Impacts of Rural to Urban Migration on the Health of Working-Age Adult Migrants in Ho Chi Minh City, Vietnam

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ABSTRACT

The rural-to-urban migration experience is believed to significantly affect various dimensions of the migrants' well-being. Potential health impacts have not been thoroughly and systematically explored. A multidimensional health assessment instrument, the SF-36, is employed in this paper to systematically investigate these potential impacts.

The paper compares eight dimensions of health status for 69 recent migrants living in Ho Chi Minh City with 85 long term urban residents in the city using data collected during 2001. As expected, recent migrants are disadvantaged with respect to longer-term residents on six of the eight dimensions of health status, including physical functioning; role limitations due to physical health problems; bodily pain; general mental health; role limitations due to emotional problems; and general health perceptions. These differences are maintained in models that control for differences in distributions of age, sex, marital status, and socioeconomic status between the two groups. While rural to urban migration often results in substantial economic benefits to those remaining in the sending areas, important health disadvantages accrue to the migrants themselves.

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The paper compares eight dimensions of health status for 69 recent migrants living in Ho Chi Minh City with 85 long term urban residents in the city using data collected during 2001. As expected, recent migrants are disadvantaged with respect to longer-term residents on six of the eight dimensions of health status, including physical functioning; role limitations due to physical health problems; bodily pain; general mental health; role limitations due to emotional problems; and general health perceptions. These differences are maintained in models that control for differences in distributions of age, sex, marital status, and socioeconomic status between the two groups. While rural to urban migration often results in substantial economic benefits to those remaining in the sending areas, important health disadvantages accrue to the migrants themselves.

INTRODUCTION

Movements from rural villages to large cities are often undertaken with the hopes of improved opportunities for economic or social advancement. Indeed, a major premise of neoclassical migration theory is that such moves will result in improved well-being for migrants and their families (Massey *et al.* 1994; De Jong *et al.* 2002). Less salient perhaps to both researchers and migrants are the potential costs of such moves. Changes of residence from places of familiarity to places of unfamiliarity require extensive investments of time to reestablish social networks, and may also result in disruptions of income-generating activities, at least temporarily. Such changes might also exact a toll on the migrant's physical and psychological well-being. Conversely, opportunities for economic advancement, educational advancement, and new social contacts in urban areas all have the potential at least to increase the quality of life – or at least mitigate some of the negative impacts - for such migrants from the countryside.

Changes in well-being resulting from rural to urban migration have not been extensively explored, in part because they are much more difficult to measure than are the economic costs of migration. However, changes in health status, both physical and emotional, are a potentially important consequence of a rural-to-urban migration experience. In addition to the disruptions resulting from such moves noted above, migrants may also be at higher risk of occupational injury because of unfamiliar work and/or more tenuous social connections to their employers; higher risks of untreated illness or injury due to unfamiliarity with the health care system in the new urban environment; and more exposure to pathogens resulting from poor and

overcrowded living conditions. On the other hand, if health services are more available and/or of higher quality in urban environments, such moves could serve to improve some dimensions of health. To date there is little systematic work exploring these possible connections between rural-to-urban migration and health.

BACKGROUND

Migration and health

One classic conceptualization of the migration - health relationship is provided by Hull (1979). Hull (1979) points out that the causal link between migration and health can occur in either direction. Health's effects on migration seem most likely to occur through a selection process by which migrants who are more healthy or otherwise more robust are the ones who undertake the often arduous journey to a new location; this is sometimes referred to as the "healthy migrant syndrome." While some individuals suffering from health problems may also migrate to benefit from superior health care services at the destination, this seems generally much less likely than the former mechanism, especially since working age adults will be much less likely to suffer from chronic or serious conditions that might result in such treatment-seeking behavior than other age groups. Also, in the Vietnam context, access to basic health care services is generally good throughout the country and is not thought to be a major determinant of health care service use (World Bank 2001, p. 47).

Most researchers focus their attention on the other causal pathway, i.e., the proposed effects of the migration experience on health. Hull (1979), and more recently, VanLandingham (2003) review the empirical evidence supporting the conclusion that many differences in health outcomes between migrants and longer-term residents are due to changes in the physical and

social environment in which the migrants find themselves. These hypothesized pathways linking migration and health are summarized in Figure 1.

The middle box of Figure 1 includes the "healthy migrant effect" described above, but focuses on hypothesized factors that mediate the effects of the migration experience on health outcomes. The migration experience could have both positive and negative implications for health. On the positive side, rural-to-urban migrants might experience more personal control over their individual destinies in an urban environment, away from restrictions and sanctions that exist in their rural homes. Such increased control might lead them to seek health care that they might otherwise forego in the sending region, and/or new social contacts or experiences that would not be available to them in their former home villages.

On the negative side, unfamiliarity with the new location could lead to loneliness and anxiety and more generally a decline in psychological well-being or increase in stress. Behavior patterns that were automatic in the village are no longer applicable in the migrant's new urban home. Being away from the protection of one's regular social networks could result in a migrant working under difficult or dangerous conditions, and/or living in inadequate housing. These potential negative effects seem much more likely to significantly affect health outcomes than the potential positive effects noted above, since the increased exposure to unhealthy work and home situations should have more direct consequences for health outcomes than any increased freedom that might result from being away from one's home village. Also, increased personal freedom in a more anonymous urban context has the potential to present new health risks, especially those related to sexual experimentation. Thus, the key mediating factors in the middle box of Figure 1 that are expected to adversely affect health outcomes are emphasized in bold. However, research focusing on the "epidemiological

paradox" proposes some health advantages of migrants over longer-term residents in a receiving area due to continued patterns of beliefs, practices, and social contacts that protect them from dangers that the new environment holds. Such features of the home environment should serve to moderate (dampen) both the negative and positive effects of the migration experience on health.

