



Emergency Room Use: Evidence from Houston, TX

Introduction and Background

Houston/Harris County is one of the fastest growing areas of the country. The overall county population was 3.5 million in 2003 with projected growth to 4.5 million by 2020.

Houston is a large tertiary medical center with more than 60 hospitals, scores of specialty health clinics, and physicians per capita, well above the state and national average.

With 31% of the under age 65 population uninsured, Houston has more uninsured than any other major city in the US. It also has a growing and demographically diverse population.

Emergency Room (ER) overcrowding is a problem nationwide but especially so in Houston, TX. The ER is seeing increasing numbers of primary care related cases. The inability of the ER to handle the volume of patients places the ER on diversion status.

Over the past 15 years, while the population has grown, the public and private resources of the health care safety net have stayed about the same, creating a growing imbalance between supply and demand.

We strive in our studies to further understand the issues that impact the healthcare received by residents of Houston/Harris County. Through our research we seek to inform policy makers of the drivers of ER utilization whereby they can make informed decisions to increase access to care for Houston/Harris County residents.

Studies have shown that when differences in patient need and having a regular source of care are accounted for, ER use is similar across populations (Zuckerman and Shen 2004; White et al. 2007). A number of studies have shown that the uninsured and persons lacking a usual source of care are disproportionate users of hospital ERs (Grumbach et al. 1993; Billings et al. 2000; Jones 1999; Lucas and Sanford 1998; O'Brien et al. 1997; Shesser et al. 1991). Still, other studies have shown that uninsured persons and those without a usual source of care are no more likely to visit the ER than the general population (Hunt et al. 2006; Weber et al. 2005; Cunningham 2005; Fryer et al. 2003; Lane et al. 2003; McLaughlin and Mortensen 2003).

Who Uses Hospital Emergency Rooms?

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Purpose

The purpose of this study is to further understand the factors associated with hospital ER use by examining the characteristics of persons choosing the ER for medical care in Harris County.

Methodology

A random sample of 500 such residents over 18 years of age were interviewed by telephone concerning a recent episode of need for medical care and the factors considered in choosing where and when to go for care. The survey also obtained information on whether the patient had insurance coverage and a regular healthcare provider, as well as demographic information on the patient and decision-maker, when care decisions were not made by the patient.

Analyses

Bivariate analysis was used to identify variables correlated with ER Use: insurance status, regular provider status, age, gender, race/ethnicity, marital status, income and education.

Multivariate analysis was performed using logistic regression to identify the relative importance of each variable while controlling for the others.

Post-stratification methods were used to correct for non-response bias commonly resulting in telephone surveys. The variables considered for post-stratification were race/ethnicity, income, insurance coverage, and education. We adjusted the survey data of respondents using the Harris County population proportions and rates for these variables.

Results

1. Of the 27% who sought care in the ER, 41% were Black.
2. Of the 27% who sought care in the ER, 36% were Male.
3. Of the 25% who sought care in the ER, 33% had no regular doctor
4. Females are 33% less likely to use the ER.
5. Hispanics are 3 times more likely to use the ER and Blacks are 6 times more likely to use the ER in comparison to Whites.
6. Patients in elementary school were 3% less likely to use the ER.

Table 1:
Characteristics related to ER Use

Predictors	Emergency Room Use		N ²
	Sought Care Outside of ER (%)	Sought Care in ER (%)	
Race			2,3766
Black	.58	.41‡	
Total	.72	.27	
Gender			6,1313
Male	.63	.36†	
Total	.72	.27	
Provider Status			3,1893
No Regular Provider	.66	.33‡	
Total	.74	.25	
Diagnosis			12,5753
Chronic Mental	.37	.62*	
Total	.68	.31	

*P< .0000
†P< .01
‡P< .1

Table 2:
Marginal Effect of Personal and Health System Factors on the Likelihood of Using the ER

