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Changes in the Healthcare Safety Net 1992–2003: Disparities in Access for Uninsured Persons in Florida

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Abstract

A patchwork of services is available to the US uninsured through the healthcare safety net (SN). During 1996–2003, some SN hospitals (SNHs) closed or converted ownership from public or non-profit to for-profit status. However, around this time the number of community health centers (CHCs) grew due to new federal funding. This paper examines the impact of these two countervailing SN events on access to care for the uninsured. Hospital admissions for ambulatory care sensitive conditions (ACSCs) relative to marker conditions were used as our access measure. We examined 35,730 discharges for uninsured adults treated in Florida hospitals in the years 1992 or 2003. A generalized estimating equation model was used to assess differential access effects for racial and ethnic groups. We found that in communities with CHC openings but no SNH contractions, uninsured black and white individuals experienced deteriorations in access over time but the Hispanic uninsured did not. However, in communities where SNHs closed or converted, access deteriorations occurred for all three racial and ethnic groups. Thus, the potentially beneficial effects of CHC expansions on access to primary care for the uninsured Hispanic population in Florida appeared to be offset if contractions in the hospital safety net were present.

People without health insurance are less likely to receive timely and recommended healthcare and often have poor health condition as compared to people with health insurance (1, 2). For example, studies have found that over a third of uninsured people in the United States do not receive needed and timely care, in contrast to less than ten percent of the insured population (3), and it is estimated that thousands die each year due to lack of health coverage (1, 4). The problem has worsened over time as the number of uninsured individuals increased from 34.7 million in 1990 (5; estimated from the Current Population Survey), to 50 million in 2009 (6).

The US healthcare system provides a patchwork of services for uninsured, under-insured, and indigent populations who would otherwise have little to no access to certain health care services. This patchwork, known as the healthcare safety net (SN), includes federally funded community health clinics, migrant health centers, health centers for the homeless, community funded health centers, county health departments, school and church-based health clinics, and services provided by safety net hospitals (SNHs) (7). SNs are typically located in medically underserved areas where there is a high concentration of poor and minority individuals (8, 9). In addition, studies have found that a shorter distance to the nearest safety net providers is associated with higher access to care for uninsured people or minority with limited English proficiency (10, 11, 12). The primary objective of this paper is to examine how specific changes to local SNs in Florida that occurred between 1992 and 2003 affected disparities in access to care among the uninsured.

Nationally, SNH closures have occurred for decades, however population-based data to study the impacts on disparities in access has not been widely available for years prior to 1990, thus we focus here on the period beginning about 1990. While SN resources were relatively stable over the 1990s in urban areas, some communities experienced changes and disruptions in their local SNs (8, 9), including a shift from private physicians towards the hospital sector and shifts in the amount of uncompensated care delivered by different hospitals (13, 14, 15). During 1996 and 2002, some SNHs closed or converted ownership (i.e. conversion from public or non-profit to for-profit status), which may have reduced local availability of indigent care for uninsured people (13). Using ambulatory-care sensitive conditions (ACSCs) as the indicator of access to health care, Mobley et al (16) found that uninsured people in California experienced impeded access to care (with increased probability of ACSC hospital admissions) when SNH contractions occurred between 1990 and 2000 and that the effects of SNH contractions varied by patient race/ethnicity.

Although some communities have experienced declines in SNHs, nationwide there has been substantial growth in the number of community health centers (CHCs) due to new federal funding. Between 1994 and 2001, the Consolidated Health Center Program, which provides primary care and preventive services to the underserved population, grew from serving 7.3 million to 10.3 million patients (17). In addition, in 2002 the government launched the Health Center Growth Initiative (HCGI) in medically underserved areas (18). The HCGI funds supported expansion of existing medical capacity (such as addition of medical providers and expansion of hours of operations at existing centers) and the addition of new service sites in areas where there were no health centers. In 2001, there were 3,400 community-based health centers serving 10 million patients (19) and by the end of 2007, 1,236 new and expanded CHC access sites were added with an additional 5.8 million patients served (19).

These two types of safety net events – namely SNH closures/ownership conversions and CHC expansions – presumably had opposite effects on access to health care for the people who rely most on the SNs for their regular health care. Given geographic variation in local SNs, it is unclear what the net effect of these change events were on the uninsured living in affected areas. In addition, the majority of patients who received care from health centers are from racial or ethnic minority groups (20). Thus, given their substantial reliance on these facilities, it is important to understand how access to care for people with different racial and ethnic backgrounds was affected by these countervailing SN events.

