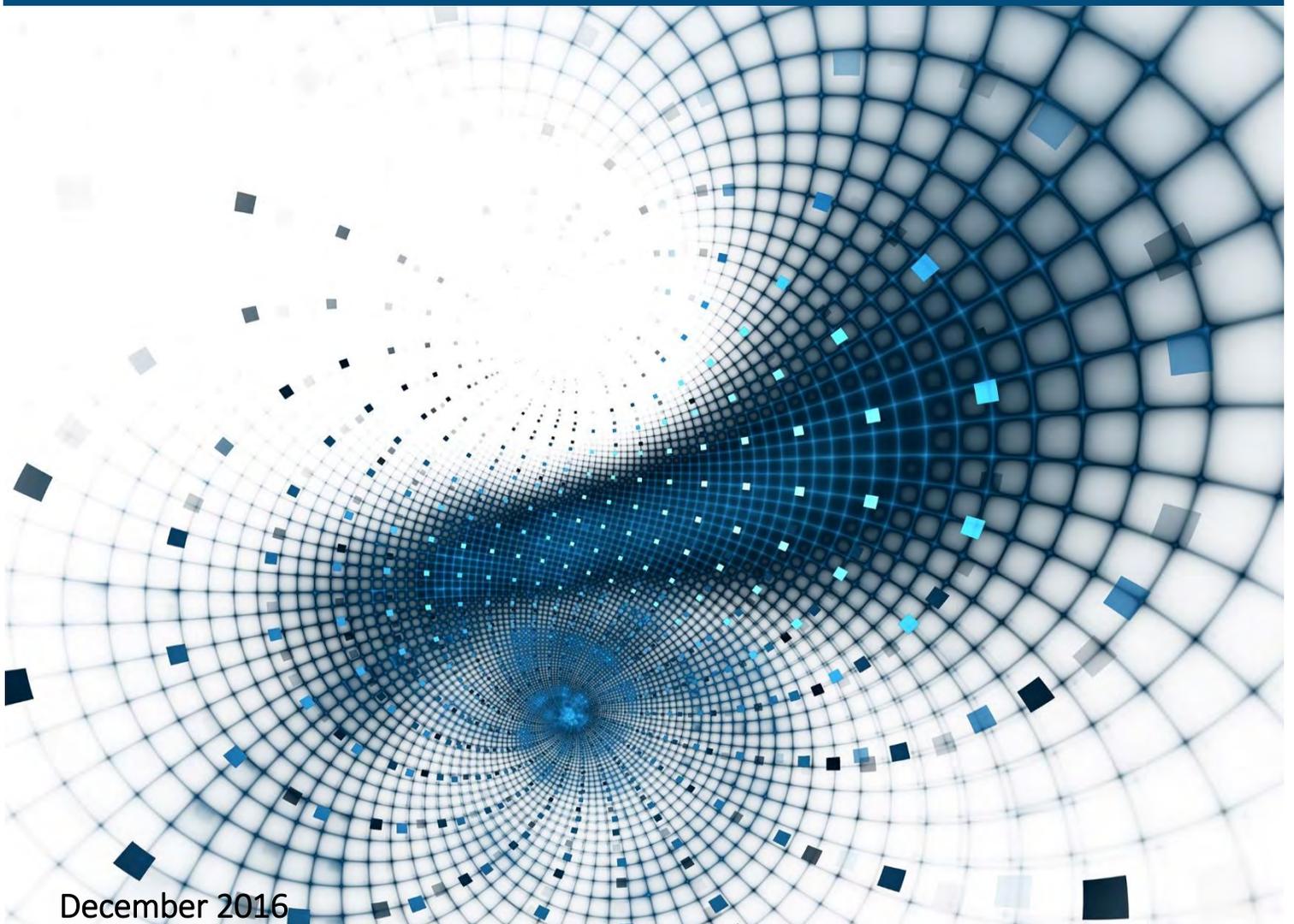


Potentially Preventable Deaths in the United States



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Introduction

This report analyzes 2015 vs. 2010 potentially preventable deaths from the five leading causes of mortality in the United States. The report builds on and extends researchⁱ previously produced by the Centers for Disease Control and Prevention (CDC) that was published in the November 18, 2016 Morbidity and Mortality Weekly Report (MMWR). That research analyzed 2014 vs. 2010 potentially preventable deaths from the same five leading causes of mortality in the United States.

As defined in the CDC research, deaths prior to age 80, which is just over US life expectancy, are considered premature and therefore preventable. Potentially preventable deaths are determined as the difference of observed to expected deaths for ages 79 and below. Expected deaths are defined as the expected death rate times the associated population. The expected death rates by cause and age group were determined in earlier work produced by the CDC that analyzed 2008-2010 potentially preventable deathsⁱⁱ. Those death rates, by cause and age group, are determined as the average of the three lowest states' death rates for 2008-2010ⁱⁱⁱ.

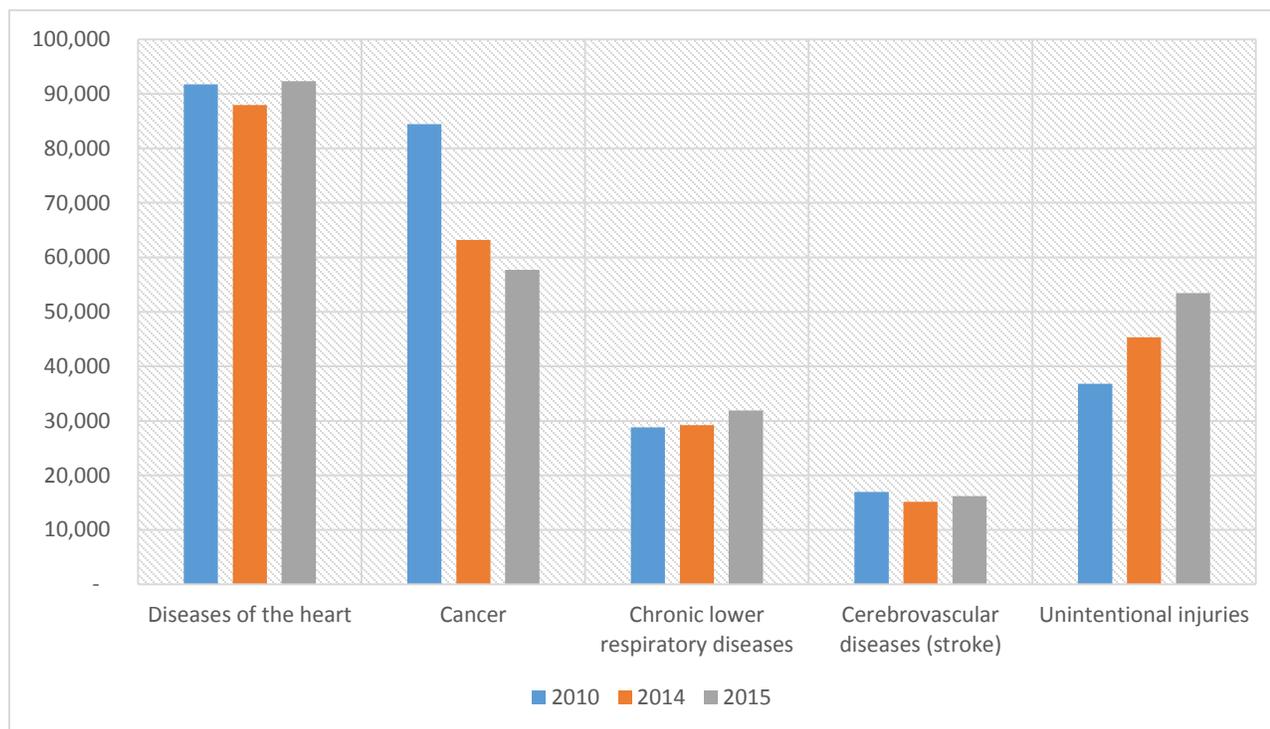
As noted in the CDC research report, tracking potentially preventable deaths is useful to health officials in the management of public programs and policy. From an actuarial perspective, monitoring the change in the potentially preventable deaths over a period of time is a way to gauge mortality improvement or deterioration relative to the benchmark mortality rates of these causes of death. Understanding the trends with respect to specific major causes of death aids in the development of an overall view of expected mortality improvement and its potential subsequent effects in estimating pension liabilities and pricing and reserving for insurance and annuity products.

In addition to extending the original research to cover the recently released 2015 mortality experience, this report provides expanded analysis of the population and potentially preventable death rates by age group. This provides insights on how change in the population mix can affect potentially preventable deaths even if mortality rates by age do not change. An alternative to the traditional analysis of the progression of potentially preventable deaths is presented where results are normalized to 2010 to gauge progress in reducing potentially preventable deaths on a "what if" basis of a static population for 2010-2015. The normalized results, in some cases, do not follow the non-normalized results and provide additional insight into the data.

Analysis

Total United States potentially preventable deaths in 2015 vs. 2014 for persons less than age 80 [Figure 1] continued the direction of changes seen in the 2014 vs. 2010 analysis for cancer (-8.7%), chronic lower respiratory disease (9.2%), and unintentional injuries (17.8%) but saw increases, which were reversals of 2014 vs. 2010, for heart disease (5.0%) and stroke (6.9%). Relative to 2010, potentially preventable deaths in 2015 increased for heart disease (0.6%), chronic lower respiratory disease (10.7%) and unintentional injuries (45.0%) and decreased for cancer (-31.6%) and stroke (-4.4%).

Figure 1 – Potentially Preventable Deaths of the Five Leading Mortality Causes, US



The statistical significance of the change in potentially preventable deaths in 2015 vs. 2010 was similar to 2014 vs. 2010 for cancer and unintentional injuries. But the statistical significance of the other three causes changed with diseases of the heart and stroke losing significance and chronic lower respiratory disease (CLRD) gaining it. Results were deemed significant when the change exceeded the z test for a 99% confidence level¹. There was a statistically significant change of potentially preventable deaths in 2015 vs. 2014 for all causes except stroke. Appendices A, B, C, D, E, & F depict these results

¹ Assumes the same approach as the CDC research where significance is determined with a two sided z-test ($p < 0.01$) and potentially preventable deaths are assume to follow a Poisson distribution.

for individual states, the 10 HHS regions² (excluding US territories) and the United States in total for these time periods respectively, 2015 vs. 2010, 2014 vs. 2010 and 2015 vs. 2014. Table 1 below shows the results for the United States extracted from the Appendices.

Table 1 – Statistical Significance of Change in Potentially Preventable Deaths^{3,4}

	2010			2015			Significant at .01
	Expected Deaths	Total Deaths	Potentially Preventable Deaths	Expected Deaths	Total Deaths	Potentially Preventable Deaths	
Diseases of the heart	181,261	272,688	91,757	206,964	298,724	92,313	
Cancer	316,652	400,949	84,443	362,704	419,683	57,722	*
CLRD	45,738	74,458	28,831	53,374	85,134	31,911	*
Stroke	35,390	52,360	16,973	40,820	56,824	16,220	
Unintentional injuries	58,055	94,862	36,836	61,599	115,018	53,419	*

	2010			2014			Significant at .01
	Expected Deaths	Total Deaths	Potentially Preventable Deaths	Expected Deaths	Total Deaths	Potentially Preventable Deaths	
Diseases of the heart	181,261	272,688	91,757	201,901	289,265	87,950	*
Cancer	316,652	400,949	84,443	353,645	416,182	63,209	*
CLRD	45,738	74,458	28,831	51,840	80,899	29,232	
Stroke	35,390	52,360	16,973	39,737	54,707	15,175	*
Unintentional injuries	58,055	94,862	36,836	60,929	106,260	45,331	*

	2014			2015			Significant at .01
	Expected Deaths	Total Deaths	Potentially Preventable Deaths	Expected Deaths	Total Deaths	Potentially Preventable Deaths	
Diseases of the heart	201,901	289,265	87,950	206,964	298,724	92,313	*
Cancer	353,645	416,182	63,209	362,704	419,683	57,722	*
CLRD	51,840	80,899	29,232	53,374	85,134	31,911	*
Stroke	39,737	54,707	15,175	40,820	56,824	16,220	
Unintentional injuries	60,929	106,260	45,331	61,599	115,018	53,419	*

² Region 1: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. Region 2: New Jersey and New York. Region 3: Delaware, the District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia. Region 4: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee. Region 5: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Region 6: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. Region 7: Iowa, Kansas, Missouri, and Nebraska. Region 8: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. Region 9: Arizona, California, Hawaii and Nevada. Region 10: Alaska, Idaho, Oregon, and Washington.

³ Values for 2010 and 2014 are reproduced with the same methods used and illustrated in the previously cited CDC research "Potentially Preventable Deaths Among the Five Leading Causes of Death — United States, 2010 and 2014" reported in the CDC November 18, 2016 MMWR.

⁴ Negative state potentially preventable deaths are set to 0 for the United States Potentially Preventable Deaths. Therefore United States Potentially Preventable Deaths will not equal the difference between United States Total Deaths and Expected Deaths where at least one state has negative potentially preventable deaths.

Table 2 compares potentially preventable deaths to total deaths by cause for 2010, 2014 and 2015. The five leading causes of death for ages less than 80 and their ranking in descending order as follows, cancer, diseases of the heart, unintentional injuries (accidents), CLRD and cerebrovascular diseases (stroke) is the same for each year 2010, 2014 and 2015. The percentage of these five leading causes to total deaths for ages less than 80 was 66% in 2010 and 65 % in both 2014 and 2015^{iv}. Potentially preventable deaths as a percentage of total deaths by cause are less in 2015 than 2010 except for accidents. Accidents (unintentional injuries) show a noteworthy continuing increase from 2014 that reflects the well-publicized^v recent continuing increase of accidental poisonings (e.g. drug overdoses). Accidental poisonings, motor vehicle accidents and falls are the three largest causes in descending order of accidental deaths in 2015. Notably, accidental poisonings replaced motor vehicle accidents as the prior number one cause of death from unintentional injuries in 2010.

