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Disparities in health care among Vietnamese New Orleanians and the impacts of Hurricane Katrina

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Abstract

This paper examines the use of routine health care and disparities by socio-economic status among Vietnamese New Orleanians. It also assesses how these differences may have changed as the result of Hurricane Katrina, which struck the Gulf Coast in late summer 2005, devastating the infrastructure of the health care system of New Orleans. Data for this study come from a panel of Vietnamese New Orleanians who were interviewed in 2005, just weeks before the hurricane, and followed up twice near the disaster's anniversary in 2006 and 2007. Findings show a steep declining trend in routine health care after the hurricane, compared to 2005. Marked differences in health care were already apparent in 2005 (before Katrina) between education levels, home ownership, and health insurance coverage. These differences were significantly reduced one year after the hurricane. We argue, however, that the reduction in disparities was not due to improved health care services or improved health care practice. Instead, it was likely due to the influx of free health care services that were provided to meet urgent needs of hurricane survivors while the area's infrastructure was devastated. By 2007, these free health care services were no longer widely available. Routine health visits dropped further and the temporary reduction in disparities disappeared. The paper also underlines ongoing shortages of essential health care services for Vietnamese New Orleanians. Efforts need to ensure that all members of this community receive the full array of comprehensive and culturally-appropriate health care as they continue to rebuild from the Katrina disaster.

Keywords

disparities; health care; service utilization; Hurricane Katrina; Vietnamese immigrants

INTRODUCTION

The levee failures after Hurricane Katrina struck the Gulf Coast resulted in heavy flooding in the New Orleans area, including New Orleans East, where the majority of the city's Vietnamese-American resides. While Vietnamese-Americans appear to have the highest return rates in the city (Vu, VanLandingham and Do 2008), basic health services are virtually absent in their community: there is only one Vietnamese family doctor in the area (compared to two physicians pre-Katrina) and the closest emergency health facility is 15 miles away. The limited availability of health services may result in health care inequality among the community as the well-off may be more likely to use scarce health services than others. This paper examines disparities in health care utilization by socio-economic status among Vietnamese-Americans in New Orleans before Hurricane Katrina and the extent to which the disaster affected such disparities in its aftermath. Our analyses benefit from

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unusual pre- and post-disaster data from a population-based sample of working-aged first generation Vietnamese-Americans.

BACKGROUND

Health problems after Hurricane Katrina

Disasters present a wide range of mental and physical health challenges to survivors (Norris et al. 2002a; Norris, Friedman, and Watson 2002b; Phifer, Kaniasty and Norris 1988; Soeteman, Yzermans, and Spreeuwenberg 2008). Hurricane Katrina was no exception. Substantial health care needs for chronic physical conditions and emotional distress were found for half or more of all adult survivors two months after the hurricane occurred (CDC 2006). Six months after the hurricane, a survey of families with children still residing in trailers or hotel rooms supplied by FEMA found that 44% of adult caregivers had significant psychological distress (Abramson and Garfield 2006). Kessler et al. (2006) followed a subset of a pre-disaster population-based sample several months after the hurricane and found that the post-disaster prevalence of serious mental illness nearly doubled that of pre-disaster. Another survey with an area-based probability sample conducted one year after a hurricane reported substantial mental health problems: 19% of those surveyed experienced probable mild-moderate mental illness and another 20% experienced probable serious mental illness (Sastry and VanLandingham 2008).

While these studies are focused largely on English-speaking populations, there has also been evidence of disparities in health issues by race and culture. Generally, blacks in New Orleans reported higher stress levels than whites concerning both their present predicament and future prospects (Elliot and Pais 2006). This is consistent with findings from an earlier study (Kessler, 1979, cited in Elliot and Pais 2006), which indicated that racial minorities were more likely than whites to report “extreme distress” in times of crisis because they were more influenced by stressful situations. Increased risks of adverse psychological consequences after disasters among ethnic minorities were also found among ethnic minorities in a review by Norris and Alegria (2005). In New Orleans, Sastry and VanLandingham (2008) also reported disparities by race as the most salient disparities in mental illness post-Katrina: blacks were more likely to experience psychological distress than whites and others, a difference that appeared attributable to a higher probability of severe property damage among blacks.

