

WORKING P A P E R

Assessing Health and Health Care in the District of Columbia

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Executive Summary

S.1 Background

As a result of the recent settlement of tobacco litigation, the District of Columbia has more than \$200 million available to invest in the health of the city's residents. A Health Care Task Force, convened in 2006 by then-Mayor Anthony Williams, considered alternative ways to invest the available funds. The Task Force crafted several options that included investment in additional or improved hospital capacity, ambulatory care, and health care system improvement, but agreed that research was needed before final investment decisions could be made. The District contracted with the RAND Corporation to perform a study of health and the health care delivery system in the District. The goals of RAND's evaluation are to:

- (1) Conduct a comprehensive health needs assessment for Washington DC;
- (2) Assess the quality and accessibility of the District's health care delivery system for individuals with urgent or emergent medical needs; and
- (3) Use information from those assessments to identify and assess various policy options for improving the health care delivery system.

This report summarizes the findings related to the first two goals. The George Washington University, through a subcontract with RAND, performed research related to goal (2). A final report, to be issued in Spring 2008, will include findings relevant to goal (3).

Legislation passed in December 2006 allocated some of the tobacco settlement funds, including \$20 million for cancer prevention, \$10 million for anti-smoking efforts, \$10 million for chronic disease treatment, \$6 million for establishing a regional health information exchange, and \$2 million to buy new ambulances; legislation passed in 2007 further authorized the use of \$79 million for a public/private partnership between the District and Specialty Hospitals of America for the revitalization of Greater Southeast Community Hospital. Allocation of the remaining funds, to be invested in hospital and/or ambulatory care improvements, was reserved until this study was completed.

S.2 Approach

Our approach is two-fold; we focus on (1) characterizing health outcomes and (2) characterizing health and medical care. Our focus on health outcomes and health care reflects the specific interest of the District in identifying gaps in health and medical care needs so that investments in the hospital and ambulatory care service systems can be optimized.

We conducted new analyses of existing survey and administrative data, and reviewed findings from previous studies. In our assessment of emergency services, we interviewed key stakeholders, conducted a focus group with emergency medical services (EMS) providers, and completed a survey of the eight acute care centers in the District.

In what follows, we first summarize socio-demographic characteristics of the District for key geographical constructs that we use throughout the report—the District's eight wards and five

Public Use Microdata Areas (PUMAs). (PUMAs are created by the U.S. Census Bureau and comprise areas that contain at least 100,000 people and are wholly enclosed within a state or territory). This demographic profile is helpful in understanding the results of our analysis. We then highlight our key findings, provide tables and figures related to the key findings, identify a number of important gaps in knowledge, and draw preliminary implications from our findings.

S.3 Socio-Demographic Characteristics of the District by Ward and PUMA

Table S.1 presents demographic characteristics of each of the District’s 8 wards using data from the 2000 Census.

Table S.1 Socio-Demographic Characteristics by Ward, 2000

Characteristic	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8
Population (in thousands)	80.0	82.8	79.6	71.4	66.5	65.5	64.7	61.5
Age 0 to 17 years (%)	17.0	10.6	12.9	20.6	21.8	19.1	27.9	36.7
Age 65 years and older (%)	7.7	9.1	13.8	17.1	17.8	11.4	14.0	6.4
African American (%)	43.2	30.4	6.3	77.9	88.2	68.7	96.9	91.8
Caucasian (%)	35.2	56.2	83.6	10.3	7.9	27.2	1.4	5.8
Hispanic (%)	23.4	8.6	6.5	12.8	2.5	2.4	0.9	1.5
Family income <FPL (%)	20.0	10.9	2.7	7.9	14.3	19.2	21.6	33.2
Family income < 1.85x FPL (%)	37.8	21.5	5.5	18.0	28.1	31.8	36.5	51.7
Median family income (in \$1000s)	58	132	191	81	55	68	45	35

Source: Census 2000. FPL is Federal poverty line.

The District is composed of five PUMAs, as depicted in Figure S.1. Table S.2 summarizes changes in socio-demographics of the District at the PUMA level between 2000 and 2006.

