

Environmental Benefits Mapping and Analysis Program

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Overview

- Intro to Benefits and Mapping Analysis Program (BenMAP)
- Running BenMAP
- Generating BenMAP results
- Learn more about BenMAP

What is BenMAP and what can it do for you?

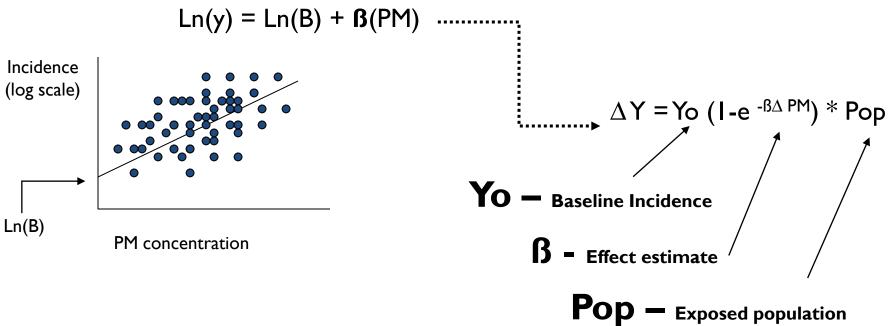
- BenMAP can estimate the health impacts (and associated economic value) of <u>changes in air quality</u>
- Simple tool for non-technical users
 - BenMAP includes nearly all the information users would need to perform a benefits analysis out of the box
- Complex tool for advanced users
 - BenMAP allows for complete customization for advanced or non-U.S. assessments
- BenMAP can estimate health impacts at any scale (city, regional, national, etc.)
- BenMAP's results can be mapped for ease of presentation

BenMAP has been used for:

- EPA rules
 - Clean Air Interstate Rule
 - PM2.5 and Ozone National Ambient Air Quality Standards
 - Small Spark Ignition Rule
 - Non-Road Diesel Rule and Locomotive and Marine Diesel Rule
- Other federal, state, and local assessments
 - FAA aircraft analysis
 - Washington and Oregon woodstove analyses
 - New York City Department of Health borough-level analysis
 - Georgia Department of Natural Resources SIP planning
- International assessments
 - China: Benefits analysis of EGU control strategy
 - South Korea: Health benefits of Seoul air quality management plan
 - Latin America: Benefits of air quality improvements in Mexico City, Saõ Paulo, Santiago
 - India: Benefits analysis in Mumbai

How does BenMAP Estimate Health Benefits?

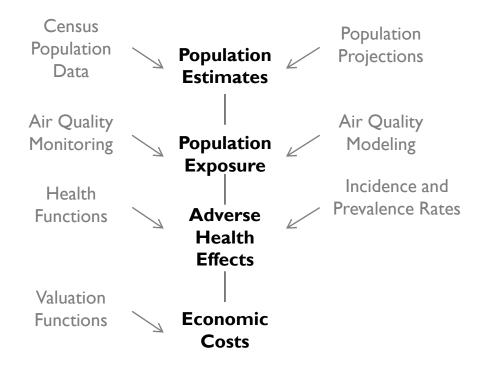
- Health Impact Functions
 - Epidemiology studies derive concentration-response functions relating pollutant concentrations and health outcomes



What Health Effects Does EPA Quantify?

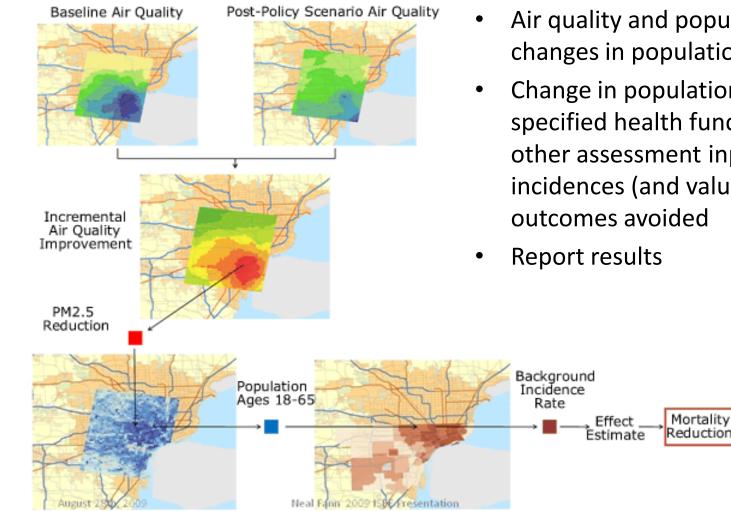
	Particulate	
Health Endpoint	Matter	Ozone
Mortality	\checkmark	\checkmark
Chronic bronchitis	\checkmark	
Nonfatal heart attacks	\checkmark	
Hospital admissions	\checkmark	\checkmark
Asthma ER visits	\checkmark	\checkmark
Acute respiratory symptoms	\checkmark	\checkmark
Asthma attacks	\checkmark	\checkmark
Work loss days	\checkmark	
Worker productivity		\checkmark
School absence rates		\checkmark

Data BenMAP Uses to Perform a Benefits Analysis



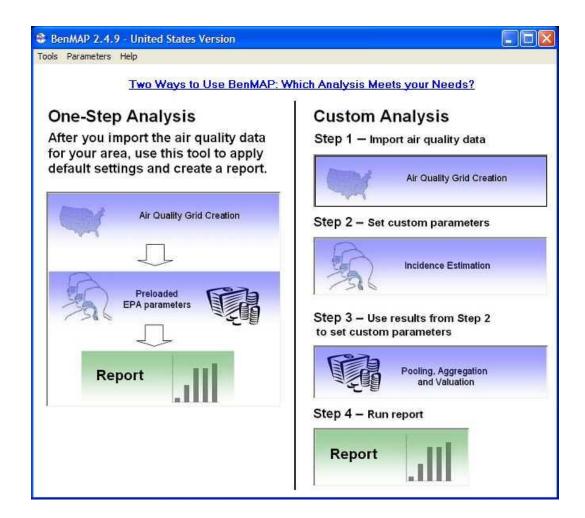
Gray text represents user specification or model input **Black** text represents result from inputs

How does BenMAP Estimate Health Benefits?



