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Disability and Access to Health and Support Services Among California's Immigrant Populations

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## *Disability and Access to Health and Support Services Among California's Immigrant Populations*

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## **Introduction**

The knowledge available to policy makers about the prevalence of disability in the general population has grown substantially in the past decade. One in five Americans has some form of disability and that one in ten has a severe disability that requires some assistance from others. Age, race and ethnicity are all known to affect the likelihood of having a disability (U.S. Bureau of the Census, 1997). People with disabilities are less likely to have private health insurance and more likely to have governmental coverage than people with no disabilities. Paradoxically, disability rates are high among those participating in means-tested assistance programs, yet most people with severe disabilities do not receive benefits from an assistance program (McNeil, 1997).

While our knowledge about the sources and consequences of disability has grown markedly, what we know about immigrant health and disability has not kept pace. Given California's large immigrant population—26% of the state population were born outside the United States—this knowledge gap needs to be addressed. Most immigrants are Latino and Asian, and most are in the country legally. Even under recent legislation that has restricted immigrants' access to some public programs, many disabled immigrants are eligible for publicly funded benefits to help meet their needs. Moreover, immigrants will contribute substantially to future population growth in California and nationally, focusing concern on better understanding the needs of disabled immigrants and effective ways to help immigrant families meet those needs. Half of the projected increase in the national school-age population will be children of immigrants; nearly half of all recent immigrant students nationally attend schools in California (Institute of Medicine, 1995).

Although immigrants on average are in better health initially than non-immigrants (a phenomenon known as an “epidemiological paradox” because of the low socioeconomic status of many immigrants), this health advantage declines over time. The initial advantage can be explained, in part, by the fact that only the most healthy adults are likely to embark on emigration from their homelands. We know little about how other factors may affect the health of immigrants over time, including changing behaviors and living conditions or barriers to health care access (Stephen, et al., 1994). Other anecdotal evidence nonetheless indicates that the prevalence of disability may be moderate to high among some immigrant groups, especially among children and the elderly. There is abundant evidence that people with disabilities are heavy users of medical care services generally and particularly those who are Medi-Cal recipients.

We know much less about possible barriers faced by immigrants with disabilities, many of whom have lower incomes, in gaining access to care. For example, frequently they may be physically unable to transport themselves to needed services; as relative newcomers, they may not know which services and providers are available; and because of cultural factors, they may be reluctant to seek outside services. Moreover, immigrants may be concerned about possible adverse consequences to their immigration status due to receiving public assistance for any disability. More generally, little is known of either the prevalence of disability among immigrants or the health and support needs of disabled ethnic and racial minorities in California. The purpose of this analysis is to examine the level of disability among immigrants to the U.S generally, and California in particular, and to assess use of medical and supportive services within this population. We begin with a review of the

literature on immigrant health and disability, as well as recent developments in health policy in the U.S. and the potential impact policy decisions may have on immigrant populations.

This will provide the background and justification for the analysis that follows.

### **Immigrant Health, Disability, and U.S. Health Policy**

Immigration is thought to be an indicator of good health since they are able to endure the process of migration, tolerating the travel across large geographic distances, possessing the means to obtain material and economic resources, and being ready to work. The ability of immigrants to adapt to a new life in the United States, however, varies with the manner of their entry into the United States: labor migrants, professional immigrants, entrepreneurial immigrants, and refugees and asylees. Their type of entry influences their opportunities for social mobility, which is associated with health (Portes & Rumbaut, 1996). This notion ties in with the increasing recognition that health is inextricably linked with social and environmental conditions. Studies indicate that a health gradient exists - those in higher socioeconomic levels have better health than those in lower socioeconomic groups (Feinstein, 1993). Historically, most immigrant groups are located in lower socioeconomic groups, finding residence and employment typically in impoverished urban or metropolitan areas. These conditions – entry-level jobs, substandard living conditions, and lack of health care – places them at increased risk for poor health. Those with the least social resources and fewest options, such as many IndoChinese refugees, are particularly disadvantaged. Others, such as the smaller number of highly educated professional immigrants from India, would be expected to have the best health outcomes.

Studies of immigrant health provide inconsistent findings - poor health for some groups and better health for others. Most often the health of immigrant groups (as with most populations) is measured by morbidity and mortality rates, although there are limited data on the prevalence of disability among immigrants (Collins, Hall, and Neuhaus, 1999). Japanese immigrants, for example, have lower rates of stroke yet higher rates of heart disease when living in the United States, compared to the population of Japan who have the reverse, namely, higher rates of stroke and lower rates of heart disease (Lanska, 1997). Examining immigrants versus first generation U.S.-born populations also suggests health differentials. For example, older Mexican immigrants are found to be at increased risk for depression when compared to those older Mexicans born in the United States (Black, Markides, & Miller, 1998). Only one-third of Mexican Americans without health insurance rate their health as excellent or very good, and receive half the amount of medical care as those with health insurance (Valdez, Giachello, Rodriguez- Trias, Gomez, & De La Rocha, 1993). On the other hand, the health profile of Mexican-Americans represents a variant of the epidemiological paradox - that is, the population has better health and overall mortality rates than expected given their low levels of income and low access to health care (Scribner, 1996).

Data on immigrant children parallel the findings for adult immigrants: lack of health insurance, low use of health services, and lack of routine medical care. Many immigrant children receive care through hospital emergency departments, which do not provide the continuity of care offered by primary care physicians that is important for monitoring childhood growth and development. The fundamental issue is lack of insurance. While

immigrants have a high rate of employment as a group, they work in areas in which their employers do not provide health insurance as a benefit to working members of these families (Halfon, Wood, Valdez, Pereyra, & Naihua, 1997).

While there has been investigation of the link between low socioeconomic status, access to health care and morbidity and mortality among immigrant populations, the literature lacks a similar examination of the prevalence of disability and its relationship to social, demographic, and economic indicators. Knowing the prevalence of disability of a population provides an accurate representation of the limitations of people and their need for assistance in everyday life. Measures of disability describe the level of difficulty with activities of daily living, or limitations on the major activities that are typically associated with a person's age group (e.g. children's ability to play with other children, and adult's ability to provide their own personal care and be mobile independently) (LaPlante, 1996). These measures identify the needs of an individual beyond information provided by morbidity and mortality studies.

Specific measures of disability include: activity limitation, Activities of Daily Living (ADL), Instrumental Activities of Daily Living (IADL), as well as number of bed days at home. Activity limitation refers to a long-term reduction in a person's capacity to perform the usual kind or amount of activities associated with one's age group. Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) are the most frequently used measures for older adults. ADLs measure the ability to perform personal care activities, including bathing, dressing, using the toilet, transferring in and out of bed or chair, and eating (LaPlante & Carlson, 1996). IADLS measure an individual's ability to function in the



community. IADLs include: shopping for groceries, preparing meals, taking medication, handling personal finances, using the telephone, and going places outside the home to do necessary business (LaPlante, 1993). The number of Aged days in the past two weeks@ captures restricted activity by indicating the number of days that a person cannot carry out their daily responsibilities.

Although these measures of disability are often linked to an impairment or health condition, they are also associated with a number of socioeconomic, cultural, and environmental conditions (Kemp, 1998). People with disabilities are typically poorer, less educated, less employed, and older than those without disabilities (National Council on Disability, 1996). The prevalence of disability is higher in most racial and ethnic minority groups than in the non-Hispanic white population. Native Americans have the highest rate of disability (21.9%) followed by blacks (20.0%), whites (19.7%), and Hispanics (15.3%). Asian-Pacific Islanders have the lowest rate (9.1%) (Bradsher, 1997). Age is one of the strongest correlates of disability (Dunlop, Hughes, & Manheim, 1997). Older adults experience disability at roughly twice the rate of those in the older working ages (45-64) and four times the rate of the younger working-age groups (18-44) (Kaye, LaPlante, Carlson, & Wenger, 1997). One partial explanation for the lower prevalence of disability among Hispanics and Asian-Pacific Islanders is that immigrants under-report functional limitations to preserve the image of the healthy immigrant - one who maintains self-reliance through gainful employment, and does not seek government assistance. Furthermore, the negative images and stereotypes of people with disabilities in the mass media and related cultural

biases lead people to conceal their activity limitations and need for assistance (Crutchfield 1997; Kaplan, 1994).

Gender and marital status have also been linked to higher levels of disability in the population. Women have higher rates of disability, and coupled with a longer life expectancy than men, are at an increased risk of becoming more disabled as they grow older. In addition, the widowed, separated, and divorced have higher rates of disability than those who are married or never married. Forty-three percent of widowed people are disabled while only thirteen percent of single people are disabled (LaPlante & Carlson, 1996).

Once an individual is disabled, the disability itself affects other aspects of health and may lead to further deterioration of health. Disability in the U.S. cost \$470 billion in medical care in 1990 and more than \$230 billion in lost productivity (Institute for Health & Aging, 1996). Medical expenditures, in particular, have steadily increased for all age groups with disabilities with older adults having the highest medical care costs (Kraus, Stoddard, & Martin, 1996; Trupin, Rice, and Max, 1997). People with disabilities have more doctor visits than those not disabled - more than one per month. This too, increases with age. Children with disabilities have 10 visits a year and this increases to 17 visits per year for those ages 75 and over. The disabled also have a higher number of hospitalizations, with 31 hospitalizations per 100 persons per year (Trupin & Rice, 1997).

