

# Age-period-cohort analysis and prediction of tuberculosis trends in China—based on the Global Burden of Disease 2021 data

## Supplementary Materials

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Table S1 Number and ASR of TB incidence in China in 2021

|          | Incidence                    |                           |                           |                        |                        |
|----------|------------------------------|---------------------------|---------------------------|------------------------|------------------------|
|          | Num_1990                     | ASR_1990 (per 100,000)    | Num_2021                  | ASR_2021 (per 100,000) | EAPC_CI                |
| China    | 1167808 (1001441 to 1359621) | 109.01 (94.81 to 124.61)  | 617726 (549548 to 688348) | 36.28 (32.63 to 40.47) | -3.78 (-3.89 to -3.67) |
| Gender   |                              |                           |                           |                        |                        |
| Male     | 683686 (593332 to 789780)    | 130.77 (113.94 to 149.71) | 406433 (360732 to 452642) | 46.75 (41.84 to 51.91) | -4.25 (-4.39 to -4.11) |
| Female   | 484122 (407126 to 574804)    | 89.27 (76.56 to 103.22)   | 211293 (186374 to 236357) | 26.27 (23.19 to 29.49) | -3.49 (-3.59 to -3.4)  |
| age_name |                              |                           |                           |                        |                        |

|                |                          |                           |                         |                           |                        |
|----------------|--------------------------|---------------------------|-------------------------|---------------------------|------------------------|
| <5 years       | 78692 (58809 to 101095)  | 70.38 (52.6 to 90.42)     | 9714 (7664 to 12247)    | 12.51 (9.87 to 15.77)     | -5.85 (-6.14 to -5.55) |
| 05 to 9 years  | 35421 (22103 to 52487)   | 33.97 (21.2 to 50.33)     | 5296 (3480 to 7837)     | 5.53 (3.63 to 8.18)       | -5.7 (-6.07 to -5.34)  |
| 10 to 14 years | 55868 (34628 to 81961)   | 54.62 (33.85 to 80.12)    | 8896 (5488 to 13413)    | 10.32 (6.37 to 15.56)     | -5.46 (-5.65 to -5.27) |
| 15 to 19 years | 117709 (68706 to 173944) | 92.93 (54.24 to 137.33)   | 23710 (15415 to 33892)  | 31.75 (20.64 to 45.39)    | -3.5 (-3.61 to -3.38)  |
| 20 to 24 years | 123723 (71464 to 191194) | 93.73 (54.14 to 144.84)   | 30396 (18914 to 43091)  | 41.54 (25.85 to 58.89)    | -2.67 (-2.83 to -2.5)  |
| 25 to 29 years | 85724 (49621 to 131307)  | 78.01 (45.16 to 119.49)   | 28082 (17827 to 42149)  | 32.47 (20.61 to 48.74)    | -3.06 (-3.21 to -2.91) |
| 30 to 34 years | 67050 (42130 to 98277)   | 75.98 (47.74 to 111.37)   | 38932 (25614 to 54533)  | 32.13 (21.14 to 45.01)    | -2.99 (-3.1 to -2.87)  |
| 35 to 39 years | 76040 (44520 to 111816)  | 83.25 (48.74 to 122.42)   | 35639 (22770 to 48927)  | 33.63 (21.49 to 46.17)    | -3.16 (-3.29 to -3.03) |
| 40 to 44 years | 62192 (37752 to 94346)   | 92.69 (56.27 to 140.62)   | 32935 (21842 to 45862)  | 35.98 (23.86 to 50.1)     | -3.39 (-3.52 to -3.26) |
| 45 to 49 years | 51690 (31569 to 78447)   | 100.14 (61.16 to 151.97)  | 39238 (27662 to 53717)  | 35.57 (25.07 to 48.69)    | -3.78 (-3.93 to -3.62) |
| 50 to 54 years | 61496 (38074 to 90584)   | 128.89 (79.8 to 189.86)   | 50214 (33922 to 68264)  | 41.55 (28.07 to 56.48)    | -4.09 (-4.25 to -3.94) |
| 55 to 59 years | 75331 (46849 to 110454)  | 173.7 (108.02 to 254.68)  | 56675 (39276 to 75389)  | 51.55 (35.72 to 68.57)    | -4.34 (-4.51 to -4.17) |
| 60 to 64 years | 80303 (48559 to 117812)  | 227.25 (137.41 to 333.39) | 51400 (34719 to 71457)  | 70.41 (47.56 to 97.88)    | -4.17 (-4.32 to -4.03) |
| 65 to 69 years | 79293 (49677 to 109063)  | 290.64 (182.09 to 399.76) | 80256 (58138 to 103330) | 104.63 (75.8 to 134.71)   | -3.57 (-3.72 to -3.43) |
| 70 to 74 years | 56117 (37575 to 76931)   | 298.21 (199.68 to 408.82) | 54571 (38629 to 72165)  | 102.39 (72.48 to 135.4)   | -3.53 (-3.68 to -3.39) |
| 75 to 79 years | 34195 (22255 to 47485)   | 300.47 (195.55 to 417.24) | 31827 (21941 to 42706)  | 96.1 (66.25 to 128.95)    | -3.65 (-3.77 to -3.53) |
| 80 to 84 years | 18589 (14028 to 24138)   | 350.92 (264.83 to 455.68) | 23278 (17819 to 28728)  | 117.61 (90.03 to 145.15)  | -3.57 (-3.7 to -3.44)  |
| 85 to 89 years | 6707 (5134 to 8465)      | 397.6 (304.33 to 501.82)  | 12047 (9570 to 14782)   | 126.47 (100.47 to 155.18) | -3.75 (-3.88 to -3.61) |
| 90 to 94 years | 1442 (1014 to 1870)      | 469.91 (330.55 to 609.38) | 3788 (2870 to 4875)     | 129.18 (97.9 to 166.26)   | -4.15 (-4.28 to -4)    |
| 95+ years      | 228 (136 to 315)         | 561.88 (336.26 to 777.58) | 832 (548 to 1179)       | 130.14 (85.81 to 184.48)  | -4.7 (-4.84 to -4.55)  |

