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Residential Status and Satisfaction with China's Public Health Services

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RESIDENTIAL STATUS AND
SATISFACTION WITH CHINA'S PUBLIC HEALTH SERVICES

A Thesis
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the Graduate School of
Clemson University

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Ye Jiao
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ABSTRACT

This thesis examined the joint effect of hukou (household registration) status and residence location on people's satisfaction with public health services in China. It also examines the role of education level, media use (official and unofficial), perception of equality, self–rated social status, self–rated health status, public health insurance participation in the relationship between residential status and satisfaction with public health services. This thesis found that hukou status and residence location have significantly joint effect on satisfaction. Satisfaction score is the highest among those with rural residence and rural hukou, followed by urban individuals with rural hukou, with urban individuals with urban hukou having the lowest satisfaction score. Official media and self-rated social status significantly suppress the effect of residential status on satisfaction while unofficial media, perception of equality and self-rated health status significantly mediate the effect. Findings from this study provide a better understanding of inequalities in health services across hukou status and residence location and provide insights on how to utilize information on public satisfaction appropriately in formulating and evaluating health policies. The expectations–experience competing effect model used in this thesis is not fully supported by the data. More research is needed to examine whether hukou status and residence location influence expectations of health service. In addition, factors other than

higher expectations might explain urban residents' lower levels of satisfaction with public

health services needs to be identified.

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CHAPTER ONE

INTRODUCTION

China has achieved great accomplishments in improving public health services in

recent decades. The average life expectancy has increased from 67 years in 1990 to 76.3

years in 2015, the maternal mortality rate declined from 80.0 per 100 000 live births in

1990 to 23.2 per 100 000 live births in 2013 (World Health Organization, 2016), and

government financed health insurance has covered 95% of the whole population in 2011

(Liang & Langenbrunner, 2013). However, health inequalities across regions and hukou

status reflect problems of public health services. For example, although life expectancy and

other important health indicators in Beijing, Shanghai, Tianjin and other developed regions

surpass high–income countries like Korea and America, in less developed regions such as

Guangxi, Guizhou, Qinghai, Tibet and Xinjiang, health indicators are more similar to those

in low–income countries. Women and children in rural and remote areas are influenced by

limited access to good health care (World Health Organization, 2016). Previous research

also found that in urban China, there are 3.9 physicians per 1000 people, compared to 1.4

physicians per 1000 people in rural areas (Liu, Rizzo & Fang, 2015). Children in rural areas

cannot obtain health services in urban areas through NCMS benefits (Lam & Johnston,

2012; Qiu, Yang, Zhang & Ma, 2011). And statistics indicate that the under 5 child

mortality rate in urban areas was 5.9 % in 2012, but was almost three times higher in rural areas (16.2 %) (National Health Commission, 2016).

Limited studies have focused on satisfaction with health services in China. Those which pay attention to this topic focus on patient satisfaction instead of public satisfaction (Liu & Wang, 2007; Tang, 2011; Yan, Wan & Li, 2011). Although these two concepts share similar characteristics, it is inappropriate to treat them as equivalent. This paper reviews relevant concepts and theories developed for patient satisfaction and discusses their implications for understanding satisfaction with public health services. Furthermore, no previous research has specifically examined the joint effect of hukou status and residence location on satisfaction with health services. Yet previous research suggests both hukou status and residential location could play important roles and might work interactively in affecting people's access to health services (Liu, Rizzo & Fang, 2015). Hence, this study aims to fill these gaps by examining the joint effect of hukou status and residence location on people's satisfaction with health services in China. It also examines the role of education level, media use, perception of equality, self–rated social status, self–rated health status, public health insurance participation in the relationship between residential status and satisfaction with public health services. Findings from this study will provide a better understanding of health services inequalities and to provide insights on how to utilize information on public satisfaction appropriately in formulating and

evaluating health policies.

CHAPTER TWO

LITERATURE REVIEW

Health Services Satisfaction

Numerous studies have been done on health services satisfaction. In their systematic review of health services satisfaction, Crow et al. (2002) bring up from the definition of satisfaction two points: first, satisfaction with a service does not indicate superior service rather that an adequate standard is achieved; and, second, satisfaction should be measured only against individuals' needs, expectations or desires. The latter point implies that satisfaction is a relative and subjective concept that something is good enough for one person does not necessarily make another person satisfied.

Based upon these two points, Crow et al. (2002) summarize several problems when applying and interpreting health services satisfaction. First, since satisfaction is a personal and subjective evaluation, individuals' backgrounds and circumstances may greatly influence their standards and judgments. Second, individuals' knowledge and expectations could shape their satisfaction with health services. In their review, they give an example that if an individual has little knowledge of the services or if his/her expectations of the services are unclear, he/she may record high satisfaction even if being provided with poor services.

Patient Satisfaction

Taking these problems into consideration, Crow et al (2002) identified several approaches to apply patient health services satisfaction. First, patient satisfaction is a good predictor of patients' health outcomes. Previous research suggests that patients with higher satisfaction with health services tend to be more cooperative, compliant, have a faster recovery and a better health outcome, which helps reduce health resources consumption and increase health services efficacy (Strasen, 1988). Second, patient satisfaction can be used as an indicator for quality assurance. In a highly competitive market–driven health care system, managers may be concerned about user perceptions because of the need to retain existing customers and attract new ones in order to maintain or increase their market share (Crow et al., 2002). Hence, patient satisfaction under this circumstance does not necessarily indicate the objective quality of the health services; it may indicate how well health services satisfy patients' standards or expectations. This is extremely important when patients have a choice between multiple health services providers. Providers that offer unsatisfying health services are very likely to lose market share and be eliminated from the competition. Third, faced with limited health resources and rising expectations, patient satisfaction is also valuable for providers to conduct cost–effectiveness assessment for new technologies and treatments.