Table 2 – Potentially Preventable Deaths as a Percentage of Total Deaths by Cause

	2010			2014			2015		
	Potentially Preventable Deaths (PPD)	Total Deaths	PPD % of Total Deaths	Potentially Preventable Deaths (PPD)	Total Deaths	PPD % of Total Deaths	Potentially Preventable Deaths (PPD)	Total Deaths	PPD % of Total Deaths
Cancer	84,443	400,949	21%	63,209	416,182	15%	57,722	419,683	14%
Heart	91,757	272,688	34%	87,950	289,265	30%	92,313	298,724	31%
Accidents	36,836	94,862	39%	45,331	106,260	43%	53,419	115,018	46%
CLRD	28,831	74,458	39%	29,232	80,899	36%	31,911	85,134	37%
Stroke	16,973	52,360	32%	15,175	54,707	28%	16,220	56,824	29%

The number of potentially preventable deaths and their percentage to total deaths by cause is affected by a number of factors. The population size, its geographic distribution, age distribution and age-adjusted death rates can all affect the measured results. The number or rate of deaths by cause can also be affected by decreases in other causes which transfer one cause to another.

Table 3 shows that age adjusted death rates by leading cause of death declined for all causes except accident (unintentional injuries) from 2010 to 2015.

Table 3 – Five Leading Causes of Death Age Adjusted Death Rates^{5,6} per 100,000 Lives

	2010	2014	2015
Cancer	98.0	90.9	89.3
Heart	64.0	61.9	62.4
Accident	29.9	32.2	34.7

⁵ Age-adjusted death rates for ages 0 – 74. Ideal 0 – 79 age range that would match other analysis in this report unavailable. All values from CDC Wonder.

⁶ Definition per CDC Wonder Underlying Cause of Death 1999-2015 Dataset Documentation: Age-adjusted death rates are weighted averages of the age-specific death rates, where the weights represent a fixed population by age. They are used to compare relative mortality risk among groups and over time. An age-adjusted rate represents the rate that would have existed had the age-specific rates of the particular year prevailed in a population whose age distribution was the same as that of the fixed population. <https://wonder.cdc.gov/wonder/help/ucd.html#>

CLRD	15.8	15.3	15.6
Stroke	11.5	10.8	10.9

The change in age-adjusted death rates is a key determinant in the change of the same cause potentially preventable deaths. Generally, with all other factors held constant (e.g. population size and its age mix), a change in the adjusted death rate will cause the same directional change in the potentially preventable deaths. When other factors are not held constant the change of the age-adjusted rate and potentially preventable deaths may match or differ in direction depending on the degree of the change in the age-adjusted death rate. Where the age-adjusted death rate change is large enough it tends to dominate the other factors such as occurred for cancer (down) and accident (up) from 2010 to 2015. The opposite occurred for heart disease where although the age-adjusted rate decreased from 2010 to 2015 the potentially preventable deaths increased. Though not reconciled, other factors such as population increase and an increase of the average age appear to outweigh the effect of that moderately lower age-adjusted death rate.

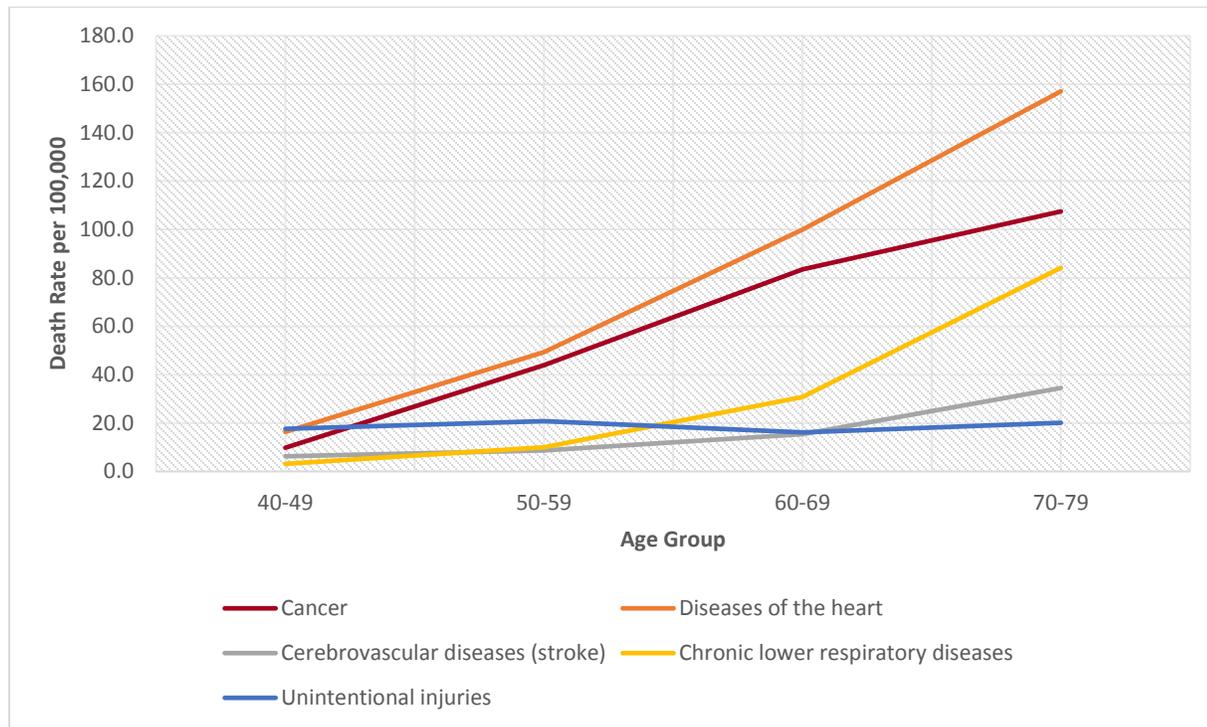
Table 4 shows the age distribution and associated average age for 2010, 2014 and 2015. During this time there was a shift in the age groups with more weight in the highest age groups and a corresponding higher average age that increases from 36.0 to 37.0 going from 2010 to 2015.

Table 4 – Population Distribution and Average Age

	Age Group								
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	Total
2010									
Pop %	13.6%	14.4%	14.3%	13.5%	14.7%	14.1%	9.8%	5.6%	
Avg Age	5.0	15.1	25.0	35.0	45.1	54.8	64.5	74.6	36.0
2014									
Pop %	13.2%	13.6%	14.6%	13.5%	13.5%	14.4%	11.0%	6.2%	
Avg Age	5.0	15.0	25.0	34.9	45.1	54.9	64.7	74.4	36.8
2015									
Pop %	13.1%	13.5%	14.6%	13.6%	13.3%	14.3%	11.4%	6.3%	
Avg Age	5.0	15.0	25.0	34.9	45.0	55.0	64.7	74.4	37.0

The effect on potentially preventable deaths from age shifts is dependent on the associated potentially preventable death rate by age. Figure 2 below shows these rates where the average of 2010 and 2015 potentially preventable death rates is shown by cause of death.

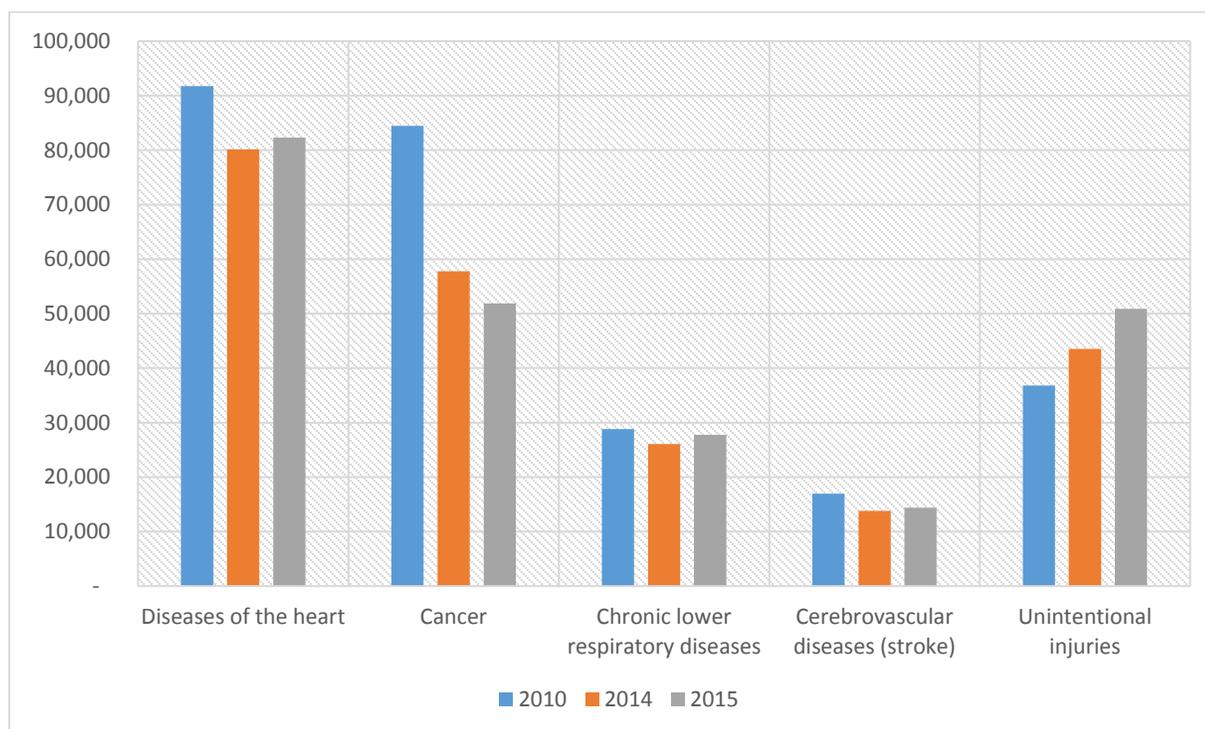
Figure 2 – Potentially Preventable Death Rate by Age Group



Potentially preventable deaths will accelerate when population shifts to age groups with steeper slopes of preventable death rates. Heart disease, cancer and CLRD potentially preventable death rates are particularly sensitive to age shifts. Whereas, the relative flatness of the unintentional injuries slope (accident) implies that age shifts alone will have little effect on those potentially preventable deaths.

Because the population size and mix by geographic and age groups could be significant factors, an alternative analysis for the United States in aggregate is shown below in Figure 3 where 2014 and 2015 are normalized to the 2010 population mix. For this purpose, 2014 and 2015 observed age group death rates by cause are applied to the 2010 population to derive a hypothetical number of potentially preventable deaths in 2014 and 2015. Because the average age within each age group is very consistent across these years, applying death rates by age group from 2014 and 2015 to the 2010 mix of those age groups produces reasonable “what if” views of 2014 and 2015 that are normalized to the 2010 population.

Figure 3 – Potentially Preventable Deaths of the Five Leading Causes, US Normalized to 2010



The relationships by cause of a 2010 normalized view for 2015 vs. 2010 differ from Figure 1 for diseases of the heart and CLRD. The higher average age in 2015 contributes to higher potentially preventable deaths for causes with the steeper slopes in Figure 2. When that effect is removed by normalizing to the 2010 starting point, 2015 potentially preventable deaths for heart disease and CLRD are less than 2010. Cancer and stroke have the same pattern in a regular and normalized view. Even though the population is aging, the significant decrease of the age-adjusted death rates from 2010 to 2015, particularly for cancer, outweighs the aging effect. When the results are normalized, removing the aging effect, amplifies these underlying patterns. This is in sharp contrast to unintentional injuries where there is virtually no change because the potentially preventable death rates are very similar for the higher age groups.

Figure 3 provides an alternative view of potentially preventable deaths. Although hypothetical, it offers a different measure of progress by excluding the uncontrollable effect of population change. When viewed in this regard, reduced potentially preventable deaths from diseases of the heart and to a lesser degree for CLRD indicate that some progress has been made in reducing those deaths which is in contrast to an opposite conclusion from Figure 1 which implies retrogression of the potentially preventable deaths from heart disease and CLRD.

Endnotes

ⁱ García MC, Bastian B, Rossen LM, et al. Potentially Preventable Deaths Among the Five Leading Causes of Death — United States, 2010 and 2014. *MMWR Morb Mortal Wkly Rep* 2016;65:1245–1255. DOI:

<http://dx.doi.org/10.15585/mmwr.mm6545a1>

ⁱⁱ Yoon PW, Brigham B, Anderson RN, et al. Potentially Preventable Deaths Among the Five Leading Causes of Death — United States, 2008-2010. *MMWR Morb Mortal Wkly Rep* 2014;63: 369-374. DOI: <https://stacks.cdc.gov/view/cdc/22471>

ⁱⁱⁱ Benchmark averages for each of the top five causes of death by age group; United States, 2008-2010, <https://stacks.cdc.gov/view/cdc/42342>

^{iv} Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2015 on CDC WONDER Online Database, released December, 2016. Data are from the Multiple Cause of Death Files, 1999-2015, as compiled from data provided by the 57 vital statistics jurisdictions through the Vital Statistics Cooperative Program. Accessed at <http://wonder.cdc.gov/ucd-icd10.html> Additionally, all values not otherwise noted in this report are derived from CDC Wonder.