Table S2 Number and ASR of TB deaths in China in 2021

|                 | Deaths                    |                        |                        |                        |                           |
|-----------------|---------------------------|------------------------|------------------------|------------------------|---------------------------|
|                 | Num_1990                  | ASR_1990 (per 100,000) | Num_2021               | ASR_2021 (per 100,000) | EAPC_CI                   |
| <b>China</b>    | 171091 (141634 to 204908) | 20.09 (16.68 to 23.84) | 37332 (29309 to 49368) | 1.91 (1.51 to 2.51)    | -7.79 (-8.06 to -7.51)    |
| <b>Gender</b>   |                           |                        |                        |                        |                           |
| Male            | 103742 (77568 to 132622)  | 25.49 (18.96 to 32.55) | 26981 (19576 to 38551) | 2.9 (2.13 to 4.12)     | -7.19 (-7.46 to -6.91)    |
| Female          | 67349 (56026 to 79053)    | 15.5 (12.96 to 18.11)  | 10351 (7976 to 13860)  | 1.03 (0.79 to 1.37)    | -8.99 (-9.31 to -8.67)    |
| <b>age_name</b> |                           |                        |                        |                        |                           |
| <5 years        | 17501 (14612 to 20663)    | 15.65 (13.07 to 18.48) | 210 (165 to 268)       | 0.27 (0.21 to 0.34)    | -12.57 (-13 to -12.14)    |
| 05 to 9 years   | 1702 (1414 to 1999)       | 1.63 (1.36 to 1.92)    | 46 (38 to 58)          | 0.05 (0.04 to 0.06)    | -11.44 (-12.04 to -10.84) |
| 10 to 14 years  | 1496 (1254 to 1736)       | 1.46 (1.23 to 1.7)     | 55 (46 to 67)          | 0.06 (0.05 to 0.08)    | -9.79 (-10.14 to -9.44)   |
| 15 to 19 years  | 3123 (2605 to 3693)       | 2.47 (2.06 to 2.92)    | 134 (108 to 167)       | 0.18 (0.14 to 0.22)    | -8.53 (-8.75 to -8.3)     |
| 20 to 24 years  | 4874 (3965 to 5900)       | 3.69 (3 to 4.47)       | 301 (238 to 396)       | 0.41 (0.32 to 0.54)    | -7.72 (-8.22 to -7.22)    |
| 25 to 29 years  | 4886 (3984 to 5855)       | 4.45 (3.63 to 5.33)    | 512 (397 to 679)       | 0.59 (0.46 to 0.78)    | -7.37 (-7.86 to -6.88)    |
| 30 to 34 years  | 5297 (4308 to 6247)       | 6 (4.88 to 7.08)       | 891 (683 to 1200)      | 0.74 (0.56 to 0.99)    | -7.33 (-7.67 to -7)       |
| 35 to 39 years  | 7417 (6115 to 8990)       | 8.12 (6.7 to 9.84)     | 868 (670 to 1169)      | 0.82 (0.63 to 1.1)     | -7.17 (-7.38 to -6.97)    |
| 40 to 44 years  | 7864 (6298 to 9539)       | 11.72 (9.39 to 14.22)  | 1096 (832 to 1495)     | 1.2 (0.91 to 1.63)     | -7.37 (-7.57 to -7.17)    |
| 45 to 49 years  | 8531 (6773 to 10397)      | 16.53 (13.12 to 20.14) | 1767 (1281 to 2370)    | 1.6 (1.16 to 2.15)     | -7.72 (-7.97 to -7.48)    |
| 50 to 54 years  | 10919 (8586 to 13400)     | 22.89 (18 to 28.09)    | 2704 (1976 to 3637)    | 2.24 (1.63 to 3.01)    | -7.73 (-7.92 to -7.54)    |

|                |                        |                           |                     |                        |                         |
|----------------|------------------------|---------------------------|---------------------|------------------------|-------------------------|
| 55 to 59 years | 14180 (11266 to 17358) | 32.7 (25.98 to 40.02)     | 2842 (2125 to 3814) | 2.58 (1.93 to 3.47)    | -8.05 (-8.28 to -7.83)  |
| 60 to 64 years | 16814 (13381 to 20389) | 47.58 (37.87 to 57.7)     | 3232 (2435 to 4418) | 4.43 (3.34 to 6.05)    | -8.1 (-8.45 to -7.75)   |
| 65 to 69 years | 18956 (15402 to 23359) | 69.48 (56.45 to 85.62)    | 4981 (3775 to 6655) | 6.49 (4.92 to 8.68)    | -7.83 (-8.18 to -7.48)  |
| 70 to 74 years | 18595 (15144 to 22505) | 98.82 (80.48 to 119.59)   | 5344 (4136 to 7070) | 10.03 (7.76 to 13.27)  | -7.38 (-7.69 to -7.07)  |
| 75 to 79 years | 15290 (12546 to 18236) | 134.35 (110.24 to 160.24) | 4874 (3809 to 6472) | 14.72 (11.5 to 19.54)  | -7.03 (-7.29 to -6.76)  |
| 80 to 84 years | 9141 (7536 to 10977)   | 172.57 (142.26 to 207.22) | 4417 (3402 to 5789) | 22.32 (17.19 to 29.25) | -6.7 (-6.95 to -6.45)   |
| 85 to 89 years | 3696 (3059 to 4367)    | 219.11 (181.34 to 258.87) | 2385 (1918 to 3004) | 25.03 (20.14 to 31.54) | -7.42 (-7.76 to -7.09)  |
| 90 to 94 years | 683 (561 to 802)       | 222.59 (182.82 to 261.46) | 564 (442 to 691)    | 19.24 (15.06 to 23.58) | -8.71 (-9.23 to -8.19)  |
| 95+ years      | 124 (98 to 148)        | 307.29 (242 to 365.01)    | 109 (78 to 139)     | 17.02 (12.14 to 21.69) | -9.61 (-10.22 to -9.01) |

