# Health Transition of International Migrants: A Study of Indian and Chinese Immigrants in the U.S.

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## Abstract

*Present paper has made an attempt to study the transition in health of Indian and Chinese legal immigrants in the U.S., in a comparative perspective. A health model has been formulated based on two related insights: 1) if migration is stressful, then the appropriate time for assessing health selectivity is at the time of the migration decision rather than at the time of the actual migration, and 2) assessment of health change subsequent to immigration should take into account heterogeneity in the sources of health change and their timing. The model distinguishes between the permanent and transitory components of health and identifies three distinct sources of change in the transitory component: visa stress, migration stress, and U.S. exposure. Though not all the data required for a thorough empirical assessment are available, several key components of health change have been estimated. This paper uses data from the New Immigrant Survey, carried out in the United States. This is a panel study of the new legal immigrants in the United States, and the information for the present paper has been drawn from the baseline round of its first full cohort of the fiscal year 2003. Results indicate towards a wide variability in the distribution of immigrants' health for the different visa categories. Employment-based immigrants appear to be among the most positively selected for health. Chinese immigrants are more likely than Indian immigrants to report experiencing sadness or depression because of the visa process, and the pattern of effects appears to differ across the sexes.*

**Keywords:** Immigration, United States, Indian immigrants, Chinese immigrants, Visa, Legal permanent residence, Immigrants' health.

## 1. Introduction

Migration and health are inter-related in a number of ways. Most obviously, the movement of human populations can promote the spread of disease, and place migrants in positions where their health suffers. Illness is extremely costly to migrants in terms of time spent not working, and cost of treatment. Migrant's health may be compromised during the process of migration. At their destination, migrant workers and displaced people may receive food of poor quality leading to malnutrition. For example, a popular story in the United States in recent years has been that of a healthy person immigrating to the U.S. and subsequently acquiring some of the bad eating habits associated with American fast food, leading to health decline (Jasso et. al., 2005). Moving across ecological conditions may expose movers to new diseases and promote disease transmission; migrants may be excluded from the public provision of food or other services as they are not 'locals'; whilst poor living and working conditions can promote ill-health.

Two questions dominate the study of immigrants' health:

1. What is the health status of a new immigrant?
2. What is the immigrant's health trajectory over the life course?

The first question, the *selection* question, encompasses all factors and mechanisms in both origin and destination countries that influence who migrate – including, for example, origin-country skill prices and destination-country visa allocation regimes – some of which are, directly or indirectly, attentive to matters of health. The second question, variously called the *assimilation* or *incorporation* question, focuses on the health-relevant aspects of the receiving country environment and the immigrant's resources and behaviors in the new country.

Migration is complicated, therefore, it is argued that a more faithful approach would incorporate the health effects of the migration process itself, which may begin long before "arrival" and may differ for immigrants facing different migration-relevant environments, such as different visa regimes (Kasl and Berkman, 1983; Vega and Amaro, 1994; Jasso, 2003; Jasso et al., 2004). For example, navigating the visa application process may be quite stressful, illegal immigrants are constantly in fear of discovery and deportation, some legal immigrants have "conditional" visas for two years after admission to legal permanent residence, and immigrants may face prejudice. A number of bad practices are prevailing in the visa issuance process in the developing countries (Khadria, 2009, pp. 66-69).

Prolonged exposure to stressful circumstances has been shown to have powerful negative effects on a variety of bodily systems (McEwan and Lasley, 2002). Attentiveness to the migration process suggests that if the migration process is stressful, then the appropriate time for assessing health selectivity is at the time of the *migration decision* – rather than at the time of actual migration – and, further, that assessment of health change subsequent to immigration should take into account heterogeneity in the sources of health change and their timing.

### Sources of Health Change: The Hypothesis

Accordingly, and building on the health and immigration literatures, three distinct sources of change in the transitory component of immigrant health have been identified: 1) *visa stress*, defined as the set of stresses related to the process of obtaining legal permanent residence; 2) *migration stress*, defined as the set of stresses related to the process of moving from one country to another, net of the visa application process; and 3) *U.S. exposure*, conceptualized as dietary and environmental factors.

Each of the three sources of health effects has a distinctive temporal span and affects distinctive subpopulations. For example, U.S. exposure affects everyone, not only immigrants; migration stress affects all international movers, whether or not they have to go through the visa process; and visa stress affects only those who must obtain legal permanent residence. With respect to the time dimension, visa stress presumably ends with admission to LPR (or, as will be seen, somewhat earlier for refugees and somewhat later for conditional immigrants); migration stress probably ends at some point after inception of U.S. residence; and U.S. exposure effects do not end, although positive effects may be accentuated and negative effects mitigated by discerning choices and behaviors.

## 2. Scenario of Migration from Asia to the U.S.

The 1965 Immigration Act abolished the ethnicity-based quota system and established a family and employment-based preference system with a greater weight on family reunification

(Khadria, 1999, p. 65). Since then the U.S. has opened the door to Asia after eight decades of almost complete exclusion. Without a strict rule of screening for skills under the 1965 Immigration law, the admission classes of immigrants have changed. According to the Immigration and Naturalization Service (2000), about 70 per cent of legal immigrations have been family based. Asians constitute the fastest growing minority group in the United States. The Asian population in the U.S. increased by 108 percent in the decade from 1980 to 1990, rising from 3.5 million to 7.3 million (Exter, 1992). During the last decade over 2 million immigrants arrived from Asia. It is estimated that by the year 2025 the population of US will be 12 percent Asians (Cummins, 1998).

In recent years immigrants have arrived in the United States from every Asian nation. It is very difficult to discuss Asian immigration as a singular enterprise because Asians are an extremely diverse group of individuals. Patterns of immigration vary for each specific group of Asians; however all Asians share the common bond of being subject to the same laws. Although patterns of Asian immigration have all been heavily shared by U.S. legislation, each nation has its own unique immigration history. India and China are two nations occupying the leading positions in migrating people to the U.S.