^v Haeyoun Park and Matthew Bloch, “How the Epidemic of Drug Overdose Deaths Ripples Across America,” *New York Times*, January. 19, 2016. <http://www.nytimes.com/interactive/2016/01/07/us/drug-overdose-deaths-in-the-us.html>

Appendix A – 2015 vs. 2010 Potentially Preventable Deaths – By State Diseases of the Heart

State	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	2,993	6,604	3,611	3,419	3,803	3,324	7,171	3,847	3,646	4,048	
Alaska	331	463	132	76	187	386	572	186	125	247	
Arizona	3,885	4,735	850	668	1,032	4,676	5,405	729	532	926	
Arkansas	1,845	3,808	1,963	1,816	2,111	2,032	4,399	2,367	2,210	2,524	*
California	19,742	24,707	4,965	4,552	5,378	23,038	26,674	3,636	3,199	4,073	*
Colorado	2,707	2,815	108	-37	254	3,259	3,259	0	-159	158	
Connecticut	2,175	2,569	394	259	529	2,405	2,606	201	62	340	
Delaware	575	857	282	208	356	681	912	231	153	310	
District of Columbia	310	729	419	356	482	345	719	374	310	437	
Florida	13,352	17,586	4,234	3,889	4,579	15,657	19,802	4,145	3,776	4,514	
Georgia	5,120	9,103	3,983	3,749	4,216	6,076	10,404	4,328	4,077	4,580	
Hawaii	836	1,007	171	87	255	944	1,214	270	178	361	
Idaho	883	1,080	197	110	284	1,059	1,245	186	92	280	
Illinois	7,249	11,424	4,175	3,908	4,443	8,023	11,953	3,930	3,653	4,207	
Indiana	3,783	6,421	2,638	2,440	2,836	4,224	6,939	2,715	2,508	2,922	
Iowa	1,892	2,716	824	691	957	2,064	2,700	636	501	771	
Kansas	1,636	2,248	612	490	734	1,798	2,406	608	481	736	
Kentucky	2,662	5,332	2,670	2,495	2,845	2,965	5,941	2,976	2,791	3,161	
Louisiana	2,609	5,784	3,175	2,996	3,355	2,922	6,092	3,170	2,984	3,356	
Maine	928	1,083	155	67	243	1,045	1,297	252	157	347	
Maryland	3,303	5,321	2,018	1,836	2,200	3,797	5,692	1,895	1,704	2,086	
Massachusetts	3,926	4,416	490	311	669	4,443	4,511	68	-118	253	*
Michigan	6,056	10,327	4,271	4,020	4,522	6,767	11,495	4,728	4,463	4,993	
Minnesota	3,050	2,720	-330	-479	-181	3,495	2,954	-541	-698	-383	
Mississippi	1,750	4,183	2,433	2,282	2,584	1,933	4,574	2,641	2,482	2,799	
Missouri	3,691	6,553	2,862	2,664	3,061	4,078	7,311	3,233	3,024	3,442	
Montana	650	826	176	100	251	752	982	230	148	311	
Nebraska	1,063	1,252	189	94	283	1,171	1,386	215	116	314	
Nevada	1,566	2,903	1,337	1,206	1,468	1,903	3,773	1,870	1,723	2,018	*
New Hampshire	828	916	88	6	170	954	1,039	85	-2	173	
New Jersey	5,243	7,106	1,863	1,645	2,081	5,820	7,159	1,339	1,116	1,562	*
New Mexico	1,253	1,510	257	154	360	1,410	1,719	309	199	418	
New York	11,522	17,371	5,849	5,516	6,182	12,692	17,651	4,959	4,618	5,301	*
North Carolina	5,678	9,021	3,343	3,105	3,580	6,637	9,743	3,106	2,855	3,356	
North Dakota	406	512	106	46	165	445	539	94	32	155	
Ohio	7,164	11,875	4,711	4,440	4,981	7,851	13,156	5,305	5,021	5,589	*
Oklahoma	2,267	4,857	2,590	2,424	2,755	2,498	5,676	3,178	3,000	3,355	*
Oregon	2,364	2,421	57	-78	193	2,804	2,792	-12	-158	135	
Pennsylvania	8,221	12,668	4,447	4,163	4,730	8,962	13,153	4,191	3,900	4,483	
Rhode Island	636	820	184	110	259	704	876	172	94	250	
South Carolina	2,896	5,413	2,517	2,338	2,696	3,447	5,938	2,491	2,302	2,681	
South Dakota	491	590	99	34	163	552	701	149	79	218	
Tennessee	3,916	7,956	4,040	3,826	4,253	4,452	9,032	4,580	4,352	4,807	*
Texas	12,683	19,939	7,256	6,902	7,610	15,024	23,536	8,512	8,127	8,897	*
Utah	1,194	1,229	35	-62	131	1,429	1,431	2	-103	106	
Vermont	411	482	71	13	130	468	561	93	30	156	
Virginia	4,609	6,588	1,979	1,772	2,186	5,325	7,113	1,788	1,569	2,006	
Washington	3,844	4,437	593	414	771	4,579	4,856	277	87	467	
West Virginia	1,308	2,400	1,092	973	1,211	1,408	2,334	926	806	1,046	
Wisconsin	3,424	4,513	1,089	915	1,264	3,862	4,785	923	741	1,106	
Wyoming	333	492	159	103	216	377	546	169	110	229	
United States	181,261	272,688	91,757	90,436	93,078	206,964	298,724	92,313	90,919	93,706	

Appendix A – 2015 vs. 2010 Potentially Preventable Deaths – By State continued Malignant Neoplasms (Cancer)

State	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	5,227	7,595	2,368	2,146	2,590	5,819	7,757	1,938	1,710	2,166	*
Alaska	588	703	115	45	186	687	783	96	21	171	
Arizona	6,775	7,460	685	452	919	8,140	8,298	158	-93	410	*
Arkansas	3,219	4,720	1,501	1,327	1,676	3,548	5,019	1,471	1,289	1,652	
California	34,454	38,226	3,772	3,243	4,300	40,363	40,640	277	-281	835	*
Colorado	4,752	4,944	192	-1	385	5,740	5,358	-382	-589	-176	*
Connecticut	3,805	4,367	562	385	739	4,224	4,358	134	-47	316	*
Delaware	1,006	1,352	346	251	442	1,192	1,405	213	113	313	
District of Columbia	543	742	199	129	269	606	787	181	108	254	
Florida	23,195	28,249	5,054	4,610	5,499	27,215	30,262	3,047	2,577	3,516	*
Georgia	8,967	11,820	2,853	2,571	3,136	10,651	12,890	2,239	1,939	2,540	*
Hawaii	1,467	1,555	88	-20	196	1,656	1,662	6	-107	119	
Idaho	1,546	1,753	207	94	319	1,855	1,979	124	2	245	
Illinois	12,654	16,558	3,904	3,569	4,239	14,075	17,233	3,158	2,812	3,505	*
Indiana	6,612	9,385	2,773	2,525	3,021	7,412	9,770	2,358	2,101	2,615	
Iowa	3,295	4,127	832	664	1,001	3,620	4,354	734	559	909	
Kansas	2,854	3,624	770	613	928	3,156	3,818	662	498	826	
Kentucky	4,655	7,499	2,844	2,628	3,060	5,202	7,865	2,663	2,439	2,887	
Louisiana	4,562	6,909	2,347	2,137	2,557	5,132	7,122	1,990	1,773	2,207	
Maine	1,627	2,259	632	510	754	1,840	2,313	473	347	599	
Maryland	5,788	7,218	1,430	1,207	1,654	6,669	7,490	821	588	1,054	*
Massachusetts	6,865	8,319	1,454	1,213	1,696	7,807	8,355	548	299	797	*
Michigan	10,600	14,394	3,794	3,484	4,104	11,896	14,665	2,769	2,450	3,089	*
Minnesota	5,328	6,273	945	734	1,156	6,139	6,612	473	252	695	*
Mississippi	3,055	4,731	1,676	1,503	1,849	3,386	4,898	1,512	1,333	1,690	
Missouri	6,442	9,023	2,581	2,337	2,825	7,145	9,277	2,132	1,881	2,384	
Montana	1,142	1,304	162	65	258	1,325	1,506	181	77	286	
Nebraska	1,852	2,254	402	276	527	2,056	2,329	273	143	403	
Nevada	2,743	3,370	627	473	780	3,328	3,692	364	200	528	
New Hampshire	1,455	1,772	317	206	428	1,682	1,958	276	157	394	
New Jersey	9,147	10,948	1,801	1,523	2,079	10,200	10,776	576	293	860	*
New Mexico	2,194	2,393	199	66	332	2,473	2,579	106	-34	245	
New York	20,112	23,787	3,675	3,264	4,085	22,253	23,649	1,396	976	1,816	*
North Carolina	9,931	13,297	3,366	3,067	3,664	11,623	14,215	2,592	2,277	2,907	*
North Dakota	708	780	72	-4	147	783	878	95	15	175	
Ohio	12,514	17,413	4,899	4,560	5,238	13,790	17,917	4,127	3,778	4,476	*
Oklahoma	3,956	5,787	1,831	1,637	2,024	4,369	6,142	1,773	1,572	1,974	
Oregon	4,153	5,212	1,059	869	1,249	4,928	5,601	673	472	874	*
Pennsylvania	14,340	19,114	4,774	4,415	5,132	15,725	19,101	3,376	3,010	3,742	*
Rhode Island	1,112	1,423	311	212	410	1,238	1,436	198	97	300	
South Carolina	5,079	7,063	1,984	1,768	2,200	6,041	7,483	1,442	1,214	1,670	*
South Dakota	856	1,054	198	112	284	972	1,082	110	21	199	
Tennessee	6,853	10,185	3,332	3,076	3,588	7,799	10,803	3,004	2,737	3,271	
Texas	22,143	27,141	4,998	4,563	5,434	26,311	29,008	2,697	2,236	3,158	*
Utah	2,080	1,931	-149	-273	-25	2,496	2,147	-349	-483	-216	
Vermont	723	921	198	118	277	825	983	158	74	241	
Virginia	8,073	10,162	2,089	1,824	2,354	9,337	10,735	1,398	1,120	1,675	*
Washington	6,754	8,193	1,439	1,200	1,679	8,052	8,830	778	523	1,032	*
West Virginia	2,289	3,415	1,126	978	1,274	2,471	3,531	1,060	909	1,212	
Wisconsin	5,978	7,530	1,552	1,324	1,780	6,787	7,678	891	656	1,127	*
Wyoming	585	695	110	40	180	665	654	-11	-82	60	
United States	316,652	400,949	84,443	82,783	86,103	362,704	419,683	57,722	55,988	59,455	*

Appendix A – 2015 vs. 2010 Potentially Preventable Deaths – By State continued Cerebrovascular Diseases (Stroke)

State	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	588	1,277	689	604	774	659	1,442	783	693	873	
Alaska	62	91	29	5	53	75	95	20	-5	46	
Arizona	771	848	77	-2	156	939	1,064	125	37	212	
Arkansas	365	718	353	289	418	406	800	394	326	462	
California	3,838	5,366	1,528	1,339	1,716	4,517	5,724	1,207	1,009	1,406	
Colorado	520	604	84	18	149	636	684	48	-24	119	
Connecticut	420	425	5	-52	62	470	421	-49	-108	9	
Delaware	113	170	57	24	90	135	170	35	0	69	
District of Columbia	61	107	46	21	72	68	108	40	14	66	
Florida	2,655	3,481	826	672	979	3,143	4,106	963	796	1,130	
Georgia	989	1,965	976	869	1,082	1,189	2,192	1,003	889	1,117	
Hawaii	163	244	81	41	120	188	299	111	68	154	
Idaho	174	234	60	20	100	211	254	43	0	85	
Illinois	1,412	2,047	635	520	751	1,573	2,141	568	448	687	
Indiana	739	1,240	501	414	588	833	1,247	414	325	504	
Iowa	373	462	89	32	145	410	464	54	-4	112	
Kansas	321	485	164	108	219	356	531	175	116	233	
Kentucky	520	934	414	340	489	585	980	395	318	473	
Louisiana	510	1,003	493	417	569	577	1,167	590	508	672	
Maine	180	229	49	9	88	206	211	5	-35	45	
Maryland	636	935	299	222	377	741	990	249	167	331	
Massachusetts	761	807	46	-31	124	870	768	-102	-181	-23	*
Michigan	1,178	1,743	565	459	671	1,333	1,845	512	402	623	
Minnesota	592	662	70	0	139	687	745	58	-16	132	
Mississippi	344	827	483	416	550	384	924	540	469	611	
Missouri	724	1,164	440	354	525	808	1,285	477	387	567	
Montana	127	162	35	2	68	150	165	15	-20	50	
Nebraska	209	294	85	41	129	232	266	34	-10	78	
Nevada	305	446	141	87	194	376	544	168	108	227	
New Hampshire	158	163	5	-31	40	186	166	-20	-57	17	
New Jersey	1,015	1,319	304	209	399	1,137	1,327	190	93	288	
New Mexico	246	310	64	17	110	281	296	15	-32	62	
New York	2,246	2,423	177	43	311	2,493	2,456	-37	-175	101	
North Carolina	1,108	1,894	786	678	893	1,310	2,240	930	813	1,047	
North Dakota	80	127	47	19	75	89	98	9	-17	36	
Ohio	1,400	2,271	871	752	990	1,548	2,300	752	630	874	
Oklahoma	448	889	441	370	513	498	901	403	330	477	
Oregon	461	635	174	110	239	555	674	119	50	188	
Pennsylvania	1,611	2,194	583	462	704	1,770	2,417	647	520	774	
Rhode Island	123	148	25	-8	57	138	145	7	-26	40	
South Carolina	567	1,119	552	471	632	685	1,281	596	509	683	
South Dakota	97	126	29	0	58	110	102	-8	-36	21	
Tennessee	765	1,463	698	605	790	880	1,606	726	628	824	
Texas	2,471	4,254	1,783	1,622	1,944	2,948	4,868	1,920	1,747	2,093	
Utah	238	282	44	-1	88	286	361	75	25	125	
Vermont	79	91	12	-14	37	92	93	1	-26	28	
Virginia	891	1,369	478	385	571	1,045	1,393	348	251	445	
Washington	743	907	164	85	244	900	1,010	110	24	196	
West Virginia	257	464	207	154	260	280	463	183	130	237	
Wisconsin	667	869	202	126	279	760	908	148	68	228	
Wyoming	65	73	8	-15	31	74	87	13	-12	38	
United States	35,390	52,360	16,973	16,392	17,554	40,820	56,824	16,220	15,608	16,833	

Appendix A – 2015 vs. 2010 Potentially Preventable Deaths – By State continued Chronic Lower Respiratory Diseases (CLRD)

