

The effect of Hukou registration system on rural-to-urban migrant's health

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Abstract: In this paper, we investigate the interconnection between internal migration and health outcomes in China, which is conditioned to the use of the Hukou registration system. We use a database from IZA (University of Bonn) to assess if there are observable differences in health outcomes between migrant workers and native-born urban residents in China. We investigate if restrictions on healthcare access for rural migrants are linked to poorer health outcomes. Our study is novel because it uses real proxies for health outcomes, such as blood pressure and grip strength, as well as the effects on self-reported health outcomes. We control for income, education, sex, and other socio-economic variables. Results indicate that there are significant differential effects on rural migrants' health that are mainly driven by the lack of access to healthcare –which is restricted because of the Chinese Hukou registration system-. The effect of Hukou restriction policy is large and significant compared to other important determinants of health as smoking condition, evidence of previous diseases or marital status.

Key Words: Internal migration, Hukou registration system, health outcomes, panel data

JEL codes: C33, F22, I15, I18, J18

I. Introduction

In the past two decades, China has tried to increase rural residents' access to healthcare through the New Cooperative Medical Scheme (NCMS) (Qiu et al., 2011). NCMS insurance, however, only allows access for rural hukou holders to receive healthcare in their registered rural areas (Liu and Rao 2006). Residency in China is heavily regulated by the government. Therefore, a citizen cannot freely choose where to live. To restrict geographic mobility, Chinese citizens possess a hukou registration card that determines where the household is allowed to live. The registration card limits access to education, health care, and other public benefits only to the place of a household's hukou registration area. However, due to the hardship of rural conditions many Chinese decide to migrate to urban cities to work every year. Due to the nature of undocumented migration, the exact number of migrants is uncertain, but the migrant population is estimated between 120 million (Li et al., 2007) and 220 million (Wang et al., 2010). These figures suggest migrants comprise between 9 and 16 percent of the total Chinese population (Shi and Kennedy, 2016). Qin et al. (2013) establish that mass migration can have profound impacts on the health of residents in China's cities.

Latest studies show that increased participation in NCMS leads to increased utilization of preventive care, but does not improve health status (Lei and Lin, 2009). Liu, Hsiao, and Eggleston (1999) outline challenges to healthcare access following sustained economic growth. Despite increased economic growth for several decades, inequality in health care access is increasing in China. Lastly, Shaokang et al. (2002) indicate that economic growth might actually be widening the health gap because healthcare providers are more likely to demand insurance or out-of-pocket payments than in the past. While this impacts poor urban residents as well, migrants are less likely than most urban residents to have health insurance or the ability to pay high out-of-pocket costs. The combination of the discriminatory hukou system and a lack of healthcare professionals create obstacles for migrant workers to obtain healthcare in urban Chinese cities (Quyang et al, 2016). Nauman et al. (2015) find that urban migration does affect mental health status, while Miranda et al. (2011) empirically asses that migration does not uniformly impact different health risk factors.

However, there is scarcity of proper analysis about the impact of urban living and laborious work on migrants' actual health. Lu and Qin (2014) demonstrate that migrant

workers are likely to be healthier than their rural neighbors that choose not to migrate as unhealthy or infirm workers aren't as able to travel far distances or likely to be productive workers. Most recent studies suggest that migrants are likely to be reasonably healthy at the point of migration but are more likely to experience adverse healthcare events than their native-born urban neighbors (Chen, 2011; Lu and Qin, 2014; and Wallace and Kulu, 2014).¹ Literature also suggests that migrants are significantly less likely to have health insurance or access to affordable health care treatment (Hesketh et al., 2008). Without access to healthcare in urban areas, some migrants that become ill decide to travel home to their rural village for treatment (Biao, 2003). The study finds that many other sick or injured migrants are unwilling to return home. These migrants choose to forego health care and to remain in urban areas. Therefore, due to the increased risk of workplace accidents, increased participation in high-risk behaviors, and lack of access to health care, migrant workers face many challenges to remain healthy.²

The aim of this paper is to study the interconnection between migration and health outcomes in China. We are using a database from IZA (University of Bonn) to assess if there are observable differences in health between migrant workers and native-born urban residents in China. While the effects of healthcare restrictions for undocumented immigrants or foreigners have been well assessed across countries, there are only few studies that tackle the relationship between migrating from rural areas to urban areas within the same country on health outcomes. To that end, we first test a simple model to assess if migrating from a rural area to an urban area of China has any explanatory effect on health outcomes in China for the two waves available in 2008 and 2009. In the second part of the study we employ a probit model to determine if restrictions on healthcare access are linked to poorer health outcomes in migrants. We control for income, education, sex, and other socio-economic variables.