Figure S.1 DC PUMAs and Wards

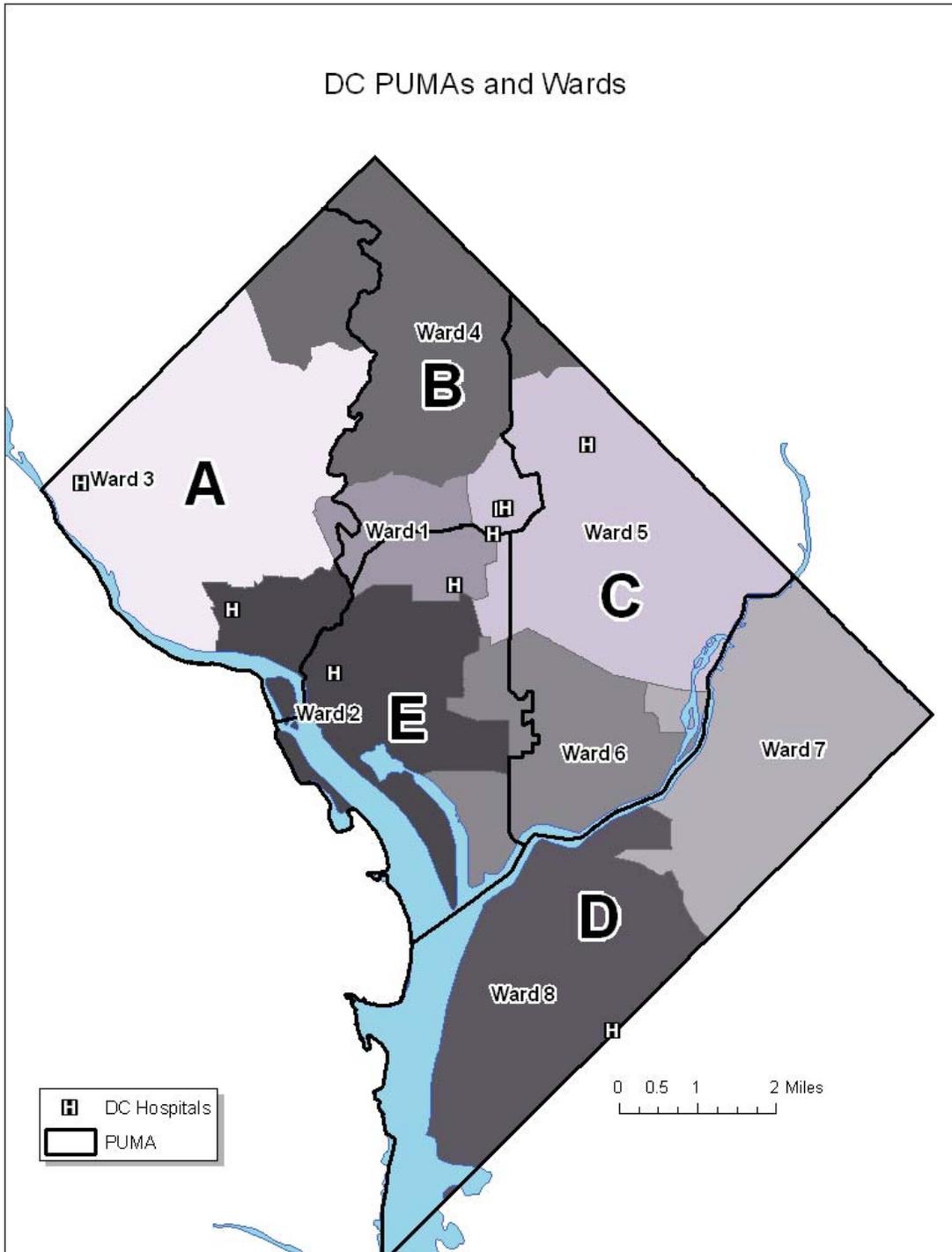


Table S.2 Socio-Demographic Changes in the District, 2000-2006

Characteristic	DC		PUMA A		PUMA B		PUMA C		PUMA D		PUMA E	
	2000	2006	2000	2006	2000	2006	2000	2006	2000	2006	2000	2006
0 to 17 years	20.1	19.7	11.7	15.9	20.3	15.6	19.3	16.4	31.8	34.4	13.5	10.7
18 to 39 years	38.5	37.6	43.4	39.8	36.3	37.9	34.7	35.3	30.8	28.8	50.4	49.6
40 to 64 years	29.2	30.4	30.9	29.7	30.5	33.2	31.2	33.0	27.3	27.6	26.4	29.6
65 years and older	12.2	12.3	14.0	14.6	13.0	13.3	14.8	15.4	10.1	9.2	9.7	10.1
High school graduate or higher	77.8	84.3	95.9	97.3	71.9	77.2	76.2	83.8	68.9	78.0	77.5	87.0
Bachelors degree or higher	39.1	45.9	79.0	83.4	32.0	38.0	31.1	41.5	10.5	13.8	47.1	58.5
Caucasian	27.8	31.6	80.2	79.1	14.2	19.7	18.4	25.1	3.1	2.8	34.1	44.0
African American	59.4	54.9	5.6	6.7	60.8	53.9	76.2	66.3	94.2	92.1	45.7	39.0
Asian	2.6	3.4	5.3	5.5	2.1	3.3	1.0	2.1	0.3	0.5	5.4	6.6
Two or more races	1.7	1.3	1.9	1.1	2.1	1.7	1.4	1.1	0.9	1.4	2.3	1.4
Hispanic or Latino	7.9	8.2	6.1	6.7	20.2	20.8	2.5	4.9	1.2	2.9	11.9	7.8
Foreign-born, in U.S.> 5 years	8.6	8.5	11.8	11.1	17.1	17.8	3.5	4.4	1.3	--	12.4	9.5
Foreign-born, in U.S. < 5 years	4.2	4.2	6.3	5.7	7.6	8.8	1.4	1.7	0.4	--	7.1	5.9
Native-born	87.1	87.3	81.9	83.2	75.3	73.4	95.1	93.8	98.3	97.4	80.5	84.5
Language other than English at home	16.8	15.3	22.0	19.8	28.0	27.3	8.3	9.2	4.6	4.7	24.8	19.2
Income < 100% poverty level	20.2	19.6	8.0	8.8	16.3	13.5	18.8	14.4	30.5	32.0	22.9	23.6
Income 100-185% poverty level	13.6	11.8	5.1	3.7	14.9	13.5	13.2	11.2	17.0	18.5	15.6	8.4
Income > 185% poverty level	66.2	68.6	86.9	87.4	68.9	73.0	67.9	74.5	52.4	49.5	61.5	67.9

Notes: Income is individual level; bolded figures indicate statistically significant change from 2000 to 2006 (with 95 percent confidence), 2000 data are from the 2000 Census; 2006 data are from the 2006 American Community Survey. Cells with dash marks indicate not estimable.

