The Effect of Hukou Registration Policy on rural-to-urban Migrants' Health Outcomes

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Introduction and Motivation:

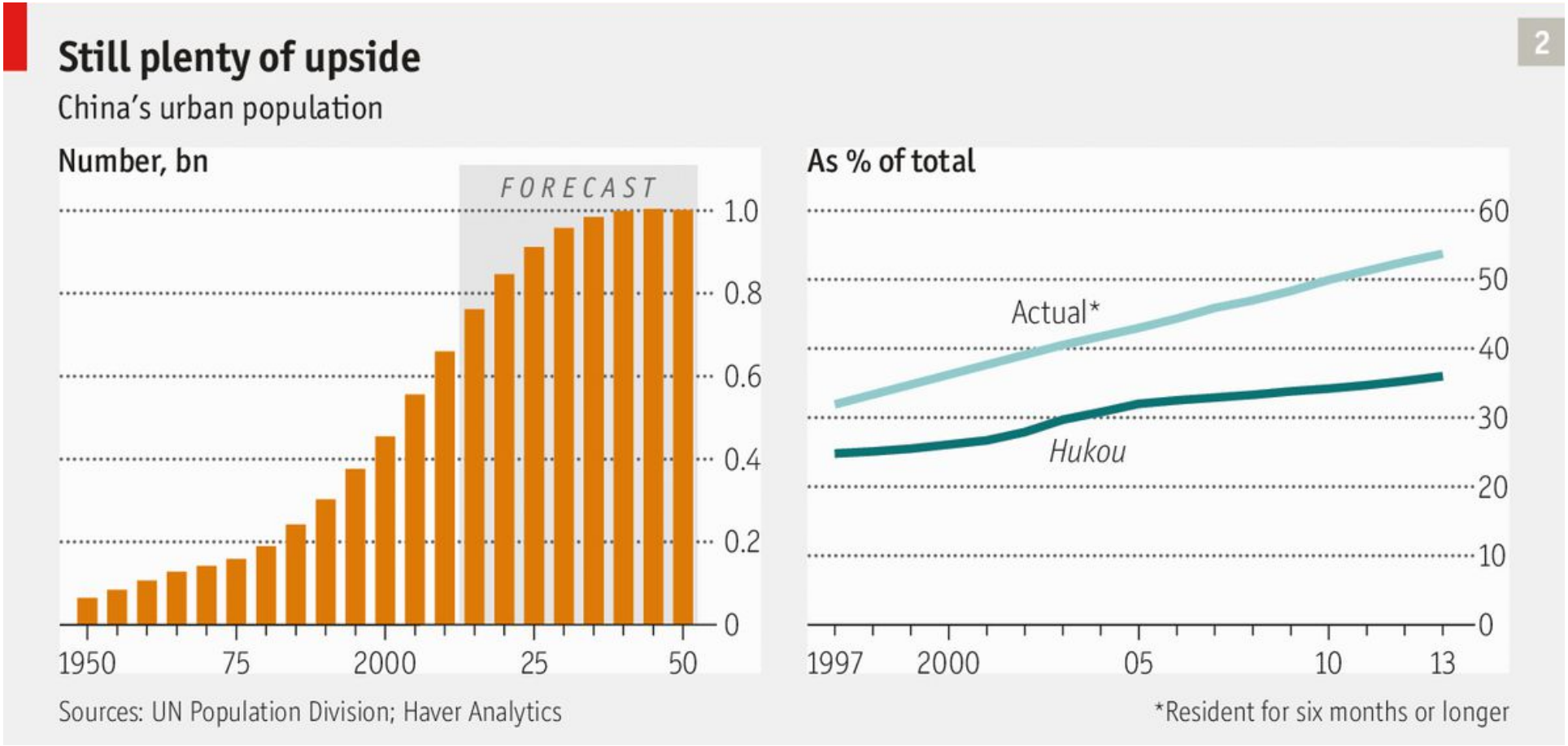
- China's rapid development have spurred massive migration from rural areas to urban areas. That migration is mostly economically driven.

- Number of rural to urban migrants has increased dramatically. Between 1990 and the end of 2015 the proportion of China's population living in urban areas jumped from 26% to 56%.