Such difficulties that migrants experience as part of their integration into their new environment have received extensive treatment in the sociological literature. Classic assimilation theory (Park 1921; Park 1950; Gordon 1964) posits that after an initial adjustment period, migrants become more and more like the native-born as their experience in their new home lengthens. This conceptualization has become more problematic in studies of international migration to the United States, since recent migrants are less similar from native born Americans than was the case early in the last century, a period that forms the context for much of the theoretical background on the experience of migration. But in Vietnam and in other developing countries, much of the rural-to-urban migration will involve migrants who are quite similar to the residents at the destination (except for background characteristics such a socioeconomic status), and so classic assimilation theory remains more relevant than it is to present trends of international migration.

There is a growing interest in the health of children of migrants (e.g., see Hernandez and Charney 1998) but much of the existing literature focuses on how the migration process affects the health of working-age adults. This emphasis on working-age adults is appropriate for several reasons. First, most rural-to-urban migrants will be in this age category, sometimes with but often without other members of their families. Second, the health of young to middle-aged adults has much significance for the well-being of their families. Third, health insults

suffered during these years have profound significance for disability through the life course. The Global Burden of Disease study concludes that nearly half of all disability due to disease or injury occurs among adults age 15-44 years. Moreover, neuropsychiatric conditions, including and especially depression, accounts for 30% of the total years lost to disability (Murray and Lopez 1996). To the extent that the stress of adapting to a new environment is related to these neuropsychiatric problems within this age group, migrants may be especially affected by these strains.

Advances in theory regarding the influence of the migration process on health outcomes have paralleled rich development in empirical investigations of this relationship. These literatures are in fact much too vast to be covered comprehensively here. Early empirical evidence of migration effects on health outcomes is provided by the Japanese-American Coronary Heart Disease (CHD) study (e.g., see Kagan et al. 1974). Japanese-Americans living in California have been found to have higher prevalence of CHD than their counterparts living in Hawaii or to Japanese living in Japan. Blood pressure is another common outcome for such studies (Waldron et al. 1982; Dressler 1999). Studies of differences in blood pressure between Somoan immigrants and native Somoans report evidence that the authors feel supports a clear conclusion that “exposure to modern life is directly related to elevated blood pressure" (McGarvey and Schendel 1986; see also Salmond et al. 1995). Other research has demonstrated improved health status for migrants to international destinations compared to resident groups in the receiving area. For example, infants of immigrant families appear to have better survival and birthweight than the native-born, even though they have poorer access to prenatal care (Hernandez and Charney 1998). Some of this cultural protection may work through more conservative norms regarding smoking for women, dietary preferences carried

over from the sending country, and stronger family bonds. Kunstadter (1997) draws upon cultural differences related to assimilation problems to help explain a second epidemiological paradox, this time among Southeast Asian refugees living in the United States. In spite of a low infant mortality rate, Hmong refugees settling in California have much higher rates of self-reported illness than a comparison group of Hmong surveyed in Thailand. High blood pressure, fevers of unknown origin, diabetes, and depression were much more frequently reported among the U.S. immigrants than among the Hmong living in Thailand.

Changes in health status resulting from rural-to-urban migration have not been extensively explored, in part because such health impacts are more difficult to measure than are the monetary costs and benefits of migration; and also because social science surveys in developing countries have been slow to incorporate systematic measures of health. Attempts to measure general health and well-being often employ *ad hoc* instruments, and many such instruments, standardized or not, if applied to generally healthy young and middle age adult populations (the population most likely to migrate) will be sensitive only to cases of extreme physical and psychological distress, rather than to more subtle differences that are likely to be more consequential later in life (Murray and Lopez 1996).

The lack of attention to national as opposed to international migration with regard to health may also be due to assumptions that such moves are not as disruptive to migrants and their families as are moves that cross national borders. But profoundly elevated rates of high blood pressure for urban compared to rural Nigerians have been documented by Kaufman et al. (1999).[1] De Jong et al. (2002) find that migration in Thailand was associated with decreased

[1] It is unknown whether this elevation results from migration or from more general features of urban life. An earlier study (Benyoussef et al. 1974) finds blood pressure to be higher in rural areas than among rural-to-urban migrants, but reports no tests of statistical significance. Finally, a study that compared disease beliefs and health

post-move satisfaction among the migrants. And Yang (2004) finds that temporary migrants in China (many of them rural to urban migrants) are more likely than non-migrants to engage in sexual risk-taking.[2]

Rural-to-urban migration in Vietnam

Vietnam provides an appropriate setting for an investigation of the relations between rural-to-urban migration and health. After reunification, the government embarked on a program of relocating citizens from densely settled areas to more sparsely settled ones in newly created "New Economic Zones." This program did not experience a great deal of success, as many of the migrants either returned or moved on (Dang *et al.* 1997). More recently, the country has been experiencing high rates of more spontaneous migration, especially into large cities such as HCMC (Dang et al. 1997). The southeast, which includes HCMC, was one of only two regions in the country to experience a net gain in migrants during the period 1994-1999. While Vietnam remains fairly un-urbanized, the proportion urban did increase from 19% in 1989 to 24% in 1999. HCMC experienced the largest gain from inter-provincial migration in the country during this time period, gaining 410,553 persons (General Statistical Office 1999). Migrants to HCMC are concentrated in the young adult age groups, with a slight bias towards females (Guest 1999).

