

Non-Emergent and Preventable ED Visits, FY05

This issue of *Analysis in Brief* examines non-emergent and preventable emergency department (ED) visits using Fiscal Year 2005 (FY05), October 1, 2004 to September 30, 2005, data and explores the factors that may contribute to differences in ED usage rates among Massachusetts residents. It also highlights policy questions related to access to primary care and the health care seeking patterns of Massachusetts residents. These analyses are based on data from DHCFP's Outpatient Emergency Department Database for FY05. The database includes information collected by DHCFP since FY02 on all outpatient ED visits to Massachusetts acute care hospitals and satellite emergency facilities. Only information on patients discharged as outpatients is available from this database; ED visits resulting in hospital admissions are not included. There were no changes in the pattern of ED use for Massachusetts residents between FY02 and FY05.

Methodology

The Division conducted the analyses for this report based upon the New York University Emergency Department data algorithm developed by John Billings, which classifies ED visits according to the following acuity categories:¹

- *Non-emergent.* Cases where immediate (within 12 hours) care is not required (e.g., sore throat, back pain, ingrown toenail, eczema, and attention to dressings).
- *Emergent, but primary care treatable.* Care is needed within 12 hours, but care could be provided in a typical primary care setting (e.g., infant with a 102° fever, nose-bleed, abdominal pain, acute bronchitis, painful breathing).

- *Emergent, ED care needed but preventable/avoidable.* Immediate care in an ED setting is needed, but the condition potentially could have been prevented or avoided with timely and effective ambulatory care (e.g., asthma, cellulitis, emphysema, pelvic inflammatory disease, diabetic ketoacidosis, etc.).
- *Emergent, ED care needed, not preventable/avoidable.* Immediate care in an ED setting is needed and the condition could not have been prevented/avoided even with effective ambulatory care (e.g., heart attack, appendicitis, kidney stone, multiple trauma, and chest pain). This category includes visits with a principle diagnosis relating to injury, mental health, alcohol and drug related, and visits with an unclassified diagnosis that does not fall into one of the other categories.

The first three categories are collectively referred to as preventable/avoidable or primary care sensitive (PCS) conditions/visits.

Primary Care Sensitive (PCS) ED Visits and their Costs

In FY05 there were 2,185,995 documented ED visits by Massachusetts residents that did not result in admission. Using Billings' algorithm, an estimated 21.0% of all FY05 outpatient ED visits by Massachusetts residents were attributable to "non-emergent" conditions (see Figure 1 on page 2), while 19.5% were designated as "emergent, but primary care treatable," and 6.0% were designated as "emergent, ED care needed but preventable/avoidable." In all, 1,017,364 visits or 46.5% of outpatient ED visits were for PCS conditions.