In this paper, we focus on the state of Florida because of the following reasons: (1) both of these types of SN events were present; (2) the state has large numbers of both blacks and Hispanics and a relatively large uninsured population; (3) it has substantial geographic diversity, including both extensive urban and rural areas. These features allow examination of differential SN event impacts on the uninsured, by race or ethnicity.

We assess the impact of these two types of SN events on access to care for the uninsured population with different racial or ethnic backgrounds. Specifically, we compared access to care among white-non Hispanic (hereafter white), black non-Hispanic (hereafter black), and Hispanic individuals who lived near these types of SN events between 1992 and 2003. The base year is a period before safety net hospitals closed or converted ownership and community health center expansion or addition (hereafter expansion) occurred, whereas the ending year is after SNH changes and during the mid-point of the CHC expansion period. This study is timely because even though national health care reform may reduce the number of uninsured nationwide, it is projected that 23 million individuals would continue to be uninsured even if the proposed policy is fully implemented (21). Thus, understanding how access to care for uninsured people in different racial or ethnic groups has been affected

by recent changes in safety net resources and availability remains important for health policy designed to improve access by uninsured persons.

Methods

Data Source

We used Florida hospital discharge data from the years 1992 and 2003 to analyze the impact of changes in safety net resources/availability on access to care for the uninsured population. The discharge data were obtained from the State Inpatient Database (SID) from the Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality (22). The SID includes the population of all discharges from all short-term general medical/surgical hospitals for each year. The state has mandatory reporting of discharge data and has complete data on patient race or ethnicity in both 1992 and 2003, ZIP code of residence, and insurance information.

We also used AHA Annual Survey data to identify and track hospitals designated as SNHs over time, and to determine SNH contraction events (e.g., facility closure or ownership conversion from non-profit to for-profit status). AHA data includes hospital identification numbers that AHRQ provides within their SID data, enabling linkage between the data sources. We also used the Area Resource File (ARF) for county-level data on community socioeconomic and health system characteristics.

Access to Care Measure

Following previous research (16, 23) we measured access to care using hospital admissions for ambulatory care sensitive conditions (ACSCs). ACSC admissions are validated indicators of impeded access to adequate primary and preventive care services. ACSC admissions are thought to be avoidable if adequate primary and preventive care is available and utilized, hence higher admission rates for these conditions signal impeded access to care (24). In the analysis, we grouped hospital admissions into ACSC or Marker condition (MC) types, following the work by Billings et al. (25) (See Table 1). MC admissions represent a stable benchmark to assess relative to ACSC admissions because the former represent admissions for un-avoidable, urgent health conditions (23). We used primary diagnosis codes in the hospital discharge records to identify ACSC and MC admissions.

Identifying Safety Net Hospitals and SNH Contraction

There is no consensus approach in the literature on how to identify SNHs. Various methods include focusing exclusively on public hospitals (9), using public hospitals and academic medical centers (26, 27), or using hospital data on uncompensated or Medicaid care to assess hospital safety net involvement (13, 28, 29, 30). Gaskin et al. (31) and Hadley and Cunningham (12) blended these various approaches, using public hospitals and a select group of non-profit SNHs with disproportionate provision of care to Medicaid patients to identify SNHs. They used the state mean of urban non-profit hospital Medicaid patient share plus one standard deviation as a threshold to identify non-profit SNHs. Because the Medicaid caseload may fluctuate over time, we averaged two years (1991–1992) of AHA data on hospital Medicaid share of inpatient days to avoid producing unstable measure of SNH status. All non-profit hospitals meeting this threshold along with all urban public hospitals were identified as SNHs.

After identifying SNHs, we examined the ownership status of these SNHs over the years 1992 to 2003 and also looked for any changes in operational status of the facility. We created a dummy variable to indicate whether there was a SNH contraction in each county. If any of the non-profit or public SNHs changed ownership to for-profit, or if any of SNH

ceased operation by 2003, we identified the county as having experienced an SNH contraction event.

Identifying Health Centers and CHC Expansion

Using data from the Area Resource File, originally provided by the Centers for Medicare and Medicaid Services in their Provider of Service files, we summed the number of the Federally qualified health centers and rural health centers in each county to obtain the number of health centers at the county level. We then compared the number of health centers in each county between 1992 and 2003 to determine if the number of health centers increased, decreased, or stayed the same.