While economic opportunities are often more favorable in the cities than in the rural areas, the urban environment is likely to be alien and lonely for many, especially on an initial trip. Also, urban working conditions are often difficult and living conditions are often crowded,

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care behavior for rural-to-urban migrants and rural nonmigrants in Nigerians found that migrant status had no effect (Uyanga 1983).

[2] Brockerhoff and Biddlecom (1999) find that some types of migrants (but not rural-to-urban) are more likely than non-migrants to engage in sexual practices that place both them and their partners at risk of contracting HIV.

polluted and substandard (World Bank 2001), increasing the potential for illness, stress, and physical injury.

Health and health care in Vietnam

Under socialism, the Vietnamese government succeeded in providing its population with better than expected health outcomes given the difficult financial conditions it faced after the Indochina War. But with the liberalization of the economy (*doi moi*) that was initiated in 1986, financial responsibility for health care has been shifting from the state to individuals and families. In 2000, only about 10% of health service contacts were with the government sector. However, hospitals are still primarily under government control. Health insurance has recently been introduced, but covers only a small proportion of the population (12%), and is heavily skewed towards urban dwellers and the better-off (World Bank 2001).

In spite of these dramatic change, health outcomes remain favorable compared to countries with similar income levels. Life expectancy is about 10 years higher than it is for other countries at Vietnam's GNP per capita level. Injuries and accidents are now the leading causes of mortality, reflecting both a decline in communicable disease and an increase in dangers related to modernization and industrialization (World Bank 2001).

Hypotheses

Given that most working age adults are unlikely to suffer from chronic or serious health problems, we deem it unlikely that many of them will have migrated to HCMC in order to reap the benefits of more sophisticated and specialized health care services available there. Also, although we expect many to find this new environment to be quite stimulating, we anticipate

that, in the short term at least, newness and unfamiliarity will lead to higher levels of distress than will be found among our comparison sample of longer-term urban residents. More specifically, we hypothesize that such disruptions in the migrants' social networks will lead to poorer outcomes for the migrant sample in social functioning and in physical limitations due to emotional problems. We hypothesize that increased loneliness and unfamiliarity among the migrants *vis-à-vis* the longer term residents will manifest itself in lower scores on the general mental health dimension for the migrants.

We also suspect that being separated from the protection afforded by their families and usual social networks in their home villages (and in contrast to the longer-term urban residents) that our migrant sample will be more at risk of physical injury related to work and everyday life, and that the migrants will also be at higher risk of disease and injury due to living in situations that are more unfamiliar, crowded and polluted than the environments in which the longer-term urban residents live.

On the other hand, selection factors should serve to mask these impacts of the migration experience upon the health of rural-to-urban migrants. First, that migration is quite arduous in the Vietnamese case should result in migrants being on average more healthy than non-migrants (the "healthy migrant syndrome"). Second, migrants experiencing health problems at the urban destination should be more likely to return home to their rural village than healthy migrants, further attenuating our measured effects of the migration experience *per se* upon the migrants who stay long enough to be likely to be included in our sample. While both of these selection effects should serve to bias in a downward direction our estimates of migration effects on the health of the migrants, we anticipate that our hypothesized effects will be large enough to become manifest in spite of these selection forces working against them. Also,

health advantages for migrants in the international migration literature appear to be mostly limited to infants; working age adults are often found to be at higher risk for a number of health problems. Therefore, we expect that the net result of these competing factors will result in disadvantages for our rural-to-urban migrants on the following dimensions of physical and general health status: physical functioning; role limitations due to physical problems; role limitations due to emotional problems; social functioning; general mental health; bodily pain; vitality, energy, fatigue; and general health perceptions.

DATA AND METHODS

Data

The data used here are from an ongoing study of the interrelationships between migration and poverty in Vietnam conducted by the Institute for Social Sciences in Ho Chi Minh City and the Social Science Research Council. The project has collected several waves of data, beginning in 1998; the author has been an advisor to the project since 1999.

Study sites include 3 urban wards in HCMC and 4 rural villages upcountry. These 7 sites were chosen because they provide (the rural sites) or receive (the urban sites) a substantial number of migrants to HCMC. Two of the rural village study sites are in the central highlands and two are in the Mekong river delta, south of HCMC.

One component of the project used in the current analysis consists of background information for a sample of 69 working age adults (age 15-50) who have recently moved to Ho Chi Minh City (HCMC), a principal destination of rural-to-urban migrants in Vietnam, from one of the 4 rural study sites. It was known that from the 600 households in the rural study communities that were included in the project, a total of 266 individuals had migrated from the

4 rural sites into HCMC; our interviewers located 70 of these for the health interviews (one case is removed because of ambiguous identification data). Background information for these rural-to-urban migrants was collected in their households and communities in their village of origin. These background data are linked with information related to their health status that was collected directly from the migrants in HCMC.

A second component of the overall project used for the current paper includes information on the health status of 85 working age long-term residents of HCMC. These 85 households to which these individuals belonged were selected randomly from a larger sample of 1050 households that are the general study group in the 3 HCMC sites. Upon arrival at the selected household, interviewers were instructed to list all eligible members of the household (eligible members are between the ages of 15-50, and resident in the community for at least 5 years), select at random an eligible member, and make an appointment to interview him or her. After 3 visits, they were to randomly select another eligible member of the household and repeat the procedure. Health data from the subsequent interview were then linked to existing individual and household-level variables that had already been collected for this individual and household in the more general survey of the HCMC sites in 2001. All data used in the current paper were collected during the spring and summer of 2001 except for the background information for the migrants, which was collected in the 4 rural communities during 2000.