Whether Vietnamese-Americans in the New Orleans area who experienced Hurricane Katrina had similar, better, or worse outcomes is a question that has received less attention. Using the same population-based data that are used in this analysis, Norris, VanLandingham and Vu (2009) find that while 21% of working-age first-generation Vietnamese-Americans met criteria for partial PTDS, only 5% met the criteria for full PTSD; rates that are substantially less than those reported for other groups of pre-disaster New Orleans residents.

Zhou and Bankston (1994;1998) and Bankston and Zhou (1997), studied this same community extensively before Katrina for their seminal work on the assimilation of Vietnamese Americans into U.S. society. They found that Vietnamese-Americans typically arrived poor, and generally moved into marginal urban areas similar to their enclave in New Orleans East. These two authors credit the close-knit character of the community – developed in part due to the enormous suffering so many experienced as part of their exodus from war-ravaged Vietnam - with the general success of most second generation Vietnamese American children in avoiding many of the urban perils that plague their similarly disadvantaged neighbors. These same community characteristics may well prove to be a source of resilience for their first-generation parents as they move on with their lives post-Katrina. Indeed, Leong et al. (2007), working in this community during the first few months

post-Katrina, report that some survivors noted that rebuilding their lives post-Katrina was less difficult than relocating from one's place of origin; and we heard similar reflections during our own fieldwork.

Health care utilization among Vietnamese-Americans

Early studies of health care utilization among Vietnamese-Americans have found use to be low (Strand and Jones 1983). Compared to whites, Vietnamese-Americans are less likely to report one or two annual health care visit but more likely to report no annual visits at all (D'Avanzo 1992). Utilization rates may well vary by geographic location. In Southern California, which has the largest concentration of Vietnamese-Americans, Gellert (1995) found that 70% of Vietnamese-Americans respondents reported routine health care visits. But D'Avanzo (1992) observed a lack of native Vietnamese primary providers serving this immigrant population nationally, although they tend to prefer health care from physicians of the same ethnic background (D'Avanzo, 1992; Spencer and Chen, 2004).

Low health care utilization patterns among Vietnamese-Americans have been attributed to three broad factors: culture (e.g., health beliefs and language), physical barriers (e.g., health insurance and transportation), and knowledge or perception of access (D'Avanzo 1992; Gellert 1995). The benefits of having a common language encourage many immigrants to seek care from Vietnamese-speaking physicians (D'Avanzo 1992; Le 2004; Pham, Rosenthal, and Diamond 1999). A disjuncture between traditional and western belief systems has also been implicated in much of the literature as an important barrier to use of health care services among Vietnamese immigrants in North America and other developed countries (see, for example, Donnelly 2006; Fung and Wong 2007; Houston 2002; Le 2004), although Jenkins et al. (1996) did not find similar results. These cultural differences in belief systems involve not only the conceptualization of health and illness, but also assumptions with regard to the patient-provider relationship (Donnelly 2006).

Other constraints to health care among Vietnamese-Americans include unemployment, difficulties in obtaining government and other types of assistance, and lack of health insurance (Pham, Rosenthal, and Diamond 1999; Stephenson 1995). Only about half of Southeast Asian immigrants have job-based health insurance compared to almost three-quarters of whites; 27% of Southeast Asian immigrants have no health insurance at all, compared with 13% of whites and 23% of blacks without insurance (Smedley, Stith, and Nelson 2002). Many recent Vietnamese immigrants are also unaware of different health care options that are available to them (Gold 1992; Hill et al. 2006; Ma 2000; Miltiades and Wu 2008). For example, among the 1975 refugee cohort in the Washington State, 50-70% of refugees were not aware of vital services including free emergency care, legal help, or low income housing (Gold 1992).