Figure 1: Outpatient ED Visits and Charges by Categories, FY05

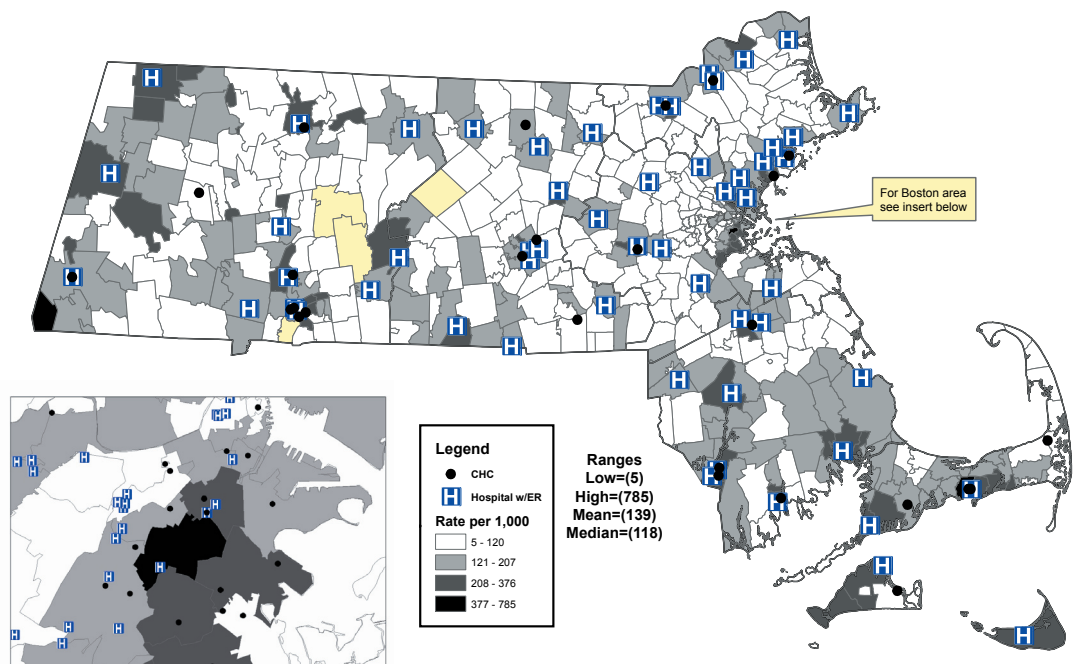
	Non-Emergent	Emergent, Primary Care Treatable	Emergent, ED Care Needed Preventable/Avoidable	Subtotal: Preventable/Avoidable	Emergent, ED Care Needed Not Preventable/Avoidable	Injury	Mental Health Alcohol, and Substance Abuse	Unclassified	Total
Number of Visits	459,657	427,236	130,471	1,017,364	205,642	687,165	113,092	162,731	2,185,995
Percent of Total Visits	21.0%	19.5%	6.0%	46.5%	9.4%	31.4%	5.2%	7.4%	100.0%
Average charges	\$812	\$1,041	\$1,074	\$976	\$1,600	\$929	\$1,118	\$989	\$1,022
Median Charges	\$827	\$906	\$1,048	\$927	\$907	\$661	\$915	\$568	\$678
Total Charges	\$373 M	\$445 M	\$140 M	\$959 M	\$329 M	\$638 M	\$126 M	\$161 M	\$2,213 M
Percent of Total Charges	16.9%	20.1%	6.3%	43.3%	14.9%	28.8%	5.7%	7.3%	100.0%

There was a large variation in the population-based PCS ED visit rate at the ZIP Code level (see Figure 2 below). ZIP Codes that had PCS ED visit rates higher than the state average (139 per 1,000 population) were not randomly distributed, but clustered around hospitals. Regionally, patients in the western

part of Massachusetts may not have a convenient alternative to a hospital, but patients who live in the Boston region generally have access to CHCs or other outpatient settings (see Figure 2 below).

At an average charge of \$976 per visit,² PCS conditions in Massachusetts hospital EDs

Figure 2: Rates of Non-Emergent and Preventable ED Visits per 1,000 Population in Massachusetts, FY05



were responsible for a total of \$959 million in charges in FY05 (see Figure 1 on page 2). As one would expect, the average and median charges for the various types of visits differed, increasing with visit acuity. Overall, PCS ED visits in Massachusetts hospitals represented 43.3% of all ED visit charges in FY05, a significant portion of health care dollars.

Demographics

ED visits were first analyzed by gender and age (see Figure 3 below). A somewhat greater proportion of outpatient ED visits by females was estimated to be non-emergent (23.3%)

is to examine the population-based rate of such visits.³ In FY05, the average “non-emergent” ED utilization rate was 72 per 1,000 Massachusetts residents and the total “preventable/avoidable” rate was 159 per 1,000 compared to a total outpatient ED utilization rate of 342 per 1,000.⁴ Non-elderly adults had the highest utilization rates for “non-emergent” and “preventable/avoidable” visits (79 per 1,000 and 169 per 1,000 respectively), while seniors had the lowest rates (55 per 1,000 and 139 per 1,000 respectively); children had moderate rates for both types of visits (see Figure 4 below). Similar patterns were found in the

Figure 3: Outpatient ED Visits by Gender and Age Group, FY05

Gender and Age Group	Non-Emergent	Emergent, Primary Care Treatable	Emergent, ED Care Needed Preventable/Avoidable	Subtotal: Preventable/Avoidable	Emergent, ED Care Needed Not Preventable/Avoidable	injury	Mental Health, Alcohol, and Substance Abuse	Unclassified	All Visits
Female	23.3%	21.1%	6.3%	50.7%	9.9%	27.2%	4.6%	7.5%	100%
Male	18.6%	17.9%	5.6%	42.1%	8.9%	35.9%	5.8%	7.3%	100%
Ages 0-17	20.9%	19.9%	6.6%	46.5%	6.3%	38.5%	3.3%	5.4%	100%
Ages 18-64	21.8%	19.3%	5.6%	46.6%	9.6%	30.2%	6.3%	7.3%	100%
Ages 65+	18.3%	20.5%	7.3%	46.1%	13.5%	26.2%	2.2%	11.9%	100%

compared to males (18.6%). This pattern is even more apparent for preventable/avoidable visits as a whole (50.7% versus 42.1%). By age, ED visit rates for preventable/avoidable conditions were remarkably similar (about 46%) for all age groups.

