhage from carotid siphon and bifurcation

I60.1 Nontraumatic subarachnoid hemorrhage from middle cerebral artery

I60.2 Nontraumatic subarachnoid hemorrhage from anterior communicating artery

I60.3 Nontraumatic subarachnoid hemorrhage from posterior communicating artery

I60.4 Nontraumatic subarachnoid hemorrhage from basilar artery

I60.5 Nontraumatic subarachnoid hemorrhage from vertebral artery

I60.6 Nontraumatic subarachnoid hemorrhage from other intracranial arteries

I60.7 Nontraumatic subarachnoid hemorrhage from unspecified intracranial artery

I60.8 Other nontraumatic subarachnoid hemorrhage

I60.9 Nontraumatic subarachnoid hemorrhage, unspecified

#### I61 - Nontraumatic intracerebral hemorrhage

#### I61 Nontraumatic intracerebral hemorrhage

I61.0 Nontraumatic intracerebral hemorrhage in hemisphere, subcortical

I61.1 Nontraumatic intracerebral hemorrhage in hemisphere, cortical

I61.2 Nontraumatic intracerebral hemorrhage in hemisphere, unspecified

---

- I61.3 Nontraumatic intracerebral hemorrhage in brain stem
- I61.4 Nontraumatic intracerebral hemorrhage in cerebellum
- I61.5 Nontraumatic intracerebral hemorrhage, intraventricular
- I61.6 Nontraumatic intracerebral hemorrhage, multiple localized
- I61.8 Other nontraumatic intracerebral hemorrhage
- I61.9 Nontraumatic intracerebral hemorrhage, unspecified

I62 - Other and unspecified nontraumatic intracranial hemorrhage

I62 Other and unspecified nontraumatic intracranial hemorrhage

- I62.0 Nontraumatic subdural hemorrhage
- I62.1 Nontraumatic extradural hemorrhage
- I62.9 Nontraumatic intracranial hemorrhage, unspecified

I63 - Cerebral infarction

I63 Cerebral infarction

- I63.0 Cerebral infarction due to thrombosis of precerebral arteries
  - I63.1 Cerebral infarction due to embolism of precerebral arteries
  - I63.2 Cerebral infarction due to unspecified occlusion or stenosis of precerebral arteries
  - I63.3 Cerebral infarction due to thrombosis of cerebral arteries
  - I63.4 Cerebral infarction due to embolism of cerebral arteries
  - I63.5 Cerebral infarction due to unspecified occlusion or stenosis of cerebral arteries
  - I63.6 Cerebral infarction due to cerebral venous thrombosis, nonpyogenic
  - I63.8 Other cerebral infarction
  - I63.9 Cerebral infarction, unspecified
-