Results indicate that there are differential effects of migration on health outcomes (measured by proxies for health, blood pressure and grip strength) despite the lack of access to healthcare for many migrants in the urban areas –which is restricted because of the Chinese Hukou registration system-. This paper informs public policy, specifically the necessity to eliminate barriers to health access which are now linked to geography. China's

¹ According to Zheng and Lian (2005) rural migrants have higher propensity to experience workplace accidents because migrants have a propensity to work in more dangerous conditions. Survey study stated that 83 percent of workplaces were deemed to have unsafe factors and 60 percent lacked of any safety measures.

² Migrant workers are also more likely to engage in high-risk behaviors, including unprotected sex and sex with high-risk partners (Pan et al., 2013; Dai et al., 2015; and Liu et al., 2016).

development has increased substantially over the last decade and it is now a trade-oriented economy. This development will require migration flows from rural areas to urban areas to fulfil production in manufacturing and services (driven by domestic demand and trade). Migration will require adjustments in health provisions to accommodate the changing spatial demographics. While our study does find significant links between health outcomes and migrant condition, restricting migrants access to healthcare will clearly have an effect in the long-run socioeconomic dynamics of China, not only on migrant's health, but productivity and potential economic growth.

II. Literature Review

Healthcare access for foreign immigrants who don't participate in the labor market is legally often limited or heavily restricted in many countries, as for example in the US or in Europe to non-European citizens. Martinez et al. (2015) demonstrate how restrictions on immigration negatively impact mental health status of undocumented immigrant workers in the United States (Martinez et al., 2015). Larchanché (2012) finds that in France stigmatization and other social factors limits healthcare access for undocumented immigrants even when there is a government-provided right to healthcare services. Davidovitch et al. (2013) establishes that utilization of healthcare for legal immigrants in Israel, a country with universal health care access, is significantly less accessible for foreign immigrants than native-born Israelis.³ Hansen and Donohoe (2003) evaluate health consequences from workplace hazards for migrant farmworkers in the United States and determine that migrant workers are significantly more likely to underreport medical conditions and have poor access to health treatment.

Studies about national migration on health outcomes are scarcer. Nauman et al. (2015) examine differences in health in rural-to-urban migrants in Thailand. The study finds that migrants who are now settled in urban areas are physically healthier than returning migrants and rural residents. After accounting for socioeconomic effects, *a priori* physical health remains positively correlated with migration, but the relationship is no longer significant (Nauman et al., 2015). Bollini and Siem (1995) use health data for immigrants and migrant workers to Western European countries and find that non-native-born residents were less likely to receive competent healthcare following a workplace accident or injury. This is particularly troubling because migrant workers are much more likely to

³ According to Davidovitch et al. (2013), migrant workers underutilize health care services because of cultural and language barriers, lack of trust in service providers, inability to miss work to receive treatment, and other bureaucratic barriers.

work in dangerous jobs (Bollini and Siem, 1995; Zheng and Lian, 2005; and Hesketh et al., 2008). Miranda et al. (2011) analyze cardiovascular risk factors for nearly 1,000 people in Peru and their findings suggest that rural-to-urban migration is detrimental to cardiovascular health.⁴ Many common explanations for health outcomes, such as age, socioeconomic status, gender, and body mass index, do not seem to explain much of the difference in cardiovascular health indicators between migrants and urban populations (Miranda et al., 2011). These results suggest that something unique about migration from rural to urban areas might have negative effects on health. What is unique about Peru's internal migration is that, unlike in China, citizens are free to move to other regions of the country and have similar access to available services in other locations.