Table S3 Number and ASR of TB DALYs in China in 2021

|                 | Disability-Adjusted Life Years (DALYs) |                              |                              |                           |                          |
|-----------------|----------------------------------------|------------------------------|------------------------------|---------------------------|--------------------------|
|                 | Num_1990                               | ASR_1990 (per 100,000)       | Num_2021                     | ASR_2021 (per 100,000)    | EAPC_CI                  |
| <b>China</b>    | 7325730 (6221452 to 8528411)           | 719.42 (610.63 to 837.38)    | 1375510 (1120820 to 1723072) | 76.22 (62.59 to 94.45)    | -7.49 (-7.7 to -7.27)    |
| <b>Gender</b>   |                                        |                              |                              |                           |                          |
| Male            | 4325971 (3342350 to 5378669)           | 855.49 (660.79 to 1064.16)   | 991182 (767265 to 1335566)   | 108.66 (85.47 to 145.29)  | -6.84 (-7.04 to -6.65)   |
| Female          | 2999759 (2585588 to 3434183)           | 592.86 (510.12 to 677.66)    | 384328 (308366 to 483222)    | 45.02 (36.46 to 55.79)    | -8.66 (-8.95 to -8.38)   |
| <b>age_name</b> |                                        |                              |                              |                           |                          |
| <5 years        | 1611064 (1353446 to 1902099)           | 1440.95 (1210.53 to 1701.25) | 27087 (21989 to 33570)       | 34.88 (28.31 to 43.22)    | -11.77 (-12.1 to -11.44) |
| 05 to 9 years   | 161766 (135597 to 189616)              | 155.13 (130.03 to 181.84)    | 7482 (5699 to 9827)          | 7.81 (5.95 to 10.26)      | -9.87 (-10.3 to -9.44)   |
| 10 to 14 years  | 121631 (102114 to 141549)              | 118.91 (99.83 to 138.38)     | 5112 (4252 to 6063)          | 5.93 (4.93 to 7.03)       | -9.45 (-9.76 to -9.14)   |
| 15 to 19 years  | 265089 (222770 to 313517)              | 209.28 (175.87 to 247.52)    | 21595 (16091 to 28718)       | 28.92 (21.55 to 38.46)    | -6.66 (-6.9 to -6.42)    |
| 20 to 24 years  | 395698 (322791 to 469553)              | 299.77 (244.54 to 355.72)    | 46768 (34017 to 64005)       | 63.91 (46.49 to 87.47)    | -5.66 (-6.1 to -5.22)    |
| 25 to 29 years  | 352652 (288742 to 414344)              | 320.91 (262.76 to 377.06)    | 51798 (40152 to 67639)       | 59.89 (46.43 to 78.21)    | -6.12 (-6.49 to -5.75)   |
| 30 to 34 years  | 337230 (275658 to 392759)              | 382.15 (312.38 to 445.08)    | 70816 (55807 to 92028)       | 58.45 (46.06 to 75.96)    | -6.55 (-6.82 to -6.27)   |
| 35 to 39 years  | 429818 (353234 to 519044)              | 470.57 (386.73 to 568.26)    | 63067 (48222 to 80542)       | 59.52 (45.51 to 76.01)    | -6.53 (-6.69 to -6.38)   |
| 40 to 44 years  | 403928 (328254 to 479508)              | 602.03 (489.24 to 714.68)    | 66113 (51190 to 86117)       | 72.23 (55.93 to 94.08)    | -6.9 (-7.08 to -6.71)    |
| 45 to 49 years  | 394076 (320131 to 477306)              | 763.43 (620.18 to 924.67)    | 93559 (71160 to 121105)      | 84.81 (64.5 to 109.77)    | -7.3 (-7.51 to -7.09)    |
| 50 to 54 years  | 444674 (360121 to 548764)              | 932.02 (754.8 to 1150.19)    | 122669 (93010 to 159193)     | 101.5 (76.96 to 131.72)   | -7.38 (-7.55 to -7.22)   |
| 55 to 59 years  | 512283 (415985 to 612934)              | 1181.22 (959.17 to 1413.3)   | 117618 (89091 to 153773)     | 106.98 (81.03 to 139.87)  | -7.67 (-7.86 to -7.48)   |
| 60 to 64 years  | 524232 (426531 to 631629)              | 1483.5 (1207.02 to 1787.42)  | 114720 (89112 to 150540)     | 157.14 (122.06 to 206.21) | -7.62 (-7.91 to -7.32)   |
| 65 to 69 years  | 507033 (418432 to 616202)              | 1858.5 (1533.74 to 2258.65)  | 178241 (138826 to 225990)    | 232.38 (180.99 to 294.63) | -6.84 (-7.1 to -6.58)    |
| 70 to 74 years  | 419416 (349200 to 496995)              | 2228.85 (1855.7 to 2641.11)  | 170759 (132535 to 212560)    | 320.39 (248.67 to 398.83) | -6.23 (-6.43 to -6.02)   |
| 75 to 79 years  | 272096 (227551 to 320747)              | 2390.86 (1999.44 to 2818.34) | 110032 (88115 to 138475)     | 332.23 (266.06 to 418.11) | -6.23 (-6.43 to -6.03)   |
| 80 to 84 years  | 125575 (105259 to 149256)              | 2370.63 (1987.1 to 2817.68)  | 70861 (57775 to 89499)       | 358.03 (291.91 to 452.2)  | -6.19 (-6.4 to -5.98)    |
| 85 to 89 years  | 39937 (33565 to 47089)                 | 2367.52 (1989.82 to 2791.53) | 29692 (24493 to 36760)       | 311.7 (257.12 to 385.9)   | -6.94 (-7.24 to -6.63)   |
| 90 to 94 years  | 6438 (5374 to 7527)                    | 2098.36 (1751.37 to 2453.35) | 6381 (5210 to 7773)          | 217.62 (177.69 to 265.1)  | -8.05 (-8.5 to -7.59)    |
| 95+ years       | 1093 (881 to 1271)                     | 2699.36 (2174.55 to 3139.7)  | 1141 (872 to 1400)           | 178.55 (136.48 to 219.03) | -9.09 (-9.63 to -8.55)   |