Type of Safety Net Event

During the study period, nine out of 67 counties in Florida had SNH contractions and all of these nine counties also had at least one CHC addition. Fifty-five of the other counties had CHCs added during the study time period but no SNH contraction events. The three remaining counties had no SNHs in place during the study period and no CHC additions. Given our study objective to assess the effects of local changes in safety nets on health care access and because of their small number, we excluded these three counties from our main analysis. Thus, the remaining counties were characterized in one of two ways: 1) having both a SNH contraction event and CHC additions, or 2) having only CHC additions but no SNH event. We did, however, undertake sensitivity analysis that examined the three counties with no SNHs and no CHC additions to provide context for our findings on how the safety net may affect care for the uninsured.

Personal and Contextual Control Variables

Following previous research that examined factors associated with changes in the healthcare safety net (16), our analysis included both patient characteristics and community contextual characteristics as key control variables. We used data from the SID to characterize patients, including age categories (25–34, 35–44, 45–54, and 55–64 years old), gender, and race or ethnicity (white, black, and Hispanic). In addition, we included a count of patient comorbidities as a health status measure. The distance of the individual to the nearest SNH was also included as a control variable, with it being measured as the straight line from the centroid of the patient's residential ZIP code to the centroid of the hospital's ZIP code. Due to the skewed distribution of this measure, we used a log transformation of the distance variable. In addition, the relationship between distance and health care access is expected to be non-linear because we include both dense urban areas and sprawling rural areas in the study. Thus, we included both a linear and quadratic terms for the distance variable in the multivariate regression model.

Because information on health care center expansions and SNH contractions is only available at the county level, we control for contextual variables that characterize the health system at the county level. Specifically, we included the number of primary care physicians per 1,000 population as a supply measure, and, percent foreign born population, and percent of population in poverty as demand measures. We also included an urban/rural indicator to differentiate dense urban markets, which may have very different supply and demand characteristics than rural markets. All of these variables were derived from the ARF and measured for the early and late periods. We used the patient's ZIP code information from the SID to identify county of residence based on ZIP code centroids being within the borders of a county.

Study Population

We restricted our analysis to adults between the ages of 25 and 64 without health insurance who were treated in Florida hospitals in the year 1992 or 2003. In addition, the study sample included only those hospital discharges for patients with a primary diagnosis involving an ACSC or a MC. Furthermore, we included white, black, and Hispanic populations in the analyses and excluded those race/ethnicity were classified as "other" or "unknown." A total of 38,123 discharges with ACSC and MC were identified. After excluding 1,107 discharges from people whose race or ethnicity is "other" or "unknown" and 1,286 discharges from the three counties that lacked SNHs and had no CHC changes, we included a total of 35,730 discharges in the analysis.

Statistical Analyses

We conducted a multilevel logistic regression model to estimate the effects of person and community factors on the likelihood of admission for an ACSC relative to a MC, for people with different racial or ethnic backgrounds living in areas with different types of SN events. These include communities with contraction in the SNH sector but expansion in community health centers, or communities with expansion in community health centers alone. Because our purpose is to assess the impact of these different types of safety net events on people with different racial and ethnic background between early and late time periods, we included two-way and three-way interactions in the model to disentangle the relative impacts of SNH events, race or ethnicity, and time. The analytic model can be written as follows:

$$\begin{aligned}
&\log\left(\frac{\Pr(ACSC=1)}{\Pr(MC=1)}\right)\\
&=\beta_0+\beta_1 Pchar_{ij}+\beta_2 Black_{ij}+\beta_3 Hisp_{ij}+\beta_4 Cchar_j+\beta_5 Late_{ij}+\beta_6 SNevent_j+\beta_7 Black_{ij}{}^{*} Late_{ij}\\
&+\beta_8 Hisp_{ij}{}^{*} Late_{ij}\\
&+\beta_9 Black_{ij}{}^{*} SNevent_j\\
&+\beta_{10} Hisp_{ij}{}^{*} SNevent_j\\
&+\beta_{11} Late_{ij}{}^{*} SNevent_j\\
&+\beta_{12} Black_{ij}{}^{*} Late_{ij}{}^{*} SNevent_j\\
&+\beta_{13} Hisp_{ij}{}^{*} Late_{ij}{}^{*} SNevent_j
\end{aligned}$$

Where $ACSC_{ij}$ is the indicator of ACSC for person i at county j, MC_{ij} is MC indicator for person i at county j, $Pchar_{ij}$ represents person level characteristics except race/ethnicity for person i at county j, $Cchar_j$ represents the community characteristics for county j, and $Late_{ij}$ is time indicator for later period (i.e., year 2003), and $SNevent_j$ is the SN event type in the county, where 1 indicates SNH contraction with CHC expansion and 0 indicates only CHC expansion.