Variable	subcategories	Univariate OR (95% CI)	Adjusted OR (95% CI)
Insured	Yes=1	.62(.33-1.15)	.48(.22-1.05)
Provider	Yes=1	.60(.34-1.05)*	1.78(.76-4.14)
Gender	Female	.49(.26-.87)**	.33(.17-.62)**
Age group	<18	1	
	18-29	.73(.27-1.97)	.89(.09-9.03)
	30-59	1.29(.51-3.26)	1.42(.15-13.04)
	60-74	.92(.34-2.43)	1.29(.11-14.6)
	75+	2.36(.81-6.84)	3.22(.31-33.6)
Race/ethnicity	White	1	
	Hispanic	.92(.43-1.99)	3.56(1.36-9.32)**
	Black	2.17(1.16-4.05)**	6.46(2.9-14.19)**
	Other	1.12(.40-3.17)	1.11(.42-2.98)
Marital	Yes=1	1.06(.56-2.0)	.94(.39-2.27)
Income	<\$25,000	1	
	>=25t & 50t	.78(.46-1.3)	.56(.23-1.36)
	>=50t & 75t	.51(.17-1.5)	.25(.05-1.13)
	>75t	.54(.31-.95)**	.52(.18-1.52)
Education	No school	1	
	Elementary	1.55(.42-5.74)	.03(.004-.28)**
	High(8)	2.81(.94-8.4)*	.7(.07-7.0)
	High(12)	1.72(.58-5.07)	.84(.08-9.14)
	College	1.16(.41-3.28)	1.32(.10-16.9)
	4 college & grad	2.3(.8-6.66)	1.54(.14-16.9)
	Post-grad	.42(.12-1.4)	.36(.02-6.44)
Diagnosis	Chron. mental	1	
	Chron. phys	.49(.13-1.85)	.12(.03-.84)**
	Acute	.39(.09-1.58)	.24(.07-.84)*
	Multi-chron.	.43(.09-1.99)	.16(.03-.83)*

Note: Adjusted variables are insurance (binary), regular provider (binary), patient age (5 categories), gender, race ethnicity (4 categories), marital status, patient income (4 categories), education (7 categories), and diagnosis (5 categories)
*indicates p<.10. **indicates p<.05.

Conclusion

Findings suggest that demographic categories and specific, related dynamics are more important factors in decisions to seek care through ERs than generally recognized. These findings are consistent with national survey data that indicate little difference between the insured and uninsured in patterns of ER use.

Access To Primary Care And Hospital Emergency Department Utilization

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Methods

Primary Care-Related Emergency Room Use

The NYU ED Algorithm was applied to UB92 data on non-admitted ED visits supplied by 25 local hospitals to assign probabilities based on ICD codes that a visit falls into one or more of the following categories: 1) Non-emergent, 2) Emergent-Primary Care Treatable, 3) Emergent-Preventable/Avoidable, and 4) ED Care Needed Not Preventable/Avoidable. The first three categories collectively are called "primary care related." Primary care related ED use was measured at the ZIP code level by dividing the number of primary care related ED visits by the 2005 population.

Availability of Primary Care

In 2005, clinics associated with Project Safety Net provided data on the amount of primary care that was provided by a physician or a mid-level practitioner. Only visits by the uninsured were used. Primary care availability was measured at the ZIP code level as a) the number of these visits to clinics within five miles of the center of a ZIP code, divided by b) the total number of uninsured persons in the same area.

Analyses

A simple linear regression was used to examine the relation between primary care related ED use and primary care availability, while controlling for age, gender, poverty, death rate, and primary care physicians per capita.

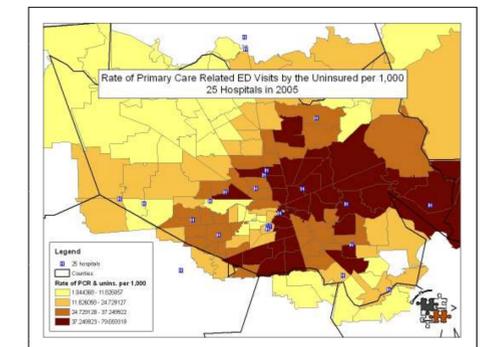
Results

The ED Algorithm classified 53.6% of all non-admitted ED visits by Harris County residents as primary care related. Patients without insurance accounted for 32.9% of primary care related visits.

Primary care related ED use by the uninsured is lower in ZIP codes with higher levels of primary care, after other population characteristics are considered (Table 1). The results indicate that an increase of 1 visit per 1,000 uninsured persons to primary care providers in the ZIP code area decreases the rate of primary care-related ED visit rate by 6.78 visits per 1000 people, controlling for other population and health system characteristics.

Table 1. Marginal Effect of Primary Care Availability and Population Characteristics on Primary Care Related ED Use

Variable	Change in ED Visits per 1,000 people	95% Confidence Interval	
		Lower bound	Upper bound
All Hospitals			
R ² = .77; Adj. R ² = .76			
Primary care visits per 1,000 in ZIP code area	-6.78	-13.19	-.36
Percent over 65	-121.85	-200.61	-43.08
Percent female	-40.33	-95.53	14.87
Percent below poverty	150.41	126.55	174.27
Death rate	3.62	2.29	4.95
PCPs per capita	.59	-2.23	1.04



Conclusion

Expanding primary care for the uninsured can help to reduce primary care related ED use by the uninsured.