- Currently estimated there are more than **240 million** rural migrants working in China's biggest cities. That accounts for aprox. 30% of total rural labor force (China National Bureau of Statistics).

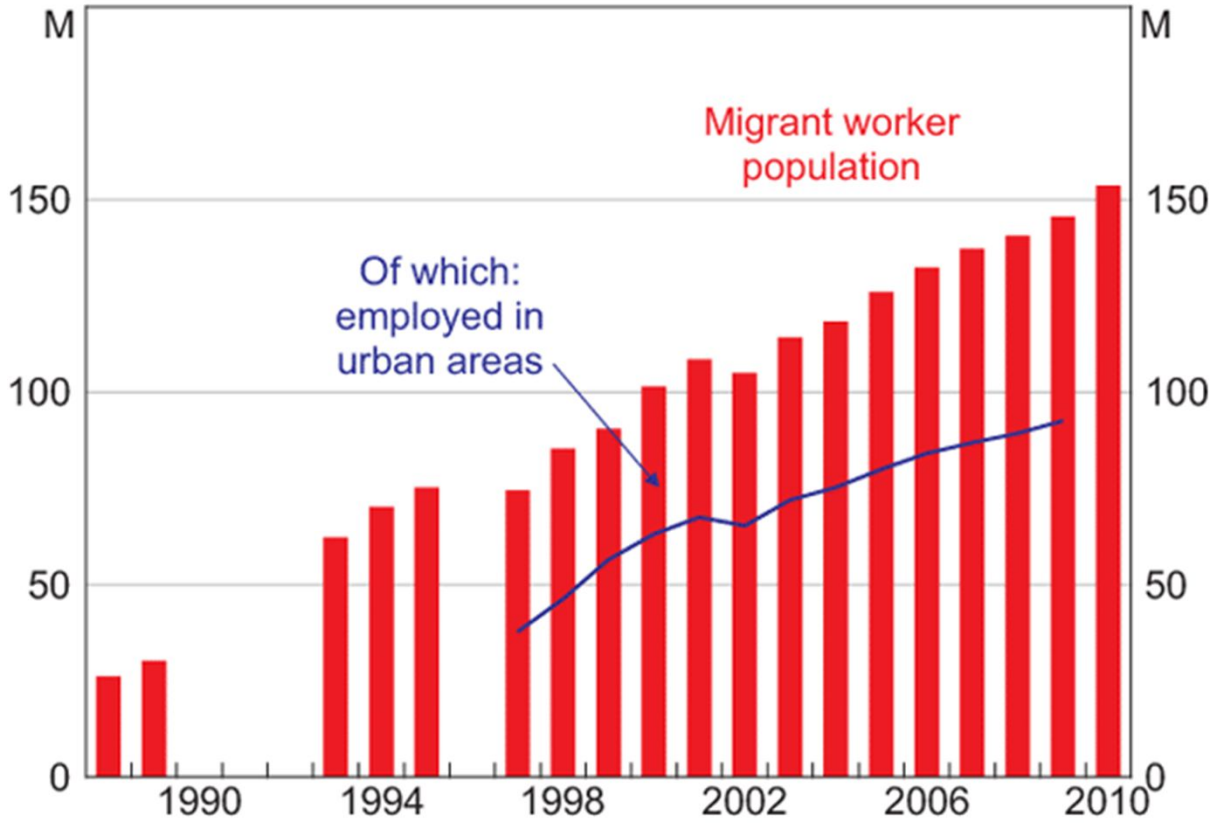
- As a consequence, we observe increasing income (wages) inequality between rural and urban areas.

- The Hukou household registration system imposes restrictions and limits to where to live –which is determined mainly by birth-. Hukou card is an internal passport that sets access to education and health services. It started in 1956-58, relaxed during the 60s and enforced again since 1978.