S.4 Key Findings

Findings from our study of health, health care, and the emergency care system in the District of Columbia include the following:

- (1) Among adult District residents, more than one in four adults reported having hypertension, making it the most common among the chronic diseases reported.**
 - Following hypertension, in order of prevalence, are asthma (10 percent), diabetes (8 percent), heart disease (5 percent), and cerebrovascular disease (3 percent).
 - Over half of adult District residents qualify as overweight or obese, and nearly one-quarter qualify as obese.
- (2) District-wide, mortality rates from heart disease and cancer were higher than those from other causes, although cancer and HIV/AIDS contribute the most to rates of premature mortality.**
- (3) Measured health outcomes among District residents are comparable to those among residents of other “benchmark” cities that are socio-demographically similar to D.C (such as Baltimore, Maryland and Atlanta, Georgia); although rates of mortality from diabetes are higher in the District compared to those in other cities.**
- (4) Among District children, 36 percent between ages 6 and 12 were overweight, based on reported height and weight, while 17 percent between ages 13 and 17 were overweight. Twelve percent were reported to have asthma.**

- 9 percent of DC children were reported to have a dental health problem.
- 11 percent of parents reported that their children require services for a behavioral health issue.
- 8 percent of children in DC were estimated to have a serious emotional disturbance (in 2000).

(5) Among adults, residents of Wards 7 and 8 had generally higher rates of chronic disease, poor health status, and premature mortality.

