Life expectancy and mortality trends in Southern Nevada, 2001-2012

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Abstract

Objective

This report describes changes and patterns in life expectancy and cause-attributable mortality in Southern Nevada from 2001 through 2012.

Data and methods

Age-specific and age-standardized mortality rates, years of potential life lost, and life expectancy at various ages were calculated from death certificate data (preliminary from 2012 onwards). The mortality burden attributable to major causes of death, particularly injury and poisoning, was evaluated using the external causes of injury mortality (mechanism/intent) framework. The excess of drug and alcohol-induced deaths was also examined with a focus on mental health. In addition, linked birth/infant death datasets and the fetal death registry (preliminary from 2011 onwards) were analyzed to partition perinatal mortality into periods of risk.

Main results

Life expectancy at birth among males increased from 73.7 years in 2001-03 to 76.5 years in 2010-12, and that among females from 78.7 years to 81 years. Compared with their national counterparts, non-Hispanic white residents had shorter life spans due primarily to their excess mortality from drug and alcohol-associated causes. Overall, injury and impaired mental health accounted for a considerably higher proportion of mortality in the county than in the nation.

Abbreviations

NHW: non-Hispanic white
NHB: non-Hispanic black
NHAIAN: non-Hispanic American Indians/Alaskan Natives
NHAPI: non-Hispanic Asians/Pacific Islanders
CI: confidence interval

Life expectancy and cause-attributable mortality are key indicators of the health of a population. They not only reflect the burden of morbidity and illness as well as circumstances contributing to death, but also provide insight into changing socio-environmental conditions, medical interventions, and trends in underlying risk factors. Drawing upon data from a number of sources, this report examines major causes of death in Clark County, and provides the latest estimates of their community impact in terms of death rates and trend patterns, with national comparisons where applicable. Among areas of investigation, injury and mental health-related deaths received priority attention as they contribute significantly to premature mortality and life expectancy gaps; further, they accounted for a considerably higher proportion of mortality in the county than in the nation, and as such, offer opportunities for improvement.

The past decade saw a steady rise in life expectancy among county residents: life expectancy at birth among males increased from 73.7 years in 2001-03 to 76.5 years in 2010-12, and that among females from 78.7 years to 81 years. The relatively slow rate of improvement in female life expectancy, and consequently the narrowing gender gap (from 5 to 4.5 years) was consistent with a broader national trend of declining gains in female life expectancies.[1] Over the same period, the life expectancy gap in middle age also narrowed between female and male residents (Figure 1). As well, men's chances of surviving to age 75 improved by an average of 6.3

percentage points between 2001-03 and 2010-12 (from 57% to 63.3%), whereas women's chances improved by 4.5 (70.4% to 74.9%). Despite the overall improvement in population health and mortality, a moderate life expectancy gap (averaging 0.2 year in 2010-12) persisted for female residents up to late middle age (55 years) when compared with females nationwide.[2] For males in the county and nationwide, life expectancies at various ages were generally similar. The differential survival outcomes for county females (relative to females nationwide) may arise along economic, socio-environmental and psychological exposure pathways, and reflect the scope and utilization of the health care sector. Further, the substantially high injury mortality risk among residents, particularly from accidental and self-harm drug poisoning (see definitions), is an important factor underlying this mortality disparity.[3,4]

Mortality disparities were also apparent across race/ethnicities (Figure 1). In 2010-12, 82.5% of non-Hispanic Asians/Pacific Islanders (NHAPI) and 80.6% Hispanics were expected to survive to age 75, compared with 73.9% of non-Hispanic American Indians/Alaskan Natives (NHAIAN), 65.5% of non-Hispanic Whites (NHW), and 62.2%

Definitions

Injury deaths: Violent or accidental deaths caused by forces external to the body. Examples of injury causes or mechanisms include cut or pierce, submersion, fall, fire/burn, firearm, motor vehicle, poisoning, and suffocation.

Poisoning deaths: Include deaths from exposure to natural or manmade substance(s). Most poisoning deaths result from unintentional or intentional (self-harm) drug overdoses. Non-drug poisoning deaths are those from exposure to other toxic substances (e.g. gases, vapors).

Drug-induced deaths: Include fatal drug poisonings (accounting for the overwhelming majority of drug-induced deaths as well as poisoning deaths) and deaths from medical conditions directly related to dependent and nondependent use of medically prescribed and other drugs (e.g. drug dependence or psychoses and other mental or behavioral disorder). The latter are not considered injury deaths according to the external causes of injury mortality framework recommend by the National Center for Health Statistics (NCHS). For a list of drug-induced causes see Appendix A1.

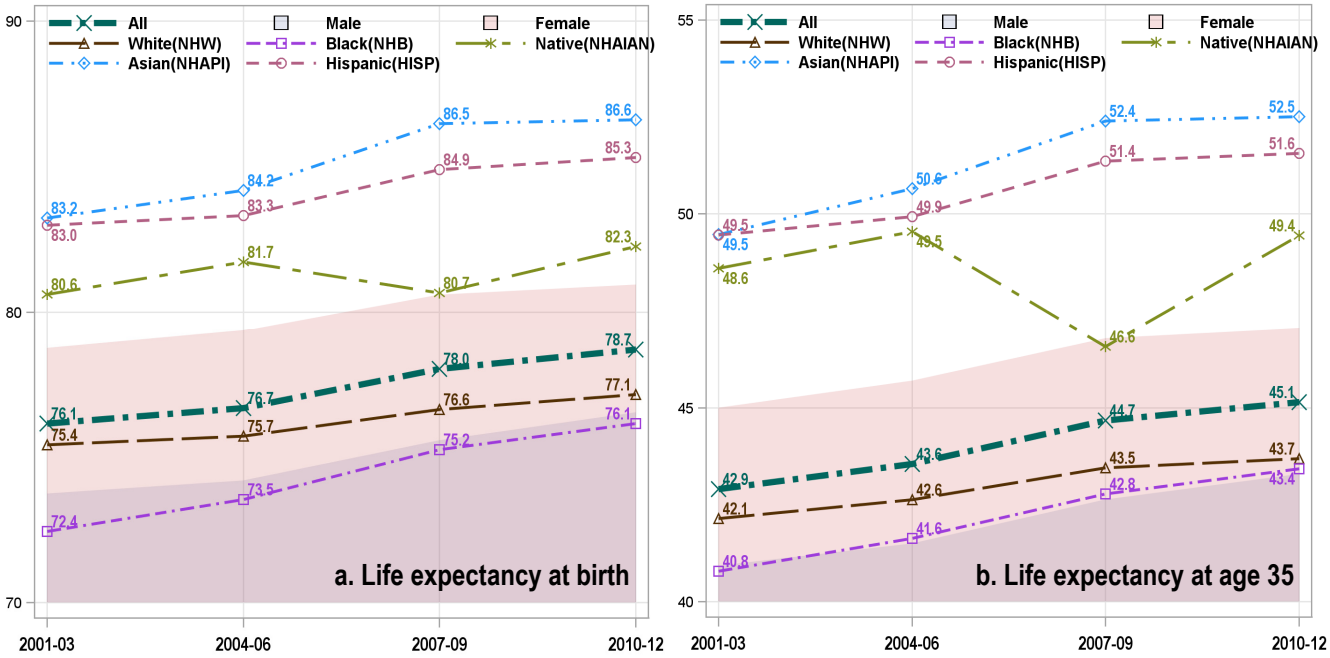
Alcohol-induced deaths: Include fatalities from such causes as alcohol poisoning, degeneration of the nervous system due to alcohol, alcoholic liver disease, alcoholic gastritis, myopathy, polyneuropathy, alcohol induced pancreatitis, and more. For a list of alcohol-induced causes see Appendix A2.

Age-specific mortality rate: Computed as the number of deaths among persons in a specific age group and time period divided by the population of all residents in that same age group and time period.

Age-standardized/adjusted mortality rate: An artificial measurement computed as the weighted average of the age-specific death rates where the weights are the standard population proportions by age. This direct adjustment method removes the potential confounding of mortality risks due to age heterogeneity across groups and over time. Unless noted otherwise, the standard or reference population adopted in this analysis was the July 1, 2000 bridged-race intercensal national population estimates.

Years of potential life lost (YPLL) rate: A measure that considers both the rate and age of death, expressed as person-years lost for a given time period divided by the total population for that period in which these deaths occurred. The YPLL rate (per population or person-years) illustrates premature mortality, i.e. life lost when death occurs before the predicted life expectancy, where life expectancy was estimated from three-year aggregated population and mortality data for subgroups of interest, using the Chiang methodology.[5]

Figure 1. Gender and race/ethnicity-specific life expectancy at birth (a) and age 35 (b), Clark County-NV, 2001-12



Source: Death certificate files (preliminary from 2012 onwards) restricted to Clark County residents at time of death. Bridged-race intercensal 2000-09 series and vintage 2013 for 2010-12 postcensal estimates used.

of non-Hispanic Blacks (NHB). As with the rest of the nation, the NHW-NHB life expectancy gap diminished markedly over the past decade; in 2010-12, the difference in life expectancy at birth between NHW and NHB residents was 1 year, compared to 3 years in 2001-03. This trend was primarily due to substantial gains in life expectancy for NHBs and less impressive improvements for NHWs. Relative to NHAPIs and Hispanics, the life expectancy gap for NHBs also narrowed, whereas that for NHWs widened. It is worth noting that the so-called 'healthy worker' effect may have conferred mortality advantages among NHAPIs and Hispanics, given that comparatively healthy people self-select into the immigration process.[6] Likewise, the 'salmon bias,' which postulates that immigrants may return to their countries of origin to die or when ill, may also have played a role.[1]

Compared with their national counterparts,[2] life expectancies were slightly higher for NHB and Hispanic residents, whereas those for NHW residents were not so favorable. In 2010-12, life expectancies for NHW residents fell short by 1.7 years at birth, 1.6 at age 35, and 0.2 at age 75 when compared with NHWs nationwide. To a great extent, this life expectancy gap for the local NHW population can be attributed to their excess mortality from drug and alcohol-associated causes (see definitions), whereby the corresponding age-adjusted death rates (AjR), at 32 and 13 deaths per 100,000 person-years in 2010-12, were over 80% and 60% higher in the county than in the nation (17 and 8 per 100,000) respectively.[7]

Age and gender distributions of deaths

There were 7,381 male and 6,313 female deaths in Clark County in 2012, with a crude ratio of 117 male deaths for every 100 female deaths (vs. 119 per 100 in 2010), and AjRs of 842.7 and 630.7 per 100,000 males and females (vs. 878.2 and 647.1 in 2010) respectively. The median ages at death were 71 years for males and 77 years for females (Table 1). About 64% of male deaths and 74% of female deaths were of people aged 65 and over, up from 61% and 72% in 2010 respectively.

Table 1. Causes of death and median age at death by ICD chapter and gender, Clark County-NV, 2012

Underlying cause of death by ICD chapter	Male		Female		Both genders	
	N (%)	Median age	N (%)	Median age	N (%)	Median age
Cardiovascular disease	2,437 (33%)	72	1,719 (27.2%)	79	4,156 (30.3%)	75
Cancer	1,607 (21.8%)	71	1,439 (22.8%)	71	3,046 (22.2%)	71
Respiratory system diseases	708 (9.6%)	76	757 (12%)	78	1,465 (10.7%)	77
Injury/medical care event	796 (10.8%)	46	429 (6.8%)	52	1,225 (8.9%)	49
Mental disorders	275 (3.7%)	83	513 (8.1%)	88	788 (5.8%)	86
Digestive disorders	295 (4%)	62	208 (3.3%)	66	503 (3.7%)	63
Nervous system diseases	232 (3.1%)	79	219 (3.5%)	82	451 (3.3%)	80
Genitourinary diseases	205 (2.8%)	75	151 (2.4%)	77	356 (2.6%)	76
Infections	203 (2.8%)	60	148 (2.3%)	73	351 (2.6%)	67
Endocrine/metabolic diseases	190 (2.6%)	68	137 (2.2%)	71	327 (2.4%)	70
Total select ICD chapters	**6,948 (94.1%)**	**..**	**5,720 (90.6%)**	**..**	**12,668 (92.5%)**	**..**
All deaths	**7,381**	**71**	**6,313**	**77**	**13,694**	**73**

Source: Death certificate files (preliminary from 2012 onwards) restricted to Clark County residents at time of death.