State	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	765	1,778	1,013	914	1,111	866	2,095	1,229	1,122	1,335	*
Alaska	77	112	35	8	62	95	127	32	2	61	
Arizona	1,004	1,558	554	455	654	1,237	2,007	770	658	881	*
Arkansas	476	1,101	625	547	703	534	1,459	925	838	1,013	*
California	4,904	6,047	1,143	938	1,349	5,851	6,498	647	429	865	*
Colorado	665	1,141	476	393	560	826	1,375	549	457	641	
Connecticut	544	509	-35	-98	29	616	582	-34	-102	34	
Delaware	147	224	77	39	114	179	274	95	54	137	
District of Columbia	78	73	-5	-29	19	87	81	-6	-31	20	
Florida	3,501	5,327	1,826	1,642	2,010	4,175	6,056	1,881	1,683	2,079	
Georgia	1,263	2,413	1,150	1,031	1,269	1,541	2,881	1,340	1,210	1,471	
Hawaii	212	141	-71	-108	-34	247	169	-78	-118	-38	
Idaho	224	409	185	135	234	277	467	190	137	244	
Illinois	1,815	2,740	925	792	1,057	2,050	2,865	815	678	953	
Indiana	954	2,154	1,200	1,091	1,309	1,088	2,465	1,377	1,260	1,494	
Iowa	485	859	374	302	446	538	1,016	478	401	555	
Kansas	414	826	412	343	481	465	940	475	402	549	
Kentucky	674	1,792	1,118	1,020	1,215	767	2,159	1,392	1,286	1,498	*
Louisiana	658	1,106	448	366	531	753	1,329	576	487	666	
Maine	237	443	206	155	258	274	542	268	212	324	
Maryland	818	1,035	217	133	302	965	1,062	97	9	185	
Massachusetts	984	1,115	131	41	220	1,138	1,334	196	99	293	
Michigan	1,527	2,721	1,194	1,066	1,322	1,752	3,163	1,411	1,274	1,549	
Minnesota	762	960	198	116	279	896	1,149	253	164	341	
Mississippi	446	1,016	570	495	645	502	1,203	701	620	782	
Missouri	941	2,090	1,149	1,041	1,257	1,061	2,367	1,306	1,192	1,421	
Montana	166	341	175	131	219	199	372	173	127	220	
Nebraska	270	543	273	217	328	303	594	291	233	350	
Nevada	395	701	306	241	371	493	921	428	354	502	
New Hampshire	206	315	109	65	154	245	391	146	97	196	
New Jersey	1,312	1,436	124	22	227	1,484	1,450	-34	-140	73	
New Mexico	320	535	215	158	273	370	605	235	174	296	
New York	2,906	3,358	452	297	607	3,256	3,481	225	64	386	
North Carolina	1,436	2,698	1,262	1,136	1,388	1,717	3,159	1,442	1,305	1,579	
North Dakota	104	170	66	34	98	115	169	54	21	87	
Ohio	1,818	3,729	1,911	1,765	2,057	2,033	4,126	2,093	1,939	2,246	
Oklahoma	581	1,736	1,155	1,061	1,249	651	1,806	1,155	1,058	1,252	
Oregon	599	1,110	511	430	592	733	1,206	473	387	560	
Pennsylvania	2,101	3,051	950	810	1,091	2,332	3,404	1,072	923	1,220	
Rhode Island	160	225	65	27	104	181	245	64	23	104	
South Carolina	740	1,391	651	561	742	904	1,768	864	763	966	*
South Dakota	126	226	100	63	137	144	238	94	56	132	
Tennessee	995	2,197	1,202	1,091	1,313	1,156	2,726	1,570	1,448	1,692	*
Texas	3,139	5,061	1,922	1,744	2,099	3,790	5,771	1,981	1,790	2,173	
Utah	298	383	85	34	136	363	476	113	56	170	
Vermont	103	167	64	31	96	122	199	77	42	112	
Virginia	1,148	1,647	499	395	602	1,363	1,884	521	410	633	
Washington	956	1,451	495	399	591	1,177	1,737	560	454	666	
West Virginia	338	921	583	513	653	371	1,034	663	589	736	
Wisconsin	862	1,190	328	239	417	997	1,498	501	403	599	*
Wyoming	83	186	103	70	135	97	209	112	77	146	
United States	45,738	74,458	28,831	28,151	29,511	53,374	85,134	31,911	31,182	32,641	*

Appendix A – 2015 vs. 2010 Potentially Preventable Deaths – By State continued Unintentional Injuries (Accidents)

State	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	910	2,036	1,126	1,019	1,232	943	2,183	1,240	1,130	1,350	
Alaska	130	331	201	158	243	138	343	205	162	248	
Arizona	1,190	2,341	1,151	1,034	1,267	1,308	2,703	1,395	1,271	1,519	*
Arkansas	551	1,221	670	588	753	571	1,255	684	600	767	
California	6,886	8,627	1,741	1,497	1,985	7,413	10,396	2,983	2,721	3,244	*
Colorado	940	1,525	585	488	682	1,041	1,983	942	834	1,050	*
Connecticut	679	905	226	148	304	697	1,325	628	540	716	*
Delaware	172	296	124	81	166	186	382	196	150	243	
District of Columbia	117	169	52	18	85	130	223	93	56	130	
Florida	3,675	6,927	3,252	3,050	3,454	4,037	7,968	3,931	3,716	4,145	*
Georgia	1,791	3,133	1,342	1,204	1,479	1,934	3,680	1,746	1,600	1,893	*
Hawaii	259	344	85	37	133	275	395	120	69	171	
Idaho	285	516	231	176	287	309	578	269	211	328	
Illinois	2,395	3,093	698	553	843	2,453	3,851	1,398	1,242	1,553	*
Indiana	1,209	2,064	855	743	967	1,257	2,616	1,359	1,237	1,481	*
Iowa	571	892	321	246	396	591	953	362	285	439	
Kansas	525	1,010	485	408	562	542	1,040	498	420	576	
Kentucky	826	2,240	1,414	1,306	1,523	856	2,561	1,705	1,591	1,820	*
Louisiana	850	1,771	921	821	1,022	888	2,259	1,371	1,261	1,481	*
Maine	262	390	128	78	178	268	568	300	243	357	*
Maryland	1,093	1,065	-28	-119	63	1,157	1,393	236	138	335	*
Massachusetts	1,252	1,507	255	152	358	1,324	2,563	1,239	1,117	1,361	*
Michigan	1,869	2,923	1,054	918	1,189	1,924	3,607	1,683	1,537	1,829	*
Minnesota	993	1,342	349	255	444	1,042	1,574	532	431	632	*
Mississippi	553	1,395	842	756	929	568	1,542	974	884	1,064	
Missouri	1,133	2,328	1,195	1,080	1,310	1,169	2,543	1,374	1,254	1,493	
Montana	190	416	226	177	274	202	462	260	210	311	
Nebraska	337	490	153	96	209	352	563	211	151	270	
Nevada	510	952	442	367	517	561	1,164	603	522	684	*
New Hampshire	255	381	126	76	175	265	633	368	309	427	*
New Jersey	1,665	1,888	223	107	340	1,728	2,540	812	683	940	*
New Mexico	386	1,013	627	554	700	398	1,115	717	640	793	
New York	3,692	3,804	112	-58	282	3,833	5,021	1,188	1,004	1,373	*
North Carolina	1,802	3,268	1,466	1,326	1,605	1,940	3,918	1,978	1,828	2,128	*
North Dakota	127	193	66	31	101	141	254	113	74	152	
Ohio	2,184	4,016	1,832	1,677	1,986	2,238	5,574	3,336	3,163	3,509	*
Oklahoma	703	1,870	1,167	1,068	1,266	738	1,877	1,139	1,039	1,239	
Oregon	730	1,068	338	255	421	788	1,378	590	499	682	*
Pennsylvania	2,435	4,319	1,884	1,723	2,045	2,494	5,628	3,134	2,957	3,310	*
Rhode Island	200	339	139	93	184	206	474	268	217	319	*
South Carolina	883	1,910	1,027	923	1,131	958	2,278	1,320	1,209	1,432	*
South Dakota	151	284	133	92	174	160	319	159	116	202	
Tennessee	1,209	2,895	1,686	1,560	1,811	1,281	3,197	1,916	1,785	2,047	
Texas	4,551	7,612	3,061	2,845	3,277	5,057	8,378	3,321	3,094	3,548	
Utah	470	765	295	226	363	521	1,005	484	407	560	*
Vermont	122	181	59	25	93	125	218	93	57	129	
Virginia	1,521	1,889	368	254	483	1,619	2,577	958	831	1,085	*
Washington	1,269	1,925	656	546	767	1,381	2,318	937	818	1,056	*
West Virginia	364	1,031	667	593	740	367	1,258	891	811	970	*
Wisconsin	1,074	1,666	592	489	694	1,111	2,049	938	828	1,049	*
Wyoming	106	296	190	150	229	111	336	225	183	266	
United States	58,055	94,862	36,836	36,070	37,602	61,599	115,018	53,419	52,596	54,243	*

Appendix B – 2015 vs. 2010 Potentially Preventable Deaths – By HHS Region

Diseases of the Heart

HHS Region	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	8,904	10,286	1,382	1,110	1,653	10,019	10,890	871	587	1,154	
2	16,765	24,477	7,712	7,314	8,110	18,512	24,810	6,298	5,890	6,706	*
3	18,327	28,563	10,236	9,812	10,660	20,517	29,923	9,406	8,965	9,846	*
4	38,367	65,198	26,831	26,200	27,462	44,492	72,605	28,113	27,443	28,784	*
5	30,726	47,280	16,554	16,006	17,101	34,221	51,282	17,061	16,488	17,634	
6	20,656	35,898	15,242	14,776	15,708	23,887	41,422	17,535	17,034	18,036	*
7	8,281	12,769	4,488	4,203	4,772	9,111	13,803	4,692	4,395	4,988	
8	5,782	6,464	682	465	899	6,816	7,458	642	408	877	
9	26,030	33,352	7,322	6,845	7,800	30,561	37,066	6,505	5,995	7,015	
10	7,422	8,401	979	732	1,225	8,828	9,465	637	372	902	

Malignant Neoplasms (Cancer)

HHS Region	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	15,587	19,061	3,474	3,109	3,839	17,616	19,403	1,787	1,410	2,164	*
2	29,259	34,735	5,476	4,980	5,971	32,453	34,425	1,972	1,466	2,479	*
3	32,039	42,003	9,964	9,431	10,497	36,000	43,049	7,049	6,498	7,601	*
4	66,962	90,439	23,477	22,700	24,255	77,737	96,173	18,436	17,619	19,254	*
5	53,686	71,553	17,867	17,173	18,561	60,098	73,875	13,777	13,059	14,494	*
6	36,074	46,950	10,876	10,311	11,441	41,834	49,870	8,036	7,442	8,629	*
7	14,443	19,028	4,585	4,227	4,944	15,976	19,778	3,802	3,431	4,172	*
8	10,123	10,708	585	302	868	11,981	11,625	-356	-657	-55	*
9	45,439	50,611	5,172	4,565	5,779	53,487	54,292	805	162	1,449	*
10	13,041	15,861	2,820	2,487	3,154	15,522	17,193	1,671	1,317	2,026	*

Appendix B – 2015 vs. 2010 Potentially Preventable Deaths – By HHS Region continued

Cerebrovascular Diseases (Stroke)

HHS Region	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	1,722	1,863	141	24	258	1,962	1,804	-158	-279	-38	*
2	3,261	3,742	481	317	645	3,630	3,783	153	-15	322	*
3	3,568	5,239	1,671	1,487	1,855	4,039	5,541	1,502	1,311	1,694	
4	7,538	12,960	5,422	5,142	5,703	8,834	14,771	5,937	5,635	6,238	
5	5,987	8,832	2,845	2,606	3,083	6,734	9,186	2,452	2,205	2,700	
6	4,040	7,174	3,134	2,926	3,342	4,709	8,032	3,323	3,101	3,544	
7	1,628	2,405	777	652	901	1,806	2,546	740	610	869	
8	1,128	1,374	246	148	344	1,345	1,497	152	48	257	
9	5,078	6,904	1,826	1,611	2,040	6,020	7,631	1,611	1,382	1,840	
10	1,439	1,867	428	315	541	1,741	2,033	292	172	413	

Chronic Lower Respiratory Diseases

HHS Region	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	2,234	2,774	540	402	679	2,575	3,293	718	567	868	
2	4,218	4,794	576	390	762	4,740	4,931	191	-1	384	*
3	4,630	6,951	2,321	2,110	2,532	5,297	7,739	2,442	2,218	2,666	
4	9,820	18,612	8,792	8,461	9,122	11,628	22,047	10,419	10,059	10,779	*
5	7,740	13,494	5,754	5,469	6,040	8,816	15,266	6,450	6,146	6,754	*
6	5,174	9,539	4,365	4,128	4,603	6,097	10,970	4,873	4,617	5,129	*
7	2,111	4,318	2,207	2,050	2,364	2,366	4,917	2,551	2,384	2,718	*
8	1,442	2,447	1,005	882	1,127	1,744	2,839	1,095	962	1,227	
9	6,514	8,447	1,933	1,693	2,173	7,829	9,595	1,766	1,508	2,025	
10	1,857	3,082	1,225	1,087	1,363	2,282	3,537	1,255	1,105	1,404	

Appendix B – 2015 vs. 2010 Potentially Preventable Deaths – By HHS Region continued

Unintentional Injuries (Accidents)

HHS Region	2010					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	2,771	3,703	932	774	1,090	2,885	5,781	2,896	2,713	3,078	*
2	5,357	5,692	335	129	541	5,561	7,561	2,000	1,775	2,224	*
3	5,703	8,769	3,066	2,831	3,302	5,953	11,461	5,508	5,249	5,766	*
4	11,650	23,804	12,154	11,785	12,523	12,517	27,327	14,810	14,419	15,201	*
5	9,724	15,104	5,380	5,071	5,688	10,026	19,271	9,245	8,910	9,581	*
6	7,040	13,487	6,447	6,166	6,727	7,652	14,884	7,232	6,937	7,526	*
7	2,566	4,720	2,154	1,987	2,321	2,655	5,099	2,444	2,272	2,617	
8	1,985	3,479	1,494	1,349	1,639	2,176	4,359	2,183	2,024	2,341	*
9	8,845	12,264	3,419	3,134	3,704	9,557	14,658	5,101	4,796	5,406	*
10	2,414	3,840	1,426	1,271	1,581	2,615	4,617	2,002	1,835	2,168	*