- However, other areas of the city also have poor health outcomes. Among adults, Ward 5 had rates of hypertension and overweight/obesity that exceeded the city-wide average.
- Breast and prostate cancer incidence rates among adults were highest in Wards 4 and 8. The cervical cancer incidence rate was highest in Ward 7 and for colon cancer, Ward 6.

(6) Among children, health outcomes were better among those in Ward 3 than in other wards.

- Asthma prevalence among children was highest in **Ward 7**, with 18 percent of children reported to have asthma of any severity.

(7) Rates of health insurance coverage among adults were higher in the District than in comparable cities, probably largely as a result of the Alliance.

(8) Despite a relatively high rate of insurance coverage, about 20 percent of District residents—children and adults—reported no usual source of care.

- Lack of a usual source of care was greater among uninsured compared to insured adults.
- Among adults, PUMA C (which includes Wards 5 and 6) was associated with having a relatively low probability of having a usual source of care among adults.
- Among children, those with public insurance were less likely to report having a usual source of care compared to those with private insurance.
- Among children, PUMAs D (which includes Wards 7 and 8) and B (which includes most of Ward 4 and some of Wards 1 and 5) were associated with relatively low rates of having a usual source of care, compared to other PUMAs.

(9) Rising rates of admissions for ambulatory care sensitive conditions¹ over time among youth and adults aged 40-64 suggest worsening access to non-hospital-based care in recent years. Similarly, rates of emergency department visits for conditions that are primary care sensitive have risen for adults 18-64.

(10) Admissions for ambulatory care sensitive conditions were highest in 2006 among adults in PUMA D (which includes Wards 7 and 8) and among children in PUMA B (which includes most of Ward 4 and some of Wards 1 and 5).

- Among children, PUMA D (which includes Wards 7 and 8) was associated with a low probability of having a well child visit or dental care. PUMA C (which includes Wards

¹ These are conditions, such as asthma or heart failure, which can usually be treated by timely access to high quality outpatient care, thereby preventing the need for hospitalization

5 and 6) was associated with having a low probability of any well child visit, any acute care visit, or any dental care.

- Among adults, the probability of having a check-up in the last two years was relatively low among residents of PUMA B (which includes most of Ward 4 and some of Wards 1 and 5) compared to those in other locations.

(11) Rates of primary care use among individuals enrolled in public insurance programs are low, as are rates of specialty use among those with chronic conditions. Rates of inpatient hospital stays and ED visits are relatively high.

- Among children enrolled in Medicaid managed care, rates of primary care use ranged from about one third among older children to just over half among children 0-5 years old. Between 2 and 4 percent had an inpatient stay during the course of a year. Among children 0-5 years who are covered by Medicaid, 42 percent had an ED visit during the year. Approximately one-quarter of children 6-17 years old who are enrolled in Medicaid had an ED visit during the year .
- Among adults covered by Medicaid, 40 percent had an ED visit during a year period. Approximately 14 percent of adult Medicaid enrollees had an inpatient stay during a one-year period.
- While the majority of individuals with chronic conditions who are enrolled by Medicaid or the Alliance have at least one visit to a primary care provider, few see a specialist with expertise in treating their condition. Between about half and three-fourths of these individuals use the ED at least once. Rates of inpatient hospital use among with those with selected chronic conditions (such as heart disease, HIV/AIDS, asthma or diabetes) ranged from 23 to 34 percent.

(12) From 2000-2006, rates of inpatient hospital use by DC residents remained fairly steady, while rates of ED use by District residents increased 7 percent between 2004 and 2006, with most of the increase driven by greater use among District residents ages 40-64.

(13) Overall primary and specialty care supply measures are not appreciably different from benchmark rates, but the distribution of providers does not appear commensurate with population need, and the availability of providers for vulnerable populations was difficult to measure.

(14) The average occupancy rate was at or below 70 percent at four hospitals in 2006, and was between 73 and 85 percent for three other hospitals. Only one hospital, Children's National Medical Center, had occupancy rates at or near 100 percent.