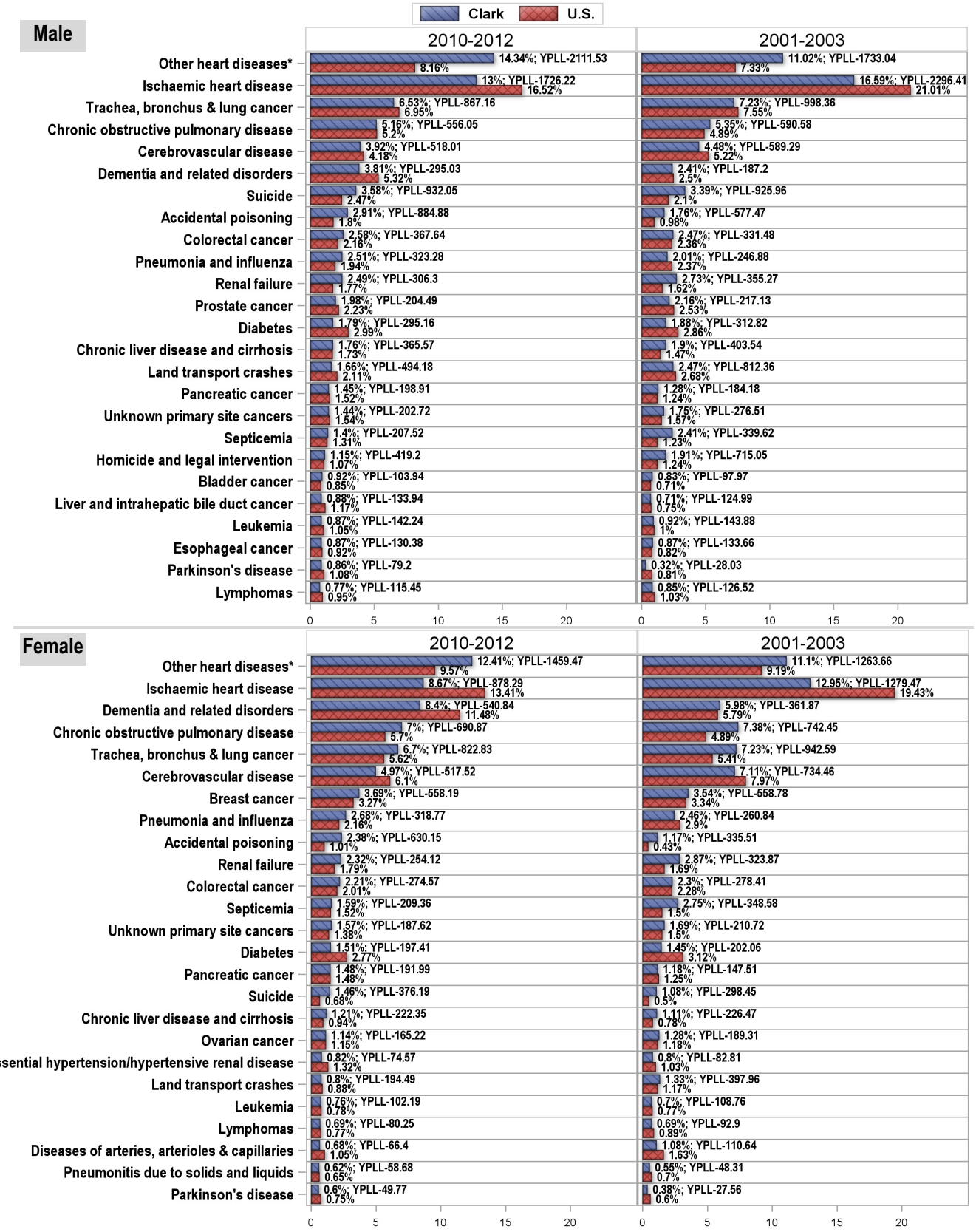
Major causes of death

Cause of death statistics generally rely on the 'underlying cause,' defined by the World Health Organization as the disease or medical condition directly responsible for the death or the circumstances of the accident or violence that produced the fatal injury. The mortality information provided below has been organized to reflect the underlying cause of death (UCD) at either the ICD chapter or the common subgroup level.

Leading underlying causes of death

The top 25 specific causes of death given in Figure 2 were responsible for over three-quarters of deaths for males and females respectively. Ischemic heart disease (mainly coronary heart disease and acute myocardial infarction) and 'other heart diseases' (pulmonary or hypertensive heart diseases, chronic rheumatic heart diseases, and 'other forms of heart diseases') were the two leading specific causes of death in both genders and accounted for nearly a quarter of all deaths in

Figure 2. Percent deaths for the top 25 underlying causes by gender, Clark County-NV, 2001-12



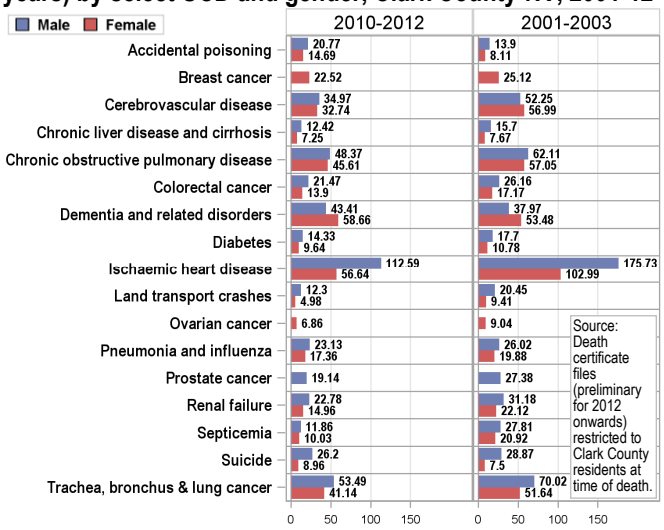
Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death.
Note: YPLL denotes years of potential life lost per 100,000 population. *Other heart diseases encompass ICD-10 coded range of I05-09, I11, I13, I26, I27, I30-52.

the 2001-12 period, although 'other heart diseases' took over as the top UCD in recent years. It was the underlying cause in 14.3% and 12.4% of male and female deaths in the county in 2010-12 (vs. 8.2% and 9.6% nationwide), whereas ischemic heart disease (IHD) accounted for 13% and 8.7% (vs. 16.5% and 13.4% nationwide) respectively. Much of the decline in IHD mortality can be attributed to progress made in preventing and treating the disease including advances in medical care, improvements in socio-economic conditions, and public health interventions to reduce risk factors such as tobacco smoking, high blood pressure or blood cholesterol, insufficient physical activity, and poor nutrition. According to a recent analysis, county residents compared well with the rest of the nation in terms of mortality from major heart and vascular diseases; on the other hand, there were higher-than-the-nation mortality among residents from 'other forms of heart disease,' a category which includes heart failure and cause-unspecific cardiac arrest.[8]

Lung cancer was the third leading UCD in males in 2010-12, followed by chronic obstructive pulmonary disease (COPD). In females, dementia and related disorders (including Alzheimer's disease) were the third leading UCD, followed by COPD. Suicide and prostate cancer were other prominent UCDs in males, whereas breast and ovarian cancers in females. Lung cancer, COPD, dementia, cerebrovascular disease (stroke), accidental poisoning, pneumonia and influenza, colorectal cancer, and renal failure were among the top 10 causes of death in both genders. Other than injury (accident, suicide, homicide, etc.), pneumonia and influenza, septicemia, and pneumonitis, all conditions listed as the top 25 causes of death are generally chronic in nature.

Of particular concern is the sharp increase in mortality from accidental poisoning between 2001-03 and 2010-12, the vast majority of which comprised drug overdoses. The corresponding male AjR increased by about 50% from 13.9 to 20.8 per 100,000, and the female AjR by 81% from 8.1 to 14.7 (Figure 3). On the other hand, the gender-specific AjRs for suicide varied in trends,

Figure 3. Age-adjusted death rates (per 100,000 person-years) by select UCD and gender, Clark County-NV, 2001-12



decreasing slightly for males and increasing moderately for females. As well, the higher-than-the-nation mortality burden apportioned to suicide and accidental poisoning represents a continuing problem. As mortality rates for other prominent causes (e.g. circulatory diseases, cancer, COPD, pneumonia and influenza, diabetes, septicemia, transport accidents) decline, the relative importance of these intentional and unintentional injury mechanisms increases. In males, suicide and accidental poisoning surpassed lung cancer in 2010-12 as leading contributors to years of life lost (see definitions) due to premature mortality; in females, accidental poisoning overtook dementia and related disorders as a leading contributor to premature mortality (Figure 2).

Other important causes of death that represented a greater mortality burden in 2010-12 than in 2001-03 include dementia and certain neurodegenerative diseases (e.g. Parkinson's disease). Between 2001-03 and 2010-12, the AjR due to dementia in females rose from 53.5 to 58.7 per 100,000, and the attributable proportion of deaths from 6% to 8.4%. While male dementia mortality was lower by comparison, it showed similar increases in terms of AjR (43.4 vs. 38 per 100,000) and apportioned deaths (3.8% vs. 2.4%). This trend is largely related to the aging of the population, in that age itself becomes a factor in the type of diseases people eventually die from as mortality declines and life span increases.

Underlying causes of death by life stage

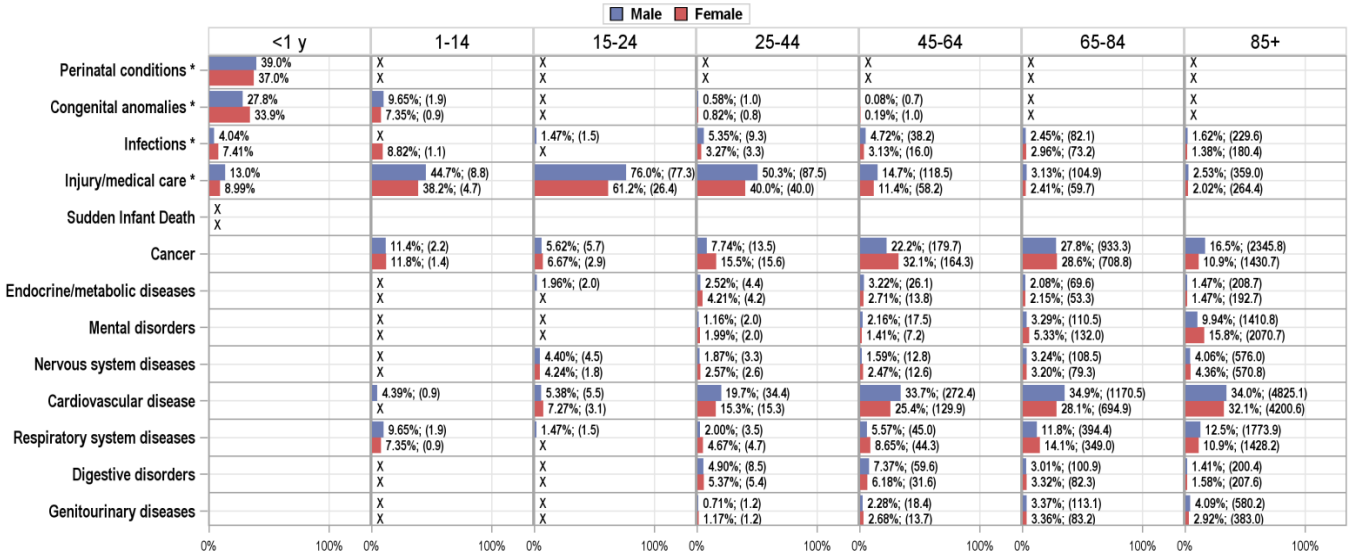
The relative contribution of different UCDs varies with age, as shown in Figure 4. Perinatal conditions (e.g. short gestation, low birth weight, maternal complications) and congenital anomalies were predominant causes of infant (<1 year of age) mortality, followed by injuries and infections. Similarly, injuries were the most common UCD in the age groups 1-14, 15-24, and 25-44. Among those aged 45-64, cardiovascular disease (heart disease, stroke, and other vascular diseases) was the leading cause of death in males, followed by cancer and injuries, whereas cancer was the most common cause of death in females, followed by cardiovascular disease (CVD) and injuries. Among those aged 65-84, CVD and cancer dominated the mortality statistics in both genders, followed by respiratory system diseases. CVD became the most frequent cause of death among those aged 85 and over.