- Air quality and population data \rightarrow changes in population exposure
- Change in population exposure; specified health functions; and other assessment inputs \rightarrow incidences (and value) of health outcomes avoided

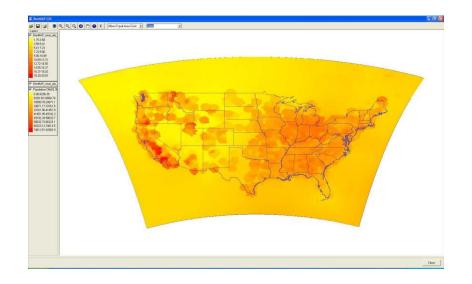
BenMAP Interface

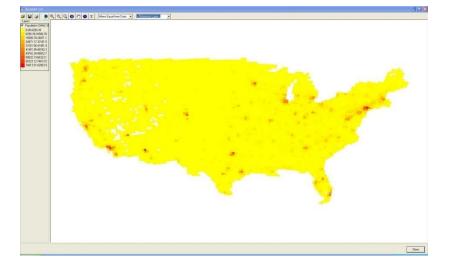


Air Quality Data

- Goal: Estimate change in population exposure to pollutant of interest
- Monitored air quality data
 - BenMAP includes built-in monitoring data
 - AIRS data for ozone, PM₁₀, and PM_{2.5}
 - Import monitoring data from other sources
- Modeled air quality data
 - Easy to import modeling data
 - Import data from other modeling platforms

Specifying Air Quality Data and Calculating Changes in Exposure





Air Quality Distribution

Population Distribution

Specifying the Benefits Analysis Options

- Select health impact and valuation functions
 - BenMAP is pre-loaded with hundreds of PM_{2.5} and ozone health impact functions
 - Users can add import additional functions
- Choose an analysis year
- Value the results
 - BenMAP allows you place an economic value on incidences of health impacts avoided
- Aggregate the results
 - BenMAP allows you to aggregate and pool the incidence estimates and economic values