- In all areas of the city, residents appear to have a choice in which hospital they go to, as residents from every zip code (or ward) used a variety of hospitals.
- The supply of hospitals and hospital beds in the District was in the range of other benchmark cities.

(15) About one-fourth of inpatient admissions among children and among adults 40-64 are ambulatory care sensitive. More than half of ED visits (that did not result in an inpatient admission) are classified as primary care sensitive across all age groups, and the percentage of ED visits that are PCS is highest among children.

(16) The overall demand for District emergency services has increased only modestly in recent years.

- The volume of EMS runs was approximately eight percent greater in 2006 than 2000.
- The number of ED visits appears to have increased between 2000 and 2001, although data from DC General, which are included in ED visit estimates, may be incomplete for these years. Since 2004, ED utilization at District hospitals increased 6.5 percent.
- We were unable to fully explain the increase in diversion, which nearly doubled between 2000 and 2006.²

(17) Patients with serious, acute conditions, such as heart conditions, strokes, and major trauma, are sometimes transported to hospitals that are not best suited to meet their needs.

- This is a particular problem for residents in Wards 7 and 8 transported to Greater Southeast.

(18) There is little evidence of a single, unified vision of high quality pre-hospital and hospital emergency services and there are few available measures of the quality of emergency care in the District.

- Hospital and DC Fire and Emergency Medical Services leaders appear to know little of each other's challenges.

S.5 Selected Tables and Figures

Tables S.3 and S.4 provide selected indicators of health outcomes among adult and youth District residents, city-wide and by Ward.

² Diversion is when a hospital can only accept the sickest "priority 1" patients.

Table S.3 Selected Indicators of Adults' Health (2004-2006)

Health Outcome	DC	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8
<i>Chronic Conditions</i>									
Heart disease (%)	4.8	3.1*	3.1**	3.9	6.0	5.6	4.8	6.4	3.4
Hypertension (%)	27.1	22.7*	15.4**	13.9**	30.4	32.5**	28.2	37.6**	35.5**
Cerebrovascular Disease (%)	2.8	1.8	1.6**	1.2**	4.2	3.2	2.8	4.8	2.9
Diabetes (%)	8.1	6.0*	5.0**	3.3**	9.8	10.3	9.2	12.2**	11.0*
Current Asthma (%)	10.0	8.4	9.7	8.3	11.6	10.8	8.2	12.2	9.9
Any chronic condition(%) [^]	37.1	30.0**	23.4**	24.6**	39.0	43.5**	39.4	51.2**	45.1**
Obese (%)	22.5	17.4**	13.7**	9.3**	30.5**	29.4**	23.3	29.4**	33.3**
Overweight or obese (%)	54.6	47.9*	39.1**	38.1**	62.3**	61.4*	58.0	65.4**	71.2**
Disability (%)	16.3	17.0	14.2	16.3	19.6	16.9	15.3	16.6	14.9
<i>Premature Mortality (age adjusted, per 100k, among those 18-64 years old) ^(a)</i>									
All cause	515	505	476	140	461	652	509	696	789
Heart disease	45	45	73	16	67	76	84	103	128
Cancer	109	133	114	57	114	98	83	166	118
Hypertension	26	20	27	4	25	31	33	29	45
HIV/AIDS	59	81	60	4	28	99	44	77	104
Cerebrovascular Disease	16	16	13	2	15	18	20	18	33
Diabetes	14	16	14	6	6	20	10	24	17
Accidents	38	29	36	17	34	51	28	47	71

Notes: Authors' analyses of BRFSS data unless otherwise noted; ** Significantly different from the city mean at the .05 level, * at the .10 level; [^]Includes asthma, diabetes, stroke, heart disease, and hypertension; (a) Analysis of mortality data from DC Department of Health. Mortality rates are population-based; thus standard errors and statistical significance not shown.