Public Health Services Satisfaction

Public health services satisfaction is closely related to patient satisfaction. They are both subjective measures and both assess perceptions toward health services. Presumably, they have similar problems and interpretations. For example, higher public health services satisfaction should not be interpreted as better objective quality (similar problem). Instead, it might indicate that health services achieve most people's subjective standards (similar explanation).

However, at the same time, there are some important differences that need to be discussed. First, the focus is different. Although there has been no clear definition of public health services satisfaction, it certainly is a broader concept that includes public perceptions and relates to the whole health services system. By contrast, patient satisfaction is mainly focused on certain hospital contexts and is about patients' feelings. Second, since public health services satisfaction is focused on public perceptions, the appropriate ways to use and measure this concept are different from that of patient satisfaction. As argued above, numerous studies have been done on patient satisfaction (Liu & Wang, 2007; Tang, 2011; Yan, Wan & Li, 2011) mainly because it relates to patient health outcomes, it is a quality assurance useful for market competition and it is an important part of cost–effectiveness analysis. However, when it comes to public health services satisfaction, it is not appropriate to directly use it for market competition because it collects information about the whole

health services system. Nor is it appropriate to use this concept to predict patients' health outcomes or to conduct cost–effectiveness analysis for certain technologies or treatments because it does not directly relate to patients.

Previous research has summarized several ways to apply public health services satisfaction. First, changes in public health services satisfaction can be used to indicate how the public perceive health reform (Blendon, Kim & Benson, 2001; Mossialos, 1997). Second, since public health services satisfaction include non-users' perceptions, it might be a good way to understand the barriers for non-users to access health care (Balabanova et al., 2012; Kohl & Wendt, 2004). Third, public health services satisfaction might reflect whether people trust health services system and how people utilize health service (Footman et al., 2013; Hudak & Wright, 2000).

Interpretations of Health Services Satisfaction

As for interpretations of health services satisfaction, several approaches are reviewed in previous study (Crow et al., 2002). This paper briefly summarizes them below and discuss their implications for public satisfaction research.

The first approach is the expectations approach. The expectations approach argues that patient satisfaction is based on the perceived difference between what patients expected and what they perceive to have been delivered. In the simplest form, if the perceived delivered services are worse than they expected, it could lead to dissatisfaction

(Cottle, 1990; Ross et al., 1987). To put this another way, satisfaction arises when positive experience confirms positive expectations or disconfirms negative expectations. Dissatisfaction arises when negative experience confirms negative expectations or disconfirms positive expectations. However, this explanation does not capture the size of the difference between expectations and perceived experience. This problem is solved by presenting expectations approach as expectations fulfilment that the larger the perceived discrepancy between expectations and experience, the greater the satisfaction or dissatisfaction. However, this still is not a perfect way to model expectations and perceived experience. This expectations fulfilment model neglects the fact that relationship between expectations and perceived experience is dynamic rather than static. Individuals' expectations might change because of perceived experience, and these new expectations might change the perceived experience in return. To model the process requires detailed data and complex methods, which is not the focus of this research.

This expectations approach shares many similarities to Fox and Storms' model (1981), which indicates that individuals' satisfaction is affected by their orientations toward health care (what they want and expect from the health care provider) and the conditions of health care providers (what is offered). They argue if the orientations and conditions are congruent then people are satisfied and if not, they are dissatisfied.

The second approach is an economic approach. Economists label satisfaction of

certain services as a type of utility. Based on economic utility theory, individuals with different preferences will select health care providers with different attribute combinations (Laidler & Estrin, 1996; Nicholson, 1995). Ideally, users or consumers will purchase the health services with utility equal or greater than the price they must pay. Individuals will be satisfied if the utility of the purchased services matches the price they pay and they will be more satisfied if there is user or consumer surplus (utility exceeds the price). Furthermore, this economic approach argues that expectations are based on information that users or consumers collect from multiple sources (Crow et al., 2002). Specifically, interest and experience in health issues could raise individuals' knowledge of health services and have an impact on their expectations. By contrast, inadequate knowledge or information may cause them to form low or no fixed expectations and report high satisfaction with the same standard of care.

Compared to expectations approach, economic approach provides a more detailed framework of how expectations can be constructed. Based on this approach, it is reasonable to infer that media use, education and other factors that contribute to one's information or knowledge of health services might affect individuals' satisfaction level (Marini et al., 2014).

These are the major approaches used to interpret patient satisfaction. As argued before, since patient satisfaction and public health services satisfaction could share similar

interpretations, it is reasonable to apply them to the understanding of the public satisfaction research.

<div align="center">Rural–Urban Difference and Health Services Satisfaction</div>

With relevant concepts and theories introduced above, this section discusses their implications for this research. Prior to introducing the hypotheses, it is helpful to take a glimpse of the history of rural–urban difference in contemporary China.

Rural–urban difference in contemporary China can be considered from two aspects: hukou difference and geographic difference (residence difference). Hukou difference is a result of the household registration system (also known as hukou policy) formally issued by Chinese government in 1958 to differentiate residents in rural areas and urban areas. Two types of hukou were created: rural hukou (also called agricultural hukou) and urban hukou (also called nonagricultural hukou) (Liu, Rizzo & Fang, 2015). In pre–reform era of China (before 1978), this household registration system greatly restricted internal migration from rural areas to urban areas, which led to geographic segregation that almost all rural–hukou residents lived in rural areas. In this era, rural hukou residents were essentially rural residents. During the pre–reform era, rural residents had relatively inferior access to public goods such as education, health care and retirement pensions (Whyte & Parish, 1985).