Hesketh et al. (2008) collected data for approximately 8,500 individuals in Eastern China and find that only 19 percent of migrant workers have health insurance, compared with 58 percent of native-born urban residents. Migrants self-report excellent health, better than both urban and rural workers, but this is likely due to selection bias (Hu et al 2008). This is unusual because migrant workers in China often experience the most dangerous workplace conditions (Zheng and Lian, 2005 and Hesketh et al., 2008). Additionally, Hong et al. (2006) analyze qualitative interviews from 90 migrants and find that migrants view healthcare as too costly and unavailable. This leads many migrants to seek alternatives to high-level medical treatment, such as self-treatment or seeing an unlicensed health-care provider (Wei et al., 2010 and Peng et al., 2010).

In our study we use two proxies for health outcomes, grip strength and blood pressure. Schooling et al. (2011) use grip strength as a measure for muscle mass and concludes that low muscle mass could be a contributing factor for diabetes in adolescents, especially in developing countries like China. Timpka et al. (2014) use hand grip strength as one of three factors to measure muscle strength and find that men with lower muscle strength in adolescence are more likely to die from cardiovascular events during their middle ages. Similarly, Mainous et al. (2016) use grip strength as a proxy for lean muscle mass and find that adults with low grip strength have higher rates of prediabetes. Blood pressure is also a known indicator for health and mortality (Sun et al., 2008; He et al., 2009; and Diaz et al., 2014). Sun et al. (2008) indicates that high blood pressure is linked with early mortality and that 44.3 percent of Han people in northeast China have prehypertension and 36.7 percent have hypertension. He et al. (2009) links hypertension with cardiovascular and cerebrovascular disease and determines that 1.27 million deaths related

⁴ Around 600 of these are migrants while the remaining 400 are nearly evenly split between rural and urban residents.

to hypertension or prehypertension were premature. These premature deaths account for 54.5 percent of all deaths attributable to hypertension in 2005. Diaz et al. (2014) demonstrate using a meta-analysis that increased blood pressure is linked with higher rates of coronary heart disease, cardiovascular disease mortality, and stroke.

Other studies specifically analyzes the relationship between migration and blood pressure. Ebrahim et al. (2010) find that rural-to-urban migration in India increases risk factors for obesity, diabetes, and high blood pressure. They also find that rural populations in India have lower blood pressure and lipid levels than urban populations, and suggest that environmental factors in urban areas increase health risks for migrants and continue to increase as a migrant remains in urban areas. He et al. (1991) examine 14,505 people in China and find that rural Yi farmers have lower blood pressure rates, and less increase in blood pressure due to age, compared with the urban populations where the Yi have migrated. Poulter et al. (1990) find that Kenyan migrants have higher blood pressure compared to their rural counterparts, and conclude that selective migration does not account for differences in blood pressure.