Specifying the Benefits Analysis Options

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lortality hronic Bronchitis cute Myocardial ospital Admissio ospital Admissio mergency Room cute Bronchitis ower Respiratory pper Respiratory	0 is Inni ons, n Vi y S, y S,		48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 7,852,826	90.313,144 48,496,620 904,675,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,058 1,988,975 7,851,914	103,571,488 25,170,120 1,109,483,520 11,527,145 240,848,288 1,947,970 3,529,582 4,925,038 3,031,827 3,091,966	1.07270523364311 633.534,922.388,7(1.230953707391 132,875,064,180,7(5.800790131422E1 3.794,585,780,224 12,457,945,655,042,240 24,255,939,770,622 9,191,374,502,400 9,560,252,219,392	3.3,653,710 4.23,797,058 2.3,977,826 2.447,748,752 2.461,463 11,091,090 4.2164,562 -3,330,663 2,427,850	-96.301.616 4.348.858 39.017.660 23.977.826 247.748.752 24.61.463 11.031.090 -2.164.562 -3.330.663 2.427.850	-86,141,704 7,370,528 51,335,176 23,977,826 247,748,752 24,63 11,091,090 -2,164,562 3,330,663 2,427,850	-78.026.720 10.002.926 60.970.756 23.977.826 247.748,752 24.63 11.091.090 -2.164.562 -3.330.663 2,427,850	-70.740.384 11.962.030 70.613.272 23.977.826 247.748.752 247.748.752 2461.463 11.031.030 -2.164.562 -3.330.663 2.427.850	-63,688,112 13,485,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850	-56,401,784 14,862,221 89,633,784 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850	48,286,796 16,057,430 98,178,240 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850	38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 258,447,532 2,461,463 11,031,030 -2,164,562 -3,330,663 2,427,850	-21,007, 18,322) 115,542 23,977,) 258,447 2,461,44 11,091,) -2,164,5 -3,330,6 2,427,8
lortality hronic Bronchitis cute Myocardial ospital Admissio ospital Admissio mergency Room cute Bronchitis ower Respiratory pper Respiratory cute Respiratory	0 is Inni nns, n Vi y S, y S, y S,		48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 7,852,826 8,720,892	90,313,144 48,496,620 904,675,776 44,226,720 575,285,312 4,915,275 17,281,224 6,474,858 1,988,975 7,851,914 8,720,742	103,571,488 25,170,120 1,109,483,520 11,527,145 240,848,288 1,947,970 3,529,582 4,925,038 3,031,827 3,031,827 3,091,966 2,011,610	1.07270523364311 633,534,922,388,71 1.23095370739116 5.800790131422E1 3.794,585,780,224 12,457,945,858,044 24,255,939,770,62- 9,191,974,502,400 9,560,252,219,392 4.046,573,535,232	3,3,653,710 4,23,797,058 3,23,977,826 1,247,748,752 2,461,463 11,091,090 4,2,164,562 3,330,663 2,427,850 5,192,807	-96.301.616 4.348.858 39.017.660 23.977.826 247.748.752 24.61.463 11.091.090 -2.164.562 -3.330.663 2.427.850 5.192.807	-86,141,704 7,370,628 51,335,176 23,977,826 247,748,752 24,61,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-78,026,720 10,002,926 60,970,756 23,977,826 247,748,752 24,61,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-70.740.384 11.962.030 70.613.272 23.977.826 247.748,752 2461.463 11.091.080 -2.164.562 -3.330.663 2.427.850 5.192.807	63,688,112 13,495,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-56,401,784 14,862,221 89,633,784 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	48,286,796 16,057,430 98,178,240 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-21,007, 18,322, 115,542 23,977, 258,447 2,461,44 11,091, -2,164,5 -3,330,6 2,427,8 5,192,8
fortality hronic Bronchitis cute Myocardial lospital Admissio lospital Admissio mergency Room cute Bronchitis ower Respiratory (per Respiratory cute Respiratory vork Loss Days	0 is IIni ons, ons, vs, yS, yS, yS, yS,		48,539,360 912,007,168 44,259,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 7,852,826 8,720,892 701,282	90.313,144 48,496,620 904,675,776 44,236,720 575,285,312 4,315,275 17,281,224 6,474,658 1,988,975 7,855,914 8,720,742 701,043	103,571,488 25,170,120 1,109,483,520 11,527,145 240,848,288 1,947,970 3,529,582 4,925,038 3,031,827 3,091,966 2,011,610 191,827	1.07270523364311 633,554,922,388,77 1.23095370739116 132,875,064,180,77 5.800790131422E1 3.794,585,780,224 12,457,345,858,044 24,255,599,770,62 9.191,974,502,400 9.560,252,219,392 36,797,624,320	3 3,653,710 23,797,058 23,977,826 247,748,752 2,461,463 11,091,090 4 2164,562 3,330,663 2,427,850 5,192,807 332,668	96.301,616 4,348,858 39,017,660 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 352,662	-86,141,704 7,370,528 51,335,176 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,653 2,427,850 5,192,807 366,692	-78,026,720 10,002,926 60,970,756 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 380,772	-70.740.384 11,562,030 70,613,272 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 395,321	63,688,112 13,495,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 408,600	-56,401,784 14,862,221 89,633,784 23,377,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 420,684	-48,286,796 16,057,430 98,178,240 23,977,826 2,387,782 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 432,116	-38,126,888 17,170,762 105,592,880 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 442,895	-21.007, 18,322,0 115,542 23,977,0 258,447 2,461,40 11,091,0 -2,164,5 -3,330,6 2,427,85 5,192,80 452,057