In New Orleans, there were problems related to access to care that existed before Hurricane Katrina, and the disaster exacerbated many of these problems. Before the storm, the number of hospital beds per 1,000 population in New Orleans was 3.03, already lower than the national average of 3.26. After the storm, the per capita figure dropped to 1.99 (Berggren and Curiel 2006). In-patient beds for mental health services were reduced from a total of 462 beds before the storm to 160 beds afterwards, and only 3 of the 8 pre-Katrina mental health out-patient clinics in the area were open after the disaster (Rudowitz, Rowland and Shartzer 2006). Shortages of health-care professionals remain: by 2008, there was only about one primary care physician for every 3,000 people and only one psychiatrist for every 21,000 people (Calderon-Abbo 2008). By the spring of 2006, there had been a 28% drop in primary health care services available and the displacement of 24.4% of surveyed physicians from their residences (Madamala et al. 2007). Quality of care may have suffered as well: among

those providing post-Katrina mental health care, two in five reported being “burned out” in a web-based survey in 2007 (National Council for Community Behavioral Healthcare 2007).

It has been well-documented that these post-Katrina shortages in access to health care and medication affected both native born residents (CDC 2006,Wang et al. 2008) and Vietnamese immigrants (Vu et al. 2008) in the affected area. Vu et al. (2008) found that one year after the hurricane, 40% of working-aged Vietnamese-Americans in the New Orleans area still reported difficulties in obtaining health care and medication. But the degree to which access was affected by the disaster has received less attention, no doubt due in large part to the data demands that such an analysis would require. Fortunately, our pre and post-Katrina measures for a population-based sample of working age Vietnamese immigrants provide a rare and valuable opportunity to highlight pre-existing disparities in health care utilization by social and economic factors within this key immigrant population; and the degree to which these disparities may have been exacerbated – or mitigated – by the Katrina disaster.

DATA AND METHODS

Data

Data for this paper come from a pre- and post-Katrina panel of Vietnamese immigrants of working age (25-49) in New Orleans. Baseline data, including physical health measures and information related to health service utilization, were collected from 127 randomly selected individuals in 2005, only weeks before Hurricane Katrina struck the Gulf Coast. These same measures were collected again during the fall of 2006 for 82 members of the original sample. During the fall of 2007, we were able to re-interview 91 of the original cohort; 80 of these 91 responded to all 3 rounds of data collection. Respondents re-interviewed in 2006 and 2007 are made up almost exclusively of individuals who had returned to the New Orleans area after the evacuation; 46 of the original respondents were not re-interviewed in 2006. Those who had returned by 2006 were more likely than those who had not to be married, to own a home, to work in the skilled sector of the economy rather than in professional occupations, and to have under-18 children (Vu et al. 2008). There were no significant differences in pre-Katrina health status between those who were re-interviewed and those who were not (results not shown). The potential impacts of differences between returnees and non-returnees on the current analysis will be discussed.

The key outcome of interest is whether an individual obtained a routine physical exam within the year preceding the interview. The main independent variables are socio-economic measures, including education, home ownership and health insurance. Health insurance is highly correlated with employment status because most health insurance in this population was obtained through employers.

Statistical models

Our data involve a three-wave panel design, observing the same individuals at roughly one-year intervals. Panel data allow for much richer analyses of individual-level behaviors because they permit us to address the importance not just of observable confounders but also the influence of unobservable factors. More specifically, we assume in our models that there is a time constant unobservable effect that influences the routine health care decision itself. There are different approaches to analysis that control for these unobserved factors (Brüderl 2005; Wooldrige 2002). However, most of these approaches would require that data be aggregated at the individual level, which would not be appropriate in this case as we aim to examine changes over time.

For this reason, we need an approach that allows us to control for unobserved factors at the individual level, and at the same time, to examine changes between three time points. We specify a random effect logit model containing an individual level effect α_i as follows:

$$\Pr(y_{it}=1)\,|x_{it}, \cdot\beta, \alpha_i) = \Lambda\left(\alpha_i + x_{it}' \cdot \beta_1 + t_{it} \cdot \beta_2 + x_{it}' \cdot t_{it} \cdot \beta_3\right)$$

where:

$\Lambda(z) = e^z / (1 + e^z)$ is the logistic distribution

y_{it} = a measure of the routine health exam outcome for individual i at time t (t=0, 1 and 2)

x_{it} = a set of characteristics of individual i at time t

t_{it} = indicator of time

α_i = time variant normally distributed random error with mean 0 and standard deviation σ_α^2 (Cameron and Trivedi 2008).

