

# **Preventable Risk Factors Attributed to Preventable Causes of Death in the District of Columbia, 2007**

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## EXECUTIVE SUMMARY

Although heart disease, cancer, and cerebrovascular diseases are the top three leading reported causes of death in the United States<sup>1</sup> (54 percent of all deaths) as well as in the District of Columbia (52.7 percent of all deaths) in 2007, research has shown that approximately one-half of all deaths nationally are actually due to preventable causes. These preventable causes of death, defined by McGinnis and Foege in 1993<sup>2</sup>, include tobacco/smoking, poor diet, physical inactivity, alcohol, microbial (infectious) agents, toxic agents, firearms, motor vehicle, sexual behavior, and illicit drug use, as well as two additional causes (uninsurance and medical errors) identified by the Institute of Medicine and applied by the state of Wisconsin. Using vital statistics data and estimates based on findings from national studies indicated by Mokdad et al.,<sup>3</sup> this report adapted and applied the estimates to the District of Columbia following Wisconsin's methodology<sup>4</sup> to estimate, for the first time, the preventable risk factors attributable to preventable cause of death in 2007.

- ❖ This is the first study that has attempted to adapt these numbers to the District of Columbia.
- ❖ In 2007, there were 5,168 deaths to District of Columbia<sup>5</sup> (DC) residents. The overall age-adjusted death rate was 865.2 per 100,000 population.
- ❖ The 10 leading causes of death were heart disease, cancer, cerebrovascular disease, accidents, HIV/AIDS, diabetes, homicide, chronic lower respiratory diseases, Alzheimer's disease, and influenza and pneumonia accounted for 73.5 percent of all DC resident deaths in 2007 (Table 1).
- ❖ Almost one-half of all deaths to DC residents in 2007 resulted from 11 preventable causes, which is similar to the national findings.<sup>2,3</sup>
- ❖ The leading causes of preventable death in the District of Columbia in 2007 were tobacco use (estimated 860 deaths; 16.6 percent of total DC resident deaths), poor diet and physical inactivity (estimated 780 deaths; 15.1 percent), microbial (infectious) agents—excluding HIV—(estimated 240 deaths; 4.6 percent), alcohol consumption (estimated 150 deaths; 2.9 percent), firearms (estimated 140; 2.7 percent), and medical errors (estimated 140 deaths; 2.7 percent).

## INTRODUCTION

In 2007, there were 5,168 deaths to residents of the District of Columbia<sup>5</sup> (DC). This represented a crude death rate of 887.6 per 100,000 population and an age-adjusted death rate of 865.2 per 100,000 U.S. 2000 standard population. Data from death certificates filed in 2007 indicated that the 10 leading causes of death in the District of Columbia were due to heart disease (1,367), cancer (1,159), cerebrovascular disease (200), accidents (200), HIV/AIDS (188), diabetes (154), homicide (166), chronic lower respiratory diseases (122), Alzheimer's disease (122), and influenza and pneumonia (119). Although deaths due to heart disease, cancer, and cerebrovascular diseases have declined both nationally and in the District, behavioral changes have led to increased prevalence of obesity and diabetes<sup>6</sup> which predispose one to heart disease and stroke. Causes of death are classified according to the underlying type of disease or injury but most diseases or injuries have multiple potential causes and many factors and conditions that may be attributable to a single death. Thus this presents a challenge in estimating the contribution of each factor to mortality.

In 1993, McGinnis and Foege identified and quantified the major external (nongenetic) risk factors that contribute to death in the United States and referred to them as "actual causes of death."<sup>1</sup> They showed that almost one-half of deaths occurring in the United States were due to preventable causes. McGinnis and Foege analyzed the roles of various external risk factors among U.S. residents and identified the leading preventable risk factors that contribute to premature deaths. These risk factors are tobacco/smoking, poor diet and physical inactivity, alcohol consumption, microbial agents (infectious agents—excluding HIV), toxic agents, firearms, sexual behavior (including HIV), motor vehicles, and illicit drugs. In 2004, Mokdad et al. continued tracking these data on a national basis, incorporating new methods and updating the number of deaths in the U.S. for the year 2000.<sup>3</sup> In a 2004 article, Vila et al. adopted Mokdad's methodology and applied it to estimating the preventable causes of death in Wisconsin.<sup>4</sup> Vila et al. used the nine preventable risk factors and included factors identified by the Institute of Medicine<sup>7,8</sup> (uninsurance and medical errors). These risk factors are usually not reported on death certificates.