Appendix C – 2014 vs. 2010 Potentially Preventable Deaths – By State^{3,4}

Diseases of the Heart

	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	2,993	6,604	3,611	3,419	3,803	3,266	6,933	3,667	3,469	3,865	
Alaska	331	463	132	76	187	377	497	120	62	178	
Arizona	3,885	4,735	850	668	1,032	4,512	5,061	549	357	740	
Arkansas	1,845	3,808	1,963	1,816	2,111	1,998	4,258	2,260	2,105	2,415	*
California	19,742	24,707	4,965	4,552	5,378	22,358	25,338	2,980	2,552	3,408	*
Colorado	2,707	2,815	108	-37	254	3,153	3,246	93	-64	250	
Connecticut	2,175	2,569	394	259	529	2,362	2,552	190	53	328	
Delaware	575	857	282	208	356	658	929	271	193	349	
District of Columbia	310	729	419	356	482	337	733	396	331	460	
Florida	13,352	17,586	4,234	3,889	4,579	15,121	19,121	4,000	3,638	4,363	
Georgia	5,120	9,103	3,983	3,749	4,216	5,890	9,911	4,021	3,775	4,267	
Hawaii	836	1,007	171	87	255	920	1,217	297	206	387	
Idaho	883	1,080	197	110	284	1,025	1,240	215	122	308	
Illinois	7,249	11,424	4,175	3,908	4,443	7,898	11,839	3,941	3,666	4,217	
Indiana	3,783	6,421	2,638	2,440	2,836	4,145	6,779	2,634	2,429	2,839	
Iowa	1,892	2,716	824	691	957	2,032	2,622	590	456	724	
Kansas	1,636	2,248	612	490	734	1,766	2,402	636	509	762	
Kentucky	2,662	5,332	2,670	2,495	2,845	2,912	5,798	2,886	2,704	3,069	
Louisiana	2,609	5,784	3,175	2,996	3,355	2,861	6,149	3,288	3,102	3,474	
Maine	928	1,083	155	67	243	1,026	1,167	141	49	233	
Maryland	3,303	5,321	2,018	1,836	2,200	3,701	5,476	1,775	1,587	1,963	
Massachusetts	3,926	4,416	490	311	669	4,333	4,382	49	-134	232	*
Michigan	6,056	10,327	4,271	4,020	4,522	6,646	11,461	4,815	4,551	5,079	*
Minnesota	3,050	2,720	-330	-479	-181	3,414	2,951	-463	-619	-306	
Mississippi	1,750	4,183	2,433	2,282	2,584	1,903	4,428	2,525	2,369	2,681	
Missouri	3,691	6,553	2,862	2,664	3,061	4,011	7,113	3,102	2,896	3,309	
Montana	650	826	176	100	251	733	910	177	97	256	
Nebraska	1,063	1,252	189	94	283	1,149	1,288	139	42	236	
Nevada	1,566	2,903	1,337	1,206	1,468	1,832	3,517	1,685	1,542	1,828	*
New Hampshire	828	916	88	6	170	931	976	45	-41	131	
New Jersey	5,243	7,106	1,863	1,645	2,081	5,703	7,145	1,442	1,220	1,665	*
New Mexico	1,253	1,510	257	154	360	1,382	1,642	260	153	368	
New York	11,522	17,371	5,849	5,516	6,182	12,467	17,127	4,660	4,322	4,997	*
North Carolina	5,678	9,021	3,343	3,105	3,580	6,456	9,223	2,767	2,521	3,012	*
North Dakota	406	512	106	46	165	437	542	105	44	167	
Ohio	7,164	11,875	4,711	4,440	4,981	7,736	12,697	4,961	4,681	5,241	
Oklahoma	2,267	4,857	2,590	2,424	2,755	2,456	5,300	2,844	2,671	3,017	
Oregon	2,364	2,421	57	-78	193	2,713	2,622	-91	-235	52	
Pennsylvania	8,221	12,668	4,447	4,163	4,730	8,824	12,689	3,865	3,578	4,153	*
Rhode Island	636	820	184	110	259	689	855	166	89	243	
South Carolina	2,896	5,413	2,517	2,338	2,696	3,335	5,742	2,407	2,220	2,593	
South Dakota	491	590	99	34	163	541	741	200	130	270	
Tennessee	3,916	7,956	4,040	3,826	4,253	4,353	8,741	4,388	4,164	4,613	
Texas	12,683	19,939	7,256	6,902	7,610	14,549	22,558	8,009	7,631	8,387	*
Utah	1,194	1,229	35	-62	131	1,383	1,349	-34	-136	69	
Vermont	411	482	71	13	130	457	536	79	17	140	
Virginia	4,609	6,588	1,979	1,772	2,186	5,185	6,978	1,793	1,577	2,009	
Washington	3,844	4,437	593	414	771	4,424	4,857	433	244	622	
West Virginia	1,308	2,400	1,092	973	1,211	1,395	2,380	985	865	1,106	
Wisconsin	3,424	4,513	1,089	915	1,264	3,779	4,710	931	750	1,111	
Wyoming	333	492	159	103	216	369	537	168	109	227	
United States	181,261	272,688	91,757	90,436	93,078	201,901	289,265	87,950	86,576	89,324	*

Appendix C – 2014 vs. 2010 Potentially Preventable Deaths – By State continued Malignant Neoplasms (Cancer)

	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	5,227	7,595	2,368	2,146	2,590	5,714	7,796	2,082	1,855	2,310	
Alaska	588	703	115	45	186	670	782	112	37	186	
Arizona	6,775	7,460	685	452	919	7,857	8,085	228	-19	476	*
Arkansas	3,219	4,720	1,501	1,327	1,676	3,487	4,897	1,410	1,230	1,589	
California	34,454	38,226	3,772	3,243	4,300	39,157	39,678	521	-30	1071	*
Colorado	4,752	4,944	192	-1	385	5,552	5,188	-364	-568	-161	*
Connecticut	3,805	4,367	562	385	739	4,144	4,219	75	-104	254	*
Delaware	1,006	1,352	346	251	442	1,151	1,426	275	175	374	
District of Columbia	543	742	199	129	269	592	837	245	171	319	
Florida	23,195	28,249	5,054	4,610	5,499	26,279	29,519	3,240	2,777	3,703	*
Georgia	8,967	11,820	2,853	2,571	3,136	10,323	12,738	2,415	2,117	2,713	
Hawaii	1,467	1,555	88	-20	196	1,616	1,693	77	-36	190	
Idaho	1,546	1,753	207	94	319	1,796	1,995	199	79	320	
Illinois	12,654	16,558	3,904	3,569	4,239	13,840	16,862	3,022	2,679	3,366	*
Indiana	6,612	9,385	2,773	2,525	3,021	7,268	9,821	2,553	2,297	2,809	
Iowa	3,295	4,127	832	664	1,001	3,559	4,258	699	525	872	
Kansas	2,854	3,624	770	613	928	3,098	3,758	660	498	822	
Kentucky	4,655	7,499	2,844	2,628	3,060	5,104	7,815	2,711	2,488	2,934	
Louisiana	4,562	6,909	2,347	2,137	2,557	5,021	7,137	2,116	1,900	2,332	
Maine	1,627	2,259	632	510	754	1,805	2,186	381	257	505	*
Maryland	5,788	7,218	1,430	1,207	1,654	6,499	7,616	1117	884	1,350	
Massachusetts	6,865	8,319	1,454	1,213	1,696	7,608	8,341	733	485	980	*
Michigan	10,600	14,394	3,794	3,484	4,104	11,671	14,884	3,213	2,894	3,533	
Minnesota	5,328	6,273	945	734	1,156	5,992	6,267	275	58	492	*
Mississippi	3,055	4,731	1,676	1,503	1,849	3,330	5,019	1,689	1,510	1,868	
Missouri	6,442	9,023	2,581	2,337	2,825	7,020	9,345	2,325	2,074	2,576	
Montana	1,142	1,304	162	65	258	1,291	1,445	154	52	257	
Nebraska	1,852	2,254	402	276	527	2,014	2,292	278	149	406	
Nevada	2,743	3,370	627	473	780	3,205	3,723	518	355	681	
New Hampshire	1,455	1,772	317	206	428	1,642	1,846	204	89	320	
New Jersey	9,147	10,948	1,801	1,523	2,079	9,986	10,965	979	696	1,263	*
New Mexico	2,194	2,393	199	66	332	2,423	2,451	28	-109	165	
New York	20,112	23,787	3,675	3,264	4,085	21,842	23,861	2,019	1,600	2,438	*
North Carolina	9,931	13,297	3,366	3,067	3,664	11,304	14,393	3,089	2,775	3,404	
North Dakota	708	780	72	-4	147	767	852	85	6	164	
Ohio	12,514	17,413	4,899	4,560	5,238	13,570	18,043	4,473	4,124	4,821	
Oklahoma	3,956	5,787	1,831	1,637	2,024	4,293	5,896	1,603	1,405	1,801	
Oregon	4,153	5,212	1,059	869	1,249	4,771	5,496	725	526	924	
Pennsylvania	14,340	19,114	4,774	4,415	5,132	15,463	19,064	3,601	3,237	3,965	*
Rhode Island	1,112	1,423	311	212	410	1,210	1,442	232	131	333	
South Carolina	5,079	7,063	1,984	1,768	2,200	5,846	7,487	1,641	1,415	1,867	
South Dakota	856	1,054	198	112	284	950	1,115	165	76	254	
Tennessee	6,853	10,185	3,332	3,076	3,588	7,622	10,694	3,072	2,807	3,337	
Texas	22,143	27,141	4,998	4,563	5,434	25,469	28,835	3,366	2,909	3,823	*
Utah	2,080	1,931	-149	-273	-25	2,413	2,105	-308	-440	-177	
Vermont	723	921	198	118	277	807	961	154	72	237	
Virginia	8,073	10,162	2,089	1,824	2,354	9,090	10,651	1,561	1,286	1,836	*
Washington	6,754	8,193	1,439	1,200	1,679	7,781	8,427	646	396	895	*
West Virginia	2,289	3,415	1,126	978	1,274	2,446	3,642	1,196	1,043	1,349	
Wisconsin	5,978	7,530	1,552	1,324	1,780	6,635	7,652	1,017	783	1,251	*
Wyoming	585	695	110	40	180	651	682	31	-41	102	
United States	316,652	400,949	84,443	82,783	86,103	353,645	416,182	63,209	61,489	64,929	*

Appendix C – 2014 vs. 2010 Potentially Preventable Deaths – By State continued Cerebrovascular Diseases (Stroke)

	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	588	1,277	689	604	774	646	1,335	689	601	776	
Alaska	62	91	29	5	53	72	87	15	-10	39	
Arizona	771	848	77	-2	156	905	912	7	-76	91	
Arkansas	365	718	353	289	418	398	738	340	274	406	
California	3,838	5,366	1,528	1,339	1,716	4,374	5,324	950	757	1,143	*
Colorado	520	604	84	18	149	614	633	19	-50	88	
Connecticut	420	425	5	-52	62	460	405	-55	-113	2	
Delaware	113	170	57	24	90	130	172	42	7	76	
District of Columbia	61	107	46	21	72	66	88	22	-2	46	
Florida	2,655	3,481	826	672	979	3,030	3,812	782	620	944	
Georgia	989	1,965	976	869	1,082	1,150	2,060	910	799	1,021	
Hawaii	163	244	81	41	120	182	234	52	12	92	
Idaho	174	234	60	20	100	204	268	64	21	106	
Illinois	1,412	2,047	635	520	751	1,547	2,175	628	509	748	
Indiana	739	1,240	501	414	588	816	1,289	473	384	563	
Iowa	373	462	89	32	145	403	465	62	4	120	
Kansas	321	485	164	108	219	349	489	140	83	196	
Kentucky	520	934	414	340	489	573	948	375	298	451	
Louisiana	510	1,003	493	417	569	564	1,176	612	530	694	
Maine	180	229	49	9	88	202	222	20	-20	61	
Maryland	636	935	299	222	377	720	1025	305	223	387	
Massachusetts	761	807	46	-31	124	846	784	-62	-141	17	
Michigan	1,178	1,743	565	459	671	1,306	1,792	486	377	595	
Minnesota	592	662	70	0	139	669	705	36	-37	108	
Mississippi	344	827	483	416	550	377	858	481	412	550	
Missouri	724	1,164	440	354	525	793	1,263	470	381	558	
Montana	127	162	35	2	68	146	182	36	1	72	
Nebraska	209	294	85	41	129	227	273	46	2	90	
Nevada	305	446	141	87	194	361	482	121	64	178	
New Hampshire	158	163	5	-31	40	181	174	-7	-44	30	
New Jersey	1,015	1,319	304	209	399	1,111	1,322	211	114	307	
New Mexico	246	310	64	17	110	275	321	46	-2	94	
New York	2,246	2,423	177	43	311	2,445	2,394	-51	-187	86	
North Carolina	1,108	1,894	786	678	893	1,271	2,110	839	725	953	
North Dakota	80	127	47	19	75	87	120	33	5	61	
Ohio	1,400	2,271	871	752	990	1,523	2,328	805	683	927	
Oklahoma	448	889	441	370	513	488	894	406	333	478	
Oregon	461	635	174	110	239	536	699	163	95	232	
Pennsylvania	1,611	2,194	583	462	704	1,740	2,388	648	522	774	
Rhode Island	123	148	25	-8	57	135	114	-21	-52	10	
South Carolina	567	1,119	552	471	632	661	1,185	524	440	608	
South Dakota	97	126	29	0	58	107	108	1	-28	29	
Tennessee	765	1,463	698	605	790	859	1,626	767	670	865	
Texas	2,471	4,254	1,783	1,622	1,944	2,850	4,620	1,770	1,601	1,939	
Utah	238	282	44	-1	88	276	325	49	1	97	
Vermont	79	91	12	-14	37	90	82	-8	-33	18	
Virginia	891	1,369	478	385	571	1,014	1,354	340	244	435	
Washington	743	907	164	85	244	867	937	70	-13	154	
West Virginia	257	464	207	154	260	276	484	208	154	262	
Wisconsin	667	869	202	126	279	742	854	112	34	190	
Wyoming	65	73	8	-15	31	73	72	-1	-24	23	
United States	35,390	52,360	16,973	16,392	17,554	39,737	54,707	15,175	14,573	15,777	*

Appendix C – 2014 vs. 2010 Potentially Preventable Deaths – By State continued Chronic Lower Respiratory Diseases (CLRD)

