

Supplementary Figures and Tables

Figure legend

Fig. S1. The age-standardized DALYs rate of risk factor contributions to LCC burden by SDI. The four risk factors included are H - BMI, Smoking, OE - Formaldehyde, and OE - Benzene. Each bar represents the proportion of the impact of a specific risk factor on the LCC burden in a particular region or SDI category. Abbreviations: LCC, Chronic Lymphocytic Leukemia; H - BMI, High Body Mass Index; OE - Formaldehyde, Occupational Exposure to Formaldehyde; OE - Benzene, Occupational Exposure to Benzene; SDI, socio-demographic index; DALYs, disability adjusted life years.

Fig. S2. The age-standardized DALYs rate of risk factor contributions to LCC burden by age and sex. The four risk factors included are H - BMI, Smoking, OE - Formaldehyde, and OE - Benzene. Each bar represents the proportion of the impact of a specific risk factor on the LCC burden in a particular region or SDI category. Abbreviations: LCC, Chronic Lymphocytic Leukemia; H - BMI, High Body Mass Index; OE - Formaldehyde, Occupational Exposure to Formaldehyde; OE - Benzene, Occupational Exposure to Benzene; SDI, socio-demographic index; DALYs, disability adjusted life years.

Fig. S3. The ASIR (A), ASPR (B), ASDR(C) and age-standardized DALYs rate(D) of LCC by 204 countries and SDI, 1990-2021. The solid line represents expected values calculated from SDI and aggregate disease rate, the shaded area shows the 95% CI of these expectations. Points above and below the line indicate higher and lower-than-expected disease burdens, respectively. Abbreviations: LCC, Chronic Lymphocytic Leukemia; GBD, Global Burden of Diseases, Injuries, and Risk Factors Study; SDI, sociodemographic index; ASIR, age-standardized incidence rate; ASPR, age-standardized prevalence rate; ASDR, age-standardized deaths rate; DALYs, disability

adjusted life years.

Fig. S4. The temporal trends of number of incidence(A), prevalence(B), deaths(C) and DALYs(D) cases of LCC from 1990 to 2021 and projections up to 2035. The dots represent the observed values from 1990 to 2021. The solid line represents the predicted mean values and the fan shape represents the predictive distribution between the 2.5 % and 97.5 % quantiles from 2022 to 2035. Abbreviations: LCC, Chronic Lymphocytic Leukemia; DALYs, disability adjusted life years.

Table legend

Table S1. The number of prevalence cases and the ASPR of LCC in 1990 and 2021, and its temporal trends from 1990 to 2021. Abbreviations: LCC, Chronic Lymphocytic Leukemia; ASPR, age standardized prevalence rate; EAPC, estimate annual percentage change.

Table S2. The number of DALYs rate and the age-standardized DALYs rate of LCC in 1990 and 2021, and its temporal trends from 1990 to 2021. Abbreviations: LCC, Chronic Lymphocytic Leukemia; DALYs, disability adjusted life years; EAPC, estimate the annual percentage change.

Table S3. The number of deaths and the ASDR of LCC in 1990 and 2021, and its temporal trends from 1990 to 2021. Abbreviations: LCC, Chronic Lymphocytic Leukemia; ASDR, age-standardized deaths rate; EAPC, estimate the annual percentage change.