fortality hronic Bronchitis (cute Myocardial lospital Admissio mergency Room cute Bronchitis ower Respiratory (cute Respiratory vork Loss Days (sthma Exacerba	0 is ins, ins, y S, y S, y S, attion		48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 7,852,826 8,720,892	90,313,144 48,496,620 904,675,776 44,226,720 575,285,312 4,915,275 17,281,224 6,474,858 1,988,975 7,851,914 8,720,742	103,571,488 25,170,120 1,109,483,520 11,527,145 240,848,288 1,947,970 3,529,582 4,925,038 3,031,827 3,031,827 3,091,966 2,011,610	1.07270523364311 633,534,922,388,71 1.23095370739116 5.800790131422E1 3.794,585,780,224 12,457,945,858,044 24,255,939,770,62- 9,191,974,502,400 9,560,252,219,392 4.046,573,535,232	3,3,653,710 4,23,797,058 3,23,977,826 1,247,748,752 2,461,463 11,091,090 4,2,164,562 3,330,663 2,427,850 5,192,807	-96.301.616 4.348.858 39.017.660 23.977.826 247.748.752 24.61.463 11.091.090 -2.164.562 -3.330.663 2.427.850 5.192.807	-86,141,704 7,370,628 51,335,176 23,977,826 247,748,752 24,61,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-78,026,720 10,002,926 60,970,756 23,977,826 247,748,752 24,61,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-70.740.384 11.962.030 70.613.272 23.977.826 247.748,752 2461.463 11.091.080 -2.164.562 -3.330.663 2.427.850 5.192.807	63,688,112 13,495,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-56,401,784 14,862,221 89,633,784 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	48,286,796 16,057,430 98,178,240 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807	-21,007, 18,322, 115,542 23,977, 258,447 2,461,44 11,091, -2,164,5 -3,330,6 2,427,8 5,192,80 452,057
Iortality hronic Bronchitis cute Myocardial ospital Admissio mergency Room cute Bronchitis ower Respiratory pper Respiratory cute Respiratory ofor Loss Days sthma Exacerba cute Myocardial	0 is inns, nv; y S, y S, u S,		48,539,360 912,007,168 44,258,176 575,504,960 4,836,972 17,261,488 6,476,168 1,930,386 7,852,826 8,720,892 701,282 586,746	90,313,144 48,496,620 904,675,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,958 1,988,975 7,851,914 8,720,742 701,043 596,608	103.571.488 25,170.120 11.02,483.520 11.527,145 240,848,288 1.947,970 3,525,582 4.925,038 3,031,827 3,091,966 2,011,610 191,827 138,021	1.07270523364311 633.534,522,388,77 1.2305370739116 132.875.064,180,77 5.800790131422E1 2.457.945,858.044 24.255.999,770.62,24 9.191,374,502,400 9.560,252,219,392 4.046,573,535,232 36,797,624,320 19.049,678,848	-3,653,710 23,797,058 23,977,058 23,977,052 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 332,668 333,751	96,301,616 4,348,858 39,017,860 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 352,662 337,972	86,141,704 7,370,528 51,325,176 23,977,826 247,748,752 2,461,463 11,091,080 -2,164,552 -3,330,663 2,427,850 5,192,807 366,552 340,477	78,026,720 10,002,326 60,970,756 23,977,826 247,748,752 2,461,463 11,091,080 -2,164,562 -3,330,663 2,427,850 5,192,807 380,772 342,478	-70,740,384 11,962,030 70,613,272 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 395,321 344,275	-63,688,112 13,465,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 408,600 346,013	56.401.784 14.862.221 89.633.784 23.977.826 258.447.532 2.461.463 11.031.090 -2.164.562 3.330.663 2.427.550 5.192.807 420.684 347.810	48,286,796 10,077,430 98,178,240 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,552 -3,330,663 2,427,850 5,192,807 432,116 349,811	38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 442,895 352,316	-21,007, 18,322, 115,542 23,977, 258,447 2,461,41 11,091, -2,164,5 2,427,84 5,192,84 5,192,85 452,057 356,537
Iortality hronic Bronchits cute Myocardial ospital Admissio ospital Admissio ospital Admissio mergency Room cute Bronchits ower Respiratory per Respiratory cute Respiratory fork Loss Days sthma Exacerba cute Myocardial cute Myocardial	0 is inns, nv; y S, y S, u S,	Woodruff et al.	48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 7,852,826 8,720,892 701,282 586,746 42,383,828	90,313,144 48,496,620 904,675,776 44,236,720 575,285,312 4,315,275 17,281,224 6,474,858 1,988,975 7,951,914 8,720,742 701,043 586,608 42,363,280	103,571,488 25,170,120 11,103,483,520 11,527,145 240,848,288 13,447,970 3,529,582 4,925,038 3,031,827 3,091,966 2,011,610 191,827 138,021 	1.07270523364311 633.554,922.388,77 1.23095370739116 132.875.064,180.77 5.800790131422E1 3.794.585,780.245 24.255.939.770.62 9.191.974.502,400 9.560,252,219,392 3.6797.624,320 19.049.678.848 121.859,110,600,77	23,977,058 23,397,858 247,748,752 24,61,463 11,091,090 2,164,562 3,330,663 2,427,860 5,192,860 333,751 2,2962,340	96.301.616 4.348.858 33.017.660 23.977.826 247.748.752 2.461.463 11.091.090 -2.164.562 -3.330.663 2.427.950 5.192.807 352.662 337.972 22.962.340	86,141,704 7,370,528 51,335,176 23,977,826 247,748,752 2,461,463 11,091,080 2,164,562 3,330,663 2,427,950 5,192,807 366,692 340,477 22,962,340	78,026,720 10,002,326 60,970,756 23,977,826 247,748,752 2,461,463 11,091,080 2,164,562 3,330,663 2,427,950 5,192,807 380,772 342,478 22,962,340	-70,740,384 11,962,030 70,613,272 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,950 5,192,807 395,321 344,275 22,962,340	-63,688,112 13,465,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 408,600 346,013 22,962,340	56.401.784 14,862.221 89,633.784 23,977.826 258,447.632 2,461.463 11,091,090 -2,164,562 -3,330.663 2,427,950 5,132,807 420,684 347,810 22,962,340	48,286,796 110,077,430 38,178,240 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,950 5,192,807 432,116 349,811 22,962,340	38,126,888 17,170,762 105,592,880 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,950 5,192,807 442,895 352,316 2,2962,340	- 21,007, 18,322,4 115,542 23,977,3 258,447 2,461,4 11,091,1 - 2,164,5 - 3,330,6 2,427,8 5,192,80 452,057 356,537 22,962,:
Iortality hronic Bronchits cute Myocardial ospital Admissio mergency Room cute Bronchitis ower Respiratory per Respiratory cute Respiratory cute Respiratory fork Loss Days sthma Exacerba cute Myocardial lortality	0 is inns, nv; y S, y S, u S,	Woodruff et al.	48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 7,852,826 8,720,892 701,282 586,746 42,383,828 24,481,386,496	90,313,144 48,456,620 904,675,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,658 1,988,975 7,851,914 8,720,742 701,043 586,608 42,363,280 24,463,034,368	103.571.488 25,170.120 11.527,145 240.048,288 11.527,145 240.048,288 1.547,970 3.529,562 4.525,038 3.031,827 3.031,827 3.031,827 3.031,827 138,021 11,038,981 11,038,981	1.07270523364311 633.534,322.386,77 1.23065370739116 132,875,064,180,77 5.800790131422E1 12,457,945,858,044 24,255,993,770,624 9,191,974,502,400 9,560,252,219,392 4,046,573,555,232 36,797,624,320 13,043,678,848 121,859,110,600,77 1,858,24537152934	-3,653,710 23,797,058 23,3977,826 247,748,752 2,461,463 11,091,090 4,2164,552 -3,330,663 2,427,850 5,132,807 332,668 333,751 2,22,952,340 4,1,842,788,608	96,301,616 4,348,858 39,017,660 23,977,826 24,7748,752 24,61,463 11,091,090 -2,164,562 3,330,663 2,427,850 5,192,807 352,662 337,972 -2,2982,340 2,086,079,744	96,141,704 7,370,628 51,325,176 23,977,826 247,748,752 24,61,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 366,652 360,652 360,477 22,962,340 3,433,066,976	78,026,720 10,002,326 60,970,756 23,977,826 24,7748,752 24,611,463 11,091,080 -2,164,562 -3,330,663 2,427,850 5,192,807 342,478 380,772 342,478	-70,740,384 11,962,030 70,613,272 23,977,826 24,7748,752 24,461,463 11,091,090 -2,164,452 3,330,663 2,427,850 5,132,807 395,321 344,275 -22,962,340 5,445,429,248	-63,688,112 13,465,016 78,916,384 23,977,826 253,998,132 2,461,463 11,091,090 -2,164,452 2,461,463 2,427,850 5,192,807 408,600 346,013 2,22,962,340 6,139,239,328	-56,401,784 14,862,221 99,633,784 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 3,330,663 2,427,650 5,132,807 420,664 347,810 22,962,340 6,817,083,392	48,286,796 10,057,430 98,178,240 23,977,826 28,447,532 24,61,463 11,091,090 -2,164,552 3,330,663 2,427,650 5,132,807 432,116 349,811 22,962,340 7,320,991,744	-38,126,888 17,170,762 105,592,880 23,977,826 238,447,532 24,61,463 11,091,090 -2,164,562 3,330,663 2,427,850 5,192,807 442,895 362,316 -2,295,240 7,808,054,208	-21,007, 18,322,J 115,542 23,977,J 258,447 2,461,4 11,091,J -2,164,5 -3,330,6 2,427,8 5,192,8 452,057 356,537 22,962, 8,314,3
fortality Anonic Bronchitti vocute Myocardial dospital Admissio fospital Admissio fospital Admissio mergency Room vocute Bronchits ower Respiratory vorte Respiratory vork Loss Days sthma Exacerba votte Myocardial dortality fortality	0 is inns, nv; y S, y S, u S,	Woodruff et al.	48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 8,720,892 701,282 596,746 42,383,828 24,481,386,496 24,481,386,496	90,313,144 48,496,620 904,575,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,958 1,388,975 7,851,314 8,720,742 701,043 701,043 701,043 42,363,280 24,463,034,368	103.571.488 25,170.120 11.527,145 240.848,288 1.347,970 3.525,582 4.325,038 3.031,827 3.031,827 3.031,827 3.031,827 3.031,827 11.948,271 138,021 138,021 13631,747,072 13,631,747,072	$\begin{array}{c} 1.07270523364311\\ 633.534.922.386.77\\ 1.2309530739116\\ 132.875.064.180.77\\ 5.800790131422E1\\ 12.457.945.955.044\\ 24.255.999.770.622\\ 9.191.974.502.400\\ 9.560.252.219.392\\ 4.046.573.535.232\\ 36.797.624.320\\ 19.049.678.848\\ 121.859.110.600.77\\ 1.859.475.2934\\ 1.85824537152934\\ \end{array}$	3,653,710 23,737,058 23,377,058 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,860 5,132,807 332,668 333,751 22,962,340 -1,842,788,608 -1,842,788,608	96,301,616 4,348,858 39,017,826 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 352,662 352,672 352,662 352,672,	-86,141,704 7,370,628 51,325,176 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 2,427,850 5,132,807 3366,6532 343,066,376 3,433,066,376 3,433,066,376 3,433,066,976	78,026,720 10,002,326 60,970,756 23,977,826 24,748,752 2,461,463 11,091,090 -2,164,562 3,330,663 2,427,950 5,192,807 330,0772 330,772 342,478 4,521,329,728 4,521,329,728	-70,740,384 11,962,030 70,613,272 23,977,826 247,748,752 2,461,463 11,091,030 -2,164,562 -3,330,663 2,427,850 5,132,807 395,321 344,275 22,962,340 5,445,429,248	-63,688,112 13,465,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 408,600 346,013 -22,962,340 6,139,299,328 6,139,299,328	56.401,784 14.862,221 99.633,784 23.977,826 258.447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 420,684 347,810 22,962,340 6,817,083,382 6,817,083,382	48,286,796 16,057,430 98,178,240 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 432,116 349,811 22,962,340 7,320,991,744 7,320,991,744	-38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,132,807 442,895 352,316 22,962,340 7,808,094,208	-21,007, 18,322,4 115,542 23,977,4 228,447 228,447 228,447 228,447 228,447 228,447 228,447 228,447 22,427,45 5,192,81 452,057 356,537 22,962,5 8,314,33 8,314,33