Table S4 Number and ASR of TB incidence, mortality, and DALYs in China from 1990 to 2021

| Year | Incidence        |          |          |          |          |          | Deaths           |          |          |          |          |          | Disability-Adjusted Life Years (DALYs) |          |          |          |          |          |
|------|------------------|----------|----------|----------|----------|----------|------------------|----------|----------|----------|----------|----------|----------------------------------------|----------|----------|----------|----------|----------|
|      | ASR (per 100000) |          |          | Number   |          |          | ASR (per 100000) |          |          | Number   |          |          | ASR (per 100000)                       |          |          | Number   |          |          |
|      | Both             | Male     | Female   | Both     | Male     | Female   | Both             | Male     | Female   | Both     | Male     | Female   | Both                                   | Male     | Female   | Both     | Male     | Female   |
| 1990 | 109.0141         | 130.7739 | 89.27437 | 1167807. | 683685.6 | 484122.1 | 20.09498         | 25.49466 | 15.50355 | 171090.8 | 103742.0 | 67348.81 | 719.4224                               | 855.4918 | 592.8627 | 7325730. | 4325971. | 2999758. |
|      | 776              | 329      | 549      | 741      | 254      | 157      | 577              | 476      | 191      | 226      | 075      | 505      | 13                                     | 334      | 458      | 059      | 167      | 892      |
| 1991 | 107.5435         | 129.1949 | 87.75648 | 1170243. | 688149.1 | 482094.1 | 19.15481         | 24.45920 | 14.61653 | 166800.9 | 102076.1 | 64724.79 | 688.7907                               | 824.4511 | 561.8218 | 7113497. | 4243443. | 2870053. |
|      | 845              | 003      | 541      | 368      | 781      | 894      | 012              | 354      | 177      | 446      | 493      | 528      | 184                                    | 64       | 336      | 496      | 613      | 884      |
| 1992 | 105.7590         | 127.2576 | 85.99477 | 1166271. | 688822.7 | 477448.4 | 17.93556         | 22.99247 | 13.57838 | 159363.5 | 98251.68 | 61111.88 | 648.0471                               | 779.7387 | 524.0736 | 6758097. | 4068975. | 2689121. |
|      | 244              |          | 448      | 198      | 051      | 932      | 531              | 544      | 052      | 734      | 728      | 614      | 552                                    | 539      | 354      | 427      | 888      | 54       |
| 1993 | 103.6438         | 124.9369 | 83.98249 | 1156881. | 686129.0 | 470752.7 | 16.58032         | 21.37473 | 12.43187 | 150079.0 | 93266.73 | 56812.32 | 601.4390                               | 728.1853 | 481.6120 | 6327201. | 3846067. | 2481134. |
|      | 083              | 411      | 159      | 874      | 864      | 876      | 294              | 214      | 302      | 613      | 156      | 975      | 1                                      | 181      | 464      | 993      | 04       | 954      |
| 1994 | 101.2475         | 122.2525 | 81.77880 | 1143310. | 680753.8 | 462556.3 | 15.28387         | 19.75465 | 11.40000 | 141217.8 | 88009.63 | 53208.24 | 559.0185                               | 676.0446 | 448.4732 | 5958463. | 3615180. | 2343283. |
|      | 95               | 243      | 168      | 143      | 377      | 05       | 75               | 892      | 448      | 803      | 721      | 313      | 64                                     | 771      | 177      | 834      | 245      | 589      |
| 1995 | 98.53858         | 119.2023 | 79.35410 | 1124920. | 672160.9 | 452759.4 | 14.11532         | 18.37619 | 10.40293 | 133089.3 | 83531.23 | 49558.07 | 520.5097                               | 630.9570 | 416.2187 | 5610557. | 3410814. | 2199743. |
|      | 171              | 289      | 061      | 413      | 867      | 262      | 734              | 155      | 049      | 081      | 673      | 135      | 035                                    | 566      | 607      | 695      | 505      | 19       |
| 1996 | 95.17131         | 115.3524 | 76.45238 | 1098226. | 658107.2 | 440118.7 | 13.00492         | 17.07160 | 9.448143 | 125004.2 | 79244.17 | 45760.04 | 481.5917                               | 588.0760 | 380.7239 | 5235191. | 3213586. | 2021604. |
|      | 708              | 092      | 361      | 059      | 85       | 738      | 83               | 594      | 67       | 192      | 262      | 659      | 887                                    | 846      | 622      | 475      | 498      | 977      |
| 1997 | 91.10739         | 110.6380 | 73.04541 | 1062641. | 638214.4 | 424427.0 | 11.98753         | 15.88025 | 8.582863 | 117506.5 | 75195.67 | 42310.86 | 445.0046                               | 547.3245 | 347.9858 | 4879187. | 3022061. | 1857125. |
|      | 904              | 246      | 716      | 51       | 713      | 382      | 667              | 239      | 172      | 403      | 789      | 244      | 971                                    | 33       | 992      | 643      | 88       | 763      |
| 1998 | 86.79842         | 105.6249 | 69.45291 | 1023526. | 615993.6 | 407533.2 | 11.20090         | 14.92296 | 7.950678 | 112258.4 | 72198.19 | 40060.28 | 416.5759                               | 513.5713 | 324.7344 | 4623137. | 2871209. | 1751928. |
|      | 726              | 96       | 065      | 929      | 81       | 483      | 593              | 063      | 117      | 872      | 899      | 825      | 335                                    | 892      | 665      | 686      | 545      | 141      |
| 1999 | 82.66568         | 100.8531 | 65.97077 | 987233.5 | 595674.3 | 391559.1 | 10.64326         | 14.23807 | 7.505482 | 109122.2 | 70479.72 | 38642.50 | 393.7433                               | 487.4946 | 304.8909 | 4430326. | 2766208. | 1664118. |
|      | 404              | 552      | 784      | 622      | 66       | 962      | 847              | 41       | 003      | 273      | 605      | 129      | 543                                    | 417      | 857      | 5        | 256      | 244      |
| 2000 | 79.15048         | 96.87290 | 62.92430 | 958173.2 | 580156.2 | 378016.9 | 10.30474         | 13.86030 | 7.194990 | 107745.5 | 70064.48 | 37681.05 | 374.9563                               | 468.9746 | 285.5249 | 4279637. | 2704835. | 1574802. |
|      | 119              | 082      | 696      | 172      | 187      | 985      | 135              | 251      | 593      | 397      | 79       | 179      | 484                                    | 761      | 723      | 927      | 268      | 66       |
| 2001 | 75.73267         | 93.13926 | 59.80499 | 931905.8 | 567557.4 | 364348.4 | 9.774635         | 13.26877 | 6.746635 | 104492.6 | 68341.71 | 36150.96 | 352.3980                               | 443.7695 | 265.8401 | 4093363. | 2603523. | 1489840. |
|      | 531              | 599      | 481      | 981      | 771      | 211      | 533              | 08       | 74       | 818      | 649      | 533      | 81                                     | 659      | 957      | 79       | 392      | 398      |
| 2002 | 71.93929         | 89.03628 | 56.25847 | 901616.1 | 553554.9 | 348061.2 | 9.339913         | 12.78021 | 6.366906 | 102358.8 | 67414.61 | 34944.25 | 331.8418                               | 423.3323 | 244.9729 | 3930918. | 2534905. | 1396012. |
|      | 436              | 622      | 608      | 809      | 566      | 244      | 579              | 958      | 244      | 742      | 849      | 566      | 025                                    | 29       | 519      | 339      | 551      | 788      |
| 2003 | 68.17687         | 84.98267 | 52.71512 | 871098.5 | 539730.0 | 331368.4 | 8.927721         | 12.37850 | 5.972682 | 100349.7 | 66687.44 | 33662.33 | 311.2955                               | 403.7200 | 223.5651 | 3768771. | 2468065. | 1300706. |
|      | 488              | 026      | 513      | 196      | 527      | 669      | 836              | 355      | 225      | 877      | 925      | 848      | 113                                    | 691      | 396      | 426      | 377      | 05       |
| 2004 | 64.86617         | 81.37832 | 49.62370 | 845482.9 | 528521.6 | 316961.3 | 8.381089         | 11.79560 | 5.477593 | 96767.11 | 65024.09 | 31743.02 | 289.5319                               | 380.8498 | 202.9545 | 3590206. | 2380318. | 1209888. |
|      | 225              | 634      | 651      | 924      | 672      | 252      | 317              | 12       | 128      | 691      | 298      | 393      | 004                                    | 575      | 363      | 734      | 224      | 511      |
| 2005 | 62.43920         | 78.66391 | 47.42401 | 828801.2 | 521469.5 | 307331.6 | 7.529847         | 10.78437 | 4.771212 | 88909.10 | 60620.19 | 28288.91 | 259.6432                               | 347.1665 | 176.6879 | 3289646. | 2212701. | 1076945. |
|      | 742              | 769      | 172      | 35       | 578      | 772      | 462              | 037      | 178      | 729      | 632      | 097      | 917                                    | 015      | 196      | 793      | 326      | 467      |
| 2006 | 60.71278         | 76.68574 | 45.91221 | 821099.8 | 518968.0 | 302131.8 | 6.300329         | 9.066084 | 3.932198 | 77228.44 | 53099.13 | 24129.31 | 224.5489                               | 302.4100 | 150.3158 | 2927072. | 1986352. | 940720.2 |
|      | 41               | 171      | 605      | 652      | 485      | 166      | 907              | 457      | 058      | 449      | 129      | 32       | 253                                    | 869      | 633      | 76       | 491      | 691      |
| 2007 | 59.23051         | 74.99692 | 44.59884 | 816430.3 | 518153.4 | 298276.9 | 5.478760         | 7.991407 | 3.325172 | 69637.83 | 48468.26 | 21169.56 | 199.2252                               | 271.4300 | 130.3076 | 2671389. | 1833109. | 838280.1 |
|      | 37               | 043      | 151      | 817      | 634      | 182      | 442              | 565      | 942      | 336      | 965      | 37       | 746                                    | 898      | 179      | 379      | 236      | 424      |
| 2008 | 57.84430         | 73.39634 | 43.37829 | 812081.4 | 517370.8 | 294710.5 | 4.909077         | 7.223904 | 2.910202 | 64446.59 | 45344.73 | 19101.86 | 181.1398                               | 249.0162 | 116.1795 | 2490723. | 1726235. | 764488.2 |