## 2.1 Studies on the Indian Immigrants in the U.S.

As a result of professional success, Indians have enjoyed financial prosperity in the United States. Data from the 1980 U.S. Census rank Indians as being recipients of the second highest median household income among all ethnic groups (Cordasco, 1990). Immigrants from India are usually proficient in English skills upon arrival to the United States. Prior English proficiency has proven extremely beneficial in easing Indian assimilation to American culture. More specifically, English fluency has facilitated Indian immigrants' entry into the work-force in the United States (Jayakar, 1994). The mental health status of the first generation Indian immigrants was investigated in a study by Mehta (1998). Results indicated that traditional demographic variables such as age, sex and skin colour did not affect Indian immigrants' well-being. Successful cultural integration entails that Indian immigrants become involved in American culture while retaining aspects of their India identity. The more distinct and separate the two cultures are, the worse the immigrants' psychological adjustment to living in the United States (Mehta, 1998). It is well documented that Indian immigrants have felt the sting of discrimination (Fisher, 1978; Gibson, 1988; Saran, 1985) and many Asian Indians have endured underemployment in the United States. Immigrants who originally came to the United States in pursuit of education, usually opted to become permanent residents once their studies were completed so that they may reap the benefits of their expanded opportunities (Cordasco, 1990).

## 2.2 Studies on the Chinese Immigrants in the U.S.

Chinese immigrants to the United States have struggled to manage the clash of their traditional cultural values with American ideals. The clash of cultural values is keenly experienced among the elder Chinese immigrants, who are firmly imbued with traditional Chinese values, and among Chinese adolescents, who are first entering a critical development period of identity formation. Mental health studies have shown that elderly Chinese immigrants may be vulnerable to mental health problems, particularly depression (Mui, 1996). Unfortunately, Chinese immigrants are also unlikely to seek out treatment for their depressive

symptoms (Loo, Tong and True, 1989; Snowden and Cheung, 1990). Risk factors for depression may be elevated among elderly Chinese immigrants due to the stress of immigration and acculturation. Alterations from the traditional family system were cited as the main source of psychological distress experienced by elderly Chinese immigrants (Mui, 1996). The process of adjusting to life in the United States is exacerbated by the developmentally appropriate need to establish an identity for Chinese adolescent immigrants. Several factors have been linked to Chinese adolescent immigrants' psychological adjustment (Florshein, 1997). Similar to the experience of elderly Chinese, family cohesion and conflict appear to be important elements in promoting psychological adjustment among adolescents. Surprisingly, immigrants who speak Chinese as opposed to English fare better in ratings of psychological adjustment. One possible explanation for this finding points to the adolescents' value orientation as a mediating factor. Therefore, Florshein's investigation of Chinese immigrant adolescents supports earlier studies that found the maintenance of a stable ethnic identity contributing to healthy psychological adjustment (Lieber, Chin, Nihira and Mink, 2001).

## 3. A Brief Overview of U.S. Legal Immigration

If someone is a citizen of a foreign country, in most cases he/she needs a visa to enter the United States. There are two categories of U.S. visa:

1. Nonimmigrant visa: These visas are for people with permanent residence outside the U.S. but who wish to go to the U.S. on a temporary basis for some purpose.
2. Immigrant visa: These visas are for people who intend to live permanently in the U.S.

### 3.1 Lawful Permanent Residence (Green-Card)

It is the official immigrant status to live in the U.S. permanently and legally. U.S. Immigration law defines immigrants as persons lawfully admitted to the permanent residence in the United States. Aliens wishing to become permanent residents may follow one of the two paths depending on their residence at the time of application. Those who have acquired immigrant visa while living abroad, are legal immigrants once they are approved for the admission at the port of entry and are eligible for the LPR (lawful permanent residence) status. Aliens already living in the United States, including those who had come on non-immigrant visa, certain undocumented immigrants, temporary workers, foreign students, refugees etc. can file applications for adjustment of status to lawful permanent residence (Khadria, 1999, pp. 80-90).

U.S. Immigration and Nationality Act permits lawful permanent resident status for several categories. They are as follows:

#### *i) Family-based category*

Immigration of foreigners to the United States can be based on relationship to a U.S. citizen or a legal permanent resident. Family-based immigration falls under two basic categories: Unlimited and Limited.

*Unlimited:* Immediate relatives of U.S. citizens (aged 21 years or above) fall in this category; for example, spouse, widow(er), unmarried children under 21, and parents.

*Limited:* According to preference the immigration categories are

1st – Unmarried sons and daughters of U.S. citizens, and their children, if any.

2nd – Spouses, minor children, and unmarried sons and daughter (over age 20) of LPR.

3rd – Married sons and daughters of U.S. citizens, and their spouses and children.

4th – Siblings of U.S. citizens (aged at least 21 years), and their spouses and children.

### *ii) Employment-based category:*

Here a key-actor in the migration process is the visa sponsor. The individual (or firm) as employer of the prospective immigrant, establishes the immigrant's eligibility for an immigrant visa. The preference categories are as follows:

1st – Priority workers.

2nd – Professionals with advanced degrees, and persons with exceptional ability.

3rd – Skilled workers, professionals and other workers.

4th – Certain retired international organization employees.

5th – Employment creators (investors).

### *iii) Diversity programme:*

This provides a certain number of permanent resident visas annually through lottery, drawing visas from countries with low representation in US population. However, India and China are not included in it.

### *iv) Humanity visa category:*

On humanitarian grounds, persons admitted to the U.S. with refugee visas or given asylee status (both these visas are nonimmigrant temporary visas) may adjust to legal permanent residence after residing in U.S. for one year.

The individuals who meet any of the eligibility criteria mentioned above, set forth for the various immigration categories, are called *"principals"*. Visas are also given to the spouses and minor children of principals in certain categories of immigrant admissions *"accompanying, or following to join"* the principals.

## 3.2 Immigration subject to Numerical Limits

The Immigration Act of 1990 specified a worldwide level of immigration for certain categories of immigrants with an annual limit that could range between 421,000 and 675,000 depending on admissions in the previous year. These categories and their limits include family-sponsored preferences (226,000 to 480,000), employment-based preferences (140,000), and diversity immigrants (55,000). The family preference limit is equal to the larger of either 226,000 or a calculation consisting of 480,000 minus 1) the previous year's total of immediate relatives of U.S. citizens, 2) two numerically small categories of children, and 3) certain categories of aliens paroled into the United States in the second preceding fiscal year plus any

unused employment preferences from the previous year. The employment preference limit can be higher than 140,000 if family preferences go unused in the previous year.

