

Disability status differentials across fifteen Asian and Pacific Islander groups and the effects of nativity and duration of residence in U.S.

Cho, Youngtae

Disability Status Differentials across Fifteen Asian and Pacific Islander Groups and the Effect of Nativity and Duration of Residence in the U.S.*

ABSTRACT: This study examines disparities in disability status across 15 Asian and Pacific Islander American (API) subpopulations and how nativity and duration in the U.S. influence these differences. Employing three disability questions (work limitations, mobility limitations, and self-care limitations) from the 1990 PUMS, the authors find substantial heterogeneity in disability status across API subgroups: while Japanese American adults have the most favorable outcomes, Other Southeast Asian adults (Laotians, Hmong, and Cambodians), followed by Vietnamese and Pacific Islander adults, suffer from a high risk of disabilities. Many of the disparities in disability status across API subpopulation adults are attributable to differentials in demographic characteristics and SES. The inclusion of an interaction term of age and nativity/ duration of residence in the U.S. in multivariate regression analyses demonstrates that the effect of nativity/duration plays a different role across age, net of demographic, and SES risk factors. The overall findings are also consistent with previous studies on the relationship between immigrant health and nativity/duration. That is, immigrants with short duration in the U.S. have superior health status, measured by risk of disability, than longer-term immigrants and their U.S.born counterparts.

INTRODUCTION

In the past two decades, the size of the Asian and Pacific Islander (API) population in the U.S. has increased dramatically. In turn, interest in the health of this population has also grown (Yoon and Chien, 1996). Although the health of this population has still been understudied compared with that of other minority populations in the U.S., recent studies on API health have broadened to encompass birth outcomes and infant mortality (Singh and Yu, 1996; Morrow et al., 1994), as well as adult mortality (Rogers et al., 1996; Hummer et al., 1999; Elo and Preston, 1997; Hoyert and Kung, 1997). What has been commonly reported across the studies is that this population appears healthier than any other race/ethnic group in the U.S. However, the overarching conclusion of "healthy APIs" has also been criticized in that the data sets employed in most of the studies do not contain sufficient information about the ethnic diversity of this population (Yu and Liu, 1992; Chen and Hawks, 1995; Singh and Yu, 1993; Takada, Ford, and Lloyd, 1998; Browne and Broderick, 1994). For example, APIs are comprised of over 30 different ethnic groups (Douglas and Fujimoto, 1995) that are heterogeneous in terms of culture, economic status, and immigration history. Most previous studies come to the conclusion of "healthy APIs" by examining only a few long-established populations such as Japanese, Chinese, and Filipinos, or by combining APIs into a single group. Therefore, it is important to take into account the heterogeneous characteristics of the various subpopulations when the health of APIs is studied.

Kuo and Porter's (1998) recent report on the health status of Asian Americans from 1992 to 1994 is one of the few studies that more effectively consider the heterogeneity of this population. This descriptive report uses data on seven different API populations from the National Health Interview Survey and shows the heterogeneity of API subpopulations in regard to self-reported health status, activity limitations, physician contacts, smoking habits, and knowledge of AIDS. Their findings reveal that not all API subpopulations have more favorable health status than non-Hispanic Whites. For instance, Vietnamese and Korean Americans are more likely to assess their own health status as fair or poor than non-Hispanic Whites, while other API subgroups (e.g., Japanese and Chinese) appear to have a more favorable health status than Whites. Thus, their study is noteworthy in that it reveals not only the heterogeneity of health status across seven API subpopulations, but also that several API subgroups appear to be less healthy than nonHispanic Whites. However, their study is still not comprehensive enough to capture the complexity and diversity of API health, because the analysis is limited to descriptive tabulations and to just seven subgroups of the API population.