For many people with disabilities the need for home care is as vital as medical care. The disabled population accounts for ninety-six percent of all home care visits (Institute for Health & Aging, 1996) involving services such as: nursing care for people who are dependent on respirators; personal care to attend to the needs of those with quadriplegia or

paraplegia; and physical and occupational therapy for those seeking rehabilitative approaches to regain and restore independence. Fifteen million workers provide this formal care, while another five million caregivers provide informal care to family members (Ficke, 1992). This need for assistance increases with age. In the second fifty years, the proportion of people needing functional assistance rises substantially: three percent of those age 45 to 54, six percent of those 55 to 64, twelve percent of those 65 to 79, and a little more than one third of those age 80 and over (McNeil, 1997). These services assist people in caring for themselves and at the same time prevent further disability and complications due to chronic disease.

Changes in immigration laws during the 1990s have attempted to severely restrict health services to immigrants to such an extent that many individuals with disabilities would not be eligible for the above services. Attempts to legislate health care to immigrants through Proposition 187 (even though not implemented) had the effect of reducing services to immigrants who were concerned that attempting to obtain health services would jeopardize their immigration status. Other laws enacted, such as the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), have caused hardship to many legal immigrants who now find it difficult and in some states impossible to qualify for means-tested programs such as Medicaid (Wallace et al, 1998). The result is an increase in the number of individuals who have impaired access to basic health care.

In sum, the U.S. immigrant population is growing. Some of the largest growth is in California. While there has been some attention to the morbidity and mortality of immigrant groups, little attention has been paid to the prevalence of disability among immigrants.

Disability can have a major impact on ability to work, and thus have consequences for lifetime earnings, income, health, and access to health care. Examination of the prevalence of disability among immigrants and what factors predict or are related to disability is necessary for designing health and social service programs that mesh with the needs of the population. Moreover, federal and state legislation that calls for scaling back services, decreasing benefits, and tightening eligibility have the potential to further limit access to health care among immigrant populations and consequently worsen health. By documenting the level of disability among the immigrant population and the correlates of disability, we can begin to fill the gap in knowledge on immigrant health status and perhaps forestall unintended and negative consequences of policy choices.

### **Purpose of the Analysis**

The purpose of this analysis is to measure the level of disability among U.S. immigrants and assess the disabled population's use of medical and supportive services. Utilizing data from three supplements of the National Health Interview Survey (NHIS, 1994), we present an analysis of disability prevalence and use of medical and supportive services, involving three comparisons: 1) U.S. immigrants and the U.S. native-born population; 2) immigrant and U.S. native-born populations residing in California; and 3) California immigrants and other U.S. immigrants. We examine levels of disability, use of medical and supportive services, as well as the factors that help us understand these phenomena including demographic characteristics, socioeconomic status, insurance status, and health status. We are interested in how the general U.S. population and immigrant populations differ with

respect to these measures, and to what extent California immigrant disability levels and service use are different from those of the native-born population in California and from those of other immigrant populations outside California.

The specific research questions guiding this analysis are: 1) What is the prevalence of disability among immigrant and non-immigrant populations? 2) What is the level of medical and supportive service use among immigrant and non-immigrant populations? 3) What are the demographic and socioeconomic factors that influence disability status among immigrants and non-immigrants? and 4) What role does insurance status and health status play in predicting use of medical and supportive services among immigrants and non-immigrants? We expect that demographic characteristics, socioeconomic status, insurance status and health status will in part explain differences that exist in disability and service use among immigrants and non-immigrants. In light of the existing literature on levels of morbidity and mortality among immigrants, and the link between low socioeconomic status, poor health, and subsequent lack of access to health care experienced by immigrant populations, we expect that immigrants will be more disabled and use less medical and supportive services than non-immigrants.

## **Data and Methods**

### *Data*

Data for this analysis come from the 1994 National Health Interview Survey (NHIS). The NHIS is a federally sponsored annual national household survey conducted by the National Center for Health Statistics. It was initiated in 1957 by Congress to collect data on the health of the civilian non-institutionalized population. It provides estimates of health

conditions such as disability, acute disease, chronic disease, injuries, limitations in activity, hospitalizations, medical services, support services, and self-assessed health status, among others. The NHIS has a complex multistage probability design that samples four major geographic regions throughout the United States: Northeast, Midwest, South and West. This design, through a system of weighting and adjusting, produces a sample that is representative of the primary sampling unit (PSU), one of 1900 geographically defined PSUs in the United States. Every decade or so the NHIS is redesigned to monitor trends of the population. This health data is important to health care providers, public policy makers, researchers, and the government to track the health needs of the population.

NHIS continues to have one of the highest rates of participation among surveys - a ninety-two percent response rate for the 1994 survey. Each year there are special sections added to the core survey. Disability was added as a special topic covering areas such as: activity limitations, support services and benefits, level of independence in self-care, activities of daily living and independent activities of daily living. For the 1994 NIS 40,000 households were interviewed consisting of 116,179 persons (Adams & Marano, 1994).

We utilize three supplements from the 1994 National Health Interview Survey (NHIS) data set: the first supplement contains questions focusing on access to care, the second includes questions on disability, and the third focuses on health insurance. The 1994 NHIS data are the most recent available for California. Combining data from these supplements should provide a useful overview of answers to the questions presented above, and should also be helpful in directing us towards areas of future research needs. For the purpose of this analysis we select out the population age 18 and older. Approximately 11,000

of the respondents are residents of California. The comparison population includes survey respondents from all other states, totaling about 63,000.

Children under the age of 18 are not included in the analysis. While 4.5% of immigrant children nationally are reported to have some limitation that could indicate a disability, their sample size is too small to proceed with any further analysis of the group. Children with special needs are a particularly important policy target currently, but immigrant children nationally comprise only 2% of all children with activity limitations. While immigrants comprise a larger segment of the child population in California than nationally, it appears that immigrants account for fewer than 10% of children with activity limitations in California (see Tables A and B).

### *Measures*

Level of disability, use of medical services, and use of supportive services are the three primary categories of dependent variables for this analysis. Level of disability of the population was measured utilizing a variety of indicators including: activity limitation, difficulty with one or more activities of daily living (ADLs), difficulty with one or more instrumental activities of daily living (IADLs), and number of bed days in the past two weeks. Activity limitation is a dichotomous variable: 1=some limitation, 0=not limited. The ADL variable is dichotomized such that 1=difficulty with 1 or more ADLs, and 0=no ADL difficulty. The list of ADLs is fairly standard and includes six activities: bathing, dressing, eating, getting in/out of bed or chairs, using the toilet, and getting around inside the home. The IADL variable is constructed in the same manner. Respondents are asked if they have difficulty

with any of the following six activities whose performance of which is necessary for maintenance of an independent home: preparing meals, shopping, managing money, using the telephone, doing heavy house work, doing light housework. Therefore, the IADL variable is dichotomized such that 1=difficulty with one or more IADLs and 0= no IADL difficulty. The number of bed days in past two weeks includes the number of days respondents report being in bed due to health problems/difficulties.

Medical service use was measured by the number of doctor visits reported in the past 12 months. Supportive service use was measured by examining whether or not respondents reported having utilized the following supportive services in the past 12 months including: physical therapy, visiting nurse, personal attendant, publicly subsidized transportation services, and social worker. All social service variables were “dummy coded” such that 1= use of specified service and 0= no use of specified service.

The primary independent variable for this analysis is immigrant status. Immigrant status is a dichotomous variable: 1=U.S. immigrant, 0=U.S. native-born. When we compare California immigrants to the U.S. native-born population residing in California the variable is coded the same but only includes immigrants residing in California (=1) and the U.S.-born population residing in California (=0). When we compare California immigrants to other U.S. immigrants, we drop the immigrant status variable from the analysis and add in the variable California: 1=California immigrant, 0=all other U.S. immigrants.

There are four additional categories of independent variables for this analysis: demographics, socioeconomic status, insurance status and health status. Demographic variables include age, gender, marital status, and ethnicity. Age is a continuous variable with



the range 18- 97. For the regression portion of this analysis we also include a variable Age<sup>2</sup>. Age is squared to include the curvilinear effects of age (such as having a greater effect per year of age at older ages) as well as the linear effects (each year of age having a similar impact). The socioeconomic status variables included in this analysis are near poverty, income, and education. Near poverty is a dichotomous variable: 1=being near poor (income less than 200% of the poverty threshold), 0=not being near poor (income above 200% of the poverty threshold). Income is a categorical variable reflecting the total family income of a household. Income categories are: <\$10,000, \$10,000-\$19,999, \$20,000-\$34,999, and \$35,000 +. Education is a dichotomous variable, where 1= less than 12 years of education, and 0= 12 or more years of education. For the multivariate portion of this analysis, we include only near poverty and education in the equation as our measures of socioeconomic status. Ethnicity includes four mutually exclusive categories: nonLatino white/other, Latino, Black, and Asian. The ethnicity variables are recoded for the multivariate portion of this analysis into two variables using comparison coding: Latino and Asian. Latino is coded 1=Latino, 0= white/other, and Asian is coded 1=Asian and 0=white/other. African-Americans are contained in the white/other category since there are too few African immigrants to support an analysis; their combination with the much larger nonLatino white group means that the white/other results are dominated by the effects of white. This results in three categories for comparison. For the Latino variable, Latinos are compared to whites and others excluding Asians. For the Asian variable, Asians are compared to whites and other excluding Latinos.