The aim of this report is to estimate the number and proportion of deaths due to various preventable causes by applying proportions adapted from McGinnis and Foege and Mokdad et al.'s studies to the 5,168 total District of Columbia resident deaths in 2007. This is the first study that has attempted to adapt these numbers to the District of Columbia.

## METHODS

### *Causes of Death*

The number of deaths and death rates for this report are based on information reported on death certificates for all District of Columbia residents in 2007. Statistics for the 10 leading causes of death presented in this report are classified in accordance with the *International Classification of Diseases Tenth Revision* (ICD-10) (World Health Organization. *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision*. Geneva: World Health Organization. 1992.)

### *Preventable Causes of Death*

The number of deaths due to the leading preventable causes in 2007 were calculated using six sources of information from the causes identified by McGinnis and Foege (i.e., tobacco use, poor diet and physical inactivity, alcohol consumption, microbial (infectious) agents, toxic agents, firearms, sexual behavior, motor vehicles, and illicit drug use) as well as two additional causes identified by the Institute of Medicine<sup>7,8</sup> (i.e., uninsurance and medical errors). All these preventable risk factors were used in Wisconsin's study.<sup>4</sup> The six sources were:

1. ***Deaths due to microbial agents, firearms, and motor vehicles***—Data for these causes of death were obtained from information on the underlying cause of death reported on the death certificate for DC residents. The information is available from the DC Department of Health (DOH), State Center for Health Statistics 2007 death database. Thus, we used the total number of reported deaths for each of these categories.
2. ***Deaths due to tobacco use***—statistics about mortality attributable to smoking were obtained from the 2007 Behavioral Risk Factor Surveillance System (BRFSS).<sup>9</sup> These statistics were based on data on epidemiologic studies from the CDC's *Smoking-Attributable Mortality, Morbidity, and Economic Cost (SAMMEC) System*.<sup>10</sup>
3. ***Deaths due to poor diet and physical inactivity, toxic agents, sexual behavior, and illicit drug use***—U.S. estimates published by the Mokdad et al. study in 2004 were adapted to the District of Columbia. The study employed a broad review of the literature published from 1980 to 2002 to identify epidemiological, clinical, and laboratory studies linking risk behaviors and mortality.<sup>3</sup> Using conservative estimates, the study obtained the number of deaths in the U.S. population due to major risk factors identified in published literature, which included smoking, physical activity, diet, obesity, alcohol, microbial agents, toxic agents, motor vehicles, firearms, sexual behavior, and illicit drug use. However, data for microbial agents, firearms, and motor vehicles used DC specific data and data for smoking used estimates from the CDC study.<sup>9,10,11</sup>

Mokdad et al. use the following formula to calculate U.S. estimates for each disease:  $[(P_o + \sum P_i (RR_i)) - 1] / [P_o + \sum P_i (RR_i)]$ , where  $P_o$  represents the percentage of U.S. individuals not engaging in the risk behavior,  $P_i$  represents the percentage of U.S.

individuals engaging in risk behavior, and  $RR_i$  was the risk ratio for the risk behavior in the general population. To apply these estimates to the District of Columbia, we followed Wisconsin's methodology<sup>4</sup> by obtaining the proportion of the U.S. population residing in the District of Columbia<sup>12</sup> using the U.S. census population estimates.<sup>13</sup> Then this proportion was multiplied by the U.S. estimated numbers of deaths from the Mokdad et al. report and rounded up to the nearest ten. The Mokdad et al. and the Vila et al. (Wisconsin) reports rounded to the nearest hundred. The rationale for rounding DC's estimates to the nearest ten versus hundred is because the total deaths to DC residents are relatively small (5,168 in 2007) and so would provide over estimates of many of the preventable risk factors attributable to preventable deaths in DC.