Since China entered the WTO in 2002 the rapid industrial development to satisfy the global demand for exports increased the necessity for workers. We observe an exponential increase in urban population. Part of that increase in labor demand was fulfilled with migrants from rural areas

China – Number of Rural Migrant Workers*



* The red colums refer to all rural migrants without local 'hukou' where they are living; the blue line by Herd, Koen and Reuterswald (2010) calculates the level of rural–urban migrant employment, RBA estimate for 2009 number following their methodology

Sources: Chan (forthcoming) for 1988, 1989, 1993–1995 data; MOLSS (2002) and RBA for 1997–1999 data; Herd *et al* (2010) for all 2000–2008 data; NBS (2010) and RBA for 2009 data; MOLSS (2011) for 2010 data

Table 3 Interprovincial Migration in China, 1990-2005 (in 1000s)

Rank	1990-1995	Migration			NET %	Rank	1995-2000	Migration			NET%	Rank	2000-2005	Migration			NET%
		In	Out	Net				In	Out	Net				In	Out	Net	
1	Guangdong	1,886	87	1,799	19.6	1	Guangdong	11,501	438	11,063	34.3	1	Guangdong	11,996	1,715	10,281	27.0
2	Shanghai	666	56	610	6.6	2	Shanghai	2,168	163	2,005	6.2	2	Zhejiang	5,062	1,041	4,021	10.6
3	Beijing	658	53	606	6.6	3	Zhejiang	2,715	970	1,745	5.4	3	Shanghai	3,025	375	2,650	7.0
4	Xinjiang	498	61	437	4.8	4	Beijing	1,890	174	1,715	5.3	4	Jiangsu	3,290	1,328	1,963	5.2
5	Jiangsu	748	430	319	3.5	5	Xinjiang	1,142	217	925	2.9	5	Beijing	2,246	330	1,916	5.0
6	Liaoning	371	122	248	2.7	6	Fujian	1,346	625	722	2.2	6	Fujian	1,934	802	1,132	3.0
7	Tianjin	206	35	171	1.9	7	Jiangsu	1,908	1,241	667	2.1	7	Tianjin	908	107	802	2.1
8	Nei Mongol	324	165	159	1.7	8	Tianjin	492	104	388	1.2	8	Xinjiang	577	182	395	1.0
9	Yunnan	231	127	104	1.1	9	Liaoning	755	380	375	1.2	9	Liaoning	674	416	257	0.7
10	Fujian	297	194	104	1.1	10	Yunnan	733	398	335	1.0	10	Hainan	191	158	33	0.1
11	Shanxi	165	79	87	0.9	11	Hainan	218	130	88	0.3	11	Ningxia	74	68	7	0.0
12	Hainan	91	54	38	0.4	12	Shanxi	383	334	49	0.2	12	Tibet	26	31	-6	0.0
13	Tibet	34	6	27	0.3	13	Ningxia	129	87	41	0.1	13	Qinghai	74	85	-12	0.0
14	Qinghai	64	47	17	0.2	14	Tibet	71	35	35	0.1	14	Nei Mongol	394	417	-23	-0.1
15	Ningxia	44	40	4	0.0	15	Shandong	904	878	26	0.1	15	Yunnan	469	601	-132	-0.3
16	Shandong	347	357	-9	-0.1	16	Qinghai	77	123	-46	-0.1	16	Shanxi	210	345	-135	-0.4
17	Shanxi	147	172	-25	-0.3	17	Hebei	770	872	-102	-0.3	17	Shandong	924	1,123	-199	-0.5
18	Hubei	246	291	-44	-0.5	18	Nei Mongol	325	441	-116	-0.4	18	Jilin	218	532	-315	-0.8
19	Hebei	354	427	-74	-0.8	19	Jilin	254	529	-275	-0.9	19	Gansu	118	494	-376	-1.0
20	Gansu	102	178	-77	-0.8	20	Shanxi	423	719	-296	-0.9	20	Hebei	612	990	-378	-1.0
21	Guizhou	181	288	-107	-1.2	21	Gansu	204	561	-357	-1.1	21	Shanxi	255	827	-572	-1.5
22	Jilin	126	260	-134	-1.5	22	Heilongjiang	301	940	-639	-2.0	22	Heilongjiang	195	1,020	-825	-2.2
23	Heilongjiang	307	495	-188	-2.0	23	Chongqing	448	1,103	-655	-2.0	23	Chongqing	427	1,437	-1,010	-2.7
24	Zhejiang	345	618	-273	-3.0	24	Guizhou	261	1,232	-970	-3.0	24	Guizhou	531	1,766	-1,235	-3.2
25	Jiangxi	96	443	-347	-3.8	25	Guangxi	287	1,838	-1,551	-4.8	25	Guangxi	397	2,123	-1,726	-4.5
26	Guangxi	82	532	-450	-4.9	26	Hubei	606	2,210	-1,604	-5.0	26	Jiangxi	499	2,476	-1,977	-5.2
27	Henan	166	680	-514	-5.6	27	Henan	470	2,309	-1,839	-5.7	27	Hubei	501	2,715	-2,214	-5.8
28	Hunan	134	666	-532	-5.8	28	Jiangxi	236	2,681	-2,445	-7.6	28	Hunan	501	3,328	-2,827	-7.4
29	Anhui	101	762	-662	-7.2	29	Anhui	313	2,893	-2,579	-8.0	29	Henan	280	3,433	-3,154	-8.3
30	Sichuan*	171	1,465	-1,294	-14.1	30	Hunan	363	3,261	-2,899	-9.0	30	Anhui	671	3,836	-3,165	-8.3
						31	Sichuan	590	4,396	-3,806	-11.8	31	Sichuan	763	3,941	-3,178	-8.4
Total		9,189	9,189	0				32,282	32,282	0				38,042	38,042	0	
IPM as % of all inter-county migration		27.6						44.2						NA			
Top 5 coastal provinces		4,329	748	3,582	39.1			19,412	1,962	17,454	54.1			25,619	4,789	20,830	54.8