There are six mutually exclusive categories of response for insurance status: uninsured, employer based insurance, private insurance, Medicaid, Medicare, and other insurance. For this analysis we comparison code insurance status into 2 “dummy variables”: Medicaid and Uninsured. The variables are coded such that 1=have Medicaid, 0=all other insurance; and 1=Uninsured, 0=all other insurance. For the variable Medicaid we are comparing individuals who have Medicaid to individuals that have other insurance that is not Medicaid. In the variable uninsured we are comparing individuals that are uninsured to individuals who have insurance excluding Medicaid.

Health status is measured by three variables including self-rated health and ADL/IADL functioning. The categories of response for self rated health status are 1=excellent, 2=very good, 3=good, 4=fair, 5=poor. In addition, we use the two dichotomous variables described above: difficulty with one or more ADL and difficulty with one or more IADL as independent variables in the portion of the analysis where we examine predictors of medical and service use.

### *Analysis*

We first report a descriptive analysis, i.e., chi-square and means for the demographic, socioeconomic status, insurance status, medical / supportive service use and disability indicators. We compare a) U.S. immigrants and the U.S. native-born population; b) the immigrant and native-born populations residing in California; and c) California Immigrants and other U.S. immigrants. This will enable us to describe the level of income, near poverty, education, age, gender, martial status, ethnicity, level of insurance, use of medical/

supportive services and levels of disability of the respective populations and will allow us to test the significance of any observed differences between the populations.

Next we run a series of logistic and Poisson regression analyses. We utilize logistic techniques where the dependent variables are dichotomous. Poisson regression is utilized where the dependent variables are continuous. The Poisson distribution was used because the sample is large with rare and discrete events (number of bed days in past two weeks and number of doctor visits). The Poisson distribution is commonly used in place of the binomial distribution. It is easier to use for approximation than the binomial distribution which does not work well when applied to samples with large number and low probabilities (Rosner, 1990).

To assess the level of disability among U.S. immigrants and U.S. native-born populations, we regress the dependent variables (i.e., activity limitation, difficulty with one or more ADLs, difficulty with one or more IADLs, and number of bed days in past two weeks) on the independent variables in three stages. First we regress the dependent variables on immigrant status, which will enable us to observe differences between U.S. immigrants and the U.S. native-born population with regard to disability level, and will test for the significance of any observed differences. Next we add in the demographic variables including age, gender, marital status and ethnicity. In the third and final stage we introduce additional independent variables, namely socioeconomic status, including near poverty and education. Performing the regression analysis in three stages enables us to examine whether or not the inclusion of each set of independent variables changes the relationship between immigrant status and disability levels. We then repeat the analysis including only the

immigrant and the U.S. native-born populations residing in California. To determine whether the patterns of disability among immigrants differs between California and the rest of the U.S., we repeat the analysis a third time including only California immigrants and other U.S. immigrants.

To measure medical and supportive service use among U.S. immigrants and the U.S. native-born population, we run a series of Poisson and logistic regression analyses. As with the analysis of disability level, we first regress the dependent variables (including number of doctor visits in past twelve months, use of physical therapy services in the past twelve months, use of visiting nurse in past twelve months, use of personal attendants in past 12 months, use of transportation service in past twelve months, and use of social worker in past twelve months), on immigrant status. In the second stage we introduce demographic characteristics, i.e., age, gender, marital status, ethnicity as well as socioeconomic status indicators: near poverty and education. In the third stage we add in the two insurance variables: Medicaid and uninsured. In the fourth and final stage we add in health status measures including self-rated health, difficulty with one or more ADLs, and difficulty with one or more IADLs. We then repeat the analysis for immigrant and U.S.-born populations residing in California, and for California immigrants and other U.S. immigrants.

## **Results**

### *Descriptive Analysis*

Data reported in Table 1 reveal differences in socioeconomic status, demographic characteristics, and disability levels between U.S. immigrant and non-immigrant populations. Specifically, we find that the U.S. immigrant population is somewhat younger than the U.S.

native-born population, and immigrants are more likely to be near poor, have lower family incomes, less education, and more often have no insurance (see Table 1). The ethnic comparison of the populations reveals that immigrants are more likely than the native-born population to be Latino (30% vs. 3%) and Asian (20% vs. 1%) and less likely to be nonLatino white (41% vs. 85%). There were no differences in the populations in terms of gender. Examination of disability levels finds that the U.S. native-born population is somewhat more disabled than the immigrant population (see Table 1A). While the prevalence of ADL/ IADL, difficulty and bed days is relatively low among both populations, 19% of U.S.-born respondents and 14% of immigrants report some limitation in activity. The only significant differences in medical and supportive service use between the two populations is in use of personal attendant and transportation, with a higher percentage of immigrants reporting use of these services.

The results of the descriptive analysis that compares immigrants and the native-born population residing in California is consistent with that found among the rest of the US. immigrant and non-immigrant population(see Table 2). California immigrants are on the whole younger than their native counterparts, are twice as likely to be near poor (58% vs. 27%), and are three times as likely to have less than 12 years of education (38% vs. 13%). Data on income reveals that immigrants in California have lower family incomes and have health uninsurance rates more than two times the rate found among native-born California residents. California immigrants are more likely to be Latino and Asian, mirroring the findings at the national level (see Table 1). There are slight differences in ADL/IADL difficulties and number of bed days between the two California populations, consistent with

the finding among immigrant and native-born populations nationally. Again the highest prevalence was found in activity limitation. Twenty percent of the native-born population residing in California and twelve percent of the immigrant population report some activity limitation. There were no differences between the populations in the use of medical or supportive services( see Table 2A).

When we compare California immigrants to the rest of the U.S. immigrant population we find evidence of differences on several measures (see Table 3). While differences between California and other U.S. immigrants are not as marked as those between immigrants and the native-born population, in some respects California immigrants are not doing as well as immigrants in the rest of the country. California immigrants are younger than the U.S. immigrant population, they are more likely to be near poor (58% vs. 45%), have less than 12 years of education (38% v. 29%), and are more likely to report being uninsured (36% vs. 27%). Ethnic patterns also differ. California immigrants are more Latino and Asian than immigrants in the rest of the U.S. There were no differences between the populations in terms of gender and only slight differences in income levels. Examination of disability levels finds no significant differences between the populations in ADL difficulty or number of bed days(see Table 3A). Other U.S. immigrants report more IADL difficulty than California immigrants, although prevalence rates are relatively low for both populations, (6% vs. 5%), and report slightly more limitation in activity (14% vs. 12%). The only differences in medical and social service use between California immigrants and other U.S. immigrants is in use of transportation, where other U.S. immigrants use this service more than California immigrants.

*Multivariate Analysis - Disability Prevalence*

When we examine factors that may affect disability prevalence among U.S. native-born and immigrant populations, we find that the U.S. native-born population reports significantly higher levels of disability than U.S. immigrants (see Table 4, Model 1). Specifically, the results of the logistic regression analysis indicate that the odds of having some activity limitation are 32% lower for immigrants than for the U.S. native-born populations. Similarly, the odds of having difficulty with one or more ADL are 37% lower for immigrants than for the native-born. The same is true for IADL difficulty, where immigrants are about one-third less likely than the native-born population to have difficulty with one or more IADL (i.e., 1.00 minus the odds ratio of .684). The results of the Poisson analysis find that immigrants also have fewer bed days than the U.S. native-born population.

When demographic indicators are introduced into the equation (see Table 4, Model 2), the relationship between immigrant status and disability remains unchanged; there is still higher prevalence of disability among the U.S.-born respondents when controlling for demographic indicators. In addition, several demographic characteristics are related to disability measures. Older age, being white/other when compared to being Asian, being single, and being female are all related to greater disability. For every one year increase in age an individual has 7.3% greater odds of experiencing some activity limitation, 2.5% greater odds of having difficulty with one or more ADL and 4.4% greater odds of having difficulty with one or more IADL. Asians are on average 1/3 less likely than whites/others to experience activity limitation, or to have ADL, or IADL difficulty. In addition, being Asian is related to fewer number of days spent in bed. Being married is associated with less

disability across all measures. Specifically, the odds of experiencing activity limitation, ADL and IADL difficulty are between 40% and 50% less for married respondents when compared to those respondents that are single. Similarly, married respondents report fewer bed days than single respondents. On the other hand women have 40% greater odds than men of experiencing difficulty with one or more IADL, and have more bed days than men.

The relationship between the demographic indicators and the disability measures for the most part does not change with the introduction of socioeconomic status variables (see Table 4, Model 3). Near poverty and low education are predictive of greater disability across all measures. Individuals below 200% of poverty are nearly twice as likely as those above 200% to have some activity limitation, report difficulty with one or more ADL and IADL, and more bed days. Individuals with less than 12 years of education have 55% greater odds of having some limitation in activity, 37% greater odds of having difficulty with one or more ADL, 45% greater odds of having difficulty with one or more IADL, and have a higher number of bed days than individuals with 12 or more years of education.