Another way of looking at the pattern of ED usage for preventable/avoidable conditions

overall outpatient ED utilization rates for these age groups. Again, females were more likely to visit the ED for a “non-emergent” or “preventable/avoidable” condition (80 per 1,000 and 173 per 1,000) than males (64 per 1,000 and 144 per 1,000). Males and females had the same rate of ED utilization overall (342 per 1,000). However, males had a much

Figure 4: Outpatient ED Visits per 1,000 Residents by Gender and Age Group, FY05

Gender and Age Group	Non-Emergent	Emergent, Primary Care Treatable	Emergent, ED Care Needed Preventable/Avoidable	Subtotal: Preventable/Avoidable	Emergent, ED Care Needed Not Preventable/Avoidable	injury	Mental Health, Alcohol, and Substance Abuse	Unclassified	All Visits
All Visits	72	67	20	159	32	108	18	26	343
Female	80	72	21	173	34	93	16	26	342
Male	64	61	19	144	30	123	20	25	342
Ages 0-17	62	61	20	143	19	119	10	17	308
Ages 18-64	79	70	20	169	35	110	23	26	363
Ages 65+	55	62	22	139	41	79	7	36	301

Figure 5: Outpatient ED Visits by Race/Ethnicity, FY05

	Percent of Outpatient ED Visits		Rate per 1,000 Mass. Residents		
	Non-Emergent	Preventable/Avoidable	Non-Emergent	Preventable/Avoidable	All Visits
White	19.8%	44.2%	61	137	310
Black	25.0%	53.0%	144	306	578
Hispanic	24.6%	54.6%	118	263	482
Other	22.7%	49.0%	82	176	359

higher rate of injury-related visits (123 per 1,000) than women (93 per 1,000).

Patterns by Race/Ethnicity

There were various differences in ED utilization patterns among racial/ethnic groups (see Figure 5 above). Hispanics and blacks, at 54.6% and 53.0% respectively, had the highest proportion of outpatient ED visits for preventable/avoidable conditions; whites had

the lowest percentage at 44.2%. The percentage of ED utilization for non-emergent visits varied somewhat less among the groups, from a low of 19.8% for whites to a high of 25.0% for blacks. When population-based rates were considered, the differences were more striking. In FY05, blacks visited the ED as outpatients at considerably higher rates overall (578 outpatient ED visits per 1,000 population) than did whites, Hispanics, and other minorities. Hispanics had the second highest rates overall and in every subcategory, including non-emergent and preventable/avoidable visits.

However, this contrasts with Hispanics' "number one" ranking for percentage of visits in preventable/avoidable categories. There is

some correlation between racial/ethnic groups that are disproportionately uninsured and higher preventable/avoidable ED usage, but the relationship is not as strong as one might expect. In 2006, 13.3% of blacks, 12.7% of Hispanics, and 5.1% of whites were uninsured.

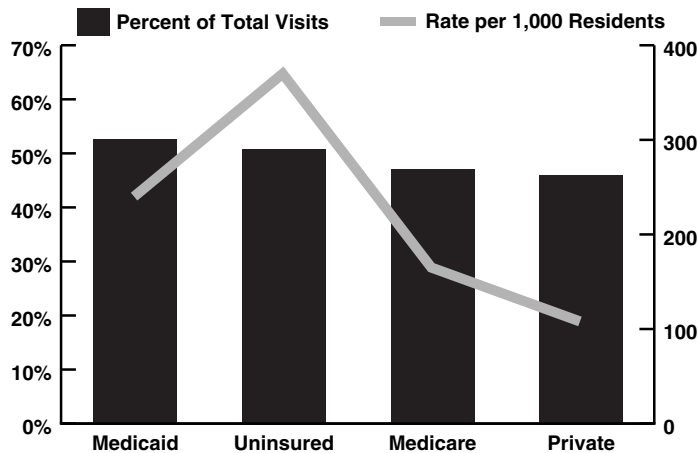
Figure 6A: Outpatient ED Visits by Payer, FY05