Another important characteristic of the API population is that the majority of individuals are immigrants. Since immigration law changes were made in the mid1960s, API populations began to grow substantially and this growth was accelerated by an influx of refugee populations from Southeast Asian countries in the mid-to-late 1970s (Lin-fu, 1988). Generally, foreign-born persons are thought to be healthier than their U.S.-born counterparts because of the self-selectivity of immigration (Marmot, Adelstein, and Bulusu, 1984), and/or because of their healthy behaviors and strong family support systems (Landale et al., 1999; Rumbaut and Weeks, 1996). At the same time, immigrants are underserved in the formal health care system (Thamer et al., 1997; Shetterly et al.,

1996). Further, the health of immigrants may change with time spent in the U.S. such that duration is associated with declines in immigrant health (Guendelman and English, 1995). Recently, Frisbie, Cho, and Hummer (2001) found that, across eight API populations, several health indicators are less favorable among those individuals who had been in the U.S. longer compared to their immigrant counterparts who had been in the U.S. for a shorter period of time. Thus, the health advantages associated with immigration seem to deteriorate as the length of exposure to U.S. society increases. This has often been thought of as a negative process of acculturation, or "Americanization" (Landale et al., 1999; Zambrana et al., 1997; Rumbaut and Weeks, 1996; Scribner and Dwyer, 1989).

In most previous studies on the relationship between nativity/duration and the health of the immigrant population, the former has been assumed to have a constant effect on the latter regardless of the age of the immigrants. That is, the advantageous health outcomes of newer immigrants in comparison to their U.S.-born counterparts or immigrants with longer duration are assumed to be constant across all ages. However, it is probable that older migrants may exhibit different health trajectories than younger migrants due to their differing levels of acculturation. Compare, for example, two persons who migrated to the U.S. 20 years ago. One came to the U.S. at age 20 and the other at age 70. It is probable that the person who migrated at age 20 would be more acculturated to the host society than the person who migrated at age 70 because of their exposure to the U.S. labor market. Thus, in spite of the same duration of time spent in the U.S., two persons may come to have quite different levels of acculturation due to their age of arrival. Further, the purpose of migration may be quite different for younger migrants (young adults and adults) and older migrants (the elderly). Young persons may opt to immigrate for job-related reasons, while older migrants may be more likely to arrive in the U.S. because of family reunification reasons. When a person migrates for work reasons, s/he should be healthy enough to work and maintain employment, which has been suggested to help account for the selective effect of healthy migrants (Marmot et al., 1984; Rosenwaike, 1991). On the contrary, a migrant entering for family reunification purposes is not necessarily healthy at the time of immigration, and this person may have limited contacts with the host society, which may in turn limit his/her level of acculturation (Douglas and Fujimoto, 1995).

Responding to the limits of previous research on the health of the API population, the current study has the following three aims: (1) to broaden the analysis of API health by examining differentials in disability across 15 API subpopulations; (2) to determine how nativity/duration interacts with the age of migration to influence the health of APIs and ethnic differences in health across API subgroups; (3) to examine the influence of social and economic factors on health differences across API subpopulations.

DATA

There are few data sets that include health-related information for different API subpopulations. The Public Use Microdata Sample (PUMS) (Census of Population and Housing [CPH], 1992) has included a question about work disability since 1970, and in 1990 added two more questions concerning functional disability (Bould, Smith, and Longino, 1997). Further, the 1990 PUMS included 62 detailed race/ethnic codes, and, among them, thirty-one were devoted to API populations. Thus, the current study employs the 1990 5 percent PUMS for the analysis of the disability status of API adult (25-year-old and over) populations. Over 200,000 respondents self-identified that they were of API origin in the 1990 5 percent PUMS (193,232 Asians and 8,596 Pacific Islanders).

Although thirty-one specific API nation-- origin groups are available in the PUMS, groups for which sample sizes are smaller than 1,000 (such as Indonesians, Malaysians, Burmese, and Tahitians) are placed into the appropriate "Other Asian" or "Other Pacific Islander" categories. Cambodian, Laotian, and Hmong persons are combined together as a group (and termed "Other Southeast Asians" throughout the remainder of the paper) because, despite their different cultural origins, their common immigration history as refugees, relatively small sample sizes and, more importantly, very similar disability outcomes made their combination a logical one. Consequently, eleven Asian and four Pacific Islander subpopulations are specified.