Iortality hronic Bronchits cute Myocardial copital Admissio ospital Admissio mergency Room cute Bronchits over Respiratory per Respiratory cute Respiratory cute Respiratory crk Loss Days sthma Exacerba cute Myocardial cute Myocardial lortality lortality	0 is inns, nv; y S, y S, u S,	Voodruff et al.	48,539,360 912,007,168 44,259,176 575,504,960 4,836,972 17,281,488 6,476,168 1,990,386 6,476,168 1,990,386 8,720,892 701,282 586,746 42,383,828 44,481,386,496 24,481,386,496 30,619,193,344	90,313,144 48,496,620 904,675,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,958 1,988,975 7,851,914 8,720,742 701,043 586,608 42,363,280 24,463,034,368 24,463,034,368 24,463,034,368	103,571,488 25,170,120 1,103,483,520 11,527,145 240,548,288 1,947,970 3,529,582 4,925,038 3,031,827 3,091,966 2,011,610 191,827 138,021 11,038,981 11,038,981 11,038,981 13,631,747,072 13,631,747,072	1.07270523364311 633.534,922.388,77 1.23095370739116 132.875.064,180,77 5.800790131422E1 3.794.585,780,224 12.457,945,858.044 24.255.939,770,62 9.150,252,219,392 4.046,573,535,232 36,797,624,320 19.049,678,848 121,859,110,600,77 1.85824537152934 2.90720726008159	23,653,710 23,797,058 23,397,826 247,748,752 2,461,463 11,091,090 4,164,562 3,330,663 2,427,850 5,192,807 332,668 333,751 22,962,340 4,1842,788,608 4,842,788,608 4,842,788,608	96.301,616 4,348,858 39,017,680 23,977,826 24,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 352,662 337,972 22,962,340 2,2962,340 2,2962,340 2,2066,079,744 2,2068,079,744	86,141,704 7,370,628 51,335,176 23,977,826 247,748,752 246,1463 11,091,080 2,164,562 3,330,663 2,427,850 5,132,807 366,852 340,477 22,962,340 3,433,066,976 3,433,066,976	78,026,720 10,002,326 60,970,756 23,977,826 247,748,752 246,1463 11,091,080 -2,164,562 -3,330,663 2,427,850 5,192,007 380,772 342,478 22,962,340 22,962,340 4,521,929,728 5,553,813,248	-70,740,384 11,962,030 70,613,272 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,063 2,427,850 5,192,807 395,321 344,275 22,962,340 5,445,429,248 5,445,429,248 5,445,429,248 5,445,429,248	63,688,112 13,465,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,300,663 2,427,850 5,192,807 408,500 346,013 22,962,340 6,139,299,328 6,139,299,328	56.401.784 14.862.221 89.633.784 23.977.826 258.447.632 24.64.463 11.091.900 -2.164.562 -3.300.663 2,427.850 5.192.807 420.684 347.810 22.962.340 6.817.083.392 6.817.083.392 6.817.083.392	48,286,796 11,057,430 98,178,240 23,977,826 258,447,632 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,007 432,116 349,811 22,962,340 7,320,991,744 7,320,991,744	38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 24,61,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 442,895 352,316 22,952,340 7,880,094,208 9,764,748,288	-21,007, 18,322, 115,542 23,977, 258,447 2,461,41 11,091,1 -2,164,5 -3,330,6 2,427,8 5,192,8 452,057 356,537 22,962, 8,314,3 8,314,3 8,314,3 10,395,4
fortality Inronic Bronchits i.cute Myocardial lospital Admissio lospital Admissio lospital Admissio cute Bronchitis ower Respiratory (per Respiratory Vork Loss Days sthme Exacerba .cute Myocardial fortality fortality fortality fortality	0 is inns, nv; y S, y S, u S,	Voodruff et al.	48,539,360 912,007,168 44,259,176 575,504,960 4,896,972 17,281,488 6,476,168 1,990,386 7,852,826 8,720,892 701,282 586,745 42,383,828 24,481,386,496 24,481,386,496 24,481,386,496 30,619,193,344 34,434,789,376	90,313,144 48,456,620 904,675,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,958 1,988,975 7,851,914 8,720,742 701,043 586,608 42,363,280 24,463,034,368 24,463,034,368 24,463,034,368 34,566,346,752	103.571.488 25,170.120 11,03.433.520 11,527,145 240.048,288 1,947.970 3,529,582 4,925,038 3,031,827 3,031,827 3,031,827 3,031,827 138,021 11,038,981 13,631,747,072 13,631,747,072 13,631,747,072	1.07270523364311 633.534,322.386,77 1.23005370739116 132,875,064,180,77 5.800790131422E1 12,457,945,858,044 24,255,993,770,624 9,191,974,850,2400 9,560,252,219,392 4,046,573,555,232 9,797,624,320 19,043,678,848 121,859,110,600,77 1,858,245371,52934 1,858,245371,52934 1,858,245371,52934 1,858,245371,52934 2,907,2072,600,155 3,679,48241,3120,76	- 3,653,710 23,797,058 23,3977,826 247,748,752 2,461,463 11,091,090 4,2164,562 - 3,330,663 2,427,850 5,132,807 332,668 333,751 22,962,340 4-1,842,788,608 - 1,842,788,608 - 1,842,788,608 - 1,842,788,608 - 1,842,788,608 - 1,942,788,608 - 1,942,788,788 - 1,942,788,788,788 - 1,942,788,788,	96,301,616 4,348,858 39,017,660 23,977,826 24,7748,752 24,61,463 11,091,090 -2,164,562 3,330,663 2,427,850 5,192,807 352,662 337,972 -2,2982,340 2,096,079,744 2,096,079,744 2,609,030,144	96,141,704 7,370,628 51,325,176 23,977,826 247,748,752 24,461,463 11,091,090 -2,164,452 3,330,663 2,427,850 5,192,807 366,652 340,477 22,962,340 3,433,066,976 3,433,066,976 4,232,405,248	78,026,720 10,002,326 60,970,756 23,977,826 24,7748,752 24,611,463 11,091,080 -2,164,562 -3,330,663 2,427,850 5,192,807 342,478 360,772 342,478 22,962,340 4,521,929,728 5,653,813,248 5,653,813,248	-70,740,384 11,982,030 70,613,272 23,977,826 24,7748,752 24,461,463 11,091,090 -2,164,452 24,461,463 11,091,090 -2,164,452 24,27,850 5,192,807 395,321 344,275 -22,962,340 5,445,429,248 5,445,429,248 5,445,429,248 6,908,467,456 7,555,407,424	63,688,112 13,465,016 78,916,384 23,977,826 253,098,132 2,461,463 11,091,090 -2,164,4562 2,330,663 2,427,850 5,192,807 408,600 346,013 -2,296,2340 6,139,299,328 6,139,299,328 7,567,220,416	-56,401,784 14,862,221 99,633,784 23,977,826 258,447,532 24,61,463 11,091,090 -2,164,562 3,330,663 2,427,650 5,132,807 420,664 347,810 22,962,340 6,817,083,392 6,817,083,392 8,523,904,000 9,579,837,440	48,286,796 10,057,430 98,178,240 23,977,826 28,447,532 24,61,463 11,091,090 -2,164,552 3,330,663 2,427,850 5,132,807 432,116 349,811 22,962,340 7,320,991,744 9,153,533,952 10,285,556,712	-38,126,889, 17,170,762, 105,592,880, 23,977,826, 23,977,826, 23,947,822, 24,61,463, 11,091,090, 2,164,562, 3,330,663, 2,427,950, 5,192,807, 442,995, 352,316, 22,962,340, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,808,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,208, 7,804,094,104,104,104,104,104,104,104,104,104,10	-21,007, 18,322, 115,542 23,977), 258,447 2,461,44 11,091,1 -2,164,54 -3,330,6 2,427,8 5,192,8 452,057 32,427,8 5,192,8 452,057 22,962,1 8,314,3 8,314,3 10,3955 11,681,1