|     |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 8   | 05       | 223      | 252      | 511      | 709      | 801      | 402      | 333      | 099      | 761      | 375      | 386      | 751      | 698      | 086      | 478      | 214      | 64       |
| 200 | 56.41640 | 71.73805 | 42.13787 | 806591.7 | 515840.7 | 290751.0 | 4.379200 | 6.468668 | 2.566143 | 59304.74 | 41937.41 | 17367.33 | 164.5038 | 227.1102 | 104.5206 | 2313991. | 1611569. | 702422.2 |
| 9   | 822      | 006      | 044      | 509      | 22       | 289      | 664      | 678      | 63       | 932      | 877      | 055      | 837      | 679      | 088      | 979      | 757      | 221      |
| 201 | 54.82744 | 69.87544 | 40.78015 | 796441.4 | 511360.3 | 285081.1 | 3.946765 | 5.834692 | 2.293197 | 54979.31 | 39035.85 | 15943.46 | 149.8262 | 207.6875 | 94.30539 | 2152567. | 1506655. | 645911.5 |
| 0   | 669      | 182      | 046      | 563      | 003      | 56       | 144      | 076      | 429      | 921      | 912      | 01       | 912      | 991      | 328      | 164      | 658      | 059      |
| 201 | 52.48351 | 67.11692 | 38.80079 | 774695.3 | 500029.9 | 274665.4 | 3.619711 | 5.371687 | 2.075444 | 52062.49 | 37169.08 | 14893.40 | 138.6680 | 193.1935 | 86.28356 | 2034808. | 1432174. | 602634.4 |
| 1   | 366      | 961      | 947      | 481      | 032      | 448      | 611      | 635      | 318      | 719      | 778      | 942      | 44       | 168      | 959      | 809      | 337      | 725      |
| 201 | 49.33235 | 63.39131 | 36.16229 | 740214.5 | 480983.5 | 259231.0 | 3.343284 | 4.976021 | 1.894886 | 49732.48 | 35664.43 | 14068.05 | 128.4475 | 179.8070 | 79.04126 | 1930475. | 1365444. | 565030.7 |
| 2   | 317      | 346      | 638      | 666      | 299      | 367      | 527      | 677      | 64       | 979      | 275      | 704      | 805      | 428      | 252      | 294      | 572      | 219      |
| 201 | 46.01195 | 59.44071 | 33.40930 | 701709.5 | 459238.0 | 242471.4 | 3.062118 | 4.569005 | 1.718216 | 47021.55 | 33833.55 | 13188.00 | 117.7836 | 165.7206 | 71.62529 | 1813094. | 1288569. | 524525.3 |
| 3   | 956      | 749      | 145      | 653      | 674      | 979      | 929      | 692      | 348      | 109      | 039      | 07       | 399      | 844      | 458      | 531      | 188      | 421      |
| 201 | 43.16011 | 55.99994 | 31.08670 | 669523.1 | 440902.7 | 228620.3 | 2.842461 | 4.256212 | 1.576936 | 45123.71 | 32575.74 | 12547.97 | 109.2925 | 154.6357 | 65.60719 | 1724611. | 1231769. | 492841.4 |
| 4   | 225      | 666      | 324      | 288      | 41       | 878      | 523      | 647      | 413      | 62       | 108      | 512      | 059      | 75       | 3        | 281      | 876      | 059      |
| 201 | 41.42293 | 53.81316 | 29.75221 | 651773.6 | 430427.1 | 221346.5 | 2.721047 | 4.071419 | 1.511896 | 44588.61 | 32120.18 | 12468.42 | 104.3005 | 147.6717 | 62.54442 | 1683913. | 1202545. | 481367.6 |
| 5   | 116      | 288      | 071      | 781      | 63       | 151      | 642      | 292      | 229      | 017      | 39       | 627      | 931      | 944      | 5        | 231      | 566      | 654      |
| 201 | 40.62027 | 52.70113 | 29.22121 | 648281.4 | 428059.7 | 220221.7 | 2.604276 | 3.887325 | 1.455229 | 44077.53 | 31633.20 | 12444.33 | 100.0622 | 141.4700 | 60.22993 | 1652511. | 1178181. | 474330.4 |
| 6   | 786      | 613      | 562      | 696      | 171      | 525      | 738      | 126      | 672      | 841      | 717      | 124      | 218      | 529      | 088      | 913      | 448      | 654      |
| 201 | 40.05962 | 51.88425 | 28.87739 | 647841.8 | 427445.7 | 220396.0 | 2.414548 | 3.616430 | 1.339049 | 42120.41 | 30278.69 | 11841.71 | 94.02458 | 133.1726 | 56.38973 | 1582251. | 1130402. | 451848.8 |
| 7   | 786      | 604      | 107      | 463      | 598      | 865      | 385      | 238      | 829      | 344      | 82       | 524      | 129      | 301      | 19       | 374      | 558      | 164      |
| 201 | 39.57443 | 51.17527 | 28.57465 | 647980.5 | 427261.3 | 220719.1 | 2.248910 | 3.384346 | 1.234685 | 40357.52 | 29087.49 | 11270.02 | 88.79896 | 126.0556 | 52.98533 | 1518277. | 1087780. | 430497.3 |
| 8   | 452      | 391      | 967      | 338      | 959      | 379      | 355      | 354      | 137      | 705      | 739      | 967      | 093      | 606      | 933      | 588      | 202      | 862      |
| 201 | 39.00333 | 50.39070 | 28.16887 | 646239.5 | 426104.4 | 220135.1 | 2.103546 | 3.176337 | 1.147469 | 38908.65 | 28075.05 | 10833.59 | 84.07708 | 119.4571 | 50.07088 | 1463417. | 1050222. | 413194.5 |
| 9   | 582      | 28       | 979      | 841      | 31       | 531      | 44       | 722      | 976      | 214      | 685      | 53       | 502      | 605      | 577      | 224      | 687      | 368      |
| 202 | 37.88160 | 49.00623 | 27.26922 | 636093.8 | 420412.1 | 215681.7 | 2.001196 | 3.032063 | 1.084458 | 38042.51 | 27484.69 | 10557.81 | 80.21124 | 114.1676 | 47.57522 | 1420618. | 1022038. | 398580.8 |
| 0   | 566      | 957      | 93       | 901      | 54       | 361      | 162      | 754      | 197      | 016      | 712      | 304      | 737      | 063      | 262      | 974      | 163      | 106      |
| 202 | 36.27988 | 46.74879 | 26.26990 | 617725.6 | 406432.7 | 211292.8 | 1.907265 | 2.897157 | 1.028765 | 37331.56 | 26981.02 | 10350.54 | 76.21543 | 108.6581 | 45.02129 | 1375510. | 991182.1 | 384328.0 |
| 1   | 005      | 962      | 992      | 42       | 763      | 657      | 974      | 372      | 267      | 823      | 02       | 804      | 447      | 882      | 236      | 112      | 032      | 093      |