Note: * including Chongqing. Sources: NPSSO (1997), SC and NBS (2002, 2007)

Source: Wing Chan 2008

Introduction and Motivation:

- As those migrants do NOT have an urban Hukou, they do not have access to health services unless totally private. Those private services are expensive and prevent most migrants to use it.

- The Hukou registration system is, *de facto*, a migration control system prompt to create inequality, social divergence and health outbreaks.

- Acquiring an urban-Hukou is highly difficult. It can be obtained only through education (university or graduate studies), by working for the Government or in high-ranked managerial position either for private company or for Stated-owned firms.

- Massive migration without access to health services –unless privately provided or via informal networks- have the potential to create large negative externalities on communities, through decline in workers productivity and overall's decline in population health & wealth.

Objective:

- Our study focuses on the interconnection between internal migration from rural to urban areas and health outcomes in China.
- We assess if there are observable differences in health outcomes migrant workers an native-born urban residents.
- We use OLS regressions -in following research we will use a probit model- applied for two waves of data surveys (2008 and 2009) from IZA with individual respondents to determine if restrictions on healthcare access are linked to poorer health outcomes.
- We control for income, education, gender and other socio-economic variables.

Previous Literature:

- Studies have associated migration in developing economies with poor mental and physical health (Li et al. 2006, Sun et al. 2008, Zhan et al. 2012). And even engaging in more risky activities (links between HIV and migration in China, Hong (2006)

- There are not many studies that have addressed this link between health outcomes and Hukou system. The most recent is by Sun (2015), who uses self-reported outcomes (do I feel well or not, have I been sick?).

- Other studies suggest that migrants are reasonably healthy at the point of migration but more likely to experience adverse effects than non-migrants. As they get injured and can't have access to health some return home while others remain in urban areas. Therefore, increases risk of workplace accidents, other contagious diseases (Chen, 2011; Lu and Quin, 2014; Wallace and Kulu, 2014).