Mortality among children aged 0-14 years was relatively low and showed a downward trend. In 2010-12, 594 children aged 0-14 died, accounting for 1.5% of all deaths in this period, while children aged 0-14 comprised about 21% of the total population. This compares with 618 child deaths or 1.8% of all deaths in 2001-03. Most of these child deaths occurred among infants—69% of child deaths were of those aged less than 1 year.

Clark County compared well nationally in infant mortality, at 5.3 infant deaths per 1,000 live births in 2011, versus a national rate of 6.1 in the same year.[9] Nonetheless, fetal mortality (stillbirths and miscarriages) as a proportion of perinatal deaths rose from 40% to 51.5% over the period 2003-12. According to a recent analysis using the Perinatal Periods of Risk approach, the vast majority of feto-infant deaths in the county occurred in the Maternal Health/Prematurity and Maternal Care periods, underscoring the need to address preconception health gaps and other factors related to low birth weight.[10] Further, injuries, especially from suffocation, were the leading cause of Infant Health deaths (infant deaths with births weights of 1,500 grams or more that occur after 27 days and before 1 year from birth). As such, substantial reductions in Infant Health mortality may be achievable through interventions targeted towards sleep-related deaths and associated risk factors.

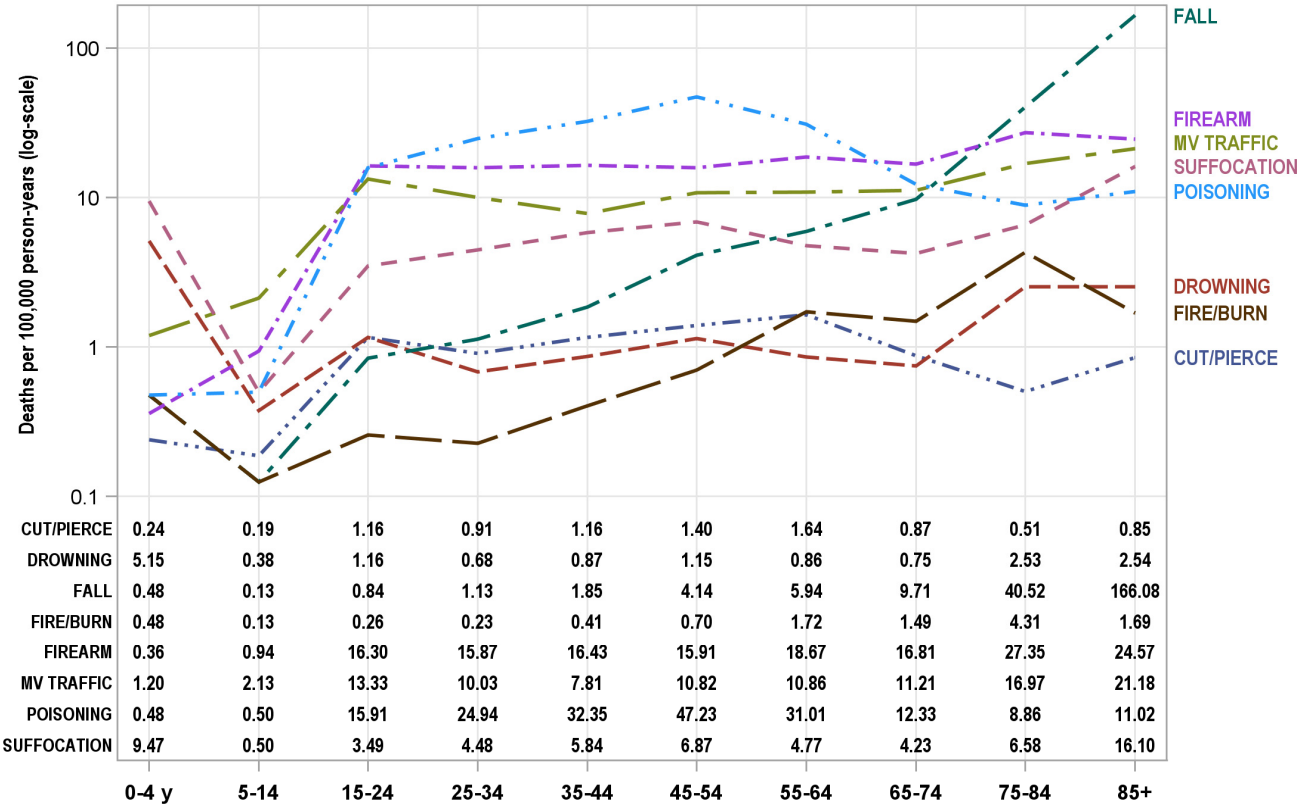
Between 2001-03 and 2010-12, mortality among children aged 1-14 declined by 19% from 24.2 to 19.6 deaths per 100,000 for boys, and by 27% from 16.72 to 12.2 per 100,000 for girls. About 45% of deaths among boys and 38% among girls in 2010-12 were due to injury, the leading UCD in this age group (Figure 4). Death

Figure 4. Percent distributions of causes of death (at ICD-chapter level) across ages, Clark County-NV, 2010-12



Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death.
Note: Cause of death organized at ICD chapter level. Age-specific rates (per 100,000 person-years) in parantheses. Data suppression (denoted by X) applied if events<5.
*Cause of infant (<1 y) deaths categorized according to the NCHS Postneonatal Mortality Surveillance System recommendations, not ICD chapter-based causes of death.

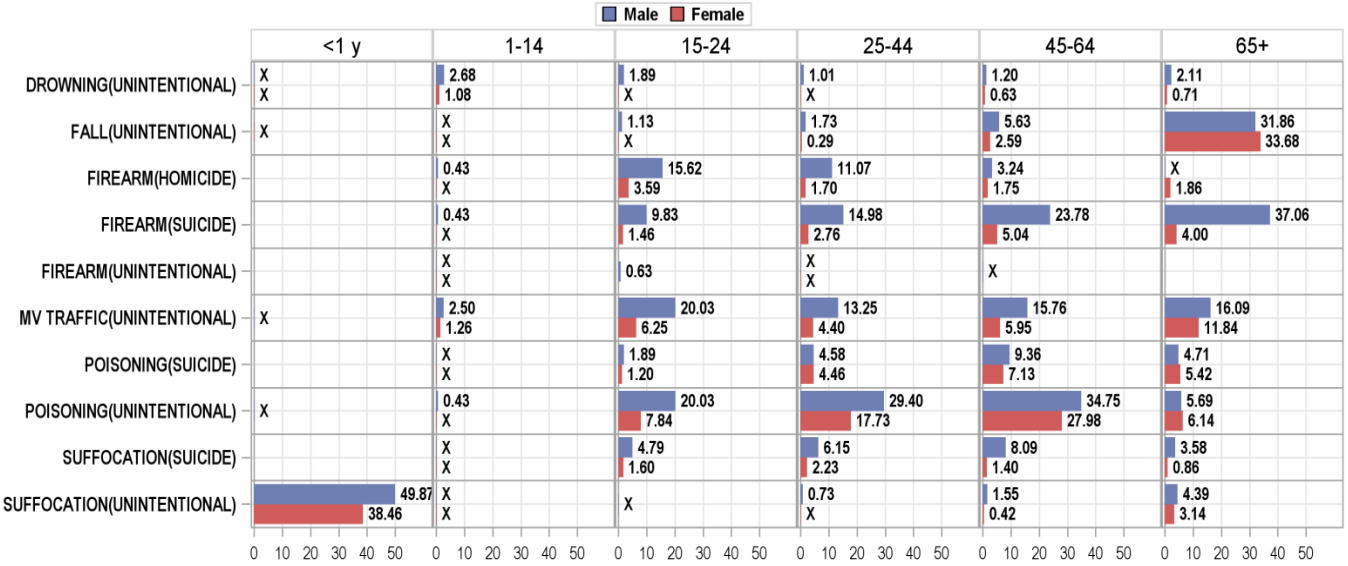
Figure 5. Injury death rates (per 100,000 person-years) for leading mechanisms by age, Clark County-NV, 2007-12



	0-4 y	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85+
CUT/PIERCE	0.24	0.19	1.16	0.91	1.16	1.40	1.64	0.87	0.51	0.85
DROWNING	5.15	0.38	1.16	0.68	0.87	1.15	0.86	0.75	2.53	2.54
FALL	0.48	0.13	0.84	1.13	1.85	4.14	5.94	9.71	40.52	166.08
FIRE/BURN	0.48	0.13	0.26	0.23	0.41	0.70	1.72	1.49	4.31	1.69
FIREARM	0.36	0.94	16.30	15.87	16.43	15.91	18.67	16.81	27.35	24.57
MV TRAFFIC	1.20	2.13	13.33	10.03	7.81	10.82	10.86	11.21	16.97	21.18
POISONING	0.48	0.50	15.91	24.94	32.35	47.23	31.01	12.33	8.86	11.02
SUFFOCATION	9.47	0.50	3.49	4.48	5.84	6.87	4.77	4.23	6.58	16.10

Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death.
Note: Injury mortality identified using categories from the external cause-of-injury mortality matrix.

Figure 6. Injury death rates (per 100,000 person-years) for leading mechanisms by age and gender, Clark County-NV, 2007-12



Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death.
Note: Injury mortality identified using categories from the external cause-of-injury mortality matrix. Data suppression (denoted by X) applied if events<5.

from injury was higher for boys (8.8 per 100,000) than for girls (4.7). The main causes of injury among children were drowning, motor vehicle (MV) transport crashes, accidental suffocation, and poisoning (Figures 5-6). Among children aged 1-14 years, deaths due to MV transport crashes declined from 2.7 deaths per 100,000 in 2001-06 to 1.9 per 100,000 in 2007-12. The death rate for accidental drowning increased slightly during the same period, from 1.6 to 1.9 per 100,000. Other common causes of death in this age group were cancer, congenital anomalies, and respiratory diseases. In 2010-12, cancer was responsible for 11.5% of child deaths, at death rates of 2.2 per 100,000 boys and 1.4 per 100,000 girls respectively (Figure 4). Around 8.8% of child deaths in the same period were attributed to congenital anomalies, and an additional 8.8% to respiratory diseases. The mortality risks from both conditions were twice as high in boys (1.9 per 100,000) as in girls (0.9).