In most previous related studies, the health of API populations is compared to non-Hispanic Whites, who are the usual reference category for race/ethnicity (e.g., Elo and Preston, 1997; Hummer et al., 1999). However, we limit our analysis to the health of the 15 API subpopulations only, because of the following two reasons. First, the reason why most previous studies have compared APIs with other race/ethnic groups (mainly Whites) is that most data sets do not allow for the separate analysis of specific API populations (Yu and Liu, 1994). The 1990 PUMS, however, provides sufficient sample sizes for 15 API populations. Given that the purpose of this study is to identify disparities in health among API subpopulations, rather than to compare this population with other race/ethnic groups, it is reasonable to limit our analysis only to APIs. Second, the inclusion of the very large category of non-Hispanic Whites in the regression analyses as a reference race/ ethnic category would lead to their domination of the analyses because their characteristics would overwhelm those of the much smaller API subpopulations (e.g., Frisbie et al., 2001). To isolate the effect of nativity/duration and socioeconomic factors for APIs, it is reasonable to exclude Whites from our analysis. We specify Japanese

Americans as the reference group for our regression models because, with the exception of Hawaiians, they are most likely to be U.S. born, and are the most socioeconomically advantaged of all the API groups.

There are two concerns in utilizing the measure of disability status from the PUMS in studying racial/ethnic differentials. First, the U.S. Census Bureau (2000) voiced a concern about the disability-related information in the 1990 PUMS. Their report concluded that the disability measures in the 1990 PUMS are not specific enough to capture disability conditions, and suggested using the data as only a general indicator of the disability burden of a population. However, they also note that the PUMS is the largest source of information on the prevalence of general disabilities, and has been widely used. Moreover, no other data set that we are aware of contains the number of necessary cases nor the necessary demographic and social variables to analyze API health in such detail. The actual questions, as discussed shortly, also reduce the influence that temporary health problems "such as a broken bone that (is) expected to heal normally" (CPH 1992:B-37) might otherwise have on the results.

Second, previous studies suggest that care should be exercised when comparisons of health status across API subpopulations are made (Uba, 1994; Douglas and Fujimoto, 1995; Takada et al., 1998), because different API groups may interpret health questions differently based on their culture of origin. For instance, Sue (1994) reports that API subpopulations have different levels of somatization and utilization of mental health services, which may be influenced not only by their different cultural orientations but also by different immigration histories. However, Uppaluri, Schumm, and Lauderdale (2001), in their recent study using the National Health Interview Survey, find no significant differences in reported stress across six Asian immigrant ethnic groups. Moreover, the questions asked in the PUMS, as discussed shortly, pertain to detailed disability conditions, making objective comparisons of API health status much more possible.

In an excellent recent example of the use of this data set, Hayward and Heron (1999) utilized the work limitations question from the 5 percent PUMS to analyze racial differentials in the relationship between morbidity and mortality; they found that aggregated APIs have a longer life expectancy and shorter periods of disability than non-Hispanic Whites and other race/ethnic groups. Earlier, Bould et al. (1997) employed the 1990 PUMS to provide a basic descriptive profile of disability status among the oldest old U.S. population, addressing long-term care policy needs. Their analyses were based on the three questions on disability status (self-care limitations, mobility limitations, and work limitations) included in the PUMS. Thus, while 1990 PUMS data is not without faults for analyzing API adult disability, there are no better current alternatives at the population level.