The instrument

The SF-36 health assessment instrument was developed by RAND corporation and JE Ware (Ware and Sherbourne 1992). It is highly regarded as a general health assessment tool (McDowell and Newell 1996) and has been widely used, but this is its first application as a

measure of the health-related costs and benefits of migration for those who move. This is also its first use among the Vietnamese. The author and the developers of the SF-36 have been working closely together on the translations and pretests of this instrument in recent months. The SF-36 includes assessments of physical functioning, role limitations due to physical health problems, bodily pain, social functioning, general mental health, role limitations due to emotional problems, vitality, energy, fatigue, and general health perceptions.

RESULTS

Table 1 indicates that both the migrant and non-migrant samples are skewed towards women. This suggests that for the nonmigrant households the interviewer was more likely to find a female respondent at home during their visit than a male respondent and that they did not randomly choose a young adult household member, as instructed, but rather selected from the household members who happened to be home at the time. The surplus of females in the migrant sample likely reflects in part the fact that slightly more women than men migrate to HCMC (Guest 1999) but also may result from a similar process that favors interviews of women over men. Although it was the migrants themselves who were selected for study (rather than the household, as it was in the nonmigrant sample), we were successful only in locating 70 of the 266 migrants from our rural study areas in HCMC, and it appears to have been easier to find women migrants than men. Migrants in our sample are more likely to be never-married, of younger age, and less educated than the nonmigrants in our sample.

Most of the migrants were involved in farming before moving to HCMC (not shown). We divide our detailed information on current occupation in HCMC into a high versus low category, the former including professionals, technicians, skilled workers, students, clerical,

government, and service employees, business and farming entrepreneurs, and semi-skilled, factory, and industrial workers. The low category consists primarily of lower skilled or unskilled workers. Migrants are more likely to be in this low category than are the longer term residents; several of the migrants work in garment and furniture factories.

Table 2 presents each of the 36 measures of health from the SF-36 instrument by the respondent's migration status. The first item, the most general measure of self-assessed health, has the nonmigrants responding more favorably than the migrants ($p < 0.01$; see the explanatory notes of the numerical values at the bottom of this table and the question wording in the appendix). Limitations of activities because of poor health (items 3-9; 12-22) all appear to favor the nonmigrants (these differences are statistically significant at $p < 0.05$ or better for climbing stairs; bending, kneeling, or stooping; bathing or dressing oneself; and engaging in normal social activities), except for limitations of vigorous activities, which appear slightly more problematic for the nonmigrants (this comparison is statistically insignificant). All of the questions addressing general feelings (items 23-36) indicate worse physical and mental well-being for the migrants, and at a statistically significant level for being down in the dumps and being happy. The last two panels of Table 2 present questions about specific problems resulting from the respondents' emotional and physical health. The proportion responding yes (a negative outcome for each question) is substantially higher for the migrants than for the nonmigrants for each item. Migrants scored on average statistically significantly higher than non-migrants for being physically limited in the kinds and difficulty of work they could do; as well as being limited because of emotional difficulties in the amount of time they have for work or social activities and for accomplishing less than they would like because of emotional difficulties.

These 36 specific questions about health are designed to be collapsed into scales to measure 8 separate dimensions of physical and mental health: physical functioning (9 items: Items 3-11 in Table 3; Questions 3a-i in the appendix); role limitations due to physical health problems (4 items: Items 13-16; Q 4a-d); bodily pain (2 items: Items 21-22; Q 7-8); social functioning (2 items: Items 20, 32; Q 6,10); general health (5 items: Items 1, 33-36; Q 1, 11a-d); mental health (5 items: Items 24-26, 28, 30; Q9b-d, 9f, 9h); role limitations due to emotional problems (3 items: Items 17-19; Q5a-c); vitality, energy, fatigue (4 items: Items 23, 27, 29, 31; Q9a, 9e, 9g, 9i). There is also a single measure of health transition (1 item: 2). The results for these scales for both migrants and non-migrants are presented in Table 3.

Health scales are tabulated in Table 3 (and hereafter) in such a way that higher scores indicate better health outcomes; they are also converted to a 0-100 scale for ease of interpretation. These same results are shown graphically in Figure 2. All eight of the standard scales computed from the SF-36 questions result in higher scores (indicating better health outcomes) for the non-migrants compared to the migrants, and all of these apparent disadvantages for migrants are either statistically significant or of borderline significance except for the scales measuring vitality and social functioning. Sample sizes become quite small when stratified by age, but the results are still remarkably consistent given these small numbers (results not shown).

The consistency of differences in health outcomes between the migrants and non-migrants shown in Tables 3 and in Figure 2 is remarkable, but such differences in health outcomes could of course be due to differences in the composition of two samples with regard to factors other than migrant status. Age, sex, educational attainment (used here as a proxy measure for socioeconomic status), and marital status all have been shown in other research to

have strong relationships with health outcomes; all of these factors have the potential to confound our bivariate findings from Table 3 above.

We explore the bivariate associations between these factors and our outcomes of interest in Table 4. Being male or female has no consistent effect on our health outcomes in these bivariate analyses, but women appear to have an advantage with regard to physical functioning ($p < 0.05$) and perhaps on general mental health and the vitality, energy and fatigue dimension ($p < 0.10$ for the latter two comparisons).