When we examine the relationships among native-born and immigrant populations residing in California, the results are similar to that found among these populations nationally. California immigrants are less disabled than their native counter parts on three of the four measures of disability( see Table 5, Model 1). The odds of having an activity limitation are 44% lower for immigrants than for the native-born population in California; and the odds of having difficulty with one or more IADL are 37% lower for California immigrants when compared to the native-born population. California immigrants also report fewer bed days than their native-born counter parts. However, in contrast to the results



nationally for the native-born and immigrants, the relationship in California between immigrant status and being disabled drops off with the inclusion of demographic controls, except with activity limitation. Specifically, when demographic characteristics are considered, the “advantage” of immigrant status is reduced. The only evidence of advantage remains in the area of activity limitation, where the odds of having some limitation in activity are 24% lower for California immigrants than for those that are native-born. There are no differences between the populations in ADL /IADL limitation or bed days when demographic indicators are taken into account. In addition, being older, non- Asian, being single, and female are related to greater disability (see Table 5, Model 2). When near poverty and education are included (see table 5, Model 3), the relationship between immigrant status, the demographic variables and disability prevalence remains the same. Immigrants have lower odds of having some limitation in activity than those that are native-born (odds ratio=.61). In addition, near poverty is associated with greater disability across all measures. Those who are near poor are twice as likely to be disabled as those who are not near poor, consistent with findings for immigrant and the native-born populations nationally. Unlike the results among these populations nationally, however, education is not related to ADL or IADL difficulty. Like the national results, the odds of having some limitation in activity are much greater ( 40%) among those with less than 12 years of education, and less education is associated with greater number of bed days.

In the final comparative analysis we examine disability levels among immigrants only, comparing California immigrants with those residing elsewhere in the U.S.(see Table 6). We find that California immigrants are less disabled than other U.S. immigrants across

three of the four disability measures. Specifically, California immigrants have 18% lesser odds of having some limitation in activity, 24% lesser odds of having difficulty with one or more IADL, and fewer bed days than other immigrants (see Table 6, Model 1). However, differences in disability levels between California immigrants and other immigrants for the most part disappear with the introduction of demographic controls. The exception involves ADL limitations, where California immigrants report more difficulty than other immigrants (see Table 6, Model 2). When demographic characteristics are held constant, California immigrants are nearly twice as likely as other immigrants to experience difficulty with 1 or more ADLs. Consistent with the earlier findings, older age, being female, non-Asian, and being single are all associated with greater disability. Among immigrants, being Latino also predicts greater activity limitation. The odds of having some limitation in activity are 25% higher among Latino immigrants when compared to white/others.

With the introduction of near poverty and education into the analysis, the relationship between being an immigrant in California and experiencing difficulty with one or more ADLs remains the same (see Table 6, Model 3). California immigrants are still nearly twice as likely as other immigrants to have difficulty with one or more ADL when demographic and socioeconomic status are taken into account. Among immigrants, being near poor is predictive of greater disability across all measures. Immigrants living below 200% of poverty are 1.5 to 2 times more likely to be disabled and have a greater number of bed days than those living above 200% of poverty. This finding mirrors that found when comparing native-born and immigrant populations (see Table 5). Also consistent is the relationship between education and both activity limitation and bed days. Immigrants with less than 12

years of education are 1.3 times more likely to have some limitation in activity than those with 12 years of education or more, and they have a higher number of bed days.

*Multivariate Analysis- Medical and Supportive Service Use*

The results of the logistic and Poisson regression analysis reveal that the U.S. native-born population has more doctor visits, while immigrants are more likely (excluding other control variables) to use certain supportive services, including physical therapy and the services of a personal attendant (see Table 7, Model 1). Perhaps most striking is the relationship between being U.S.-born and having a greater number of doctor visits, because it remains essentially unchanged when controlling for all other factors, including demographics, socioeconomic status, insurance status, and health status (see Table 7, Model 4). Having a greater number of doctor visits is also associated with being older, female, non-Asian, single, near poor, and less educated (see Table 7, Model 2). Examination of the relationship between insurance status and doctor visits not surprisingly reveals that having Medicaid and not being uninsured is associated with more doctor visits (see Table 7, Model 3). As expected self-rated poor health, having difficulty with one or more ADLs and one or more IADLs are associated with more doctor visits (see Table 7, Model 4).

The relationship between immigrant status and other service use is not as consistent as that found between immigrant status and doctor visits. Specifically, being an immigrant is associated with greater use of a personal attendant i.e., immigrants are 1.5 times more likely to use a personal attendant than non-immigrants. The relationship between the variables remains intact when controlling for demographic and socioeconomic status (see Table 7,

Model 2). However, the relationship between immigrants status and use of a personal attendant drops off when insurance status and health status are taken into account (see Table 7, Model 3 & 4). The relationship between having Medicaid and use of a personal attendant is particularly strong. Respondents with Medicaid are 3.6 times more likely to use a personal attendant than those respondents with insurance other than Medicaid. The odds of utilizing the services of a personal attendant are 66% lower for uninsured respondents compared to those that have insurance. Like insurance status, health status is strongly associated with use of personal attendant. The odds of using the services of a personal attendant are 6 times greater for those with ADL difficulty and nearly 4 times greater for those with IADL difficulty, when compared to those without difficulty.

Examination of physical therapy utilization finds that there are no differences between immigrants and the U.S. native-born population when demographic and socioeconomic status are held constant. However, when insurance status and health status are introduced into the equation, immigrants are more likely to use physical therapy than non-immigrants. (Table 7, Models 3 & 4). Immigrants have 26% greater odds than U.S born population of using physical therapy services. Having other insurance than Medicaid, and being insured rather than uninsured are also predictive of physical therapy use. The strongest predictors of physical therapy use are the health status measures. Respondents who report poor health are more likely to use physical therapy services, and those with ADL and IADL difficulty are nearly twice as likely to use physical therapy than those who do not have these difficulties. There were no other differences between the populations in use of services.

The relationship between immigrant status and doctor visits among immigrants and native-born respondents residing in California is different than what is found among these populations nationally. Specifically, immigrant status is not related to number of doctor visits among the California population. This relationship remains consistent even when controlling for demographic, socioeconomic status, insurance status, and health status (Table 8). Consistent with findings nationally, being white/other (when compared to being Asian ), insured (when compared to uninsured) and being in poor health is predictive of a greater number of doctor visits. Specifically, in the area of health those reporting poor self-rated health, and ADL and IADL limitations, have more doctor visits. As with the results nationally, respondents with insurance have a greater number of doctor visits than respondents without insurance.

Viewed alone, immigrant status among Californians is not related to use of any of the supportive services (see Table 8). As with the population nationally, having Medicaid and being in poor health is related to use of the majority of services. Respondents with Medicaid are roughly 2 to 6 times more likely to use supportive services (except physical therapy) than respondents who have insurance other than Medicaid (See Table 8, Model 3 & 4). The odds of using some supportive services are approximately 2 to 8 times greater for those individual who have difficulty with one or more ADL, and nearly 2 to 3.4 times greater among those with and IADL difficulty, when compared to respondents without these difficulties (see Table 8, Model 4).

The analysis of the use of medical and supportive services among immigrants yields somewhat different patterns. California immigrants do not differ from other U.S. immigrants

in the number of doctor visits they report, and transportation is the only supportive service where differences among populations remain when controlling for all other factors (see Table 9). Immigrants outside of California use more medical transportation than California immigrants. California immigrants have approximately 80% lower odds of using transportation services than other immigrants with all measures held constant (see Table 9, Models 1-4). The finding about the importance of Medicaid to the use of supportive services is consistent with what is found among immigrants and the U.S. native-born population both nationally and in California. Having Medicaid is highly predictive of use of supportive services except for physical therapy. Immigrants with Medicaid are approximately 2 to 10 times more likely to use supportive services when demographic, socioeconomic status, and health status are held constant (see Table 9, Model 4). As with earlier analyses, ADL and IADL difficulty are predictive of use several supportive services. Those respondents with these difficulties are 2 to 5 times more likely to use supportive services.

### **Discussion and Implications**

Immigrants in both California and the rest of the U.S. have characteristics that in the general population are associated with higher rates of poor health. Consistent with other research, we found that adults who are immigrants have higher rates of low-income compared to U.S. natives, are more likely to have low levels of education, and have twice the rates of no health insurance. Despite these disadvantages, we find that adults who are immigrants are *less* likely than U.S. natives to report any activity limitation, difficulties in any activities of daily living (ADLs), difficulties in any instrumental activities of daily living

(IADLs), and any days in bed because of a health problem. Immigrants who live in California are even poorer, less educated, and more uninsured than immigrants in the rest of the US, yet immigrants in California also are *less* likely than immigrants elsewhere in the U.S. to report any activity limitation or IADL difficulties (they are similar in ADL and bed days).