MEASUREMENT AND METHODS

There are three questions related to disability in the 1990 PUMS. One involves work limitations, one involves mobility limitations, and one involves self-care limitations. The actual question for work limitations is "Does this person have a physical, mental, or other condition that has lasted for 6 or more months and which limits the kind or amount of work this person can do at a job?" (CPH 1992: E-14). This question ascertains if a respondent was restricted in his or her choice of jobs or not able to work fulltime (CPH 1992: B-37). The question for mobility limitations is "Because of a health condition that has lasted for 6 or more months, does this person have any difficulty going outside the home alone, for example, to shop or visit a doctor's office?" (CPH 1992: E-14). This question indicates a need for help, but not necessarily a need for care (Bould et al., 1997). The question for personal care limitations asks "Because of a health condition that has lasted for 6 or more months, does this person have any difficulty taking care of his/her own personal needs, such as bathing, dressing, or getting around inside the home?" (CPH 1992: E-14). Many studies have found that functional limitations are associated with a high risk of mortality among elderly populations (Rogers, 1995; Verbrugge, 1989). Recently, Rogers, Hummer, and Nam (2000: Chapter 11) found that young adults are unlikely to be functionally limited, but if they have a limitation, it is an important threat to subsequent survival. While the analyses of the mobility limitations and self-care limitations are carried out among API adults age 25 and over, the analysis of work limitations is limited to API adults aged 25-64, because work limitation status is a much more relevant concept for the working-age population. These three outcomes are coded as "yes" or "no"; we use answers of "no" as the reference category for the analysis of each outcome.

One of the main interests of this paper concerns the effects of duration/nativity on the disability status of API populations. Although 10 subcategories are available in the PUMS for nativity and duration, to be consistent with previous studies that employed this variable (e.g., Frisbie et al., 2001; LeClere, Jensen, and Biddlecom, 1994; Kuo and Porter, 1998), we reclassified it into four categories: U.S.-born (reference category); immigrant, duration 0 to 5 years; immigrant, duration 6 to 10 years; and immigrant, duration 11 years or more. These cutpoints are reasonable in that an immigrant must remain in the U.S. for at least for 5 years to obtain citizenship, and in that after 10 years, the odds of poor health starts converging with the nativeborn (Frisbie et al., 2001; Singh and Siahpush, 2001). To capture the contingent relationship between the outcomes and duration/nativity by age, we include an interaction term of nativity/duration and age in a portion of the analysis. In addition, English ability is controlled, because it has been

shown to be an important risk factor for the health of immigrants (LeClere et al., 1994; Cobas et al., 1996; Zambrana et al., 1997). Because demographic characteristics and socioeconomic status (SES) are strongly associated with disability status (Williams and Collins, 1995), we also include sex, age, marital status, educational attainment, household income, and employment status as sociodemographic factors that are potentially important for understanding subpopulation differences in disability.

Logistic regression analysis is carried out for each outcome variable. To measure the association between ethnicity, nativity/duration, and the health of APIs, we designed four models for each outcome in a progressive fashion (Mirowsky, 1999). Model 1 contains dummy variables for the 15 API subpopulations and serves as a baseline model. Model 2 adds nativity/duration to the baseline model. This shows the net effect of nativity/ duration on the health of API adults, controlling for ethnicity and vice versa. We add the interaction term of nativity/ duration by age in Model 3 to see if the effect of nativity/duration remains the same across adult ages. Finally, Model 4 is a full model that includes all risk factors, including English proficiency, marital status, and the SES variables. All models are adjusted for age, in single years, and sex. To statistically test the differentials of coefficients across logistic regression models, we employed a method introduced by Clogg et al. (1995).

In addition to the regression results for the three disability measures, we provide graphic presentations for each set of results. They represent the predicted probability of each disability outcome for the four nativity/duration categories across the adult ages. The graphs depict the predicted probability of disability, based on the mean value of each risk factor.

