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I. Introduction

Recent years have witnessed large scale immigration to the state of Georgia. A booming economy and relatively affordable housing and living costs might have contributed to this immigration surge. Immigration peaked since the new century, with over a third of the state's immigrants arrived after 1999. In 2007, there were 953,000 immigrants living in Georgia, ranking Georgia 7th among all states by its immigrant size. Immigration has been particularly large in the Atlanta Metropolitan Statistical Area (MSA), which has been termed as an "emerging immigrant gateway." Between 1980 and 2000, Atlanta's immigrant population grew by 817 percent.

The rapid increase of immigrant population brings significant changes to urban areas and raises heated debate regarding their effect on the labor market and urban economy. Immigrants from Latin America make up more than 50 percent of current immigration and they are overly-represented in the low-skilled labor force. While some maintain that they fill in vacancies at the bottom of labor market and are an integral part of the U.S. economy, others argue that they compete for jobs with low-skilled native-born workers and exacerbate the employment difficulties of blacks. Despite the relatively high employment growth in recent years prior to the 2007-2009 recession, urban poverty remains high and concentrated in the inner city of Atlanta. Disadvantaged black Atlantans were not able to fully take advantage of the economic boom in the region as in-migration to the metropolitan area absorbed the growth in jobs.

Previous reports issued by the Fiscal Research Center (Matthews 2009; Turner 2009) document the decline in per capital income and wages per worker in the state, but it is unclear if immigration is a factor that is driving the change. Understanding the effect of Latino immigration on the urban low-skilled labor market, especially on low-skilled black workers, has important implications regarding possible policy options to expand employment opportunities for both groups.

This report discusses the results of a detailed occupational analysis of low-skilled Latino immigrants and native-born blacks in the Atlanta labor market using census individual-level data from 1990 and 2000 as well as American Community Survey data from 2008. The report is divided into three sections. First, the report

traces the evolution of occupational compositions among low-skilled blacks and Latino immigrants for three separate years: 1990, 2000 and 2008. Second, we report the results of occupation-level regression analysis that examines compositional change of occupations and explores whether black workers are crowded out of certain occupations by Latino immigrants. In other words, we examine how the occupational distribution of blacks changed in relation to the changing composition of Latino immigrants in each decade. The analysis also explores whether Latino immigrants shifted towards black-dominated occupations or reinforced their own established employment concentrations. Last the report considers whether the presence and growth of Latino immigrants in certain occupations exerts a downward pressure on the wage growth of black workers in that occupation for each decade.

These three sets of results place potential Latino immigrant-black competition along occupational lines and provide new evidence on the immigration debate. Results obtained from this analysis shed new light on the discussion regarding the competition between immigrants and natives in the low-skill urban labor markets. As it identifies the specific dynamics that underlie the employment difficulties of low-skill immigrants and natives, it thus provides insights for policies aimed at improving the socioeconomic well-being and economic mobility of both groups in the 20-county Atlanta metropolitan area. Through identifying the occupational sectors with high immigrant and minority concentration, these results also inform local community economic development initiatives. All of the workers considered in this report are low-skilled, so references to black workers mean low-skilled black workers, where low-skilled means having less than a high school degree. Blacks refer to native, non-immigrants, while Latinos refer to just immigrants.

II. Occupational Composition

The growth of Latino immigrants in Atlanta from 1990 to 2008 was phenomenal (Table 1). In 1990, there were only 7,760 low-skilled Latino immigrant workers, comprising 3 percent of the total low-skilled workforce. In 2000, this group grew to 53,761, or 25 percent of the total low-skilled workforce. This group grew by more than half between 2000 and 2008, and now represent 42 percent of low-skilled Atlantans, i.e., those without a high school degree. On the contrary, the share of black workers in this low-skill group stayed relatively stable, with a slight decline from 28 percent in 1990, to 26 percent in 2000, and to 21 percent in 2008.