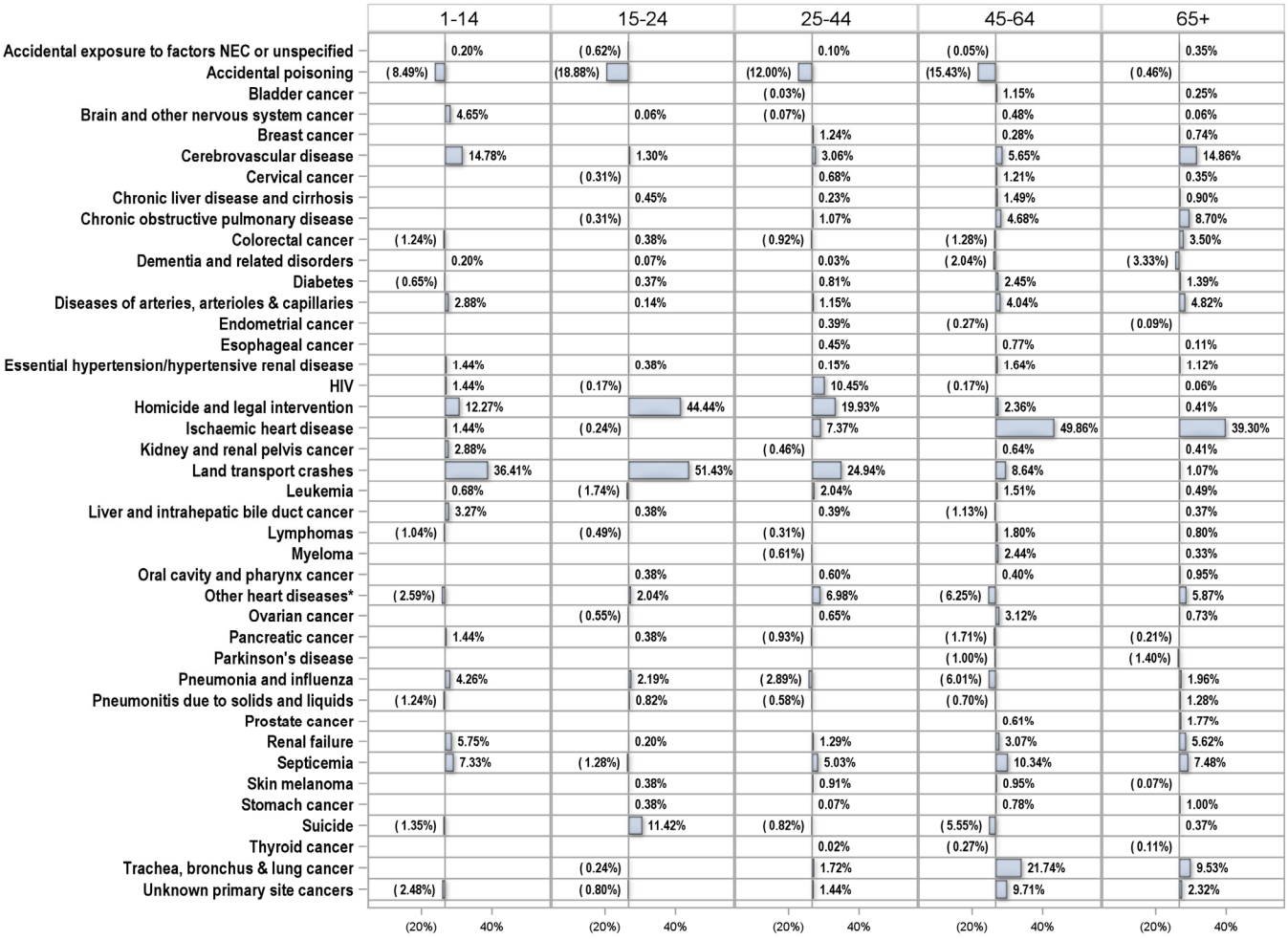
Young people aged 15-24 comprised about 13% of the total population and 1.4% of all deaths in 2010-12. Accidental poisoning, the majority of which was by drugs (>90%), was the most frequent cause of death, accounting for 111 deaths or 19.3% of all deaths in 15 to 24-year-olds in 2010-12. Land transport crashes (18.3%; 105 deaths), suicide (15.5%; 89 deaths), and homicide/legal intervention (14.6%; 84 deaths) were other prominent causes of death in this age group. Between 2001-03 and 2010-12, the death rate for young males declined by 25% from 136.2 to 101.6 per 100,000, and that for young females by 12% from 49.2 to 43.2 per 100,000. This mortality trend was due primarily to fewer deaths from major causes among young people, with the exception of accidental poisoning (Figure 7). In 2007-12, deaths due to MV transport crashes in 15 to 24-year-olds occurred at a rate of 13.3 per 100,000 (vs. 23.5 in 2001-06), those due to homicide/legal intervention at 12.8 per 100,000 (vs. 22.1), and those due to suicide at 11.3 per 100,000 (vs. 13.6). In terms of injury mechanisms, the firearm homicide death rate declined to 9.8 per 100,000 (vs. 17.1 in 2001-06), the firearm suicide rate to 5.8 per 100,000 (vs. 6.8), and the suffocation suicide rate to 3.2 per 100,000 (vs. 4.3). On the other hand, whereas the death rate for self-harm (suicide) poisoning was essentially unchanged (1.5 to 1.6 per 100,000), that for accidental poisoning increased to 14.1 per 100,000 (vs. 10.2 in 2001-06). In particular, the accidental poisoning death rate rose by 41% in young males (from 14.2 to 20 per 100,000), and by 34% in young females (from 5.9 to 7.8).

Mortality rates for adults aged 25-44 decreased about 20% for both males (from 217.3 to 174 per 100,000) and females (from 125.7 to 100.2) between 2001-03 and 2010-12, largely as a result of reductions in mortality due to traffic crashes, homicide/legal intervention, HIV, septicemia, and chronic conditions such as CVD and cancer (Figure 7). Adults aged 25-34 and 35-44 each made up about 15% of the total population in 2010-12, and contributed around 2% and 4% of all deaths in that period respectively. Accidental poisoning remained the leading UCD in both age groups in 2010-12, accounting for 23.2% (192 deaths) and 15.3% (241 deaths) of all deaths in those aged 25-34 and 35-44 respectively. Suicide contributed an additional 16.3% (135 deaths) and homicide/legal intervention a further 9.7% (80 deaths) in those aged 25-34, whereas 'other heart diseases' (14.1%; 222 deaths) overtook suicide (12.8%; 202 deaths) as the second leading cause of death in those aged 35-44. There was a moderate increase in deaths from self-harm poisoning in 25 to 34-year-olds between 2001-06 and 2007-12 (from 2 to 3.2 per 100,000), despite an overall decline of suicide deaths in this age group (from 16.2 to 15.1). In 35 to 44-year-olds, suicide mortality increased between 2001-06 and 2007-12 (from 21.7 to 23.2 per 100,000). The upturn was observed for suicide by firearm (from 9.3 to 10.7) and to a lesser extent, by suffocation (from 4.7 to 4.9). Meanwhile the self-harm poisoning rate in this age group was unchanged (5.9). For males in the 25-34 age group, the accidental poisoning death rate increased by 28% to 28.1 per 100,000 (vs. 22 in 2001-06), and that for females by 63% to 14.3 per 100,000 (vs. 8.8).

For those in the 35-44 age group, the equivalent rate for males decreased to 30.7 per 100,000 (vs. 32.8), while the female rate rose to 21.2 per 100,000 (vs. 18).

Adults aged 45-64 comprised a quarter of the total population and 24% of all deaths in 2010-12. The mortality rate for this age group fell by 14% from 2001-03 (940.1 per 100,000) to 2010-12 (808.5) in males, and by 6% in females (from 544.8 to 511.6). Decreases in mortality from CVD, lung cancer, COPD, chronic liver disease/cirrhosis, diabetes/renal failure, septicemia, traffic crashes and homicide accounted for much of the mortality decline among those aged 45-64 (Figure 7). Of the 9,695 deaths in this age group in 2010-12, 14.6% were due to 'other heart diseases,' 11.3% to IHD, 6.8% to lung cancer, 4.9% to accidental poisoning, 4.5% to suicide, 3.7% to stroke, 3.7% to chronic liver disease and cirrhosis, and 3.3% to COPD. For several causes of death—including accidental poisoning, 'other heart diseases,' pneumonia and influenza, suicide, and dementia—mortality rates in adults aged 45-64 increased over the period 2001-06 to 2007-12. The upturn was particularly marked for poisoning fatality. In males aged 45-64, suicide poisoning deaths rose by 18% to 9.4 per 100,000 in 2007-12 (vs. 7.9 in 2001-06), and the equivalent female rate by 23% to 7.1 per 100,000 (vs. 5.8). Meanwhile male accidental poisoning deaths in this age group rose by 28% to 34.8 per 100,000 (vs. 27.2), and the equivalent female rate by 53% to 28 per 100,000 (vs. 18.3). Further, suicide (of all mechanisms) and accidental poisoning deaths peaked in those aged 45-64 at 29.1 and 31.4 per 100,000 respectively (compared to 19.1/23.7 in ages 25-44, and

Figure 7. Mortality rate declines between 2001-06 and 2007-12 apportioned to select causes by age, Clark County-NV



Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death. *Other heart diseases encompass ICD-10 coded range of I05-09, I11, I13, I26, I27, I30-52.

27.6/5.9 in those aged 65 and over).

Mortality rates among those aged 65 and older decreased 15% for males (from 4893.2 to 4147.4 per 100,000) and 17% for females (from 4352.3 to 3631.8) during 2001-03 to 2010-12 respectively. Decreases have been driven mainly by lower deaths from chronic conditions such as CVD, cancer, and COPD (Figure 7). Improvements in IHD mortality for example, contributed nearly 40% to the mortality reduction in those aged 65 and over; decreases in stroke death rates contributed about 15% of the decrease overall; lower lung cancer death rates also contributed 9.5% to the decrease; and lower COPD death rates a further 8.7%. In 2010-12, leading UCDs in those aged 65 and over were 'other heart diseases' and IHD, responsible for 13.6% and 12.1% of the 27,090 deaths in this age group respectively. Deaths from dementia and related disorders followed at 8.7%, COPD at 7.8%, stroke at 5%, pneumonia and influenza at 2.9%, and renal failure at 2.8%. Injury mortality was comparatively low in this age group, at 2.6% (compared to 13% in ages 45-64, 47% in ages 25-44, and 72% in ages 15-24). Nonetheless, males aged 65 and over had the highest firearm suicide rate of all age-gender subgroups, and females aged 65 and over the highest MV traffic accident death rate (Figure 6). As well, deaths from accidental fall rose with age and peaked in those aged 65 and over.

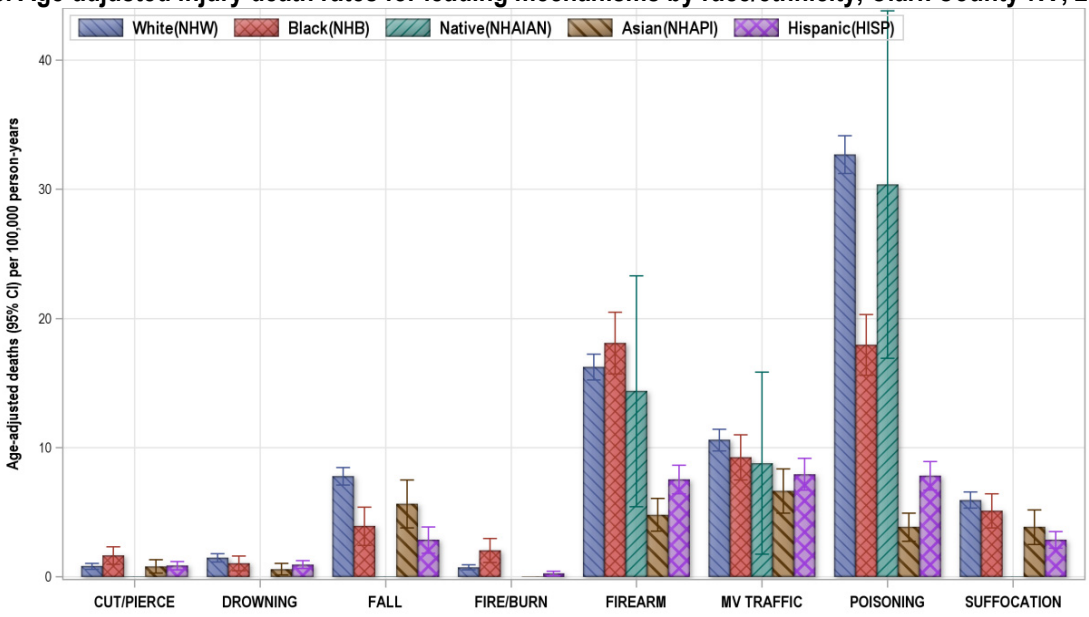
Among prominent UCDs in older ages, dementia, Parkinson's disease, and accidental fall recorded increases during 2001-12. Between 2001-06 and 2007-12, dementia deaths in those aged 65 and over increased by 6.3% to 323.4 per 100,000 (from 304.1), those from Parkinson's disease by 28% to 37.1 per 100,000 (from 29), and those from accidental fall by 28% to 32.8 per 100,000 (from 25.6). The incidence of accidental poisoning deaths also rose appreciably in those aged 65 and over (from 3.3 to 5.9 per 100,000), with a sharper increase in females (from 3.2 to 6.1) than in males (from 3.3 to 5.7). Whereas declines in firearm suicide deaths (especially among males) brought about an overall decline in suicide mortality in older ages, suicide poisoning deaths increased in females aged 65 and over during this period (from 3.6 to 5.4).