### 3.3 Medical Examination

In addition to all theses eligibility criteria, the prospective immigrant must pass a medical examination to ensure that he or she is not inadmissible on medical grounds. The medical grounds for inadmissibility are grouped into four categories: 1) Communicable disease of public health significance, 2) Lack of required vaccinations, 3) Physical or mental disorders with harmful behaviour, and 3) Drug abuse or addiction.

## 4. Health Implications of the U.S. Visa Allocation System

The U.S. visa allocation system has several implications for immigrant health at the time of the initial migration decision. A priori, the spouses of U.S. citizens—approximately a third of adult immigrants—would be expected to be healthy; the marital tastes of U.S. citizens, assortative mating mechanisms, and the energies and attributes required for participation in the international marriage market would militate to produce healthy spouses. Employment-based immigrants would also be expected to be in superior health, again in view of their participation in international labor markets. On the other hand, less healthy immigrants may include refugees (who may have suffered many deprivations) and parents of U.S. citizens (who may be of advanced age).

The visa allocation system also has implications for the health trajectory during the visa application process. While all visa classes require certain documents – such as birth certificate, marriage certificate, police record, military record – and filling out forms, they differ on the requirements for a sponsor and for an affidavit of support. Numerically limited and numerically unlimited visas differ in the time required to obtain them. The overall waiting period has two phases. The first phase, applicable only to numerically limited visas, involves waiting for availability of a visa. Visa waiting times vary by both class of admission and country of origin.

The second phase of the waiting period consists of application processing. Of course, for prospective migrants who qualify for a numerically unlimited visa, this phase is coterminous with the entire waiting period. The length of this phase varies with administrative factors. As would be expected, qualifying for an immigrant visa is an overriding concern for prospective immigrants to the United States, and visa allocation law is a critical component of the environment faced by prospective immigrants. Accordingly, the time waiting for a visa may be a time of accumulating visa stress.

### 4.1 Disentangling Visa Stress, Migration Stress, and U.S. Exposure

It is illuminating to contrast these three sets of effects on immigrant health, and this can be done along two dimensions: first, by noting their spatio-temporal character; and second, by highlighting comparison groups. Visa stress is tightly linked to the visa process. It begins with the first filing, proceeds differentially by visa class, and ends with admission to LPR status, or, for conditional immigrants, at removal of the conditionality restrictions. Moreover, visa applicants are subject to visa stress, regardless of where they are located, whether in the origin country or in the United States. In contrast, migration stress and U.S. exposure have different

life spans, independent of the visa process and both beginning with inception of U.S. residence. Moreover migration stress and U.S. exposure affect different subsets of people. U.S. exposure affects all residents, whether native born or foreign born. Migration stress affects all movers, whether they go through the visa process or are already U.S. citizens.

This discussion suggests that for assessing both migration stress and U.S. exposure effects, the point at which inception of U.S. residence occurs is a critical time. The visible effects, if any, of migration stress and U.S. exposure will differ depending on whether inception of U.S. residence occurs before admission to permanent residence or at admission to permanent residence—that is, before or during the decline associated with visa stress or at its end. If the combined migration-U.S. exposure effect is zero, then both the visa-stress decline and the post-LPR recovery are unaffected. However, when inception of U.S. residence occurs prior to admission to legal permanent residence, a positive net effect of the combined migration-U.S. exposure would attenuate the visa-stress decline, while a negative net effect would exacerbate it. Moreover, the combined migration-U.S. exposure net effect would also alter the recovery incline, exaggerating it if positive, attenuating or even reversing it if negative.

# 5. Modeling Immigrants Health

## 5.1 Data Source

The present study is mainly based on a new data-source – the New Immigrant Survey. This is a multi-cohort prospective-retrospective panel study of new legal immigrants to the United States. A survey pilot project (NIS-P) was carried out in 1996 to inform the fielding and design of the full NIS. The first full cohort (NIS-2003) sampled immigrants in the period May-November 2003. The base-line survey was conducted from June 2003 to June 2004. The sampled immigrants were located by the addresses at which the immigrants requested their Green cards to be sent. Interviews were conducted in respondents' preferred languages. In the baseline survey the interview with the immigrant was conducted as soon as possible after his/her admission to the LPR.

## 5.2 Disentangling Various Health Components

Overall healthiness H has been conceptualized as having two components – a permanent component, denoted as $h^p$ and a transitory one, denoted as $h^t$:

$$H = h^p + h^t$$

Following the standard model, pioneered by Grossman (1972), health is an important form of human capital, and includes both a persistent time-invariant component and a time-varying component (Strauss and Thomas, 1998).

Measuring health is not a simple matter. Here two types of measures have been used: the subjective assessment of overall health and a subjective measure of health change. This is because previous studies suggest that subjective assessment of overall health accords well with the objective measures (Ware and Donald, 1978; Wallace and Herzog, 1995). The NIS-2003 Round-I survey asked the question "In general, how would you say your health is?" and it provides four response categories: excellent, good, fare and poor. This question helps to

assess the overall health of immigrants subjectively. Nonetheless, it is possible that measured healthiness includes a new component – the immigrant's style reporting, a style that may be understated or overstated. Moreover the style of reporting may also have a permanent component and a transitory component.

Jasso et. al. (2005) have drawn out the subjectively measured overall health (H*) of migrants as to contain four distinct components: two health components introduced earlier ($h^P$ and $h^t$) and two style of reporting components – a permanent component of the style of reporting ($s^P$) and a transitory component of the style of reporting ($s^t$):

$$H^* = h^P + h^t + s^P + s^t$$

The NIS-2003 Round-I data include three subjective assessments of health, pertaining to three points in time: (i) during childhood (*when you were growing up, from birth to age 16*), (ii) at the time of the migration decision (*at the time of that first filing that started the process for the immigrant visa that you now have*), and (iii) at the time of the interview.

All the measures capture the same permanent health component and permanent style component. They differ, however, in the transitory health component and the transitory style component. With respect to the transitory health component, the question on healthiness at the time that the first application was filed taps healthiness prior to the start of visa stress; the childhood question does so as well, provided that the sample is restricted to respondents for whom the first filing occurred after they were age sixteen. In contrast, the question on current healthiness taps overall healthiness at a point subsequent to admission to permanent residence.

With respect to the transitory style component, it is tempting to assume that because the measures are obtained at the same time, they contain the same transitory style component. However, one pertains to the present and the other two to the past. The measure of current healthiness is subject to underestimation. The measures of past healthiness are probably freer of style distortions, although they may be subject to overestimation, if the past is remembered fondly.