	Percent of Outpatient ED Visits		Rate per 1,000 Mass. Residents		
	Non-Emergent	Preventable/Avoidable	Non-Emergent	Preventable/Avoidable	All Visits
Medicaid	24.0%	52.7%	109	240	455
Uninsured	24.3%	50.7%	177	370	731
Medicare	19.3%	47.1%	67	165	350
Private	20.5%	46.0%	48	108	236

Insurance Status and Payer

The analysis of these data by payer type revealed relatively small differences in the proportion of PCS visits by payer group. This suggests that privately insured patients (who are expected to have a regular source of primary care) use the ED for non-emergent and preventable conditions in the same proportion as uninsured and Medicaid patients (see Figure 6A above). For the uninsured without a regular primary care physician, the ED may be the primary place where they have access

Figure 6B: Percent and Rate per 1,000 Residents of Outpatient ED Visits for PCS Conditions, FY05



to care. At the rate of 731 visits per 1,000 residents, the uninsured were three times as likely to have had an outpatient ED visit for any reason as the privately insured at 236 visits per 1,000 (see Figure 6B on page 4).

Although the total number of uninsured and Medicaid clients who visited the ED was much higher than the total number of privately insured who visited the ED, the proportion of PCS ED visits (as a percent of total visits) by privately insured individuals was almost as high as the proportion of PCS ED visits by the uninsured and Medicaid clients. In addition, the percent of visits for non-emergent conditions was similarly close. From this analysis of claims data it is not possible to assess why people with private insurance use the ED for non-emergent and preventable conditions. This may require further investigation by their health insurance plans. At 19%, Medicare patients had the lowest percent while Medicaid and uninsured patients had a slightly higher rate of non-emergent visits, 24% for each group. The percent for privately insured patients was 21%.

Time of Day and Day of Week

The question of when EDs are used for non-emergent conditions, or emergent, but primary care treatable conditions is important in assessing the capacity of our primary care system. Figure 7 (above) shows that the percent of such visits varied slightly by time of day. The highest percentage of these visits occurred during the early morning hours (6:00 to 9:00 A.M.), while the lowest percentage was in the early evening hours (5:00 to 9:00 P.M.). For visits occurring during regular business hours (Monday through

Friday, 9:00 A.M. to 5:00 P.M.), the percents of non-emergent and preventable/avoidable conditions were nearly identical to the rates for total ED visits.

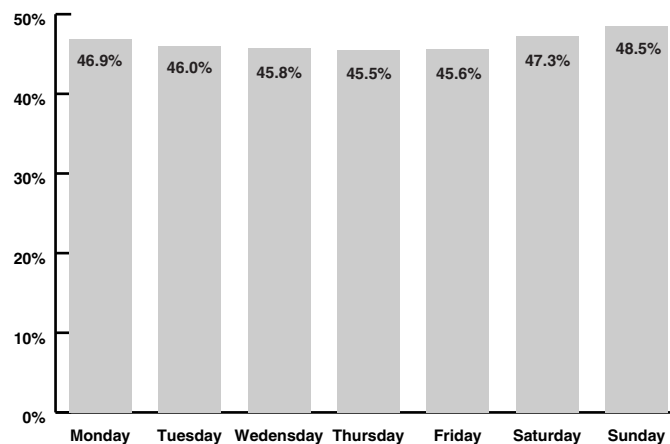
Analysis of the data by day of week showed that visits for preventable/avoidable condi-

Figure 7: Outpatient ED Visits by Time of Day, FY05

	Non-Emergent	Emergent, Primary Care Treatable	Emergent, ED Care Needed Preventable/Avoidable	Subtotal: Preventable/Avoidable	All Other
Midnight to 5:59 A.M.	20.9%	22.0%	7.0%	49.9%	50.1%
6:00 A.M. to 8:59 A.M.	23.1%	21.9%	6.9%	51.9%	48.1%
9:00 A.M. to 4:59 P.M.	21.4%	19.2%	5.8%	46.3%	53.7%
5:00 P.M. to 8:59 P.M.	19.9%	18.3%	5.6%	43.8%	56.2%
9:00 P.M. to 11:59	20.4%	20.1%	6.2%	46.7%	53.3%
Total	21.0%	19.5%	6.0%	46.5%	53.5%

tions in hospital EDs were somewhat higher on weekends, ranging from a low of 45.5% on Wednesday to a high of 48.5% on Sunday (see Figure 8 below).