Mortality patterns by race/ethnicity

AjR data from 2001-03 to 2010-12 show substantial mortality reductions for NHBs (from 1059.9 to 845.5 per 100,000), NHWs (from 954.3 to 833.4), NHAIANs (from 663 to 563.3 albeit non-significantly), Hispanics (from 548.9 to 467.9), and NHAPIs (from 536.4 to 425.2). Across race/ethnicities, the mortality decline was most dramatic for circulatory diseases (e.g. IHD, stroke), COPD, septicemia, transport accidents, and homicide (Appendix A). On the other hand, for a few causes, notably accidental poisoning, dementia and Parkinson's disease, all racial subgroups recorded higher AjRs in 2010-2012 than in 2001-03. In 2010-12, the death rates for IHD, COPD, accidental poisoning, chronic liver disease and cirrhosis, suicide, and skin melanoma were significantly higher in NHWs than in the general population, and those for stroke, diabetes/renal failure, hypertension, septicemia, HIV, and homicide/legal intervention in NHBs. In addition to experiencing higher injury mortality in general (Figure 8), NHWs and NHBs also had AjRs in excess of the general population for heart disease, dementia, lung, breast and colorectal cancers, and pneumonia and influenza.

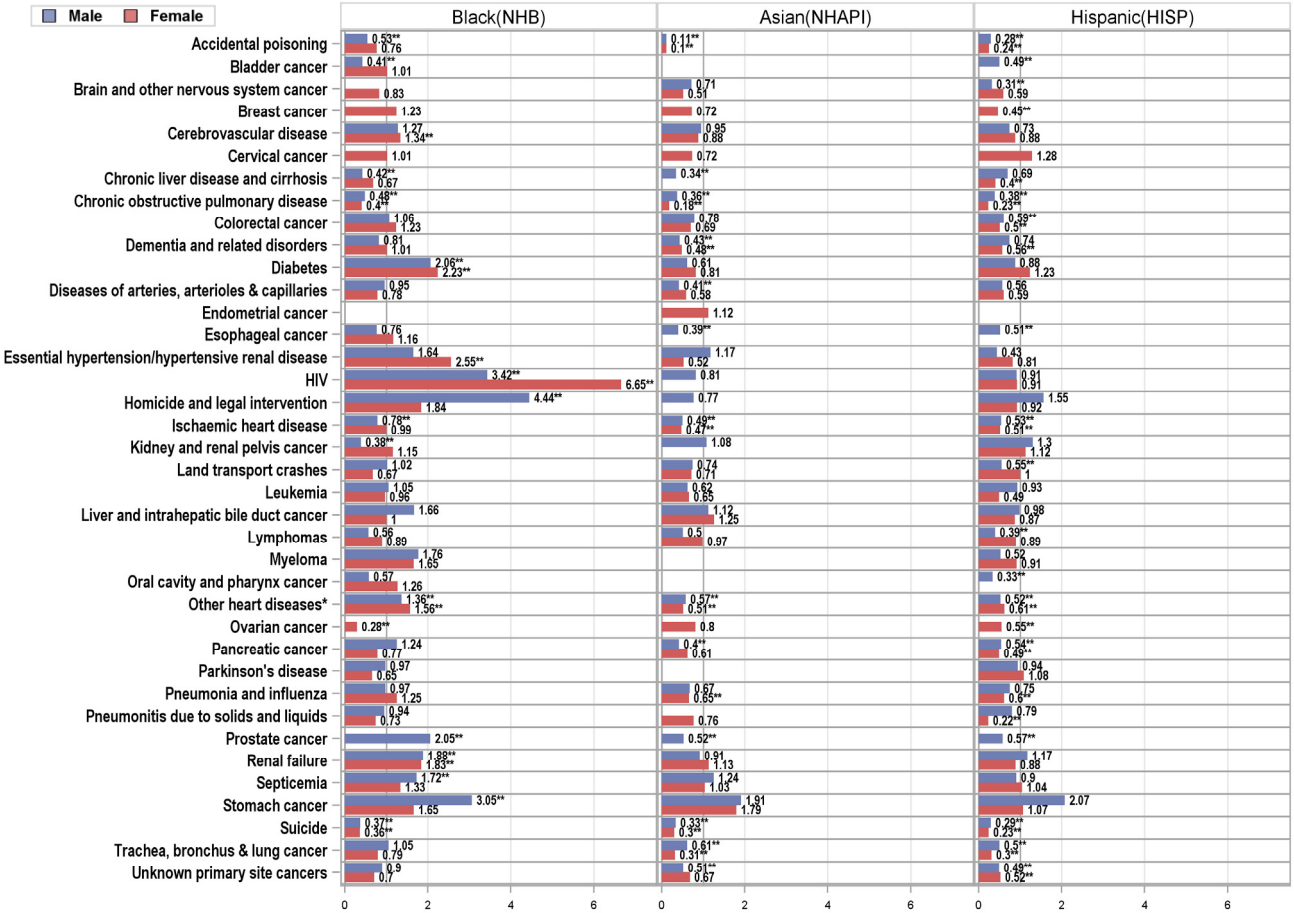
The NHB-NHW mortality disparity in terms of rate ratios—expressed as the AjR in NHBs divided by that in NHWs—tended to diminish over time (from 1.1 in 2001-03 to 1 in 2010-12), largely because of the decline in mortality risks for NHBs from HIV, homicide, hypertension, and stroke, as well as a worsening risk profile for NHWs with respect to IHD, accidental poisoning, suicide, and chronic liver disease and cirrhosis. In 2010-12, the largest NHB-NHW AjR ratio was for HIV disease, at 3.4 for males and 6.7 for females (Figure 9). Other important UCDs for which the ratio was high include homicide/legal intervention (4.4 and 1.8), prostate cancer (2.1), diabetes (2.1 and 2.2), renal failure (1.9 and 1.8), and essential hypertension/hypertensive renal disease (1.6 and 2.6). Conditions with a NHB-NHW AjR ratio

Figure 8. Age-adjusted injury death rates for leading mechanisms by race/ethnicity, Clark County-NV, 2007-12



Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death.
Note: Injury mortality identified using categories from the external cause-of-injury mortality matrix. Crude rates were age-standardized to the 10-group age distribution of the July 1, 2000 bridged-race intercensal national population estimates. Data suppression (denoted by X) applied if events<5.

Figure 9. Age-adjusted mortality rate ratios (relative to NHW) by select leading cause, gender and race/ethnicity, Clark County-NV, 2010-12



Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death.
Note: Crude rates were age-standardized to the 10-group age distribution of the July 1, 2000 bridged-race intercensal national population estimates. Standardized rate ratios not calculated if events<5. Significance in difference indicated by **.
*Other heart diseases encompass ICD-10 coded range of I05-09, I11, I13, I26, I27, I30-52.

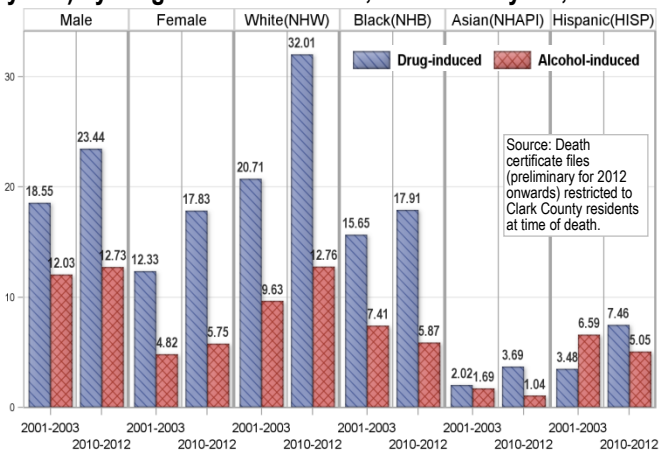
considerably less than 1—that is, rates were higher in NHWs compared to NHBs—were accidental poisoning, chronic liver disease and cirrhosis, COPD, ovarian cancer, and suicide.

The widening life expectancy gap between Hispanics and NHWs over the period 2001-03 to 2010-12 was mirrored by the higher NHW-Hispanic mortality rate ratio in 2010-12 (1.8) than in 2001-03 (1.7). The higher relative mortality risk and hence shorter life span for NHWs when compared with Hispanics are partially attributable to the 'healthy worker' and 'salmon bias' effects as previously noted. On the basis of AjR data for 2010-12, higher mortality rates among NHWs for heart disease explained about 25% of the NHW-Hispanic mortality disparity. Those for COPD explained an additional 11% and lung cancer a further 9%. Other leading UCDs contributing significantly to the life expectancy gap between NHWs and Hispanics include dementia (5.9%), accidental poisoning (5.4%), suicide (5.2%), and colorectal cancer (2.4%).

Drug/alcohol-induced deaths and mental illness

There were 1,255 drug-induced deaths (i.e. from poisoning and medical conditions caused by dependent or nondependent use of legal or illegal drugs) and 575 alcohol-induced deaths (i.e. from alcohol poisoning and dependent or nondependent use of alcohol) in Clark County in 2010-12, at AjRs of 20.7 and 9.2 per 100,000 (vs. 13.6 and 7.7 in the nation) respectively. These represent a 34% increase in drug-induced mortality and a 10% increase in alcohol-induced mortality since 2001-03 (15.5 and 8.4 per 100,000 respectively). While the county population as a whole had drug and alcohol-induced death rates well in excess of national rates, the rate differentials tended to be higher in females than in males, and in NHWs than in other race/ethnicities.[7] The vast majority (>80%) of drug-induced deaths involved opioids or other narcotics, and close to two-thirds of drug poisoning deaths (i.e. drug overdoses) involved opioid pain killers (vs. a national rate of 41%).[4] As in the nation, NHW males comprised the majority of both drug and alcohol-induced deaths. Further, the rise in alcohol-induced mortality in the county over the past decade was mainly the result of a significant increase in alcohol-induced deaths among NHWs, contrasting with general declines in other race/ethnicities (Figure 10). Meanwhile, the increasing burden of drug-induced mortality in the county was mostly explained by the rapidly rising accidental drug overdose rates, particularly among NHWs, NHBs, and Hispanics (the rise in suicide drug overdoses was less pronounced). As well, NHWs had higher suicide drug overdose rates across age groups than other race/ethnicities.[3] In 2010-12, the highest rates for both drug and alcohol-induced deaths occurred in NHWs aged 45-54 (at 65.9 and 36.6 per 100,000 respectively).

Figure 10. Age-adjusted death rates (per 100,000 person-years) by drug or alcohol causes, Clark County-NV, 2001-12



The excessive mortality risks among residents from drug overdoses and alcohol use or abuse (as well as suicide) underline the burden of mental illness which often occurs in conjunction with substance dependence. Indeed, evidence suggests a reciprocal influence with regards to substance use/dependence and depression, one of the most prevalent mental health problems.[11] Based on weighted data from the Behavioral Risk Factor Surveillance System (BRFSS), 15.5% of county adults aged 18 and older (the equivalent of 310,000 people) were affected by a depressive disorder (including depression, major depression, dysthymia, or minor depression) in 2012 (compared to 14.1% in 2011). The rate increased

with age to peak in adults aged 55-64 years (21.7%), and was more than twice as high in women as in men (21.8% vs. 9.2%). Rates were also elevated among low-income residents of NHW and multi-racial origins (data not shown). Further, 4.1% of county adults (equivalent to 82,000 people) in the same year experienced serious psychological distress (SPD), that is, scoring 13 or greater on the Kessler Psychological Distress Scale (see Appendix A3 for a list of questions comprising the screening instrument).[12] The prevalence rate for SPD was about 50% higher in women than in men (4.9% vs. 3.2%), and peaked in adults aged 45-54 (8.1%). As well, SPD showed characteristic race/ethnicity and income gradients, with NHWs of lower socio-economic status at higher risk (data not shown).