The above model does not have a closed form solution and the likelihood function and its derivates are calculated in *Stata 10.0* using adaptive Gauss-Hermite quadrature with the *xtlogit, re* command. The *quadchk* command is used to refit the model with different numbers of quadrature points and compare the results (StataCorp 2007).

We focus on several parameters. The first are the β's for the individual covariates (β_1), which reflect the time invariant effect of the covariates (e.g. years of education) on the outcome of interest. For example, a positive β_1 for education indicates that individuals with higher education were more likely to have had routine annual health exam. The second important parameters are the β's for the covariates interacted with the time dummy variables for second and third waves (β_3). These interaction terms test whether the effects of the individual covariates have changed in statistically significant ways for the latter two waves, compared to the first wave (in 2005). A positive β_3 coupled with a positive β_1 of a specific independent variable indicates an increased inequality in health care by that factor over time, while a negative β_3 coupled with a positive β_1 indicates a decreased inequality in health care over time.

FINDINGS

The distribution of the panel sample by basic characteristics as measured in 2005 is presented in Table 1. Nearly three quarters of the sample (73%) were more than 40 years old when they were first interviewed; one-third (32%) were females. Many more males than females emigrated to the U.S. after the war (Goodkind 1997). More than half (56%) had at least 12 years of combined schooling in Vietnam and in the U.S. The majority of the respondents (83%) also owned their home before the hurricane hit. About a third - 35% - of the sample did not have health insurance in 2005. In terms of acculturation, 40% could be described as Vietnamese in orientation and 60% could be described as bicultural.

The first three columns of Table 2 present the proportion of respondents who obtained a routine physical exam within the last 12 months and its variation by basic socio-demographic characteristics before and after Hurricane Katrina. There was a significantly declining trend in the percentage of respondents who obtained a routine physical exam in the 12 months before the interview. Before the hurricane occurred in late August 2005, as many as 71% of the respondents had had a routine exam during the previous year. This proportion

dropped dramatically to 56% one year after the hurricane; two years after the hurricane, only 44% of the respondents had had a routine health exam during the past year ($p<.001$).

The first three columns of Table 2 shows several statistically significant variations in obtaining a routine exam by the basic socio-demographic factors of interest in 2005, 2006, and 2007. Sex differences in health care were significant in 2005: the vast majority of women (92%), compared to 61% of men, had obtained a routine exam during the past year ($p<.001$). Routine physical exam also varied by homeownership before the hurricane struck: more than three-quarters (77%) of house owners had had a routine exam within a year, while only 43% of renters had done so ($p<.05$). Having health insurance, as expected, was an important factor that differentiated those with and without an annual routine physical exam as measured in 2005: while just over half of our respondents without health insurance had a routine exam within the last 12 months, 81% of the insured had done so ($p<.001$). Also, the vast majority (90%) of those who perceived their health to be poor in 2005 had obtained a routine exam within the 12 months before the survey, compared to only two-thirds of those who did not report poor health. However, this difference is not statistically significant. No differences were observed in routine health care between age groups[1], education levels, and acculturation.

Over time, these variations are found to change markedly from the period just before Katrina (2005) to the period that followed (2006 and 2007). One notable finding is the disproportional decline of routine health care among women, compared to men. Annual health assessment for women dropped by half from 92% in 2005 to 46% in 2006, and then further dropped to less than 40% by 2007. Meanwhile, routine health care among males remained stable between 2005 and 2006 at about 60%; it dropped in 2007 to 46%, by which point it was higher than that for women.

Another key finding is changes in routine health care between home owners and others. While home ownership conferred an advantage for routine annual health assessment in 2005 (compared to those who did not own a house), the difference was reversed one year after the hurricane: just over half of home owners had obtained a routine health exam in 2006, compared to 83% of those who did not own a house ($p<.05$). Annual health care assessment then dropped among both owners and non-owners by 2007 to the same level of 43%.

