

### **Wage Inequality among Immigrant Workers: Spatial-temporal Patterns and Implication for Rising Overall Wage Inequality in the U.S. Metropolitan Areas**

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#### **Abstract:**

In the burgeoning literature on wage inequality in the U.S., little attention is paid to the geographical variation in wage inequality, especially that across U.S. metropolitan areas. Even less attention has been directed toward wage disparities among foreign-born workers. Using IPUMS Decennial Census and pooled ACS data from 1980 to 2009, this paper conducts a systematic study on the spatial and temporal patterns of inequality among immigrant workers over the past three decades. I found higher levels of wage inequality and more rapid growth of inequality among foreign-born workers in relation to native-born workers in the U.S. during the past three decades. Meanwhile, the contribution of immigrant inequality to the overall wage gap in the U.S. was relatively small though it has increased rapidly, mainly due to the sharp increase in income shares of immigrant workers over time. Wide spatial variations exist in immigrant wage inequality and in the contribution of immigrant workers to overall wage inequality across metropolitan areas. In 2009, while high levels of wage inequality among immigrant workers concentrated in many Southern metropolitan areas, their contributions to the overall inequalities were most significant in traditional immigrant gateways. My findings highlight the importance of the dynamics of immigrant wages and inequalities across U.S. metropolitan areas for understanding the overall gains in wage inequality.

#### **Introduction**

Since the abolition of the national origins quota system in the Immigration and Nationality Act of 1965, new waves of immigration have greatly changed America's demographics. Meanwhile, wage inequality in the United States has grown significantly since the late 1970s. Impacts of immigration on native wages and the rising income gap between high- and low-skilled workers in the U.S. have been widely discussed. However,

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there is very little research that looks specifically at wage inequality among immigrant workers and how this inequality varies over space.

The shift of immigration policies from the national to the local level makes the discussion around immigration dynamics critical to local communities across the United States. Cities benefit in job creation and business growth by assisting the economic integration of immigrant workers with different skills and removing barriers that limit their accesses to jobs and services. However, immigrant skills are distributed unevenly across different labor markets and not always in ways that match the distribution of skilled and unskilled jobs. Accordingly, the labor market outcomes of immigrant workers are highly variable. Comprehensive study of wage inequality among immigrant workers in the United States demands broad analysis across time and space.

This paper compares wage inequality patterns among the foreign-born to those of the total and native workers in the U.S. at the national and metropolitan levels. Decomposing overall wage inequality by nativity, I then examine the contributions of nativity variation and wage inequality within the native and immigrant workers relative to the overall wage gap in the U.S.. Finally, to account for the spatial variations in the contribution of immigrant wage inequality to the overall inequality, I explore its connection with the uneven distributions of immigrant income shares and wage inequality among immigrant workers across different U.S. metropolitan labor markets.

### **Literature Review**

The theoretical framework that guides this research comes from traditional theories and methods used to examine overall wage inequality and immigrant wage trends in the U.S.. There is a broad consensus on the continuing rise in wage inequality for workers in the United States since the 1980s in different forms such as percentile ratios, Gini and Theil Indices (Katz and Murphy 1992; Autor, Katz, and Kearney 2008). There is also a widening wage spread between the rich and poor, as represented by the ratio of 90th percentile to 10th percentile of the U.S. wage distribution (Katz and Murphy 1992). Beyond the aggregated national story, a few studies on sub-national patterns and trends all suggest significant geographical variability in wage inequality during different

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observed years (Lynch 2003; Morrill 2000; Bernstein, McNichol, and Nicholas 2008).

Immigration has been widely evaluated as a major determinant of overall wage inequality in the U.S.. While researchers using national and cross-city approaches debate the significance of the effects of immigration on the wages of natives, they found most competition to happen between low-skilled natives and low-skilled immigrants (Borjas, Freeman, and Katz 1997; Borjas 2003; Card 1989; Altonji and Card 1989; Card 2001). New findings indicate the concentration of immigrants in the tails of the skill distribution in the 2000s(Card 2009). The decline in relative wages among new immigrants has reversed since the 1990s, in part due to a shift in immigration policy toward high-skill workers matched with jobs (Borjas and Friedberg 2009). The new trends of wage structure among immigrant workers will lead to changes in their impact on overall wage inequality. However, we know little about how much immigrant wage inequality accounts for overall wage inequality at the national level and across metropolitan areas in the U.S..

In the discussion of immigration and wage inequality, the metropolitan level has become an important geographic scale of analysis. Studies show that high urban density leads to more pronounced wage inequality (Wheeler, 2004). Urban theories argue that skill accumulation works faster in metropolitan areas due to agglomeration of knowledge(Marshall 1920; Jacobs 1969; Lucas 1988). Large metropolitan areas attract a greater supply of skilled labor and entrepreneurs, who would induce skill-biased technological change(SBTC) or generate greater stratification of workers by skill (Glaeser and Mare 2001). Together with other local labor market conditions that concentrate spatially, such as international trade and institutional factors, SBTC influences changes in demand for skills. Therefore, returns to skills and wage inequality vary across metropolitan areas. Similar interpretations can be made for the linkage between immigrant skills and their wage gaps in cities. Given that the supply of and demand for immigrant skills are distributed unevenly across the U.S. metropolitan areas (Hall et al.), wage disparities among immigrant workers in different cities should vary as well.

### **Research Question**

This paper gives a comprehensive overview of wage inequality among foreign-born

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workers across U.S. metropolitan areas, and the contribution of immigrant wage inequality to overall wage inequality over time and space. It aims to shed light on two research questions.

- 1) What are the spatial and temporal patterns of wage inequality among foreign-born workers? How do they compare to the wage inequality patterns among the total labor force?
- 2) How much does immigrant wage inequality account for the overall wage inequality across U.S. metropolitan areas over the past three decades? What about the contributions of nativity variation and wage inequality within native workers to the overall wage inequality?