RESULTS

Descriptive Analyses. Table 1 shows percentage distributions of nativity/duration, demographic variables, and SES risk factors for 15 Asian and Pacific Islander populations. The percentage distribution for nativity/duration shows that a majority of individuals in most Asian subpopulations are foreign born, except Japanese (63.7 percent U.S. born) and Hawaiians, most of whom are U.S. citizens by birth. Taiwanese, Pakistanis, Asian Indians, Koreans, and Other Southeast Asians tend to be relatively recent immigrants. Indeed, the majority of them have been in the U.S. for fewer than 11 years. The distributions for demographic and SES risk factors are overall consistent with what would be expected from previous studies (Kuo and Porter, 1998; Singh and Yu, 1993; Frisbie et al., 2001). Overall, extensive heterogeneity is found across the 15 API subpopulations, as critiques on the earlier studies of the health of APIs have suggested (Singh and Yu, 1994; Chen and Hawks, 1995). In several instances, differences between the Taiwanese, Chinese, Vietnamese, and Other Southeast Asians are extensive. For example, the Taiwanese are, by far, more highly educated than the Chinese, although their household income distributions are similar. Further, Vietnamese adults are much more advantaged across most SES characteristics compared to the Other Southeast Asian populations. While the majority of Other Southeast Asians speak English not well or at all, more than 60 percent of Vietnamese speak English at least well.

Descriptive analysis of the three disability outcomes (work limitations, mobility limitations, and self-care limitations) are shown in Table 2. All percentages for disability status are directly age-standardized using the age structure of the Japanese. Other Southeast Asians have the highest percentage of work-limited status (20.2 percent), followed by the Vietnamese and Pacific Islander populations (ranges from 10 to 13 percent), compared to the other ethnic groups. Taiwanese adults show an extraordinarily low proportion of work limitations (just 2.3 percent). Although the overall prevalence is less frequent for mobility limitations compared to the other two outcomes, Other Southeast Asians have the highest proportion of this disability (13.4 percent), followed by Samoans (9.3 percent) and Vietnamese (8.7 percent). In the case of self-care limitations, Other Southeast Asians again show the highest percentage (14.8 percent), while Pacific Islander subpopulations (except Samoans at 11.5 percent) exhibit similar proportions to most of the other national-origin groups. Koreans have a surprisingly high proportion of self-care limitations (9.5 percent), given their low prevalence of the other two disabilities. Overall, those populations with a longer immigration history (e.g., Japanese, Chinese, and Filipinos) have a more favorable disability status profile than most other API groups with relatively shorter immigration histories. Other Southeast Asians, Vietnamese, and Pacific Islander subpopulations have the least favorable disability status profiles compared to the other groups. Interestingly, Thai and Vietnamese adults are much better off than the Other Southeast Asian populations, a finding which is consistent with Brainard and Zaharlick (1989).

Logistic Regression Analyses. Results of logistic regression analyses for the effects of national origin and nativity/duration on work limitations among API adults are presented in Table 3. This analysis is limited to individuals of age 25-64. Model 1 shows that Taiwanese and Chinese adults are significantly less likely to be work limited than Japanese adults, controlling for age and sex. Other Southeast Asians and Pacific Islander subpopulations have much higher likelihoods of work limitations than other ethnic groups. For example, Other Southeast Asians have over five times higher odds of having a work limitation than do Japanese American adults.

In Model 2, where the effect of nativity/ duration is added, odds ratios increase for most API populations, suggesting these

populations are advantaged in work limitation status due in part to their immigrant status in comparison to the Japanese (differences of odds ratios for all national-origin groups between Model 1 and Model 2 are significant in $\alpha = 0.05$). Further, odds ratios for nativity/duration are all smaller than unity, indicating immigrants are better off, in terms of work limitations, than their U.S.-born counterparts. However, duration in the U.S. does not show much of an effect for the risk of work limitations.