4. ***Deaths due to alcohol consumption***—Estimates for alcohol-related mortality were obtained from the 2007 BRFSS.<sup>9</sup>
5. ***Deaths due to medical errors***—Vila et al. include the two additional risk factors to Wisconsin using information published by the Institute of Medicine. Wisconsin calculated its estimates by taking the national estimate and multiplying it by the Wisconsin proportion of the U.S. population. The District of Columbia employed this methodology to obtain its estimates.
6. ***Deaths due to uninsurance***—Data obtained from two sources: 1) a report published by the Kaiser Family Foundation<sup>14</sup> that referenced Health Insurance Coverage for DC adult residents aged 19-64 years in 2005; and 2) a study published by the Institute of Medicine in 2002,<sup>8</sup> which provided an estimate on the number of deaths attributable to deaths in the United States. The District of Columbia employed the same death rate for the uninsured U.S. population and applied it to the District uninsured population and then multiplied by the District proportion of the U.S. population.

## RESULTS

### *Causes of Death*

In 2007, there were 5,168 deaths to residents of the District of Columbia.<sup>5</sup> This represented a crude death rate of 887.6 per 100,000 population and an age-adjusted death rate of 865.2 per 100,000 U.S. 2000 standard population. The age-adjusted death rate eliminates the effects of the aging of the population per 100,000 U.S. standard population (Table 1).

The top 10 leading causes of death for the District of Columbia in 2007 based on the underlying cause of death reported on the death certificate were heart disease, cancer, cerebrovascular diseases, accidents, HIV/AIDS, diabetes, homicide (assaults), chronic lower respiratory diseases, alzheimer's disease, and influenza and pneumonia. In 2007, the top 10 leading cause of death accounted for 73.5 percent of all deaths to DC residents. The top three causes—heart disease, cancer, and cerebrovascular diseases—accounted for 52.7 percent (Table 1 and Figure 1).

**Table 1. Number of Deaths and Age-Adjusted Death Rates by Ten Leading Causes of Death: District of Columbia, 2007**

Cause of Death	Number of Deaths	Rate*
Total Deaths	5,168	865.2
1. Heart Disease	1,367	228.6
2. Malignant Neoplasms (Cancer)	1,159	197.0
3. Cerebrovascular Diseases	200	33.2
4. Accidents	200	33.1
5. HIV/AIDS	188	31.8
6. Diabetes	154	25.6
7. Homicide/Assault	166	25.2
8. Chronic Lower Respiratory Diseases	122	21.1
9. Alzheimer's Disease	122	19.1
10. Influenza & Pneumonia	119	19.1
All Other Causes	1,371	246.3

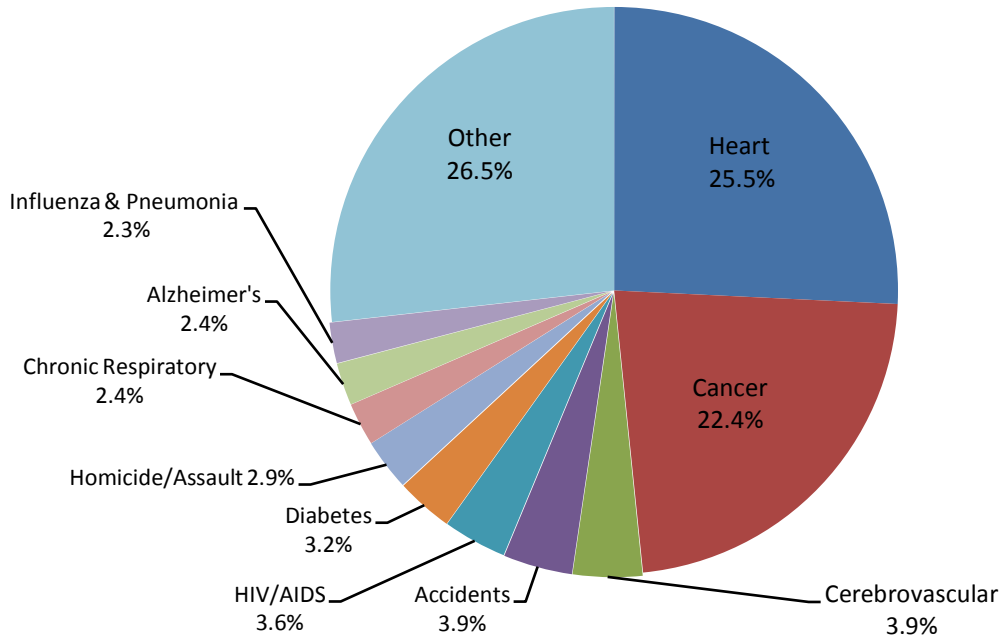
\*Age-Adjusted rates per 100,000 U.S. standard population based on 2007 population estimates.