### *5.2.1 Health Selection Equation*

To estimate the health selection equation, two subjective measures of overall healthiness have been used: during childhood and at the time of the first filing. These measures approximate a pure measure of the permanent component of health at the time of the initial self-selection. They are imperfect, however, because inception of U.S. residence may already have occurred, and thus migration stress and the effects of U.S. exposure may already have begun. To correct for this effect, information have been used on whether the new immigrant is adjusting to LPR while already residing in the United States.

### *5.2.2 Health Change Equation*

To assess the effects of visa stress, migration stress, and exposure to the U.S. environment, this study makes use of a question tapping health change between inception of U.S. residence and the baseline-round interview. For immigrants whose U.S. residence started at admission to LPR, visa stress ended at admission to LPR for all sample members, and thus the health change reflects migration stress and U.S. exposure, plus the recovery from visa stress. For

immigrants whose U.S. residence started at some point prior to admission to LPR (which could have been before or after the first visa filing), the health change also reflects visa stress. Accordingly, the specifications include the adjustment variables. The adjustee immigrants are expected to have greater incidence of health deterioration and lower incidence of health improvement, due in part to the visa stress experienced by adjustees and in part to the greater duration of the period of migration stress and U.S. exposure.

# 6. Results of Bi-variate Analysis

## 6.1 Immigrants' Health Self Assessment

Table-1 reports the immigrants' assessments of their overall health. Overall, the new immigrants thought of themselves as quite healthy in general both from India and China. However, Indians are thought to be healthier in general than the Chinese. Almost 37 percent of the Indian immigrants judged themselves to be in excellent health, whereas only 25 percent Chinese had reported to have excellent health. In case of poor health status, Chinese have reported more (11.8 percent) to be in poor health than the Indians (7.7 percent). For the other two categories the two groups of immigrants have almost the same results.

Males are more in poor health status than the females for the Chinese immigrants (10.1 percent female and 14.3 percent male), but in case of Indians females are more in the poor health status (10 percent female and 4.6 percent male). When considering age-groups, the younger people are more in the excellent category. The oldest age-group persons have assessed themselves mostly to have a poor health. In case of Chinese migrants there is a clear and gradual decline in the proportion of excellent health with increasing age, achieving a highest of 42.8 percent for the youngest age-group and the lowest of 6.5 percent for the people who are 56 years or above. Health is declining with a decreased years of schooling for both the countries. Chinese immigrants who are in the third quartile have very high proportion of poor health, but Indian immigrants in this quartile have not revealed having poor health. There is a wide variability in the distribution of immigrants' health for the different visa categories. Employment-based immigrants have assessed themselves to have a better health than all the other category of immigrants. Adjustee immigrants have slightly better health than the newly arrived immigrants.

## 6.2 Immigrants' Health before Coming to the U.S.

To assess immigrants' health before the migration process actually started two health measures have been taken – (i) immigrant's health at the time of the first filing for the visa application process, and (ii) the health of the migrants during childhood or while he/she was growing up. The last component has been considered for capturing the cases where immigrants started living in the U.S. before the visa process. Generally, immigrants are found to be pretty healthy before coming to the U.S., as well as during their childhood. Those who have very high years of schooling were very healthy at the time of the first filing (from a minimum of 38.5 percent to a maximum of 56.8 percent for Indians and a minimum of 26.3 percent to a maximum of 43.1 percent for Chinese). However, during childhood all the immigrants have reported to have almost same health status – being healthier than the time of the first filing. There is not much change across the occupational quartiles for the childhood

health, although the immigrants from India in higher occupational quartiles showed a slightly healthier status of health during childhood than the lower quartiles. The differentiation becomes pronounced in the case of the health status at the time of the first filing. 41.5 percent Indians in the lowest quartile reported to have excellent health at the time of the first filing, whereas 60.3 percent in the highest quartile reported to have excellent health. For the Chinese also this values is minimum (28 percent) in the lowest quartile and is maximum (45.5 percent) for the highest quartile. Among the non-working Indian immigrants 2.8 percent had poor health at the time of first filing, and among the non-working Chinese 8.3 percent reported to have poor health.

## 6.3 Migration Stress

Table-4 presents the comparative health of the immigrants just before coming to the U.S. and at the time of the interview, capturing the stress due to the migration. Although most of the immigrants reported that they have an about same health status compared to that of in their home-country, 8.2 percent of Indian immigrants and 9.5 percent of Chinese immigrants told that they have a worse health now compared to their home-country. Even a fairly good percentage of immigrants reported to have better health than before. Aged people mostly reported to have a better health now. Indians having higher years of schooling reported that their health remains almost same. However, for Chinese immigrants no change occurs with an increase in the years of schooling. Occupational quartiles have not any significant effect on the migration stress. In case of visa categories, Indian immigrants are supposed to experience more migration stress than the other categories, although this gives no difference in case of Chinese immigrants.

## 6.4 Visa Stress

The question asked was whether the immigrant felt any stress due to visa application process. Only 10.6 percent Indian immigrants felt visa stress. A higher percentage than that of Chinese immigrants reported to have visa-stress (17.5 percent). In case of Chinese immigrants, female immigrants faced much more vise stress (19.5 percent) than male immigrants (14.4 percent). In case of India visa-stress is higher among males (13.1 percent) than females (8.7 percent). Visa-stress decreases with the increasing age. Visa stress decreases with the age for both the nations. Years of schooling have a significant impact on the Chinese immigrants – those having higher years of schooling are supposed to experience very less visa-stress. Occupational groups do not show any significant difference among themselves for Indians, but it is a little more for the higher occupational quartiles in case of China. Visa-stress is the highest among the employment category immigrants (14.5 percent for India and 30.8 percent for China). Adjustee immigrants are far more likely to have visa-stress than the newly arrived immigrants. For China the percentages are 25.6 and 12.3 and for India those are 13 and 8.2 respectively.

## 6.5 Stress Due to U.S. Exposure

U.S. exposure seems to increase the health condition of Indian immigrants towards a better health. 18 percent of them reported to have a better health at the time of the interview than their health one year before. Whereas only 10.2 percent Chinese immigrants reported that their health is better than one year before. Almost eighty percent immigrants from both the

countries reported to have same health status – US exposure does not seem to have any effect on their health. Years of schooling is showing a significant effect on the Chinese immigrants. Those having less years of schooling achieved a better health due to U.S. exposure (13.8 percent). Family preference category immigrants experienced better health due to the U.S. exposure.