In Model 3, we add the interaction term of age by nativity/duration. Even though odds ratios for the national-origin groups remain about the same, the significant interaction terms as well as the improvement of model fit indicate that the effect of nativity/duration on work limitation status varies with age. In the full model (Model 4), Taiwanese and Chinese adults remain as groups with a more favorable work limitation profile than the Japanese. The addition of English ability, demographic factors, and SES narrows the gap between most other API subpopulations and Japanese adults (except when comparing Filipino and Asian Indian adults to the Japanese), indicating that their disadvantaged work limitation status is strongly influenced by their lower SES in comparison to the Japanese. In particular, the decrease in the odds ratio for Other Southeast Asians is notable (odds ratio of 6.92 in Model 3 changing to 2.59 in Model 4, $t = 20.8$, p

Figure 1 visually illustrates how nativity/ duration influences the predicted probability of work limitation status across age, controlling for the other demographic and social factors in Model 4. The relative gap between longer-term immigrants and the native born converges at older ages; however, recent immigrants demonstrate a much lower risk of work limitations throughout the working ages. Nevertheless, there is a lower probability of work limitation status for foreign-born APIs in comparison to their U.S.-born counterparts throughout the working ages. This finding is consistent with the report of Frisbie et al. (2001) for the overall health of APIs.

Table 4 presents the mobility limitation status results for API adults. Model 1 shows less favorable outcomes for most API subpopulations compared to the Japanese, controlling for age and sex. Other Southeast Asians suffer from an enormously higher risk of mobility limitations compared to Japanese adults ($OR = 6.60$), followed by Samoans ($OR = 3.29$) and Vietnamese ($OR = 3.14$). Further, Koreans and several Pacific Islander subgroups are more than twice as likely to be mobility limited than the Japanese. The addition of the nativity/duration effect in Model 2 causes a slight decrease in the odds ratios for all national-origin groups (except Hawaiians) compared to the baseline model. The odds ratios for nativity/duration indicate that immigrants have a significantly higher risk of mobility limitations than their U.S.-born counterparts, and among the former group, APIs with shorter duration in the U.S. are worse off than APIs with longer duration. This pattern is quite different from the results for work limitation status seen in Table 3. When the interaction terms for age by nativity/duration are added (Model 3), the odds ratios for national-origin groups remain about the same, while those for nativity/duration change quite substantially. Indeed, immigrants with 5 years or less duration in the U.S. are more than twice as likely to be mobility limited than their U.S.-born counterparts. However, foreign-born API adults with 11 or more years duration in the U.S. have a substantially lower risk of mobility limitations, compared to their U.S.born counterparts. In our full model (Model 4), the inclusion of English ability, marital status, and SES risk factors decreases the odds ratios for most API subpopulations, in particular for Vietnamese and for Other Southeast Asians, relative to the Japanese (differences of odds ratios for all national-origin groups between Model 3 and Model 4 are significant in $\alpha = 0.05$, except Taiwanese and Pakistanis). This again demonstrates that social risk factors play an important role in health disparities across the API groups, particularly for the inferior health status of Vietnamese and Other Southeast Asian adults. However, even in the most inclusive model, Other Southeast Asians and Samoan adults are still more than twice as likely to be mobility limited than Japanese adults. The odds ratios for nativity/duration indicate that immigrants with 11 or more years duration in the U.S. are the only group that is significantly less likely to be mobility limited than U.S.-born APIs ($OR = 0.66$), while no differences are found for other foreignborn API adults at age 25. To explore if the advantage of immigrants with longer duration in mobility limitation status remains throughout all ages, we have to take into account the interaction effect of age and nativity/duration.

Figure 2 depicts the predicted probability of mobility limitations by age for the nativity/duration groups. Although immigrants with 11 or more years of duration enjoy a lower risk of mobility limitations at age 25 than their U.S.-born counterparts, the advantage reverses around the age of 60, and thereafter, the disadvantage of the former over the latter group becomes wider. Given that mobility limitations are more prevalent among the elderly than among younger adults (Rogers, 1995; Verbrugge, 1989), our findings suggest that immigrant APIs with less than or equal to 10 years of duration do not differ from their U.S.-born counterparts in the likelihood of mobility limitations, but immigrants with longer durations suffer from a significantly higher risk of this limitation. It is probable, for the immigrants with longer duration, that their relatively abject work conditions during the ages of heaviest labor force participation may result in the high predicted probability of mobility limitations during old age. On the other hand, for newer immigrants among the elderly, even though they are more likely to come to the U.S. for the purpose of family reunification rather than employment, they had to be healthy enough to recently migrate. This may have resulted in the probability of their mobility limitation status being quite

similar to that of the U.S.-born APIs.

