1	Global trajectories of liver cancer burden from 1990 to 2019 and
2	projection to 2035
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Fig. S3. Trajectories of the age-standardized incidence rate of liver cancer in men in each model (A1-A5) and the corresponding goodness-of-fit statistics for one-to-five class solutions (B)





Fig. S4. Trajectories of the age-standardized mortality rate of liver cancer in men in each model (A1-A5) and the corresponding goodness-of-fit statistics for one-to-five class solutions (B)



Fig. S5. Trajectories of the age-standardized incidence rate of liver cancer in women in each model (A1-A5) and the corresponding goodness-of-fit statistics for one-to-five class solutions (B)





Fig. S6. Trajectories of the age-standardized mortality rate of liver cancer in women in each model (A1-A5) and the corresponding goodness-of-fit statistics for one-to-five class solutions (B)

















1 Supplementary tables

2 Table S1. Number of parameters and posterior probabilities in growth mixture models for

3 liver cancer incidence and mortality

Туре	Number of parameters	Group 1	Group 2	Group 3	Group 4	Group 5
	10	0.99	0.99	-	-	-
Insidence	13	1	0.99	0.99	-	-
Incluence	16	1	1	1	0.98	-
	19	1	0.98	0.99	0.99	1
	10	0.97	0.99	-	-	-
Martalita	13	0.98	0.99	0.99	-	-
Mortanty	16	1	0.99	0.99	1	-
	19	0.96	1	0.98	1	0.97

4

5 Table S2. Number of parameters and posterior probabilities in growth mixture models for

Туре	Number of parameters	Group 1	Group 2	Group 3	Group 4	Group 5
	10	0.98	1	-	-	-
Incidence	13	0.98	0.97	0.99	-	-
Incidence	16	0.99	1	1	1	-
	19	0.98	0.98	0.99	1	0.98
	10	0.99	1	-	-	-
Montolity	13	0.99	1	0.99	-	-
Mortanty	16	0.98	0.98	1	0.97	-
	19	0.97	1	1	0.98	0.98

6 liver cancer incidence and mortality in men

7

8 Table S3. Number of parameters and posterior probabilities in growth mixture models for

9 liver cancer incidence and mortality in women

Туре	Number of parameters	Group 1	Group 2	Group 3	Group 4	Group 5
	10	1	0.99	-	-	-
Incidence	13	1	1	1	-	-
Incidence	16	0.99	1	1	1	-
	19	0.96	1	1	1	0.97
	10	0.99	0.98	-	-	-
Montolity	13	0.99	1	1	-	-
Mortanty	16	0.99	0.99	1	1	-
	19	0.96	0.98	1	0.96	1

		1990		20	2019		
Trajectory group	Etiology	Number No. ×10 ³	ASIR per 100,000	Number No. ×10 ³	ASIR per 100,000	Change in ASIR	Contributions to change (%) ^a
Increasing							
	Hepatitis B	7.0	0.65	24.6	1.46	0.81	24.2
	Hepatitis C	10.6	0.94	36.4	1.99	1.05	31.1
	Alcohol use	8.4	0.74	32.1	1.78	1.03	30.8
	NASH	2.1	0.19	9.0	0.49	0.30	9
	Other causes	2.2	0.22	6.1	0.38	0.17	4.9
	Total	30.5	2.74	108.1	6.10	3.36	100
Stable							
	Hepatitis B	25.9	1.31	51.5	1.24	-0.07	-113.4
	Hepatitis C	34.7	2.05	77.4	2.05	0.00	3.2
	Alcohol use	18.6	1.03	43.2	1.09	0.05	86.5
	NASH	5.7	0.33	16.0	0.41	0.08	133.3
	Other causes	5.3	0.23	9.4	0.22	-0.01	-9.5
	Total	90.3	4.94	197.4	5.00	0.06	100
Decreasing							
	Hepatitis B	165.1	14.3	142.7	5.90	-8.40	63.4
	Hepatitis C	38.9	4.08	38.4	1.66	-2.42	18.3
	Alcohol use	21.2	1.99	23.2	0.95	-1.05	7.9
	NASH	9.8	0.94	11.4	0.49	-0.46	3.4
	Other causes	17.4	1.50	13.1	0.57	-0.93	7.0
	Total	252.6	22.82	228.7	9.57	-13.25	100