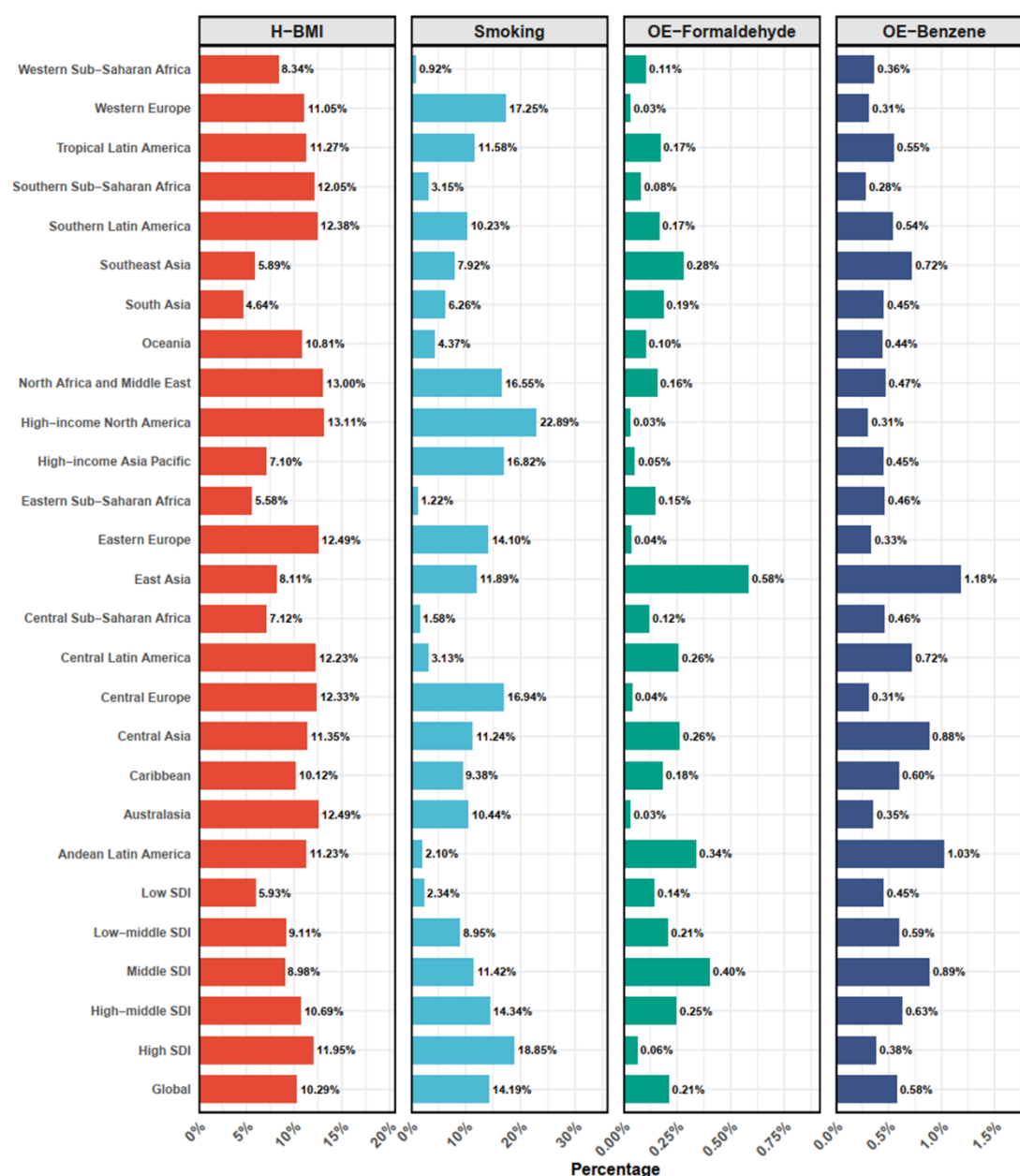


Fig. S1. The ASDR of Risk Factor Contributions to LCC Burden by SDI. The four risk factors included are H - BMI, Smoking, OE - Formaldehyde, and OE - Benzene. Each bar represents the proportion of the impact of a specific risk factor on the LCC burden in a particular region or SDI category. Abbreviations: LCC, Chronic Lymphocytic Leukemia; H - BMI, High Body Mass Index; OE - Formaldehyde, Occupational Exposure to Formaldehyde; OE - Benzene, Occupational Exposure to Benzene; DALYs, disability adjusted life years; SDI, socio-demographic index.

