

Primary Care Demand and Supply in Harris County

A Proposal for the Houston Endowment Project

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April 23, 2009

Proposal prepared for the Houston Endowment sponsored project.

Abstract

The Harris County area is faced with the problem of an increasingly large number of uninsured and underinsured residents. Building a comprehensive safety net is one way to meet the need for primary care of this vulnerable population. This study will estimate the current primary care demand of the low-income, uninsured population in the area. In addition, it will examine the accessibility of primary care, and measure the primary care supply capacity of safety net providers. The demand estimate will be compared to supply to determine the gap in primary care for this population. Recommendations for planners and policy makers will follow from the analyses.

1. Objectives and Specific Aims

The project has three main objectives. The first is to estimate the demand for primary care among the low-income, uninsured population in Houston/Harris County area. The second is to measure the supply of primary care of safety net providers in Houston/Harris County area. The third is to estimate the gap between demand for and supply of primary care for the low-income, uninsured population in Houston/Harris County.

For the demand objective, this study will estimate the current amount of primary care demanded by the low-income, uninsured population and describe the predisposing, enabling, and need factors that significantly affect demand. The demand model may suggest appropriate targets for strategies to enhance primary care demand among disadvantaged residents. Specific aims related to Objective 1 are:

- 1) To construct an empirical model of the demand for primary care.
- 2) To estimate the quantity of primary care demanded and effects of various factors on demand using California Health Interview Survey (CHIS) data.

A review of the medical care demand literature will be completed to achieve Aim 1. Aim 2 will be accomplished by retrieving data from the CHIS 2005 data available on the internet to estimate the model for Harris County.

This study will also examine the primary care supply capacity in Harris County using data collected from Project Safety Net in 2007, 2008. A majority of safety net patients are low-income people who are either uninsured or enrolled in Medicaid. Thus, information on safety net accessibility and capacity is helpful in making health policy to address access to care issues for vulnerable population groups. Specific aims related to Objective 2 include:

- 1) To examine features of safety net clinics which affect accessibility
- 2) To examine features of safety net clinics which affect productivity
- 3) To estimate the current amount of primary care supplied as a whole and by regions

Project Safety Net 2008 survey data will be analyzed to achieve Aims 1 and 2. Aim 3 is obtained by computing the total number of primary care visits reported by all clinics and by clinic groups of different ownership types.

Finally, for the third objective the study will estimate the gap in primary care among the uninsured, low-income populations in the Houston/Harris County area. Specific aims related to Objective 3 include:

- 1) Estimate the gap in primary care demand and supply for the uninsured, low-income populations in Harris County
- 2) Provide suggestions for health planners and policy makers to balance the primary care demand and supply in Harris County

Aim 1 will be attained based on results from the demand and supply components. The quantity of primary care demanded will be compared with the current supply capacity, to estimate the size of the gap. This comparison identifies existing problems which health planners and policy makers can use as guidance for their planning and policy making processes. The ultimate goal is to ensure enough primary care for the low-income, uninsured population and better health for the whole community.

2. Background and Significance

As the fourth largest city in the United States, Houston/Harris County has a rapidly growing and ethnically diverse population, of which approximately 1.6 million are either uninsured or underinsured. This fact has placed an increasing burden on the local public health system with a large amount of subsidized or uncompensated care. Given difficulties in financing and expanding the system's infrastructure, limited access to care and unmet demand are major problems for the low-income and uninsured population. Without a major change in the availability of insurance for this population, a broad and extensive safety net system is the best solution to ensure health equity for indigent people.

Houston/Harris County has a network of public and private hospitals and health centers, as well as some non-profit clinics, serving as safety net providers. However, it was estimated that only

one third of the total demand for health services of safety net consumers was provided by this system. At the same time, there exists the problem of primary care-related Emergency Department visits which are mostly made by the uninsured.¹

Primary care can have significant impacts on community health via providing better access to health care, improving quality of care, prevention concentration, disease management, a focus on appropriate care and lowering redundant specialty care. An important strategy to achieve a healthy community is making proper investments in primary care, especially for vulnerable populations. Besides a proven access problem, little is known about the actual gap in primary care services among Houston's low-income and uninsured people. This information increasingly has become critical to health policies aimed at reducing disease and financial burdens on this group.

