

## Supplementary material

### Disease burden of liver cancer in China from 1997 to 2016: an observational study based on the Global Burden of Diseases

Supplementary Table 1 Prevalence, incidence, mortality, and DALYs of liver cancer from 1997 to 2016 in China

Year	Prevalence			Incidence			Mortality			Rate of DALYs		
	Cases			Cases			Cases			Cases		
	Rate per 100000 (AR)			Rate per 100000 (AR)			Rate per 100000 (AR)			Rate per 100000 (AR)		
	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
1997	82909	266218	349127	88637	249426	338063	92055	246849	338904	2522224	7789084	10311308
	13.77	41.94	28.22 (38.68)	14.72	39.29	27.33 (37.55)	15.28	38.89	27.40 (38.03)	418.77	1227.04	833.52 (1104.65)
1998	84364	274893	359257	90299	256920	347219	93934	254706	348640	2559691	7993522	10553213
	13.91	42.99	28.83 (38.81)	14.89	40.18	27.87 (37.60)	15.49	39.83	27.98 (38.15)	421.97	1250.06	846.92 (1102.84)
1999	86051	284319	370370	92207	265064	357271	95499	260806	356305	2581475	8141584	10723059
	14.10	44.20	29.55 (38.96)	15.11	41.20	28.50 (37.66)	15.65	40.54	28.43 (37.97)	423.10	1265.56	855.48 (1092.88)
2000	88082	294938	383020	94500	274245	368745	97342	266605	363947	2608028	8257714	10865742
	14.35	45.55	30.36 (39.14)	15.39	42.36	29.23 (37.76)	15.85	41.18	28.85 (37.69)	424.78	1275.37	861.37 (1078.74)
2001	88591	300757	389348	94986	277754	372740	98741	270937	369678	2624456	8344139	10968595
	14.36	46.20	30.71 (38.75)	15.39	42.67	29.40 (37.17)	16.00	41.62	29.16 (37.26)	425.36	1281.80	865.05 (1061.15)

2002	89335	307339	396674	95710	281786	377496	99337	274005	373342	2619985	8376589	10996574
	14.41	46.98	31.13 (38.42)	15.44	43.07	29.63 (36.62)	16.03	41.88	29.30 (36.60)	422.69	1280.41	863.12 (1036.56)
2003	90325	314723	405048	96675	286374	383049	98467	273478	371945	2576919	8306876	10883795
	14.5	47.87	31.64 (38.11)	15.52	43.55	29.92 (36.10)	15.81	41.59	29.05 (35.40)	413.76	1263.37	850.09 (998.97)
2004	91499	322827	414326	97823	291409	389232	98324	275691	374015	2549290	8318744	10868034
	14.62	48.85	32.20 (37.84)	15.63	44.10	30.25 (35.60)	15.71	41.72	29.07 (34.52)	407.39	1258.86	844.73 (970.16)
2005	92891	331831	424722	99159	297003	396162	98507	277377	375884	2525686	8318538	10844224
	14.78	49.97	32.86 (37.62)	15.77	44.73	30.65 (35.14)	15.67	41.77	29.08 (33.62)	401.76	1252.76	838.9 (940.59)
2006	94548	344719	439267	99469	301876	401345	97491	276119	373610	2486963	8240561	10727524
	15.00	51.78	33.90 (37.91)	15.78	45.35	30.97 (34.68)	15.47	41.48	28.83 (32.53)	394.62	1237.91	827.80 (907.70)
2007	96483	358906	455389	99978	307300	407278	97478	277033	374511	2466662	8220896	10687558
	15.25	53.69	35.00 (38.23)	15.8	45.97	31.30 (34.23)	15.41	41.44	28.78 (31.69)	389.85	1229.82	821.37 (881.22)
2008	98964	375147	474111	100884	313704	414588	97455	278725	376180	2447243	8211039	10658282
	15.56	55.81	36.24 (38.64)	15.86	46.67	31.69 (33.83)	15.32	41.47	28.76 (30.88)	384.77	1221.63	814.76 (855.47)
2009	101694	392780	494474	101917	320452	422369	96958	280277	377235	2419311	8190167	10609478
	15.90	58.10	37.59 (39.11)	15.94	47.40	32.10 (33.44)	15.16	41.46	28.67 (30.03)	378.30	1211.40	806.43 (829.02)
	104779	412171	516950	103111	327711	430822	96518	281513	378031	2395331	8160269	10555600

