Evolution and Nuances of Urban-Rural Disparity in China's Health Care, 1991-2011

1. INTRODUCTION

Urban-rural disparity in health care has been among top priorities in health policy reform in China over the last two decades. Although systematic urban-rural disparity had long persisted before the economic reform that began at the end of the 1970s (Naughton, 2007), the gap was widening considerably following the reform as both health care financing and service provision in rural areas had been deteriorated (Walder, 1988; Liu, 2004; Cheng, 2007). The scheme of Cooperative Medical System (CMS) which had provided basic health care coverage for vast majority of rural population collapsed due to the dismantling of collective farms (Yip, 2010). At the end of the 1970s, 90% of the rural population had access to reasonable quality care and some protection against catastrophic expenses (Ooi, 2005), but within a decade the proportion had shrunk to 5%. The situation is different in urban areas. While the coverage of health insurance had been decreased since 1980's, the coverage of health insurance for urban residents was still over 60% in 1993[1].

More important, with the deepening of the marketization reform, physical, financial and human resources were drawn to urban public hospitals at the expense of reduced accessibility to health care in rural areas. For example, between 1985 and 2000, the number of beds per 1,000 population in township health centers decreased from 0.86 to 0.80, in comparison to the increase in the number of beds in all service providers from 2.14 to 2.38, and and the number of rural village doctors per 1,000 population decreased from 1.55 to 1.44, while the number of doctors per 1,000 population increased from 1.38 to 1.68 in the same period[2].

Since early 1990s, the government has introduced several policy initiatives to address urban-rural disparity in health care (e.g. Ministry of Health, 1992; CPC Central Committee and State Council, 1997) The new cooperative medical scheme for rural residents was launched a decade later in 2003. During the 6th Plenum of the 16th CPC Congress in 2006, the central leadership also pledged to increase healthcare transfers to rural areas as well as poor regions to finance the provision of health care to ensure equal provision of basic public services (People's daily online 2007[3]). Since 2009, health reform has been implemented to build up networks of primary care clinics in both urban and rural areas to improve the accessibility of health care (Author 2014a; Bhattacharyya, et al. 2011). In particular, the government had planned to invested in upgrading 29,000 township health clinics and 5,000 township health centres in rural areas by 2011[4]. [citations]

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[1] National Survey on Health Service in 1993.
[2] See *China Health Statistical Yearbook*, various years.
[3] downloadable from: http://theory.people.com.cn/GB/49154/49156/5347540.html; accessed Feb 27, 2017.
[4] http://www.sda.gov.cn/WS01/CL0056/41295_3.html, accessed on Feb 20, 2016.

Despite the reform initiatives over the two decades, there has been so far no consensus on their effectiveness in reducing urban-rural disparity. For example, Meng et al., (2012) used data from three rounds of National Health Services Survey (NHSS 2003, 2008 and 2011) to show that mean difference between rural and urban residents on seven indicators, including rates of outpatient care usage, hospital admission and inpatient reimbursement rates, has decreased continually from 2003 to 2008 and then 2011.[5] This trend also seems to be in line with the official claim that 96% of Chinese rural residents had been covered by rural health insurances by the end of 2011. In contrast, Long et.al (2013) observed through official data that whereas share of oop in total health expenditure for urban population declined from 53% in 2005 to 36% in 2011, decrease for rural population was less impressive (53% to 50% for the same period). Other studies also found discrepancy in accessing to health care between urban and rural residents to be significant (Gao et al., 2002; Zhang and Kanpur, 2005; Eriksson et al., 2014). Jian et al., (2010) found that between 1993 and 2003 as per NHSS data despite the overall reduction of urban-rural gap in utilization of inpatient services, rural residents are more than twice as likely to drop out of treatment as urban residents. Using the same dataset, Yip (2010) showed that per capita oop as percentage of income has risen by more percentage points for rural residents than for their urban counterparts between the decade (2.5 versus 1.2), whose income were constantly lower to begin with. Xu & Short (2011), using four waves of the China Health and Nutrition Survey (CHNS) data (to be described in detail later), also found a widening difference between cities and villages in terms of inpatient reimbursement rates, suggesting that the urban insured continue to have an advantage over the rural insured

A major source of disagreement stems from the fact that many studies employ data which were collected in different contexts and with different questionnaire design, sampling methodologies as well as measurement of key indicators. In addition, many studies have been based on analysis of cross-sectional data collected from a particular point in time, or on comparison of two or three rounds of data gathered from a relatively short time period. Last but not least, with limitations on more detailed socioeconomic data, few researches so far have gone beyond the broad categorization of urban versus rural and systematically inquired into its nuances from the perspective of regions, workplace, employment status or occupation.

This paper uses data from the China Health and Nutrition Survey (CHNS) 1991-2011 to systematically examine the trend of urban-rural disparity in health care with multiple and nuanced perspectives of region, employment status, occupation, work unit,

[5] For example, Table 5 in that paper reports that rural-urban ratio on physical access to a facility has risen from 0.84 in 2003 to 0.91 in 2011. Similarly, inpatient reimbursement ration is increased from 0.17 in 2003 to 0.80 in 2011.

and income level., The CHNS dataset provides a series of rich, consistent and compatible variables on various urban and rural identifications as well as health outcomes. Spanning nine waves over two decades, it can give us a consistent and comprehensive long-term picture that is hardly available from analysing datasets that only covers a short period. As the health sector in China has undergone substantial changes since the 1990s, the long-term trends may be quite different from the snapshots captured by short-term studies. The CHNS data would provide a meaningful lens through which we can revisit the various and highly debated short-term trends and see which aspects of urban-rural disparity have got reinforced, which got mitigated, and which got reversed.