One limitation of a simple comparison between immigrants and the native-born is that immigrants are also younger and more likely to be married than native-born adults, characteristics which are associated with lower rates of disability. The same pattern of advantages is present in immigrants in California compared to immigrants in the rest of the United States. However, when we control statistically for the variables that are independently associated with disability (age, gender, ethnicity, marital status, low income, and low education) we find that immigrants are *still less likely* than native-born adults to report disabilities at the national level. California follows the same pattern of immigrant advantage except for ADLs where, net of other predictors, California immigrants have higher levels of ADLs than immigrants in other states and therefore differ little from native-born adults.

Researchers have noted the paradox of immigrants experiencing a number of known risks for poor health while at the same time exhibiting better mortality patterns (Abraído-Lanza, et al., 1999). Latino immigrants are also less likely to have a number of serious chronic conditions such as heart disease and most cancers (Markides and Wallace, 1996). To our knowledge, the research reported here is the first to extend this paradox to include disability. The epidemiological paradox has been explained as a function of selective immigration (with only the healthiest and strongest migrating), selective emigration (those

who do fall seriously ill returning to their native country), combined with favorable health behaviors and social networks.

Our study was not designed to identify potential causes of health advantages, but the same set of explanations could be valid for disability as for acute illness and mortality. First, there are a number of factors that would encourage only the physiologically healthiest members of the sending country to migrate. Research has clearly documented that the primary reason most immigrants come to the United States is employment related. A disabled or frequently ill person would face added barriers to finding and holding employment, discouraging their migration to the United States. In addition, a disabled or ill immigrant would place a potentially unsupportable burden on the receiving family members. Second, if an immigrant were to become disabled after arriving in the U.S. and required personal assistance from friends or family, there may be an incentive to return to their native country where employment rates among women are lower and therefore more family members would be available to provide personal assistance. Finally, there is evidence in the literature that explores the relationship between social networks/ health habits and disease, that good health habits and social connectedness among immigrants is related to a favorable profile for certain chronic diseases (Wallace, Villa, Lubben, 1998; Villa, Wallace, Moon, and Lubben, forthcoming). Health behaviors and social networks that contribute to lower heart disease and stroke rates may also translate into lower disability rates from these causes.

Perhaps the most important conclusion from our analysis of disability rates among immigrants in California and the rest of the United States is that immigrants overall have a lower prevalence of disability than native-born residents, and are therefore *less likely* to have



needs that require expensive health and supportive services. In this sense, there is little evidence that immigrants to California will place special burdens on our disability service system in the near future. Concerns regarding excessive use of services by immigrant populations reflected in legislation such as proposition 187 and the Personal Responsibility and Work Opportunity Reconciliation Act (PROWRA) seem unfounded.

The next logical question is, what happens to immigrants who become disabled in California? There are a number of health and community long-term care services that are designed to assist those with disabilities, and the epidemiological paradox provides no insight about the barriers disabled immigrants may face in making use of those services. At the simple descriptive level we find no differences in service utilization between immigrants and native-born residents who report activity limitations. Since differences in social and demographic characteristics of immigrants versus native-born residents may have masked some differences, we next controlled statistically for predictors of service use. Nationally, these regression models continued to show no differences in service use between immigrants and native-born adults, with the exception of a somewhat higher use of physical therapy and lower number of doctor visits. Immigrants in California do not differ significantly in service use from the rest of the U.S. except in use of medical transportation. It is possible that a number of persons in public transportation rich cities such as Chicago and New York confused the transportation question with general public transportation versus special medical transportation, which might account for the higher rates among immigrants outside of comparatively public transportation poor California.

To understand the full implications of the use of services by immigrants, it is important to consider all of the predictors of service use. The most commonly used service among those with activity limitations is physical therapy (PT), which was used by about 12% of adults. The goal of PT is to restore lost function when possible, such as after a partially paralyzing stroke or disabling injury. As we would expect, ADL and IADL difficulties, in addition to more general reported activity limitations, increases the odds that PT will be used in the US population. When we examine the immigrant population, the impact of the ADL and IADL predictors is similar to that in the general population. This is encouraging because it suggests that, after controlling for economic and social characteristics, health needs have a similar impact on the use of PT for both immigrants and the native-born. More worrisome is the effect of the insurance variables. The effect of being uninsured in decreasing PT use among those with activity limitations is twice as large for immigrants as for native-born adults. Since immigrants overall are at least twice as likely to be uninsured as native-born adults, this “PT gap” now represents a serious risk for immigrants should they become disabled. The other variable of concern among immigrants is the lower use of PT services by Asian immigrants compared to non-Hispanic white immigrants.

There are relatively few predictors of other service use among immigrant adults, probably because of the relatively small sample size of immigrants with activity limitations who use those services (service users in the sample equal 38 to 71 respondents depending on the service). Consistent across those services is that disability (ADL and/or IADL) plays a roughly equivalent role in predicting visiting nurse, attendant, transportation, and social worker use in immigrants and in the entire U.S. sample. Medicaid also plays an important

role in improving access to those services, with social worker services having a particularly large effect among immigrants. The other different predictor of services between immigrants and the whole U.S. sample of adults with activity limitations is that low education decreases a different pair of services for immigrants (visiting nurse and transportation) than for the general U.S. adult population (PT and attendant).

In summary, when immigrants have similar levels of insurance, education, and need, it appears that they have generally similar levels of the use of key services for disabled adults. Immigrants, however, are much more likely to be uninsured and have lower educational levels, placing them at potential risk for facing service barriers when they become disabled. Our analysis suggests that public policy *does not need any special policies to address disability services access to immigrant* beyond those already applicable to the general population. The influence of education and insurance status, however, indicates that *general public policies* such as insurance coverage are necessary to reduce the barriers produced by financial barriers and low education. In addition, language barriers and cultural differences between immigrants and service systems undoubtedly affect the quality and quantity of services received.

## **Conclusion**

This analysis documents that the disability profile of immigrants in California and the U.S. as a whole is better than expected given their socioeconomic status. This refutes the concerns of some that immigrants place an extra burden the health care system for medical and supportive services. In addition, disability-related service use for immigrant and native born Americans appears similar when sociodemographic and need factors are similar. Again,

this is good news that suggests immigrants do not face any *unique* barriers to the use entering the service system. As with all other Americans, immigrants share barriers to appropriate service use when they have no health insurance (which is a particular problem among immigrants), while Medicaid serves to improve access to care. These findings reinforce the need for Medi-Cal and Healthy Families outreach programs to the uninsured in California, and for further efforts to insure health insurance coverage for *all* Californians.

One caution to our findings is that it is cross sectional, capturing the population at one point in time. If we follow this large immigrant cohort over time, we would likely find less favorable disability outcomes because of how social conditions influence health status. The National Council of Disability (1998) finds higher rates of disability when living conditions include poorer health coverage, greater exposure to crimes, inadequate nutrition, and environmental pollution – similar to areas that immigrants settle in. These areas are typically in impoverished urban or metropolitan areas that provide housing and employment yet at the same time trap immigrants in unhealthy environments with limited opportunity for social mobility. It is these social conditions that place immigrants at risk for disability and might eventually impact their health status to the extent that the environment eventually erodes their healthy immigrant status. One approach to curbing government expenditures is to assist immigrants in maintaining the health status that they immigrated with. Health policy measures can be instituted to eliminate substandard or unhealthy conditions in these “disability risk” urban areas. Community development that improves housing, provides employment mobility, and reduces environmental pollution would contribute to maintaining the healthy immigrant status for these groups. Health policy, therefore, can look to reducing

health care expenditures *in the future* by improving social conditions to prevent disease and disability *today*.

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Table A: Demographic, Socioeconomic Status, Insurance Status, and Disability Status of Native Born and Immigrant Populations, Age 0-17, **United States**, 1994 (percentages presented).

	Immigrant (N=865)	Native Born (N=26,038)	Chi-Square
Age:			
0-5	18	35	110.943***
6-17	82	65	
Gender			
-Female	45	48	--
Ethnicity			
-Latino	33	8	1991.249***
-White/other	35	74	
-Black	11	16	
-Asian	21	2	
Near Poverty			
-<200% of Poverty	64	47	88.278***
Insurance Status			
-uninsured	34	14	325.048***
-employer based	41	62	
-private	6	4	
-Medicaid	13	16	
-Medicare	0	0	
-other	6	4	
Activity Limitation			
-some limitation	5	7	--

\*\*\*P<.001

-- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table B: Demographic, Socioeconomic Status, Insurance Status, and Disability Status of Immigrant and Native Populations, Age 0-17, **California**, 1994 (percentages presented).

	Immigrant (N=443)	Native Born (N=3,827)	Chi-Square
Age:			
0-5	13	40	116.825***
6-17	87	60	
Gender			
-Female	50	49	--
Ethnicity			
-Latino	46	35	189.972***
-White/other	26	48	
-Black	3	9	
-Asian	25	9	
Near Poverty			
-<200% of Poverty	81	50	147.545***
Insurance Status			
-uninsured	47	17	251.776***
-employer based	26	52	
-private	3	5	
-Medicaid	23	24	
-Medicare	0	0	
-other	2	2	
Activity Limitation			
-some limitation	5	6	--

\*\*\*P<.001

-- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 1: Demographic, Socioeconomic Status, and Insurance Status of Native Born and Immigrant Populations, Age 18+, **United States**, 1994 (percentages presented).