Table S5 Average Annual Percentage Change of the ASR for TB incidence, mortality, and DALYs in China from 1990 to 2021, categorized by gender

| Item                            | Year      | Sex    | AAPC(%， 95%CI)     | <i>t</i> | <i>P</i> |
|---------------------------------|-----------|--------|--------------------|----------|----------|
| Age-standardized incidence rate | 1990-2021 | Both   | -3.33(-3.45,-3.21) | -53.2694 | <0.001   |
|                                 |           | Male   | -3.09(-3.23,-2.94) | -41.297  | <0.001   |
|                                 |           | Female | -3.73(-3.91,-3.55) | -40.6552 | <0.001   |
| Age-standardized deaths rate    | 1990-2021 | Both   | -7.28(-7.55,-7.01) | -50.5709 | <0.001   |

|                             |           |        |                    |          |        |
|-----------------------------|-----------|--------|--------------------|----------|--------|
| Age-standardized DALYs rate | 1990-2021 | Male   | -6.84(-7.12,-6.56) | -46.203  | <0.001 |
|                             |           | Female | -8.26(-8.56,-7.96) | -51.3936 | <0.001 |
|                             |           | Both   | -6.77(-7.01,-6.54) | -55.062  | <0.001 |
|                             |           | Male   | -6.31(-6.53,-6.10) | -55.6673 | <0.001 |
|                             |           | Female | -7.69(-8.19,-7.18) | -28.697  | <0.001 |
|                             |           |        |                    |          |        |

Table S6 Number and ASR prediction of TB incidence, mortality and DALY in China from 2022 to 2046 based on APC model