1 Table S4. The new cases and ASIR of liver cancer caused by five major risk factors, according



3 ASIR, age-standardized incidence rate; NASH, non-alcoholic steatohepatitis.

^a The contributions of different etiologies to the change in ASIR or ASMR from 1990 to 2019 were

5 defined as $(Y_{e,2019} - Y_{e,1990}) / (Y_{t,2019} - Y_{t,1990})$, where $Y_{t,2019}$ denotes liver cancer ASIR or

1 ASMR in 2019 and $Y_{e,2019}$ denotes liver cancer ASIR or ASMR caused by specific etiology in 2019.

2

3 Table S5. The deaths and ASMR of liver cancer caused by five major risk factors, according

4 to trajectory groups, from 1990 to 2019.

		1990		20	19		
Trajector y group	Etiology	Number No. ×10 ³	ASMR per	Number No. ×10 ³	ASMR per	Change in ASMR	Contributions to change (%) ^a
. .			100,000		100,000		
Increasing	TT						
	Hepatitis B	5.6	0.55	17.0	1.09	0.54	22.2
	Hepatitis C	7.0	0.67	24.0	1.40	0.73	30.2
	Alcohol use	7.2	0.68	24.9	1.50	0.82	33.7
	NASH	1.7	0.17	6.7	0.39	0.23	9.4
	Other causes	1.6	0.16	4.1	0.27	0.11	4.5
	Total	23.0	2.24	76.7	4.66	2.42	100
Stable							
	Hepatitis B	21.7	1.24	46.3	1.20	-0.04	-16.6
	Hepatitis C	20.3	1.41	50.9	1.48	0.07	28.2
	Alcohol use	14.7	0.94	38.6	1.07	0.13	50.9
	NASH	5.0	0.33	15.2	0.43	0.10	39.6
	Other causes	5.1	0.22	8.7	0.22	-0.01	-2.1
	Total	66.9	4.14	159.7	4.40	0.26	100
Decreasin							
g							
	Hepatitis B	163.0	11.54	128.4	4.55	-6.99	60.4
	Hepatitis C	57.3	4.73	66.9	2.38	-2.35	20.3
	Alcohol use	26.0	1.96	27.2	0.94	-1.02	8.8
	NASH	11.1	0.86	12.8	0.45	-0.40	3.5
	Other causes	17.9	1.27	12.7	0.47	-0.80	6.9
	Total	275.2	20.36	248.0	8.80	-11.56	100

1 ASMR, age-standardized mortality rate; NASH, non-alcoholic steatohepatitis.

2 ^a The contributions of different etiologies to the change in ASIR or ASMR from 1990 to 2019 were

3 defined as $(Y_{e,2019} - Y_{e,1990}) / (Y_{t,2019} - Y_{t,1990})$, where $Y_{t,2019}$ denotes liver cancer ASIR or

4 ASMR in 2019 and $Y_{e,2019}$ denotes liver cancer ASIR or ASMR caused by specific etiology in 2019.

Table S6. Major drivers of change in the burden of liver cancer at the country level according
to trajectory groups, 1990 to 2019

	Trajectory group	Hepatitis B	Hepatitis C	Alcohol use	NASH	Other causes
	Increasing	7	10	26	0	0
Incidence	Stable	62	29	30	10	0
	Decreasing	13	5	12	0	0
	Increasing	8	13	22	0	0
New cases	Stable	70	36	24	1	0
	Decreasing	14	4	12	0	0
	Increasing	4	12	17	0	0
Mortality	Stable	69	31	29	8	0
	Decreasing	11	9	14	0	0
	Increasing	6	12	15	0	0
Deaths	Stable	68	44	25	0	0
	Decreasing	14	6	14	0	0