2010	16.3	60.62	39.08 (39.69)	16.04	48.20	32.57 (33.10)	15.01	41.41	28.58 (29.18)	372.62	1200.25	798.03 (803.07)
2011	111103	443702	554805	106193	342951	449144	96011	283187	379198	2371995	8162312	10534307
	17.20	64.94	41.74 (41.46)	16.44	50.19	33.79 (33.59)	14.87	41.45	28.53 (28.47)	367.27	1194.58	792.58 (782.14)
2012	118211	478654	596865	109543	359275	468818	96495	287323	383818	2370629	8237352	10607981
	18.23	69.73	44.71 (43.43)	16.89	52.34	35.12 (34.13)	14.88	41.86	28.75 (28.01)	365.52	1200.08	794.63 (768.39)
2013	126109	517053	643162	113122	376580	489702	97112	293599	390711	2377018	8367376	10744394
	19.37	75.02	47.99 (45.56)	17.38	54.64	36.54 (34.70)	14.92	42.60	29.15 (27.70)	365.13	1214.00	801.67 (758.98)
2014	134992	559505	694497	117018	395090	512108	99520	303352	402872	2420877	8590916	11011793
	20.66	80.85	51.62 (47.87)	17.91	57.09	38.06 (35.29)	15.23	43.83	29.94 (27.72)	370.49	1241.39	818.44 (758.25)
2015	144988	606516	751504	121270	414908	536178	101141	312996	414137	2449391	8815824	11265215
	22.10	87.27	55.63 (50.39)	18.49	59.70	39.69 (35.92)	15.42	45.04	30.66 (27.67)	373.39	1268.52	833.87 (757.07)
2016	156160	657866	814026	125740	435509	561249	103262	323638	426900	2486266	9052836	11539102
	23.73	94.32	60.04 (53.18)	19.10	62.44	41.40 (36.62)	15.69	46.40	31.49 (27.73)	377.75	1297.87	851.16 (759.02)
AAPC (%)	2.9*	4.4*	4.0* (1.6*)	1.3*	2.4*	2.1* (-0.3*)	-0.1	0.7*	0.5* (-1.90*)	-0.7*	0.1	-0.1 (-2.2*)

AR, Age-adjusted rate by the population of China in 2010; DALYs, Disability-adjusted life years; AAPC, Average annual percent change; \* p<0.05.

Supplementary Table 2 Changes in MI ratio of liver cancer from 1997 to 2016 in China

Year	Mortality cases/Incidence cases (MI ratios)		
	Female	Male	Total
1997	92055/88637 (1.04)	246849/249426 (0.99)	338904/338063 (1.00)
1998	93934/90299 (1.04)	254706/256920 (0.99)	348640/347219 (1.00)
1999	95499/92207 (1.04)	260806/265064 (0.98)	356305/357271 (1.00)
2000	97342/94500 (1.03)	266605/274245 (0.97)	363947/368745 (0.99)
2001	98741/94986 (1.04)	270937/277754 (0.98)	369678/372740 (0.99)
2002	99337/95710 (1.04)	274005/281786 (0.97)	373342/377496 (0.99)
2003	98467/96675 (1.02)	273478/286374 (0.95)	371945/383049 (0.97)
2004	98324/97823 (1.01)	275691/291409 (0.95)	374015/389232 (0.96)
2005	98507/99159 (0.99)	277377/297003 (0.93)	375884/396162 (0.95)
2006	97491/99469 (0.98)	276119/301876 (0.91)	373610/401345 (0.93)
2007	97478/99978 (0.97)	277033/307300 (0.90)	374511/407278 (0.92)
2008	97455/100884 (0.97)	278725/313704 (0.89)	376180/414588 (0.91)
2009	96958/101917 (0.95)	280277/320452 (0.87)	377235/422369 (0.89)
2010	96518/103111 (0.94)	281513/327711 (0.86)	378031/430822 (0.88)
2011	96011/106193 (0.90)	283187/342951 (0.83)	379198/449144 (0.84)
2012	96495/109543 (0.88)	287323/359275 (0.80)	383818/468818 (0.82)
2013	97112/113122 (0.86)	293599/376580 (0.78)	390711/489702 (0.80)
2014	99520/117018 (0.85)	303352/395090 (0.77)	402872/512108 (0.79)
2015	101141/121270 (0.83)	312996/414908 (0.75)	414137/536178 (0.77)
2016	103262/125740 (0.82)	323638/435509 (0.74)	426900/561249 (0.76)
Annual change rate (%)	(-1.23)	(-1.50)	(-1.44)