I65 - Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction

I65 Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction

I65.0 Occlusion and stenosis of vertebral artery

I65.1 Occlusion and stenosis of basilar artery

I65.2 Occlusion and stenosis of carotid artery

I65.8 Occlusion and stenosis of other precerebral arteries

I65.9 Occlusion and stenosis of unspecified precerebral artery

I66 - Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction

I66 Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction

I66.0 Occlusion and stenosis of middle cerebral artery

I66.1 Occlusion and stenosis of anterior cerebral artery

I66.2 Occlusion and stenosis of posterior cerebral artery

I66.3 Occlusion and stenosis of cerebellar arteries

I66.8 Occlusion and stenosis of other cerebral arteries

I66.9 Occlusion and stenosis of unspecified cerebral artery

I67 - Other cerebrovascular diseases

I67 Other cerebrovascular diseases

I67.0 Dissection of cerebral arteries, nonruptured

I67.1 Cerebral aneurysm, nonruptured

I67.2 Cerebral atherosclerosis

I67.3 Progressive vascular leukoencephalopathy

---

I67.4 Hypertensive encephalopathy

I67.5 Moyamoya disease

I67.6 Nonpyogenic thrombosis of intracranial venous system

I67.7 Cerebral arteritis, not elsewhere classified

I67.8 Other specified cerebrovascular diseases

I67.9 Cerebrovascular disease, unspecified

I68 - Cerebrovascular disorders in diseases classified elsewhere

I68 Cerebrovascular disorders in diseases classified elsewhere

I68.0 Cerebral amyloid angiopathy

I68.2 Cerebral arteritis in other diseases classified elsewhere

I68.8 Other cerebrovascular disorders in diseases classified elsewhere

I69 - Sequelae of cerebrovascular disease

I69 Sequelae of cerebrovascular disease

I69.0 Sequelae of nontraumatic subarachnoid hemorrhage

I69.1 Sequelae of nontraumatic intracerebral hemorrhage

I69.2 Sequelae of other nontraumatic intracranial hemorrhage

I69.3 Sequelae of cerebral infarction

I69.8 Sequelae of other cerebrovascular diseases

I69.9 Sequelae of unspecified cerebrovascular diseases

---

ICD: International Classification of Diseases.

**Supplementary Table 1: Age-specific CVD mortality rates stratified by residence and sex in 2019.**

---

Age group	All areas			Urban areas			Rural areas		
	Both	Male	Fema	Both	Male	Fema	Both	Male	Fema

---

<b>p</b> <b>(years)</b>	<b>le</b>			<b>le</b>			<b>le</b>		
0–	0.16	0.24	0.07	0	0	0	0.24	0.36	0.10
1–4	0	0	0	0	0	0	0	0	0
5–9	0.13	0.12	0.13	0.19	0.31	0.05	0.10	0.05	0.16
10–14	0.21	0.27	0.15	0.30	0.35	0.25	0.18	0.24	0.10
15–19	0.90	1.16	0.61	0.71	0.78	0.63	0.99	1.32	0.60
20–24	1.19	1.73	0.60	0.79	1.03	0.54	1.41	2.11	0.63
25–29	1.95	2.88	0.96	1.24	1.74	0.69	2.40	3.60	1.13
30–34	4.58	7.10	2.12	2.97	4.50	1.47	5.56	8.67	2.52
35–39	8.76	14.10	3.39	6.18	10.06	2.30	10.23	16.40	4.01
40–44	17.09	26.32	7.70	13.05	20.14	5.78	19.28	29.70	8.74
45–49	30.79	45.38	15.96	26.05	39.28	12.40	33.16	48.47	17.72
50–54	55.78	78.95	32.51	41.34	59.61	22.49	63.82	89.94	37.96
55–59	95.18	134.34	55.67	77.52	115.33	39.25	105.02	144.97	64.80
60–64	154.92	211.47	97.73	129.41	183.53	75.05	168.31	226.05	109.70
65–6	301.3	394.7	211.9	248.5	337.2	164.8	327.5	422.9	235.4

9	8	9	0	5	0	4	0	5	1
70–7	606.5	752.1	468.6	473.2	603.6	353.3	675.7	827.4	529.7
4	8	9	1	6	6	3	3	4	3
75–7	1159.	1378.	961.9	929.1	1120.	762.5	1286.	1517.	1075.
9	58	92	2	3	85	0	97	41	12
80–8	1938.	2278.	1671.	1619.	1818.	1455.	2121.	2553.	1791.
4	47	60	46	67	98	39	24	66	19
85+	4611.	4872.	4433.	4337.	4516.	4208.	4764.	5080.	4555.
	32	61	66	04	28	85	24	80	04

CVD: Cerebrovascular disease. Mortality rate = 1 per 100,000 individuals.