Because our data included factors at both patient and county level, we used the generalized estimating equation approach (GEE, 32) to control for the redundancy in contextual effects due to individuals living in the same areas sharing the same contextual variables. The GEE approach produces robust estimates of the standard errors for the covariate in models with a binary dependent variable, thus allowing correct estimates of the standard errors for the model covariates.

After obtaining the estimates of the logistic regression model, we computed the marginal probabilities of ACSC versus MC admission for black, Hispanic, and white, for each time period and SN event type. We then graphed these marginal probabilities separately for SN

events, by race or ethnicity, and overall (including all groups together). We also performed tests for the difference of the ACSC marginal probability between the two time periods for each racial/ethnic group.

Results

Although our main focus is access to care using ACSC and MC discharges, we first present data on discharges of different types pertaining to uninsured individuals in the study communities, to provide a broader overview of the hospitalization trend in Florida during the study period. Specifically, in Table 2 we present the discharges for each year and the percent change over time, for four groups of discharges: ACSCs (our access measure), MCs (our stable benchmark group), referral sensitive conditions (RSCs) and all other discharges. RSCs represent admissions where physician referral to specialists is essential and where treatment typically involves specialized hospital technology. To calculate percent change in Table 2, we divided the difference in the ACSC level across time by the average level, averaged over the two time periods (an arc elasticity measure that is not sensitive to the size of the base year used in the denominator). ACSC discharges increased 43%, compared to the relatively stable MCs (6%). Large growth occurred in the RSCs (87%), which reflected growth in cardiac surgery over time due to improvements in technology (e.g., increased use of coronary stents and open heart surgery), along with wider diffusion across hospitals in the provision of specialized procedures. The remaining discharges, which represented about 75% of the uninsured discharges each period, increased 30%, exhibiting a 13% lower growth rate than the ACSC group. These basic descriptive data suggest that access impediments for the uninsured increased over time in Florida, especially in relation to primary and preventive care, which likely led to greater numbers of preventable ACSC admissions.

Table 3 presents characteristics of uninsured patients with ACSC or MC hospitalizations in the counties included in the study. Overall, there were more discharges in the late period than in the early period, which likely reflects general population growth occurring for the state of Florida over time. The ACSC admissions were higher in the late period (86%) than in the early period (81%). There were proportionately more whites than blacks and Hispanics in both time periods, but the proportion decreased in the late period for whites and increased for Hispanics. Over time, the proportions for youngest and oldest age groups decreased whereas they increased for the other age groups.

For the contextual variables, we found that the proportion of rural counties decreased from 51% to 45% during 1992–2003. In fact, five rural counties became urban counties in late period and one county had changed from urban to rural. Such urbanization may also explain the data that the percent of people in poverty decreased and ratio of primary care physicians per 1,000 people increased over time. In addition, the percent of foreign born population increased during the study period.

Multilevel Model Results

Table 4 presents the coefficient estimates (rather than odds ratio estimates) from the multilevel model, focusing on the effects of race/ethnicity, time period, SN events, and their interaction. We control statistically for other personal and contextual variables, but omit these from the table for brevity and clearer focus (table available from lead author upon request). Overall, we found that blacks had a higher likelihood whereas Hispanics had a similar likelihood of an ACSC admission when compared to whites. In addition, the overall likelihood of an ACSC admission (versus MC) was higher in the late period than in the early period. Three interaction terms, blacks in late period, Hispanics in late period, and Hispanics living in areas with SNH contractions, were significant. The interaction effects are difficult

to interpret from the coefficient estimates alone because these must be combined to produce the net (combined overall) marginal effect. Thus we use graphs of the marginal probabilities to facilitate interpretation. We graphed the marginal probabilities of ACSCs for all individuals combined and also by race or ethnicity group for each time period. The two types of SN event communities are distinguished in Figures 1 and 2.

Figure 1 shows that for all individuals, there was 6 percentage points increase in the probability of ACSC admission over time, and about a 3 to 8 percentage points increase in the probability of ACSC admission over time for the three racial or ethnic groups, in areas where SNH contractions occurred along with CHC expansions (SN event type 1). We compared the magnitude of increase of ACSC probability over time for the sample overall and for each racial or ethnic group, and found that the increase in probability of ACSC admission was significant for the overall sample, for black, and for white individuals ($p < 0.05$) and marginally significant for Hispanics ($p=0.12$).