The effects of age on health generally have the expected negative coefficients, but are significant only for vitality, energy and fatigue; and general health perceptions – the negative effect of age on physical functioning is of borderline significance ($p < 0.1$). The only significant effect of being married on health in bivariate analysis is a negative effect on general health perceptions, a relationship that is surely confounded by age. Increasing years of education (a proxy for socioeconomic status) has the expected positive coefficients for all of the health dimensions, and these are statistically significant for physical functioning, general mental health, and vitality, energy, and fatigue. Occupational status has neither consistent nor any significant effects on health.

To control for possible confounding influences of age, sex, socioeconomic status or marital status on our main relationship of interest, i.e., the effect of migrant status on health, we include these factors in the multivariate models displayed in the final table.[3] Table 5 explores the effect of being a migrant on our eight standard health outcome scales, both in conjunction with these control factors (the gross effect) and separately from them (the net effect).

[3] Occupational status is omitted from our multivariate model since it showed no relationship with health outcomes in bivariate analysis, and because it will be redundant with our educational attainment variable as a measure of socioeconomic status.

Being a migrant has a gross negative effect on all of the health dimensions, and these negative effects are statistically significant or borderline significant for all scales except for the vitality, energy, and fatigue dimension. Adding the effects of education, age, marital status, and sex increases the size of the migrant effect in every instance except for the scale measuring role limitations due to emotional problems. And in those remaining 6 models, the inclusion of the control factors results in a strengthening of the significance level of the migrant effect, with only the migrant effect on social functioning remaining in the borderline category. Clearly, the negative effects of being a migrant for these health scales are masked in the bivariate comparisons by the migrants having a favorable age distribution compared to the non-migrants.

While the independent variable of primary interest is migrant status, the pattern of results from our control factors in multivariate analysis is also interesting. The most consistent effect was that of age on our measures of health status: getting older is clearly bad for your health![4] Being male conferred advantages for physical functioning, vitality, and mental health at statistically significant levels, and for general health at a borderline significant level. Marital status (coded as currently married versus unmarried) had no significant effects on our health outcomes for this sample of working-age adults in multivariate analysis.

DISCUSSION

Self-administered and multi-dimensional health assessments such as the SF-36 have much untapped potential for assessing whether the migration experience affects the well-being of migrants; and if it does, on what dimensions of physical and mental health these effects might act upon. As expected, being a recent migrant from a rural area puts one at a

[4] The effect of age on the health scales was negative and statistically significant or of borderline significance for all scales except for role limitations due to emotional problems.

disadvantage compared to non-migrants resident in the same city for health outcomes related to physical functioning; role limitations due to physical health problems; bodily pain; general mental health; role limitations due to emotional problems; and general health perceptions. Similar findings for the dimensions social functioning, and vitality, energy, and fatigue were of borderline statistical significance in the multivariate models. These disadvantages are not due to differences in distributions of age, sex, marital status, or socioeconomic status between the two groups; and are consistent with previous empirical research on health and international migration.

We are not able to investigate in a satisfactory way the effect of prior health status on the current health status of these migrants. Health data for the migrants collected in their home villages about a year before the SF-36 was administered to them are fairly crude (normal health or not), are likely proxy reports in most cases, and in any case are missing for many of the migrants. Even so, it seems most likely that the migrants were at least as healthy as the working-age populations in both the sending and receiving areas, if not more so. If this assumption is correct, then the fact that any such "healthy migrant" effect does not protect the migrants from health problems associated with migration makes these results even more striking. It is also noteworthy that in spite of the fact that unhealthy migrants should be more likely to return home (and thus not be included in our migrant sample), this additional selection bias does not completely mask the negative effects of the migration experience on the health of the migrants. Indeed, our estimates should be considered to be lower-bound estimates of the real negative effects of migration upon health.

It is of course possible (but very unlikely) that these migrants possessed the health disadvantages found here prior to their move, and/or that the migrants may differ from non-

migrants on factors related to both migration and health that are not captured by the control factors in our multivariate models. Further work should develop research designs utilizing panel data or exploiting "natural experiments" (VanLandingham 2003) to determine whether such *a priori* differences might account for some of the distinctions seen here.

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Table 1. Demographic Characteristics of Study Participants

Items	Migrants (n=69)	Non Migrants (n=85)
Sex		
Male	44%	37%
Female	56%	63%
Age (average)	26	32***
Marital Status		
Single	71%	42%**
Married	26%	51%
Divorced	1%	4%
Widowed	0%	2%
Separated	1%	1%
Occupational status		
Low	75%	48%**
High	25%	52%
Years of Education		
0-6	36%	28%**
7-9	39%	25%
Over 10	25%	47%

Notes:

* significant at the $p < 0.05$ level.