Table S.4 Selected Indicators of Children's Health (2003)

	DC	Ward 1	Ward 2	Ward 3	Ward 4	Ward 5	Ward 6	Ward 7	Ward 8
Current asthma (any severity) (%) [†]	11.9	7.6*	5.0**	3.9**	9.1	14.9	12.6	17.9**	12.1
Overweight among 6-12 yrs. (%)	36.3	35.4	25.5	10.8**	30.4	36.5	49.7	36.4	44.2
Overweight among 13-17 yrs (%)	17.2	10.3*	16.4	7.6	10.4	20.3	27.0	13.7	20.6
Limitation in activity or function (%)	7.4	4.8	2.9**	2.8**	5.7	5.0	10.2	10.8	8.6
Any chronic condition among 6-12 years (%) ^(a)	52.5	39.5*	40.8	48.3	45.1	57.9	54.9	62.1*	52.2
Any chronic condition among 13-17 years (%) ^(a)	52.4	38.5	46.4	47.2	54.4	62.7	40.8*	55.3	58.6
Behavioral health issue needing treatment (%)	10.5	10.6	8.0	8.0	7.1	14.7	11.7	12.0	7.9
Dental problem (%)	8.5	11.3	9.3	2.1**	8.7	9.2	10.4	8.6	5.8*

*Authors' analyses of data from the National Survey of Children's Health. ** statistically significant difference from city-wide mean at .05 level; * statistically significant difference from city-wide mean at .10 level; † Asthma rates are among all children. (a) Includes asthma, bone or joint problems, diabetes, developmental delay or physical impairment, respiratory allergy, food or digestive allergy, eczema, severe headaches, stuttering or speech problems, chronic ear infections, attention deficit disorder, depression, anxiety, behavioral or conduct problems, or autism.*

Table S.5 Access to Health Care Among District Residents

Measure	Adults	Children
	(2006)	(2003)
	%	%
Insured (any source)	91.3	95.5
Uninsured	8.7	4.5
Insured—private	--	47.2
Insured-public	--	48.3
No regular source of care	19.9	19.8
No regular source of care among the uninsured	63.6	--
No regular source of care, among insured	15.7	--
No regular source of care among publicly insured	--	22.6
No regular source of care, among privately insured	--	14.2

Source: Authors' analyses of 2006 BRFSS data for adults and 2003 NSCH data for children. Dashes indicate data are not available or not sufficient for estimation.

Figures S.2 and S.3 depicts trends in ambulatory care sensitive inpatient hospital admission rates for District youth and for District adults ages 40-64.

Figure S.2 Trends in Ambulatory Care Sensitive Admission Rates by PUMA Among District Residents Ages 0-17

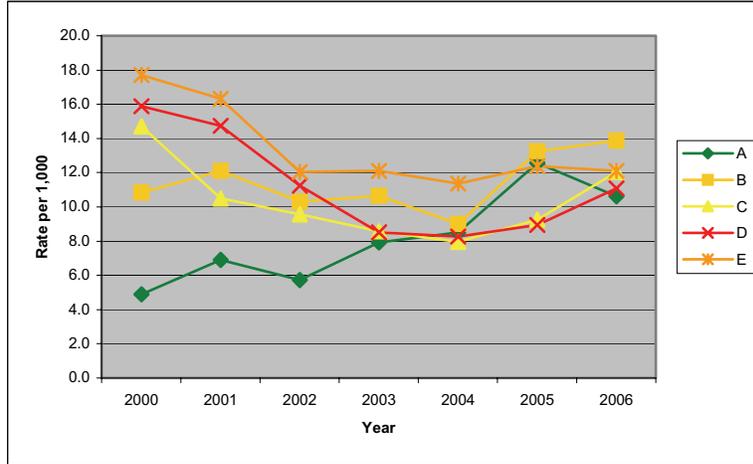


Figure S.3 Trends in Ambulatory Care Sensitive Admission Rates by PUMA Among District Residents Ages 40-64