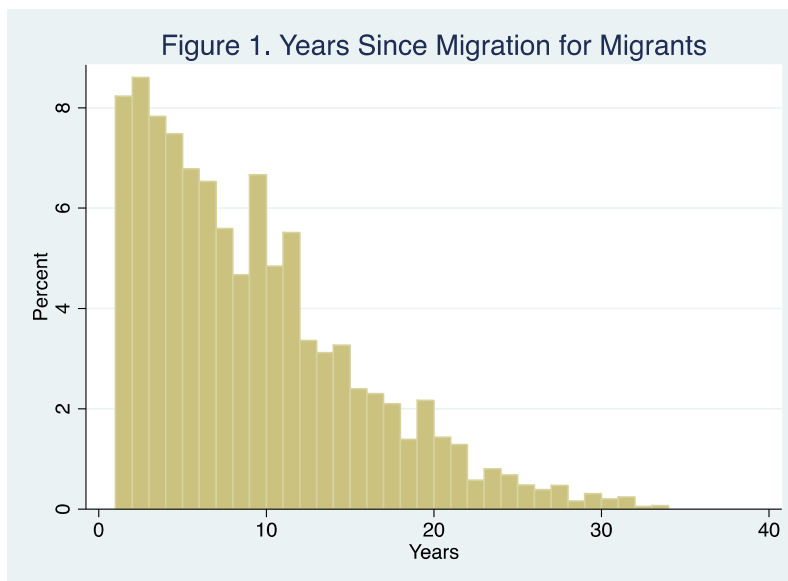
III. Data

In this paper we use survey data reported in the *Longitudinal Survey on Rural Urban Migration in China* from the Institute for the Study of Labor (IZA). The survey collects data for 71,074 individuals (29,556 urban persons; 32,171 rural persons; and 9,347 migrants) in two waves for the years 2008 and 2009. The survey contains data on socioeconomic indicators, such as education, income, ethnicity, and hukou registration. For education, available data includes the highest level of education completed, years of formal education, and grades earned before leaving school. Separate data is reported for educational participation and attainment for children, including where the child is enrolled in school. This is especially important for migrant workers because the children of migrants are only eligible for government education where their Hukou is registered. For income, data for migrants details their current income from all sources, previous incomes from other migrant jobs, and their expected wages if they remained in their home village.

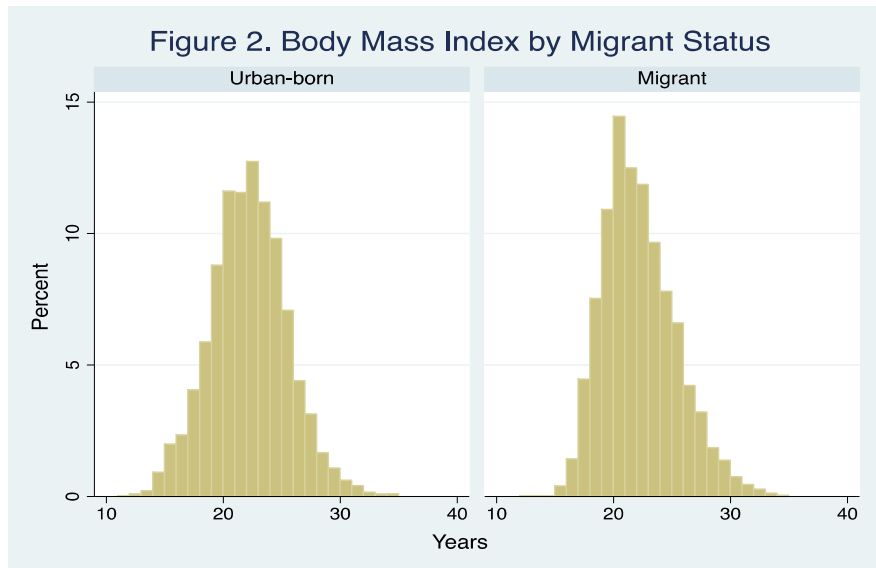
IZA survey also includes data on many health indicators and outcomes. Measurable characteristics are detailed in the survey. These include weight (kilograms), height (centimeters), dominant handedness, blood pressure, and grip strength. To reduce measurement error for blood pressure screenings, a person's blood pressure is measured three times and the average of all values is used for their blood pressure. For example,

blood pressure is measured three times and the systolic pressure from each separate measurement is averaged to determine a person's systolic pressure. Similarly, diastolic pressure is calculated by averaging the diastolic pressure from each separate measurement. Grip strength is measured twice for both hands and the average for each hand is calculated from the two measurements. Instructions to measure blood pressure, grip strength, height, and weight are explicitly provided, so that different people administering a survey will obtain similar results for similar individuals. Smoking status, and number of cigarettes smoked per day, is also included in the survey.

Self-reported health status is collected from respondents. Respondents rate their health on a scale from one (excellent health) to five (very poor health) compared to people of the same age. A person's disability status is included, and specifies if there is (1) no disability, (2) a disability but one that does not impact normal living, or (3) a disability that does impact living. Respondents indicate if they were sick or injured in the previous three months and, if so, to list the nature or name of that illness or injury. Importantly, a person's response to illness or injury is listed. It is detailed if a respondent: (1) did nothing; (2) rested, but did not take medicine; (3) took medicine, but did nothing else; (4) went to the doctor at a clinic; or (5) went to the doctor at a hospital. This question is particularly helpful to understand potential differences in medical choices for urban and migrant populations. The decision is likely based, in part, on health insurance status.