	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	765	1,778	1,013	914	1,111	848	1,897	1,049	946	1,152	
Alaska	77	112	35	8	62	92	116	24	-4	52	
Arizona	1,004	1,558	554	455	654	1,189	1,870	681	573	790	
Arkansas	476	1,101	625	547	703	523	1,339	816	731	901	*
California	4,904	6,047	1,143	938	1,349	5,650	6,073	423	211	635	*
Colorado	665	1,141	476	393	560	795	1,301	506	416	596	
Connecticut	544	509	-35	-98	29	601	586	-15	-83	52	
Delaware	147	224	77	39	114	172	231	59	20	98	
District of Columbia	78	73	-5	-29	19	85	73	-12	-36	13	
Florida	3,501	5,327	1,826	1,642	2,010	4,018	5,855	1,837	1,642	2,032	
Georgia	1,263	2,413	1,150	1,031	1,269	1,486	2,729	1,243	1,116	1,370	
Hawaii	212	141	-71	-108	-34	239	151	-88	-127	-49	
Idaho	224	409	185	135	234	267	485	218	165	272	
Illinois	1,815	2,740	925	792	1,057	2,010	2,891	881	744	1018	
Indiana	954	2,154	1,200	1,091	1,309	1,063	2,389	1,326	1,211	1,441	
Iowa	485	859	374	302	446	528	968	440	364	516	
Kansas	414	826	412	343	481	455	938	483	410	557	
Kentucky	674	1,792	1,118	1,020	1,215	750	2,078	1,328	1,223	1,432	*
Louisiana	658	1,106	448	366	531	733	1,360	627	537	716	*
Maine	237	443	206	155	258	268	494	226	172	281	
Maryland	818	1,035	217	133	302	936	998	62	-24	149	
Massachusetts	984	1,115	131	41	220	1,105	1,205	100	6	195	
Michigan	1,527	2,721	1,194	1,066	1,322	1,712	2,939	1,227	1,093	1,360	
Minnesota	762	960	198	116	279	871	1,153	282	194	370	
Mississippi	446	1,016	570	495	645	492	1,129	637	558	715	
Missouri	941	2,090	1,149	1,041	1,257	1,039	2,175	1,136	1,025	1,247	
Montana	166	341	175	131	219	192	380	188	141	235	
Nebraska	270	543	273	217	328	296	563	267	210	325	
Nevada	395	701	306	241	371	472	883	411	338	483	
New Hampshire	206	315	109	65	154	237	352	115	67	162	
New Jersey	1,312	1,436	124	22	227	1,447	1,391	-56	-161	48	
New Mexico	320	535	215	158	273	361	605	244	183	305	
New York	2,906	3,358	452	297	607	3,186	3,306	120	-38	277	*
North Carolina	1,436	2,698	1,262	1,136	1,388	1,663	3,077	1,414	1,279	1,549	
North Dakota	104	170	66	34	98	113	162	49	17	82	
Ohio	1,818	3,729	1,911	1,765	2,057	1,996	3,922	1,926	1,775	2,077	
Oklahoma	581	1,736	1,155	1,061	1,249	638	1,787	1,149	1,053	1,246	
Oregon	599	1,110	511	430	592	706	1,153	447	363	532	
Pennsylvania	2,101	3,051	950	810	1,091	2,287	3,223	936	790	1,081	
Rhode Island	160	225	65	27	104	176	242	66	26	106	
South Carolina	740	1,391	651	561	742	870	1,693	823	723	922	
South Dakota	126	226	100	63	137	140	202	62	25	98	
Tennessee	995	2,197	1,202	1,091	1,313	1,125	2,567	1,442	1,323	1,561	*
Texas	3,139	5,061	1,922	1,744	2,099	3,656	5,456	1,800	1,613	1,987	
Utah	298	383	85	34	136	350	451	101	45	156	
Vermont	103	167	64	31	96	118	189	71	36	105	
Virginia	1,148	1,647	499	395	602	1,320	1,714	394	286	502	
Washington	956	1,451	495	399	591	1,130	1,603	473	370	575	
West Virginia	338	921	583	513	653	367	995	628	556	701	
Wisconsin	862	1,190	328	239	417	970	1,375	405	310	499	
Wyoming	83	186	103	70	135	95	185	90	57	123	
United States	45,738	74,458	28,831	28,151	29,511	51,840	80,899	29,232	28,518	29,946	

Appendix C – 2014 vs. 2010 Potentially Preventable Deaths – By State continued

Unintentional Injuries (Accidents)

	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	910	2,036	1,126	1,019	1,232	939	2,104	1,165	1,057	1,273	
Alaska	130	331	201	158	243	137	348	211	168	254	
Arizona	1,190	2,341	1,151	1,034	1,267	1,284	2,562	1,278	1,157	1,400	
Arkansas	551	1,221	670	588	753	568	1,172	604	522	686	
California	6,886	8,627	1,741	1,497	1,985	7,315	9,818	2,503	2,246	2,759	*
Colorado	940	1,525	585	488	682	1,018	1,833	815	710	919	*
Connecticut	679	905	226	148	304	696	1,142	446	362	531	*
Delaware	172	296	124	81	166	183	350	167	122	212	
District of Columbia	117	169	52	18	85	128	177	49	15	84	
Florida	3,675	6,927	3,252	3,050	3,454	3,951	6,997	3,046	2,841	3,251	
Georgia	1,791	3,133	1,342	1,204	1,479	1,905	3,342	1,437	1,295	1,579	
Hawaii	259	344	85	37	133	272	356	84	35	133	
Idaho	285	516	231	176	287	304	575	271	213	329	
Illinois	2,395	3,093	698	553	843	2,449	3,642	1,193	1,040	1,346	*
Indiana	1,209	2,064	855	743	967	1,250	2,425	1,175	1,056	1,294	*
Iowa	571	892	321	246	396	587	948	361	284	438	
Kansas	525	1,010	485	408	562	539	1,004	465	388	542	
Kentucky	826	2,240	1,414	1,306	1,523	852	2,225	1,373	1,264	1,482	
Louisiana	850	1,771	921	821	1,022	882	2,074	1,192	1,085	1,298	*
Maine	262	390	128	78	178	267	487	220	166	273	
Maryland	1,093	1,065	-28	-119	63	1,147	1,217	70	-26	165	
Massachusetts	1,252	1,507	255	152	358	1,310	2,085	775	661	890	*
Michigan	1,869	2,923	1,054	918	1,189	1,916	3,455	1,539	1,396	1,683	*
Minnesota	993	1,342	349	255	444	1,034	1,440	406	308	503	
Mississippi	553	1,395	842	756	929	567	1,438	871	783	959	
Missouri	1,133	2,328	1,195	1,080	1,310	1,163	2,414	1,251	1,133	1,368	
Montana	190	416	226	177	274	199	418	219	170	267	
Nebraska	337	490	153	96	209	349	535	186	127	244	
Nevada	510	952	442	367	517	549	1,032	483	405	561	
New Hampshire	255	381	126	76	175	263	507	244	189	298	*
New Jersey	1,665	1,888	223	107	340	1,718	2,309	591	466	715	*
New Mexico	386	1,013	627	554	700	397	1,249	852	772	931	*
New York	3,692	3,804	112	-58	282	3,813	4,515	702	523	881	*
North Carolina	1,802	3,268	1,466	1,326	1,605	1,915	3,592	1,677	1,532	1,823	
North Dakota	127	193	66	31	101	138	233	95	57	133	
Ohio	2,184	4,016	1,832	1,677	1,986	2,230	4,928	2,698	2,532	2,864	*
Oklahoma	703	1,870	1,167	1,068	1,266	732	1,944	1,212	1,111	1,314	
Oregon	730	1,068	338	255	421	773	1,254	481	393	569	
Pennsylvania	2,435	4,319	1,884	1,723	2,045	2,486	4,993	2,507	2,338	2,677	*
Rhode Island	200	339	139	93	184	205	408	203	155	252	
South Carolina	883	1,910	1,027	923	1,131	942	2,032	1,090	983	1,197	
South Dakota	151	284	133	92	174	159	320	161	118	204	
Tennessee	1,209	2,895	1,686	1,560	1,811	1,268	3,059	1,791	1,662	1,920	
Texas	4,551	7,612	3,061	2,845	3,277	4,951	8,159	3,208	2,983	3,432	
Utah	470	765	295	226	363	510	927	417	343	491	
Vermont	122	181	59	25	93	125	188	63	29	98	
Virginia	1,521	1,889	368	254	483	1,604	2,390	786	663	910	*
Washington	1,269	1,925	656	546	767	1,355	2,181	826	710	943	
West Virginia	364	1,031	667	593	740	368	1,134	766	690	842	
Wisconsin	1,074	1,666	592	489	694	1,105	2,008	903	794	1,013	*
Wyoming	106	296	190	150	229	111	315	204	164	244	
United States	58,055	94,862	36,836	36,070	37,602	60,929	106,260	45,331	44,530	46,132	*

Appendix D – 2014 vs. 2010 Potentially Preventable Deaths – By HHS Region

Diseases of the Heart

HHS Region	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	8,904	10,286	1,382	1,110	1,653	9,798	10,468	670	391	949	*
2	16,765	24,477	7,712	7,314	8,110	18,170	24,272	6,102	5,698	6,506	*
3	18,327	28,563	10,236	9,812	10,660	20,099	29,185	9,086	8,651	9,521	*
4	38,367	65,198	26,831	26,200	27,462	43,235	69,897	26,662	26,003	27,321	
5	30,726	47,280	16,554	16,006	17,101	33,618	50,437	16,819	16,251	17,387	
6	20,656	35,898	15,242	14,776	15,708	23,245	39,907	16,662	16,169	17,154	*
7	8,281	12,769	4,488	4,203	4,772	8,958	13,425	4,467	4,174	4,760	
8	5,782	6,464	682	465	899	6,616	7,325	709	478	940	
9	26,030	33,352	7,322	6,845	7,800	29,622	35,133	5,511	5,012	6,009	*
10	7,422	8,401	979	732	1,225	8,539	9,216	677	416	938	

Malignant Neoplasms (Cancer)

HHS Region	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	15,587	19,061	3,474	3,109	3,839	17,216	18,995	1,779	1,406	2,152	*
2	29,259	34,735	5,476	4,980	5,971	31,827	34,826	2,999	2,493	3,505	*
3	32,039	42,003	9,964	9,431	10,497	35,241	43,236	7,995	7,446	8,544	*
4	66,962	90,439	23,477	22,700	24,255	75,522	95,461	19,939	19,129	20,750	*
5	53,686	71,553	17,867	17,173	18,561	58,975	73,529	14,554	13,841	15,267	*
6	36,074	46,950	10,876	10,311	11,441	40,693	49,216	8,523	7,935	9,110	*
7	14,443	19,028	4,585	4,227	4,944	15,692	19,653	3,961	3,593	4,330	
8	10,123	10,708	585	302	868	11,625	11,387	-238	-535	59	*
9	45,439	50,611	5,172	4,565	5,779	51,835	53,179	1,344	709	1,979	*
10	13,041	15,861	2,820	2,487	3,154	15,018	16,700	1,682	1,333	2,031	*

Appendix D – 2014 vs. 2010 Potentially Preventable Deaths – By HHS Region continued

Cerebrovascular Diseases (Stroke)

HHS Region	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	1,722	1,863	141	24	258	1,913	1,781	-132	-252	-13	*
2	3,261	3,742	481	317	645	3,556	3,716	160	-7	327	*
3	3,568	5,239	1,671	1,487	1,855	3,947	5,511	1,564	1,373	1,754	
4	7,538	12,960	5,422	5,142	5,703	8,567	13,934	5,367	5,073	5,661	
5	5,987	8,832	2,845	2,606	3,083	6,603	9,143	2,540	2,294	2,786	
6	4,040	7,174	3,134	2,926	3,342	4,575	7,749	3,174	2,956	3,391	
7	1,628	2,405	777	652	901	1,773	2,490	717	589	845	
8	1,128	1,374	246	148	344	1,302	1,440	138	35	240	
9	5,078	6,904	1,826	1,611	2,040	5,822	6,952	1,130	909	1,352	*
10	1,439	1,867	428	315	541	1,679	1,991	312	194	431	

Chronic Lower Respiratory Diseases

HHS Region	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	2,234	2,774	540	402	679	2,505	3,068	563	416	709	
2	4,218	4,794	576	390	762	4,634	4,697	63	-126	253	*
3	4,630	6,951	2,321	2,110	2,532	5,166	7,234	2,068	1,850	2,287	
4	9,820	18,612	8,792	8,461	9,122	11,254	21,025	9,771	9,419	10,123	*
5	7,740	13,494	5,754	5,469	6,040	8,623	14,669	6,046	5,747	6,345	
6	5,174	9,539	4,365	4,128	4,603	5,911	10,547	4,636	4,385	4,888	
7	2,111	4,318	2,207	2,050	2,364	2,317	4,644	2,327	2,163	2,490	
8	1,442	2,447	1,005	882	1,127	1,685	2,681	996	866	1,125	
9	6,514	8,447	1,933	1,693	2,173	7,550	8,977	1,427	1,175	1,679	*
10	1,857	3,082	1,225	1,087	1,363	2,195	3,357	1,162	1,016	1,308	

Appendix D – 2014 vs. 2010 Potentially Preventable Deaths – By HHS Region continued

Unintentional Injuries (Accidents)

HHS Region	2010					2014					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	2,771	3,703	932	774	1,090	2,866	4,817	1,951	1,780	2,123	*
2	5,357	5,692	335	129	541	5,531	6,824	1,293	1,075	1,511	*
3	5,703	8,769	3,066	2,831	3,302	5,916	10,261	4,345	4,096	4,595	*
4	11,650	23,804	12,154	11,785	12,523	12,338	24,789	12,451	12,073	12,828	
5	9,724	15,104	5,380	5,071	5,688	9,984	17,898	7,914	7,587	8,242	*
6	7,040	13,487	6,447	6,166	6,727	7,530	14,598	7,068	6,776	7,359	*
7	2,566	4,720	2,154	1,987	2,321	2,639	4,901	2,262	2,091	2,432	
8	1,985	3,479	1,494	1,349	1,639	2,136	4,046	1,910	1,756	2,064	*
9	8,845	12,264	3,419	3,134	3,704	9,420	13,768	4,348	4,050	4,647	*
10	2,414	3,840	1,426	1,271	1,581	2,569	4,358	1,789	1,626	1,952	*

Appendix E – 2015 vs. 2014 Potentially Preventable Deaths – By State Diseases of the Heart