Figure 2 shows the change in the probability of ACSC admission for individuals living in areas where there were CHC expansions but no SNH contractions. We found that for all sample individuals and for whites, there was a 7 percentage points increase in ACSC probability over time, a 3 percentage points increase for blacks, but a one percentage point decrease for Hispanics. The difference in change of ACSCs over time was significant for the overall sample, for whites, and for blacks ($p < 0.05$) but not for Hispanics ($p = 0.69$), indicating that Hispanics' access to care was stable over time when CHCs expanded, however white and black individuals did not benefit from this SN event.

Sensitivity Analysis

While we focused above on uninsured individuals in counties with local changes in their safety net, we also examined trends in ACSC relative to MC hospitalizations in other patient populations to describe the broader context of overall trends in Florida during this period. We first examined the three counties that had no SNHs and no CHC additions. We found that uninsured people in these three counties had worse access than elsewhere and that their access declined to a similar degree relative to the uninsured in counties that had a SNH closure. These findings make sense in that there were few SN resources available locally for these individuals and they likely needed to go outside the county to another SNH in an adjacent county, or receive treatment where they were less likely to be welcomed (in non-SN hospitals).

Second, we examined what happened to the uninsured relative to those with Medicaid and private insurance in all three SN event types. We found that the experience for the uninsured was much worse than for the two insured groups (data not shown, but figures can be provided by the lead author on request). Specifically, for all race/ethnicities, the probability of ACSC increased by 5 to 10% for the uninsured but by only 0 to 3% for the privately insured across the three community types. However, the ACSC probability decreased slightly (by 1 to 2%) for the Medicaid population. Thus, the results of these additional analyses suggested that the uninsured were particularly vulnerable to SNH contractions and experienced worsening access relative to insured patients over time.

Discussion

Analyzing patient discharge data from Florida, our study found that the countervailing events of SNH contraction and community health center expansion that occurred between 1992 and 2003 had differential impacts on access to care for uninsured people from different racial or ethnic groups who lived in the affected areas. Our findings suggest that all uninsured people, regardless of their racial or ethnic background, experienced increased

access barriers associated with higher likelihood of ACSC admission in communities where SNH contractions occurred (Figure 1). In areas where there were no SNH contractions, though, and only CHC additions, we similarly found that the probability of ACSC admission increased for white and black uninsured individuals but not for Hispanics (Figure 2). This suggests a protective effect from CHC expansion for this latter ethnic group that is not present for the other groups studied. However, as evident from Figure 1, this beneficial effect from CHC expansion was negated when SNH contractions occurred.

The finding that the probability of ACSC admission increased in the communities with CHC expansions and no SNH contractions for white and black uninsured individuals while the probability remained fairly constant for Hispanic individuals is interesting. Why did uninsured Hispanics benefit from CHC resources, while whites and blacks did not? Our study sample shows that the proportion of foreign born individuals increased over time. One possible explanation is that during the study period more foreign-born Hispanics moved into Florida, and CHCs may have responded with services increasingly tailored in Spanish language or otherwise geared to Hispanic cultures. This is consistent with an earlier study that found increasing community health center capacity had beneficial effects on health care access for uninsured, Spanish-speaking Hispanics (33). Such actions by CHCs may have crowded out the demand by non-Hispanics for care from CHCs and thus reduced utilization of CHC care by whites and blacks. This possibility was raised by a previous study, which found that whites perceived more difficulty receiving health care if they lived in areas where large shares of the population in the area were Hispanic (34). Future research is needed to better understand potential barriers in access to or utilization of care by people with different racial and ethnic backgrounds in communities where CHC expansions occurred.

This study has some limitations. First, we only focused on the state of Florida, and thus, the results cannot directly generalize to other states. In addition, this study used data between 1992 and 2003. The later time period occurred in the middle of the implementation of the federal Health Center Growth Initiative, which expanded the CHCs and ended in 2006. Thus, the beneficial effect resulting from CHC additions may not have been fully realized during our study period. Finally, to measure CHC expansion and addition, we used only data on the number of new community or rural health centers entering each county. We did not have detailed information regarding the expansion of various health care services including primary care services. Thus, our results may have underestimated the benefits of the federal Health Center Growth Initiative.

Our study findings suggest that the loss of safety net resources in a community due to SNH closure or conversion may not necessarily be countered by the growth in another type of safety net provider (i.e. CHC expansion). This is important given that national health reform, as embodied in the Affordable Care Act (ACA) of 2010, will result in 23 million individuals remaining uninsured after full implementation of the ACA (as currently proposed). In addition, there is much emphasis in the ACA on continuing the expansion and support of community health centers, but relatively little discussion of the continuing role of safety net hospitals. In fact, ACA provisions would reduce major sources of financial support for safety net hospitals – namely Medicaid and Medicare Disproportionate Share Hospital (DSH) payments. Policymakers may need to pay special attention to the disruption in obtaining health care if SNH support and thus capacity to provide services decline with the implementation of the ACA.