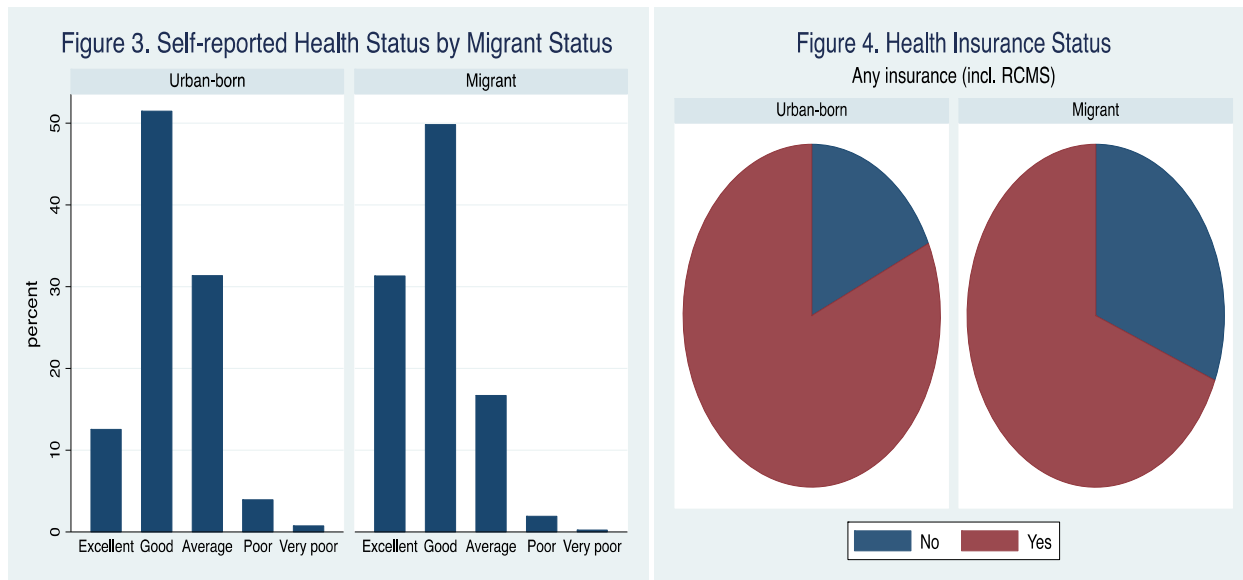
Source: Own elaboration



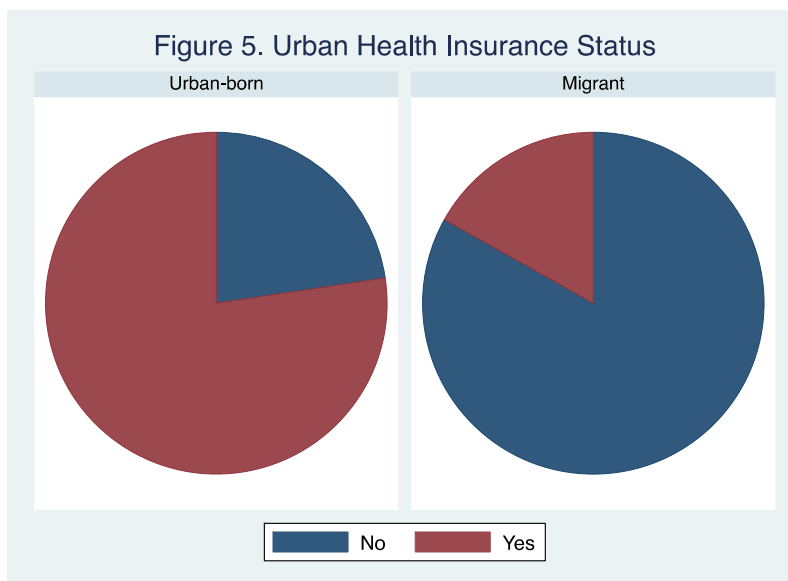
Source: Own elaboration from IZA dataset.