The adult prevalence of depression among Nevadans—over 70% of which dwell in Clark County—does not stand out as being exceedingly high (16.3% in 2012) when compared with the national median (17.6%). Nonetheless, the high rate of substance dependence or abuse among adults in the state of Nevada (the fifth highest in the nation at 10.3%, compared to a national rate of 8.5% in 2011-12[13]) underscores the necessity to identify and monitor coping behaviors and comorbidities, and the importance of addressing these aspects of mental health.

Using the Clark County subset of the 2011/12 BRFSS data to account for differential risk profiles due to demographic, socio-economic and biomedical factors (e.g. age, gender, race/ethnicity, education, income, employment, marital status, obesity, and activity limitations due to health problems), the associations between chronic health conditions (e.g. CVD, COPD, any type of cancer, diabetes, kidney disease, hypertension, high blood cholesterol, asthma, arthritis, and vision impairment), risky health behaviors (e.g. smoking and binge drinking) and mental illness (depression used as a proxy indicator) were examined for a better understanding of coexistent behavioral and physical health problems that contribute to impaired mental health, and to help identify prevention and management strategies.

Table 2. Adjusted odds ratios (AOR) for depression, smoking, binge drinking† and chronic health conditions†† based on BRFSS Clark County-NV subset, 2011-12

	Any form of depression	Current smoker	Bing drinking	Chronic conditions
	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)	AOR(95% CI)
Any form of depression	..	1.7**(1.3-2.2)	1.2(0.9-1.6)	2.1**(1.6-2.8)
Current smoker	1.7**(1.3-2.1)	..	2.4** (1.9-3.1)	1(0.8-1.3)
Binge drinking	1.3(0.9-1.7)	2.4**(1.9-3.2)	..	1.1(0.9-1.4)
Chronic conditions	2.1**(1.6-2.7)	1.1(0.9-1.4)	1.1(0.9-1.4)	..

Source: Behavioral Risk Factor Surveillance System, 2011/12.

Note: AORs obtained from standard multiple logistic regression (sample size=2,909 after exclusion of item nonresponses). Those for demographic, socio-economic and biomedical factors not displayed. An AOR of 1.7 relating depression to current smokers means that individuals reporting depressive experiences had a 1.7 times higher odds of smoking currently compared with those not affected by depression, after accounting for differential vulnerabilities to smoking attributed to age, gender, race/ethnicity, education, income, employment, marital status, obesity, activity limitations, binge drinking, and chronic conditions.

†Binge drinking refers to males having 5+ drinks, or females having 4+ drinks on one occasion.

††Conditions considered in this analysis were CVD, COPD, any type of cancer, diabetes, kidney disease, hypertension, high blood cholesterol, asthma, arthritis, and vision impairment. Respondents were classified as having either none or at least one of these conditions.

**Difference in odds between those with and without the risk factor is significant at the 95% confidence level.

The higher smoking and binge drinking rates as well as a higher prevalence of chronic health conditions among those suffering from depression were confirmed by multiple regression analysis (Table 2). While simultaneous consideration of potentially confounding variables attenuated the relationship between binge drinking and depression, the level of smoking and chronic health conditions remained significantly elevated among those with depression. These findings suggest that the integration of behavioral and primary health care can help alleviate the mortality and morbidity burden attributable to mental illness.

Geographic variations in life expectancy and select causes of mortality

Mortality outcomes need to be considered in their socio-economic and environmental settings which are often spatially structured. To help identify area-based differences in mortality and opportunities for intervention, Appendix C presents residential zip code-level life expectancy estimates and AjRs, as well as geographic breakdowns of the mortality burden from important causes of premature deaths. Appendix D describes the spatial variations in IHD mortality with a socio-demographic lens.

Concluding remarks

For both genders and all racial groups, life expectancy increased steadily during 2001-2012, with greater gains achieved among males, and among NHBs relative to NHWs. Compared with their national counterparts, NHW residents had lower life expectancies, largely due to their excess mortality from drug and alcohol-associated causes.

The leading causes of death among residents were heart disease, lung cancer, COPD, dementia and related disorders (including Alzheimer's disease), and stroke. For several causes of death—including IHD, stroke, lung cancer, COPD, transport crashes, and homicide/legal intervention—death rates declined rapidly over the past decade. On the other hand, the higher-than-the-nation mortality burden apportioned to suicide and accidental poisoning (the overwhelming majority of which being unintentional drug overdoses) represents a continuing problem. In males, suicide and accidental poisoning surpassed lung cancer as leading contributors to years of life lost due to premature mortality; in females, accidental poisoning overtook dementia as a leading contributor to premature mortality.

The notably lower life expectancies for NHW and NHB residents, when compared with other race/ethnicities, are due primarily to their excess (relative to residents as a whole) mortality from heart disease, dementia, lung, breast and colorectal cancers, pneumonia and influenza, and most injuries. Further, deaths rates for IHD, COPD, accidental poisoning, chronic liver disease and cirrhosis, suicide, and skin melanoma were highest among NHWs, and those for stroke, diabetes/renal failure, hypertension, septicemia, HIV, and homicide/legal intervention in NHBs.

Although significant improvements were made in reducing mortality from heart disease, stroke and other chronic conditions, the leading mortality causes among residents were generally chronic in nature. Thus, monitoring and reducing the prevalence of modifiable behavioral and metabolic risk factors (e.g. smoking, inactivity, obesity), which are critical determinants of chronic disease outcomes, is crucial to alleviating the morbidity/mortality burden. Based on self-reports from the BRFSS, 20.5% of county adults, corresponding to 315,300 residents in 2013, were current smokers (vs. 22.7% in 2011), 13.3% (204,600) were binge drinkers (vs. 18.7%), 24.2% (372,300) had no leisure time activity or exercise (vs. 25.1%), and 28.2% (433,800) were obese (vs. 24.4%). Meanwhile, about one in ten county adults had diabetes, and more than one-third had high blood pressure or high cholesterol. Clearly, the burden of chronic disease in the county gives an impetus to a prevention orientation that addresses the patterns and trends in lifestyle behaviors, as well as the socio-economic, environmental and cultural determinants of health.

Compared with the rest of the nation, residents had a disproportionate share of drug/alcohol-induced mortality. Death rates due to these causes also increased rapidly over the past decade. The excessive mortality risks among residents from drug overdoses and alcohol use or abuse underline the burden of mental illness which often occurs in conjunction with substance dependence. Further, residents with mental health disorders are at higher risk for comorbid physical conditions, and experience significant barriers managing illnesses and receiving medical care. According to the 2011-12 National Survey on Drug Use and Health, 2.1% of Nevada adults needed but did not receive treatment for illicit drug use in the past year, compared to a national rate of 2.2%; whereas 8.9% needed but did not receive treatment for alcohol use in the past year, compared to a national rate of 6.6%.[13] As such, systematic improvement of access to mental health support services and substance abuse treatment programs has the potential to reduce the premature morbidity/mortality burden associated with mental illness and substance use among residents. In addition, a better understanding of the mechanisms underlying mental disorders, as well the coexistent behavioral and physical health problems, is clearly needed to help identify factors that affect at-risk populations and strategies that improve the lives of those with mental illness.

Acknowledgements

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Appendix A1. List of ICD-10 codes comprising the drug-induced death category

D52.1 (drug-induced folate deficiency anemia); D59.0 (drug-induced hemolytic anemia); D59.2 (drug-induced nonautoimmune hemolytic anemia); D61.1 (drug-induced aplastic anemia); D64.2 (secondary sideroblastic anemia due to drugs and toxins); E06.4 (drug-induced thyroiditis); E16.0 (drug-induced hypoglycemia without coma); E23.1 (drug-induced hypopituitarism); E24.2 (drug-induced Cushing's syndrome); E27.3 (drug-induced adrenocortical insufficiency); E66.1 (drug-induced obesity); F11.0-F11.5, F11.7-F11.9, F12.0-F12.5, F12.7-F12.9, F13.0-F13.5, F13.7-F13.9, F14.0-F14.5, F14.7-F14.9, F15.0-F15.5, F15.7-F15.9, F16.0-F16.5, F16.7-F16.9, F17.0, F17.3-F17.5, F17.7-F17.9, F18.0-F18.5, F18.7-18.9, F19.0-F19.5, F19.7-F19.9 (mental and behavioral disorders due to psychoactive substance use); G21.1 (other drug-induced secondary parkinsonism); G24.0 (drug-induced dystonia); G25.1 (drug-induced tremor); G25.4 (drug-induced chorea); G25.6 (drug-induced tics and other tics of organic origin); G44.4 (drug-induced headache, NEC); G62.0 (drug-induced polyneuropathy); G72.0 (drug-induced myopathy); I95.2 (hypotension due to drugs); J70.2-J70.4 (drug-induced interstitial lung disorders); K85.3 (drug-induced acute pancreatitis); L10.5 (drug-induced pemphigus); L27.0-L27.1 (skin eruption due to drugs and medicaments); M10.2 (drug-induced gout); M32.0 (drug-induced systemic lupus erythematosus); M80.4 (drug-induced osteoporosis with pathological fracture); M81.4 (drug-induced osteoporosis); M83.5 (other drug-induced osteomalacia in adults); M87.1 (osteonecrosis due to drugs); R50.2 (drug-induced fever); R78.1-R78.5 (finding of opiate drug / cocaine / hallucinogen / other drugs of addictive potential / psychotropic drug in blood); X40–X44 (accidental poisoning by and exposure to drugs, medicaments and biological substances); X60–X64 (intentional self-poisoning or suicide by and exposure to drugs, medicaments and biological substances); X85 (assault or homicide by drugs, medicaments and biological substances; and Y10–Y14 (poisoning by and exposure to drugs, medicaments and biological substances, undetermined intent).

Appendix A2. List of ICD-10 codes comprising the alcohol-induced death category

E24.4 (alcohol-induced pseudo-Cushing's syndrome); F10 (alcohol related disorders); G31.2 (degeneration of nervous system due to alcohol); G62.1(alcoholic polyneuropathy); G72.1(alcoholic myopathy); I42.6 (alcoholic cardiomyopathy); K29.2 (alcoholic gastritis); K70 (alcoholic liver disease); K85.2 (alcohol induced acute pancreatitis); K86.0 (alcohol-induced chronic pancreatitis); R78.0 (finding of alcohol in blood); X45 (accidental poisoning by and exposure to alcohol); X65 (intentional self-poisoning by and exposure to alcohol); and Y15 (poisoning by and exposure to alcohol, undetermined intent).

Appendix A3. The Kessler-6 (K6) Psychological Distress Scale

The K6 scale is a standardized and validated measure of non-specific psychological distress, comprising six questions (provided below). Responses to these questions are scored on a five-point Likert scale, ranging from 'none of the time' to 'all of the time'. Respondents with a score of 13 or greater are identified as having serious psychological distress.

About how often (all of the time, most of the time, some of the time, a little of the time, or none of the time) during the past 30 days did you feel …

1. Nervous?
2. Hopeless?
3. Restless or fidgety?
4. So depressed that nothing could cheer you up?
5. That everything was an effort?
6. Worthless?