Differences in routine health care seen between those with and without health insurance in 2005 were no longer observed after the hurricane. One year after Katrina, the decline in routine health care was more marked among those with health insurance than among those uninsured. One year after that (in 2007), routine health exam obtainment was stable among the insured but dropped among the uninsured, leaving the uninsured at a disadvantage compared to the insured. The differences in 2006 and 2007, however, were not statistically significant. Self-reported overall health status, which did not show a significant association with routine health care in 2005, was significantly related to health care in 2006 ($p<.001$). The differences were consistent during the initial two years after Katrina: a higher percentage of those who reported poor health had obtained an annual check up than did those who did not report poor health. Routine health care declined for both groups.

The association between acculturation and obtaining annual health exams also showed interesting changes during this early post-Katrina period. While there was no difference in routine health care between Vietnamese-oriented and bicultural-oriented groups in 2005, the difference between them in 2006 was remarkable. Those more bicultural experienced a marked drop in annual visits while the more Vietnamese-oriented group experienced a small

[1]All of our respondents are middle-aged.

increase. As a result, only two in five among the bicultural group obtained routine health care in 2006, compared to nearly three-quarters of the Vietnamese-oriented group ($p<.01$). By 2007, however, the Vietnamese-oriented group experienced a sharp decline in health care, bringing the proportion of people who obtained routine health care among this group close to that of the other group.

Similar to variations in health care by overall health and acculturation, routine health care also did not show statistical significant differences by age in 2005 but did by 2006. The change results from a drop in health care among younger (under 40 years old) Vietnamese from nearly 70% in 2005 to only 38% in 2006, while routine health care among older (41 years old or more) Vietnamese only went down slightly from 72% in 2005 to 64% in 2006 ($p<.05$). In 2007, the difference was reversed due to an increase to 54% of routine health care among the younger group and a drop to 42% among the older group.

Factors associated with obtaining a routine physical exam and changes over time

The last two columns of Table 2 present the results of the random effect multivariate models, which examine factors influencing health care and how these influences might have changed during the period from just before to just after the hurricane. Model 1 shows the main effects of socio-economic factors and Model 2 shows the interactions of these factors with time.

Results from Model 1 show significant influences of education and health insurance on obtaining routine health care, as well as differences in obtaining routine health care by self-reported overall health status. Compared to an average middle-aged first-generation Vietnamese New Orleanian, people with more years of education were more likely to obtain routine health care ($p<.10$). Having health insurance is another factor significantly associated with increased routine health care: those who were insured were more likely than the uninsured to obtain routine health care ($p<.05$). Also as expected, people who reported poor overall health status were significantly more likely than those who reported better health to have obtained routine health exam ($p<.01$). In addition, Model 1 shows a significant declining trend in health care over time, controlling for individual factors in the model: compared to 2005, individuals were significantly less likely to obtain a routine physical exam in 2006 and 2007 ($p<.05$ in 2006 and $p<.001$ in 2007).

Model 2 shows some evidence of change in the associations between individual socio-economic factors and health care over time. Most noticeably were changes in routine health care by home ownership between the time just before and the initial two years after Katrina struck. In this model, home ownership provided an advantage in the obtainment of routine health care in 2005 ($p<.10$). This advantage was significantly reduced in 2006, in other words, the inequality in health care by homeownership was significantly reduced one year after the hurricane ($p<.01$). No changes in this dimension of inequality, however, were observed during the second year after the hurricane. There was also a slight reduction in inequalities in obtaining routine health care by health insurance coverage in 2006 ($p<.10$), but not in 2007. There were no changes in the differences in routine health care by education during the period of interest.