Figure 3 illustrates that migrants are much more likely to report their health status as “excellent” than urban-born Chinese residents. The survey includes detailed data on health insurance status. Possible responses include commercial medical insurance, government health services, employment medical care, family medical insurance, rural cooperatives medical coverage, women and children health insurance, immunization insurance, or other. The rural cooperative medical coverage (RCMS) only provides care where a person’s hukou is registered, so migrants are unable to obtain coverage through RCMS in an urban city. Therefore, when calculating if migrants have health insurance coverage, respondents that indicate they only have RCMS will be considered to be without health insurance coverage. A respondent’s cost for health insurance is detailed and data is also provided regarding why a person lacks health coverage. The survey also includes data on the total amount a person spends on health care in the survey year.

Figures 4 and 5 illustrate that, while many migrant workers possess health insurance, most migrant workers have health insurance that can only be used in rural



Source: Own elaboration from IZA dataset



IV. Methodology

This paper assesses if knowing a person’s migrant status helps to predict health, as measured through several proxies. Our preliminary estimations analyze if migrants and urban-born Chinese have significantly different health indicators, then we will be able to

help predict health metrics based on migrant status. This paper cannot determine causal impacts and so makes no attempt to explain why rural to urban migration could cause any difference, if differences do exist, in health metrics.

First, we use a simple OLS regression for a cross-section of 29,556 urban persons in a two-year period. The main objective of this regression is to test if being a migrant with only rural-Hukou insurance in an urban area has any predictive value for health outcomes, while controlling for age, education and other socio-economic variables. We use two different proxies for health outcomes as dependent variables: blood pressure and grip strength. As discussed earlier in the literature review, various research establishes these two measurements as credible proxies for health (Sun et al., 2008; He et al., 2009; Schooling et al., 2011; Timpka et al., 2014; Diaz et al., 2014; and Mainous et al., 2016). We believe that these two measures can be used as proxies for different health outcomes. Grip strength, as a measure of muscular strength, is a good indicator of current health, while blood pressure is reliable predictor for future cardiovascular diseases and early mortality. Therefore, using grip strength as the dependent variable will predict current health while using systolic or diastolic blood pressure as the dependent variable will predict future health.

A dummy variable for marriage is created and a person is considered married if they are married or remarried. Respondents that are separated, widowed, or divorced are not considered to be married. A dummy variable for cigarette is also calculated. If a person smokes at least one cigarette per day, then they are considered to be a smoker. If a person smokes less than one cigarette per day on average, they are not considered to be a smoker.

$$(1) \quad \text{Systolic Pressure} = \beta_1 \text{migrantdummy} + \beta_2 \text{age} + \beta_3 \text{insurancedummy} + \beta_4 \text{marrydummy} + \beta_5 \text{smokerdummy} + \beta_6 \text{yearsofeducation} + \beta_7 \text{gender} + \varepsilon$$

$$(2) \quad \text{Diastolic Pressure} = \beta_1 \text{migrantdummy} + \beta_2 \text{age} + \beta_3 \text{insurancedummy} + \beta_4 \text{marrydummy} + \beta_5 \text{smokerdummy} + \beta_6 \text{yearsofeducation} + \beta_7 \text{gender} + \varepsilon$$

$$(3) \quad \text{Grip Strength} = \beta_1 \text{migrantdummy} + \beta_2 \text{age} + \beta_3 \text{insurancedummy} + \beta_4 \text{marrydummy} + \beta_5 \text{smokerdummy} + \beta_6 \text{yearsofeducation} + \beta_7 \text{gender} + \varepsilon$$

Second, health indicators could also be impacted by the length of time since a person migrated. Research finds (He et al., 1991 and Ebrahim et al., 2010) that a migrant's health worsens the longer they spend away from their rural village. This research suggests environmental factors, including diet, causes poorer health than in a rural village. These

regressions will be repeats of the first three OLS models, but will analyze blood pressure for only the 9,347 migrants in the survey and determine if length of time since migrating causes an increase in blood pressure.