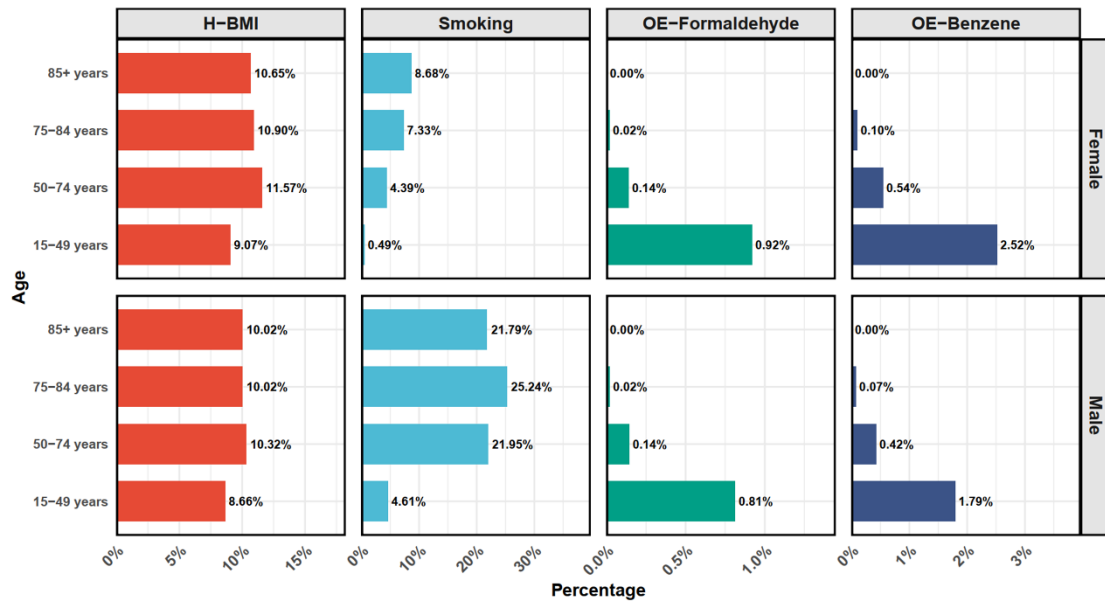


Fig. S2. The age-standardized DALYs rate of risk factor contributions to LCC burden by age and sex. The four risk factors included are H - BMI, Smoking, OE - Formaldehyde, and OE - Benzene. Each bar represents the proportion of the impact of a specific risk factor on the LCC burden in a particular region or SDI category. Abbreviations: LCC, Chronic Lymphocytic Leukemia; H - BMI, High Body Mass Index; OE - Formaldehyde, Occupational Exposure to Formaldehyde; OE - Benzene, Occupational Exposure to Benzene; SDI, socio-demographic index; DALYs, disability adjusted life years.