TABLE 1. NUMBER AND COMPOSITION OF LOW SKILLED WORKERS IN ATLANTA

Year	----------Black----------		---Latino Immigrant---		--------All-------
1990	70,824	28.12%	7,760	3.08%	251,882
2000	53,199	25.52%	53,761	25.79%	208,496
2008	43,385	21.03%	87,560	42.45%	206,275

The majority of low-skilled workers are working for the relatively semi-skilled and low-skilled occupations of sales, clerical, craftsmen, operative, and service (Table 2). (For detailed classification and corresponding Census codes, see Appendix.) Black workers are much more concentrated in the sales and clerical (administrative support) jobs than Latino immigrant workers, and such difference enlarged over time. In 2008, 13.3 percent of black workers worked in sales and 8.8 percent of black workers worked in clerical jobs, while only 2 percent of Latino immigrants worked in each category. On the other hand, a much higher percentage of Latino immigrants are employed in craftsman occupations, including mechanics and repairers, construction trades, and precision production. Between 25 percent and 32 percent of Latino immigrants work for this sector in each year observed, compared to less than 10 percent of native-born blacks.

TABLE 2. COMPOSITION OF LOW-SKILLED WORKERS BY OCCUPATIONAL GROUPS

	1990			2000			2008		
	All	**Black**	**Latino**	**All**	**Black**	**Latino**	**All**	**Black**	**Latino**
Managerial Occupations	4.0%	2.6%	2.0%	2.9%	2.1%	1.1%	3.7%	4.6%	1.7%
Professional Occupations	2.4%	2.6%	2.3%	2.2%	3.5%	0.6%	2.4%	3.3%	0.8%
Sales Occupations	7.7%	4.8%	3.2%	7.4%	7.6%	1.7%	7.8%	13.3%	2.0%
Clerical Occupations	8.8%	7.4%	1.3%	9.0%	11.3%	2.4%	6.9%	8.8%	2.0%
Craftsmen Occupations	18.6%	10.9%	29.1%	22.7%	11.3%	32.5%	18.3%	6.4%	25.4%
Operative Occupations	36.8%	38.6%	38.9%	30.3%	31.8%	32.0%	31.3%	25.6%	37.6%
Service Occupations	19.1%	30.7%	18.8%	21.8%	30.7%	21.2%	24.1%	37.2%	20.6%
Farm Occupations	2.6%	2.5%	4.4%	3.8%	1.7%	8.5%	5.5%	0.8%	9.9%

Operative and service jobs are the largest sectors in the low-skilled labor market, together employing more than 50 percent of both groups. Operative occupations include labor as machine operators, assemblers, transportation, and helpers, while service occupations include service to private household, protective, food preparation, health, building, and personal services. Between the two occupations, black workers gained prevalence in service occupations, reaching 37 percent in 2008 while the same percentage of Latino immigrants work in operative occupations. Lastly, Latino immigrants have steadily taken over farm jobs within the last decade, while 2.5 percent of black workers and 4.4 percent of Latino immigrant workers were employed on the farm in 1990, only 0.8 percent of black workers are in 2008, compared to 10 percent of Latino immigrants.

These patterns seem to be in accordance with some recent research regarding the different skill specialization of immigrant and native-born workers. Peri and Sparber (2009) found that since immigrants have a comparative advantage in manual and physical tasks but disadvantage in communication due to limited English proficiency, they will concentrate in manual jobs while native-born workers will gradually shift towards language-intensive jobs. In Atlanta, this is evidenced by the occupational reallocation of blacks into sales and service jobs—jobs with higher inter-personal interactions—and by the concentration of Latino immigrants in craftsmen and operative jobs. At the same time, blacks are also overly represented in clerical and public administration jobs. Language-intensive by nature, these jobs also

feature relatively low immigrant penetration rates given its formal recruitment process and eligibility criteria (Lim, 2001).