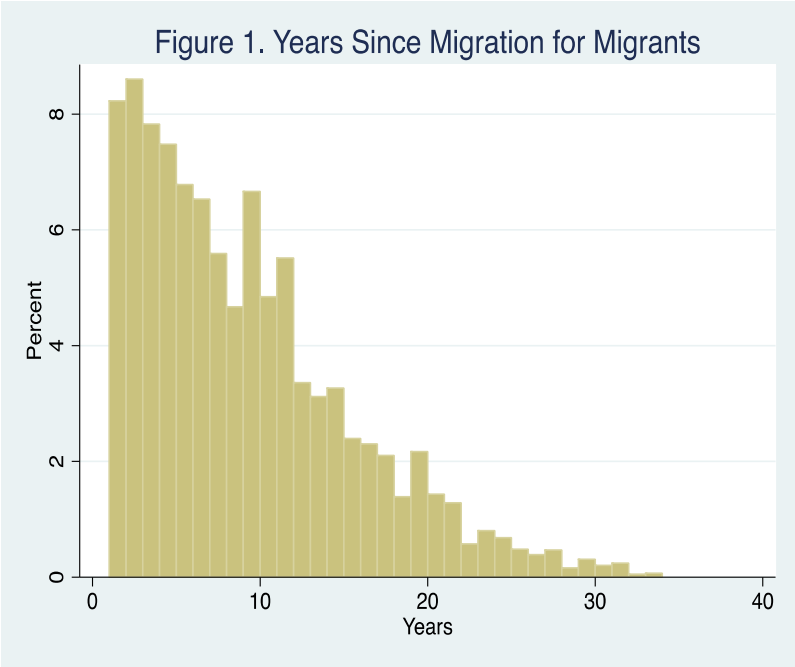
Descriptive Statistics and Model:

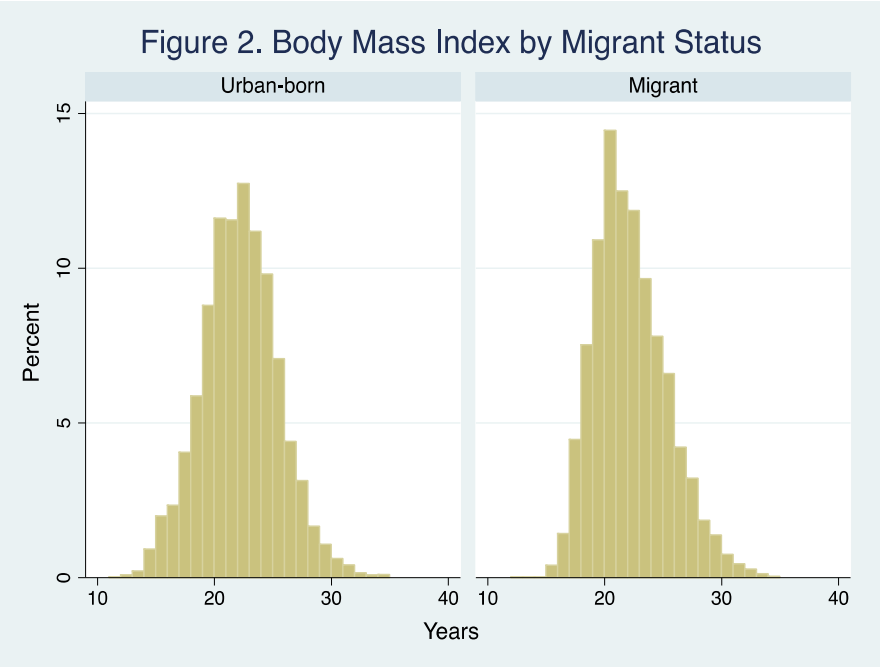
- We use survey data reported in the *Longitudinal Survey on Rural Urban Migration in China* from the Institute for the Study of Labor (IZA). The survey collects data for 71,074 individuals (29,556 urban persons; 32,171 rural persons; and 9,347 migrants. Aprox 29% of rural persons) in two waves for the years 2008 and 2009.

- The survey contains data on socioeconomic indicators, such as education, income, ethnicity, and hukou registration.

- IZA survey also includes data on many health indicators and outcomes. These include weight (kilograms), height (centimeters), dominant handedness, blood pressure, and grip strength.

Descriptive Statistics and Model:





Descriptive Statistics and Model:

Figure 5. Urban Health Insurance Status

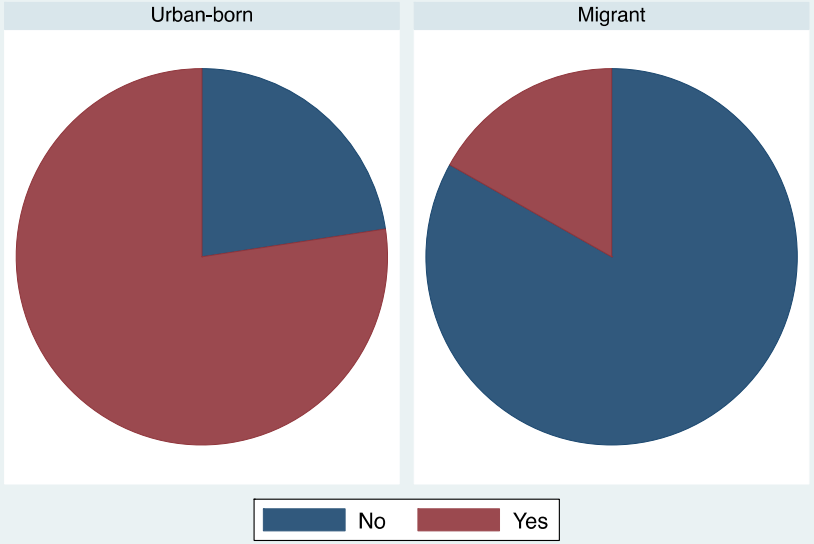
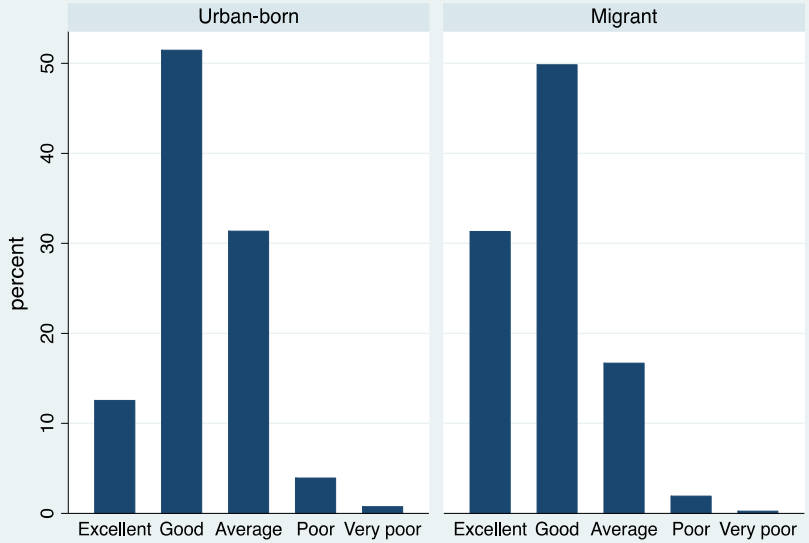


Figure 3. Self-reported Health Status by Migrant Status



Descriptive Statistics and Model:

(1) Systolic Pressure $=\beta_1$age + $\beta_2$insurancedummy + $\beta_3$marrydummy +β_4 smokerdummy +β_5 yearsofeducation+β_6 gender + β_7 yrssincemigrating +ε

(2) DiastolicPressure $= \beta_1$age + $\beta_2$insurancedummy + $\beta_3$marrydummy +β_4 smokerdummy +β_5 yearsofeducation+β_6 gender + β_7 yrssincemigrating +ε

(3) GripStrength $= \beta_1$age + $\beta_2$insurancedummy + $\beta_3$marrydummy +β_4 smokerdummy +β_5 yearsofeducation+β_6 gender + β_7 yrssincemigrating +ε

(4) HealthRating $= \beta_1$age + $\beta_2$insurancedummy + $\beta_3$marrydummy +β_4 smokerdummy +β_5 yearsofeducation+β_6 gender + β_7 yrssincemigrating +ε

- Grip strength, is good proxy of muscular strength, and 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.

Descriptive Statistics and Model:

- We use Grip strength and blood pressure as proxies for health outcomes. 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 test if being a migrant with only rural Hukou in an urban area has any predictive value for health outcomes, while controlling for age, education and other socio-economic variables.

Regression Results, R-squared is 0.69 and 0.75

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

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 Results, R-squared is 0.73 and 0.74

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

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

Concluding Remarks:

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

- Migrants with urban Hukou insurance have a higher likelihood of presenting better health outcomes. Data from two survey waves in consecutive years confirm for different individuals confirm that health outcomes of migrants with rural Hukou cards influence health outcomes negatively.

- Necessity to eliminate barriers to health access which are now linked to geography. China is as a trade-oriented economy that will still 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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