Figure 8: Preventable/Avoidable Outpatient ED Visits by Day of the Week, FY05



Combining the data for time of day and day of week, Figure 9 on page 6 shows both the percentage of all visits in the various categories that occurred during regular business hours, and the percentage that occurred during off-hours.

An estimated 32.9% of outpatient visits to the ED for non-emergent conditions and 31.8% of visits for conditions that were emergent, but could have been treated in a primary care setting occurred during regular business hours when CHCs and most physician offices are open. This represents a total of 286,879 visits per year, slightly more than 12% of all ED visits to Massachusetts hospitals in FY05.

Summary

In FY05 over 21% of all outpatient ED visits in Massachusetts were categorized as non-emergent. An additional 25.5% were emergent, but could have been treated in a primary care setting, or avoided with better primary care. Certain patient characteristics were associated with higher proportions of non-emergent and preventable/avoidable visits. Females, blacks, and Hispanics had a higher proportion of non-emergent and preventable/avoidable ED

The uninsured did not appear to be much different from the insured in terms of the distribution of their visits across the categories studied, but their overall rate of outpatient ED utilization was very high. Similarly, blacks and Hispanics used the ED more frequently than whites for visits of all types. Medicaid enrollees also appeared to rely on the ED much more than the privately insured, although not at the high rates shown by the uninsured.

Non-elderly adults had a somewhat higher rate of preventable/avoidable visits when compared to children and seniors. This may be because of higher rates of uninsurance among non-elderly adults or fewer regular ties to the medical system. The fine distinction of ED utilization that emerged when both percentage distributions and population rates were studied demonstrates the value of using both measures.

The reasons behind high utilization of EDs by any demographic group are complex.

Figure 9: Outpatient ED Visits by Category, Time of Day, and Day of the Week, FY05

	Non-Emergent	Emergent, Primary Care Treatable	Emergent, ED Care Needed Preventable/Avoidable	Emergent, ED Care Needed Not Preventable/Avoidable	injury	Mental Health, Alcohol, and Substance Abuse	Unclassified
Regular Business Hours	32.9%	31.8%	31.1%	33.6%	32.9%	35.6%	34.7%
Off-hours Monday-Friday							
Midnight to 5:59 A.M.	6.2%	7.1%	7.4%	8.3%	4.1%	7.9%	6.2%
6:00 A.M. to 8:59 A.M.	5.9%	6.1%	6.4%	6.6%	4.9%	3.5%	5.6%
5:00 P.M. to 8:59 P.M.	16.4%	16.1%	15.7%	15.3%	19.8%	18.0%	16.7%
9:00 P.M. to 11:59 P.M.	8.4%	8.8%	8.7%	8.7%	8.7%	10.0%	8.0%
Total Off-hours Monday-Friday	36.9%	38.1%	38.2%	38.9%	37.5%	39.4%	36.5%
Total Saturday and Sunday	30.2%	30.1%	30.7%	27.5%	29.6%	25.0%	28.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

visits than others. Among payers, Medicaid patients had the highest percentages of non-emergent and preventable/avoidable visits. The percentage of preventable/avoidable visits was fairly similar for patients across age groups. Although some types of patients visited the ED much more frequently than others overall (as revealed by analysis of population-based rates), they did so for a wide variety of reasons and diagnoses, not just for primary care conditions.

High rates in all or most visit categories suggest a high burden of disease and injury in addition to the possibility of problems with access to primary care, or a preference for hospital care.

The percent of preventable/avoidable visits occurring during regular business hours was no lower than the average for all hours. It is unclear why this was so, although other studies have shown that patients who visited the ED for non-emergent conditions often did

so because they were not linked to a regular source of care, were unable to get a timely appointment with their primary care physician (PCP) if they had one, were referred by their PCP, or believed that their symptoms required ED care.⁵

The fact that a substantial portion of non-emergent and emergent, but primary care treatable visits occurred during regular business hours suggests either capacity constraints in individual physicians' offices and primary care clinics, or, among some patients, the preference for treatment in a hospital ED over other primary care settings. Further research, including geographical analysis and analysis of variation among hospitals and payer types, is warranted as well as qualitative research on patient attitude and site of care preferences in order to establish a clear conclusion.