It is therefore considered suitable for the purpose of answering the key research questions: two decades into the reform, has urban-rural disparity in China's health care changed? If so, how and to what extent?

The current study is, to our knowledge, the first to employ micro-level panel data systematically to assess the evolution and nuances of spatial inequalities in China's health care over the two decades 1991-2011. Our results highlighted that while urban-rural disparity in health care has generally been reduced in some aspects, it is also contingent upon determinants such as occupation, region, income, etc. While the waves of reforms appear to have been effective in some aspects, achieving a high level of equalities in health insurance coverage, other measures such as utilization of health services and control of health expenditures suggest that urban-rural gap has persisted or even worsened in some circumstances. Our findings lead to several critical insights into the design of health policy reforms aimed at achieving universal health care.

2. DATA AND METHODOLOGY

2.1 Dataset

The data analyzed here, unless otherwise mentioned, come from the eight waves of CHNS beginning in 1989 whose results were reported from 1991 to 2011. The dataset is a collaborative project between the Carolina Population Center at the University of North Carolina at Chapel Hill and the National Institute of Nutrition and Food Safety at the Chinese Center for Disease Control and Prevention (Popkin et al., 2009). CHNS uses a multi-stage random clustering process to draw a sample of about 4,400 households in nine provinces.

This dataset is well suited for the research. To begin with, from 1991 to 2011, eight waves of CHNS have been conducted, spanning more than two decades during which key health policy reforms were introduced. While only 14% of total individual

respondents and 7% of households have participated entire nine waves of survey (authors' calculation) who are subjected to ageing, drop-out and other issues, it still **offers a great opportunity to study the changes in inequalities over a long period of time**. Survey questionnaires and sampling methodologies have also remained unchanged throughout that period, providing a high level of **consistency and compatibility** across data collected in different years. CHNS also used the same localities through all its waves of data collection.

While CHNS data have already been used in many other studies,[6] our usage of the data is different in the following sense. First, unlike other studies which focus on a specific type of population (e.g. Liu et al., 2013 on children; Liang et al., 2011 on children and adolescents; Feng et al., 2015 on the elderly etc.), our focus is on the general adult population. We have thus excluded children, students and the elderly (respondents aged 65 years and above) from the original CHNS data sets, because their patterns of health-care financing and utilization- aspects that we focus on in this paper- are quite different from that of adults.[7]

Second, our outcome variables is highly comprehensive that covers most major aspects of universal health coverage specified by the WHO (e.g. WHO, 2010). This gives us a unique opportunity to **look beyond insurance and scrutinize how urban-rural disparity has evolved in other key outcome dimensions**. Focusing on insurance coverage, health care utilization and health expenditure, rather than self-rated outcomes (e.g. Baeten et al., 2013) or chronic diseases, is also more relevant to health reform, as the former may be influenced by aspects such as lifestyle and individual perceptions which is less prone to health policy intervention.

Finally, our independent variables also go beyond traditional investigations on gender, ethnicity or education. With rich information about respondents' other socioeconomic characteristics, the dataset enables us to delve into the less-explored yet significant nuances of urban-rural disparity in China's health care, including employment status, workplace, occupation and income.

2.2 Subcategories of Urban and Rural Respondents

[6] The latest example of which is Miao & Wu (2016) on urbanization and health disparity in China.

[7] Whether students enroll in an insurance package is often decided by schools rather than students. In this case, socioeconomic conditions for students are not very useful in understanding their health financing conditions. As for the elderly, their proportion to the population rose from 1991 to 2011. This trend creates differences across data from succeeding waves of the CHNS surveys and may introduce a potential bias, as the elderly incur significantly higher health care expenditures than other age groups (Casey et al, 2003). Respondents from the three provinces (Beijing, Shanghai, and Chongqing) added to the sample in the 2011 wave were also excluded due to limited observations. Overall, 75.9% of the observations from the original dataset are retained in our reconstructed dataset.

Our sample of CHNS survey respondents is organized as follows. First and foremost, consistent with other studies using the same dataset (e.g. Feng et al., 2015), we categorize respondents as *urban* and *rural* according to where they were located at the time they participated in a CHNS survey.

Apart from **Geographic Locations (GL)**, respondents were also given a designation by region of residence (**Geographic Regions, GR**). *Coastal* provinces (CS) include those in Liaoning, Jiangsu, and Shandong, whereas *inland* provinces (IN) include those in Heilongjiang, Henan, Hubei, Hunan, Guangxi, and Guizhou;

Respondents located in urban areas were further categorized along **Urban Work Units** and **Urban Employment Status**. In the former, employees of *state-related entities* include those working in government, state organs and institutions. They are also referred to as "government employees". Employees of *state-owned enterprises* (SOEs) are referred to as "SOE employees". Employees of *non–state entities,* including big and small collectives and private enterprises and foreign-invested or -collaborated companies (*san zi qi ye*), are referred to as "non-state employees."