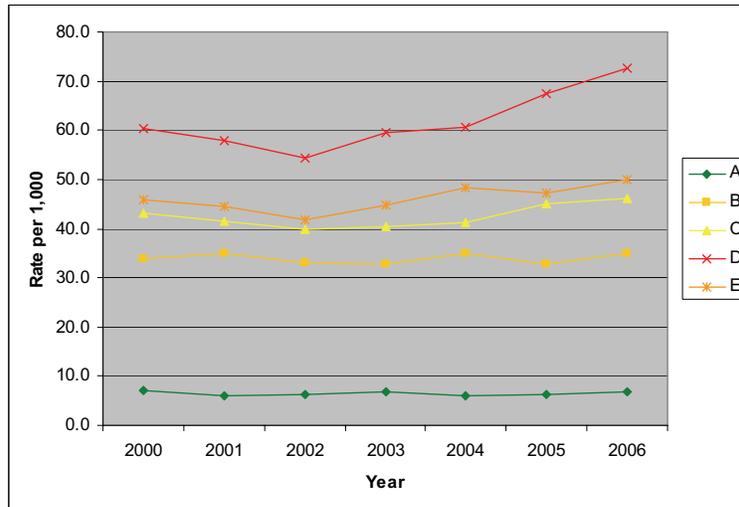


Table S.6 classifies inpatient admissions into those that are ambulatory care sensitive and those that are not.

Table S.6 Classification of Inpatient Admissions Among DC Residents (2006)

Classification	0-17	18-39	40-64	65+
Non Ambulatory Care Sensitive	73%	88%	75%	70%
Ambulatory Care Sensitive	27%	12%	25%	30%

**Source: Authors analyses of DCHA data.*

Table S.7 classifies emergency department visits into a variety of categories.

Table S.7 Classification of ED Visits Among District Residents (2006)

Classification	0-17	18-39	40-64	65+
Non-emergent (a)	23.9	25.1	23.5	21.3
Emergent, primary care treatable (b)	24.1	22.6	21.7	21.3
Emergent, preventable/avoidable (c)	9.7	6.9	9.1	9.0
Emergent, not preventable/avoidable	6.2	10.2	11.6	14.0
Injury	24.5	23.3	18.5	18.8
Mental Health Related	1.7	1.9	2.4	1.2
Alcohol Related	0.1	1.4	2.8	1.1
Drug Related (excluding alcohol)	0.1	0.2	0.3	0.0
<i>Total</i>	<i>90.3</i>	<i>91.6</i>	<i>89.9</i>	<i>86.7</i>
<i>Unclassified</i>	<i>9.7</i>	<i>8.3</i>	<i>10</i>	<i>13.3</i>
Primary care sensitive (sum of a-c)	57.7	54.6	54.3	51.6

**Source: Authors analyses of DCHA data. Excludes ED visits that result in an inpatient admission.*

Table S.8 summarizes the distribution across hospitals of EMS transports for various conditions.

Table S.8 Distribution of EMS Transports for Stroke, High Acuity Cardiac and High Acuity Trauma Calls, 2005

Hospital	Stroke (%)	High Acuity Cardiac / Chest Pain (%)	High Acuity Trauma (%)
Children's National Medical Center	0.5	1.3	6.9
George Washington University Hospital	15.4	16.8	17.4
Georgetown University Hospital	4.4	6.2	4.7
Greater Southeast Community Hospital	13.7	15.7	14.3
Howard University Hospital	10.0	15.0	23.7
Providence Hospital	20.2	16.4	7.7
Sibley Memorial Hospital	4.9	3.6	2.9
Washington Hospital Center /MedStar	25.5	21.5	23.0
Other		3.5	5.5

Source: DC FEMS CAD Data, CY 2005.

S.6 Gaps in Knowledge

In what follows, we highlight a number of gaps in knowledge. These knowledge gaps are largely due to gaps in data.