** significant at the $p < 0.01$ level.

*** significant at the $p < 0.001$ level.

Table 2: Individual items from the SP-36

Measure	Recent migrants: mean score (n=69)	Long term residents: mean score (n=85)
Item1: your health	3.63	3.28**
Item2: your health compared with 1 year ago	3.1	3.03
Health limit		
Item3: vigorous activities	2.31	2.18
Item4: moderate activities	2.64	2.73
Item5: lifting or carrying groceries	2.9	2.94
Item6: climbing several flights of stairs	2.57	2.8*
Item7: climbing one flight of stairs	2.83	2.93
Item8: bending, kneeling, or stooping	2.53	2.82***
Item9: walking about two kilometers	2.64	2.7
Item10: walking several blocks	2.7	2.77
Item11: walking one block	2.8	2.88
Item12: bathing or dressing yourself	2.96	3.00*
Item20: your normal social activities	1.49	1.25*
Item21: bodily pain	2.29	1.91
Item22: pain interfere with your normal work	1.6	1.38
How you feel		
Item23: full of pep	3.31	3.19
Item24: very nervous	4.53	4.93
Item25: so down in the dumps that nothing could cheer you up	5.26	5.62**
Item26: calm and peaceful	3	2.64
Item27: a lot of energy	3.33	3.34
Item28: downhearted and blue	4.97	5.26
Item29: worn out	5.44	5.45
Item30: happy	3.64	3.02*
Item31: tired	4.54	4.62
Item32: your physical health or emotional problems interfered with your social activities	4.44	4.53
Item33: I seem to get sick a little easier than other people.	3.56	3.8
Item34: I am as healthy as anybody I know.	2.3	2.27
Item35: I expect my health to get worse	3.44	3.7
Item36: my health is excellent	3.2	2.93

Table 2 (continued)

Measure	Recent migrants: % responding yes (n=70)	Long term residents: % responding yes (n=88)
Problems as a result of physical health		
Item13: cut down on the amount of time	17.1	10.2
Item14: accomplished less than you would like	21.4	15.9
Item15: were limited in the kind of work	24.3	12.5*
Item16: had difficulty performing the work	40	13.6***
Problems as a result of emotion		
Item17: cut down on the amount of time	18.6	9.1*
Item18: accomplished less than you would like	25.7	12.5*
Item19: didn't do things as carefully	15.7	8.0

Notes:

[a] scales for item 1: 1 = excellent, 2 = very good, 3 = good, 4 = fair, 5 = poor.

[b] scales for item 2: 1 = much better, 2 = somewhat better, 3 = about the same, 4 = somewhat worse, 5 = much worse.

[c] scale for items 3-12: 1 = yes, limited a lot, 2 = yes, limited a little, 3 = no, not limited at all.

[d] scale for item 20: 1 = not at all, 2 = slightly, 3 = moderately, 4 = quite a bit, 5 = extremely.

[e] scale for item 21: 1 = none, 2 = very mild, 3 = mild, 4 = moderate, 5 = severe, 6 = very severe.

[f] scale for item 22: 1 = not at all, 2 = a little bit, 3 = moderately, 4 = quite a bit, 5 = extremely.

[g] scale for item 23-31: 1 = all of the time, 2 = most of the time, 3 = a good bit of the time, 4 = some of the time, 5 = a little of the time, 6 = none of the time.

[h] scale for item 32: 1 = all of the time, 2 = most of the time, 3 = some of the time, 4 = a little of the time, 5 = none of the time.

* significant at the $p < 0.05$ level.

** significant at the $p < 0.01$ level.

*** significant at the $p < 0.001$ level.

Table 3: Health Dimensions from the SF-36: Migrants versus longer term residents in HCMC

Health scale	Recent migrants: mean score (n=69)	Long term residents: mean score (n=85)
1. PF	84.27 (α= 86.52%)^	89.06 (α= 84.19%)
2. RP	73.91 (α= 78.10%)**	87.65 (α= 82.39%)
3. BP	72.38 (α= 63.10%)*	78.75 (α= 77.96%)
4. GH	55.20 (α= 80.34%)^	61.78 (α= 82.16%)
5. VT	66.67 (α= 73.93%)	68.29 (α= 68.57%)
6. SF	86.78 (α= 64.57%)	91.32 (α= 80.88%)
7. RE	79.71 (α= 64.67%)^	90.98 (α= 69.94%)
8. MH	68.35 (α=66.20%)**	76.8 (α= 73.93%)

Notes: Larger scores indicate better health outcomes.
PF = Physical functioning
RP = Role limitations due to physical health problems
BP = Bodily pain
GH = General health perceptions
VT = Vitality, energy, and fatigue
SF = Social functioning
RE = Role limitations due to emotional problems
MH = General mental health

^ significant at the $p < 0.1$ level.
* significant at the $p < 0.05$ level.
** significant at the $p < 0.01$ level.
*** significant at the $p < 0.001$ level.

Table 4: Bivariate correlations between control factors and each health scale

Outcome measure	male vs. female	age	married vs. unmarried	yrs of educ	low vs. high occ
Physical functioning	-0.18*	-0.14^	-0.09	0.22**	-0.07
Role limitations due to physical health problems	0.11	-0.06	-0.00	0.06	-0.06
Bodily pain	-0.09	-0.1	-0.03	0.001	0.01
Social functioning	-0.003	-0.05	0.09	0.03	0.00
General mental health	-0.14^	-0.09	-0.03	0.22**	-0.08
Role limitations due to emotional problems	0.09	0.09	0.11	0.03	-0.06
Vitality, energy, and fatigue	-0.15^	-0.21**	-0.06	0.20*	-0.02
General health perceptions	-0.11	-0.24**	-0.21**	0.12	-0.08

^ significant at the $p < 0.1$ level.
* significant at the $p < 0.05$ level.
** significant at the $p < 0.01$ level.
*** significant at the $p < 0.001$ level.