# 7. Results from Multivariate Analysis

## 7.1 Visa-Stress

To explore visa-stress in a multivariate context, a binary logit specification has been estimated that includes sex, age, years of schooling, occupational quartiles in their home-country, visa-category and binary variables for residential location and adjustment status differently for India and China. Table-7 reports the result of the binary logistic regression analysis. As it is seen from the table, Indian females are less likely to have visa-stress than males, but the case is opposite for the Chinese immigrants. Age is positively correlated with visa-stress, although not statistically significant. As the years of education increases, visa stress decreases for the Indian immigrants, but not for Chinese. The occupational quartiles are showing to have a significant impact on visa-stress. Keeping non-working group as the reference category all the other category immigrants are showing a less level of visa-stress for both the countries, although some of the quartiles ($2^{nd}$ and $4^{th}$) in China are having more visa-stress than non-workers. Visa categories are showing a significant impact on the visa-stress. Employment category immigrants are supposed to experience a high level of visa-stress than the other category immigrants as the other immigrants are showing to experience less visa stress with reference to the employment category immigrants.

## 7.2 Migration-stress

Ordered logit estimates of migration-stress are reported in Table-8. Results suggest that males are more likely to have this stress than the females in case of Chinese immigrants. But the scenario is just opposite for the Indian immigrants. Although, this result is not found statistically significant. But there is a statistically significant relationship between the occupational quartiles in their home-country and the migration stress. Taking non-working group as the reference category, most of the other groups are showing a significantly less probability of experiencing migration stress, specifically for Chinese. In case of visa-categories, the employment based immigrants are less likely to have migration stress from India, but the family preference categories are having less migration stress for the Chinese immigrants. This result is statistically significant. Adjustee immigrants are showing a highly statistical significant relationship for migration stress. Being adjustee, immigrants has very less chance to experience migration stress with reference to the newly arrived immigrants.

## 7.3 Stress due to U.S. exposure

Table-9 reports the results of the multivariate analysis for the stress due to U.S. exposure. Results of the ordinal logistic regression analysis show a significant relationship of this stress with sex for India. Indian women are more likely to gain health due to U.S. exposure. But there is no significant relationship between sex and U.S. exposure in case of China. Visa category has significant impact on this stress for India, but not for China. U.S. exposure is

supposed to be beneficial for the employment category immigrants of India than all the other categories.

## 8. Concluding Remarks

Results indicate that men are more positively selected for health than women for the Indian immigrants and women are more positively selected than men for the Chinese immigrants (though we cannot yet rule out differential reporting styles by sex). There is a wide variability in the distribution of immigrants' health for the different visa categories. Employment-based immigrants appear to be among the most positively selected for health. Adjustee immigrants have a slightly better health than the newly arrived immigrants.

Chinese immigrants are more likely than Indian immigrants to report experiencing sadness or depression because of the visa process, and the pattern of effects appears to differ across the sexes. Men with a spouse or parent, who is a U.S. citizen, are less likely to experience visa depression. Visa-stress is highest among the employment-based visa category of immigrants. This may be due to the visa application process itself. U.S. legislation has several criteria for the eligibility of getting an immigrant visa, as well as the procedure of application also varies drastically for different categories.

The combined effects of migration stress and U.S. exposure are negative in the time before admission to legal permanent residence but non-negative afterwards. Thus, it would appear that the pure effect of U.S. exposure is positive, at least after legal permanent residence and for men. But we cannot rule out the possibility that migration gains are high, outweighing both migration stress and the possible negative effect of U.S. exposure.

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**Table 1: Immigrants' Health Self-assessment About their Overall Health (Percentage-Distribution)**

| | Indian Immigrants | | | | Chinese Immigrants | | | |
|---|---|---|---|---|---|---|---|---|
| | Poor | Fair | Good | Excellent | Poor | Fair | Good | Excellent |
| **All immigrants** | **7.7** | **26.3** | **29.6** | **36.5** | **11.8** | **28.9** | **34.6** | **24.8** |
| **Sex** | | | | | | | | |
| Female | 10.0 | 30.5 | 26.2 | 33.2 | 10.1 | 29.5 | 36.8 | 23.6 |
| Male | 4.6 | 20.7 | 34 | 40.8 | 14.3 | 28.0 | 31.3 | 26.4 |
| **Age-group** | | | | | | | | |
| 18 to 25 | 5.5 | 23.2 | 31.7 | 39.6 | -- | 27.3 | 29.9 | 42.8 |
| 26 to 35 | 3.1 | 20.1 | 36.4 | 40.3 | 5.1 | 12.4 | 44.4 | 38.1 |
| 36 to 45 | 5.0 | 26.0 | 29.3 | 39.7 | 5.9 | 33.1 | 35.3 | 25.7 |
| 46 to 55 | 4.8 | 36.5 | 24.4 | 34.3 | 11.4 | 31.1 | 37.9 | 19.5 |
| 56 & above | 27.0 | 29.2 | 17.3 | 26.5 | 27.9 | 40.0 | 25.6 | 6.5 |
| **Years of Schooling** | | | | | | | | |
| 0 to 10 | 21.7 | 32.5 | 16.5 | 29.2 | 16.8 | 29.5 | 33.4 | 20.4 |
| 10 to 16 | 6.0 | 27.6 | 33.2 | 33.2 | 8.5 | 32.1 | 36.3 | 23.1 |
| 17 & above | 2.1 | 20.7 | 31.5 | 45.7 | 7.8 | 19.8 | 33.2 | 39.2 |
| **Occupational quartile** | | | | | | | | |
| Non-working | 5.3 | 29.8 | 29.2 | 35.7 | 13.5 | 30.7 | 33.2 | 22.7 |
| 1st quartile | 4.4 | 31.6 | 35.1 | 28.8 | 5.9 | 26.8 | 41.0 | 26.3 |
| 2nd quartile | 4.1 | 25.7 | 30.0 | 40.1 | 5.5 | 26.0 | 39.2 | 29.3 |
| 3rd quartile | 0.0 | 17.8 | 30.0 | 52.2 | 10.2 | 21.1 | 32.7 | 36.0 |
| 4th quartile | 3.7 | 17.0 | 37.3 | 42.0 | 1.6 | 14.2 | 42.5 | 41.6 |
| **Visa category** | | | | | | | | |
| Employment-based | 3.0 | 22.2 | 32.2 | 42.6 | 4.3 | 18.0 | 34.4 | 43.3 |
| Immediate relative | 13.2 | 25.8 | 27.7 | 33.3 | 15.1 | 30.8 | 32.3 | 21.8 |
| Family preference | 5.6 | 31.2 | 30.1 | 33.2 | 9.8 | 41.1 | 40.3 | 8.7 |
| Other | 11.8 | 32.5 | 24.8 | 30.9 | 12.4 | 18.7 | 35.4 | 33.5 |
| **Adjustment status** | | | | | | | | |
| Newly arrived | 9.1 | 28.1 | 26.6 | 36.3 | 12.9 | 33.0 | 32.4 | 21.7 |
| Adjusted | 6.1 | 24.4 | 32.8 | 36.7 | 10.0 | 22.2 | 38.1 | 29.7 |