While these comparisons demonstrate the relative occupational distribution of these two groups, a more thorough analysis requires going beyond the occupational groupings and examine the trend for individual occupations. Two different measures characterize the level of concentration within occupations. One measure I term the *composition index*, which is the share of black (or Latino immigrant) workers in one occupation over all black (or Latino immigrant) low-skilled workers in the whole Atlanta Metropolitan Area. These percentages measure the size and distribution of workers across all occupations. The second measure is termed the *concentration index*, it measures the percentage of black (or Latino immigrant) workers out of all workers in one occupation. It indicates the concentration or level of clustering of one racial/ethnic group in an occupation. A *niche index* is also derived by dividing the concentration index for each occupation by the mean black (or Latino immigrant) concentration. A niche index of one means that the concentration of blacks (Latino immigrants) in a certain occupation is equal to the overall concentration of blacks (Latino immigrants) in the metropolitan labor market, whereas an index of greater than one signals over-representation in that occupation. The top 10 occupations with the largest number of black and Latino immigrant occupations for each year are presented in Table 3 and Table 4, respectively, with their associated composition, concentration and niche indices.

For both Table 3 and Table 4, occupations that remain in the top 10 list for all three years (1990, 2000, and 2008) are highlighted in bold, indicating the black (Latino immigrant) clusters that are maintained through the 20 year period. Occupation clusters that are shared by both black and Latino immigrant workers in a

TABLE 3. TOP 10 LARGEST BLACK OCCUPATIONS BY YEAR

		Black			Latino		
	Occupation	**Composition**	**Concentration**	**Niche**	**Composition**	**Concentration**	**Niche**
				1990			
1	**Janitors**	8.0%	53.8%	1.91	3.2%	2.3%	0.76
2	**Truck, delivery, and tractor drivers**	6.9%	27.8%	0.99	1.5%	0.7%	0.22
3	**Cooks, variously defined**	6.7%	46.3%	1.65	4.7%	3.6%	1.16
4	Machine operators, n.e.c.	4.1%	36.4%	1.29	2.5%	2.4%	0.79
5	Private household cleaners and servants	3.6%	83.9%	2.99	0.3%	0.7%	0.23
6	Construction laborers	3.6%	32.8%	1.17	7.3%	7.2%	2.35
7	Housekeepers, maids, etc.	3.6%	63.8%	2.27	1.4%	2.8%	0.90
8	Assemblers of electrical equipment	2.9%	26.3%	0.93	1.6%	1.6%	0.52
9	**Nursing aides, orderlies, and attendants**	2.9%	53.9%	1.92	0.3%	0.6%	0.20
10	**Laborers outside construction**	2.5%	34.9%	1.24	6.4%	9.6%	3.11
	Total	*44.9%*			*29.2%*		
				2000			
1	**Truck, delivery, and tractor drivers**	6.9%	32.8%	1.29	1.32%	6.3%	0.25
2	**Cooks, variously defined**	6.8%	34.9%	1.38	5.53%	28.5%	1.11
3	Housekeepers, maids, etc.	5.3%	46.6%	1.84	3.91%	34.7%	1.35
4	**Janitors**	5.2%	38.3%	1.51	3.57%	26.6%	1.04
5	**Laborers outside construction**	5.1%	45.1%	1.78	2.32%	20.6%	0.80
6	Cashiers	4.3%	37.4%	1.47	0.62%	5.4%	0.21
7	**Nursing aides, orderlies, and attendants**	3.0%	64.6%	2.55	0.10%	2.1%	0.08
8	Machine operators, n.e.c.	3.0%	26.5%	1.04	3.31%	29.7%	1.16
9	Construction laborers	2.5%	11.4%	0.45	13.40%	62.9%	2.45
10	Stock and inventory clerks	2.2%	34.8%	1.37	0.71%	11.4%	0.44
	Total	*44.4%*			*34.8%*		
				2008			
1	**Cooks, variously defined**	9.7%	35.2%	1.67	6.6%	47.9%	1.13
2	**Janitors**	9.5%	42.6%	2.03	4.1%	37.0%	0.88
3	Cashiers	8.1%	46.1%	2.19	1.2%	13.4%	0.32
4	**Truck, delivery, and tractor drivers**	8.0%	34.6%	1.65	1.9%	16.7%	0.40
5	**Laborers outside construction**	3.8%	25.5%	1.21	1.7%	23.3%	0.55
6	**Nursing aides, orderlies, and attendants**	3.6%	72.7%	3.46	0.1%	3.5%	0.08
7	Vehicle washers and equipment cleaners	3.2%	38.5%	1.83	2.2%	52.9%	1.25
8	Retail sales clerks	2.6%	33.9%	1.61	0.1%	3.8%	0.09
9	Supervisors and proprietors of sales jobs	2.5%	26.4%	1.25	0.6%	13.1%	0.31
10	Guards, watchmen, doorkeepers	2.3%	57.3%	2.72	0.0%	0.0%	0.00
	Total	*53.2%*			*18.5%*		