### **Data and Research Methods**

Raw data at the state- and metropolitan-levels are extracted from the IPUMS Decennial in 1980, 1990, 2000, and the five-year pooled IPUMS ACS data in 2009. Borrowing from Singer's topology of immigration metros, I construct 100 largest "metropolitan areas" based on 2009 IPUMS ACS. All the immigration metros are medium to large cities with a total population of at least 500,000. Metropolitan-level data are then imputed to fix the missing case problem of the IPUMS data. Different measures, namely the percentile wage ratios and Theil-T Index, are used to estimate wage inequality. I then follow a series of procedures to handle the top-code problem of wage income in IPUMS for the calculation of Theil-T Index across metropolitan areas in the U.S.. Other data source includes a topology of different immigrant gateways developed by Singer et al. (Singer 2004, 2008; Hall et al. 2011).<sup>1</sup>

### **Findings**

This paper identifies some unique temporal and spatial patterns of the foreign-born workers. First, at the national level, both inequality measures indicate levels of wage

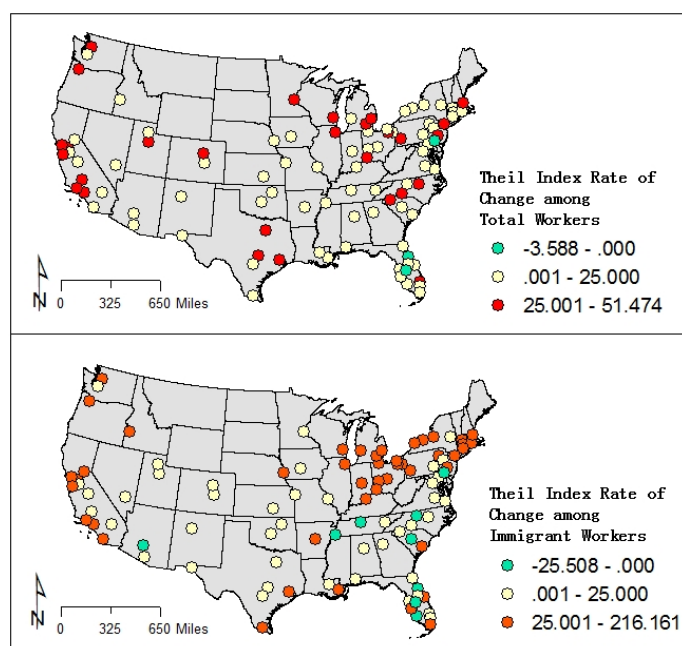
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<sup>1</sup> The classification of eight types of immigrant gateways is based on the size and growth rate of immigrant population over the twentieth century, as well as the total population size in a metropolitan area. Three groups of immigrant skill profile represent the ratio of immigrant skills in a metropolitan area.

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inequality among immigrant workers were much higher than those among the total labor force and the native-born between 1980 and 2009. Over the past three decades, wage inequality in the foreign born has been increasing faster than in the general population. Second, temporal trends of wage ratios between the 90<sup>th</sup> and the 10<sup>th</sup> percentiles, the 90<sup>th</sup> and the 50<sup>th</sup> percentiles, and the 50<sup>th</sup> and the 10<sup>th</sup> percentiles suggest that the concentration of inequality at the upper half of the wage distribution is much more significant for immigrant workers than for the total U.S. workers. Thirdly, when inequality is measured across metro areas, the variance of inequality growth rate for immigrant workers was 5-10 times larger than that of the total labor force in each decade. Spatially speaking, the wage gap among immigrant workers in the Mountain West, neighboring Midwest metros and many Southeast metros increased slightly or even narrowed in the past three decades. Meanwhile, positive changes in inequality occurred in contiguous states mostly located in metros located in Pacific West and Northeast regions.

Figure 1. Rate of change in the Theil index for FTFY Total Workers vs. FTFY Foreign-born Workers by Metropolitan Areas from 1980 to 2009



I then move on to examine how immigrant wage inequality accounts for the rapidly increasing overall wage inequality in the U.S. over the past three decades. A decomposition of the Theil-T Index for overall wage inequality by nativity in the U.S.

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shows a slight increase in percentage of contribution from nativity variation. Wage inequality among natives remained the major source of overall wage inequality over the three decades. However, wage inequality within native workers declined while that within immigrants increased. The contribution of within-group inequality is a product of income share of each group and its level of wage inequality. The sharp increase in income share of immigrant workers over the past three decades accounted substantially for the increasing contribution of immigrant inequality to the overall wage inequality in the U.S.. Likewise, the contributions of immigrant inequalities are found higher in metropolitan areas where a large inflow of immigrant workers occurred since the late 1970s.

### **Conclusion**

In summary, this paper examines the temporal trends and spatial patterns of wage inequality among immigrant workers in relation to the rise in overall wage inequality from 1980 to 2009. Immigration inequality accounts for a relatively small share of the current level of U.S. wage inequality. Moreover, the highest increase in wage inequality occurs within immigrant workers, indicating a more significant effect of immigration on wage disparity among immigrant workers than on overall or the native inequalities. However, the rapid increase in foreign-born participation rate in the U.S. labor force since the 1970s (from 5.2% in 1970 to 15.6% in 2009 according to the Census Bureau) leads to a continuous growth in income share of immigrant workers, which is likely to accelerate the rise in overall wage inequality. In addition, immigrant wage inequality and income share vary across local labor markets. If immigrants are highly concentrated in particular geographic areas, then overall wage inequality among who live in those communities might be more affected. My findings offer important insights into how to reform local immigration policy and how to embrace immigrants in the interest of local economic structures in U.S. metropolitan areas.

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