However, the economic reform since 1978 greatly changed this situation. Abolition

of the commune system and introduction of the household responsibility system in agriculture (a migration push factor), great need for labor in urban areas (a pull factor), and migration policy being relaxed altogether resulted in many millions of rural residents migrating to urban areas. However, despite these rural residents working and living in urban areas, they were not entitled to convert their rural hukou to urban hukou and thus had very limited access to urban public goods. For example, one of the most serious barriers caused by the hukou difference is that rural residents' children lack access to public schools in urban areas (Liu, Rizzo & Fang, 2015). Besides, most of these rural migrants were employed in jobs with minimum payment and low social prestige. Under this circumstance, these rural residents became a "second class" in urban areas (Chan, 1994).

These changes led to the coexistence of three population groups–urban residents with urban hukou (referred to as U–U below), urban residents with rural hukou (referred to as U–R below) and rural residents (referred to as rural below). These three categories reflect two aspects of difference: first, individuals with urban hukou are entitled to better public services than their rural hukou counterparts; and second, individuals with urban residence have access to better public services than their rural residence counterparts. It should be noted that more recently, restrictions on hukou conversion were relaxed and rural residents who work in urban areas could gain urban hukou through certain procedures. As the results, the current urban residents with urban hukou include some rural residents who moved to

urban areas and converted their hukou status to urban hukou.

According to the expectations approach and an economic approach, individuals with a lack of experience and knowledge of health services may have low or unfixed expectations and might tend to report higher satisfaction with health services, compared to individuals with more knowledge. Applying this to rural–urban divide in contemporary China, this study expects that individuals with rural hukou or rural residence have lower or more unfixed expectations than individuals with urban hukou or urban residence (expectations or fixed expectations: rural<U–R<U–U) because individuals with rural hukou or rural residence might have less information or knowledge about public health (information and knowledge: rural<U–R<U–U). Previous research found a large gap in educational attainment and related occupational mobility across hukou status and residence location that rural individuals had the lowest educational attainment, followed by rural migrants, with urban individuals having the highest education attainment (Hao, Hu & Lo, 2014; Wu & Treiman, 2007; Zhou, Moen & Tuma, 1998). Presumably, education is one way to attain knowledge about health services. Based on this assumption, rural individuals and U-R individuals should be more satisfied with public health services than U-U individuals. Another possible way to obtain information or knowledge is through media because a considerable amount of information of health services is disseminated through media nowadays. Given that media such as TV and Internet might be less used among rural

individuals and U-R individuals, they tend to have lower expectations and report higher satisfaction scores. In addition, previous research found that perception of equality has a positive impact on satisfaction with health services (Munro & Duckett, 2016; Zhou, et al., 2011). Failure to acknowledge such inequality when living under worse conditions could be an indication of lack of knowledge or low expectations, and thus I expect perception of equality also play a role in this process.

As for the experience, many studies have confirmed that rural areas provide worse health services than urban areas, which implies rural individuals have worse health services experience (Chen, Yin & Xie, 2014; Fang, Chen & Rizzo, 2009; Lei & Lin, 2009; Li et al., 2018; Liu, Fang & Zhao, 2013; Liu, Rizzo & Fang, 2015; Zheng et al., 2001; Zhu, 2015). Previous research also found that compared to urban individuals, rural migrants (U-R) does not have the same access to regular health services. Lack of insurance, high cost and exacting working schedule prevent them from seeking health care services efficiently in urban areas (Hong et al., 2006). In addition, there are separate health insurance systems for people with different hukou. Urban health insurance offers better health coverage and reimbursement than its rural counterpart. Rural health insurance is a public health insurance program operated at the county level. People with this rural hukou seek health services from specific providers mostly within their home county and health services in urban areas are typically out of network for them (Liu, Rizzo & Fang, 2015). This means although

public health services in urban areas are accessible to U-R and rural individuals, the health services experience might still be worse than that of urban individuals. Hence, I consider that U–U individuals have access to better health services than U–R individuals, with rural individuals having the worst experience of seeking health services (Experience: U–U>U–R>rural). I further consider that the worse experience for U–R and rural individuals is closely related to their social status and health status. On the one hand, U–R individuals have lower social status than U–U individuals in urban areas. Previous research found that rural migrants in urban cities experience discrimination on many occasions (Thelle, 2010). This might happen in health services context and shape their experience. On the other hand, U-R and rural individuals are in worse health conditions due to their working conditions, lifestyle and prior limited access to public health services. Presumably, individuals with better health status tend to have more positive health services experience because they go through less pain and spend less time and money in the recovery process than those in worse health conditions. The existing bad health conditions of U–R and rural individuals might lead to their bad health services experience.

It is then clear that rural–urban difference could affect public health services satisfaction in two different ways. On the one hand, rural and U-R individuals have less knowledge of health services and thus have lower expectations. Hence, they tend to report higher satisfaction scores. On the other hand, rural and U-R individuals do not have the

same access to health services as their urban counterparts. This make them tend to report lower satisfaction scores. In our research, I consider this as an expectations–experience competing effect. If expectations' effect exceeds the effect of experience, then I expect rural individuals to be more satisfied than U–R individuals, with U–U individuals being the least satisfied. If experience's effect exceeds the effect of expectation, then I expect rural individuals to be less satisfied than U–R individuals, with U–U individuals being the most satisfied. Previous research from countries in the former Soviet Union found rural individuals report higher satisfaction than urban individuals (Footman et al., 2013), but no studies have examined urban-rural differences in public health services satisfaction in China. Thus, based on the study on former Soviet Union countries, I expect that rural residents would be the most satisfied while U-U residents are the least satisfied with public health services in China.