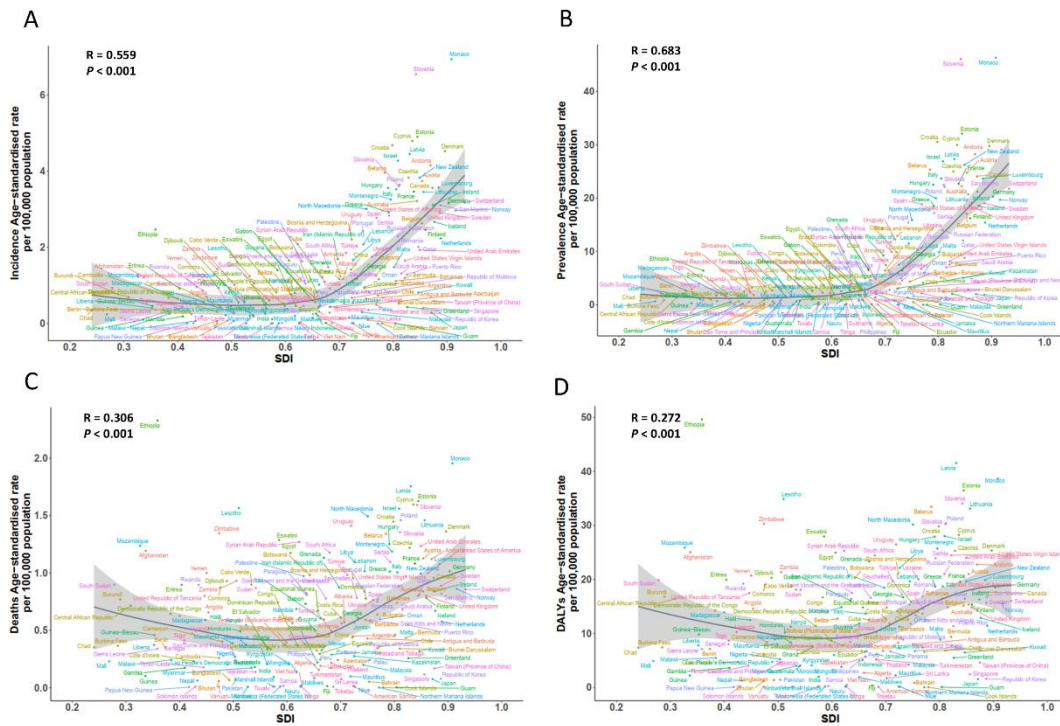


Fig. S3. The ASIR (A), ASPR (B), ASDR(C) and age-standardized DALYs rate(D) of LCC by 204 countries and SDI, 1990-2021. The solid line represents expected values calculated from SDI and aggregate disease rate, the shaded area shows the 95% CI of these expectations. Points above and below the line indicate higher and lower-than-expected disease burdens, respectively. Abbreviations: LCC, Chronic Lymphocytic Leukemia; GBD, Global Burden of Diseases, Injuries, and Risk Factors Study; SDI, sociodemographic index; ASIR, age-standardized incidence rate; ASPR, age-standardized prevalence rate; ASDR, age-standardized deaths rate; DALYs, disability adjusted life years.

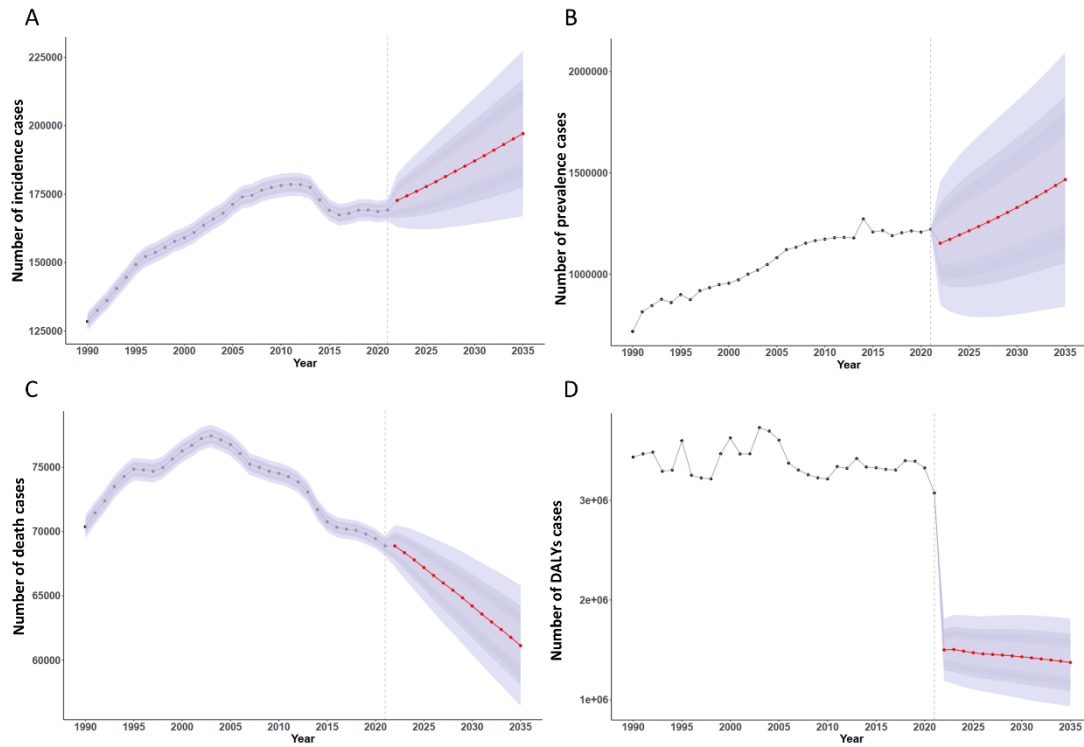


Fig. S4. The temporal trends of number of incidence(A), prevalence(B), deaths(C) and DALYs(D) cases of LCC from 1990 to 2021 and projections up to 2035. The dots represent the observed values from 1990 to 2021. The solid line represents the predicted mean values and the fan shape represents the predictive distribution between the 2.5 % and 97.5 % quantiles from 2022 to 2035. Abbreviations: LCC, Chronic Lymphocytic Leukemia; DALYs, disability adjusted life years.

Table S1. The number of prevalence cases and the ASPR of LCC in 1990 and 2021, and its temporal trends from 1990 to 2021.