State	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	3,266	6,933	3,667	3,469	3,865	3,324	7,171	3,847	3,646	4,048	
Alaska	377	497	120	62	178	386	572	186	125	247	
Arizona	4,512	5,061	549	357	740	4,676	5,405	729	532	926	
Arkansas	1,998	4,258	2,260	2,105	2,415	2,032	4,399	2,367	2,210	2,524	
California	22,358	25,338	2,980	2,552	3,408	23,038	26,674	3,636	3,199	4,073	
Colorado	3,153	3,246	93	-64	250	3,259	3,259	0	-159	158	
Connecticut	2,362	2,552	190	53	328	2,405	2,606	201	62	340	
Delaware	658	929	271	193	349	681	912	231	153	310	
District of Columbia	337	733	396	331	460	345	719	374	310	437	
Florida	15,121	19,121	4,000	3,638	4,363	15,657	19,802	4,145	3,776	4,514	
Georgia	5,890	9,911	4,021	3,775	4,267	6,076	10,404	4,328	4,077	4,580	
Hawaii	920	1,217	297	206	387	944	1,214	270	178	361	
Idaho	1,025	1,240	215	122	308	1,059	1,245	186	92	280	
Illinois	7,898	11,839	3,941	3,666	4,217	8,023	11,953	3,930	3,653	4,207	
Indiana	4,145	6,779	2,634	2,429	2,839	4,224	6,939	2,715	2,508	2,922	
Iowa	2,032	2,622	590	456	724	2,064	2,700	636	501	771	
Kansas	1,766	2,402	636	509	762	1,798	2,406	608	481	736	
Kentucky	2,912	5,798	2,886	2,704	3,069	2,965	5,941	2,976	2,791	3,161	
Louisiana	2,861	6,149	3,288	3,102	3,474	2,922	6,092	3,170	2,984	3,356	
Maine	1026	1,167	141	49	233	1,045	1,297	252	157	347	
Maryland	3,701	5,476	1,775	1,587	1,963	3,797	5,692	1,895	1,704	2,086	
Massachusetts	4,333	4,382	49	-134	232	4,443	4,511	68	-118	253	
Michigan	6,646	11,461	4,815	4,551	5,079	6,767	11,495	4,728	4,463	4,993	
Minnesota	3,414	2,951	-463	-619	-306	3,495	2,954	-541	-698	-383	
Mississippi	1,903	4,428	2,525	2,369	2,681	1,933	4,574	2,641	2,482	2,799	
Missouri	4,011	7,113	3,102	2,896	3,309	4,078	7,311	3,233	3,024	3,442	
Montana	733	910	177	97	256	752	982	230	148	311	
Nebraska	1,149	1,288	139	42	236	1,171	1,386	215	116	314	
Nevada	1,832	3,517	1,685	1,542	1,828	1,903	3,773	1,870	1,723	2,018	
New Hampshire	931	976	45	-41	131	954	1,039	85	-2	173	
New Jersey	5,703	7,145	1,442	1,220	1,665	5,820	7,159	1,339	1,116	1,562	
New Mexico	1,382	1,642	260	153	368	1,410	1,719	309	199	418	
New York	12,467	17,127	4,660	4,322	4,997	12,692	17,651	4,959	4,618	5,301	
North Carolina	6,456	9,223	2,767	2,521	3,012	6,637	9,743	3,106	2,855	3,356	
North Dakota	437	542	105	44	167	445	539	94	32	155	
Ohio	7,736	12,697	4,961	4,681	5,241	7,851	13,156	5,305	5,021	5,589	
Oklahoma	2,456	5,300	2,844	2,671	3,017	2,498	5,676	3,178	3,000	3,355	*
Oregon	2,713	2,622	-91	-235	52	2,804	2,792	-12	-158	135	
Pennsylvania	8,824	12,689	3,865	3,578	4,153	8,962	13,153	4,191	3,900	4,483	
Rhode Island	689	855	166	89	243	704	876	172	94	250	
South Carolina	3,335	5,742	2,407	2,220	2,593	3,447	5,938	2,491	2,302	2,681	
South Dakota	541	741	200	130	270	552	701	149	79	218	
Tennessee	4,353	8,741	4,388	4,164	4,613	4,452	9,032	4,580	4,352	4,807	
Texas	14,549	22,558	8,009	7,631	8,387	15,024	23,536	8,512	8,127	8,897	
Utah	1,383	1,349	-34	-136	69	1,429	1,431	2	-103	106	
Vermont	457	536	79	17	140	468	561	93	30	156	
Virginia	5,185	6,978	1,793	1,577	2,009	5,325	7,113	1,788	1,569	2,006	
Washington	4,424	4,857	433	244	622	4,579	4,856	277	87	467	
West Virginia	1,395	2,380	985	865	1,106	1,408	2,334	926	806	1,046	
Wisconsin	3,779	4,710	931	750	1,111	3,862	4,785	923	741	1,106	
Wyoming	369	537	168	109	227	377	546	169	110	229	
United States	201,901	289,265	87,950	86,576	89,324	206,964	298,724	92,313	90,919	93,706	*

Appendix E – 2015 vs. 2014 Potentially Preventable Deaths – By State continued Malignant Neoplasms (Cancer)

State	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	5,714	7,796	2,082	1,855	2,310	5,819	7,757	1,938	1,710	2,166	
Alaska	670	782	112	37	186	687	783	96	21	171	
Arizona	7,857	8,085	228	-19	476	8,140	8,298	158	-93	410	
Arkansas	3,487	4,897	1,410	1,230	1,589	3,548	5,019	1,471	1,289	1,652	
California	39,157	39,678	521	-30	1,071	40,363	40,640	277	-281	835	
Colorado	5,552	5,188	-364	-568	-161	5,740	5,358	-382	-589	-176	
Connecticut	4,144	4,219	75	-104	254	4,224	4,358	134	-47	316	
Delaware	1,151	1,426	275	175	374	1,192	1,405	213	113	313	
District of Columbia	592	837	245	171	319	606	787	181	108	254	
Florida	26,279	29,519	3,240	2,777	3,703	27,215	30,262	3,047	2,577	3,516	
Georgia	10,323	12,738	2,415	2,117	2,713	10,651	12,890	2,239	1,939	2,540	
Hawaii	1,616	1,693	77	-36	190	1,656	1,662	6	-107	119	
Idaho	1,796	1,995	199	79	320	1,855	1,979	124	2	245	
Illinois	13,840	16,862	3,022	2,679	3,366	14,075	17,233	3,158	2,812	3,505	
Indiana	7,268	9,821	2,553	2,297	2,809	7,412	9,770	2,358	2,101	2,615	
Iowa	3,559	4,258	699	525	872	3,620	4,354	734	559	909	
Kansas	3,098	3,758	660	498	822	3,156	3,818	662	498	826	
Kentucky	5,104	7,815	2,711	2,488	2,934	5,202	7,865	2,663	2,439	2,887	
Louisiana	5,021	7,137	2,116	1,900	2,332	5,132	7,122	1,990	1,773	2,207	
Maine	1,805	2,186	381	257	505	1,840	2,313	473	347	599	
Maryland	6,499	7,616	1,117	884	1,350	6,669	7,490	821	588	1,054	
Massachusetts	7,608	8,341	733	485	980	7,807	8,355	548	299	797	
Michigan	11,671	14,884	3,213	2,894	3,533	11,896	14,665	2,769	2,450	3,089	
Minnesota	5,992	6,267	275	58	492	6,139	6,612	473	252	695	
Mississippi	3,330	5,019	1,689	1,510	1,868	3,386	4,898	1,512	1,333	1,690	
Missouri	7,020	9,345	2,325	2,074	2,576	7,145	9,277	2,132	1,881	2,384	
Montana	1,291	1,445	154	52	257	1,325	1,506	181	77	286	
Nebraska	2,014	2,292	278	149	406	2,056	2,329	273	143	403	
Nevada	3,205	3,723	518	355	681	3,328	3,692	364	200	528	
New Hampshire	1,642	1,846	204	89	320	1,682	1,958	276	157	394	
New Jersey	9,986	10,965	979	696	1,263	10,200	10,776	576	293	860	
New Mexico	2,423	2,451	28	-109	165	2,473	2,579	106	-34	245	
New York	21,842	23,861	2,019	1,600	2,438	22,253	23,649	1,396	976	1,816	
North Carolina	11,304	14,393	3,089	2,775	3,404	11,623	14,215	2,592	2,277	2,907	
North Dakota	767	852	85	6	164	783	878	95	15	175	
Ohio	13,570	18,043	4,473	4,124	4,821	13,790	17,917	4,127	3,778	4,476	
Oklahoma	4,293	5,896	1,603	1,405	1,801	4,369	6,142	1,773	1,572	1,974	
Oregon	4,771	5,496	725	526	924	4,928	5,601	673	472	874	
Pennsylvania	15,463	19,064	3,601	3,237	3,965	15,725	19,101	3,376	3,010	3,742	
Rhode Island	1,210	1,442	232	131	333	1,238	1,436	198	97	300	
South Carolina	5,846	7,487	1,641	1,415	1,867	6,041	7,483	1,442	1,214	1,670	
South Dakota	950	1,115	165	76	254	972	1,082	110	21	199	
Tennessee	7,622	10,694	3,072	2,807	3,337	7,799	10,803	3,004	2,737	3,271	
Texas	25,469	28,835	3,366	2,909	3,823	26,311	29,008	2,697	2,236	3,158	
Utah	2,413	2,105	-308	-440	-177	2,496	2,147	-349	-483	-216	
Vermont	807	961	154	72	237	825	983	158	74	241	
Virginia	9,090	10,651	1,561	1,286	1,836	9,337	10,735	1,398	1,120	1,675	
Washington	7,781	8,427	646	396	895	8,052	8,830	778	523	1,032	
West Virginia	2,446	3,642	1,196	1,043	1,349	2,471	3,531	1,060	909	1,212	
Wisconsin	6,635	7,652	1,017	783	1,251	6,787	7,678	891	656	1,127	
Wyoming	651	682	31	-41	102	665	654	-11	-82	60	
United States	353,645	416,182	63,209	61,489	64,929	362,704	419,683	57,722	55,988	59,455	*

Appendix E – 2015 vs. 2014 Potentially Preventable Deaths – By State continued Cerebrovascular Diseases (Stroke)

State	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	646	1,335	689	601	776	659	1,442	783	693	873	
Alaska	72	87	15	-10	39	75	95	20	-5	46	
Arizona	905	912	7	-76	91	939	1,064	125	37	212	
Arkansas	398	738	340	274	406	406	800	394	326	462	
California	4,374	5,324	950	757	1,143	4,517	5,724	1,207	1,009	1,406	
Colorado	614	633	19	-50	88	636	684	48	-24	119	
Connecticut	460	405	-55	-113	2	470	421	-49	-108	9	
Delaware	130	172	42	7	76	135	170	35	0	69	
District of Columbia	66	88	22	-2	46	68	108	40	14	66	
Florida	3,030	3,812	782	620	944	3,143	4,106	963	796	1,130	
Georgia	1,150	2,060	910	799	1,021	1,189	2,192	1,003	889	1,117	
Hawaii	182	234	52	12	92	188	299	111	68	154	
Idaho	204	268	64	21	106	211	254	43	0	85	
Illinois	1,547	2,175	628	509	748	1,573	2,141	568	448	687	
Indiana	816	1,289	473	384	563	833	1,247	414	325	504	
Iowa	403	465	62	4	120	410	464	54	-4	112	
Kansas	349	489	140	83	196	356	531	175	116	233	
Kentucky	573	948	375	298	451	585	980	395	318	473	
Louisiana	564	1,176	612	530	694	577	1,167	590	508	672	
Maine	202	222	20	-20	61	206	211	5	-35	45	
Maryland	720	1,025	305	223	387	741	990	249	167	331	
Massachusetts	846	784	-62	-141	17	870	768	-102	-181	-23	
Michigan	1,306	1,792	486	377	595	1,333	1,845	512	402	623	
Minnesota	669	705	36	-37	108	687	745	58	-16	132	
Mississippi	377	858	481	412	550	384	924	540	469	611	
Missouri	793	1,263	470	381	558	808	1,285	477	387	567	
Montana	146	182	36	1	72	150	165	15	-20	50	
Nebraska	227	273	46	2	90	232	266	34	-10	78	
Nevada	361	482	121	64	178	376	544	168	108	227	
New Hampshire	181	174	-7	-44	30	186	166	-20	-57	17	
New Jersey	1,111	1,322	211	114	307	1,137	1,327	190	93	288	
New Mexico	275	321	46	-2	94	281	296	15	-32	62	
New York	2,445	2,394	-51	-187	86	2,493	2,456	-37	-175	101	
North Carolina	1,271	2,110	839	725	953	1,310	2,240	930	813	1,047	
North Dakota	87	120	33	5	61	89	98	9	-17	36	
Ohio	1,523	2,328	805	683	927	1,548	2,300	752	630	874	
Oklahoma	488	894	406	333	478	498	901	403	330	477	
Oregon	536	699	163	95	232	555	674	119	50	188	
Pennsylvania	1,740	2,388	648	522	774	1,770	2,417	647	520	774	
Rhode Island	135	114	-21	-52	10	138	145	7	-26	40	
South Carolina	661	1,185	524	440	608	685	1,281	596	509	683	
South Dakota	107	108	1	-28	29	110	102	-8	-36	21	
Tennessee	859	1,626	767	670	865	880	1,606	726	628	824	
Texas	2,850	4,620	1,770	1,601	1,939	2,948	4,868	1,920	1,747	2,093	
Utah	276	325	49	1	97	286	361	75	25	125	
Vermont	90	82	-8	-33	18	92	93	1	-26	28	
Virginia	1,014	1,354	340	244	435	1,045	1,393	348	251	445	
Washington	867	937	70	-13	154	900	1,010	110	24	196	
West Virginia	276	484	208	154	262	280	463	183	130	237	
Wisconsin	742	854	112	34	190	760	908	148	68	228	
Wyoming	73	72	-1	-24	23	74	87	13	-12	38	
United States	39,737	54,707	15,175	14,573	15,777	40,820	56,824	16,220	15,608	16,833	

Appendix E – 2015 vs. 2014 Potentially Preventable Deaths – By State continued Chronic Lower Respiratory Diseases (CLRD)