Previous research also examined whether common social demographic factors could affect health services satisfaction (Cohen, 1996; Munro & Duckett, 2016; Yan, Wan & Li, 2011). Cohen (1996) found that there is strong and positive association between age and patient satisfaction while effect of sex is not significant. Cohen argued that older patients tend to have lower expectations in terms of health care because they often see themselves as a burden on their families and do not feel deserving of attention. Another explanation is that older people tend to be treated with more consideration and respect than younger

people and the different perceived experience results in higher satisfaction among the elders. One other possible explanation is that older people tend to be more accepting and less likely to report negative judgments (Hall & Dornan, 1988).

Based on the theories and literature reviewed above, this study tests the following three hypotheses:

H1: Rural individuals are the most satisfied with China's public health services, followed by U–R individuals, with U–U individuals being the least satisfied.

H2: Expectations related factors (education level, media exposure) and perception of inequality are associated with lower satisfaction and thus mediate the effect of hukou status and residence location on satisfaction with public health services.

H3: Experience related factors (health status, social status and public health insurance participation) are associated with higher satisfaction and thus suppress the effect of hukou status and residence location on satisfaction with public health services.

CHAPTER THREE

METHODS

<u>Data</u>

Data for this research is from Chinese General Social Survey (CGSS) 2013. The CGSS was started by Renmin University of China and the Hong Kong University of Science and Technology in 2003. The CGSS adopts multi–stage, stratified random sampling design and has a nationally representative sample (except for Hainan province and the Xinjiang Uygur Autonomous Region) of 11,438 respondents (aged from 17 to 97 for CGSS 2013). All data is collected through face–to–face interviews and the CGSS 2013 response rate is 72.17%. This study used CGSS 2013 because it includes a special module about perceptions toward public health services. However, only 5703 respondents were randomly given the questionnaire that included this module. This study was further restricted to the 5231 respondents who have an agriculture or non-agriculture hukou status. After listwise deleting of missing cases on other variables, the final sample size used in this research is 5153. Table 1 shows the number of missing cases on the variables used in this study, based on 5231 respondents who were asked public health services satisfaction question and are in one of the three categories of residential status.

Table 1.   Number of Missing Cases of Variables Used in the Analysis

Variables	Number of Missing Cases
Education Level (1–13)	3
Official Media Exposure	78
Unofficial Media Exposure	78
Perception of Equality	6
Self–rated Social Status (1–10)	16
Self–rated Health Status (1–5)	1
Public Financed Insurance Participation (Yes)	29
Region	0
Male	0
Age (17–97)	0

Measurements

Dependent Variables

Satisfaction with public health services in general. Respondents were asked "In general , how do you rate your satisfaction level with current public health services?" Respondents gave their answer on a 100–point scale from completely unsatisfied–0 to completely satisfied–100.

Independent Variables

Residential Status. The original question asked respondents "What is your current hukou status?" Respondents reported their hukou status in following categories: agriculture, non–agriculture, blue–stamp, resident (used to be agriculture), resident (used to be non–

agriculture), soldiers, no hukou, others. Resident hukou came as a result of the latest hukou reform which started to get away from the discriminatory labeling of rural hukou holders (Wang, 2010). People with rural hukou or urban hukou could convert their hukou to this new category through certain procedures. However, there are very few studies on this new category. CGSS 2013 indicates that there are 253 cases for resident hukou that used to be agriculture and 207 cases for resident hukou that used to be non–agriculture. It is not clear how these cases differ from agriculture and non–agriculture hukou holders. Hence, this category will not be included in the research. Blue–stamp (0 cases), soldiers (4 cases), no hukou (6 cases) and others (2 cases) have very few cases, and I treat them as missing. Based on above, I recode hukou into a new variable with two categories: rural (coded as 3) and urban (coded as 4).

Interviewers also described the residence location type of respondents in following categories: central area of city/county, fringe area of city/county, rural–urban fringe area, township (outside city/county urban area), rural area, others (no cases). I combine the first four categories to create a new category–urban (coded as 1) and retain rural category (coded as 2).

I compute a new variable based on hukou status and residence location. This new variable has four categories: urban residence with urban hukou (U–U), urban residence with rural hukou (U–R), rural residence with urban hukou and rural residence with rural

hukou. Rural residence with urban hukou has very few cases, so I combine the two rural hukou categories to one (Rural) and then I create two dummy variables–urban residence with rural hukou and rural. U–U is used as reference category.

Mediators and Suppressors

Education level. Respondents were asked "Including current education, what is your highest education level?" 13 categories from "no education" to "graduate and above" were given for selection. I label "others" as missing.

Media exposure. The CGSS 2013 asked respondents how often they use different media, including newspaper, journal, broadcasting, television, Internet and customed phone messages. Respondents gave answers on a 5-point scale from never–1 to very frequent–5. I do a factor analysis to see if they can be grouped into fewer and more meaningful categories. The results indicate that journal, newspaper and broadcasting have high loading on one factor (0.827, 0.745, 0.634 respectively, after rotation) while Internet and customed phone messages have high loading on the other (0.808, 0.766 respectively, after rotation). Television does not have high loading on either factor but is positively associated with the first factor and negatively associated with the second factor (0.467, -0.499 respectively, after rotation). Based on the results, I consider the first factor can be defined as official media exposure or more traditional media and the second factor can be defined as unofficial media exposure.