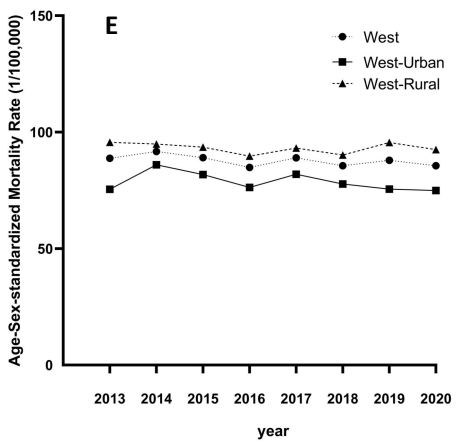
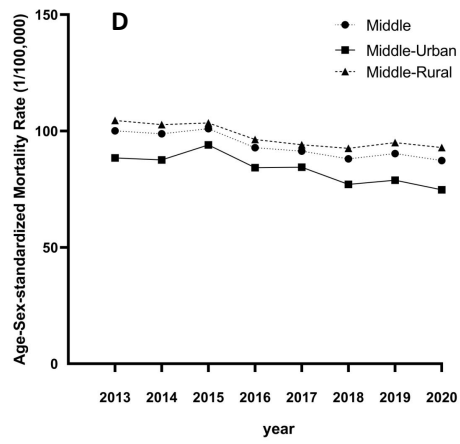
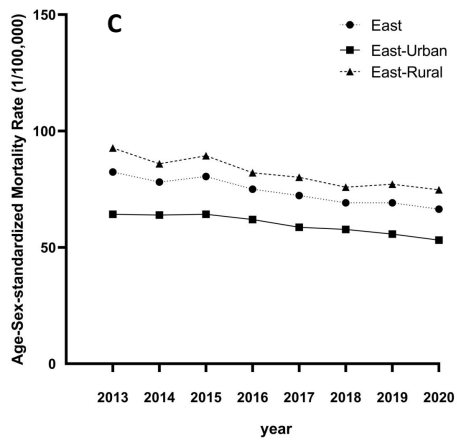
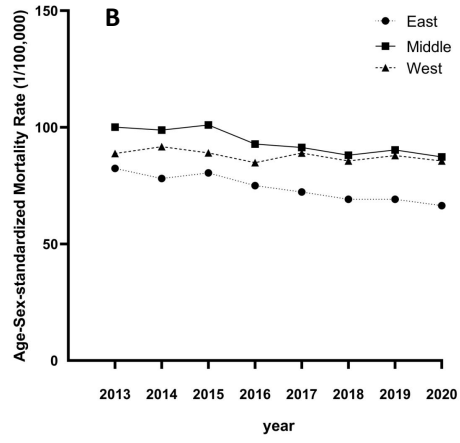
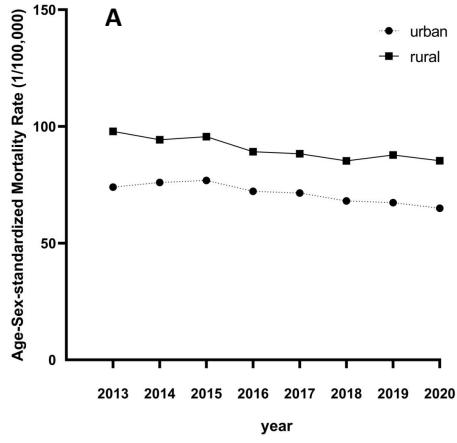
**Supplementary Table 2: Age-specific mortality rates of CVD stratified by region and sex in 2019.**

Age group (years)	Eastern region			Central region			Western region		
	Both	Male	Female	Both	Male	Female	Both	Male	Female
0–	0.25	0.31	0.17	0.10	0.18	0	0.12	0.23	0
1–4	0	0	0	0	0	0	0	0	0
5–9	0.13	0.11	0.16	0.09	0.10	0.08	0.17	0.18	0.15
10–14	0.33	0.36	0.29	0.10	0.14	0.04	0.22	0.33	0.09
15–19	0.90	1.07	0.69	0.59	0.68	0.47	1.23	1.74	0.65
20–24	0.91	1.19	0.59	1.03	1.48	0.54	1.77	2.77	0.68
25–29	1.41	2.13	0.62	1.96	2.86	1.02	2.85	4.13	1.45