Supplementary Table 3 Cause proportions in prevalence, incidence, mortality, and DALYs of liver cancer from 1997 to 2016 in China

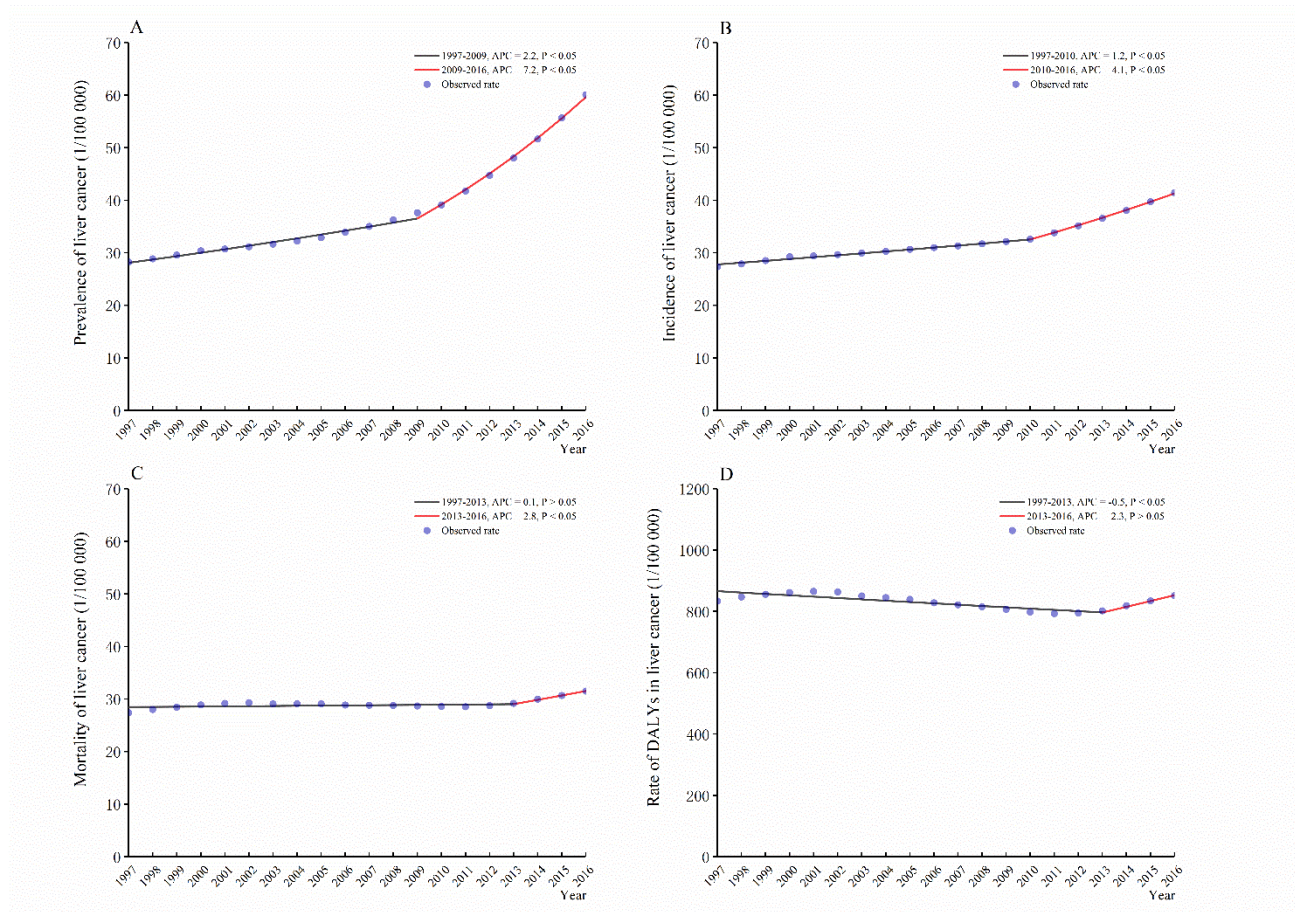
Year	Prevalence (%)				Incidence (%)				Mortality (%)				DALYs (%)			
	Alcohol use	Hepatitis B	Hepatitis C	Other causes	Alcohol use	Hepatitis B	Hepatitis C	Other causes	Alcohol use	Hepatitis B	Hepatitis C	Other causes	Alcohol use	Hepatitis B	Hepatitis C	Other causes
1997	10.23	55.59	7.29	26.89	11.02	55.29	7.42	26.27	11.60	54.70	7.70	26.00	9.28	57.12	6.56	27.04
1998	9.98	55.68	7.31	27.03	10.77	55.39	7.44	26.40	11.33	54.81	7.73	26.14	9.08	57.18	6.59	27.15
1999	9.74	55.76	7.33	27.17	10.52	55.47	7.47	26.53	11.10	54.88	7.76	26.25	8.92	57.21	6.62	27.25
2000	9.51	55.82	7.35	27.31	10.30	55.55	7.50	26.66	10.91	54.93	7.81	26.35	8.80	57.21	6.67	27.31
2001	9.37	55.79	7.41	27.43	10.17	55.52	7.55	26.75	10.80	54.93	7.85	26.42	8.72	57.19	6.71	27.37
2002	9.24	55.75	7.46	27.55	10.06	55.48	7.61	26.85	10.66	54.90	7.92	26.52	8.64	57.14	6.78	27.44
2003	9.11	55.70	7.53	27.66	9.95	55.43	7.68	26.94	10.54	54.85	7.99	26.61	8.58	57.03	6.86	27.52
2004	8.99	55.64	7.59	27.78	9.85	55.39	7.74	27.03	10.41	54.80	8.06	26.72	8.52	56.92	6.95	27.62