The study's findings will be useful in several respects. First, the demand study will not only show the actual amount of primary care demand but also reveal potential barriers to health care among the uninsured and low-income population. Based on this important information, we hope that policy makers will be able to find suitable solutions to reducing demand barriers and enhancing health equity. Providers should also understand their consumers better. Second, with a better understanding of their current supply capacity and factors affecting their productivity, providers can implement interventions to increase capacity by removing, or at least abating, negative predictors of productivity. Their plans for expanding facilities or recruiting personnel would be made on the basis of improved information. Third, final results will be useful for planning and health policy making purposes. The estimate of the primary care gap will help local planners and policy makers become more aware of the magnitude of the problem, where it is and what can be done to ensure a more efficient system of safety net providers. Finally, the demand model can be applied to other databases to determine primary care demand at the county level. The gap estimation can serve as a useful tool to assist planners in other cities in assessing their situations and developing plans.

3. Preliminary Studies

In 2006, an analysis on safety net primary care demand and supply was done by researchers of UT-School of Public Health, with the collaboration of the Community Clinics Advisory Committee and the Project Safety Net. The objectives of this study were to assess the overall primary care gap in the County, to identify areas with the largest gap and to predict the impact of different strategies to close the gap (unpublished data). The demand for safety net primary care was estimated by multiplying the total number of uninsured people in each zip code level

with the average number of primary care visits per person per year. The number of uninsured people was obtained from another estimation done at UT-School of Public Health. The average primary care visits per person per year was based on a rough estimation from Harris County Hospital Districts (HCHDs) registration data which is 2.1 visits/person/year. Demand for primary care, after being calculated for each quadrant, was added together to obtain the total number of visits.

The supply of safety net primary care by quadrant was estimated using data from the Project Safety Net survey. A total of 70 clinics which admitted the uninsured, provide sliding scale services, operated at least 20 hours per week and had physicians and/or mid-level practitioners, were included in the survey. Primary care visits were defined as any visit with a physician or mid-level practitioner, excluding visits for immunization or medication refills. Visits of patients with either public or private coverage were excluded. Like demand, the supply in each quadrant was calculated in terms of number of visits and then added to get the total supply in the county.

Results showed that the total annual primary care visits demanded by the uninsured in 2005 was nearly 2.4 million while the total supply was approximately 0.9 million, resulting in the gap of about 1.5 million visits. The current supply satisfied nearly 85% and 54% of the primary care demand among the uninsured below 100% Federal Poverty Level (FPL) and those below 200% FPL respectively. The Northeast quadrant was the most deficient area and needed more investments to improve primary care access for the uninsured. The study also suggested that the current growth in supply might just fill new demand resulting from population growth.

The study has some limitations. First, the average number of visits was estimated by HCHD data and might underrepresent the uninsured population. This demand estimation does not take into account some potentially important socio-economic status and demography factors. Second, the uninsured rely not only on safety net clinics, but also on other providers such that basing demand on HCHD data use might lead to an underestimate. Third, the supply of primary care for the uninsured was based on unproven assumptions regarding payer mix and might overestimate the safety net capacity because patients at each clinic came from different parts of the County. Fourth, the supply estimate did not reflect the real capacity of safety net providers since they have to rely on other insured people to gain revenue. Finally, the gap or unmet demand for primary care was overestimated since there was charity care available for the uninsured not included in the analysis. Despite these limitations, this analysis provides important information as it provides an estimate of the problem of primary care access among the uninsured population, which requires the urgent attention of safety net planners and managers.

4. Research Design and Methods

4.1. Design

A literature review of past studies on the demand for medical care will be undertaken to identify variables in the demand model. A secondary analysis of data from CHIS 2005 will be implemented to estimate the model. The unit of study in this component of the study will be the individual.