In the latter, respondents are categorized as *urban employed*, *urban informal sectors* (including the self-employed, temporary workers, and household workers) and *unemployed/ urban retired*. We also identified as *migrant workers* those who answered that they were working in urban areas but had rural *hukou*. (The *hukou* data is only available since 1993. So the subcategory of migrant workers is accordingly only relevant since that wave.)

Last but not least, respondents were asked their major occupation in the survey, for which the **farmer** sub-category (including farmers, fishermen and hunters) is used here to compare with those urban work-related subcategories. Respondents were also divided into five groups (first/bottom, second, third, fourth and fifth/top quintiles respectively) on the basis of **household per capita income ("household income" hereinafter)** , for which the data is constructed in the original dataset by the dataset provider.

Subcategory composition in the sample is summarized below in Table I.

Table 1. Subcategory Composition of CHNS respondents sampled, 1991–2011

	1991	1993	1997	2000	2004	2006	2009	2011
Total No. of Respondents	9892	9531	10270	11430	11222	13744	14023	13668
Geo Locations								

Urban (%)	31.1	29.3	30.4	30.2	30.0	27.8	26.9	25.2
-Urban Coastal	10.2	9.2	6.9	9.4	8.9	7.9	7.5	6.7
-Urban Inland	21.0	20.1	23.5	20.7	21.1	19.9	19.5	18.5
Rural (%)	68.9	70.7	69.6	69.8	70.0	72.2	73.1	74.8
-Rural Coastal	23.6	23.7	16.6	22.6	21.8	22.5	21.9	22.5
-Rural Inland	45.2	47.0	53.0	47.3	48.2	49.7	51.1	52.3
Urban Working Unit								
Gov (%)	55.2	55.3	44.4	43.2	28.6	28.2	30.3	28.6
SOE (%)	12.6	11.5	9.0	8.9	20.0	16.5	14.6	13.2
Non-state (%)	32.2	33.2	46.6	47.9	51.4	55.3	55.1	58.2
Urban Employment Status								
Urban employed (%)	78.1	59.3	55.1	51.9	43.9	43.2	42.1	42.6
Urban informal sector and unemployed (%)	13.0	11.0	15.7	18.8	30.3	31.1	32.2	30.2
Urban retired (%)	9.0	7.0	6.6	9.1	11.5	10.5	11.1	12.0
Migrant worker (%)	-	22.8	22.7	20.2	14.3	15.2	14.6	15.1
Farmers (%)	57.1	55.5	56.2	54.9	49.3	47.8	46.0	40.9

Source: Authors' Analysis of CHNS data, 1991-2011

2.3 Outcome Variables: Health Insurance and Beyond

Apart from health insurance coverage, we are also interested in examining the urban-rural and regional gaps through other outcome variables, namely health-seeking behavior, health care expenditure for outpatient treatment, and out-of-pocket (OOP) payments for outpatient treatment.

Health insurance coverage was measured by the percentage of the respondents who reported being enrolled in health insurance of any kind.

Health-seeking behavior **was** based on respondents' answers to a question in the CHNS survey: "What did you do when you fell ill?" The choices given in the survey were non-

treatment, self-treatment, visiting local health workers, and visiting doctors. As the distinction between the last two was not entirely clear-cut in the survey, we combined them into one category, "visiting health workers/doctors". This gives us a more general depiction of health utilization that minimizes the bias from the situation that the respondents confuse between local health workers and doctors. Note, however, that positive responses to this question are associated with both outpatient and inpatient treatment.

Overall outpatient expenditure was calculated from health expenditure per episode of outpatient treatment. Respondents to the adult CHNS questionnaire were asked if they had experienced any particular type(s) of illness "during the last four weeks [before the survey]." If yes, and if they received outpatient treatment for the illness, they were then asked how much they had spent "during this treatment" or "so far." (In a different question, respondents who had disease/illness during the episode were asked "How much money did you spend for the illness or injury?" But this could include self-treatment as well, and thus does not fit our scope here.)

Out-of-the-pocket (OOP) payment was the amount that each respondent who received medical treatment paid personally for each episode of outpatient treatment, calculated by subtracting the amount of reported reimbursement from health insurance from the overall outpatient expenditure.

Note that only **outpatient treatment** was included for the latter two outcomes. While many social insurance plans in China (e.g. NCMS) attempt to protect people from catastrophic health expenditure, which mainly is associated with inpatient health care, we were not able to get sufficient observations for inpatient care while inpatient expenditure also varies greatly. However, as will be shown, even just considering outpatient OOP payment, its proportion in individual income is already quite high especially among low-income groups.

All figures stated here are inflation-adjusted using CPI data extracted from *Statistical Yearbook of China* for respective waves of CHNS. They are all reported in 2011 prices.

3. ANALYTICAL RESULTS

3.1 Health Insurance: Nuances behind Near-Universal Coverage

TABLE 2 presents health insurance coverage rates for different population sub-categories. Most sub-categories, urban and rural alike, have seen a decline of insurance coverage from 1991 to 2000, when it hit the lowest point. Since 2004, insurance coverage started to expand again. Yet substantial leap occurred only from the wave 2009 onwards. By 2011, all subcategories except urban unemployed and those in urban informal sectors have a coverage rate of more than 90%.