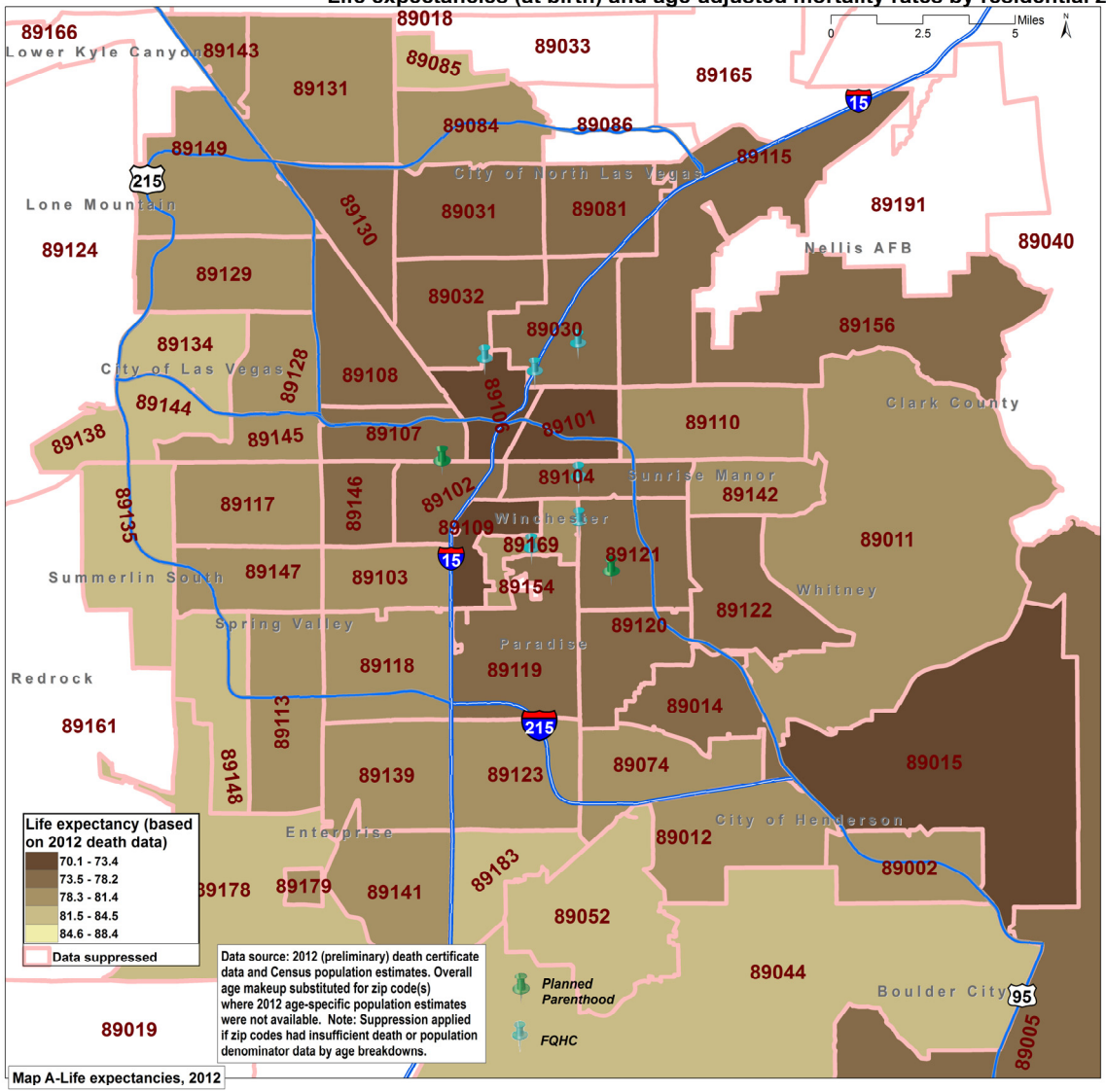
Appendix B. Age-adjusted death rates (per 100,000 person-years) by race/ethnicity and select cause, Clark County-NV, 2001-03 and 2010-12

Source: Death certificate files (preliminary for 2012 onwards) restricted to Clark County residents at time of death. Note: Rates suppressed (denoted by X) if events<5. Significance in difference indicated by **. *Other heart diseases encompass ICD-10 coded range of I05-09, I11, I13, I26, I27, I30-52.

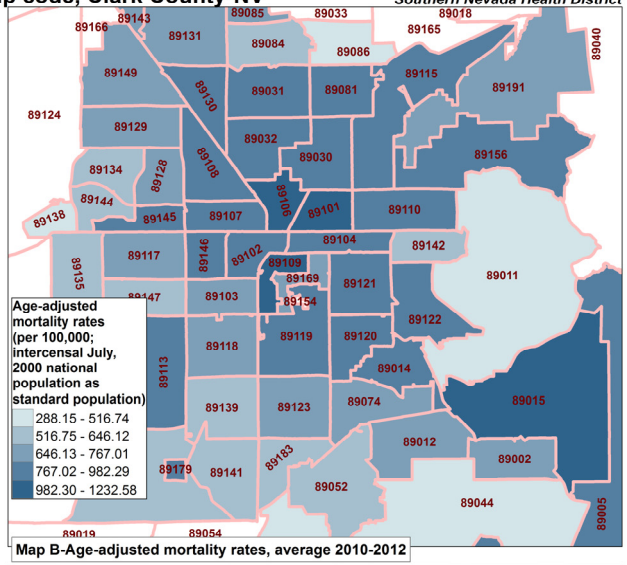
	White(NHW)			Black(NHB)			Native(NHAIAN)			Asian(NHAPI)			Hispanic(HISP)		
	2001-03	2010-12	Change	2001-03	2010-12	Change	2001-03	2010-12	Change	2001-03	2010-12	Change	2001-03	2010-12	Change
Accidental exposure to factors NEC or unspecified	0.99	0.44	Down	-X-	-X-		-X-	-X-		-X-	-X-		-X-	0.90	Up
Accidental poisoning	14.80	27.06	Up**	12.69	16.90	Up	21.31	39.02	Up	1.75	2.86	Up	2.75	7.38	Up**
Bladder cancer	6.02	6.21	Up	3.35	3.47	Up	-X-	-X-		-X-	1.42	Up	3.87	2.74	Down
Brain and other nervous system cancer	4.41	4.55	Up	2.37	2.47	Up	-X-	-X-		1.99	2.72	Up	2.75	1.99	Down
Breast cancer	26.85	24.74	Down	33.07	30.55	Down	-X-	-X-		11.39	17.80	Up	14.66	11.25	Down
Cerebrovascular disease	53.71	34.02	Down**	82.62	43.70	Down**	64.21	21.40	Down	67.72	30.41	Down**	39.88	27.91	Down
Cervical cancer	2.80	1.73	Down	4.49	1.75	Down	-X-	-X-		5.01	1.25	Down	2.29	2.21	Down
Chronic liver disease and cirrhosis	12.81	12.69	Down	9.99	6.38	Down	18.93	14.57	Down	3.17	2.89	Down	12.47	7.13	Down
Chronic obstructive pulmonary disease	66.58	57.81	Down**	29.21	24.94	Down	54.98	31.87	Down	15.42	14.25	Down	26.95	16.53	Down
Colorectal cancer	22.60	18.70	Down**	24.58	21.06	Down	-X-	-X-		13.42	13.61	Up	11.42	10.09	Down
Dementia and related disorders	51.38	57.05	Up**	50.18	54.76	Up	-X-	-X-		12.15	26.63	Up**	20.06	35.56	Up**
Diabetes	14.04	11.38	Down**	26.83	23.86	Down	-X-	-X-		11.26	7.63	Down	11.12	11.32	Up
Diseases of arteries, arterioles & capillaries	12.36	5.85	Down**	10.15	4.79	Down	-X-	-X-		8.37	2.90	Down	3.05	3.41	Up
Endometrial cancer	1.41	1.55	Up	-X-	-X-		-X-	-X-		-X-	1.73	Up	-X-	-X-	
Esophageal cancer	5.32	4.71	Down	3.88	3.86	Down	-X-	-X-		-X-	1.45	Up	2.54	1.94	Down
Essential hypertension/hypertensive renal disease	5.52	4.48	Down	16.41	10.22	Down	-X-	-X-		5.05	3.27	Down	3.90	3.11	Down
HIV	3.46	2.38	Down	13.60	8.85	Down	-X-	-X-		-X-	1.42	Up	3.77	2.13	Down
Homicide and legal intervention	6.02	4.20	Down**	32.33	14.75	Down**	-X-	-X-		8.87	2.43	Down**	11.25	5.57	Down**
Ischemic heart disease	146.30	94.39	Down**	148.13	80.50	Down**	86.10	32.34	Down	77.56	43.46	Down**	83.39	48.44	Down**
Kidney and renal pelvis cancer	4.33	3.40	Down	3.93	2.32	Down	-X-	-X-		1.87	2.56	Up	2.68	3.99	Up
Land transport crashes	15.82	10.02	Down**	13.05	8.99	Down	35.70	-X-	Down	10.63	6.83	Down	14.17	6.99	Down**
Leukemia	7.96	6.30	Down	5.36	6.43	Up	-X-	-X-		3.96	3.91	Down	2.75	4.52	Up
Liver and intrahepatic bile duct cancer	4.69	4.90	Up	4.68	6.52	Up	-X-	-X-		7.33	5.46	Down	4.62	4.51	Down
Lymphomas	7.08	6.07	Down	6.15	4.29	Down	-X-	-X-		4.68	4.25	Down	6.19	3.68	Down
Myeloma	3.65	2.84	Down	5.78	4.63	Down	-X-	-X-		-X-	0.92	Up	2.48	1.94	Down
Oral cavity and pharynx cancer	3.36	2.29	Down	2.84	1.75	Down	-X-	-X-		3.09	1.42	Down	-X-	0.63	Up
Other heart diseases*	105.92	106.83	Up	150.84	154.91	Up	72.35	95.52	Up	65.30	55.92	Down	59.97	59.89	Down
Ovarian cancer	10.32	8.07	Down	8.19	2.29	Down	-X-	-X-		-X-	6.49	Up	3.53	4.42	Up
Pancreatic cancer	10.84	11.47	Up	13.87	11.47	Down	-X-	-X-		7.13	5.88	Down	4.63	5.93	Up
Parkinson's disease	4.08	6.60	Up**	-X-	5.57	Up	-X-	-X-		-X-	1.28	Up	2.33	6.51	Up
Pneumonia and influenza	23.17	21.06	Down	26.38	23.69	Down	33.35	-X-	Down	16.32	13.76	Down	14.05	14.46	Up
Pneumonitis due to solids and liquids	6.33	5.32	Down	2.33	4.54	Up	-X-	-X-		5.21	3.10	Down	4.06	2.36	Down
Prostate cancer	26.26	18.77	Down**	65.03	38.44	Down	-X-	90.52	Up	12.12	9.70	Down	24.25	10.69	Down
Renal failure	24.85	17.01	Down**	44.92	31.39	Down	20.67	-X-	Down	23.06	16.95	Down	21.50	17.28	Down
Septicemia	24.38	10.42	Down**	29.28	15.87	Down**	-X-	-X-		12.88	11.47	Down	20.17	10.17	Down**
Skin melanoma	3.70	3.92	Up	-X-	-X-		-X-	-X-		-X-	-X-		-X-	0.62	Up
Stomach cancer	3.83	2.61	Down	4.69	6.20	Up	-X-	-X-		4.80	4.68	Down	4.44	3.99	Down
Suicide	21.95	25.81	Up**	11.42	8.88	Down	26.96	19.11	Down	8.72	7.72	Down	8.32	6.95	Down
Thyroid cancer	0.45	0.52	Up	-X-	-X-		-X-	-X-		-X-	-X-		-X-	1.12	Up
Trachea, bronchus & lung cancer	67.04	54.02	Down**	54.88	48.53	Down	-X-	32.88	Up	21.28	23.76	Up	23.98	20.92	Down
Unknown primary site cancers	15.87	12.26	Down**	15.32	9.71	Down	-X-	-X-		9.23	7.37	Down	7.56	6.38	Down

Appendix C1.