Characteristic	1990			2021			1990-2021	
	Number of cases (95%UI)	ASPR/10000 0(95% UI)		Number of cases (95%UI)	ASPR/10000 0(95% UI)		EAPC (95%CI)	
Global	306132 (288026, 321531)	7.72 (7.25, 8.09)		721066 (598861, 814073)	8.34 (6.94, 9.40)		0.15 (-0.11, 0.40)	
SDI Level								
High SDI	201678 (191990, 208515)	17.97 (17.15, 18.58)		325962 (299079, 345342)	15.51 (14.31, 16.37)		-0.61 (-1.02, -0.20)	
High-middle SDI	76202 (70452, 82899)	7.38 (6.84, 8.02)		239351 (191732, 285214)	12.23 (9.75, 14.68)		1.64 (1.46, 1.81)	
Middle SDI	22361 (12966, 27894)	1.81 (1.09, 2.22)		131357 (83878, 172635)	4.66 (2.98, 6.12)		3.43 (3.31, 3.55)	
Low-middle SDI	3098 (1691, 3882)	0.47 (0.27, 0.59)		15824 (8186, 20396)	1.03 (0.54, 1.31)		2.59 (2.55, 2.64)	
Low SDI	2477 (1345, 3253)	1.04 (0.58, 1.36)		7657 (3807, 10810)	1.40 (0.71, 1.97)		0.87 (0.72, 1.01)	
Regions								
Andean America	Latin 161 (118, 221)	0.71 (0.53, 0.98)		1287 (790, 1746)	2.10 (1.30, 2.85)		3.85 (3.59, 4.11)	
Australasia	5066 (4648, 5531)	21.10 (19.34, 23.05)		12359 (10496, 14348)	22.88 (19.36, 26.61)		0.32 (-0.11, 0.76)	
Caribbean	963 (884, 1044)	3.64 (3.34, 3.94)		2417 (2073, 2774)	4.47 (3.83, 5.13)		0.74 (0.48, 0.99)	
Central Asia	1260 (1030, 1463)	2.41 (1.97, 2.81)		2280 (1862, 2830)	2.51 (2.05, 3.11)		0.10 (-0.23, 0.43)	
Central Europe	11463 (10545, 12516)	7.40 (6.82, 8.07)		42546 (38151, 46821)	19.22 (17.27, 21.12)		3.41 (2.93, 3.90)	
Central America	Latin 1139 (1079, 1197)	1.28 (1.21, 1.34)		5762 (5118, 6519)	2.27 (2.01, 2.57)		1.73 (1.50, 1.97)	
Central Saharan Africa	Sub- 265 (120, 369)	1.10 (0.51, 1.54)		1070 (393, 1628)	1.75 (0.67, 2.64)		1.52 (1.34, 1.70)	
East Asia	28618 (16660, 38651)	2.67 (1.59, 3.63)		205129 (127870, 285903)	9.63 (5.99, 13.45)		4.80 (4.59, 5.01)	
Eastern Europe	22672 (20333, 24890)	7.84 (7.04, 8.60)		48631 (44422, 53062)	13.94 (12.73, 15.23)		1.45 (1.02, 1.89)	
Eastern Saharan Africa	Sub- 1834 (1135, 2492)	2.30 (1.47, 3.09)		5622 (2911, 8271)	3.09 (1.64, 4.50)		0.80 (0.67, 0.94)	
High-income Asia Pacific	3137 (2899, 3400)	1.51 (1.40, 1.64)		8697 (7466, 10108)	1.99 (1.73, 2.38)		0.82 (0.28, 1.36)	
High-income North America	107795 (102412, 111198)	30.40 (28.97, 31.33)		133991 (122409, 140968)	19.66 (18.02, 20.66)		-1.68 (-2.16, -1.19)	
North Africa and Middle East	4534 (1867, 6032)	2.53 (1.08, 3.35)		31601 (14621, 40451)	6.66 (3.15, 8.53)		3.40 (3.28, 3.52)	
Oceania	4 (0, 12)	0.14 (0.01, 0.37)		2 (1, 3)	0.02 (0.01, 0.04)		-7.50 (-8.41, -6.59)	
South Asia	1031 (381, 1433)	0.17 (0.06, 0.24)		5576 (2559, 7583)	0.36 (0.17, 0.49)		2.34 (2.17, 2.51)	
Southeast Asia	1753 (891, 2288)	0.62 (0.31, 0.81)		7214 (4483, 10646)	1.03 (0.64, 1.52)		1.47 (1.33, 1.60)	
Southern America	Latin 1510 (1319, 1727)	3.20 (2.80, 3.66)		3393 (2923, 3851)	3.87 (3.34, 4.40)		0.44 (-0.09, 0.97)	
Southern Saharan Africa	Sub- 823 (344, 1089)	2.84 (1.21, 3.86)		2945 (1311, 3919)	4.80 (2.13, 6.32)		1.91 (1.82, 2.00)	
Tropical America	Latin 1376 (1287, 1471)	1.47 (1.37, 1.58)		7683 (7041, 8267)	2.95 (2.70, 3.18)		2.11 (1.90, 2.33)	
Western Europe	110301 (104099, 115520)	18.99 (17.95, 19.87)		191187 (170006, 207665)	20.56 (18.51, 22.24)		0.15 (-0.32, 0.63)	
Western Saharan Africa	Sub- 429 (215, 553)	0.48 (0.24, 0.62)		1675 (730, 2212)	0.81 (0.36, 1.06)		1.81 (1.70, 1.91)	