$$(4) \quad \text{Systolic Pressure} = \beta_1 \text{age} + \beta_2 \text{insurancedummy} + \beta_3 \text{marrydummy} + \beta_4 \text{smokerdummy} + \beta_5 \text{yearsofeducation} + \beta_6 \text{gender} + \beta_7 \text{yrssincemigrating} + \varepsilon$$

$$(5) \quad \text{Diastolic Pressure} = \beta_1 \text{age} + \beta_2 \text{insurancedummy} + \beta_3 \text{marrydummy} + \beta_4 \text{smokerdummy} + \beta_5 \text{yearsofeducation} + \beta_6 \text{gender} + \beta_7 \text{yrssincemigrating} + \varepsilon$$

$$(6) \quad \text{GripStrength} = \beta_1 \text{age} + \beta_2 \text{insurancedummy} + \beta_3 \text{marrydummy} + \beta_4 \text{smokerdummy} + \beta_5 \text{yearsofeducation} + \beta_6 \text{gender} + \beta_7 \text{yrssincemigrating} + \varepsilon$$

Lastly, we use an OLS model to determine migrant status is a significant predictor of self-reported health status. After finding results for the previous regressions, this model will identify if migrants self-report better health than native-born urban residents. Self-reported health rating is a one to five score, where one is very poor health compared to other people of the same age and a five is excellent health.

$$(7) \quad \text{HealthRating} = \beta_1 \text{age} + \beta_2 \text{insurancedummy} + \beta_3 \text{marrydummy} + \beta_4 \text{smokerdummy} + \beta_5 \text{yearsofeducation} + \beta_6 \text{gender} + \beta_7 \text{yrssincemigrating} + \varepsilon$$

V. Results

Regression 1, R-squared is 0.65

Predicted value of representative worker equals 121.6. This is similar to the average value of 120.3.

| systolicavg | Coefficient | Std. Error | T-score |
|---------------------|-------------|------------|---------|
| marrydummy | 1.32 | 0.07 | 2.80 |
| smokerdummy | -0.81 | 0.09 | 2.65 |
| urbaninsurancedummy | 0.14 | 0.19 | 2.30 |
| yearsofeduc | 0.29 | 0.06 | 5.17 |
| maledummy | -5.64 | 0.00 | 13.57 |
| mgrntdummy | -3.85 | 0.03 | 6.93 |
| age | 0.44 | 0.01 | 29.91 |
| constant | 100.89 | 1.06 | 95.05 |

Regression 2, R-squared is 0.79.

Predicted value of representative worker equals 76.8. This is similar to the average value of 76.6.

| diastolicavg | Coefficient | Std. Error | T-score |
|---------------------|-------------|------------|---------|
| marrydummy | 0.82 | 0.09 | 2.80 |
| smokerdummy | -0.74 | 0.03 | 2.37 |
| urbaninsurancedummy | 0.21 | 0.06 | 3.68 |
| yearsofeduc | 0.09 | 0.08 | 2.52 |
| maledummy | -3.34 | 0.02 | -12.84 |
| mgrntdummy | 0.16 | 0.05 | 0.46 |
| age | 0.14 | 0.01 | 15.04 |
| constant | 69.21 | 0.67 | 104.05 |

Regression 3, R-squared is 0.74

Predicted value of representative worker equals 41.2. The average value for the entire sample is 33.7, and the average for only men is 40.0.

| gripstrength | Coefficient | Std. Error | T-score |
|---------------------|-------------|------------|---------|
| marrydummy | 2.98 | 0.05 | 2.77 |
| smokerdummy | -1.72 | 0.06 | 3.52 |
| urbaninsurancedummy | 1.21 | 0.12 | 2.08 |
| yearsofeduc | 0.03 | 0.13 | 0.21 |
| maledummy | -10.79 | 0.06 | -11.29 |
| mgrntdummy | 2.81 | 1.27 | 2.22 |
| age | -0.08 | 0.03 | -2.30 |
| constant | 28.01 | 2.44 | 11.47 |

Regression 4, R-squared is 0.76

Predicted value of representative worker equals 121.3 and the average for migrants is 119.1.