Finally, Table 5 presents results for self-care limitation status. Our baseline model shows that none of the API subpopulations is better off than the Japanese in terms of self-care limitations, controlling only for sex and age. In this model, Other Southeast Asians again have the highest risk of self-care limitations (OR = 3.42) among the 15 API subpopulations. Samoans, Koreans, and Vietnamese also demonstrate a relatively high risk of self-care limitations: all exhibit more than twice the odds compared to Japanese adults. In Model 2, odds ratios for all API subpopulations, except Hawaiians, decreased over the baseline model due to the effect of nativity/duration, although a more substantive decrease is found among most of the Asian subgroups in comparison to the Pacific Islander subgroups (differences of odds ratios for all national-origin groups between Model 1 and Model 2 are significant in $\alpha = 0.05$). This suggests that most API populations are disadvantaged in self-care conditions compared to the Japanese in part due to their foreign-born status. Indeed, immigrants are more likely to be self-care limited than U.S.-born adult APIs by over 40 percent for immigrants with 10 or fewer years of duration and by 28 percent for immigrants with longer duration.

Addition of the interaction effect of age and nativity/duration (Model 3) notably increases the disadvantage of immigrants compared to the U.S. born in the risk of self-care limitations. In particular, the odds ratio for immigrants with a short duration (0-5 years) more than doubles over the previous model (OR = 3.86, $t = 15.6$, p

The effects of age and nativity/duration and their interaction are visually depicted in Figure 3. Bear in mind that self-care limitation status is a more relevant concept for the elderly. From age 65 and up, U.S.-born APIs have the highest probability of self-care limitations, followed by immigrants with 11 or more years of duration, immigrants with six to ten years of duration, and immigrants with 5 or fewer years of duration. Of interest is the finding that, among immigrants with long duration, their risk of this limitation is about as high as that of U.S.-born APIs. This result is consistent with Frisbie et al. (2001) and Singh and Siahpush (2001), both of whom find that the health of immigrants with 10 or more years of duration converges with that of U.S.-born populations. In contrast, elderly immigrants with short duration of stay in the U.S. may be selectively healthy enough to opt to migrate to the U.S., and thus demonstrate a lower overall risk of self-care limitations.

DISCUSSION

Three objectives were addressed in this paper. The first was to divulge differences in health status across 15 API populations, as measured by reports of disability. The second was to test the interaction effect of nativity/duration with age on the health of APIs. The third was to examine the impact of demographic and SES risk factors on health differentials among the API population. Our descriptive analyses indicated that the 15 API subpopulations are quite heterogeneous in terms of social and demographic characteristics, as well as disability status. For example, Vietnamese adults enjoy higher levels of SES and better health than Other Southeast Asian adults (Laotians, Hmong, and Cambodians). This may stem from the fact that most early Vietnamese refugees were from the urban elite class (Uba, 1992). In terms of disability status, there exist clear disparities across API subpopulations, with Other Southeast Asians, Vietnamese, and Pacific Islander adult populations demonstrating much worse profiles than other Asian subpopulations. Japanese, Chinese, Filipino, and Asian Indian adults, who are well-established and dominant in size among the 15 API groups, have relatively high SES and lower risk of disabilities. These findings support other work that states that lumping Asian and Pacific Islander populations together as an aggregate group may lead to misleading conclusions. In particular, the overarching expression of "healthy APIs" should be reexamined, because careful analyses of API data demonstrate that there are very important intra-API differentials (see also Yu and Liu, 1992; Chen and Hawks, 1995; Singh and Yu, 1993).