	Immigrant (N=6,757)	Native Born (N=67,507)	Chi-Square
Age: 18-64 65+	86 14	83 17	46.139***
Gender -Female	52	52	--
Ethnicity -Latino -White/other -Black -Asian	30 41 9 20	3 85 11 1	19858.722***
Marital Status -Married	67	64	22.256***
Near Poverty -<200% of Poverty	45	32	450.642***
Family Income -<\$10,000 -\$10,000-\$19,999 -\$20,000-\$34,999 -\$35,000 +	13 22 25 40	11 17 26 46	178.891***
Education -<12 years	29	18	482.267***
Insurance Status -uninsured -employer based -private -Medicaid -Medicare -other	28 50 10 7 3 2	14 66 10 5 3 2	1013.872***

\*\*\*P<.001, -- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 1A: Disability Status and Medical/ Supportive Service Use of Native Born and Immigrant Populations, Age 18+, **United States**, 1994(percentages presented).

	Immigrant (N=6,757)	Native Born (N=67,507)	Chi-Square or t-test
Activity Limitation -some limitation	14	19	89.483***
Difficulty with 1 or more ADLs	2	3	26.319***
Difficulty with 1 or more IADLs	6	8	33.765***
Bed Days in Past 2 weeks			
-none	95	94	
-1-3 days	3	4	
-4-7 days	1	1	
8-14 days	1	1	16.762***
	N=895	N=12,963	
Physical Therapy used in past 12 months	11	11	--
Visiting Nurse used in past 12 months	6	6	--
Personal Attendant used in past 12 months	4	2	14.758***
Transportation used in past 12 months	5	3	7.821**
Social worker used in past 12 months	3	2	--
Doctor Visits in last 12 months (mean)	8	10	--

\*\*\*P<.001, \*\*P<.01

-- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 2: Demographic, Socioeconomic Status, and Insurance Status of Immigrant and Native Born Populations, Age 18+, **California**, 1994(percentages presented).

	Immigrant (N=3,120)	Native Born (N=7,339)	Chi-Square
Age: 18-64 65+	91 9	84 16	82.028***
Gender -Female	51	52	--
Ethnicity -Latino -White/other -Black -Asian	43 26 1 31	13 75 9 3	3580.973***
Marital Status -Married	69	61	61.231***
Near Poverty -<200% of Poverty	58	27	933.297***
Family Income -<\$10,000 -\$10,000-\$19,999 -\$20,000-\$34,999 -\$35,000 +	13 25 25 37	8 15 20 57	352.209***
Education -<12 years	38	13	896.731***
Insurance Status -uninsured -employer based -private -Medicaid -Medicare -other	36 43 7 11 2 1	16 62 12 7 2 1	677.428***

\*\*\*p<.001, -- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 2A: Disability Status and Medical/ Supportive Service Use of Immigrant and Native Born Populations, Age 18+, **California**, 1994(percentages presented).

	Immigrant (N=3,120)	Native Born (N=7,339)	Chi-Square or t-test
Activity Limitation -some limitation	12	20	87.088***
Difficulty with 1 or more ADLs	2	3	--
Difficulty with 1 or more IADLs	5	7	22.165***
Bed Days in Past 2 weeks			
-none	95	93	
-1-3 days	3	5	
-4-7 days	1	1	
8-14 days	1	1	10.706*
	N=392	N=1,496	
Physical Therapy used in past 12 months	12	13	--
Visiting Nurse used in past 12 months	4	5	--
Personal Attendant used in past 12 months	2	3	--
Transportation used in past 12 months	1	2	--
Social worker used in past 12 months	3	3	--
Doctor Visits in last 12 months (mean)	4	5	--

\*\*\*P<.001, \*P<.05, -- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 3: Demographic, Socioeconomic Status, and Insurance Status of Immigrants, Age 18+, United States, 1994(percentages presented).

	Other U.S. (N=6,609)	California (N=3,120)	Chi-Square
Age: 18-64 65+	86 14	91 9	40.955***
Gender -Female	52	51	--
Ethnicity -Latino -White/other -Black -Asian	30 41 9 20	43 26 1 31	550.031***
Marital Status -Married	67	69	--
Near Poverty -<200% of Poverty	45	58	129.577***
Family Income -<\$10,000 -\$10,000-\$19,999 -\$20,000-\$34,999 -\$35,000 +	13 22 25 40	13 25 25 37	12.609**
Education -<12 years	29	38	83.525***
Insurance Status -uninsured -employer based -private -Medicaid -Medicare -other	27 50 10 8 3 2	36 43 7 11 2 1	156.861***

\*\*\*P<.001, \*P<.05, -- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 3A: Disability Status and Medical/ Supportive Service Use of Immigrants Age 18+, United States, 1994(percentages presented).

	other U.S. (N=6,609)	California (N=3,120)	Chi-Square or t-test
Activity Limitation -some limitation	14	12	6.446*
Difficulty with 1 or more ADLs	2	2	--
Difficulty with 1 or more IADLs	6	5	7.225**
Bed Days in Past 2 weeks			
-none	95	95	
-1-3 days	3	3	--
-4-7 days	1	1	
8-14 days	1	1	
	N=877	N=392	
Physical Therapy used in past 12 months	11	12	--
Visiting Nurse used in past 12 months	6	4	--
Personal Attendant used in past 12 months	4	2	4.646*
Transportation used in past 12 months	5	1	11.435***
Social worker used in past 12 months	3	3	--
Doctor Visits in last 12 months (mean)	5	4	--

\*\*\*P<.001., \*\*P<.01, \*P<.05, -- =not significant

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.



Table 4: Logistic and Poisson Regression Analysis of Disability Measures Regressed on Immigrant Status, Demographic Characteristics, and Socioeconomic Status among Native Born and Immigrant Populations, Age 18+, **United States**, 1994 (parameter estimates presented, odds ratios in parenthesis).

	Logistic Regression			Poisson Regression
	Activity Limitation	Difficulty with 1 or more ADLs	Difficulty with 1 or more IADLs	Bed Days in Past two weeks
<b>Model 1</b>				
Immigrant	-.3799*** <sup>1</sup> (.684)	-.4616*** (.630)	-.3848*** (.681)	-.1069***
<b>Model 2</b>				
Immigrant	-.2198*** (.803)	-.2745** (.760)	-.1944*** (.823)	-.0760*
Age	.0705*** <sup>2</sup> (1.073)	.0244** (1.025)	.0433*** (1.044)	.0253***
Age2	-.0002*** (1.000)	.0002*** (1.000)	.0000* (1.000)	--
Female	--	--	.3355*** (1.399)	.2945***
Latino <sup>A</sup>	.0998* (1.105)	--	--	.3375***
Asian <sup>B</sup>	-.4583*** (.632)	-.5550* (.574)	-.4749*** (.622)	-.3679***
Married	-.5387*** (.583)	-.6025*** (.547)	-.5846*** (.557)	-.3576***
<b>Model 3</b>				

**Disability and Access to Health & Support Services among California's Immigrant Population**

Immigrant	-.3383*** (.713)	-.2718** (.762)	-.2507*** (.778)	-.1716***
Age	.0886*** (1.093)	.0365*** (1.037)	.0567*** (1.058)	.0402***
Age2	.0004*** (1.000)	.0001* (1.000)	--	-.0002***
Female	--	--	.3303*** (1.391)	.2749***
Latino <sup>A</sup>	-.1732*** (.841)	--	-.2098** (.811)	.0902*
Asian <sup>B</sup>	-.4624*** (.630)	-.5905** (.554)	-.5462*** (.579)	-.3522***
Married	-.4149*** (.660)	-.4594*** (.632)	-.4486*** (.639)	-.2366***
Near Poverty(below 200%)	.6794*** (1.973)	.6207*** (1.860)	.6304*** (1.878)	.5851***
Education(less than 12years)	.4399*** (1.553)	.3184*** (1.375)	.3739*** (1.453)	.4176***

<sup>1</sup>= Minus sign indicates that the relationship is negative, e.g., immigrants have less activity limitation than native born.

<sup>2</sup>=No sign indicates that the relationship is positive, e.g., older age is associated with greater activity limitation..

<sup>A</sup>=In comparison to all other racial / ethnic groups excluding Asians.

<sup>B</sup>=In comparison to all other racial/ethnic groups excluding Latinos.

\*\*\*P<.001, \*\*P<.01, \*P<.05, -- =not significant

NA=not applicable

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 5: Logistic and Poisson Regression Analysis of Disability Measures Regressed on Immigrant Status, Demographic Characteristics, and Socioeconomic Status among Native Born and Immigrant Populations, Age 18+, **California**, 1994(parameter estimates presented, odds ratios in parenthesis).