Abbreviations: LCC, Chronic Lymphocytic Leukemia; ASPR, age-standardized prevalence rate; EAPC, estimate annual percentage change.

Table S2. The number of DALYs rate and the age-standardized DALYs rate of LCC in 1990 and 2021, and its temporal trends from 1990 to 2021.

		1990		2021		1990-2021
Characteristic		Number of cases (95%UI)	Age-standardized DALYs/1000 00 (95%UI)	Number of cases (95%UI)	Age-standardized DALYs/100000 (95%UI)	EAPC (95%CI)
Global		715876 (600949, 791419)	18.10 (15.54, 19.95)	1002495 (780350, 1150043)	11.81 (9.25, 13.53)	-1.52 (-1.63, -1.40)
SDI regions						
Low SDI		288042 (270784, 301672)	25.89 (24.33, 27.11)	314638 (285001, 340546)	14.26 (13.01, 15.35)	-2.04 (-2.25, -1.82)
Low-middle SDI		216349 (187667, 244424)	21.39 (18.72, 24.08)	297209 (239644, 350090)	15.65 (12.45, 18.63)	-1.22 (-1.38, -1.07)
Middle SDI		153736 (87033, 193378)	12.47 (7.47, 15.48)	257817 (166496, 332015)	9.54 (6.21, 12.26)	-0.90 (-0.95, -0.84)
High-middle SDI		27298 (14491, 34837)	4.32 (2.38, 5.45)	72895 (38815, 92013)	4.96 (2.72, 6.25)	0.50 (0.44, 0.57)
High SDI		29522 (16323, 38934)	12.67 (7.21, 16.70)	58604 (29460, 82881)	11.35 (5.81, 16.03)	-0.49 (-0.58, -0.41)
Regions						
Andean America	Latin	1367 (1002, 1879)	5.99 (4.52, 8.39)	3891 (2479, 5143)	6.42 (4.11, 8.47)	0.35 (0.10, 0.59)
Australasia		5786 (5283, 6286)	24.53 (22.39, 26.62)	9014 (7722, 10370)	15.85 (13.57, 18.27)	-1.35 (-1.56, -1.14)
Caribbean		3937 (3554, 4462)	15.14 (13.68, 17.04)	5944 (4998, 7050)	11.04 (9.28, 13.09)	-0.92 (-1.09, -0.76)
Central Asia		5713 (4773, 6630)	10.93 (9.06, 12.72)	6428 (5252, 8098)	7.26 (5.93, 9.16)	-1.48 (-1.67, -1.28)
Central Europe		37420 (34551, 40955)	24.82 (22.90, 27.17)	56626 (50766, 62149)	25.13 (22.50, 27.64)	0.25 (-0.04, 0.53)
Central America	Latin	7318 (6958, 7690)	8.34 (7.89, 8.77)	17371 (15506, 19646)	6.99 (6.23, 7.90)	-0.66 (-0.83, -0.49)
Central Saharan Africa	Sub-	2946 (1344, 4116)	12.79 (6.05, 18.37)	8379 (3136, 12856)	14.59 (5.63, 22.54)	0.47 (0.42, 0.52)
East Asia		179475 (102867, 244326)	16.70 (9.74, 22.51)	273755 (170355, 387971)	13.90 (8.63, 19.60)	-0.62 (-0.70, -0.54)
Eastern Europe		66055 (59562, 72519)	23.22 (20.97, 25.52)	75721 (68738, 83264)	21.62 (19.62, 23.77)	-1.00 (-1.42, -0.57)
Eastern Saharan Africa	Sub-	22266 (13433, 30717)	28.54 (17.92, 38.72)	42509 (22168, 62744)	24.80 (13.67, 36.18)	-0.62 (-0.69, -0.56)
High-income Pacific	Asia	4773 (4313, 5680)	2.38 (2.15, 2.83)	7757 (6488, 8948)	1.58 (1.35, 1.91)	-1.46 (-1.79, -1.13)
High-income North America		129283 (121788, 135278)	36.37 (34.31, 38.01)	125397 (112636, 134866)	18.05 (16.32, 19.38)	-2.53 (-2.84, -2.21)
North Africa and Middle East		30290 (12102, 41150)	17.89 (7.48, 24.22)	75795 (32471, 99050)	16.89 (7.53, 21.79)	-0.04 (-0.13, 0.05)
Oceania		36 (2, 97)	1.19 (0.07, 3.13)	11 (4, 20)	0.14 (0.07, 0.27)	-8.13 (-9.00, -7.24)
South Asia		10252 (3853, 14297)	1.75 (0.66, 2.45)	27361 (13528, 38130)	1.87 (0.94, 2.61)	0.01 (-0.09, 0.11)
Southeast Asia		13022 (6762, 17111)	4.72 (2.44, 6.17)	27815 (17072, 42539)	4.14 (2.56, 6.25)	-0.63 (-0.74, -0.52)
Southern America	Latin	7139 (6231, 8076)	15.57 (13.63, 17.57)	7945 (6898, 9045)	8.93 (7.76, 10.17)	-1.86 (-2.27, -1.45)
Southern Saharan Africa	Sub-	5882 (2632, 7793)	21.08 (9.46, 28.42)	14504 (6999, 19115)	25.14 (12.38, 32.82)	0.72 (0.45, 0.98)
Tropical America	Latin	8865 (8268, 9452)	9.93 (9.21, 10.61)	25091 (22858, 26936)	9.87 (8.98, 10.61)	-0.07 (-0.23, 0.09)