Perception of equality. Respondents were asked "In general, do you think society is equal or unequal?" Respondents gave their answers on a 5-point scale from complete unequal–1 to complete equal–5.

Self–rated social status. Interviewers presented a card of social status ladder and asked respondents to rate their own social status on a 10–point scale from the lowest–1 to the highest–10.

Self–rated health status. Respondents were asked "How do you rate your current health condition?" Answers were given on a 5–point scale from very unhealthy–1 to very healthy–5.

Insurance participation. Respondents were asked whether or not they participate in Urban Employee Basic Medical Insurance (UEBMII), new Urban Residents Basic Medical Insurance (U–RBMI) or publicly financed medical care. I recoded 0 as not participating (reference category) and 1 as participating.

Control Variables

Sex. Respondents' sex was reported by interviewers. The original variable is coded 1 for male and 2 for female. I create a dummy variable for male using female as the reference category.

Age. Original question asked respondents "What is your birth date?" I use 2013 to subtract the reported birth year to get respondents' age.

Region. Interviewers recorded the location where interviews took place. I recode this variable into an aggregated regional variable. Specifically, based on current economic regions (Li et al., 2018; Yu, De Jong, Storm & Mi, 2013), I combine Inner Mongolia, Guangxi, Sichuan, Chongqing, Yunnan, Tibet, Guizhou, Ningxia, Xinjiang, Gansu, Shanxi and Qinghai to create West Region, combine Anhui, Shanxi, Jiangxi, Henan, Hubei and Hunan to create Central Region, combine Shanghai, Beijing, Tianjin, Shandong, Guangdong, Jiangsu, Hebei, Zhejiang, Hainan and Fujian to create East Region, and combine Jilin, Liaoning and Heilongjiang to create Northeast Region. Then I create four dummy variables West, Central, East and Northeast. West is the reference category.

Statistical Analysis

First, I report descriptive statistics of all variables used for the whole sample and then stratified by residential status. Then I run multivariate analysis for eight models using Ordinal Least Squares Regression. I estimate eight models. I regress satisfaction with public health services on residential status in model 1 to examine the effect of residential status on satisfaction with health services. Control variables sex, age and region dummies are added in model 2 to detect spuriousness. Model 3, model 4, model 5 and model 6 add expectations related variables, including education level, official and unofficial media use, and perception of equality to examine whether they mediate the effect of residential status (H2). Model 7, model 8 and model 9 add experience related variables, including social

status, health status and public financed health insurance participation to examine whether

they suppress the effect of residential status (H3). Finally, I do a Sober test (Sobel, 1982)

to examine whether mediation and suppression are significant.

CHAPTER FOUR

RESULTS

<u>Descriptive Statistics and Bivariate Analysis</u>

Table 2 shows the descriptive statistics and bivariate analysis results of variables used in this study. The results show that the average score for satisfaction with public health services is 66.19. Rural individuals have the highest score in terms of satisfaction (67.60), followed by U–R individuals (65.87), with U–U individuals being the least satisfied (64.72). The ANOVA–test results indicates the difference is significant at <.000 level.

As for education, U–U individuals have the highest education level (6.67), followed by U–R individuals (4.37), with rural individuals having lowest education level (3.37). The difference is significant at <.000 level.

Both official and unofficial media exposure scores are the highest among U–U individuals (0.51, 0.27 respectively), followed by U–R individuals (-0.12, 0.13), with rural individuals having the lowest media exposure score (-0.41, -0.31). The difference of media exposure is significant at <.000 level.

As for perception of equality, Rural individuals have the highest score (3.19), followed by U–U individuals (2.89), with U–R individuals having the lowest score (2.86). The difference is significant at <.000 level.

The pattern for self–rated social status is opposite to that of satisfaction. U–U individuals have the highest social status score (4.69), followed by U–R individuals (4.23), with the rural individuals having lowest social status score (4.05). The results are also significant at <.000 level.

As for self–rated health status, U–R individuals have the highest score (3.90), followed by U–U individuals (3.82) and rural individuals are the least healthy (3.54). This pattern is opposite to that of public health insurance participation. Public health insurance participation rate is the highest among rural individuals (94.0%) and is the lowest among U–R individuals (84.8%). Both self–rated health status and public health insurance participation are significantly different across three groups (p<.001).

Table 2. Means, Percentages and Standard Deviations for Variables Used in the Analysis, Also Stratified by Residential Status

	M N=5153	U–U N=1941	U–R N=1102	Rural N=2110	ANOVA/ Chi-Square Sig.
Satisfaction with Public Health Services (0–100)	66.19 (15.41)	64.72 (15.09)	65.87 (15.70)	67.60 (15.42)	.000
Education level (1–13)	4.83 (3.02)	6.67 (3.32)	4.37 (2.45)	3.37 (1.89)	.000
Official Media Exposure	0 (1)	0.51 (1.04)	-0.12 (0.89)	-0.41 (0.79)	.000
Unofficial Media Exposure	0 (1)	0.27 (1.11)	0.13 (1.00)	-0.31 (0.79)	.000
Perception of Equality	3.01 (1.03)	2.89 (1.02)	2.86 (1.00)	3.19 (1.02)	.000
Self–rated social status (1–10)	4.33 (1.66)	4.69 (1.62)	4.23 (1.62)	4.05 (1.66)	.000
Self–rated health status (1 –5)	3.72 (1.08)	3.82 (0.97)	3.90 (1.05)	3.54 (1.16)	.000
Public financed insurance participation (Yes)	90.2%	89.1%	84.8%	94.0%	.000
Region (West)	24.4%	12.3%	24.9%	35.3%	.000
Region (Central)	25.3%	17.2%	27.3%	31.7%	.000
Region (East)	36.5%	55.6%	36.9%	18.7%	.000
Region (Northeast)	13.8%	15.0%	10.9%	14.3%	.005
Male (Male)	50.5%	50.6%	47.9%	51.6%	.166
Age (17–97)	48.53 (16.34)	48.75 (16.76)	44.16 (15.79)	50.60 (15.80)	.000