In the most general sense, it can be said that urban-rural gap has indeed been closed in terms of health insurance coverage. Back in 1991, insurance rate for urban respondents

used to be more than triple the rate for their rural counterparts. Even when both figures went down to the lowest in 2000, the triple gap still existed. Nevertheless, the rural coverage nearly caught up in 2006. In the last two waves, it becomes the sub-category of rural respondents that enjoys a higher insurance coverage. In a similar vein, insurance rate for farmers used to be the lowest amongst all sub-categories for more than a decade (from the wave 1991 to 2004). Yet by the wave of 2011, their insurance coverage has become the highest amongst all sub-categories listed here.

Zooming into the regional aspects, whereas coastal-inland coverage difference has been closed for urban residents throughout the waves, such difference nearly doubled for rural residents between 1991 and 2006. And especially towards the later waves (i.e. after 2004), coverage of rural residents in coastal areas is even higher than their urban-inland counterparts, suggesting a local variation of policy implementation for health insurance, the benefit and coverage of which depend on local fiscal and economic conditions.

Within those working in urban areas, a bias towards government employees is still quite visible: their insurance rate in 2011 is still among the highest. In contrast, not only had urban unemployed and those in urban informal sectors a lowest insurance coverage to begin with (only slightly better than farmers and non-state employees in the waves 1991 to 2000). Even as of 2011, they are the *only* one whose insurance rate is well below 90% (only 83.9%, in fact). Migrant workers had a similarly low insurance coverage till the wave 2006, which has nonetheless caught up in the last two waves.

Those working in urban SOEs present a differently interesting case. This used to be one of the most privileged group in the beginning, as their 86.8% of insurance rate in 1991 was only lower than government employees (by merely 1 percentage point). This privilege carried even when the insurance rate was the lowest in general in 2004. Yet as the coverage for other sub-categories started to catch up since 2009, an insurance rate of 93.7% in 2011 makes SOE employees much less outstanding as they used to be. In contrast was change for non-state workers, whose insurance coverage was the second lowest before 2000, even lower than that for inland rural residents and migrant workers. Their insurance rate has nevertheless also caught up in the last wave.

TABLE 2. Overall Insurance Coverage for Different Population Subcategories

Year	Geographic Locations: Urban			Geographic Locations: Rural			Urban Work Unit			Urban Employment Status				Farmer
	Total	CS	IN	Total	CS	IN	Gov	SOEs	Non-state	Emp	Informal & Unemp	Retired	Migrant Worker	
1991	58.9	83.4	46.8	18.8	30.3	12.5	87.8	86.8	8.1	59.5	18.6	85.9	-	4.9

1993	53.7	80	41.2	14.3	24.2	9.1	83.1	72.6	8.7	54.7	12.5	87.6	20.9	2.2
1997	41.3	63.8	34.7	18.0	41.8	10.2	73.7	53.3	9.5	42.6	15.4	68.9	12.5	8.9
2000	38.8	51.6	32.8	12.6	27.2	5.7	69.3	52.0	11.1	40.9	12.7	65.4	11.1	6.0
2004	38.9	51.9	32.8	19.4	38.4	10.3	77.0	73.0	32.3	43.9	16.0	68.4	13.4	12.9
2006	49.8	64.7	43.2	48.8	72	37	88.0	81.1	45.7	53.7	32.4	77.2	30.3	46.1
2009	86.3	84.2	87.2	93.1	94.4	92.4	96.8	93.4	80.9	88.2	77.3	95.1	92.8	96.7
2011	90.6	91	90.4	96.8	97	96.7	98.0	93.7	90.6	93.2	83.9	96.2	95.0	98.1

Source: Authors' analysis of CHNS data, 1991-2011

3.2 Health-seeking Patterns: Declining Service Utilization

The impressive progress made in health insurance coverage, however, has not led to proportionate improvement in access to health services (TABLE 3), although in other studies that distinguish between outpatient and inpatient service utilization, some do find increase in the latter type (Jian et al., 2010) and/or correlation between insurance and utilization (Liu et al., 2002; Liu et al., 2012; Meng et al., 2014).

In our sample, the evolution of health-seeking patterns does share some similarities between urban and rural respondents. Yet unlike the gaps manifested in health insurance coverage, which saw substantial improvement only after the wave of 2006, the picture is more mixed for health-seeking patterns.

To illustrate, the percentage of respondents who saw doctors when falling ill was declining for both sub-categories till 2004. Even when the figure saw some slight upward trends in subsequent waves, health-seeking rate in the wave of 2011 is still lower than that in 1993 for both sub-categories, with the decline for urban respondents much sharper (29.4 percentage points) than for rural respondents (8.7 percentage points).

The health-seeking rate in our sample was actually higher in rural areas than in urban areas for all subsequent waves after 1993. In a similar vein, inland provinces saw higher service utilization rates after 2000 than did coastal provinces for both urban and rural

areas, although the latter are widely perceived as more advanced and wealthier: in terms of mean individual income of respondents, we calculated from the CHNS data that the figure for coastal provinces is around 1.1 to 1.3 times as that for inland provinces, for all waves of the CHNS survey.