State	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	848	1,897	1,049	946	1,152	866	2,095	1,229	1,122	1,335	
Alaska	92	116	24	-4	52	95	127	32	2	61	
Arizona	1,189	1,870	681	573	790	1,237	2,007	770	658	881	
Arkansas	523	1,339	816	731	901	534	1,459	925	838	1,013	
California	5,650	6,073	423	211	635	5,851	6,498	647	429	865	
Colorado	795	1,301	506	416	596	826	1,375	549	457	641	
Connecticut	601	586	-15	-83	52	616	582	-34	-102	34	
Delaware	172	231	59	20	98	179	274	95	54	137	
District of Columbia	85	73	-12	-36	13	87	81	-6	-31	20	
Florida	4,018	5,855	1,837	1,642	2,032	4,175	6,056	1,881	1,683	2,079	
Georgia	1,486	2,729	1,243	1,116	1,370	1,541	2,881	1,340	1,210	1,471	
Hawaii	239	151	-88	-127	-49	247	169	-78	-118	-38	
Idaho	267	485	218	165	272	277	467	190	137	244	
Illinois	2,010	2,891	881	744	1,018	2,050	2,865	815	678	953	
Indiana	1063	2,389	1,326	1,211	1,441	1,088	2,465	1,377	1,260	1,494	
Iowa	528	968	440	364	516	538	1,016	478	401	555	
Kansas	455	938	483	410	557	465	940	475	402	549	
Kentucky	750	2,078	1,328	1,223	1,432	767	2,159	1,392	1,286	1,498	
Louisiana	733	1,360	627	537	716	753	1,329	576	487	666	
Maine	268	494	226	172	281	274	542	268	212	324	
Maryland	936	998	62	-24	149	965	1,062	97	9	185	
Massachusetts	1105	1,205	100	6	195	1,138	1,334	196	99	293	
Michigan	1,712	2,939	1,227	1,093	1,360	1,752	3,163	1,411	1,274	1,549	
Minnesota	871	1,153	282	194	370	896	1,149	253	164	341	
Mississippi	492	1,129	637	558	715	502	1,203	701	620	782	
Missouri	1039	2,175	1,136	1,025	1,247	1,061	2,367	1,306	1,192	1,421	
Montana	192	380	188	141	235	199	372	173	127	220	
Nebraska	296	563	267	210	325	303	594	291	233	350	
Nevada	472	883	411	338	483	493	921	428	354	502	
New Hampshire	237	352	115	67	162	245	391	146	97	196	
New Jersey	1,447	1,391	-56	-161	48	1,484	1,450	-34	-140	73	
New Mexico	361	605	244	183	305	370	605	235	174	296	
New York	3,186	3,306	120	-38	277	3,256	3,481	225	64	386	
North Carolina	1,663	3,077	1,414	1,279	1,549	1,717	3,159	1,442	1,305	1,579	
North Dakota	113	162	49	17	82	115	169	54	21	87	
Ohio	1,996	3,922	1,926	1,775	2,077	2,033	4,126	2,093	1,939	2,246	
Oklahoma	638	1,787	1,149	1,053	1,246	651	1,806	1,155	1,058	1,252	
Oregon	706	1,153	447	363	532	733	1,206	473	387	560	
Pennsylvania	2,287	3,223	936	790	1,081	2,332	3,404	1,072	923	1,220	
Rhode Island	176	242	66	26	106	181	245	64	23	104	
South Carolina	870	1,693	823	723	922	904	1,768	864	763	966	
South Dakota	140	202	62	25	98	144	238	94	56	132	
Tennessee	1125	2,567	1,442	1,323	1,561	1,156	2,726	1,570	1,448	1,692	
Texas	3,656	5,456	1,800	1,613	1,987	3,790	5,771	1,981	1,790	2,173	
Utah	350	451	101	45	156	363	476	113	56	170	
Vermont	118	189	71	36	105	122	199	77	42	112	
Virginia	1,320	1,714	394	286	502	1,363	1,884	521	410	633	
Washington	1130	1,603	473	370	575	1,177	1,737	560	454	666	
West Virginia	367	995	628	556	701	371	1,034	663	589	736	
Wisconsin	970	1,375	405	310	499	997	1,498	501	403	599	
Wyoming	95	185	90	57	123	97	209	112	77	146	
United States	51,840	80,899	29,232	28,518	29,946	53,374	85,134	31,911	31,182	32,641	*

Appendix E – 2015 vs. 2014 Potentially Preventable Deaths – By State continued Unintentional Injuries (Accidents)

State	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
Alabama	939	2,104	1,165	1,057	1,273	943	2,183	1,240	1,130	1,350	
Alaska	137	348	211	168	254	138	343	205	162	248	
Arizona	1,284	2,562	1,278	1,157	1,400	1,308	2,703	1,395	1,271	1,519	
Arkansas	568	1,172	604	522	686	571	1,255	684	600	767	
California	7,315	9,818	2,503	2,246	2,759	7,413	10,396	2,983	2,721	3,244	
Colorado	1018	1,833	815	710	919	1,041	1,983	942	834	1,050	
Connecticut	696	1142	446	362	531	697	1,325	628	540	716	*
Delaware	183	350	167	122	212	186	382	196	150	243	
District of Columbia	128	177	49	15	84	130	223	93	56	130	
Florida	3,951	6,997	3,046	2,841	3,251	4,037	7,968	3,931	3,716	4,145	*
Georgia	1,905	3,342	1,437	1,295	1,579	1,934	3,680	1,746	1,600	1,893	*
Hawaii	272	356	84	35	133	275	395	120	69	171	
Idaho	304	575	271	213	329	309	578	269	211	328	
Illinois	2,449	3,642	1193	1040	1346	2,453	3,851	1,398	1,242	1,553	
Indiana	1,250	2,425	1175	1056	1294	1,257	2,616	1,359	1,237	1,481	
Iowa	587	948	361	284	438	591	953	362	285	439	
Kansas	539	1,004	465	388	542	542	1,040	498	420	576	
Kentucky	852	2,225	1,373	1,264	1,482	856	2,561	1,705	1,591	1,820	*
Louisiana	882	2,074	1192	1085	1,298	888	2,259	1,371	1,261	1,481	
Maine	267	487	220	166	273	268	568	300	243	357	
Maryland	1,147	1,217	70	-26	165	1,157	1,393	236	138	335	
Massachusetts	1,310	2,085	775	661	890	1,324	2,563	1,239	1,117	1,361	*
Michigan	1,916	3,455	1,539	1396	1,683	1,924	3,607	1,683	1,537	1,829	
Minnesota	1034	1,440	406	308	503	1,042	1,574	532	431	632	
Mississippi	567	1,438	871	783	959	568	1,542	974	884	1,064	
Missouri	1,163	2,414	1,251	1,133	1,368	1,169	2,543	1,374	1,254	1,493	
Montana	199	418	219	170	267	202	462	260	210	311	
Nebraska	349	535	186	127	244	352	563	211	151	270	
Nevada	549	1032	483	405	561	561	1,164	603	522	684	
New Hampshire	263	507	244	189	298	265	633	368	309	427	*
New Jersey	1,718	2,309	591	466	715	1,728	2,540	812	683	940	
New Mexico	397	1,249	852	772	931	398	1,115	717	640	793	
New York	3,813	4,515	702	523	881	3,833	5,021	1,188	1,004	1,373	*
North Carolina	1,915	3,592	1,677	1,532	1,823	1,940	3,918	1,978	1,828	2,128	*
North Dakota	138	233	95	57	133	141	254	113	74	152	
Ohio	2,230	4,928	2,698	2,532	2,864	2,238	5,574	3,336	3,163	3,509	*
Oklahoma	732	1,944	1,212	1,111	1,314	738	1,877	1,139	1,039	1,239	
Oregon	773	1,254	481	393	569	788	1,378	590	499	682	
Pennsylvania	2,486	4,993	2,507	2,338	2,677	2,494	5,628	3,134	2,957	3,310	*
Rhode Island	205	408	203	155	252	206	474	268	217	319	
South Carolina	942	2,032	1,090	983	1,197	958	2,278	1,320	1,209	1,432	*
South Dakota	159	320	161	118	204	160	319	159	116	202	
Tennessee	1,268	3,059	1,791	1,662	1,920	1,281	3,197	1,916	1,785	2,047	
Texas	4,951	8,159	3,208	2,983	3,432	5,057	8,378	3,321	3,094	3,548	
Utah	510	927	417	343	491	521	1,005	484	407	560	
Vermont	125	188	63	29	98	125	218	93	57	129	
Virginia	1,604	2,390	786	663	910	1,619	2,577	958	831	1,085	
Washington	1,355	2,181	826	710	943	1,381	2,318	937	818	1,056	
West Virginia	368	1,134	766	690	842	367	1,258	891	811	970	
Wisconsin	1,105	2,008	903	794	1013	1,111	2,049	938	828	1,049	
Wyoming	111	315	204	164	244	111	336	225	183	266	
United States	60,929	106,260	45,331	44,530	46,132	61,599	115,018	53,419	52,596	54,243	*

Appendix F – 2015 vs. 2014 Potentially Preventable Deaths – By HHS Region

Diseases of the Heart

HHS Region	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	9,798	10,468	670	391	949	10,019	10,890	871	587	1,154	
2	18,170	24,272	6,102	5,698	6,506	18,512	24,810	6,298	5,890	6,706	
3	20,099	29,185	9,086	8,651	9,521	20,517	29,923	9,406	8,965	9,846	
4	43,235	69,897	26,662	26,003	27,321	44,492	72,605	28,113	27,443	28,784	*
5	33,618	50,437	16,819	16,251	17,387	34,221	51,282	17,061	16,488	17,634	
6	23,245	39,907	16,662	16,169	17,154	23,887	41,422	17,535	17,034	18,036	
7	8,958	13,425	4,467	4,174	4,760	9,111	13,803	4,692	4,395	4,988	
8	6,616	7,325	709	478	940	6,816	7,458	642	408	877	
9	29,622	35,133	5,511	5,012	6,009	30,561	37,066	6,505	5,995	7,015	*
10	8,539	9,216	677	416	938	8,828	9,465	637	372	902	

Malignant Neoplasms (Cancer)

HHS Region	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	17,216	18,995	1,779	1,406	2,152	17,616	19,403	1,787	1,410	2,164	
2	31,827	34,826	2,999	2,493	3,505	32,453	34,425	1,972	1,466	2,479	*
3	35,241	43,236	7,995	7,446	8,544	36,000	43,049	7,049	6,498	7,601	
4	75,522	95,461	19,939	19,129	20,750	77,737	96,173	18,436	17,619	19,254	
5	58,975	73,529	14,554	13,841	15,267	60,098	73,875	13,777	13,059	14,494	
6	40,693	49,216	8,523	7,935	9,110	41,834	49,870	8,036	7,442	8,629	
7	15,692	19,653	3,961	3,593	4,330	15,976	19,778	3,802	3,431	4,172	
8	11,625	11,387	-238	-535	59	11,981	11,625	-356	-657	-55	
9	51,835	53,179	1,344	709	1,979	53,487	54,292	805	162	1,449	
10	15,018	16,700	1,682	1,333	2,031	15,522	17,193	1,671	1,317	2,026	

Appendix F – 2015 vs. 2014 Potentially Preventable Deaths – By HHS Region continued

Cerebrovascular Diseases (Stroke)

HHS Region	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	1,913	1,781	-132	-252	-13	1,962	1,804	-158	-279	-38	
2	3,556	3,716	160	-7	327	3,630	3,783	153	-15	322	
3	3,947	5,511	1,564	1,373	1,754	4,039	5,541	1,502	1,311	1,694	
4	8,567	13,934	5,367	5,073	5,661	8,834	14,771	5,937	5,635	6,238	*
5	6,603	9,143	2,540	2,294	2,786	6,734	9,186	2,452	2,205	2,700	
6	4,575	7,749	3,174	2,956	3,391	4,709	8,032	3,323	3,101	3,544	
7	1,773	2,490	717	589	845	1,806	2,546	740	610	869	
8	1,302	1,440	138	35	240	1,345	1,497	152	48	257	
9	5,822	6,952	1,130	909	1,352	6,020	7,631	1,611	1,382	1,840	*
10	1,679	1,991	312	194	431	1,741	2,033	292	172	413	

Chronic Lower Respiratory Diseases (CLRD)

HHS Region	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	2,505	3,068	563	416	709	2,575	3,293	718	567	868	
2	4,634	4,697	63	-126	253	4,740	4,931	191	-1	384	
3	5,166	7,234	2,068	1,850	2,287	5,297	7,739	2,442	2,218	2,666	
4	11,254	21,025	9,771	9,419	10,123	11,628	22,047	10,419	10,059	10,779	
5	8,623	14,669	6,046	5,747	6,345	8,816	15,266	6,450	6,146	6,754	
6	5,911	10,547	4,636	4,385	4,888	6,097	10,970	4,873	4,617	5,129	
7	2,317	4,644	2,327	2,163	2,490	2,366	4,917	2,551	2,384	2,718	
8	1,685	2,681	996	866	1,125	1,744	2,839	1,095	962	1,227	
9	7,550	8,977	1,427	1,175	1,679	7,829	9,595	1,766	1,508	2,025	
10	2,195	3,357	1,162	1,016	1,308	2,282	3,537	1,255	1,105	1,404	

Appendix F – 2015 vs. 2014 Potentially Preventable Deaths – By HHS Region continued
Unintentional Injuries (Accidents)

HHS Region	2014					2015					Change in Preventable Deaths Significant at .01
	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	Expected	Observed	Potentially preventable	Potentially preventable 95% CI Low	Potentially preventable 95% CI High	
1	2,866	4,817	1,951	1,780	2,123	2,885	5,781	2,896	2,713	3,078	*
2	5,531	6,824	1,293	1,075	1,511	5,561	7,561	2,000	1,775	2,224	*
3	5,916	10,261	4,345	4,096	4,595	5,953	11,461	5,508	5,249	5,766	*
4	12,338	24,789	12,451	12,073	12,828	12,517	27,327	14,810	14,419	15,201	*
5	9,984	17,898	7,914	7,587	8,242	10,026	19,271	9,245	8,910	9,581	*
6	7,530	14,598	7,068	6,776	7,359	7,652	14,884	7,232	6,937	7,526	
7	2,639	4,901	2,262	2,091	2,432	2,655	5,099	2,444	2,272	2,617	
8	2,136	4,046	1,910	1,756	2,064	2,176	4,359	2,183	2,024	2,341	
9	9,420	13,768	4,348	4,050	4,647	9,557	14,658	5,101	4,796	5,406	*
10	2,569	4,358	1,789	1,626	1,952	2,615	4,617	2,002	1,835	2,168	

About The Society of Actuaries

The Society of Actuaries (SOA), formed in 1949, is one of the largest actuarial professional organizations in the world dedicated to serving 24,000 actuarial members and the public in the United States, Canada and worldwide. In line with the SOA Vision Statement, actuaries act as business leaders who develop and use mathematical models to measure and manage risk in support of financial security for individuals, organizations and the public.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policymakers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement, and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

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