Note: Leading causes of death based on number of deaths from the list of 113 Selected Causes of Death.

Sources: (1) DC Department of Health, Center for Policy, Planning, and Epidemiology, State Center for Health Statistics, 2009.

(2) Population Division, U.S. Census Bureau, 2007

**Figure 1. Ten Leading Causes of Death in the District of Columbia, 2007**



Source: DC Department of Health, Center for Policy, Planning, and Epidemiology, State Center for Health Statistics, 2009

***Estimate of Preventable Causes of Death***

Using the Mokdad et al. model,<sup>3</sup> the leading causes of preventable death in the District of Columbia in 2007 were tobacco use (16.6 percent of all deaths), poor diet and physical inactivity (15.1 percent), microbial (infectious) agents (4.6 percent), alcohol consumption (2.9 percent), firearms (2.7 percent), and medical errors (2.7 percent). In the District of Columbia, 49.5 percent of all resident deaths resulted from 11 preventable causes (Table 2 and Figure 2).

**Table 2. Number and Percent of Preventable Causes of Deaths:  
District of Columbia Residents, 2007**

Preventable Cause of Death	Number of Preventable Deaths	Percent of Preventable Deaths*	Percent of all Deaths
Tobacco <sup>1</sup>	860	33.6	16.6
Poor diet and physical inactivity <sup>2</sup>	780	30.5	15.1
Microbial (infectious) agents <sup>3</sup>	240	9.4	4.6
Alcohol consumption <sup>1</sup>	150	5.9	2.9
Firearms <sup>3</sup>	140	5.5	2.7
Medical errors <sup>4</sup>	140	5.5	2.7
Toxic agents <sup>2</sup>	110	4.3	2.1
Sexual behavior <sup>2</sup>	40	1.6	0.8
Illicit drugs <sup>2</sup>	40	1.6	0.8
Motor vehicles <sup>3</sup>	30	1.2	0.6
Uninsurance <sup>4</sup>	30	1.2	0.6
Total Preventable Deaths	2,560	100.3	49.5
Total Deaths	5,168	--	100.0

\*Percentage does not add to 100 due to rounding.

Note: Deaths due to motor vehicle accidents include alcohol-related deaths to stress efforts to educate the public and to enforce laws against driving while intoxicated.

Sources: 1. DC Department of Health. Behavioral Risk Factor Surveillance System (BRFSS), 2007.