While the non-treatment rates was indeed higher for rural respondents until 2000, the sharp gap of 11.2 percentage points in 1993 was nevertheless closed to 3.7 percentage points in 2000. From 2004 onwards, urban respondents started to have higher non-treatment rates than rural respondents, although the gap in the last three rounds never exceeds 1.5 percentage points. Overall, whereas non-treatment rate for urban respondents is 7.3 percentage points higher in 2011 than the figure in 1993, such rate has declined by 5.8 percentage points for rural respondents. This might be explained by the increasingly higher OOP payments for urban respondents, as we shall discuss in the next sub-section. Moreover, self-treatment rate has been consistently higher for urban respondents than for their rural counterparts.

Taken together, while the reimbursement rate of a particular insurance type may have influenced health-seeking decisions (Ma et al., 2012), declining tendency to visit doctors or local health workers when ill does not necessarily imply an increase in non-treatment. Instead, an increasing number of respondents, urban and rural alike, may have resorted to self-treatment. Despite so, ironically, reduction and even reversal of the trend in urban -rural gaps for non-treatment and health-seeking still seems to have been realized via declining utilization of services overall.

TABLE 3. Health-seeking Behavior for Urban and Rural Respondents

Year		1993	1997	2000	2004	2006	2009	2011
Urban Total	Non-treatment	3.3	4.7	5.5	14.8	10.5	11.3	10.6
	Self-Treatment	*14.4*	*27.4*	*36.5*	*45.9*	*45.4*	*41.4*	*36.4*
	Health-Seeking	82.4	67.9	57.9	39.4	44.1	47.3	53
Urban Coastal	Non-Treatment	3.8	3.3	2.1	14.9	11.9	14	12.3
	Self-Treatment	*18.9*	*18*	*55.2*	*47.9*	*56.8*	*40.2*	*39.3*
	Health-Seeking	77.4	78.7	42.7	37.2	31.2	45.9	48.3
Urban Inland	Non-Treatment	3	5.1	7.4	14.7	9.8	10.2	10.1
	Self-Treatment	*12*	*30.1*	*26.3*	*44.5*	*39.8*	*41.9*	*35.3*
	Health-Seeking	85	64.8	66.3	40.9	50.5	48	54.6
Rural	Non-Treatment	14.5	5.8	9.2	11.4	9.8	9.8	8.7

Total	*Self-Treatment*	*10*	*17.5*	*17.6*	*27.9*	*22.3*	*26.2*	*24.5*
	Health-Seeking	75.6	76.7	73.2	60.8	67.9	64	66.9
Rural Coastal	Non-Treatment	9.5	6.8	11.2	13	14.1	7.6	8.6
	Self-Treatment	*11.6*	*15.9*	*16.4*	*33.3*	*27.4*	*35.4*	*31.1*
	Health-Seeking	79	77.3	72.4	53.7	58.5	57	60.3
Rural Inland	Non-Treatment	16.7	5.7	8.3	10.5	7.8	11.1	8.7
	Self-Treatment	*9.3*	*17.8*	*18.2*	*24.7*	*19.9*	*20.9*	*20.6*
	Health-Seeking	74.1	76.6	73.5	64.9	72.3	68.1	70.8

Source: Authors' Analysis of CHNS data, 1993-2011

3.3 Outpatient Health Expenditure and Out-of-pocket Payments: A Rising Burden

One explanation for the declining utilization of health services in spite of wider coverage of health insurance may be the steady escalation of health expenditure, and in particular OOP payments, over the survey waves. As illustrated in Table 4, in line with the declined tendency to visit doctors or health workers, all subcategories in our sample experienced significant cost escalation in health expenditure and OOP payments from 1991 through 2011. Escalation in outpatient OOP payments was more pronounced for urban and coastal respondents than for their rural and inland counterparts. This may in part account for the more steeply declining rates in service utilization among these groups as noted above.

TABLE 4. Mean Overall Treatment Expenditure and Mean Out-of-pocket Payment for Urban and Rural Respondents

Year	Urban Total		Urban Coastal		Urban Inland		Coastal	
	OTE	OOP*	OTE	OOP	OTE	OOP	OTE	OOP
1991	203.6	148.8 (73.1)	302.4	180.1 (59.5)	165.7	130.7 (78.8)	250.2	164.0 (65.5)
1993	192.4	146.3 (76.0)	303.4	246 (81.1)	170.7	121.5 (71.2)	219.1	169.3 (77.3)
1997	218.8	121.9 (55.7)	302.3	156.4 (51.8)	197.1	111.8 (56.7)	326.5	231.5 (70.9)
2000	389.9	306.1	666.7	495.9 (74.4)	326.4	262.5	475.1	421.8