Findings from multivariate regression analyses elaborate the relationship between nativity/duration and API health beyond what has been previously examined. Immigrants are generally found to be healthier than their U.S.-born counterparts (Singh and Siahpush, 2001; Kestenbaum, 1986; Hummer et al., 1999; Hummer et al., 2000), and longer duration in the U.S. erodes the advantage of immigrants (Guendelman and English, 1995; Frisbie et al., 2001). Our findings, from three disability status measures, suggest that the advantage in health of the foreign born over their U.S.-born counterparts remains even after taking into account the interaction of nativity/duration and age among API adult populations. Indeed, inclusion of the interaction effect between age and nativity/duration makes it possible to focus on the most relevant age groups for each disability status. We found that API immigrants in working ages are less likely to be work limited, and elderly API immigrants are less likely to be mobility and self-care limited than their U.S.-born counterparts, which supports the notion of a "healthy migrant effect." Furthermore, immigrants with shorter duration enjoy more favorable disability status than immigrants with longer duration. Elderly immigrants with 11 or more years duration appear to have higher risk of mobility limitations and about the same risk of self-care limitations, compared to their U.S.-born counterparts, which may have resulted from the negative "Americanization" process, and/or from the relatively precarious and inferior working environments of longerterm immigrants who were in the labor force over many years. Another possibility is the delayed effect of

childhood illnesses in the country of origin, which may affect disability after years in the U.S. In particular, it has been reported that health problems of refugees have arisen from inadequate physical, psychological, and nutritional experiences during war years and in refugee camps (Uba and Chung, 1991). Furthermore, inadequate access to health care in the U.S., mainly caused by different cultural beliefs about diseases and lack of English ability (see Douglas and Fujimoto, 1995; Uba, 1994 for additional discussions on health care and API immigrant populations), may also work to gradually deteriorate the health of API immigrant populations. Longitudinal data on immigration, labor force participation, utilization of health care services and health are desperately needed to test such ideas.

Our multivariate analyses also showed that the wide health disparities across 15 API subpopulations are partly associated with disadvantages in demographic and/ or socioeconomic conditions. Indeed, the inferior health status of Other Southeast Asian groups (Laotians, Hmong, and Cambodians), Vietnamese, and most Pacific Islander populations is mainly attributable to their low SES. APIs without English ability are also at a substantially higher risk of disabilities than those who speak English at least well. Lack of English proficiency makes access to adequate formal health care services more difficult (LeClere et al., 1994; Uba, 1992; Ladenheim, 1997).

With few exceptions, all API subpopulations have worse health than the Japanese, and Other Southeast Asians are at particularly high risk. Health disparities across API subpopulations, which have not been fully explained in the current study, may also stem from differential health behaviors across groups or differential health status at the time of immigration. Unfortunately, there are few data sets that make it possible to control for such risk factors among API subpopulations. Indeed, data from both sending and receiving nations would best be able to address these issues.

Throughout this paper, we have uncovered wide health disparities among 15 API subpopulations and have identified some of the determinants of these health differences. However, this study is limited in at least the following three ways. First, since the PUMS produces only cross-sectional information, we could not distinguish if limitations occurred before or after immigration. Second, a comparison of health status among API subpopulations, as already discussed, may be affected by the possibility that each API national-origin group may use somewhat different standards to report health conditions (Douglas and Fujimoto, 1995; Takada et al., 1998), which could be a partial cause of disparities uncovered in this paper. Third, the quality of the PUMS data used in this analysis has been questioned by other researchers (e.g., Andresen et al., 2000) and may, in fact, understate poor health. Nevertheless, the severe health disadvantages found among the predominantly Other Southeast Asian populations and among the Pacific Islander populations should raise substantial awareness that the API population contains some very advantaged and some very disadvantaged subgroups. In light of Healthy People 2010 (Yu, 1998) goals to eliminate disparities in health across race/ ethnic groups, the wide API differentials we uncovered here should become part of the national discourse on this topic.

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Youngtae Cho and Robert A. Hummer

Population Research Center and Dept. of Sociology, The University of Texas at Austin

*Direct all correspondence to Youngtae Cho, 1800 Main Building, Population Research Center, The University of Texas, Austin, TX 78712 (youngtae@prc.utexas.edu).

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