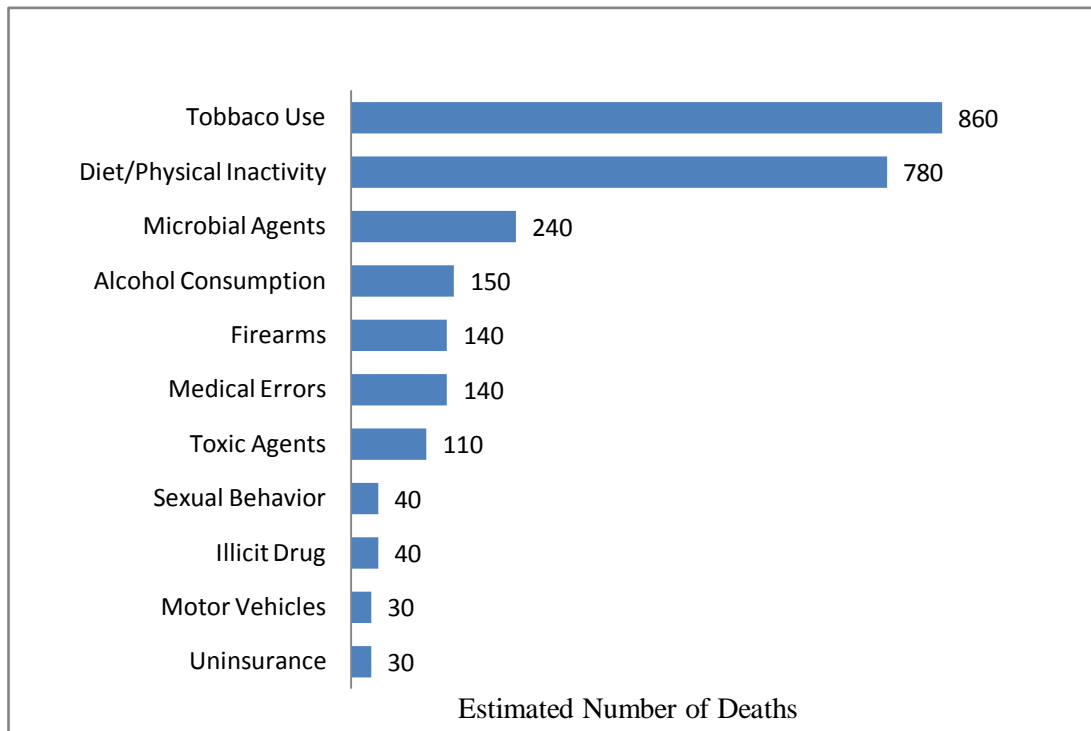
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4. Institute of Medicine. To Err is Human: Building a Safer Health System. Washington, DC: National Academies Press; 2000.

5. Based on 2005 Health Insurance Coverage of DC adult residents aged 19 to 64 years, Kaiser Family Foundation (Appendix 1) and U.S. estimates: Institute of Medicine. Care Without Coverage: Too Little, Too Late. Washington, DC: National Academies Press; 2002.

**Figure 2. Estimated Preventable Causes of Death in the District of Columbia, 2007**



Source: DC Department of Health, Center for Policy, Planning, and Epidemiology, State Center for Health Statistics, 2009.

## Tobacco

(DC Healthy People 2010 Objectives:

- Goal Not Yet Met: Reduce cigarette smoking by adults to 12%; in 2007, the District's rate is 17%.
- Goal Not Yet Met: Increase smoking cessation attempts by adult smokers to 75%; in 2007, the District's rate is 62%.
- Goal Not Yet Met: Increase the proportion of work sites with formal smoking policies that prohibit smoking or limit to separately ventilated areas to 100%; in 2007, the District's rate is 78% for no workplace smoking in public areas and 89% for work areas.)<sup>9</sup>

Although the prevalence of tobacco use has declined over recent years in the U.S., tobacco use is still the leading preventable cause of death, resulting in almost 440,000 deaths each year (38,000 of which are estimated to be from exposure to second-hand smoke).<sup>9</sup> Tobacco is the leading cause of preventable death in the District of Columbia and in the United States. Tobacco use contributed to an estimated 860 deaths annually in the District of Columbia. This estimate was obtained from data based on Smoking-Attributable Mortality, Years of potential Life Lost, and Productivity Losses—United States, 2000-2004<sup>10</sup> and reported in the 2007 BRFSS. Smoking harms almost every organ in the body, resulting in cancer, cardiovascular disease, and respiratory disease.<sup>9</sup>

## Poor Diet and Physical Inactivity

(DC Healthy People 2010 Objectives:

- Goal Not Yet Met: Reduce the proportion of adults who engage in no leisure-time physical activity to 20%; in 2007, the District's rate is 21%.<sup>9</sup>

Routine exercise has been shown to reduce the risk of a variety of diseases, including heart disease, stroke, colon cancer, diabetes, and high blood pressure. Regular physical activity also assists in maintaining healthy weight, bones, muscles, and joints. In addition to assisting with the maintenance of a healthy weight, eating a variety of the recommended servings of fruits and vegetables—excluding French fries, fried potatoes and potato chips—prevents many diseases. These diseases include heart disease, stroke, high blood pressure, cholesterol, certain types of cancer, cataract and macular degeneration, and diverticulitis (an intestinal illness).<sup>9</sup> Poor diet and physical inactivity lead to approximately 780 deaths per year in the District of Columbia based on U.S. mortality estimates for this risk factor.