		(78.5)				(80.4)		(88.8)
2004	385.0	326.3 (84.7)	389.1	292.1 (75.1)	402.7	338.9 (84.2)	320.3	276.6 (86.3)
2006	305.4	244.1 (79.9)	279.8	208 (74.3)	315.6	258.5 (81.9)	338.9	296.6 (87.5)
2009	479.3	381.5 (79.6)	584.9	385.3 (65.9)	433.6	358.0 (82.6)	484.0	349.4 (72.2)
2011	548.0	489.3 (89.3)	662.7	555 (83.7)	509.4	445.2 (87.4)	529.6	461.1 (87.1)
Year	Rural Total		Rural Coastal		Rural Inland		Inland	
	OTE	OOP	OTE	OOP	OTE	OOP	OTE	OOP
1991	167.7	132.4 (78.9)	226.8	152.5 (67.3)	145.7	124 (85.1)	151.6	127.4 (84.0)
1993	187.5	161.6 (86.2)	199.2	151.0 (75.8)	182.9	165.7 (90.6)	179.0	153.2 (85.6)
1997	302.6	290.6 (96.0)	355.5	320.2 (90.1)	295.4	283 (95.8)	256.9	218.7 (85.1)
2000	374.2	362.9 (97.0)	428.8	392.7 (91.6)	345.7	341.5 (95.8)	338.7	313.2 (92.5)
2004	284.1	273.2 (96.2)	281.2	260.3 (92.6)	285.7	277.2 (97.0)	322.4	298.9 (92.7)
2006	290.8	271.5 (93.4)	361.5	330.6 (91.4)	261.8	246.4 (94.1)	276.9	250.4 (90.4)
2009	351.7	273.5 (77.7)	445.3	327 (73.4)	297.4	232.2 (78.1)	343.5	285.7 (83.2)
2011	398.5	333.1 (83.6)	478.7	404.9 (84.6)	360.0	285.3 (79.3)	412.8	351.9 (85.2)

Source: Authors' Analysis of CHNS data, 1991-2011
* bracket indicates OOP as percentage of OTE

The burden of outpatient OOP payments as percentage of overall outpatient expenditure rose before 2004-2006 and declined only slightly afterwards, remaining above 80% for all four geographic subcategories. The burden as of 2011 is also higher for all of them as compared with two decades ago in 1991.

The absolute figures of overall treatment expenditure for urban/ urban-coastal respondents are higher than those for rural/ rural-coastal respondents in all waves except 1997. OTE for urban inland respondents also started to grow higher than their rural inland counterparts since 2004. Yet so far as outpatient OOP payments as percentage of OTE are concerned, the evolution of urban-rural gap is more similar to the manifestation in terms of health insurance coverage. The percentage of OOP payment in OTE was higher for rural respondents till the wave of 2006. It is only in the last two waves that the trend becomes reversed. Similar trend is observed for inland respondents. Yet in coastal regions, OOP as percentage of OTE is consistently higher for rural respondents than for their urban counterparts, although the gap has been remarkably closed in the last wave.

In general, it can still be concluded that urban-rural gap is being closed in terms of OOP burdens. But again, the picture will be more blurred if we supplement the broad division of urban versus rural with some additional lenses.

TABLE 5 presents mean OOP payment both as percentage of OTE and as percentage of mean household income for different urban and rural income quintiles. The first quintile is the only exception where the pattern is less clear. For all others, payment burden, measured as the percentage of OOP to household income, has been consistently higher for rural respondents even till the last wave. In particular, whereas the richest consistently spent less than 0.5% of their annual income on OOP payments, for the poorest in rural areas, OOP payment doubled as a percentage of income (from 3.4% to 6.8%) over the two decades.

Calculating the burden different as the OOP percentage to overall treatment expenditure, the result is more mixed. Burden measured in this way is consistently higher for both the richest and poorest in rural areas than for their urban counterparts. The story is largely similar for the fourth quintile in most waves as well. For the second quintile, OOP as percentage of OTE was higher for rural respondents till the wave 2006. Pattern is less emerged for the third quintile. But in general, picture presented in TABLE 5 does suggest that urban-rural gap may still linger in more nuanced fashions even though the overall trend has improved substantially. While studies using other datasets have found that inpatient cost falls as respondent income increases (Tian et al., 2015) or that NCMS insurance decreased patients' OOP payments for higher-cost health services (Babiarz et al., 2012), outpatient care remains a significant portion of health expenditure for the poor.

TABLE 15. Mean Out-of-pocket Payment for Different Urban and Rural Income Quintiles