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Biographies

Tzy-Mey Kuo, PhD. is a research psychologist at RTI International since 1997. Dr. Kuo received her Ph.D. in Psychology and MPH in Biostatistics from the University of North Carolina at Chapel Hill. Her research interest focuses on health prevention, outcome evaluation, and health disparities. She is also interested in using methods in geographic information system to study geographic variations of health access and outcome. Dr, Kuo is the lead author in several publications published in *Medical Care*, *Health and Place*, *Obstetrics and Gynecology*, and *Demography*. She is also a co-author in several papers covering a variety of topics published in other peer review journals.

Lee R. Mobley, PhD. is currently a Senior Fellow in Spatial Science and Health Economics at RTI International (2001–2011), with a Ph.D. in economics from the University of California at Santa Barbara. Previously (from 1991–2000) she was an Associate professor of Economics at Oakland University, in Rochester, Michigan. As of October, 2011 she had more than 50 publications in peer reviewed journals. Dr. Mobley's areas of research interest include: disparities research, including geographic disparities; spatially-enabled analysis of socio-ecological problems where place and space are important; translational research in populomics science; assessments of health markets and development of community risk profiles; spatial analysis applied to evaluations of interventions and natural experiments; and building spatial decision support systems combining databases, knowledge bases, and analytic tools.

Gloria J. Bazzoli, Ph.D. is the Bon Secours Professor of Health Administration with Virginia Commonwealth University in Richmond, VA. Dr. Bazzoli has published a variety of research papers on the US hospital sector. She has been a lead author in studies of hospital financial pressure and the quality of hospital care, and the financial forces affecting the hospital safety net. She received her M.S. and Ph.D. in economics from Cornell University and her B.S. in economics from the University of Illinois-Champaign/Urbana. She is also editor-in-chief of the journal *Medical Care Research and Review.*