Characteristic	1990		2021		1990-2021	
	Number of cases (95%UI)	Age- standardized DALYs/1000 00 (95%UI)	Number of cases (95%UI)	Age-standardized DALYs/100000 (95%UI)	EAPC (95%CI)	
Western Europe	169693 (158889, 179004)	28.98 (27.14, 30.51)	179478 (156451, 198487)	17.41 (15.46, 19.13)	-1.74 (-1.94, -1.54)	
Western Sub-Saharan Africa	4358 (2251, 5572)	5.07 (2.70, 6.49)	11705 (5127, 15379)	6.09 (2.79, 7.89)	0.72 (0.67, 0.78)	

Abbreviations: LCC, Chronic Lymphocytic Leukemia; DALYs, disability-adjusted life years; EAPC, estimate the annual percentage change.

Table S3. The number of deaths and the ASDR of LCC in 1990 and 2021, and its temporal trends from 1990 to 2021.

Characteristic	1990				2021				1990-2021	
	Number of cases (95%UI)		ASDR/1000 00 (95%UI)		Number of cases (95%UI)		ASDR/1000 00 (95%UI)		EAPC (95%CI)	
Global	29278 31837)	(25730,	0.83 0.90)	(0.74,	45573 51085)	(37693,	0.55 0.62)	(0.46,	-1.45 1.34)	(-1.56, -
SDI regions										
Low SDI	14137 14772)	(13128,	1.26 1.32)	(1.17,	17961 19401)	(15598,	0.73 0.79)	(0.65,	-1.88 1.71)	(-2.05, -
Low-middle SDI	8300 9158)	(7452,	0.89 0.98)	(0.80,	12978 14997)	(10852,	0.67 0.78)	(0.56,	-1.10 0.94)	(-1.26, -
Middle SDI	4681 5780)	(2865,	0.46 0.56)	(0.30,	9437 12161)	(6372,	0.37 0.48)	(0.26,	-0.74 0.67)	(-0.80, -
High-middle SDI	1019 (564, 1288)		0.19 0.24)	(0.11,	2864 3551)	(1607,	0.22 0.27)	(0.13,	0.53 0.62)	(0.44,
High SDI	1100 (633, 1453)		0.55 0.73)	(0.32,	2268 3205)	(1173,	0.53 0.75)	(0.29,	-0.20 0.13)	(-0.28, -
Regions										
Andean Latin America	51 (39, 70)		0.26 0.36)	(0.19,	161 (107, 210)		0.28 0.36)	(0.19,	0.47 0.70)	(0.23,
Australasia	277 (252, 300)		1.20 1.29)	(1.08,	511 (425, 584)		0.83 0.95)	(0.70,	-1.11 0.95)	(-1.27, -
Caribbean	178 (163, 198)		0.73 0.80)	(0.67,	284 (239, 330)		0.52 0.61)	(0.44,	-0.91 0.74)	(-1.09, -
Central Asia	178 (147, 208)		0.37 0.43)	(0.30,	214 (174, 268)		0.27 0.33)	(0.22,	-1.09 0.89)	(-1.29, -