For the supply component, we will have data from the Project Safety Net survey for 2008. The clinics' characteristics will be descriptively analyzed for the year of survey to examine how they affect primary care access of the vulnerable populations. Productivity will be calculated as number of visits per FTE physician and mid-level practitioner. The unit of study in this component is the clinic.

The gap component will measure the difference between the demand for and the supply of primary care in the uninsured and low-income populations by looking at the whole county as the study unit. The average primary care visit per person per year will be multiplied by the number of the uninsured to get the total demand for primary care. The total number of primary care visits supplied will be obtained by adding up the quantities reported by all clinics. The gap is the difference between these two figures.

The population of interest in this study is the low-income and uninsured population. People will be categorized according to their income levels. There will be four groups of income: below 100% FPL, 100-199% FPL, 200-299% FPL and 300% FPL and higher.

4.2. Data Sources

The demand component of this study will use data from public use files of California Health Interview Survey (CHIS) 2005. It was a population-based random-digit dial telephone survey conducted in California between July 2005 and April 2006. Detailed information on this survey is available at www.chis.ucla.edu. For the purpose of preliminary demand estimation, data of urban adults who were at least 18 years old will be retrieved from the publicly available data set and analyzed. The total number of people will be 34,930. To estimate demand of the uninsured, there will be 3,472 people below 100% FPL and 5,393 people below 200% FPL.

The supply component will use data from the Project Safety Net Survey. This survey will be conducted in School Based Clinics, Federally Qualified Health Centers, Community Based Organizations, and Public Clinics between April and May 2009. The survey will include two sections: the clinic information section and the capacity information section. The clinic section data will be used for assessing the clinic features which affect primary care accessibility. The capacity section data will be used for measuring the primary care supply and determining clinic features which affect productivity. More information on sample size, response rate and design of this survey will be available in June 2009.

4.3 The Model of Demand for Primary Care

This study will employ the two-equation approach to estimate primary care demand. The first equation will be the use/non-use equation which measures the influences of certain explanatory variables on the decision to seek health care. The second equation will estimate the effects of various factors on the actual use of primary care. The reason for choosing this model is because it takes into account two different stages in the decision making process. The patient first decides whether or not to visit the doctor. The doctor will then determine how much care is needed. The demand for primary care is subject to the characteristics of both the patient and the doctor. The variables for supply side effects will present only in the second equation.

4.4 Measurement of Dependent Variables

Need is “the amount of medical care that medical experts believe a person should have to remain or become as healthy as possible, based on current medical knowledge”.² “Demand is the quantity of a specific good that people are willing and able to buy during a specific period, given the prices and choices available”.³ Demand for primary care is the amount of primary care which consumers are willing and able to purchase at alternative prices. The critical thing that makes demand differ from need is that price and income are two important demand determinants whereas need for care purely depends on medical criteria.

In a limited number of studies devoted to primary care demand, the demand for primary care was defined as the number of visits to general practitioners during a specific time period.⁴ Therefore, the demand for primary care in this study is operationalized as the number of primary care visits that the uninsured and low-income population made to generalists during the last twelve months. For the first equation of the demand model, the dependent variable will be whether the person made any doctor visit during the last twelve months. Although there may be some demand unsuccessfully sought by the low-income and uninsured population due

to access barriers, it is unable to measure such demand with the data set available. This study therefore will estimate demand based on observed utilizations.

A primary care visit counted in the Project Safety Net survey is any visit made by the uninsured or low-income population to a physician or a mid-level provider in safety net clinics, including those for well-child, family planning, EPSDT visits and prenatal care. These visits exclude primary care related visits in Emergency Departments. Only clinics which serve the uninsured, provide sliding scale services, open 20 hours per week and have physicians and/or mid-level practitioners working are included in the survey.

Clinic productivity is measured as the total number of primary care visits per full-time physician and mid-level practitioner employee (FTE). Measures of primary care accessibility include after-hours operation, type of services provided, patient's eligibility policy, enabling services (assistance with language and/or transportation), patient registration policy, payment methods and payer mix, waiting time at the clinic and time for new appointment.

The primary care gap is measured as the difference between the number of primary care visits demanded by the uninsured, low-income population and those supplied by the safety net providers at the county and sub-county level.