2005	8.87	55.58	7.65	27.90	9.74	55.33	7.81	27.12	10.31	54.74	8.14	26.81	8.46	56.81	7.02	27.70
2006	8.96	55.48	7.68	27.88	9.89	55.19	7.83	27.08	10.49	54.58	8.17	26.76	8.65	56.64	7.07	27.64
2007	9.06	55.38	7.70	27.85	10.04	55.05	7.86	27.04	10.71	54.39	8.21	26.68	8.87	56.45	7.12	27.56
2008	9.17	55.28	7.73	27.82	10.20	54.91	7.90	26.99	10.92	54.21	8.26	26.62	9.09	56.25	7.18	27.49
2009	9.28	55.18	7.76	27.78	10.37	54.75	7.93	26.94	11.09	54.03	8.31	26.58	9.29	56.05	7.23	27.43
2010	9.39	55.07	7.79	27.75	10.55	54.59	7.96	26.89	11.28	53.85	8.35	26.53	9.50	55.86	7.28	27.36
2011	9.53	54.93	7.81	27.73	10.71	54.43	7.97	26.89	11.49	53.64	8.37	26.50	9.72	55.66	7.32	27.31
2012	9.68	54.79	7.82	27.71	10.87	54.27	7.98	26.89	11.71	53.43	8.38	26.48	9.94	55.45	7.35	27.26
2013	9.84	54.64	7.84	27.69	11.03	54.10	7.98	26.88	11.89	53.23	8.39	26.49	10.11	55.26	7.38	27.25
2014	10.01	54.48	7.86	27.65	11.20	53.93	7.99	26.87	12.13	53.01	8.40	26.46	10.34	55.04	7.41	27.20
2015	10.19	54.31	7.88	27.61	11.38	53.75	8.01	26.86	12.31	52.81	8.40	26.47	10.52	54.85	7.43	27.20
2016	10.38	54.14	7.91	27.57	11.56	53.56	8.03	26.85	12.50	52.60	8.42	26.48	10.71	54.64	7.46	27.19
Total	9.59	55.11	7.68	27.61	10.56	54.78	7.81	26.85	11.23	54.13	8.14	26.50	9.29	56.29	7.05	27.36

DALYs, Disability-adjusted life years.