- ◆ **Little is known about children’s health status and access to care.** The only available data are from the 2003 National Survey of Children’s Health (NSCH), for which we needed to conduct analysis at the secure Research Data Center in Hyattsville, Maryland. While the 2007 wave of the NSCH is nearly complete, the District should consider a more regularly collected and accessible mechanism to gather information on access to care and health status for children.
- ◆ **Available information about insurance status among adults in the District is inadequate.** The Behavioral Risk Factor Surveillance System (BRFSS) only asks about whether an individual has insurance but about not type of insurance. Further, the failure to ask about specific insurance sources by program name likely results in some misreporting by Alliance enrollees.
- ◆ **Little is known about the quality of emergency medical services in DC.** Response times have been an important metric historically. But quality in health care has moved beyond just a question of timeliness. Quality is now thought to include six domains: safety, timeliness, efficiency, effectiveness, equity and patient-centeredness. Currently, some data exist on EMS timeliness and a little is known about hospital emergency care effectiveness. Not much in the way of quality of emergency services is measured in the District, and we have seen no imminent plans to do so, despite the District government’s major role in financing these services
- ◆ **Available data on mental health prevalence and mental health and substance abuse service use are extremely limited.** Data from the National Survey of Drug Use and Health provide sub-city estimates of the prevalence of substance abuse disorders, but no comparable data exist for mental health. As a result, we had to rely on indirect estimates of mental health prevalence from outdated sources. Given the importance of these problems for the District’s population and their implications for health care and for quality of life, productivity, employability and safety, the District would benefit from developing mechanisms to regularly monitor mental health needs and access to mental health and substance abuse services.
- ◆ **Provider supply could be measured with more precision if reliable data on practice time in the District and population served by type of insurance were available.**
- ◆ **Differences in data formats and availability of Medicaid and Alliance data from managed care organizations make it less useful than it could be.** The District should, as part of its managed care organization (MCO) contracting process, work with MCOs to ensure that progress is made towards standardization of data in the future.
- ◆ **The lack of timely analysis of data with which to monitor the health of the District should be addressed.** Such data clearly exist (e.g., vital statistics, cancer statistics and BRFSS), but analysis of them are often several years out of date.

S. 7 Preliminary Implications

Our forthcoming final report will address policy approaches to the problems identified. However, we offer some preliminary insights from our findings.

1. **The relatively high rates of use of ED and inpatient hospital services among Medicaid/Alliance enrollees and rates of ambulatory care sensitive admissions and primary care sensitive emergency department visits may reflect inadequacies in the supply or effectiveness of primary and specialty care, inappropriate care-seeking patterns, or supply-sensitive demand.** Reducing hospital use by addressing these issues may provide additional hospital and emergency department capacity. Planning for any new hospital capacity must consider whether efforts to reduce use could be successful and the extent to which supply-sensitive demand could generate more hospital use.³
2. **The District’s hospital system does not appear to be operating on the brink of saturation.** Over the last six years, inpatient admission rates to District hospitals have been relatively flat; rates of ED visits to District hospitals have increased only moderately since 2004; hospital occupancy rates have averaged about 75% with only one hospital operating at near 100 percent capacity (Children’s); patients from each zip code within the District appear to have a choice in hospital destination, as shown by the diversity of hospitals which they use; and the supply of hospital beds and hospitals per population and per square mile are within the range of benchmark cities. However:
 - a. Disruption at Prince George’s Hospital Center could have a dramatic regional impact; and
 - b. Steps need to be taken to ensure that District residents in emergency situations are taken to hospitals with the appropriate facilities to care for them, and/or that hospitals they are taken to develop broader capacities for treating conditions requiring emergency care.
3. **There appears to be considerable room for improvement in quality of care and its measurement across the various types of care—emergency, inpatient, or outpatient—and for particular providers.**
4. **Addressing problems in the availability of outpatient care—both primary care and specialty services—will need to consider not only the appropriate location for those providers, but what incentives might help patients use care appropriately and what will increase provider willingness to serve populations in greatest need.**
5. **Coordination of efforts between hospitals and Fire and Emergency Medical Services (FEMS) has the potential to better serve District residents.** Further, while DC FEMS has aggressive plans for reducing demand for EMS, other initiatives to address core aspects of quality, such as pain management, trauma management, advanced airway management and cardiac arrest survival are also needed.

³ Supply-sensitive care is care whose frequency of use is not determined by well-articulated medical theory or scientific evidence (Center for the Evaluative Clinical Sciences, Dartmouth Atlas Project, www.dartmouthatlas.org). .

6. **The dynamics of change since 2004 need to be better understood.** For many of the measures we studied, 2004 was a turning point. Additional study is required to understand what forces led to the changes in 2004 and beyond.

Future analysis will be aimed at identifying a set of recommendations to improve access to appropriate care that meets population needs and to promote care-seeking at the kinds of locations that are most appropriate. Our subsequent report will also make recommendations about the use of tobacco settlement funds to strengthen the health care system in the District.