Table 5: Multivariate analysis

Outcome measure	Unstd beta	p value	R^2
Physical functioning			
-Model 1: effect of migrant status without controls	-4.9	0.063	0.02
-Model 2: effect of migrant status with controls	-7.4	0.009	0.14
Role limitations due to physical health problems			
-Model 1: effect of migrant status without controls	-14.1	0.004	0.05
-Model 2: effect of migrant status with controls	-18.2	0.001	0.09
Bodily pain			
-Model 1: effect of migrant status without controls	-6.2	0.03	0.03
-Model 2: effect of migrant status with controls	-9.0	0.005	0.08
Social functioning			
-Model 1: effect of migrant status without controls	-4.7	0.109	0.02
-Model 2: effect of migrant status with controls	-6.1	0.064	0.04
General mental health			
-Model 1: effect of migrant status without controls	-8.3	0.003	0.06
-Model 2: effect of migrant status with controls	-10.4	0.001	0.14
Role limitations due to emotional problems			
-Model 1: effect of migrant status without controls	-11.6	0.009	0.05
-Model 2: effect of migrant status with controls	-10.9	0.03	0.05
Vitality, energy, and fatigue			
-Model 1: effect of migrant status without controls	-1.9	0.57	0
-Model 2: effect of migrant status with controls	-5.9	0.092	0.13
General health perceptions			
-Model 1: effect of migrant status without controls	-6.6	.098	0.02
-Model 2: effect of migrant status with controls	-13.4	0.002	0.14

Notes: control variables include sex, age, marital status, and education level.
n = 153 cases.

Figure 1: Conceptual framework for comparing the health status of recent rural-to-urban migrants with longer-term urban residents

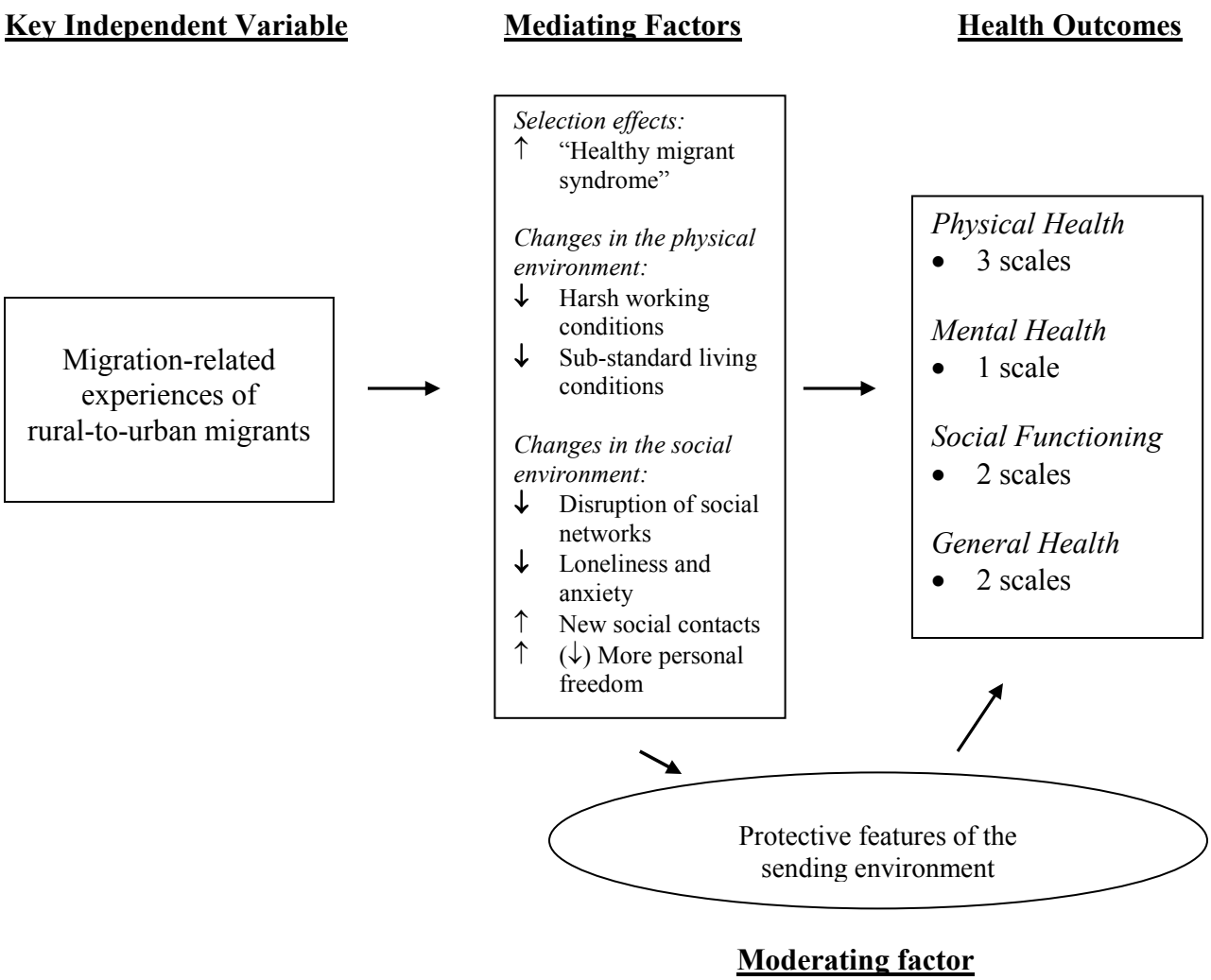
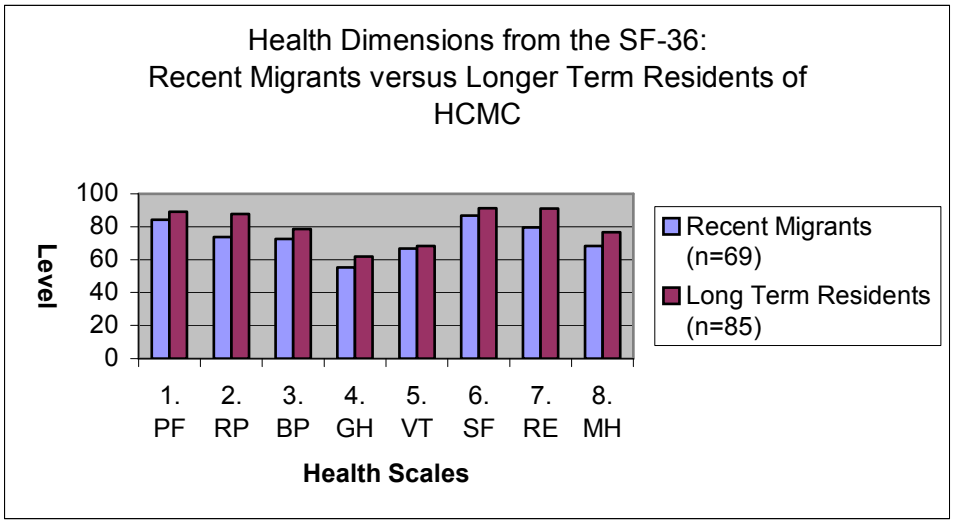