Ethnicity of Health Care Providers for Vietnamese New Orleanians

During the year just before Katrina, among our respondents who had obtained an annual physical exam, three-quarters of them had done so from a Vietnamese health care provider (results not shown). During the first year after the hurricane, this proportion declined dramatically to 61%; and further to 41% during the second year (2007). In addition, during this period, many of the factors that had distinguished those who sought out Vietnamese

providers before Katrina became insignificant afterwards. Before Hurricane Katrina, respondents who are older (41 or above), who had no health insurance and who were more Vietnamese in cultural orientation were much more likely than others to receive health care from a Vietnamese provider ($p<.05$, $p<.10$, and $p<.05$, respectively). Post-Katrina, the only significant predictor for receiving care from a Vietnamese provider was health insurance status: those who had no health insurance but received an annual health exam were still more likely than those who had insurance to visit a Vietnamese health care provider (rather than a non-Vietnamese provider) in 2006, but in 2007, this difference was reversed.

DISCUSSION

We examine patterns of use of routine health care among Vietnamese New Orleanians both before and after Hurricane Katrina struck the Gulf Coast in late August 2005. Measures of health status and access to health care were collected for a random sample of first-generation middle-aged Vietnamese New Orleanians just before the hurricane occurred, and most of these original respondents were followed up in 2006 and 2007, providing unique panel data for a longitudinal analysis of change in health care access for this population resulting from the disaster.

Our data show significant declines in obtaining annual routine health exams during these first two years post-Katrina. We speculate that this decline in use stemmed from two major factors. The first factor involves the widespread lack of health care services in New Orleans – especially in the East - immediately after Katrina struck. Post-Katrina access to health care and medicine was cited as a major problem for over half of this Vietnamese American population during 2006 (Vu et al. 2008). During the second year after the disaster (2007), a third of the respondents still reported at least some difficulties accessing health care (results not shown). Rudowitz, Rowland, and Shartzer (2006) reported that the number of physicians throughout the affected area dropped from about 4,500 before to 1,200 after the hurricane; and the number of emergency medical service units declined from 17 in 2005 to 7 in 2006. Our findings suggest that this decline in providers was severe among Vietnamese-speaking practitioners; which may well have been a contributing cause in the steep decline in obtaining routine health care among Vietnamese-Americans, given their preference for such providers

Second, given the vast array of significant problems needing immediate attention from our respondents during these initial two years post-Katrina, e.g., very large and widespread financial losses, problems with insurance and government agencies, over-crowding, crime, etc., (Vu et al. 2008), one’s own health care may well have been perceived as a low priority among members of this working-aged generation who bore the primary responsibility for getting their families and community moving forward again. More on this below.

While overall *access* to routine health care declined during the post-Katrina period, several *disparities* in obtaining routine health care - notably by health insurance and home ownership status - were significantly reduced in 2006. But by 2007 these disparities were indistinguishable from their pre-Katrina levels. This short-lived reduction in disparities may have been due to efforts by various agencies to provide free basic health care for all in the affected region, particularly during the year immediately following the hurricane (2006). Our discussions with community leaders indicate that health fairs and mobile vans helped to temporarily fill the major gaps that resulted from a health care infrastructure shattered by Katrina (Fr. Vien, personal communication; Tran, personal communication). Many of these efforts focused on areas that were especially hard-hit, including New Orleans East, where Vietnamese-Americans are concentrated. By 2007, most of these efforts to meet the most urgent health care needs post-disaster may have either been withdrawn or perhaps were no

longer being accessed by members of this community. Receiving welfare is embarrassing to many Vietnamese-Americans and so many may have chosen to forego these free or subsidized services once their most severe health needs had been met.

Similar to the patterns above, bi-variate pre-Katrina disparities favoring women with regard to obtaining an annual exam disappeared during the first year after the storm. And as above, this reduction in differentials was due, unfortunately, not to any general improvements but rather to a steeper decline among women than among men. Further research is needed to assess possible differential impacts of Hurricane Katrina on the use of health care among Vietnamese men and women. Steep declines were also observed among our middle-aged respondents during this period. Health status measures of this same population (Norris, VanLandingham, and Vu, 2009 in press) and from other post-Katrina studies (Sastry and VanLandingham 2008) indicate that it was middle-aged (40 and above) individuals whose health suffered the most post-Katrina. Our data presented here unfortunately reveal that the middle-aged also showed some of the steepest declines in use of routine health care services during this same period.