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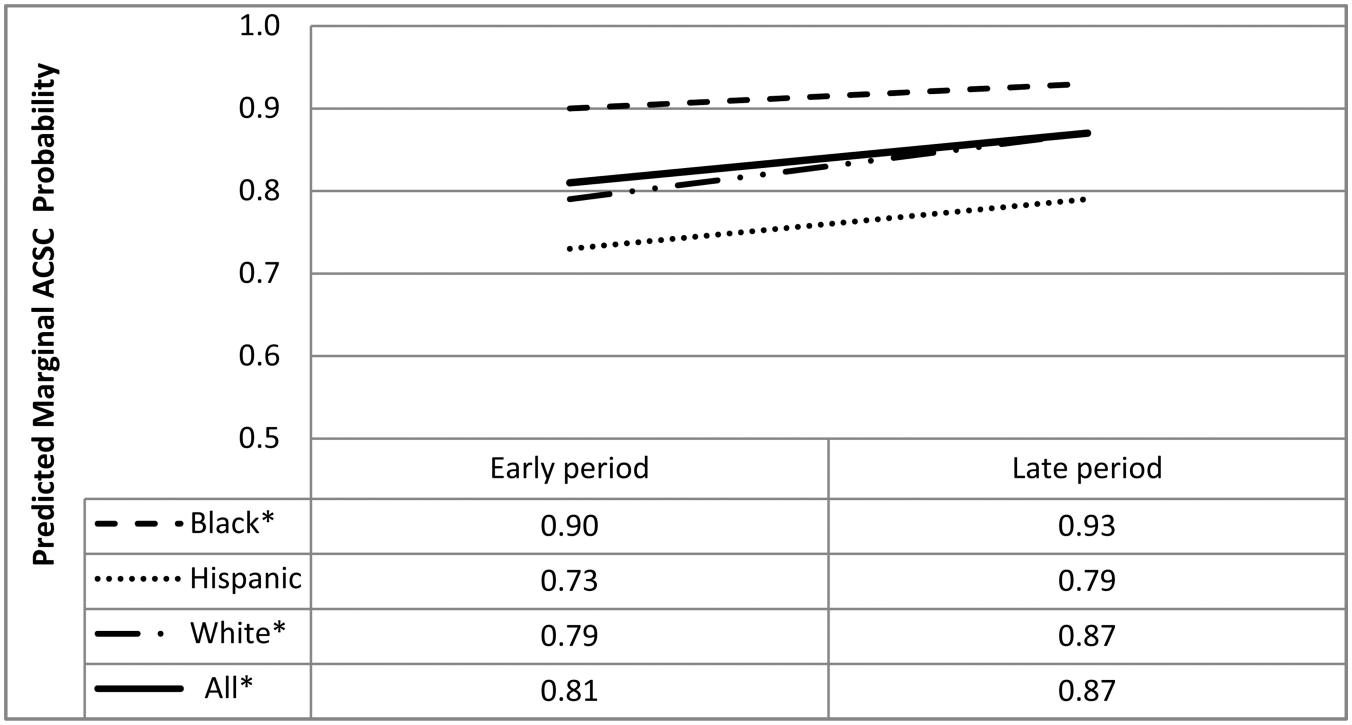
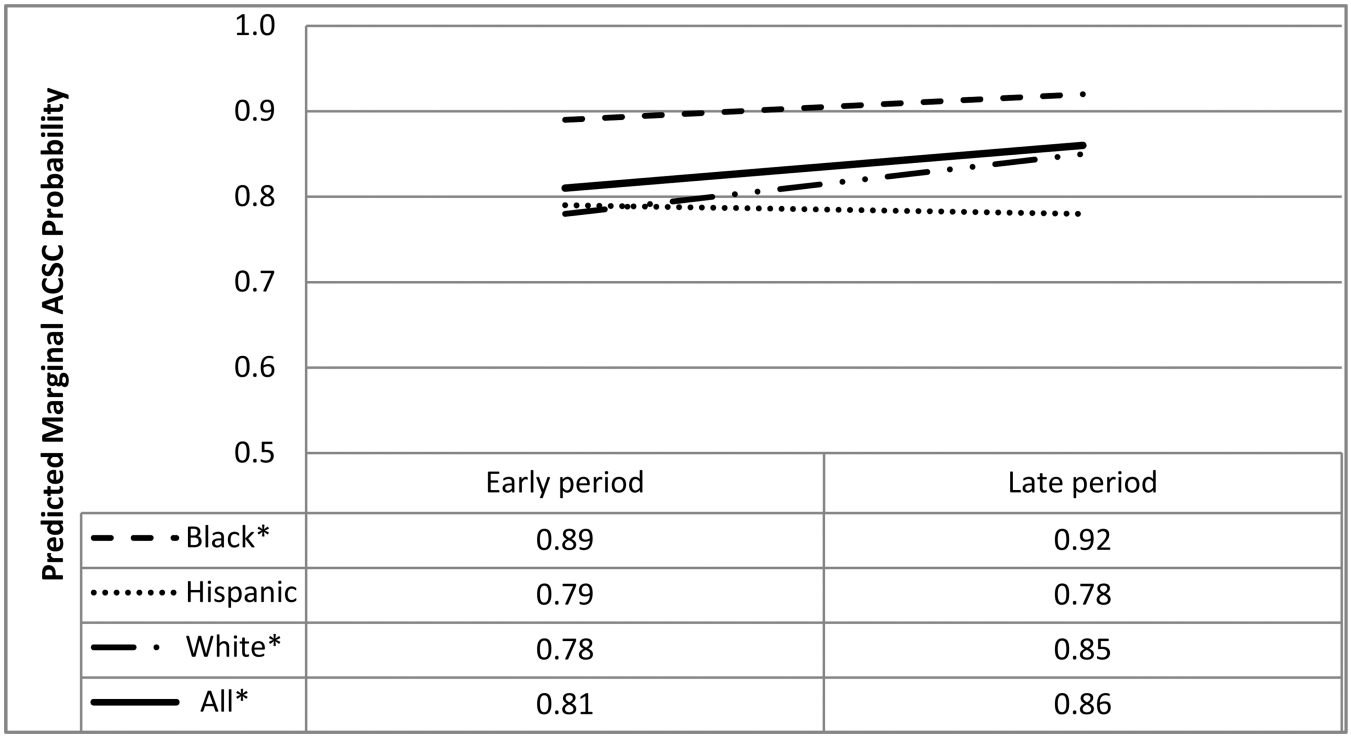


	Early period	Late period
Black*	0.90	0.93
Hispanic	0.73	0.79
White*	0.79	0.87
All*	0.81	0.87

Figure 1.
Model Predicted Marginal ACSC Probability for People Living in Areas Where SNHs Closed/Converted and CHC Additions Occurred, by Study Time Period and Race or Ethnicity
* The difference between early and late time periods is significant at $p < 0.05$.