30–34	3.75	6.07	1.47	5.05	7.45	2.76	5.35	8.33	2.34
35–39	7.70	12.45	2.93	8.89	14.36	3.48	10.12	16.15	3.94
40–44	14.46	22.20	6.68	18.19	28.48	7.84	19.24	29.10	8.92
45–49	23.85	35.74	11.87	33.57	49.99	17.15	37.26	53.23	20.46
50–54	41.70	59.46	23.94	62.95	89.05	37.04	69.62	97.66	40.77
55–59	75.12	107.61	42.47	113.45	160.95	65.92	106.83	146.67	65.92
60–64	134.58	187.31	81.45	176.56	241.69	110.78	159.16	210.32	107.02
65–69	248.12	334.02	166.56	350.36	457.00	247.93	326.62	414.05	241.87
70–74	522.84	660.11	394.13	693.95	865.70	530.25	626.24	749.93	507.93
75–79	941.45	1129.04	775.32	1310.38	1561.43	1080.42	1351.22	1577.97	1144.98
80–84	1653.20	1988.96	1403.12	2208.18	2598.82	1898.05	2155.06	2405.45	1939.22
85+	4393.37	4554.87	4286.73	4849.75	5059.16	4700.90	4723.90	5253.53	4365.05

CVD: Cerebrovascular disease. Mortality rate = 1 per 100,000 individuals.

### Supplementary Figure 1





**Supplementary Figure 1:** Trends in Age-Sex standardized mortality by residence and region from 2013 to 2020. (A) Age-sex standardized mortality rate for urban and rural areas, 2013-2020; (B) Age-sex standardized mortality rate for different regions, 2013-2020; (C) Age-sex standardized mortality rate for urban and rural areas in East China, 2013-2020; (D) Age-sex standardized mortality rate for urban and rural areas in Middle China, 2013-2020; (E) Age-sex standardized mortality rate for urban and rural areas in West China, 2013-2020. Jointpoint regression analysis showed that Urban area and East-Urban area had one jointpoint in 2015; however, only the APC from 2015 to 2020 were statistically significant. The Western, Western-Urban and Western-Rural Region maintained stability in the Age-Sex standardized CVD mortality rate from 2013 to 2020. The remaining regions all show a downward trend in Age-Sex standardized CVD mortality. APC: Annual percentage changes; CVD: Cerebrovascular disease.

**Supplementary Table 3: APC of age–sex standardized mortality of CVD.**

Cohort	Segment	Lower endpoint	Upper endpoint	APC	Lower CI	Upper CI	Test statistic (t)	Prob. >  t
Urban – 1	1	2013	2015	1.1	–3.6	5.9	0.7	0.522
Urban – 1	2	2015	2020	–3.2*	–4.2	–2.2	–9.8	0.002
Rural – 0	1	2013	2020	–2.0*	–2.8	–1.1	–5.8	0.001
East – 0	1	2013	2020	–3.1*	–3.8	–2.3	–9.8	<0.001
Middle – 0	1	2013	2020	–2.2*	–3.1	–1.2	–5.7	0.001
West – 0	1	2013	2020	–0.6	–1.5	0.2	–1.8	0.116

East-Urban – 1 Joinpoint	1	2013	2015	-0.1	-4.7	4.6	-0.1	0.939
East-Urban – 1 Joinpoint	2	2015	2020	-3.6*	-4.6	-2.6	-11.2	0.002
East-Rural – 0 Joinpoints	1	2013	2020	-3.0*	-4	-2	-7.2	<0.001
Middle-Urba n – 0 Joinpoints	1	2013	2020	-2.7*	-4.2	-1.2	-4.3	0.005
Middle-Rural – 0 Joinpoints	1	2013	2020	-1.9*	-2.7	-1	-5.1	0.002
West-Urban – 0 Joinpoints	1	2013	2020	-0.9	-2.7	0.9	-1.2	0.262
West-Rural – 0 Joinpoints	1	2013	2020	-0.3	-1.3	0.6	-0.8	0.443

APC: Annual percent change; CI: Confidence interval; CVD: Cerebrovascular disease.

\*Statistically significant.