## Microbial or Infectious Agents

Human immunodeficiency virus (HIV) is excluded from this category and included with sexual behaviors. Infectious agents were defined as salmonella, tuberculosis, influenza, and pathogens causing septicemia, meningitis, and pneumonia.<sup>2,3</sup> These causes of death were obtained from the underlying cause of death reported on the death certificate for DC residents. Infectious agents caused approximately 240 deaths in the District of Columbia. Although microbial (infectious) agents are no longer the leading causes of death in the United States, they still contribute a significant cause of death and are associated with high morbidity.<sup>3</sup> In 2007, pneumonia and influenza was the most significant disease in this category causing 119 deaths and was the 10<sup>th</sup> leading cause of death in the District of Columbia. Increased immunization in older adults against influenza and pneumonia caused the decline in these deaths in the United States.<sup>3</sup>

Transmission may occur through several different mechanisms. Respiratory diseases and meningitis are commonly acquired by contact with aerosolized droplets, spread by sneezing, coughing, talking, or kissing. Gastrointestinal diseases are often acquired by ingesting contaminated food and water.

## Alcohol Consumption

(DC Healthy People 2010 Objectives:

- Goal Not Yet Met: Reduce the proportion of adults engaging in binge drinking of alcoholic beverages to 6%; in 2007, the District's rate is 16%.<sup>9</sup>

Excessive alcohol use (regular and binge drinking) has been shown to cause liver disease, myocardial infarction, stroke, dementia, cancer, unintentional injuries, intimate partner violence, child maltreatment, risky sexual behaviors, miscarriage and stillbirth, alcohol poisoning, and motor vehicle-related accidents. Excessive alcohol use is the third leading lifestyle-related cause of death in the U.S. In 2001, alcohol use was attributed to over 75,000 deaths in the U.S.<sup>9</sup> Annually, alcohol use leads to approximately 150 deaths in the District of Columbia based on U.S. estimates.<sup>3</sup>

## Firearms

Firearms cause approximately 140 deaths in the District of Columbia based on death certificates in 2007.<sup>5</sup> These deaths included intentional self-harm (suicide) by discharge of firearms; unintentional discharge of firearms; discharge of firearms, undetermined intent; and legal intervention (homicide committed by law enforcement officers).

In 2007, the DC Metropolitan Police Department (MPD) reported that 80 percent of homicide was committed using firearms; 85 percent juvenile homicide was committed using firearms; 25 percent of aggravated assaults; and 44 percent of robberies. According to the 1999 Crime Gun Trace Reports, the Bureau of Alcohol, Tobacco and Firearms (ATF) reported the following data about individuals possessing crime guns in the District of Columbia. A crime gun is any firearm that is illegally possessed, used in a crime, or suspected to have been used in a crime. An abandoned firearm may also be categorized as a crime gun if it is suspected it was used in a crime or illegally possessed.

- Juveniles (ages 17 and under) were associated with more than 10 percent of recovered crime guns.
- Youth (ages 18-24) were associated with slightly more than 47 percent of crime guns.
- Adults (ages 25 and older) accounted for nearly 43 percent of recovered crime guns.

The National Shooting Sports Foundation has partnered with the MPD to distribute 9,400 free gun locks in Washington, DC, as part of the national Project ChildSafe initiative. Project ChildSafe is funded by a \$50 million grant from the US Department of Justice and is administered nationally by the NSSF, a trade association for the firearms and recreational shooting sports industry. The program will provide nearly 20 million free gun locks and firearms safety educational materials to individuals and families in all 50 states, the five U.S. territories and the District of Columbia.

## Medical Errors

Deaths due to medical errors accounted for about 140 deaths in the District of Columbia based on U.S. estimates.<sup>3</sup> The Institute of Medicine published a report in 2000, which examined the occurrence of medical errors, and determined that anywhere from 44,000 to 98,000 deaths due to medical error occur each year in the United States along with 1 million injuries.<sup>7</sup> The 10 most common medical errors are: 1) medication errors; 2) abbreviation errors; 3) preventable adverse drug reaction; 4) patient falls; 5) wrong site surgery; 6) IV errors; 7) hospital infection; 8) incorrect diagnosis; 9) equipment failure; and 10) billing errors.