	Logistic Regression		Poisson Regression	
	Activity Limitation	Difficulty with 1 or more ADLs	Difficulty with 1 or more IADLs	Bed Days in Past two weeks
<b>Model 1</b>				
Immigrant	-.5689*** <sup>1</sup> (.566)	--	-.4556*** (.634)	-.2318***
<b>Model 2</b>				
Immigrant	-.2631*** (.769)	--	--	--
Age	.0714*** <sup>2</sup> (1.074)	.0749*** (1.078)	.0490** (1.050)	.0215**
Age2	-.0003*** (1.000)	--	--	--
Female	--	--	.3946*** (1.484)	.4344***
Latino <sup>A</sup>	--	--	--	--
Asian <sup>B</sup>	-.4165*** (.659)	-.7203* (.487)	-.8869*** (.412)	-.5179***
Married	-.3981*** (.672)	-.6969*** (.498)	-.7071*** (.493)	-.3133***
<b>Model 3</b>				

**Disability and Access to Health & Support Services among California's Immigrant Population**

Immigrant	-.4842*** (.616)	--	--	-.1970**
Age	.0876*** (1.092)	.0988*** (1.104)	.0630*** (1.065)	.0319***
Age2	-.0005*** (1.000)	--	--	--
Female	--	--	.3811*** (1.464)	.4147***
Latino <sup>A</sup>	-.3674*** (.693)	--	-.2981* (.742)	-.1931*
Asian <sup>B</sup>	-.4145*** (.661)	-.8156* (.442)	-1.015*** (.362)	-.5154***
Married	-.3003*** (.741)	-.5476*** (.579)	-.5988*** (.549)	-.2111***
Near Poverty(below 200%)	.6257*** (1.870)	.7666*** (2.152)	.5927*** (1.809)	.6092***
Education(less than 12 years)	.3372*** (1.401)	--	--	.2994***

<sup>1</sup>= Minus sign indicates that the relationship is negative, e.g., immigrants have less activity limitation than native born.

<sup>2</sup>=No sign indicates that the relationship is positive, e.g., older age is associated with greater activity limitation.

<sup>A</sup>=In comparison to all other racial / ethnic groups excluding Asians.

<sup>B</sup>=In comparison to all other racial/ethnic groups excluding Latinos.

\*\*\*P<.001, \*\*P<.01, \*P<.05, -- =not significant

NA=not applicable

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 6: Logistic and Poisson Regression Analysis of Disability Measures Regressed on California Residence, Demographic Characteristics, and Socioeconomic Status among Immigrants, Age 18+, **United States**, 1994(parameter estimates presented, odds ratios in parenthesis).

	Logistic Regression		Poisson Regression	
	Activity Limitation	Difficulty with 1 or more ADLs	Difficulty with 1 or more IADLs	Bed Days in Past two weeks
<b>Model 1</b>				
California Residence	-.1958** <sup>1</sup> (.822)	--	-.2739** (.760)	-.1275*
<b>Model 2</b>				
California Residence	--	.5612** <sup>2</sup> (1.753)	--	--
Age	.0749*** (1.078)	--	.0482** (1.049)	.0466***
Age2	-.0002* (1.000)	.0004* (1.000)	--	-.0001*
Female	.1530* (1.165)	--	.3215** (1.379)	.5130***
Latino <sup>A</sup>	.2257** (1.253)	--	--	.4138***
Asian <sup>B</sup>	-.4023*** (.669)	-.8173** (.442)	-.4506** (.637)	-.5202***
<b>Model 3</b>				
California Residence	--	.5671** (1.763)	--	--
Age	.0834*** (1.087)	--	.0541** (1.056)	.0528***

**Disability and Access to Health & Support Services among California's Immigrant Population**

Age2	-.0003** (1.000)	.0004* (1.000)	--	-.0002***
Female	.1467* (1.158)	--	.2657* (1.304)	.4790***
Latino <sup>A</sup>	--	--	--	.3082***
Asian <sup>B</sup>	-.4272*** (.652)	-.8671** (.420)	-.5608*** (.571)	-.5172***
Married	-.3077*** (.735)	-.6952*** (.499)	-.4334*** (.648)	-.3246***
Near Poverty (below 200%)	.4315*** (1.540)	.6941*** (2.002)	.5129*** (1.670)	.3565***
Education (less than 12 years)	.2630*** (1.301)	--	--	.1406*

<sup>1</sup>= Minus sign indicates that the relationship is negative, e.g., California immigrants have less activity limitation than other U.S. immigrants.

<sup>2</sup>=No sign indicates that the relationship is positive, e.g., California immigrants are more likely to have difficulty with one or more ADL than other U.S. immigrants.

<sup>A</sup>=In comparison to all other racial / ethnic groups excluding Asians.

<sup>B</sup>=In comparison to all other racial/ethnic groups excluding Latinos.

\*\*\*P<.001, \*\*P<.01, \* P<.05, -- = not significant

NA=not applicable

Source: National health Interview Survey (NHIS), Disability Supplement, 1994.

Table 7: Logistic and Poisson Regression Analysis of Medical and Supportive Service Use Regressed on Immigrant Status, Demographic Characteristics, Socioeconomic Status, Insurance Status, and Health Status among Native Born and Immigrant Populations, Age 18+, **United States**, 1994 (parameter estimates presented, odds ratios in parenthesis).

	Poisson Regression	Logistic Regression				
	Doctor Visits	Physical Therapy	Visiting Nurse	Personal Attendant	Transportation	Social Worker
<b>Model 1</b>						
Immigrant	-.2473*** <sup>1</sup>	--	--	.4399** <sup>2</sup> (1.553)	--	--
<b>Model 2</b>						
Immigrant	-.1823***	--	--	.3868* (1.472)	--	--
Age	.0120***	--	.0398** (1.041)	--	.0484*** (1.050)	--
Age <sup>2</sup>	--	--	--	.0005*** (1.001)	-.0003* (1.000)	--
Female	.3373***	.1239* (1.132)	--	--	--	--
Latino <sup>A</sup>	--	--	--	--	--	--
Asian <sup>B</sup>	-.3696***	--	--	--	--	--
Married	-.0502***	--	-.5000*** (.607)	-.6645*** (.515)	-1.561*** (.210)	-.9214*** (.398)
Near Poverty(below 200%)	.2310***	-.2081*** (.812)	.4540*** (1.575)	--	.6476*** (1.911)	.6674*** (1.949)

*Disability and Access to Health & Support Services among California's Immigrant Population*

Education(less than 12 years)	.0671***	-.3821*** (.682)	--	--	.3890*** (1.475)	--
<b>Model 3</b>						
Immigrant	-.1799***	.2316* (1.261)	--	--	--	--
Age	.0116***	--	.0410** (1.042)	--	.0482*** (1.049)	--
Age2	--	--	--	.0005*** (1.001)	-.0002* (1.000)	--
Female	.2918***	.1231* (1.131)	--	--	--	--
Latino <sup>A</sup>	--	--	-.4252* (.654)	--	-.5309* (.588)	--
Asian <sup>B</sup>	-.3757***	--	--	--	--	--
Married	--	--	-.3908*** (.677)	-.5272*** (.590)	-1.393*** (.248)	-.7464 (.474)
Near Poverty(below 200%)	.1559***	-.1178* (.889)	.3231*** (1.381)	--	.3770*** (1.458)	.3088* (1.362)
Education(less than 12 years)	--	-.3524*** (.703)	--	-.3129* (.731)	--	--
Medicaid <sup>C</sup>	.7852***	-.2597** (.771)	.9061*** (2.475)	1.276*** (3.585)	1.225*** (3.396)	1.267*** (3.550)
Uninsured <sup>D</sup>	-.3043***	-.5121*** (.599)	-.4586* (.632)	-1.054* (.348)	--	--
<b>Model 4</b>						



**Disability and Access to Health & Support Services among California's Immigrant Population**

Immigrant	-.1229***	.2276* (1.256)	--	--	--	--
Age	-.0012***	--	--	--	.0421** (1.043)	-.0416** (.959)
Age2	--	--	--	.0004* (1.000)	-.0002* (1.000)	--
Female	.2720***	--	--	--	--	--
Latino <sup>A</sup>	--	--	--	--	-.4751* (.622)	--
Asian <sup>B</sup>	-.3077***	--	--	--	--	--
Married	.0682***	--	-.3840*** (.681)	-.4626*** (.630)	-1.372*** (.253)	-.7039*** (.495)
Near Poverty(below 200%)	--	-.1989*** (.820)	.2298** (1.258)	--	.3544** (1.425)	.2750* (1.317)
Education(less than 12 years)	-.1401***	-.4040*** (.668)	--	-.3431** (.710)	--	--
Medicaid <sup>C</sup>	.3477***	-.4246*** (.654)	.6742*** (1.962)	.9703*** (2.639)	1.047*** (2.851)	1.084*** (2.957)
Uninsured <sup>D</sup>	-.3520***	-.5440*** (.580)	-.4922* (.611)	-1.041* (.353)	--	--
Self Rated Health (excellent)	-.8421***	-.3180*** (.728)	-.6801*** (.507)	-.2499* (.779)	-.2985** (.742)	-.3544** (.702)
ADL Diff.(1 or more)	.6107***	.5455*** (1.726)	1.124*** (3.079)	1.758*** (5.802)	.8692*** (2.385)	.7209*** (2.056)

**Disability and Access to Health & Support Services among California's Immigrant Population**

IADL Diff.(1 or more)	.7563***	.5808*** (1.788)	.7343*** (2.084)	1.277*** (3.586)	.4973*** (1.644)	.5490*** (1.731)
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<sup>1</sup>= Minus sign indicates that the relationship is negative, e.g., immigrants have less doctor visits than native born.

<sup>2</sup>=No sign indicates that the relationship is positive, e.g., immigrants are more likely than the native born to use the services of a personal attendant.