Our study has important limitations. One is the small sample size, making it difficult to confirm key relationships such as associations between self-reported overall health status and routine health care in 2005 - significant in bi-variate analysis but not in multi-variate analysis. Second, only about two-thirds of the original sample was interviewed for all 3 rounds, introducing the possibility of bias due to loss-to-follow up. Fortunately, on most key measures of interest, e.g., a broad array of pre-Katrina physical and mental health status measures, differences between those re-interviewed and those lost-to-follow-up are very small and statistically insignificant. However, there are some differences. For example, those who were re-interviewed (i.e., had returned to the area) in 2006 were more likely to own a home than those who were not re-interviewed (Vu et al. 2008). Thus, limiting our analysis to those who were interviewed in all three waves skews the sample towards home-ownership, which may result in an overestimate of the difference between home-owners and renters. Another limitation involves possible endogeneity between self-reported overall health status and routine health exams. Indeed, overall health status declined after Katrina (results not shown), along with declines in the use of routine health exams, suggesting that our reported effects of Hurricane Katrina on routine health exams may well be understated.

Despite these limitations, our paper highlights important trends and key disparities in health care among Vietnamese-Americans in the greater New Orleans area before and after Hurricane Katrina. Our paper also underlines ongoing shortages of essential health care services for Vietnamese New Orleanians. Routine annual exams are an important component of – and proxy measure for – the full array of basic health care services that must be available to working-age adults. The proportion of our study population receiving these basic services remains far below what it was before the disaster. Women and the middle-aged have been especially affected; those without health insurance remain at high risk. The opening of a new health clinic in the area during the second half of 2008 by Tulane University is one of the first steps to address these new and ongoing problems. It also presents a terrific opportunity to ensure that all members of this community receive the full array of comprehensive and culturally-appropriate health care as they continue to rebuild from the Katrina disaster.

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Table 1

Distribution of the original sample in 2005.

Characteristics	%
Age	
Under 40	27.1
41 and above	72.9
Gender	
Male	68.3
Female	31.7
Education	
<12 years	43.9
≥12 or more years	56.1
Ownership of house currently lived in	
No	17.1
Yes	82.9
Have health insurance	
No	35.4
Yes	64.6
Acculturation	
Vietnamese	40.2
Bicultural	59.8
N	**82**

Table 2

Factors associated with routine physical exam in the last year among Vietnamese immigrants in New Orleans, 2005-2007.

	Routine physical exam within the last year				
	%			Coef. (s.d.)	
	2005	2006	2007	Model 1	Model 2
Age				−.00	.02
Under 40	68.9	37.5*	53.9		
41 and above	71.7	63.8*	41.8		
Gender				−.11	−.02
Male	60.7**	61.1	46.2		
Female	92.3**	46.4	39.3		
Education				.01†	.01
<12 years	63.9	64.5	40.5		
≥12 or more years	76.1	51.0	46.5		
Ownership of house currently lived in				.14	1.49†
No	42.9*	83.3*	42.9		
Yes	76.5*	51.4*	43.9		
Have health insurance				.80*	1.61*
No	51.7**	56.8	30.8		
Yes	81.1**	55.6	50.0		
Overall health now is poor				1.03*	.90*
No	67.6	41.5**	40.0		
Yes	90.9	70.7**	48.6		
Acculturation				−.02	.01
Vietnamese	68.1	73.7**	46.7		
Bicultural	74.3	40.9**	40.0		
Year					
2005				—	—

	Routine physical exam within the last year				
	%			Coef. (s.d.)	
	2005	**2006**	**2007**	**Model 1**	**Model 2**
2006				−.84*	1.30
2007				−1.37***	−.151
Year * home ownership					
2005 * ownership					—
2006 * ownership					−3.27**
2007 * ownership					−1.28
Year * health insurance					
2005 * health insurance					—
2006 * health insurance					−1.46†
2007 * health insurance					−.83
Year * years of education					
2005 * 12 or more years					—
2006 * 12 or more years					−.12
2007 * 12 or more years					.05
Total	70.7**	56.1**	43.8**		
N	**82**	**82**	**80**	**242**	**242**

† p<.10

* p<.05

** p<.01

*** p<.001