Discussion

This analysis shows that hospital EDs continue to play a large role in providing primary care to both the insured and uninsured populations at higher costs to the health care system. Whether this is due to structural systemic factors, such as inadequate capacity at CHCs and other primary care sites, language barriers, hours of operation at outpatient clinics and CHCs, and/or personal choice of a hospital ED over other outpatient alternatives, cannot easily be determined. As a result, quality of care, especially the benefits that come from continuity of care to the patient by a regular medical provider, may suffer.

Furthermore, the cost of providing primary care in an ED is considerably higher than at a physician's office or a CHC. In FY05 the total PCS ED visit charges in Massachusetts hospitals exceeded \$1.0 billion (see Figure 10 below). The average and median charges for PCS ED visits in FY05 were \$976 and \$927 respectively. Forty-six percent, or 476,794, of the PCS ED visits in FY05 occurred during regular business hours (9:00 A.M. to 5:00 P.M.) Monday through Friday. Among payer types, Medicaid average and median charges for a primary care visit in a hospital were \$899 and \$565 respectively, and for the uninsured these charges were \$937 and \$579; a compa-

Figure 10: Outpatient ED Visits and Charges by Payer, FY05

Payer Type	Number of Visits	As a Percent of All Visits	Average Charges	Median Charges	Total Charges	As a Percent of All Charges
Total Visits	2,185,944	100.0%	\$1,023	\$678	\$2,213 M	100.0%
Private	945,139	43.2%	\$1,032	\$686	\$969 M	43.8%
Medicaid	449,757	20.6%	\$917	\$601	\$408 M	18.4%
Medicare	335,780	15.4%	\$1,247	\$879	\$414 M	18.7%
Uninsured	319,975	14.6%	\$966	\$619	\$304 M	13.7%
All Other	135,293	6.2%	\$881	\$595	\$119 M	5.4%
PCS Visits	1,017,364	46.5%	\$976	\$927	\$1,032 M	46.6%
Private	435,235	46.0%	\$1,089	\$695	\$446 M	20.2%
Medicaid	236,814	52.7%	\$899	\$565	\$215 M	9.7%
Medicare	158,253	47.1%	\$1,247	\$919	\$195 M	8.8%
Uninsured	162,245	50.7%	\$937	\$579	\$154 M	7.0%
All Other	24,817	18.3%	\$819	\$492	\$22 M	1.0%

table figure for a physician's office or clinic visit is typically much lower. If even some percentage of visits by Medicaid and uninsured patients were moved to clinic or office settings, a substantial savings to the Commonwealth of Massachusetts could accrue.⁶

¹ Downloaded from AHRQ web page at www.ahrq.gov/data/safetynet/billingfig9.htm, the Billings algorithm, which is widely used by many states, was developed using records from Bronx, NY EDs and was not independently validated using Massachusetts data.

² Charges in ED data are the grand total of all charges associated with a patient's ED visit. It represents neither the cost of care provided to the patient nor the payment received by hospitals for providing that care.

Analysis in Brief

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Governor

Timothy P. Murray
Lieutenant Governor

JudyAnn Bigby, M.D., Secretary
Executive Office of
Health and Human Services

Amy M. Lischko, Commissioner
Division of Health Care Finance and Policy
2 Boylston Street, Boston, MA 02116
Tel: 617.988.3100
Fax: 617.727.7662
www.mass.gov/dhcfp

Staff for this issue:
Getachew Habte-Haymer
Maria Schiff

Heather Shannon, Editing and Design

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- ³ Rate calculations include only Massachusetts residents. These rates refer to outpatient ED visits only. It is also important to note that the ED visits are for all non-federal acute care hospitals and do not include Veteran's Administration hospitals nor Massachusetts residents' visits to hospital EDs in other states.
- ⁴ The population-based rates are calculated using the 2004 Population Estimate: Population Division, U.S. Census Bureau. Release Date: February 25, 2005.
- ⁵ Joshua H. Sarver et al, "Usual Source of Care and Nonurgent Emergency Department Use," *Academic Emergency Medicine* 9(9):916-923, and GP Young, et al, "Ambulatory Visits to Hospital Emergency Departments, Patterns and Reasons for Use: 24 hours in the ED Study Group," *JAMA* 276(6):460-65.
- ⁶ For comparison, the average Medicaid payment to CHCs for individual medical visits (T1015) and urgent care (99050) from Monday to Saturday was \$103.78 per unit. Source: FY05 CHCs Medicaid payment, Division of Health Care Finance and Policy. January 13, 2006.