| Year | Incidence        |        |             |             | Deaths           |        |             |             | Disability-Adjusted Life Years (DALYs) |        |             |             |
|------|------------------|--------|-------------|-------------|------------------|--------|-------------|-------------|----------------------------------------|--------|-------------|-------------|
|      | ASR (per 100000) |        | Number      |             | ASR (per 100000) |        | Number      |             | ASR (per 100000)                       |        | Number      |             |
|      | Male             | Female | Male        | Female      | Male             | Female | Male        | Female      | Male                                   | Female | Male        | Female      |
| 2022 | 47.14            | 26.44  | 414310.6303 | 213159.4655 | 2.78             | 0.99   | 26665.02485 | 10053.23723 | 106.66                                 | 45.43  | 980843.6303 | 383481.6464 |
| 2023 | 46.22            | 26.04  | 409001.5751 | 210919.1706 | 2.63             | 0.94   | 25740.64766 | 9704.622069 | 102.37                                 | 44     | 948309.8407 | 370764.2435 |
| 2024 | 45.29            | 25.64  | 403321.7345 | 208473.3859 | 2.47             | 0.89   | 24747.09794 | 9324.853225 | 98.07                                  | 42.58  | 913477.0283 | 357110.4923 |
| 2025 | 44.66            | 25.3   | 401169.2063 | 207298.3255 | 2.39             | 0.86   | 24539.7622  | 9247.577404 | 95.36                                  | 41.48  | 898013.1384 | 350485.8525 |
| 2026 | 44.03            | 24.97  | 398659.5361 | 206042.3656 | 2.31             | 0.83   | 24291.24483 | 9152.130042 | 92.64                                  | 40.38  | 881271.9896 | 343303.6641 |
| 2027 | 43.4             | 24.63  | 395822.7835 | 204732.0493 | 2.23             | 0.79   | 23987.31324 | 9032.747102 | 89.93                                  | 39.28  | 863124.9207 | 335504.0489 |
| 2028 | 42.77            | 24.3   | 392879.5603 | 203420.6305 | 2.15             | 0.76   | 23640.17292 | 8893.817949 | 87.22                                  | 38.18  | 843639.7638 | 327104.8434 |
| 2029 | 42.14            | 23.96  | 389869.5299 | 202092.6774 | 2.07             | 0.73   | 23251.70791 | 8736.464327 | 84.51                                  | 37.08  | 822699.3571 | 318082.4994 |
| 2030 | 41.84            | 23.77  | 390486.2987 | 202359.6851 | 2.04             | 0.72   | 23472.9908  | 8822.735623 | 83.28                                  | 36.57  | 817936.5517 | 315728.3824 |
| 2031 | 41.53            | 23.57  | 390792.4128 | 202576.8434 | 2.02             | 0.71   | 23668.44564 | 8898.393427 | 82.05                                  | 36.05  | 812370.6473 | 313025.3867 |
| 2032 | 41.22            | 23.38  | 390745.5771 | 202750.4993 | 1.99             | 0.7    | 23824.02954 | 8957.915239 | 80.82                                  | 35.54  | 805891.0047 | 309953.5018 |
| 2033 | 40.92            | 23.19  | 389913.8811 | 202499.9789 | 1.97             | 0.69   | 23951.977   | 9006.073206 | 79.59                                  | 35.03  | 798612.9454 | 306531.7183 |
| 2034 | 40.61            | 22.99  | 388653.7668 | 202028.611  | 1.94             | 0.68   | 24054.45326 | 9043.745356 | 78.35                                  | 34.52  | 790452.5821 | 302733.8933 |
| 2035 | 40.59            | 22.92  | 390445.9243 | 202845.4134 | 1.96             | 0.68   | 24715.42229 | 9309.404158 | 78.3                                   | 34.48  | 796136.0022 | 304633.2992 |
| 2036 | 40.56            | 22.86  | 391722.8329 | 203373.6823 | 1.97             | 0.69   | 25358.36981 | 9567.842194 | 78.24                                  | 34.43  | 800964.1463 | 306138.3272 |
| 2037 | 40.54            | 22.79  | 392432.997  | 203524.0542 | 1.99             | 0.69   | 25965.83315 | 9811.615477 | 78.18                                  | 34.39  | 804584.6486 | 307092.2433 |
| 2038 | 40.51            | 22.72  | 392677.2225 | 203468.5381 | 2.01             | 0.69   | 26544.06141 | 10046.85431 | 78.12                                  | 34.34  | 807047.9591 | 307734.0814 |
| 2039 | 40.49            | 22.65  | 392488.8206 | 203150.5693 | 2.03             | 0.7    | 27096.16653 | 10273.80982 | 78.06                                  | 34.3   | 808333.4424 | 307959.4531 |
| 2040 | 40.48            | 22.59  | 392723.711  | 202813.1096 | 2.05             | 0.7    | 27741.26894 | 10544.68707 | 78.03                                  | 34.25  | 810979.3325 | 308820.3634 |
| 2041 | 40.47            | 22.52  | 392672.1083 | 202291.62   | 2.07             | 0.71   | 28370.56959 | 10806.00334 | 78                                     | 34.21  | 812863.0131 | 309367.9699 |
| 2042 | 40.45            | 22.45  | 392426.5247 | 201588.5925 | 2.09             | 0.72   | 28974.97478 | 11052.07664 | 77.97                                  | 34.17  | 814000.0887 | 309609.5796 |
| 2043 | 40.44            | 22.38  | 392073.0889 | 200831.382  | 2.11             | 0.72   | 29550.98754 | 11280.79217 | 77.95                                  | 34.12  | 813992.2262 | 309378.3217 |

|      |       |       |             |             |      |      |             |             |       |       |             |             |
|------|-------|-------|-------------|-------------|------|------|-------------|-------------|-------|-------|-------------|-------------|
| 2044 | 40.43 | 22.32 | 391576.2435 | 199931.6596 | 2.13 | 0.73 | 30098.1976  | 11493.59192 | 77.92 | 34.08 | 812736.8838 | 308647.0763 |
| 2045 | 40.42 | 22.25 | 390918.6511 | 198893.1913 | 2.15 | 0.73 | 30607.69519 | 11689.60258 | 77.89 | 34.04 | 810420.4916 | 307495.9329 |
| 2046 | 40.4  | 22.18 | 390119.0457 | 197745.2638 | 2.18 | 0.74 | 31077.26485 | 11870.03736 | 77.86 | 33.99 | 807378.7445 | 306044.0004 |