Supplementary Table 4 Cause proportions in prevalence, incidence, mortality, and DALYs of liver cancer among different age groups in China

Age group	Prevalence (%)				Incidence (%)				Mortality (%)				DALYs (%)			
	Alcohol use	Hepatitis B	Hepatitis C	Other causes	Alcohol use	Hepatitis B	Hepatitis C	Other causes	Alcohol use	Hepatitis B	Hepatitis C	Other causes	Alcohol use	Hepatitis B	Hepatitis C	Other causes
	0-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5-9	0.00	39.26	1.29	59.45	0.00	40.24	1.42	58.34	0.00	40.24	1.28	58.48	0.00	40.25	1.32	58.43
10-14	0.00	50.06	1.66	48.28	0.00	50.93	1.84	47.23	0.00	51.02	1.77	47.21	0.00	51.04	1.76	47.20
15-19	0.13	55.18	2.00	42.70	0.15	55.92	2.13	41.81	0.18	55.97	2.09	41.75	0.21	55.97	2.08	41.74
20-24	0.62	61.38	2.52	35.48	0.67	62.14	2.63	34.56	0.68	62.15	2.58	34.59	0.67	62.16	2.57	34.59
25-29	0.95	63.81	2.89	32.35	1.04	64.37	2.97	31.62	1.04	64.53	2.91	31.53	1.04	64.53	2.91	31.51
30-34	1.86	64.32	3.21	30.61	2.00	64.73	3.28	29.99	1.99	64.82	3.23	29.96	2.00	64.82	3.23	29.95
35-39	3.28	63.10	3.73	29.90	3.50	63.39	3.79	29.31	3.49	63.47	3.74	29.30	3.49	63.48	3.74	29.30
40-44	4.78	61.80	4.44	28.98	5.15	61.94	4.52	28.40	5.13	61.96	4.51	28.40	5.13	61.96	4.51	28.40
45-49	5.99	59.82	5.47	28.72	6.53	59.81	5.54	28.12	6.65	59.80	5.57	27.98	6.64	59.80	5.57	27.99
50-54	7.35	57.53	6.84	28.28	8.09	57.40	6.89	27.62	8.29	57.45	6.84	27.42	8.28	57.45	6.84	27.43
55-59	8.95	55.41	7.88	27.75	9.91	55.11	7.97	27.01	10.16	54.98	8.04	26.82	10.15	54.98	8.04	26.82
60-64	10.94	53.09	8.63	27.34	12.10	52.65	8.73	26.53	12.33	52.49	8.83	26.35	12.32	52.50	8.83	26.35
65-69	13.49	50.78	9.07	26.66	14.82	50.25	9.15	25.78	14.99	50.12	9.24	25.65	14.98	50.12	9.24	25.66
70-74	14.83	49.35	9.74	26.08	16.24	48.80	9.82	25.15	16.48	48.65	9.91	24.96	16.45	48.66	9.91	24.98
75-79	14.64	48.97	10.76	25.63	15.95	48.44	10.90	24.71	16.20	48.25	11.01	24.53	16.17	48.26	11.01	24.56
80-84	15.39	48.52	11.97	24.11	15.89	48.13	12.16	23.82	16.02	47.98	12.26	23.75	15.96	47.98	12.26	23.79
85-89	15.56	48.90	13.04	22.50	16.46	48.50	13.27	21.78	16.56	48.34	13.39	21.71	16.51	48.32	13.40	21.78
90-94	15.67	49.49	14.27	20.57	16.34	49.08	14.56	20.02	16.42	48.90	14.71	19.98	16.40	48.83	14.73	20.04
95 +	14.89	50.24	15.66	19.21	15.32	49.79	16.03	18.86	15.49	49.56	16.23	18.71	15.48	49.46	16.27	18.80
Total	9.59	55.11	7.68	27.61	10.56	54.78	7.81	26.85	11.23	54.13	8.14	26.50	9.29	56.29	7.05	27.36

DALYs, Disability-adjusted life years.



**Supplementary Figure 1 Trends of liver cancer by Joinpoint regression from 1997 to 2016 in China. Panel A The trend in prevalence of liver cancer; Panel B The trend in incidence of liver cancer; Panel C The trend in mortality of liver cancer; Panel D The trend in rate of DALYs of liver cancer**