## Uninsurance

In the District of Columbia, a lack of insurance caused approximately 30 deaths each year, based on a report published by the Kaiser Family Foundation<sup>14</sup> on Health Insurance Coverage for DC adult residents aged 19-64 years in 2005 and U.S. estimates reported by the Institute of Medicine in 2002.<sup>8</sup> The 2005 Kaiser Family Foundation report indicated that 16 percent of DC residents were uninsured (Appendix 1). Not having health insurance is a strong barrier to accessing health care services and leads to premature deaths. What difference would health insurance make in health-related outcomes, in general, and premature deaths, specifically, if the uninsured were

provided with coverage? According to the Institute of Medicine, “they would be likely to use more services like timely preventive care and chronic disease care that match professional guidelines. They would also be more likely to have a regular source of care. Most importantly, if adults were insured on a continuous basis, their health would be expected to be better and their risk of dying prematurely reduced. The survival benefits derived from insurance coverage, however, can be achieved in full only when health insurance is acquired well before the development of advanced disease.”<sup>8</sup>

## **Toxic Substance**

Toxic agents [environmental (air pollutants), occupational, food and water] are associated with an increased mortality from cancer, respiratory, and cardiovascular diseases. Toxic agents (substance) accounted for 110 deaths in the District of Columbia, based on U.S. estimates.<sup>3</sup> Nonetheless, Mokdad et al. estimated approximately 55,000 deaths attributable to toxic agents. They pointed out that estimating this number is more challenging than any other risk factors due to limited published research and the challenges in measuring exposure and outcome.<sup>3</sup>

## **Sexual Behavior**

Sexual behavior is associated with an increased risk of preventable disease and disability.<sup>3</sup> Risky sexual behavior (includes HIV/AIDS) accounts for almost 40 deaths in the District of Columbia based on U.S. estimates.<sup>3</sup> Using the sexual behavioral-attributable fraction from the literature, Mokdad et al. estimated that about “20,000 deaths (range, 18000-25,000 deaths) in 2000 were due to sexual behavior—mainly HIV; other contributors were hepatitis B and C viruses and cervical cancer,” due to Human papillomavirus (HPV).

According to BRFSS research, sexual behaviors associated with risk for STD, including human immunodeficiency virus, found that women who become sexually active at an early age are more likely to engage in risky sexual behavior as adults and to have a history of STD. The research suggests that women who became sexually active between the ages of 10 and 14 years were almost 4 times more likely to report having 5 or more sexual partners in the past year (OR=3.8; 95% CI=2.6-5.6); 3 times more likely to report having sex with bisexual intravenous drug-using or HIV-infected men (OR=3.5; 95% CI=2.4-5.0); and twice as likely to report a history of STD within the last 5 years (OR=2.3; 95% CI=1.8-3.0) compared with women who became sexually active when they were 17 years of age or older. Also, controlling for education and duration of sexual activity, Black women were more likely to report a history of STD but less likely to report having 9 or more sexual partners during the past 5 years or a risky partner.

## **Illicit Drug Use**

Referenced in Mokdad et al.'s 2004 report, illicit drug use is associated with suicide, homicide, motor-vehicle injury, HIV infection, pneumonia, violence, mental illness, and hepatitis. Illicit drug use causes approximately 40 deaths in the District of Columbia based on U.S. estimates of 17,000 deaths in 2000.<sup>3</sup> However, because illicit drug use information is not always reported on the death certificate, this number is most likely an underestimate.

The Mayor's Interagency Task Force on Substance Abuse Prevention, Treatment and Control Report in September 2003 reported that the number one illicit drug use in the District of Columbia is marijuana and a significant number of residents used cocaine. The report also noted that a resurgence of PCP use began in 2001.