Table S7 Number and ASR prediction of TB incidence, mortality and DALY in China from 2022 to 2046 based on BAPC model

| Year | Incidence        |             |             |             | Deaths           |             |             |             | Disability-Adjusted Life Years（DALYs） |             |             |             |
|------|------------------|-------------|-------------|-------------|------------------|-------------|-------------|-------------|---------------------------------------|-------------|-------------|-------------|
|      | ASR (per 100000) |             | Number      |             | ASR (per 100000) |             | Number      |             | ASR (per 100000)                      |             | Number      |             |
|      | Male             | Female      | Male        | Female      | Male             | Female      | Male        | Female      | Male                                  | Female      | Male        | Female      |
| 2022 | 43.40339788      | 25.19488211 | 175151.3626 | 313057.176  | 2.810202537      | 0.978134288 | 6799.855327 | 20269.24419 | 97.25847812                           | 41.72349953 | 290056.0424 | 701499.5597 |
| 2023 | 41.35810672      | 24.45477767 | 170296.8387 | 298514.7774 | 2.678161401      | 0.928238699 | 6464.017712 | 19330.44856 | 90.61499589                           | 39.42308688 | 274532.329  | 654041.4317 |
| 2024 | 39.41301307      | 23.73982813 | 165528.1974 | 284539.8817 | 2.552307958      | 0.880685418 | 6140.662391 | 18426.23407 | 84.42769479                           | 37.24914656 | 259723.1981 | 609520.6739 |
| 2025 | 37.56325011      | 23.05107523 | 160849.1356 | 271100.9703 | 2.432537764      | 0.835274753 | 5828.501307 | 17556.07798 | 78.66126692                           | 35.19009164 | 245554.5248 | 567713.0101 |
| 2026 | 35.79926244      | 22.38732118 | 156257.8658 | 258148.7655 | 2.318308108      | 0.791894073 | 5527.221267 | 16717.33816 | 73.27948339                           | 33.23531384 | 231974.1236 | 528418.9362 |
| 2027 | 34.11633835      | 21.74642538 | 151757.565  | 245686.3844 | 2.209500188      | 0.750518736 | 5237.499674 | 15911.55847 | 68.25635576                           | 31.38000277 | 218985.5449 | 491543.2919 |
| 2028 | 32.51589212      | 21.1283595  | 147352.6296 | 233739.2372 | 2.106063203      | 0.711193011 | 4959.976203 | 15139.35416 | 63.57722596                           | 29.62760279 | 206627.7403 | 457022.4383 |
| 2029 | 30.99702852      | 20.53367833 | 143053.2811 | 222317.5152 | 2.007788566      | 0.673858307 | 4694.611469 | 14400.30178 | 59.22074892                           | 27.97567631 | 194899.9211 | 424744.2538 |
| 2030 | 29.55463576      | 19.96260485 | 138861.4242 | 211388.9724 | 1.914609185      | 0.638323233 | 4440.225809 | 13694.20593 | 55.1614175                            | 26.41421968 | 183739.3563 | 394540.9938 |
| 2031 | 28.1793507       | 19.41415833 | 134776.8431 | 200900.9081 | 1.825923752      | 0.604504345 | 4196.586118 | 13017.67894 | 51.37270387                           | 24.93482044 | 173102.3476 | 366254.8144 |
| 2032 | 26.86740311      | 18.88677174 | 130803.1997 | 190852.5902 | 1.741468037      | 0.572359424 | 3963.961921 | 12370.51769 | 47.83584291                           | 23.53294082 | 162980.9477 | 339801.8961 |
| 2033 | 25.62028683      | 18.37940328 | 126938.6338 | 181266.6215 | 1.661153019      | 0.541932925 | 3742.897642 | 11752.8581  | 44.54076243                           | 22.21072967 | 153399.9575 | 315131.27   |
| 2034 | 24.43727664      | 17.89186136 | 123186.3192 | 172147.4188 | 1.584869895      | 0.513163833 | 3533.157477 | 11164.55265 | 41.47259504                           | 20.96586593 | 144350.9873 | 292152.0385 |
| 2035 | 23.31369814      | 17.42371626 | 119543.5803 | 163463.6549 | 1.512589499      | 0.485852064 | 3333.416037 | 10605.49924 | 38.61322913                           | 19.79000587 | 135778.6204 | 270736.0935 |
| 2036 | 22.24077687      | 16.97320237 | 116003.3347 | 155161.4199 | 1.443757513      | 0.459924627 | 3143.354408 | 10072.28601 | 35.94357622                           | 18.67650908 | 127644.5827 | 250758.1617 |
| 2037 | 21.21548612      | 16.53916344 | 112568.8674 | 147234.7818 | 1.378016597      | 0.435326532 | 2962.919793 | 9563.390248 | 33.4505358                            | 17.62184215 | 119937.7961 | 232145.6276 |
| 2038 | 20.23947613      | 16.12085321 | 109239.8099 | 139701.6737 | 1.315241852      | 0.412102792 | 2792.533997 | 9078.371728 | 31.12757495                           | 16.62802052 | 112676.53   | 214856.0708 |
| 2039 | 19.31235537      | 15.71800704 | 106016.8774 | 132560.251  | 1.255375729      | 0.390194886 | 2631.837694 | 8616.914852 | 28.96435285                           | 15.69329999 | 105850.23   | 198811.6835 |
| 2040 | 18.43021247      | 15.32988201 | 102891.0673 | 125774.8955 | 1.198413865      | 0.369406556 | 2479.382086 | 8178.439552 | 26.94791428                           | 14.81076182 | 99406.83758 | 183902.9857 |
| 2041 | 17.58549505      | 14.95433487 | 99848.65351 | 119292.8905 | 1.143906245      | 0.349669885 | 2334.712142 | 7759.797612 | 25.06428496                           | 13.97461124 | 93307.13318 | 170025.9784 |
| 2042 | 16.77594956      | 14.5906267  | 96890.01683 | 113103.0259 | 1.0916042        | 0.330925481 | 2197.532435 | 7359.567793 | 23.30435507                           | 13.18198145 | 87535.81536 | 157117.3701 |
| 2043 | 16.00352141      | 14.23898048 | 94015.99995 | 107215.7803 | 1.041488556      | 0.313216851 | 2068.083136 | 6977.464852 | 21.66390371                           | 12.43481821 | 82103.62179 | 145137.5781 |
| 2044 | 15.26843303      | 13.89984181 | 91228.19935 | 101628.0895 | 0.993551556      | 0.296497716 | 1945.989972 | 6613.17021  | 20.13575008                           | 11.73205678 | 77000.47451 | 134025.3978 |
| 2045 | 14.56787476      | 13.57277331 | 88520.08144 | 96313.64128 | 0.947766969      | 0.280600999 | 1830.04775  | 6266.040131 | 18.71059601                           | 11.0683718  | 72186.6601  | 123702.7131 |
| 2046 | 13.89585596      | 13.25554091 | 85877.20934 | 91230.72103 | 0.903744345      | 0.265471902 | 1719.883504 | 5933.369523 | 17.37834368                           | 10.4388539  | 67629.05021 | 114094.3623 |