Regression Analysis

Table 3 shows the results of regression analysis. The results from Model 1 indicate that residential status has a significant effect on individuals' satisfaction with public health services. U–R individuals are on average 1.152 points more satisfied (p<.05) and rural individuals are on average 2.971 points more satisfied (p<.001) than U–U individuals.

Control variables sex and age are added in model 2. Sex does not have a significant

effect on satisfaction whereas age has a highly significant (p<.001) impact on satisfaction that with ten year increase in age, individuals' satisfaction score would on average increase by .63 point. Two regional variables have significant effect on satisfaction that individuals in central region are on average 1.648 points less satisfied than individuals in west region (p<.01) and individuals in northeast region are even less satisfied (p<.001). Adding sex, age and region dummies in model 2 changes the difference between U–R, rural and U–U. After controlling for sex and age, the difference of satisfaction between U–R and U–U increases from 1.152 in model 1 to 1.604 in model 2 and the difference between rural and U–U increases from 2.930 in model 1 to 3.382 in model 2.

Education level is added in model 3. Education itself does not have a significant impact on satisfaction in general, although adding education in model 3 does cause the effect of hukou and residence location on satisfaction to decrease. After controlling for education, the difference of satisfaction between U–R and U–U decreases from 1.604 in model 2 to 1.317 in model 3 and the difference between rural and U–U decreases from 3.382 in model 2 to 3.054 in model 3. Sober test results indicate that the mediation effect is not significant.

Official media and unofficial media exposure are added in model 4 and 5. Official media exposure has a significantly (p<.001) positive impact on satisfaction. One point increase in official media exposure score would on average increase satisfaction score

by .853 point. Controlling for Official media exposure increases the difference between U–R and U–U (1.317 in model 3 to 1.604 in model 4) as well as the difference between rural and U–U (3.054 in model 3 to 3.529 in model 4). By contrast, unofficial media exposure has a significantly negative effect on satisfaction that one point increase in unofficial media exposure score would on average cause satisfaction score to decrease by .682 point. After controlling for unofficial media exposure, the difference of satisfaction score between U–R, Rural and U–U decreases. Sober test results indicate that official media significantly suppresses the effect of residential status on satisfaction (p<.001). Unofficial media significantly mediates the effect of being a rural individual (versus being U–U) (p<.05).

Perception of equality is added in model 6. It has a significantly positive impact on satisfaction (p<.001) that one point increase in this score would on average increase satisfaction score by 2.463 points. Adding perception of equality causes the difference between rural and U–U to decrease from 3.333 in model 5 to 2.653 in model 6. Sober test results indicate that perception of equality significantly mediates the effect of residential status on satisfaction (p<.001).

Self–rated social status is added in model 7. Self–rated social status has a highly significant effect (p<.001) on satisfaction that one point increase in social status score would on average increase satisfaction score by .541 point. In addition, controlling for social status increases the difference of satisfaction between U–R, rural and U–U. The

difference of satisfaction between U–R and U–U increases from 1.550 in model 6 to 1.611 in model 7 and the difference between rural and U–U increases from 2.653 in model 6 to 3.728 in model 7. Sober test results also indicate that social status marginally significantly suppresses the effect of being a rural individual (p=.052).

Self–rated health status is added in model 8. Self–rated health status itself has a significantly (p<.001) positive impact on satisfaction with health services. One point increase in self–rated health status score would on average increase the satisfaction score by 1.192 points. Controlling for self-rated health status decreases the difference between U–R and U–U (from 1.61 in model 7 to 1.487 in model 8). Sober test results indicate that health status significantly mediates the effect being a U–R individual (p<.05).

Public health insurance participation is added in model 9 and it has a marginally significantly positive impact on satisfaction. Individuals with public health insurance are on average 1.373 points more satisfied than individuals without the insurance. Adding it in model 9 does not greatly change the effect of residential status and the Sobel test results are not significant.

Table 3. Coefficients for Models of Satisfaction of Public Health Services

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
U–R	1.152*	1.604**	1.317*	1.604*	1.553*	1.550*	1.611*	1.487*	1.501*
Rural	2.971***	3.382***	3.054***	3.529***	3.333***	2.653***	2.728***	2.769***	2.663***
Male		-0.166	-0.089	-0.174	0.756	-0.106	-0.003	-0.167	-0.146
Age		0.063***	0.053**	0.046**	0.031	0.015	0.016	0.045**	0.041*
Central		-1.648**	-1.644**	-0.153*	-1.540*	-1.095	-1.239*	-1.436	-1.457*
East		0.848	0.924	0.777	0.829	1.117+	0.868	0.576	0.616
Northeast		-3.822***	-3.808***	-3.840***	-3.931***	-3.627***	-3.709***	-3.922***	-3.824***
Education Level			-0.113	-0.191+	-0.105	-0.015	-0.133	-0.146	-0.157
Official Media Exposure				0.853***	0.713**	0.668**	0.541*	0.465	0.444+
Unofficial Media Exposure					-0.682*	-0.665*	-0.715*	-0.708*	-0.712*
Perception of Equality						2.463***	2.313***	2.264***	2.262***
Social Status							0.541***	0.447***	0.435***
Health Status								1.192***	1.198***
Health Insurance Participation									1.373+
Constant	64.723***	62.131***	63.263***	63.803***	64.192***	57.567***	55.814***	50.879***	49.897***
R^2	0.007	0.020	0.021	0.023	0.024	0.049	0.052	0.058	0.058