	Early period	Late period
Black*	0.89	0.92
Hispanic	0.79	0.78
White*	0.78	0.85
All*	0.81	0.86

Figure 2.
Model Predicted Marginal ACSC Probability for People Living in Areas Where CHC Expansion Occurred But No SNH Contraction Occurred, by Study Time Period and Race/ethnicity
* The difference between early and late time periods is significant at $p < 0.05$.

Table 1

List of ambulatory care sensitive and marker conditions used to select hospital discharge records for study

Ambulatory Care Sensitive Conditions		**Marker Conditions**
Angina	Hypertension	Acute myocardial infarction
Asthma	Grand mal status and other epileptic convulsions	Fracture hip/femur
Bacterial pneumonia	Hypoglycemia	Appendicitis with appendectomy
Lower limb peripheral vascular disease (PVD)	Immunization-related and preventable conditions	Gastrointestinal obstruction
Chronic obstructive pulmonary disease	Pulmonary or other tuberculosis	
Congenital syphilis	Kidney/urinary infection	
Congestive heart failure	Nutritional deficiencies	
Dehydration-volume depletion	Pelvic inflammatory disease	
Acute diabetic events	Iron deficiency anemia	
Dental conditions	Cellulitis	
Failure to thrive	Severe ear, nose, or throat infections	
Gastroenteritis	Skin grafts with cellulitis or septicemia	

Table 2

Comparison of changes in numbers of uninsured people discharged from Florida hospitals, by discharge group

Discharge Group	Early (1992)	Late (2003)	% change*
ACSC	11,862	18,291	0.43
MC	2,703	2,874	0.06
RSC (after excluding ACSC and MC)	1,063	2,713	0.87
All others (excludes the above three)	60,522	81,828	0.30

*Calculated as the difference in early and later period numbers, divided by their average value across the two periods.

Table 3

Patient and Contextual Characteristics by Time Period

	Early (1992)	Late (2003)
Patient level data (N)	14,565	21,165
Outcome measure		
Ambulatory care sensitive condition	**81%**	**86%**
Marker condition	**18%**	**14%**
Race/ethnicity		
Black	**28%**	**27%**
Hispanic	**10%**	**18%**
White	**62%**	**55%**
Age group		
25–34	**23%**	**19%**
35–44	**24%**	**27%**
45–54	**25%**	**30%**
55–64	**28%**	**24%**
Sex		
Male	56%	56%
Female	44%	44%
Number of comorbidities: mean (std. deviation)	**1.01 (1.11)**	**1.17 (1.07)**
Log of distance to nearest SN hospital: mean (std. deviation)	**1.54 (2.25)**	**1.91 (2.41)**
County Characteristics		
Number of counties	64	64
Safety net events		
Counties with SNH Contraction and CHC expansion	9	9
Counties with only CHC expansion	55	55
Rural county indicator	51%	45%
% of population in poverty: mean (std. deviation)	**17% (4%)**	**14% (4%)**
% of foreign born: mean (std. deviation)	**5% (6%)**	**7% (8%)**
Primary care physicians per 1000 population: mean (std. deviation)	**0.3 (0.1)**	**0.4 (0.1)**

Bold fonts indicate that the difference between time periods is statistically significant at the 95% level of confidence or better ($p < 0.05$).

Table 4

Multilevel Logistic Model Results: Coefficient Estimates and Their Standard Errors

Variable	Coefficient	Standard error
Race/ethnicity		
Black (versus white)	0.8853***	0.0860
Hispanic (versus white)	0.0844	0.0615
Time period		
Late period (versus early)	0.5140***	0.0603
Safety net event		
SNH contraction and HC expansion (versus HC expansion only)	0.0709	0.0992
Interaction of race * time		
Black, late	−0.2196*	0.1109
Hispanic, late	−0.5655***	0.0862
Interaction of race * SN event		
Black, contraction	−0.0123	0.1448
Hispanic, contraction	−0.3993*	0.1558
Interaction of time * SN event		
Late, contraction	0.0836	0.1363
Interaction of race*time*SN event		
Black, late, contraction	0.0043	0.1708
Hispanic, late, contraction	0.2950	0.2976

Additional statistical control variables not included in the table: patient characteristics including age, gender, number of comorbilities, distance to nearest SNH; and contextual characteristics including percent of population in poverty, percent of population that is foreign born, primary care physicians per 1000 population, and an urban-rural indicator for the county of patient's home address.

* p< .05 ;

** p< .01;

*** p< .001