	Urban

Year	1st Quintile		2nd Quintile		3rd Quintile		4th Quintile		5th Quintile	
	OOP (% OTE)	%inc	OOP (% OTE)	%inc	OOP (% OTE)	%inc	OOP (% OTE)	%inc	OOP (% OTE)	%inc
1991	186.2 (88.5)	4.5	171.5 (68.8)	1.7	136.2 (75.9)	1.0	108.7 (63.8)	0.6	110.2 (56.9)	0.4
1993	319.1 (100.0)	6.7	24.4 (46.6)	0.3	330.7 (94.5)	2.1	107.9 (70.8)	0.5	15.3 (11.4)	0.0
1997	74.5 (58.2)	1.6	107.0 (54.9)	1.0	163.6 (62.1)	1.0	136.0 (37.0)	0.6	152.2 (71.5)	0.4
2000	283.6 (100.0)	5.8	317.2 (97.0)	2.5	160.7 (98.6)	0.8	737.2 (92.6)	2.7	108.7 (32.0)	0.2
2004	562.1 (98.8)	9.6	107.1 (75.1)	0.7	405.8 (84.1)	1.8	295.7 (68.9)	0.8	297.9 (79.1)	0.4
2006	297.8 (97.9)	5.0	246.1 (98.1)	1.7	339.4 (98.5)	1.4	150.5 (44.1)	0.4	196.3 (67.3)	0.2
2009	474.4 (79.5)	5.8	372.1 (81.2)	1.8	399.0 (88.7)	1.1	412.2 (68.3)	0.8	298.3 (80.4)	0.3
2011	486.4 (90.6)	5.3	461.8 (94.9)	1.8	704.9 (96.9)	1.7	331.6 (80.6)	0.5	254.2 (61.7)	0.2
Year	Rural									
	1st Quintile		2nd Quintile		3rd Quintile		4th Quintile		5th Quintile	
	OOP (% OTE)	%inc	OOP (% OTE)	%inc	OOP (% OTE)	%inc	OOP (% OTE)	%inc	OOP (% OTE)	%inc
1991	91.8 (94.3)	3.4	138.7 (95.8)	2.4	186.2 (95.7)	2.2	89.0 (39.5)	0.8	121.3 (73.0)	0.5
1993	112.9 (99.3)	4.1	47.7 (68.1)	0.8	191.6 (93.1)	2.2	253.0 (78.0)	1.8	150.5 (78.8)	0.6
1997	265.7 (99.6)	8.1	393.8 (92.6)	5.2	188.5 (99.9)	1.6	292.9 (97.6)	1.8	382.4 (91.3)	1.2
2000	316.8 (100.0)	9.8	283.1 (100.0)	3.6	424.2 (97.0)	3.4	398.8 (92.3)	2.0	401.1 (96.4)	1.0
2004	307.4 (100.0)	7.8	361.3 (99.9)	4.1	191.3 (85.8)	1.3	262.0 (94.0)	1.2	214.6 (95.1)	0.5
2006	309.9 (98.2)	8.9	205.7 (93.9)	2.4	320.5 (90.4)	2.1	307.6 (91.1)	1.3	245.8 (93.6)	0.5
2009	261.1 (81.7)	4.2	305.5 (80.1)	2.1	279.8 (67.8)	1.2	244.9 (77.5)	0.7	294.2 (80.8)	0.4

2011	440.6 (96.1)	6.8	275.8 (62.5)	1.7	290.0 (84.3)	1.0	343.7 (91.1)	0.8	369.4 (89.4)	0.4

Source: Authors' Analysis of CHNS data, 1991-2011

%OTE: OOP as Percentage of OTE % inc: OOP as Percentage of Household Income

4. DISCUSSIONS

Our results on insurance coverage, in particular the results reported for waves before 2009, are consistent with other studies in the literature (Ge et al., 2007; Gu et al., 2006) as well as the general policy development over the two decades. For instance, in the beginning of 1990s, China's health care system was at a stage where the "old support system was dismantled early on while a new system emerged … much later" (Ringen and Ngok, 2013, p, 7). Reflected in insurance coverage, a constant decline has been observed from 1991 to 2000 regardless of urban or rural areas. But even during this period of decline, urban-rural gap still existed.

Near-universal insurance coverage in the latest wave (2011) is less cheerful once we take into consideration that the figures here do not distinguish any substantive differences between insurances received by different subcategories, which may in turn have implications on reimbursement rates and accordingly out-of-pocket costs. For example, UEBMI has generally more comprehensive service coverage and financial protections than URBMI and NCMS (Meng et al., 2015).

And if we further zoom into different urban workplaces or employment status, urban/rural disparity of the insurance coverage is contingent upon occupation and workplaces. It is clear that government employees still have a much more prestigious coverage than, say, urban unemployed and those in urban informal sectors. In other words, the legacy of the occupation-based social welfare system is still significant. This finding is also consistent with others in the literature (e.g. Liu et al., 2015). The insurance advantage of another previously privileged group, namely the SOE employees, has nevertheless dwindled.

On the other hand, we found that the increased health insurance enrollment rates were accompanied by an overall decline in the utilization of health care services in both urban and rural areas. This result is also supported by the literature. Using a different dataset (China National Health Services Survey), Liu et.al (2007) also found that physician-seeking rates for urban residents dropped greatly from 1993 to 2003. Similar story is told different in Babiarz et al., (2012) which found that the NCMS improved finances of township health centres but not the number of patients served.

However, whether such decline was more pronounced in urban or rural areas was less clear-cut in the literature. On one hand, Liu et al (2007) used a single wave NHSS 2003

to show that self-treatment rate was higher for rural residents (47%) than urban residents (32%). Jian et al (2010), using the 1993, 1998 and 2003 waves of the same survey, found that rural residents citing affordability as a reason for not seeking health care or treatment was consistently higher than that of urban residents in the three waves of National Health Services Survey (NHSS 1993, 1998 and 2003).

From a long-term perspective, this paper contributes to the literature by suggesting that in later waves of the CHNS survey, decline of health service utilization was more pronounced among urban and coastal respondents than among their rural and inland counterparts. However, the NCMS initiated in the early 2000s does not seem to increase the likelihood of health-seeking behaviours for rural residents either, although the health reform in 2009 may have played some role in improving the health-seeking rate in both urban and rural areas in the last wave (2011). Moreover, in our sample it is the urban residents that have consistently higher self-treatment rates throughout the two decades. Even though, concerns expressed in Liu et al., (2007) regarding potential long-term consequences of self-treatment, such as misusing of medication, delaying of optimal timing of effective treatments, posing challenges in monitoring infectious and epidemic diseases, remains valid and deserves further attention.