**Supplementary Table 4: AAPC of age–sex standardized mortality of CVD.**

Cohort	Range	Lower endpoint	Upper endpoint	AAPC	Lower CI	Upper CI	Test statistic~	P-value
Urban – 1 Joinpoint	Full range	2013	2020	-2.0*	-2.9	-1.1	-4.2	<0.001
Rural – 0 Joinpoints	Full range	2013	2020	-2.0*	-2.8	-1.1	-5.8	0.001
East – 0	Full	2013	2020	-3.1*	-3.8	-2.3	-9.8	<0.001

Joinpoints	range								
Middle – 0	Full	2013	2020	-2.2*	-3.1	-1.2	-5.7	0.001	
Joinpoints	range								
West – 0	Full	2013	2020	-0.6	-1.5	0.2	-1.8	0.116	
Joinpoints	range								
East-Urban –	Full	2013	2020	-2.6*	-3.5	-1.7	-5.5	<0.001	
1 Joinpoint	range								
East-Rural –	Full	2013	2020	-3.0*	-4	-2	-7.2	<0.001	
0 Joinpoints	range								
Middle-Urban	Full	2013	2020	-2.7*	-4.2	-1.2	-4.3	0.005	
– 0 Joinpoints	range								
Middle-Rural	Full	2013	2020	-1.9*	-2.7	-1	-5.1	0.002	
– 0 Joinpoints	range								
West-Urban –	Full	2013	2020	-0.9	-2.7	0.9	-1.2	0.262	
0 Joinpoints	range								
West-Rural –	Full	2013	2020	-0.3	-1.3	0.6	-0.8	0.443	
0 Joinpoints	range								

AAPC: Average annual percent change; CI: Confidence interval; CVD: Cerebrovascular disease. \*Statistically significant.

**Supplementary Table 5: CVD mortality rates (1/10<sup>5</sup>) in 2020 and the projection for 2020, stratified by age, sex, urban–rural residential setting, and regional classification using cause of death monitoring datasets of China.**

Characteristics	2020		
	No.	Rate (95% CI)	Projection rate (95% CI)
Total	278,517,860		
Crude	430,007	154.4 (153.9, 154.9)	150.9 (150.7, 151.2)
Age adjusted*		108.3 (108.1, 108.5)	110.4 (110.2, 110.6)
Age group (years)			

≤34	1741	1.5 (1.4, 1.6)	1.4 (1.3, 1.5)
35–44	5179	13.5 (13.1, 13.8)	12.3 (12.1, 12.5)
45–54	21,385	43.1 (42.6, 43.7)	42.6 (42.4, 42.8)
55–64	44,122	120.4 (119.3, 121.6)	121.8 (121.6, 122.0)
65–74	101,820	411.8 (409.3, 414.3)	402.7 (402.5, 402.9)
75–84	150,083	1482.4 (1474.9, 1489.8)	1443.1 (1443.0, 1443.3)
≥85	105,677	3966.2 (3942.8, 3989.7)	4706.8 (4706.6, 4707.0)
Sex*			
Male	241,217	134.1 (133.9, 134.3)	134.4 (134.2, 134.6)
Female	188,790	84.8 (84.6, 85.0)	87.7 (87.5, 87.9)
Urban–rural*			
Urban	132,006	90.4 (90.1, 90.7)	92.7 (92.5, 93.0)
Rural	298,001	118.5 (118.3, 118.7)	120.0 (119.8, 120.2)
Region*			
East	162,001	92.4 (92.1, 92.6)	94.2 (94.0, 94.4)
Central	156,541	121.3 (121.1, 121.5)	123.3 (123.1, 123.5)
West	111,465	119.2 (119.0, 119.4)	122.5 (122.3, 122.7)

ASR: Age-standardized rate; CI: Confidence interval; CVD: Cerebrovascular disease; CDC-DSP: Chinese Center for Disease Control and Prevention’s Disease Surveillance Points.

The number indicates the number of absolute deaths due to CVD recorded in the CDC-DSP.

Rate = 1 per 100,000 individuals.

\*Indicates the ASR standardized to the Chinese population according to the 2010 census.