fortality Aronic Bronchitis tospital Admissio lospital Admissio lospital Admissio mergency Roy mergency Respiratory york Loss Days tocute Respiratory vork Loss Days sthme Exacerbo sthme Exacerbo tocating tortality fortality fortality fortality fortality	0 is inns, nv; y S, y S, u S,	Woodruff et al.	48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,930,366 8,720,892 701,282 596,746 42,383,828 24,481,386,496 24,481,386,496 24,481,386,496 30,619,193,344 34,434,789,376	90,313,144 48,496,620 904,575,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,958 1,988,975 7,851,914 8,720,742 701,043 586,608 42,363,280 24,463,034,368 24,463,034,368 24,463,034,368 24,463,034,368 24,463,034,368 24,463,46,752 35,542,274,048	103.571.488 25.170.120 11.527.145 240.948.288 1.347.370 3.525.582 4.325.038 3.031.827 3.031.827 3.031.827 3.031.827 3.031.827 3.031.827 13.8021 13.8021 13.8021 13.631.747.072 14.747.747.747.747.747.747.747.747.747.7	1.07270523364311 633.534,522,388,77 1.2309530739116 132.875.064,180,77 5.800790131422E1 21,457,345,855,80,44 24,255,599,770,62, 9,191,974,502,400 9,560,252,219,332 4,046,573,535,232 36,797,524,320 19,049,678,848 121,859,110,600,77 18,564537152934 1,85824537152934 1,85824537152934 1,85824537152934 1,85824537152934 1,85824537152934 1,85824537152934 2,90720726008159 3,67949241312076 7,34474893254275	3,653,710 23,797,058 23,397,058 23,377,058 23,377,058 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,063 2,427,880 5,132,807 333,751 22,962,340 -1,842,788,608 -3,947,786,608 -2,952,005,376 -2,770,941,440	96,301,616 4,348,858 39,017,660 23,977,826 24,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 362,662 337,972 -2,296,622,340 2,086,079,744 2,086,079,744 2,086,079,744 2,086,079,744 2,083,074,840	96,141,704 7,370,628 51,325,176 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 3,330,663 2,427,850 5,192,807 3,46592 340,477 22,962,340 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,452,095,9763,452,095,9763,452,095,9763,452,095,9763,452,095,9763,452,095,9763,452,095,9763,452,095,9763,452,095,9763,452,976 3,452,9763,452,976 3,452,976,9763,452,976 3,452,9764,452,976 3,452,976,9764,976 4,452,976,9764,976 4,452,976,9764,976 4,452,976,9764,976 4,452,976 4,452,976,9764,976 4,452,976 4,452,9764,976 4,452,976 4,452,9764,976 4,452,976 4,452,976 4,452,9764,452 4,556 4,556,9764,556 5,556,976 5,556,9765,556 5,556,976 5,556,976 5,556,9765,556 5,556,97665,556 5,5566,9765,5566	78,026,720 10,002,326 60,970,756 23,977,826 24,748,752 2,461,463 11,091,090 -2,164,562 3,330,663 2,427,850 5,192,907 380,772 382,478 22,962,340 4,521,929,728 4,521,929,728 4,521,929,728 5,563,913,248 5,563,913,248	-70,740,384 11,962,030 70,613,272 23,977,826 247,748,752 2,461,463 11,031,080 -2,164,562 -3,330,663 2,427,850 5,132,807 395,321 344,275 -22,962,340 5,445,429,248 5,445,429,248 5,445,429,248 5,445,429,248	63,688,112 13,465,016 78,916,384 23,977,826 25,3098,192 2,461,463 11,091,090,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 408,600 346,013 22,962,340 6,139,299,328 7,556,204,116 7,566,583,680	-56,401,784 14,862,221 99,633,784 23,977,826 258,447,532 24,647,532 24,643 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,007 420,684 347,810 22,962,340 6,817,083,392 6,817,917,083 7,817	48,286,796 16,057,430 98,178,240 23,977,826 286,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,907 432,116 349,811 22,962,340 7,320,991,744 7,320,991,744 7,320,991,744 9,153,533,952 10,285,555,712	38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 2,461,463 11,031,030 -2,164,562 3,330,663 2,427,850 5,132,807 442,895 352,316 22,962,340 7,808,094,208 7,808,094,208 7,808,094,208 9,764,742,288	-21,007, 18,322, 115,542 23,977, 258,447 2,461,41 11,091, -2,164,5 -3,330,6 2,427,8 5,192,84 452,057 356,537 22,962, 8,314,3 8,314,3 10,395, 11,681, 4,988,44 -2,88,44 -2,88,44 -2,862,45 -
fortality Anonic Bronchits votre Myocardial tospital Admissio tospital Admissio imergency Room cutte Bronchits ovver Respiratory Vork Loss Days votre Respiratory Vork Loss Days votre Respiratory vork Loss Days votre Myocardial tottality fortality fortality fortality fortality fortality fortality fortality	0 is inns, nv; y S, y S, u S,	Woodruff et al.	48,539,360 912,007,168 44,258,176 575,504,960 4,836,972 17,281,488 6,476,168 1,990,386 8,720,882 701,282 586,746 42,383,828 44,481,386,496 42,481,386,496 30,619,193,344 34,434,789,376 34,240,378,880 8,152,312,832	90,313,144 48,496,620 904,675,776 44,236,720 575,285,312 4,315,275 17,281,224 6,474,858 1,389,375 7,851,314 8,720,742 701,043 596,608 42,363,280 24,463,034,368 24,463,034,368 30,594,951,168 34,406,346,752 35,542,274,048 8,133,760,640	103.571.488 25,170.120 11.052,145 240,948,220 11.527,145 240,948,289 13,529,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 43,525,582 13,581,747,072 14,592,582 1	1.07270523364311 633.534,522,388,77 1.23095370739116 132.875.064,180,77 5.800790131422E1 23.794,585,780,224 12.457,945,858,044 24.255,939,770,622 3.191,974,502,400 9.560,252,219,332 4.046,573,535,232 36.797,624,320 19.049,678,848 121.859,110,600,77 1.85824537152934 2.90720726008159 3.67948241312076 7.3447483254275 2.065036532682936	23,653,710 23,797,058 23,397,826 247,748,752 2,461,463 11,091,090 2,164,562 3,330,663 2,427,850 5,192,807 332,668 333,751 22,962,340 4,842,786,608 4,842,786,608 4,842,786,608 4,842,786,609 4,842,786,786 4,944,440 6,944,440 6,944,4406	96.301,616 4,348,858 39.017,680 23.977,826 24,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 55,192,807 55,262 337,972 22,952,340 2,086,073,744 2,008,073,744 2,008,073,744 2,009,030,144 2,333,302,848 1,349,371,840 0	-86,141,704 7,370,628 51,335,176 23,977,826 247,748,752 24,748,752 24,61,463 11,091,090 -2,164,562 3,330,663 2,427,950 5,192,807 