4.5 Independent Variables

To estimate the demand for primary care, independent variables include need measures, enabling variables and predisposing variables. Predisposing variables are the existing characteristics of the individuals such as demographic factors: age, sex, race, family size or education. Enabling variables are socio-economic elements that have either positive or negative effects on the use of services, for instance income, wage rate, employment status, insurance status, etc. Need for care variables are physical and mental health conditions of a person like chronic disease, self-perceived health status and disability status.⁵

The association between clinic productivity and other clinic characteristics will be assessed. The clinic characteristics of interest are ownership types, operation hours, language assistance services, waiting time at the clinic, time for new appointment scheduled, availability of enabling services and patient registration policy.

4.6 Analytical Methods

The frequency distribution, means, percentage and standard deviation of each variable will be calculated. In the demand component, probit regression will be employed to analyze the use/non-use equation. The negative binomial regression will be used to measure the average primary care visit demanded by the uninsured and low-income population. This type of regression is the most suitable estimation method because the dependent variable only takes non-negative integers and the model allows for over-dispersion of the data set. In the supply component, χ^2 test will be performed to test for the significant difference in categorical variables among clinics of various ownership types. When one expected value of any variable is less than 1 or more than 20% of these expected values are smaller than 5, the Fisher's exact test will be employed. The analysis of variance (ANOVA) method will be used to test the variations in continuous values. We also will use this method to find the association between facility productivity and facility characteristics.

4.7 Products

A research brief on the quantity of primary care demanded and effects of various factors on demand for the uninsured.

A research brief on the current amount of primary care supplied to the uninsured in the county and in regions of the county.

A research brief on the availability of enabling services in safety net clinics that affect primary care accessibility.

A research brief on safety net clinic productivity.

A research brief on the gap between primary care supply and demand and suggestions for closing the gap.

5. Limitations

The major limitation to the demand component of this study is the availability of variables for the demand equation. For the first of step of estimating the demand model using CHIS 2005, the limitations are the lack of important variables such as the price of services, the time price and supply side effects. Another critical problem is that the chosen dependent variable, the number of doctor visits, does not necessarily represent the demand for primary care because these visits can include visits to general practitioners and visits to specialists.

In the supply component, the first concern is the response rate of the Project Safety Net Survey. Surveys in previous years did not have a satisfactory rate of response, especially in the capacity section. This problem would undermine the quality of any subsequent analysis of supply capacity. The second limitation is the breath of information included in the clinic information section of the survey. No information on clinic's physical capital or computerized data system will be collected. The survey cannot cover every source of charity care for the low-income and

uninsured people. The supply estimate, therefore, may underrepresent the real amount of primary care services provided to this population. We will address this issue with a sensitivity analysis using alternate assumptions for how much of care for the low income population is receiving charity care. We can obtain this value from the literature on charity care in the U.S.

The measured gap may be overestimated because the uninsured also seek primary care from other potential providers. The clinics serve the uninsured and other patients who may have a source of payment. The primary care capacity estimate based on the uninsured and low-income population can miscalculate the actual needed capacity of safety net providers. Finally the estimated gap for each quadrant may be inaccurate because patients come from all around the county. The overall gap of all quadrants avoids that problem due to mutual compensations.

6. References

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7. Schedule

Schedule

Activities	2009				2010				2011
	jan-mar	apr-jun	jul-sep	oct-dec	jan-mar	apr-jun	jul-sep	oct-dec	jan-mar
Objective 1: The demand component									
To construct an empirical model of the demand for primary care									
To estimate the quantity of primary care demanded and effects of various factors using the California Health Interview Survey (CHIS) data									
Objective 2: The supply component									
To examine features of safety net clinics which affect primary care accessibility									
To examine features of safety net clinics which affect health providers' productivity									
To estimate the current amount of primary care supplied as a whole and by regions									
Objective 3: The gap component									
To estimate the gap in primary care demand and supply for the uninsured, low-income populations in Houston/Harris County area									
To provide suggestions for health planners and policy makers to balance the primary care demand and supply in Houston/Harris County area									