Figure 2.


Health Dimensions from the SF-36:
Recent Migrants versus Longer Term Residents of HCMC
Level
100
80
60
40
20
0
1. PF
2. RP
3. BP
4. GH
5. VT
6. SF
7. RE
8. MH
Health Scales
Recent Migrants (n=69)
Long Term Residents (n=85)

SF-36 HEALTH SURVEY IN VIETNAM

Instructions: This survey asks for your views about your health. This information will be help keep track of how you feel and how well you are able to do your usual activities.

Answer every question by marking the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.

Question 1: In general, would you say your health is:

(Circle one)

Excellent 1
Very good 2
Good 3
Fair 4
Poor 5

Question 2: Compared to one year ago, how would you rate your health in general now?

(Circle one)

Much better now than one year ago 1
Somewhat better now than one year ago 2
About the same now as one year ago 3
Somewhat worse now than one year ago 4
Much worse now than one year ago 5

Question 3: The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

(Circle one number on each line)

Activities	Yes, Limited A Lot	Yes Limited A Little	No, Not Limited At All
a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	1	2	3
b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf[5]	1	2	3
c. Lifting or carrying groceries	1	2	3
d. Climbing several flights of stairs	1	2	3
e. Climbing one flight of stairs	1	2	3
f. Bending, kneeling, or stooping	1	2	3
g. Walking about two kilometers	1	2	3
h. Walking several blocks	1	2	3
i. Walking one block	1	2	3
j. Bathing or dressing yourself	1	2	3

[5] Bowling and golf were to be changed to tai chi (duong sinh), ping pong, and foot volleyball (da cau) in the Vietnamese version, but these changes did not occur and bowling and golf were translated directly.

Question 4: During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of physical health?

(Circle one number on each line)

Problems as a result of physical health	Yes	No
a. Cut down on the amount of time you spent on work or other activities	1	2
b. Accomplished less than you would like	1	2
c. Were limited in the kind of work or other activities	1	2
d. Had difficulty performing the work or other activities (for example, it took extra effort)	1	2

Question 5: During the past 4 weeks, have you had any of the following problems with your work or other regular activities as a result of any emotional problems (such as feeling depressed or anxious)?

(Circle one number on each line)

Problems as a result of emotion	Yes	No
a. Cut down on the amount of time you spent on work or other activities	1	2
b. Accomplished less than you would like	1	2
c. Didn't do work or other activities as carefully as usual	1	2

Question 6: During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?

(Circle one)

Not at all..... 1
Slightly..... 2
Moderately..... 3
Quite a bit..... 4
Extremely..... 5

Question 7: How much bodily pain have you had during the past 4 weeks?

(Circle one)

None..... 1
Very mile..... 2
Mild..... 3
Moderate..... 4
Severe..... 5
Very severe..... 6

Question 8: During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

(Circle one)

Not at all 1
A little bit 2
Moderately 3
Quite a bit 4
Extremely 5

Question 9: These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks.

(Circle one number on each line)

How you feel	All of the Time	Most of the Time	A Good Bit of the Time	Some of the Time	A Little of the Time	None of the Time
Full of pep	1	2	3	4	5	6
Very nervous	1	2	3	4	5	6
So down in the dumps that nothing could cheer you up	1	2	3	4	5	6
Calm and peaceful	1	2	3	4	5	6
A lot of energy	1	2	3	4	5	6
Downhearted and blue	1	2	3	4	5	6
Worn out	1	2	3	4	5	6
Happy	1	2	3	4	5	6
Tired	1	2	3	4	5	6

Question 10: During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

(Circle one)

All of the time 1
Most of the time 2
Some of the time 3
A little of the time 4
None of the time 5

Question 11: How TRUE or FALSE is each the following statements for you?

(Circle one number on each line)

	Definitely True	Mostly True	Don't Know	Mostly False	Definitely False
a. I seem to get sick a little easier than other people	1	2	3	4	5
b. I am as healthy as anybody I know	1	2	3	4	5
c. I expect my health to get worse	1	2	3	4	5
d. My health is excellent	1	2	3	4	5