## **Motor Vehicles**

Motor vehicle accidents cause about 30 deaths in the District of Columbia based on information reported on the death certificate in 2007. These accidents included passengers and pedestrians as well as alcohol-related crashes. Ten tips to avoid motor vehicle accidents are: (1) Avoid drinking and driving. (2) Minimize distractions such as reading newspapers or talking on the cell phone when driving. (3) Properly maintain vehicles. (4) Do not encourage aggressive drivers. (5) Leave a safe distance between your cars and others. (6) Maintain a constant speed. (7) Adjust mirrors properly and check the side and rear-view mirrors every 15 seconds. (8) Take defensive driving classes to improve your ability to drive and be better prepared for the unpredictable behavior of other motorists. (9) Proceed with great caution through intersections. (10) Be sufficiently aware of road conditions and be more visible.<sup>15</sup>

## DISCUSSION

The results from this report showed that about one-half of all DC resident deaths in 2007 can be attributed to a number of largely preventable behaviors and exposures. Cause-of-death ranking is a popular method of presenting mortality statistics and is a useful tool for illustrating the relative burden of cause-specific mortality, but it must be used cautiously with a clear understanding of the limitations underlying the method.

One limitation of the analysis is that there may be some overlap in the various categories examined in estimating the total number of deaths due to preventable causes. For example, it is possible that deaths due to lack of insurance may have been caused by one of the other causes of deaths such as tobacco, poor diet and physical inactivity, and microbial agents. While the attempt is to move away from looking at merely the causes of death as reported on the death certificates, one should consider that these documented causes of death are mitigating factors and other social risk factors have a large impact on the preventable causes of death as identified in this report. Socioeconomic risk factors such as education, income, social support, unemployment, and the environment impact the overall health of DC residents.

It is important to note that these estimates of preventable causes of death in the District of Columbia are based on evidence from epidemiological, clinical, and laboratory studies. Nonetheless, they indicate that reducing or eliminating preventable risk factors could add many years of life for DC residents thus achieving the goal of increased life expectancy in DC. It is not a secret or mystery that these risk factors contribute to premature deaths—the challenge is to educate people to change behaviors; and to provide the skills and a healthy environment to be able to choose and maintain healthy behaviors.

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## APPENDIX 1

### Health Insurance Coverage of DC Adult Residents (19 to 64 years of age), 2005

Source of Insurance	Males		Females %		Total	
	No.	%	No.	%	No.	%
<b>Employer</b>	99,292	58.0	117,328	62.0	216,620	60.0
<b>Individual Plan</b>	11,684	7.0	14,225	8.0	25,908	7.0
<b>Medicaid</b>	19,789	12.0	32,633	17.0	52,422	15.0
<b>Other public provider</b>	3,581	2.0	2,408	1.0	5,989	3.0
<b>None/uninsured*</b>	36,669	21.0	22,253	12.0	58,922	16.0
<b>Source: Kaiser Family Foundation</b>						
<b>Note: Percentages may not add to 100.0% because of rounding.</b>						
<b>* Persons enrolled in DC Healthcare Alliance are included in this category.</b>						

## APPENDIX 2

### Estimated Population for 2007 by Sex: District of Columbia and the United States

Sex and Age	2007 Population Estimate District of Columbia	2007 Population Estimate United States
<b>Both Sexes</b>	<b>588,292</b>	<b>301,621,157</b>
<b>Under 5 years</b>	<b>36,215</b>	<b>20,724,125</b>
<b>5 to 9 years</b>	<b>28,558</b>	<b>19,849,628</b>
<b>10 to 14 years</b>	<b>29,207</b>	<b>20,314,309</b>
<b>15 to 19 years</b>	<b>40,355</b>	<b>21,473,690</b>
<b>20 to 24 years</b>	<b>53,093</b>	<b>21,032,396</b>
<b>25 to 34 years</b>	<b>107,721</b>	<b>40,590,926</b>
<b>35 to 44 years</b>	<b>85,206</b>	<b>43,161,289</b>
<b>45 to 54 years</b>	<b>76,435</b>	<b>43,874,760</b>
<b>55 to 59 years</b>	<b>34,529</b>	<b>18,236,259</b>
<b>60 to 64 years</b>	<b>27,232</b>	<b>14,475,817</b>
<b>65 to 74 years</b>	<b>35,851</b>	<b>19,352,149</b>
<b>75 to 84 years</b>	<b>23,214</b>	<b>13,023,511</b>
<b>85 years and over</b>	<b>10,676</b>	<b>5,512,298</b>

Source: 1. US Census Bureau, Population Estimates Program, Table DP-1 (US).

2. US Census Bureau, Population Estimates Program, Release Date: May 1, 2008 (DC).