**Table 2: Immigrants' Health at First Filing (percentage distribution)**

| | Indian Immigrants | | | | Chinese Immigrants | | | |
|---|---|---|---|---|---|---|---|---|
| | Poor | Fair | Good | Excellent | Poor | Fair | Good | Excellent |
| **All immigrants** | 2.8 | 19.6 | 29.9 | 47.7 | 6.7 | 19.7 | 42.3 | 31.2 |
| **Sex** | | | | | | | | |
| Female | 3.6 | 23.1 | 28.6 | 44.7 | 6.4 | 19.3 | 44.3 | 30.1 |
| Male | 1.8 | 15.0 | 31.5 | 51.7 | 7.2 | 20.3 | 39.6 | 33.0 |
| **Age-group** | | | | | | | | |
| 18 to 25 | 3.6 | 14.0 | 36.2 | 46.2 | -- | 5.5 | 62.7 | 31.8 |
| 26 to 35 | 0.9 | 13.0 | 36.5 | 49.6 | 1.0 | 11.1 | 43.1 | 44.8 |
| 36 to 45 | 2.4 | 13.6 | 31.8 | 52.2 | 4.2 | 25.5 | 39.3 | 31.0 |
| 46 to 55 | 2.3 | 28.3 | 17.9 | 51.5 | 4.8 | 21.3 | 47.3 | 26.7 |
| 56 & above | 7.2 | 36.1 | 22.9 | 33.8 | 18.1 | 26.9 | 38.1 | 16.9 |
| **Years of Schooling** | | | | | | | | |
| 0 to 10 | 9.4 | 26.8 | 25.3 | 38.5 | 10.0 | 19.5 | 44.3 | 26.3 |
| 10 to 16 | 1.8 | 21.0 | 31.9 | 45.3 | 5.5 | 22.2 | 41.1 | 31.2 |
| 17 & above | 0.5 | 13.3 | 29.4 | 56.8 | 1.9 | 14.4 | 40.7 | 43.1 |
| **Occupational quartile** | | | | | | | | |
| Non-working | 2.8 | 15.7 | 32.3 | 49.2 | 8.3 | 17.2 | 39.1 | 35.4 |
| 1st quartile | 2.1 | 20.5 | 35.9 | 41.5 | 3.8 | 20.2 | 48.0 | 28.0 |
| 2nd quartile | 1.1 | 22.3 | 31.9 | 44.7 | 1.1 | 18.7 | 48.5 | 31.7 |
| 3rd quartile | -- | 9.8 | 38.6 | 51.6 | -- | 11.1 | 40.2 | 48.8 |
| 4th quartile | -- | 8.8 | 30.9 | 60.3 | 1.6 | 11.9 | 40.9 | 45.5 |
| **Visa category** | | | | | | | | |
| Employment-based | 1.7 | 11.5 | 31.8 | 55.0 | 2.7 | 9.6 | 46.3 | 41.4 |
| Immediate relative | 3.5 | 27.8 | 32.2 | 36.4 | 10.1 | 22.6 | 38.7 | 28.6 |
| Family preference | 2.1 | 20.1 | 23.3 | 54.5 | 3.6 | 21.0 | 54.3 | 21.1 |
| Other | 5.9 | 22.0 | 29.5 | 42.6 | 3.3 | 21.0 | 33.3 | 42.4 |
| **Adjustment status** | | | | | | | | |
| Newly arrived | 3.2 | 22.8 | 25.5 | 48.5 | 7.5 | 19.8 | 44.0 | 28.7 |
| Adjusted | 2.3 | 16.2 | 34.5 | 46.9 | 5.4 | 19.6 | 39.7 | 35.4 |