Notes: OLS: ordinary least squares,

+p<0.1, *p<.05,**p<.01, ***p<0.001.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

This research examines the joint effect of hukou status and residence location on people's satisfaction with health services in China and found significant difference among three residential groups. This research also examines the role of expectations related factors and experience related factors and found that official and unofficial media exposure and perception of equality play roles in the mediation process. The results from this research is useful for understanding urban-rural health services satisfaction difference, as well as the determinants of health satisfaction.

Hypothesis 1 is supported by the results that rural individuals are the most satisfied with public health services, followed by U–R individuals, with U–U individuals being the least satisfied. According to the framework brought up before, this might be because expectations' effect exceeds the effect of experience (Cottle, 1990; Ross et al., 1987). To put this another way, rural residence individuals are more satisfied with public health services possibly because rural residence has a significant negative impact on expectations and low expectations' positive effect on satisfaction is greater than the negative effect brought by poorer experience in rural residence.

Hypothesis 2 is not fully supported. Model 3 and Sober test results indicate that education level does not have significant effect on satisfaction, although adding it in the model moderates the effect of residential status. This might be because people with higher education have higher expectations, but they also have better access to resources, and these two effects may have cancelled out each other. Besides, model 4 and Sober test results indicate that official media significantly suppresses the effect of residential status instead of mediating it. I consider this finding reasonable since official media tends to present the positive side of health services, and U–U and U–R individuals are more exposed to official media. By contrast, unofficial media exposure significantly mediates the effect of difference between U–U and rural on satisfaction. I consider that U–U individuals are more exposed to unofficial media and are thusly more exposed to critical or negative information, which cause them to report lower satisfaction. If this were true, then not only does the amount of information have an effect on satisfaction, the nature of the information also has an impact. More studies need to be done to further examine the relation between knowledge/information and satisfaction. Finally, model 6 and Sober test results indicate perception of equality significant mediate the effect of being a rural individual (versus being a U–U individual), which matches our expectation.

Hypothesis 3 is partly supported by model 7 and Sober test results that after controlling for self–rated social status, the difference between U–U and rural significantly

increases, which means social status suppresses the effect of residential status on satisfaction. Based on the experience model, the possible explanation is that U–U individuals on average have higher social status and have better access to health services, which leads to higher satisfaction score. By contrast, adding self-rated health status in model 8 cause the difference between U–R and U–U to decrease, which means it's actually a mediator. Based on our model, it is possible that individuals with better health status tend to have more positive health services experience because they go through less pain and spend less time in the recovery process. However, it is difficult to explain why U–R individuals on average have higher health status score than U–U individuals. More studies could be done to examine this relation. At the same time, model 9 results indicate that public health insurance does not suppress the effect because the participation rate is actually higher in rural areas. This is contradictory to existing studies (Fang, Chen & Rizzo, 2009; Lei & Lin, 2009; Li et al., 2018) and is worth noting. More studies using different datasets are needed to examine this difference. Nonetheless, the finding underscores the importance of health insurance coverage for people's satisfaction with public health services and the high coverage among rural residents improves their satisfaction with public health services. Low health insurance coverage among migrants, however, calls for additional programs to address the needs of this population.

This study has some implications for future health service satisfaction research and

health policy. First, this study confirms that disparities still exist across hukou status and residence location (Chan, 1994; Liu, Rizzo & Fang, 2015). For example, rural and U–R individuals still have lower education level, lower self-rated social status, worse self-rated health status than U–U individuals.

Second, this study suggests that although satisfaction is considered as an important indicator of health services quality, it is a complex concept and should be interpreted very carefully. Subjective measures and objective measures of health services should not be considered as equal, otherwise rural individuals should be more satisfied with health services. To put it further, if policy makers are using satisfaction to assess individuals' experience of health services, expectations-related factors should be controlled. In this way, the satisfaction scores might to some extent reflect the objective quality of health services.

Finally, the opposite effect of official and unofficial media exposure on satisfaction indicates that it is not accurate to argue that more media exposure would increase expectations and thus lower their satisfaction scores. The type of media and whether the information is positive or negative must be considered.

This research also has some limitations. First, since CGSS 2013 does not include variables directly related to expectations and experience, more research is needed to validate the framework in this research. For example, whether health services education have an impact on expectations of health services needs to be examined. Second, not all

experience and expectations related factors are included in this research. Other factors such as ideological beliefs might also has an impact on satisfaction with health services. For example, people with egalitarian welfare values might be less satisfied with health services than others (Missinne, Meuleman & Bracke, 2013). Third, since this is a cross-sectional study, it is limited in establishing casual direction in the relationship between residential status and satisfaction with public health services. Although previous research has proved that hukou status and residence location could cause education inequality, health status disparity, etc. these factors also have an impact on chances of converting hukou status and affect the ability to change residence location. This could be a problem for our study because I use current hukou and residence information (CGSS 2013 does not provide enough information about previous hukou status and residence location). This might undermine our results. Future study using longitudinal data is needed to validate the findings from this study. Finally, CGSS 2013 only asked respondents about their perceptions about China's public health services as a whole. To understand people's perceptions of public health services in local areas is different and requires future research.