366,592 340,477 22,962,340 3,433,066,976 3,433,066,976 4,292,405,248 4,823,172,096 2,247,942,656 0	78,026,720 10,002,326 60,970,756 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 -2,427,950 5,192,807 380,772 342,478 22,962,340 4,521,329,728 4,521,329,728 5,653,813,248 6,362,382,016 2,795,666,400 0	-70,740,384 11,962,030 70,613,272 23,977,826 247,748,752 2461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 395,321 344,275 22,962,340 5,445,429,248 6,808,467,456 7,850,407,424 3,227,941,888 0	63,688,112 13,455,016 78,916,384 23,977,826 253,098,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 408,600 346,013 22,962,340 6,139,299,328 7,676,220,416 8,826,140,160 3,664,833,880 0	56.401.784 14.862.221 89.633.784 23.977.826 258.447.532 24.647.532 24.64.63 11.031.090 -2.164.562 -3.330.663 2.427.850 5.192.807 420.684 347.810 22.962.340 6.817.083.382 8.523.904.000 9.579.837.440 3.399.03056 0	46,286,796 10,077,430 98,178,240 23,977,826 258,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 -2,427,850 5,192,007 432,116 349,811 22,962,340 7,320,391,744 9,153,533,952 10,285,555,712 4,361,769,384 0	38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 24,61,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 442,895 352,316 22,962,340 7,808,094,208 9,764,748,288 10,978,416,640 4,644,871,680 0	9,354,01 -21,007, 18,322,6 115,542 23,977,6 258,447 2,461,46 11,091,0 -2,164,5 -3,330,6 2,427,86 5,192,80 452,057 356,537 22,962,3 8,314,33 8,314,33 8,314,33 10,395,5 11,681,1 4,588,46 0 11,807,5 11,807,
Mortality Mortality Chronic Bronchits Acute Myocardial Hospital Admissio Hospital Admissio Emergency Room Acute Bronchitis Lower Respiratory Morte Respiratory Morte Respiratory Acute Respiratory Acute Respiratory Acute Respiratory Acute Myocardial Acute Myocardial Acute Myocardial Acute Myocardial Mortality Mortality Mortality Mortality Mortality Mortality	0 is inns, nv; y S, y S, u S,	Woodruff et al.	48,539,360 912,007,168 44,258,176 575,504,960 4,896,972 17,281,488 6,476,168 1,930,366 8,720,892 701,282 596,746 42,383,828 24,481,386,496 24,481,386,496 24,481,386,496 30,619,193,344 34,434,789,376	90,313,144 48,496,620 904,575,776 44,236,720 575,285,312 4,915,275 17,281,224 6,474,958 1,988,975 7,851,914 8,720,742 701,043 586,608 42,363,280 24,463,034,368 24,463,034,368 24,463,034,368 24,463,034,368 24,463,034,368 24,463,46,752 35,542,274,048	103.571.488 25.170.120 11.527.145 240.948.288 1.547.370 3.525.582 4.525.038 3.031.827 3.031.827 3.031.827 3.031.827 3.031.827 3.031.827 1.547.970 1.547.972 1.5631.747.072 13.6531.747.755555 13.655555555555 13.65555555555555555	1.07270523364311 633.534,522,388,77 1.2309530739116 132.875.064,180,77 5.800790131422E1 21,457,345,855,80,44 24,255,599,770,62, 9,191,974,502,400 9,560,252,219,332 4,046,573,535,232 36,797,524,320 19,049,678,848 121,859,110,600,77 18,564537152934 1,85824537152934 1,85824537152934 1,85824537152934 1,85824537152934 1,85824537152934 1,85824537152934 2,90720726008159 3,67949241312076 7,34474893254275	-3,653,710 23,777,058 23,777,058 23,777,058 247,748,752 247,748,752 24,61,463 11,091,090 2,164,562 3,330,663 2,427,748,007 332,668 333,751 22,962,340 -1,842,788,608 -2,304,786,672 -2,592,005,376 -2,71,746,048	96,301,616 4,348,858 39,017,660 23,977,826 24,748,752 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 362,662 337,972 -2,296,622,340 2,086,079,744 2,086,079,744 2,086,079,744 2,086,079,744 2,083,074,840	96,141,704 7,370,628 51,325,176 23,977,826 247,748,752 2,461,463 11,091,090 -2,164,562 3,330,663 2,427,850 5,192,807 3,46592 340,477 22,962,340 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,433,086,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,976 3,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,432,085,9763,452,976,9763,477,9764,976,976 3,432,976,9764,976,976 3,432,976,9764,976,976 3,432,976,9764,976 3,432,976,9764,976 4,432,976,9764,976 4,432,976,976 4,432,976,9764,976 4,432,976,9764,976 4,432,976 4,432,976,9764,976 4,432,976 4,432,976 4,432,976 4,432,976 4,432,976 4,432,976 4,432,976 4,432,976 4,432,976 4,432,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,976 4,452,9764,456 4,456,976 4,456,9764,45	78,026,720 10,002,326 60,970,756 23,977,826 24,748,752 2,461,463 11,091,090 -2,164,562 3,330,663 2,427,850 5,192,907 380,772 382,478 22,962,340 4,521,929,728 4,521,929,728 4,521,929,728 4,521,929,728 4,521,929,728 4,521,929,728 4,521,929,728 4,521,929,728	-70,740,384 11,962,030 70,613,272 23,977,826 247,748,752 2,461,463 11,031,080 -2,164,562 -3,330,663 2,427,850 5,132,807 395,321 344,275 -22,962,340 5,445,429,248 5,445,429,248 5,445,429,248 5,445,429,248	63,688,112 13,465,016 78,916,384 23,977,826 25,3098,192 2,461,463 11,091,090,192 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,807 408,600 346,013 22,962,340 6,139,299,328 7,556,204,116 7,566,583,680	-56,401,784 14,862,221 99,633,784 23,977,826 258,447,532 24,647,532 24,643 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,007 420,684 347,810 22,962,340 6,817,083,392 6,817,917,083 7,817	48,286,796 16,057,430 98,178,240 23,977,826 286,447,532 2,461,463 11,091,090 -2,164,562 -3,330,663 2,427,850 5,192,907 432,116 349,811 22,962,340 7,320,991,744 7,320,991,744 7,320,991,744 9,153,533,952 10,285,555,712	38,126,888 17,170,762 105,592,880 23,977,826 258,447,532 2,461,463 11,031,030 -2,164,562 3,330,663 2,427,850 5,132,807 442,895 352,316 22,962,340 7,808,094,208 7,808,094,208 7,808,094,208 9,764,742,288	-21,0 18,32 23,97 258,4 2,461 11,05 -2,16 -3,33 2,427 5,192 452,0 356,5 22,96 8,314 8,314 10,38 11,66 4,988 0

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