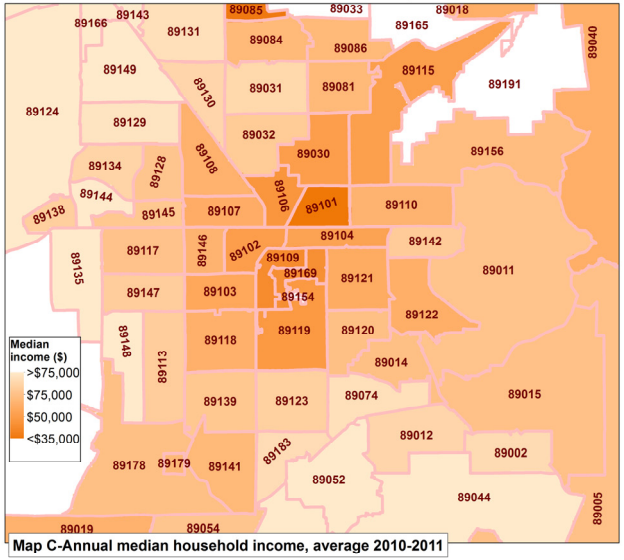
Life expectancies (at birth) and age-adjusted mortality rates by residential zip code, Clark County-NV



Map A-Life expectancies, 2012

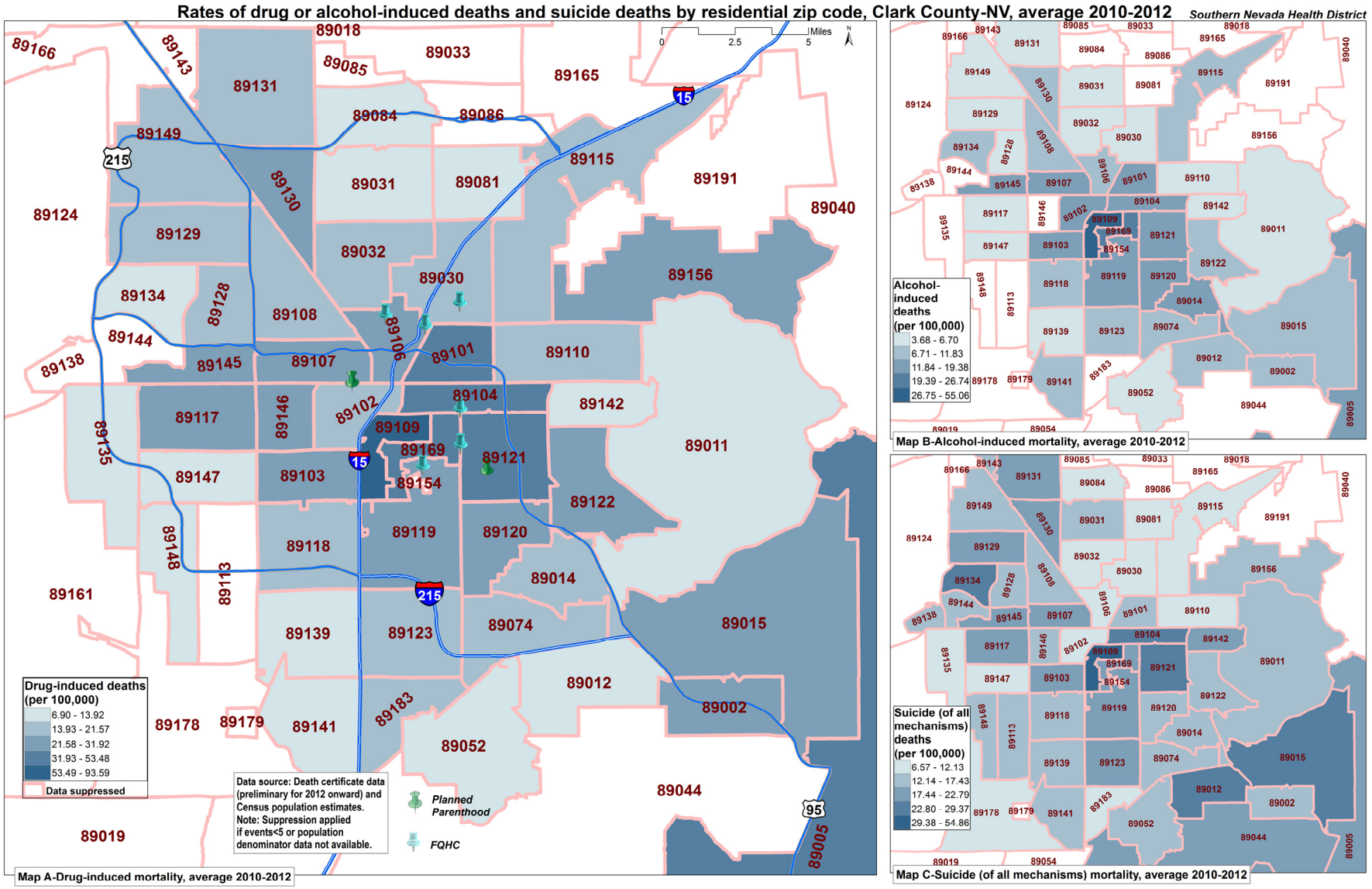


Map B-Age-adjusted mortality rates, average 2010-2012



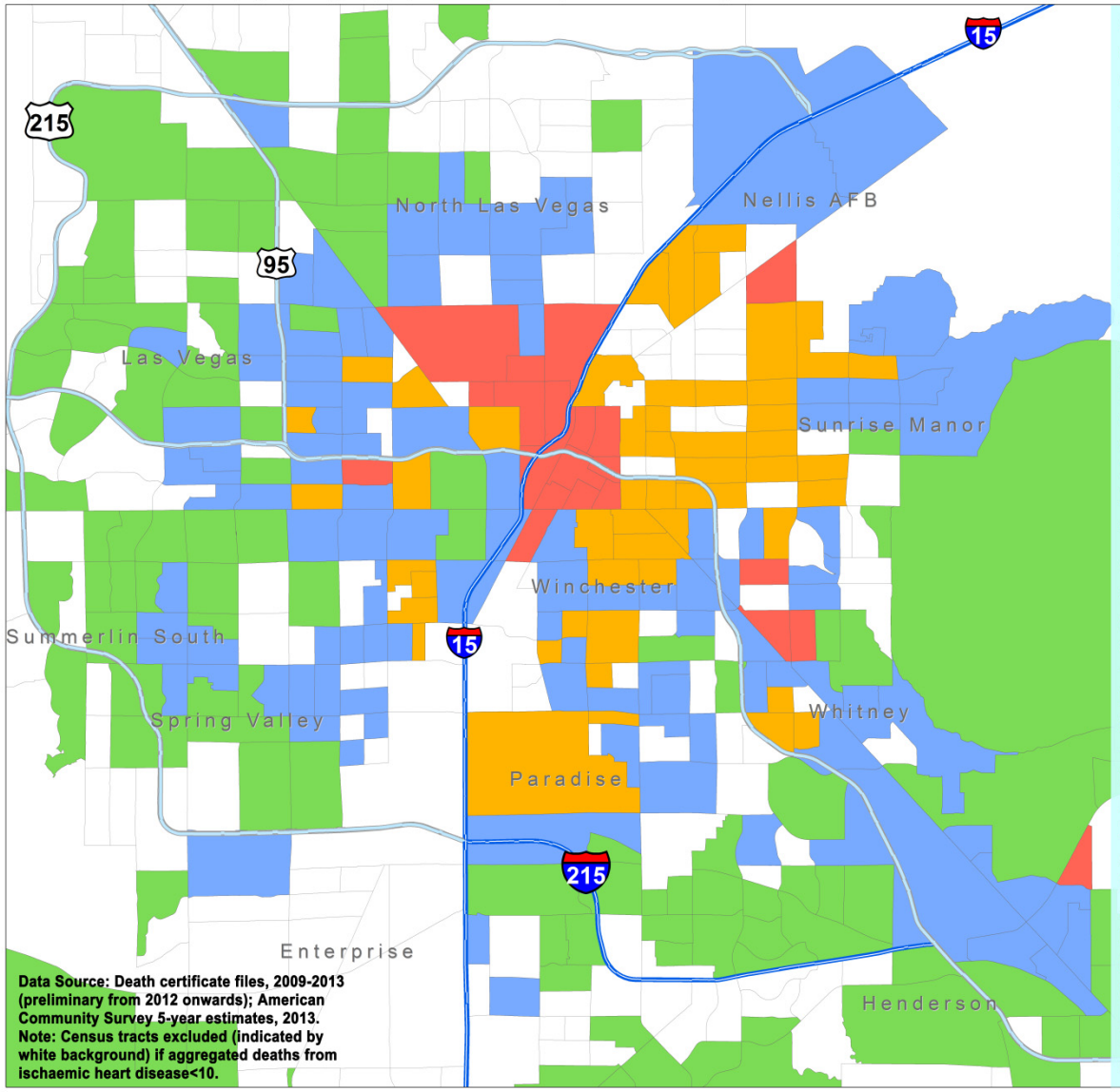
Map C-Annual median household income, average 2010-2011

Appendix C2.


Rates of drug or alcohol-induced deaths and suicide deaths by residential zip code, Clark County-NV, average 2010-2012
Southern Nevada Health District
Miles
0
2.5
5
N
Drug-induced deaths (per 100,000)
6.90 - 13.92
13.93 - 21.57
21.58 - 31.92
31.93 - 53.48
53.49 - 93.59
Data suppressed
Data source: Death certificate data (preliminary for 2012 onward) and Census population estimates.
Note: Suppression applied if events<5 or population denominator data not available.
Planned Parenthood
FQHC
Map A-Drug-induced mortality, average 2010-2012
Alcohol-induced deaths (per 100,000)
3.68 - 6.70
6.71 - 11.83
11.84 - 19.38
19.39 - 26.74
26.75 - 55.06
Map B-Alcohol-induced mortality, average 2010-2012
Suicide (of all mechanisms) deaths (per 100,000)
6.57 - 12.13
12.14 - 17.43
17.44 - 22.79
22.80 - 29.37
29.38 - 54.86
Map C-Suicide (of all mechanisms) mortality, average 2010-2012

Appendix D.

Geographic grouping of Clark County census tracts by ischaemic heart disesae mortality and socio-demographic characteristics *Southern Nevada Health District*



Group 1:
Census tracts: 20 (6.6%)
Age-adjusted ischaemic heart disease death rate: 157.12 per 100,000
Minority races: 32.5% Hispanic, 31.4% Black
Not speaking English: 9.9%
Income: $24,590
Below 200% poverty: 59.3%
Age 25+ without high school diploma: 28.5%
Age 18-64 without health insurance: 42.7%
Age 16+ in civilian workforce unemployed: 24.6%
Having a disability: 20.8%
No vehicle access and low food access at 1/2 mile: 21.6%

Group 2:
Census tracts: 50 (16.5%)
Age-adjusted ischaemic heart disease death rate: 134.66 per 100,000
Minority races: 60.1% Hispanic, 12.1% Black
Not speaking English: 20.1%
Income: $34,135
Below 200% poverty: 57.8%
Age 25+ without high school diploma: 37.1%
Age 18-64 without health insurance: 49.3%
Age 16+ in civilian workforce unemployed: 17.0%
Having a disability: 11.7%
No vehicle access and low food access at 1/2 mile: 2.1%

Group 3:
Census tracts: 112 (37.0%)
Age-adjusted ischaemic heart disease death rate: 109.68 per 100,000
Minority races: 32.2% Hispanic, 13.0% Black
Not speaking English: 7.6%
Income: $44,932
Below 200% poverty: 37.7%
Age 25+ without high school diploma: 18.5%
Age 18-64 without health insurance: 32.5%
Age 16+ in civilian workforce unemployed: 15.1%
Having a disability: 13.7%
No vehicle access and low food access at 1/2 mile: 3.0%

Group 4:
Census tracts: 121 (39.9%)
Age-adjusted ischaemic heart disease death rate: 71.16 per 100,000
Minority races: 15.3% Hispanic, 7.6% Black
Not speaking English: 2.9%
Income: $67,961
Below 200% poverty: 17.0%
Age 25+ without high school diploma: 8.3%
Age 18-64 without health insurance: 17.9%
Age 16+ in civilian workforce unemployed: 9.8%
Having a disability: 11.4%
No vehicle access and low food access at 1/2 mile: 2.1%