<sup>A</sup>=In comparison to all other racial / ethnic groups excluding Asians.

<sup>B</sup>=In comparison to all other racial/ethnic groups excluding Latinos.

<sup>C</sup>=In comparison to the risk for those with any other insurance excluding Medicaid.

<sup>D</sup>=In comparison to the risk for those that are insured.

\*\*\*P<.001, \*\*P<.01, \*P<.05, -- =not significant

NA=not applicable

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 8: Logistic and Poisson Regression Analysis of Medical and Supportive Service Use Regressed on Immigrant Status, Demographic Characteristics, Socioeconomic Status, Insurance Status, and Health Status among Native Born and Immigrant Populations, Age 18+, **California**, 1994 (parameter estimates presented, odds ratios in parenthesis).

	Poisson Regression	Logistic Regression				
	Doctor Visits	Physical Therapy	Visiting Nurse	Personal Attendant	Transportation	Social Worker
<b>Model 1</b>						
Immigrant	--	--	--	--	--	--
<b>Model 2</b>						
Immigrant	--	--	--	--	--	--
Age	--	--	--	--	--	-1.071** (.898)
Age2	--	--	--	--	--	.0008* (1.001)
Female	--	--	--	--	--	--
Latino <sup>A</sup>	--	-6495** (.522)	--	--	--	--
Asian <sup>B</sup>	-.5026*** <sup>1</sup>	-1.083** (.338)	--	--	--	--
Married	--	--	-.8292*** (.436)	-.8522* (.426)	-1.539*** (.215)	--

**Disability and Access to Health & Support Services among California's Immigrant Population**

Near Poverty(below 200%)	.1949*** <sup>2</sup>	--	--	--	1.117** (3.057)	1.539*** (4.663)
Education(less than 12 years)	--	--	--	--	--	--
<b>Model 3</b>						
Immigrant	--	--	--	--	--	--
Age	--	--	--	--	--	-1.377** (.871)
Age2	--	--	--	.0009* (1.001)	--	.0011** (1.001)
Female	--	--	--	--	--	--
Latino <sup>A</sup>	--	-.6298** (.533)	--	--	--	--
Asian <sup>B</sup>	-.5405***	-1.116** (.327)	--	--	--	--
Married	--	--	-.7262** (.484)	-.7757* (.460)	-1.379** (.252)	--
Near Poverty(below 200%)	.1803*	--	--	--	--	.8936* (2.444)
Education(less than 12 years)	--	--	--	--	--	--
Medicaid <sup>C</sup>	--	--	.7165* (2.047)	1.116** (3.056)	1.466*** (4.332)	1.877*** (6.539)

*Disability and Access to Health & Support Services among California's Immigrant Population*

Uninsured <sup>D</sup>	-.2995*	-.7572** (.469)	--	--	--	--
<b>Model 4</b>						
Immigrant	--	--	--	--	--	--
Age	--	--	--	--	--	-.1646*** (.848)
Age2	--	--	--	.0011* (1.001)	--	.0013*** (1.001)
Female	--	--	--	--	--	--
Latino <sup>A</sup>	--	-.6207* (.538)	--	--	--	--
Asian <sup>B</sup>	-.4563***	-1.011* (.364)	--	--	--	--
Married	--	--	-.5700* (.565)	--	-1.190** (.304)	--
Near Poverty(below 200%)	--	--	--	--	--	.8901* (2.435)
Education(less than 12 years)	-.1574**	--	--	--	--	--
Medicaid <sup>C</sup>	--	--	.6241* (1.867)	1.132** (3.103)	1.362** (3.908)	1.763*** (5.832)
Uninsured <sup>D</sup>	-.3140***	-.7686** (.464)	--	--	--	--

**Disability and Access to Health & Support Services among California's Immigrant Population**

Self Rated Health (excellent)	-.7092***	--	-.6389* (.528)	--	--	--
ADL Diff.(1 or more)	.2970***	--	.8539** (2.349)	2.095*** (8.129)	1.384** (3.991)	.8869* (2.427)
IADL Diff.(1 or more)	.3506***	.6609*** (1.937)	.7174* (2.049)	--	--	1.224*** (3.404)

<sup>1</sup>= Minus sign indicates that the relationship is negative, e.g., Asians have less doctor visits than white/others.

<sup>2</sup>=No sign indicates that the relationship is positive, e.g., near poverty is associated with a higher number of doctor visits.

<sup>A</sup>=In comparison to all other racial / ethnic groups excluding Asians.

<sup>B</sup>=In comparison to all other racial/ethnic groups excluding Latinos.

<sup>C</sup>=In comparison to the risk for those with any other insurance excluding Medicaid.

<sup>D</sup>=In comparison to the risk for those that are insured.

\*\*\*P<.001, \*\*P<.01, \*P<.05, -- =not significant

NA=not applicable

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

Table 9: Logistic and Poisson Regression Analysis of Medical and Supportive Service Use Regressed on California Residence, Demographic Characteristics, Socioeconomic Status, Insurance Status, and Health Status, among Immigrants, Age 18+, **United States**, 1994 (parameter estimates presented, odds ratios in parenthesis).

	Poisson Regression	Logistic Regression				
	Doctor Visits	Physical Therapy	Visiting Nurse	Personal Attendant	Transportation	Social Worker
<b>Model 1</b>						
California Residence	--	--	--	-8614* <sup>1</sup> (.423)	-1.494** (.224)	--
<b>Model 2</b>						
California Residence	--	--	--	--	-1.291** (.275)	--
Age	.0156*** <sup>2</sup>	--	--	--	--	-.1363*** (.873)
Age2	--	--	--	--	--	.0010* (1.001)
Female	.3831***	--	--	--	--	--
Latino <sup>A</sup>	--	--	--	--	--	--
Asian <sup>B</sup>	.4388***	-.8719** (.418)	--	--	--	--
Married	--	--	--	--	-.6818** (.506)	-.7815* (.458)
Near Poverty(below 200%)	.2982***	--	--	--	--	--

*Disability and Access to Health & Support Services among California's Immigrant Population*

Education(less than 12 years)	--	--	--	--	--	--
<b>Model 3</b>						
California Residence	--	--	--	--	-1.628** (.196)	--
Age	.0115***	--	--	--	--	-.1660*** (.847)
Age2	--	--	--	.0013* (1.001)	--	.0013** (1.001)
Female	.3089***	--	--	--	--	--
Latino <sup>A</sup>	--	--	--	--	--	--
Asian <sup>B</sup>	-.4469***	-.8824** (.414)	--	--	--	--
Married	.1232***	--	--	--	--	--
Near Poverty(below 200%)	.2621***	--	--	--	--	--
Education(less than 12 years)	--	--	-.6952* (.499)	--	-.7248* (.484)	--
Medicaid <sup>C</sup>	.7235***	--	1.006** (2.737)	1.665*** (5.290)	1.973*** (7.195)	2.423*** (11.298)
Uninsured <sup>D</sup>	-.4942***	-.9844** (.374)	--	--	--	1.292* (3.643)
<b>Model 4</b>						



**Disability and Access to Health & Support Services among California's Immigrant Population**

California Residence	--	--	--	--	-1.719*** (.179)	--
Age	-.0019	--	--	--	--	-.1793*** (.836)
Age2	--	--	--	.0011* (1.001)	--	.0012** (1.001)
Female	.2898***	--	--	--	--	--
Latino <sup>A</sup>	--	--	--	--	--	--
Asian <sup>B</sup>	-.3589***	-.8156* (.442)	--	--	--	--
Married	.1934***	--	--	--	--	--
Near Poverty(below 200%)	.1440***	--	--	--	--	--
Education(less than 12 years)	-.0983**	--	-.6642* (.515)	--	-.6873* (.503)	--
Medicaid <sup>C</sup>	.3652***	--	.8310** (2.296)	1.306** (3.692)	1.760*** (5.813)	2.287*** (9.848)
Uninsured <sup>D</sup>	-.5282***	-1.065** (.344)	--	--	--	1.365* (3.919)
Self Rated Health (excellent)	-.8801***	--	--	--	--	--
ADL Diff.(1 or more)	.3221***	--	.7223* (2.059)	1.562*** (4.771)	.9409* (2.562)	--

**Disability and Access to Health & Support Services among California's Immigrant Population**

IADL Diff.(1 or more)	.7907***	.7770*** (2.175)	--	1.433*** (4.193)	--	1.418** (4.131)
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<sup>1</sup>= Minus sign indicates that the relationship is negative,e.g., California immigrants are less likely than other U.S. immigrants to use the services of a personal attendant.

<sup>2</sup>=No sign indicates that the relationship is positive, e.g., older age is associated with a higher number of doctor visits.

<sup>A</sup>=In comparison to all other racial / ethnic groups excluding Asians.

<sup>B</sup>=In comparison to all other racial/ethnic groups excluding Latinos.

<sup>C</sup>=In comparison to the risk for those with any other insurance excluding Medicaid.

<sup>D</sup>=In comparison to the risk for those that are insured.

\*\*\*P<.001, \*\*P<.01, \*P<.05, -- =not significant

NA=not applicable

Source: National Health Interview Survey (NHIS), Disability Supplement, 1994.

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