| systolicavg | Coefficient | Std. Error | T-score |
|--------------------------------|--------------------|-------------------|----------------|
| Married | 0.27 | 0.03 | 4.51 |
| Smoking habits | -0.45 | 0.71 | -1.82 |
| Rural Hukou | -0.53 | 0.69 | 2.07 |
| Education | 0.42 | 0.01 | 5.04 |
| Gender (male) | -0.70 | 0.00 | -11.28 |
| Age | -0.35 | 0.00 | -9.81 |
| Years since immigration | -0.04 | 0.05 | -4.80 |
| constant | 1.03 | 0.06 | 2.26 |

Regression 5, R-squared is 0.68.

Predicted value of representative worker equals 76.5 and the average for migrants only is 75.8.

| Diastolic avg | Coefficient | Std. Error | T-score |
|--------------------------------|--------------------|-------------------|----------------|
| Married | 0.19 | 0.03 | 2.35 |
| Smoking habits | -0.19 | 1.05 | -0.65 |
| Rural Hukou | -0.48 | 0.04 | 2.74 |
| Education | 0.27 | 0.02 | 2.88 |
| Gender (male) | 0.37 | 0.00 | 8.02 |
| Age | -0.22 | 0.01 | -7.59 |
| Years since immigration | -0.04 | 0.05 | -2.19 |
| Constant | 1.88 | 0.00 | 3.19 |

Regression 6, R-squared is 0.62.

Predicted value of representative worker equals 42.05 and the average for migrants only is 42.9.

| Grip strenth | Coefficient | Std. Error | T-score |
|-------------------------|-------------|------------|---------|
| Married | 0.41 | 0.02 | 3.69 |
| Smoking habits | -1.02 | 0.07 | -2.45 |
| Rural Hukou | -1.01 | 0.04 | -2.85 |
| Education | 0.31 | 0.10 | 2.09 |
| Gender (male) | -1.27 | 0.00 | -4.87 |
| Age | -0.16 | 0.08 | -2.58 |
| Years since immigration | -0.02 | 0.03 | -3.78 |
| Constant | 1.07 | 0.02 | 2.46 |

Regression 7, R-squared is 0.68.

Predicted value of representative worker equals 1.88 and the average for migrants only is 2.1.

| Health self-reported rating | Coefficient | Std. Error | T-score |
|-----------------------------|--------------|-------------|--------------|
| Married | 0.16 | 0.01 | 3.18 |
| Smoking habits | -0.21 | 0.01 | -5.56 |
| Rural Hukou | -0.35 | 0.01 | -3.37 |
| Education | 0.22 | 0.00 | 3.28 |
| Gender (male) | -0.18 | 0.02 | -2.93 |
| Age | -0.29 | 0.01 | -3.34 |
| Years since immigration | -0.14 | 0.00 | -3.61 |
| Constant | 1.46 | 0.00 | 5.32 |

VI. Conclusion

Results demonstrate that, migrant status is a significant predictor of health outcomes even after controlling for many independent variables, like marriage, smoker status, health insurance access, age, and gender, the relationship holds to be able to predict health indicators.

Most literature detailed above indicates that migrants should have worse health outcomes than their urban neighbors. Migrant laborers work in more dangerous jobs, are more likely to experience a workplace accident, and are less likely to practice safe sex. Migrants are also less likely to have health insurance coverage in their urban city, less likely to be able to afford health insurance or copays, and less likely to visit a licensed healthcare provider. It is possible, however, that the proxies used for overall health in this study are better predictors for *future* health than *present* health. Data from two survey waves in consecutive years confirm that health outcomes of migrants with rural Hukou cards influence health outcomes negatively. This paper informs public policy, specifically the necessity to eliminate barriers to health access which are now linked to geography. China's development has increased substantially over the last decade and it is now, for example, a trade-oriented economy. This development will require migration flows from rural areas to urban areas to fulfil production in manufacturing and services (driven by domestic demand and trade). Migration will require adjustments in health provisions to accommodate the changing spatial demographics. Restricting migrants access to healthcare will clearly have an effect in the long run, including on migrant's health, productivity, and potential economic growth.

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