Our analysis based on trends in outpatient treatment expenditure (OTE) and out-of-pocket (OOP) payments may help explain the declining utilization rate despite near-universal health insurance coverage in both urban and rural areas. Whereas OTE and OOP have seen a general escalation, results presented in this paper also show that urban-rural gap in the broad sense has also seen a decline over time, much like the trend in insurance coverage.

However, urban-rural gap may still linger for some particular income quintiles. This paper shows that the financial burden was higher for the poor not only in the share of outpatient OOP payment in total outpatient expenditure, but also in the share of OOP as a proportion of annual income, and the level of inequalities has worsened. In particular, although only observations for outpatient care have been included, the financial burden is so high for urban and rural bottom 20% households that outpatient health expenditure amounted to over 5% and 6% of their income per capita respectively.

These findings here on the relevance of income distribution are also supported by the literature. For instance, Tian et al., (2015) examined OOP under URBMI by different income quintiles using URBMI Household Survey from 2007 to 2011. They have similarly results reported that while oop rate of the richest group is nearly 60%, the ratio rises to 76.8% when it came to the poorest income group..

To summarize, the long-term trends analyzed here suggests that while urban-rural disparity has certainly been reduced in some aspects, its manifestation now is more

contingent upon various related factors such as occupation, region, etc. In terms of health insurance, the largest coverage gap is found between government employees and urban unemployed/ those in urban informal sectors. It should also be noted that increased insurance coverage is accompanied by a rising rate of self-treatment, especially among the urban respondents. Finally, within the overall escalation of OOPs, closed urban-rural gap overall becomes clearly more visible when re-examined from the additional angle of household income.

5. CONCLUSION

This paper has investigated into the evolution and regional, occupational and income-related nuances of urban-rural disparity in China's health care since 1990s. Using the unique micro-level panel datasets from the China Health and Nutrition Survey, it finds that despite the near universalization of insurance coverage, health inequality did not improve proportionately when it comes to health care service utilization and out of pocket payment. Taken together with other studies on health outcomes (e.g. Sun et al., 2011; Norstrand and Xu, 2011; Meng and Chen, 2014), the findings here suggest that urban-rural disparity still lingers. More importantly, it is through inquiring into more nuanced aspects of region, income or employment status that the otherwise declined disparity (e.g. in health insurance) becomes more clearly manifested. In particular, the interaction between rural area and inland regions or urban area with informal-sector employment may well render these people to be more vulnerable than the broad urban-rural division would manifest.

These findings have several policy implications. First, while rising health insurance coverage rates in China represent a critical aspect of the falling level of inequalities in health care, variances of benefit (i.e. reimbursement rate) and coverage across different insurance may play a key role in determining the level of inequalities in access to the health care throughout the population. Our results point to the possibility that excessive enrollment in health insurance may be achieved at the expense of lower coverage and benefit level, which are nevertheless the two other key dimensions of universal health care as specified by the WHO (e.g. WHO, 2010).

Our results thus call into question the overall effectiveness of health policy reforms in China since the 1990s. From 1991 to 2011, the years covered by our study, total health spending per capita surged from 77 yuan to 1,807 yuan, a more than 20-fold increase (National Bureau of Statistics of China, 2013). While it has been argued that the dramatic increase in health expenditure has been essential in improving access to health care, our analysis, based on trends over the two first decades of reforms (1991-2011), suggests that only limited progress has been made on that front despite dramatic increase in health expenditure.

The latest reform since 2009 seems to be more effective than previous reforms in early 2000s at least judging from the data of the last wave as compared with previous waves. However, to further improve the effectiveness of the reform, as well as to better understand China's urban-rural gap in health care, one has to look at structural factors beyond the health sector, such as type of profession, nature of work unit, location or level of income. Closure of such gap in health care thus may depend on policy instruments beyond the realm of the health sector, a point which is also highlighted by WHO (2010). Recognizing the limitations of the impacts of health policy reforms may lead to the discovery of effective policy mixes with policy instruments aimed at tackling multiple and more nuances sources of urban-rural gap.

There are several limitations of this paper to be noted, which also opens space for further investigations. First, for the purpose of figuring out the trend of urban-rural disparity in China's health care over the two decades, our data is mostly descriptive. Based on the findings here, regression analysis can be used in the future to assess the impact of different policies and identify determinants for the coverage of different insurance types on one hand and health-seeking and expenditure on the other related. Second, our identification of urban versus rural is based on locations of the respondents rather than their *hukou*. Yet to the extent that the *hukou* aspect still has a strong presence in the current health care system (and the welfare system in general), the nuances of its impact also deserves further inquiry beyond the focus on migrant workers as adopted in this paper.

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Appendix 1 Policy goals set in the government documents since 1990's

Year	Name of the Document	Points Addressing Urban-rural Disparity
1992	Several opinions about deepening health reform	Improving health care in rural and poor regions
1997	The decision for health reform and development	Developing and improving rural cooperative medical scheme; Upgrading rural primary care network, in particular for poor regions and regions with minority groups
2002	The decision to improve the rural health system	Increasing government inputs for the rural health system; Building up a new type of rural health insurance
2009	Opinions for deepening health reform; Plan on Recent Priorities in Carrying out the Reform of Health Care System (2009-2011)	Improving the networks of primary care clinics in both urban and rural areas; Improving health insurance coverage for urban and rural residents including those disadvantage groups Incentives for the deployment and retention of health workers to rural areas and primary care levels

Source: Compiled by the authors