This study found that hukou status and residence location have significantly joint effect on satisfaction with public health services in China. Satisfaction scores are the highest among rural residence individuals, followed by U–R individuals, with U–U individuals having the lowest satisfaction score. The expectations–experience competing

effect model is not fully supported by the data. More research is needed to examine whether hukou status and residence location influence expectations of health services, and if so, how they affect the expectations. In addition, what else other than higher expectations might explain urban residents' lower levels of satisfaction with public health services needs to be identified.

APPENDICES

Appendix A

Means and Standard Deviations for Six Media Exposure Variables Used in the Analysis, Also Stratified by Residential Status

	M N=5153	U–U N=1941	U–R N=1102	Rural N=2110	ANOVA Sig.
Journal	1.79 (0.99)	2.22 (1.07)	1.78 (0.93)	1.41 (0.77)	.000
Newspaper	2.06 (1.21)	2.75 (1.28)	1.93 (1.07)	1.50 (0.84)	.000
Broadcasting	1.87 (1.13)	2.26 (1.26)	1.73 (1.00)	1.58 (0.95)	.000
Television	4.10 (0.96)	4.14 (0.94)	4.06 (0.98)	4.09 (0.96)	.055
Internet	2.18 (1.55)	2.78 (1.65)	2.34 (1.56)	1.54 (1.15)	.000
Customed Phone Messages	1.61 (1.08)	1.84 (1.21)	1.70 (1.11)	1.34 (0.86)	.000

Appendix B

Factor Loadings and Explained Variances from Factor Analysis (After Rotation)

	Loadings	
	Factor 1: Official Media Exposure	Factor 2: Unofficial Media Exposure
Journal	**0.827**	0.220
Newspaper	**0.745**	0.400
Broadcasting	**0.634**	0.016
Television	0.467	-0.499
Internet	0.232	**0.808**
Phone Messages	0.191	**0.766**
% of Explained Variances	40.472	20.316

Appendix C

Coefficients for Models of Satisfaction with Public Health Services (With Standard Errors, F Statistics, Degree of Freedom and Sober Test Results)

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
U–R	1.152*	1.604**	1.317*	1.604*	1.553*	1.550*	1.611*	1.487*	1.501*
	(0.579)	(0.588)	(0.637)	(0.642)	(0.642)	(0.633)	(0.633)	(0.631)	(0.631)
Rural	2.971***	3.382***	3.054***	3.529***	3.333***	2.653***	2.728***	2.769***	2.663***
	(0.483)	(0.515)	(0.587)	(0.602)	(0.607)	(0.602)	(0.601)	(0.599)	(0.602)
Male		-0.166	-0.089	-0.174	0.756	-0.106	-0.003	-0.167	-0.146
		(0.426)	(0.431)	(0.431)	(0.431)	(0.425)	(0.425)	(0.425)	(0.425)
Age		0.063***	0.053**	0.046**	0.031	0.015	0.016	0.045**	0.041*
		(0.013)	(0.015)	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Central		-1.648**	-1.644**	-0.153*	-1.540*	-1.095	-1.239*	-1.436	-1.457*
		(0.606)	(0.606)	(0.606)	(0.606)	(0.599)	(0.599)	(0.599)	(0.599)
East		0.848	0.924	0.777	0.829	1.117+	0.868	0.576	0.616
		(0.590)	(0.594)	(0.595)	(0.595)	(0.587)	(0.590)	(0.590)	(0.591)
Northeast		-3.822***	-3.808***	-3.840***	-3.931***	-3.627***	-3.709***	-3.922***	-3.824***
		(0.723)	(0.723)	(0.722)	(0.723)	(0.714)	(0.713)	(0.712)	(0.714)
Education Level			-0.113	-0.191+	-0.105	-0.015	-0.133	-0.146	-0.157
			(0.097)	(0.099)	(0.105)	(0.104)	(0.104)	(0.104)	(0.104)
Official Media				0.853***	0.713**	0.668**	0.541*	0.465	0.444+
				(0.243)	(0.250)	(0.247)	(0.248)	(0.248)	(0.248)
Unofficial Media					-0.682*	-0.665*	-0.715*	-0.708*	-0.712*
					(0.287)	(0.283)	(0.283)	(0.282)	(0.282)
Perception of Equality						2.463***	2.313***	2.264***	2.262***
						(0.207)	(0.210)	(0.210)	(0.210)
Self-rated Social Status							0.541***	0.447***	0.435***
							(0.133)	(0.134)	(0.134)
Self-rated Health Status								1.192***	1.198***
								(0.216)	(0.216)
Health Insurance Participation									1.373+
									(0.716)
Constant	64.723***	62.131***	63.263***	63.803***	64.192***	57.567***	55.814***	50.879***	49.897***
	(0.349)	(0.886)	(1.312)	(1.319)	(1.329)	(1.425)	(1.487)	(1.732)	(1.806)
F	19.204	16.356	14.483	14.271	13.422	25.374	24.705	25.266	23.736
df	2	7	8	9	10	11	12	13	14
Sober Test Sig. (U–R)			0.244	0.001	0.090	0.981	0.115	0.021	0.445
Sober Test Sig. (Rural)			0.244	0.000	0.021	0.000	0.052	0.389	0.066
R^2	0.007	0.020	0.021	0.023	0.024	0.049	0.052	0.058	0.058

Notes: OLS: ordinary least squares, +p<0.1, *p<.05, **p<.01, ***p<0.001.

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