Central Europe	1626 (1508, 1773)		1.12 1.22)	(1.04,	2788 (2507, 3041)		1.18 1.28)	(1.06,	0.39 0.64)	(0.14,
Central Latin America	292 (276, 308)		0.38 0.41)	(0.36,	798 (706, 894)		0.34 0.38)	(0.30,	-0.53 0.35)	(-0.70, -
Central Sub-Saharan Africa	105 (50, 151)		0.57 0.86)	(0.28,	299 (116, 461)		0.66 1.05)	(0.26,	0.50 0.54)	(0.45,
East Asia	4926 (2870, 6660)		0.54 0.72)	(0.32,	8815 (5658, 12611)		0.43 0.62)	(0.28,	-0.78 0.68)	(-0.87, -
Eastern Europe	2483 (2240, 2719)		0.89 0.97)	(0.80,	3215 (2934, 3513)		0.90 0.98)	(0.82,	-0.62 0.23)	(-1.02, -
Eastern Sub-Saharan Africa	819 (525, 1110)		1.22 1.64)	(0.80,	1644 (919, 2395)		1.18 1.69)	(0.67,	-0.23 0.18)	(-0.29, -
High-income Asia Pacific	211 (192, 245)		0.11 0.13)	(0.10,	451 (370, 512)		0.08 0.09)	(0.06,	-1.33 1.05)	(-1.61, -
High-income North America	6328 (5817, 6602)		1.72 1.80)	(1.59,	7252 (6248, 7794)		0.99 1.06)	(0.86,	-2.04 1.78)	(-2.31, -
North Africa and Middle East	1192 (509, 1609)		0.84 1.13)	(0.38,	3119 (1408, 4025)		0.81 1.03)	(0.37,	0.07 0.18)	(-0.03,
Oceania	1 (0, 3)		0.05 0.12)	(0.00,	0 (0, 1)		0.01 0.01)	(0.00,	-7.36 6.49)	(-8.22, -
South Asia	384 (146, 536)		0.08 0.11)	(0.03,	1141 (576, 1605)		0.09 0.12)	(0.04,	0.18 0.28)	(0.08,
Southeast Asia	462 (238, 609)		0.20 0.26)	(0.10,	1051 (661, 1569)		0.18 0.26)	(0.11,	-0.61 0.50)	(-0.72, -
Southern Latin America	344 (303, 390)		0.78 0.89)	(0.69,	446 (388, 502)		0.49 0.55)	(0.42,	-1.54 1.15)	(-1.94, -
Southern Sub-Saharan Africa	234 (108, 318)		0.97 1.34)	(0.46,	593 (296, 765)		1.20 1.53)	(0.61,	0.79 1.05)	(0.54,
Tropical Latin America	382 (353, 410)		0.48 0.52)	(0.44,	1240 (1104, 1341)		0.50 0.54)	(0.45,	0.16 0.32)	(-0.00,
Western Europe	8621 (8009, 9112)		1.43 1.50)	(1.32,	11068 (9433, 12209)		0.95 1.04)	(0.82,	-1.41 1.28)	(-1.54, -
Western Sub-Saharan Africa	184 (99, 235)		0.25 0.32)	(0.14,	482 (224, 625)		0.30 0.39)	(0.15,	0.80 0.85)	(0.74,

Abbreviations: LCC, Chronic Lymphocytic Leukemia; ASDR, age-standardized deaths rate; EAPC, estimate the annual percentage change.