**Table 3: Immigrants' Health during Childhood (percentage distribution)**

| | Indian Immigrants | | | | Chinese Immigrants | | | |
|---|---|---|---|---|---|---|---|---|
| | Poor | Fair | Good | Excellent | Poor | Fair | Good | Excellent |
| **All immigrants** | 2.1 | 16.1 | 28.1 | 53.7 | 6.6 | 15.9 | 39.8 | 37.6 |
| **Sex** | | | | | | | | |
| Female | 2.1 | 18.0 | 28.2 | 51.7 | 5.9 | 16.7 | 39.0 | 38.4 |
| Male | 2.0 | 13.6 | 27.9 | 56.5 | 7.7 | 14.8 | 41.1 | 36.4 |
| **Age-group** | | | | | | | | |
| 18 to 25 | 1.7 | 21.2 | 33.3 | 43.8 | -- | 17.8 | 34.6 | 47.6 |
| 26 to 35 | 1.5 | 14.0 | 31.6 | 52.9 | 4.4 | 8.5 | 43.7 | 43.5 |
| 36 to 45 | 4.0 | 16.4 | 25.2 | 54.4 | 4.1 | 23.2 | 37.0 | 35.6 |
| 46 to 55 | 1.6 | 13.1 | 27.9 | 57.4 | 6.6 | 13.7 | 41.7 | 38.0 |
| 56 & above | 2.2 | 20.7 | 21.1 | 56.0 | 12.1 | 19.0 | 40.4 | 28.6 |
| **Years of Schooling** | | | | | | | | |
| 0 to 10 | 3.8 | 19.1 | 25.1 | 51.9 | 9.5 | 14.7 | 39.6 | 36.1 |
| 10 to 16 | 2.3 | 14.1 | 30.2 | 53.5 | 2.8 | 17.8 | 43.6 | 35.8 |
| 17 & above | 0.7 | 17.7 | 26.5 | 55.1 | 8.3 | 14.4 | 31.8 | 45.4 |
| **Occupational quartile** | | | | | | | | |
| Non-working | 2.2 | 16.1 | 32.0 | 49.6 | 6.0 | 15.3 | 36.6 | 42.1 |
| 1st quartile | 2.1 | 17.9 | 33.3 | 46.8 | 6.9 | 16.3 | 41.2 | 35.6 |
| 2nd quartile | 2.5 | 12.9 | 35.3 | 49.3 | -- | 17.6 | 49.5 | 32.9 |
| 3rd quartile | -- | 13.5 | 22.9 | 63.7 | 5.2 | 13.8 | 40.5 | 40.5 |
| 4th quartile | 2.3 | 11.9 | 26.3 | 59.4 | 7.6 | 7.0 | 38.0 | 47.5 |
| **Visa category** | | | | | | | | |
| Employment-based | 1.7 | 13.3 | 28.3 | 56.7 | 4.4 | 12.8 | 34.6 | 48.3 |
| Immediate relative | 2.3 | 19.1 | 25.5 | 53.1 | 8.7 | 17.3 | 40.0 | 34.1 |
| Family preference | 3.5 | 19.1 | 26.0 | 51.5 | 6.8 | 17.5 | 46.6 | 29.2 |
| Other | -- | 11.5 | 39.4 | 49.0 | 1.5 | 13.0 | 37.5 | 48.0 |
| **Adjustment status** | | | | | | | | |
| Newly arrived | 2.6 | 17.0 | 27.3 | 53.1 | 6.1 | 14.1 | 41.6 | 38.1 |
| Adjusted | 1.5 | 15.3 | 28.8 | 54.4 | 7.3 | 18.7 | 37.1 | 36.9 |

**Table 4: Percentages of Immigrants having Visa-stress in various groups**

| | India | China |
|---|---|---|
| **All immigrants** | 10.6 | 17.5 |
| **Sex** | | |
| Female | 8.7 | 19.5 |
| Male | 13.1 | 14.4 |
| **Age-group** | | |
| 18 to 25 | 12.3 | 25.0 |
| 26 to 35 | 13.3 | 24.1 |
| 36 to 45 | 15.1 | 21.2 |
| 46 to 55 | 8.5 | 15.8 |
| 56 & above | 6.5 | 8.4 |
| **Years of Schooling** | | |
| 0 to 10 | 4.0 | 9.8 |
| 10 to 16 | 13.5 | 19.1 |
| 17 & above | 9.8 | 32.1 |
| **Occupational quartile** | | |
| Non-working | 10.4 | 16.9 |
| 1st quartile | 9.0 | 12.6 |
| 2nd quartile | 12.2 | 30.5 |
| 3rd quartile | 12.5 | 16.7 |
| 4th quartile | 15.2 | 38.2 |
| **Visa category** | | |
| Employment-based | 14.5 | 30.8 |
| Immediate relative | 5.3 | 15.7 |
| Family preference | 9.8 | 13.5 |
| Other | 14.2 | 10.6 |
| **Adjustment status** | | |
| Newly arrived | 8.2 | 12.3 |
| Adjusted | 13.0 | 25.6 |

**Table 5: Immigrants' Health Change due to Migration Stress (percentage distribution)**

| | Indian Immigrants | | | Chinese Immigrants | | |
|---|---|---|---|---|---|---|
| | Worse | Same | Better | Worse | Same | Better |
| **All immigrants** | 8.2 | 70.0 | 21.9 | 9.5 | 73.6 | 16.9 |
| **Sex** | | | | | | |
| Female | 8.1 | 71.2 | 20.7 | 9.8 | 71.8 | 18.4 |
| Male | 8.2 | 68.3 | 23.5 | 9.0 | 76.3 | 14.7 |
| **Age-group** | | | | | | |
| 18 to 25 | 10.1 | 72.4 | 17.6 | 12.3 | 62.0 | 25.7 |
| 26 to 35 | 9.9 | 69.8 | 20.3 | 6.5 | 76.7 | 16.8 |
| 36 to 45 | 5.9 | 68.5 | 25.7 | 16.2 | 77.6 | 6.2 |
| 46 to 55 | 6.9 | 71.9 | 21.2 | 10.6 | 72.2 | 17.2 |
| 56 & above | 7.7 | 66.0 | 26.3 | 8.2 | 72.9 | 18.9 |
| **Years of Schooling** | | | | | | |
| 0 to 10 | 10.5 | 65.9 | 23.6 | 7.1 | 74.8 | 18.1 |
| 10 to 16 | 7.6 | 68.3 | 24.1 | 9.4 | 73.2 | 17.4 |
| 17 & above | 7.6 | 75.0 | 17.4 | 15.5 | 71.5 | 13.0 |
| **Occupational quartile** | | | | | | |
| Non-working | 5.0 | 72.0 | 23.0 | 4.6 | 74.5 | 21.0 |
| 1st quartile | 11.4 | 67.9 | 20.7 | 9.1 | 76.7 | 14.2 |
| 2nd quartile | 9.6 | 69.7 | 20.7 | 17.4 | 67.1 | 15.6 |
| 3rd quartile | 8.0 | 81.0 | 11.0 | 8.1 | 82.6 | 9.3 |
| 4th quartile | 11.1 | 66.7 | 22.2 | 17.4 | 71.0 | 11.6 |
| **Visa category** | | | | | | |
| Employment-based | 7.7 | 74.8 | 17.4 | 16.1 | 72.3 | 11.6 |
| Immediate relative | 10.4 | 65.5 | 24.1 | 8.9 | 70.7 | 20.4 |
| Family preference | 5.0 | 74.3 | 20.7 | 2.2 | 82.2 | 15.6 |
| Other | 9.1 | 57.2 | 33.7 | 12.5 | 74.7 | 12.8 |
| **Adjustment status** | | | | | | |
| Newly arrived | 4.9 | 69.5 | 25.7 | 5.0 | 77.1 | 17.9 |
| Adjusted | 11.5 | 70.5 | 18.0 | 16.5 | 68.1 | 15.4 |

**Table 6: Immigrants' Health Change due to U.S. Exposure (percentage distribution)**

| | Indian Immigrants | | | Chinese Immigrants | | |
|---|---|---|---|---|---|---|
| | Worse | Same | Better | Worse | Same | Better |
| **All immigrants** | 4.1 | 77.9 | 18.0 | 8.6 | 81.2 | 10.2 |
| **Sex** | | | | | | |
| Female | 6.0 | 77.3 | 16.6 | 8.5 | 80.9 | 10.6 |
| Male | 1.5 | 78.7 | 19.8 | 8.7 | 81.7 | 9.6 |
| **Age-group** | | | | | | |
| 18 to 25 | 1.9 | 84.1 | 14.0 | -- | 91.7 | 8.3 |
| 26 to 35 | 2.6 | 81.8 | 15.6 | 1.5 | 83.9 | 14.6 |
| 36 to 45 | 6.9 | 69.8 | 23.2 | 8.1 | 87.5 | 4.3 |
| 46 to 55 | 1.6 | 78.7 | 19.8 | 13.3 | 76.8 | 9.9 |
| 56 & above | 8.8 | 71.2 | 20.0 | 14.3 | 76.8 | 8.9 |
| **Years of Schooling** | | | | | | |
| 0 to 10 | 8.6 | 73.9 | 17.5 | 10.3 | 75.9 | 13.8 |
| 10 to 16 | 3.8 | 78.1 | 18.1 | 8.2 | 84.0 | 7.8 |
| 17 & above | 2.0 | 79.9 | 18.0 | 5.4 | 87.7 | 7.0 |
| **Occupational quartile** | | | | | | |
| Non-working | 4.0 | 72.7 | 23.3 | 3.7 | 84.5 | 11.8 |
| 1st quartile | 6.0 | 78.4 | 15.6 | 8.4 | 79.5 | 12.0 |
| 2nd quartile | 2.9 | 72.0 | 25.1 | 10.3 | 81.9 | 7.8 |
| 3rd quartile | -- | 95.2 | 4.8 | 2.9 | 91.1 | 6.0 |
| 4th quartile | 0.8 | 86.7 | 12.5 | 10.4 | 79.6 | 9.9 |
| **Visa category** | | | | | | |
| Employment-based | 2.7 | 85.0 | 12.3 | 7.0 | 85.6 | 7.4 |
| Immediate relative | 4.1 | 76.6 | 19.3 | 10.1 | 78.9 | 11.0 |
| Family preference | 6.6 | 70.2 | 23.2 | 3.9 | 88.3 | 7.7 |
| Other | 4.6 | 71.0 | 24.3 | 11.3 | 74.2 | 14.5 |
| **Adjustment status** | | | | | | |
| Newly arrived | 4.7 | 73.1 | 22.3 | 7.2 | 82.7 | 10.2 |
| Adjusted | 3.5 | 82.9 | 13.6 | 10.8 | 79.0 | 10.2 |

**Table 7: Binary Logistic Regression Predicting Visa-Stress**

| | | India | China |
|---|---|---|---|
| **Sex** | Female[R] | | |
| | Male | .102* | -.313** |
| **Age** | Age | .152 | .042 |
| | Age squared | -.002 | -.001 |
| **Years of Schooling** | | -.004** | .051 |
| **Occupational quartiles** | Non-working[R] | | |
| | 1st quartile | -.365 | -.464** |
| | 2nd quartile | -.247* | .077 |
| | 3rd quartile | -.381*** | -1.105 |
| | 4th quartile | -.226*** | .070*** |
| **Visa category** | Employment-based[R] | | |
| | Immediate relative of US citizen | -.643*** | -.067** |
| | Other Family preference | -.563** | -.153** |
| | Other | .083 | -.642* |
| **Adjustment status** | Newly arrived[R] | | |
| | Adjustee | .446** | .435* |
| **Intercept** | | -5.191** | -2.341 |

*$p<0.1$, **$p<0.05$, ***$p<0.01$

[R]: *Reference category*

**Table 8: Ordinal Logistic Regression Predicting Migration Stress**

| | | India | China |
|---|---|---|---|
| **Sex** | Female[R] | | |
| | Male | -.171 | .020 |
| **Age** | Age | .003 | .004 |
| | Age squared | -.000 | -.000 |
| **Years of education** | | .001 | .035 |
| **Occupational quartile** | Non-working[R] | | |
| | 1st quartile | -.367 | -.834** |
| | 2nd quartile | -.261 | -.217 |
| | 3rd quartile | .068 | -.207 |
| | 4th quartile | -.219** | -.691** |
| **Visa category** | Employment-based[R] | | |
| | Immediate relative of US citizen | .275** | .580*** |
| | Other Family preference | .493** | -.110** |
| | Other | -.189 | .317* |
| **Adjustment status** | Newly arrived[R] | | |
| | Adjustee | -.701*** | -.677** |
| Observations | | 570 | 399 |
| Pseudo $R^2$ | | 0.034 | 0.063 |
| -2Loglikelihood | | 854.820 | 568.437 |
| Degree of freedom | | 12 | 12 |

*$p<0.1$, **$p<0.05$, ***$p<0.01$

[R]: *Reference category*

**Table 9: Ordinal Logistic Regression Predicting Health due to U.S. Exposure**

| | | India | China |
|---|---|---|---|
| **Sex** | Female[R] | | |
| | Male | -.482** | -.102 |
| **Age** | Age | -.158*** | -.006 |
| | Age squared | .002*** | -.000 |
| **Years of education** | | .039 | -.043 |
| **Occupational quartile** | Non-working[R] | | |
| | 1st quartile | .342 | .020 |
| | 2nd quartile | -.357 | .889* |
| | 3rd quartile | .598 | .317 |
| | 4th quartile | .203 | .426 |
| **Visa category** | Employment-based[R] | | |
| | Immediate relative of US citizen | .657*** | .162*** |
| | Other Family preference | -.007 | .056** |
| | Other | .254** | -.184 |
| **Residential Location** | Elsewhere[R] | | |
| | Preferred states | -.129* | .342 |
| **Adjustment status** | Newly arrived[R] | | |
| | Adjustee | -.484* | .018 |
| Observations | | 569 | 399 |
| Pseudo $R^2$ | | 0.059 | 0.050 |
| -2Loglikelihood | | 684.644 | 456.574 |
| Degree of freedom | | 13 | 13 |

*$p<0.1$, **$p<0.05$, ***$p<0.01$
[R]: *Reference category*