TABLE 4. TOP 10 LARGEST LATINO IMMIGRANT OCCUPATIONS BY YEAR

		Latino			Black		
	Occupation	**Composition**	**Concentration**	**Niche**	**Composition**	**Concentration**	**Niche**
		1990					
1	Butchers and meat cutters	7.9%	36.4%	11.80	0.4%	18.1%	0.64
2	**Construction laborers**	7.3%	7.2%	2.35	3.6%	32.8%	1.17
3	Laborers outside construction	6.4%	9.6%	3.11	2.5%	34.9%	1.24
4	**Painters, construction and maintenance**	5.1%	13.8%	4.48	0.7%	17.7%	0.63
5	**Cooks, variously defined**	4.7%	3.6%	1.16	6.7%	46.3%	1.65
6	Packers, fillers, and wrappers	4.3%	21.3%	6.92	0.7%	30.4%	1.08
7	**Misc food prep workers**	3.3%	10.0%	3.24	1.2%	32.8%	1.17
8	Packers and packagers by hand	3.3%	11.9%	3.86	0.9%	28.3%	1.01
9	**Janitors**	3.2%	2.3%	0.76	8.0%	53.8%	1.91
10	Machine operators, n.e.c.	2.5%	2.4%	0.79	4.1%	36.4%	1.29
	Total	*47.9%*			*28.8%*		
		2000					
1	**Construction laborers**	13.4%	62.9%	2.45	2.5%	11.4%	0.45
2	Carpenters	10.1%	62.3%	2.43	1.0%	6.1%	0.24
3	Gardeners and groundskeepers	6.8%	64.7%	2.52	1.0%	9.8%	0.39
4	**Cooks, variously defined**	5.5%	28.5%	1.11	6.8%	34.9%	1.38
5	**Painters, construction and maintenance**	4.4%	64.2%	2.50	0.4%	5.3%	0.21
6	Housekeepers, maids, etc.	3.9%	34.7%	1.35	5.3%	46.6%	1.84
7	**Janitors**	3.6%	26.6%	1.04	5.2%	38.3%	1.51
8	**Misc food prep workers**	3.6%	55.0%	2.14	1.2%	18.3%	0.72
9	Machine operators, n.e.c.	3.3%	29.7%	1.16	3.0%	26.5%	1.04
10	Masons, tilers, and carpet installers	2.8%	60.3%	2.35	0.4%	8.4%	0.33
	Total	*57.3%*			*26.8%*		
		2008					
1	**Construction laborers**	19.6%	83.5%	1.98	1.3%	2.7%	0.13
2	Gardeners and groundskeepers	9.2%	87.2%	2.07	0.58%	2.7%	0.13
3	Carpenters	7.1%	78.5%	1.86	0.24%	1.3%	0.06
4	**Cooks, variously defined**	6.6%	47.9%	1.13	9.68%	35.2%	1.67
5	**Janitors,**	4.1%	37.0%	0.88	9.50%	42.6%	2.03
6	**Painters, Construction and Maintenance**	3.7%	87.6%	2.08	0.15%	1.8%	0.08
7	Housekeepers, maids, etc.	3.4%	54.9%	1.30	1.61%	13.1%	0.62
8	**Misc food prep workers**	2.9%	67.4%	1.60	1.55%	17.7%	0.84
9	Drywall installers	2.7%	100.0%	2.37	0.00%	0.0%	0.00
10	Masons, tilers, and carpet installers	2.6%	100.0%	2.37	0.00%	0.0%	0.00
	Total	*61.9%*			*24.6%*		

single year are shaded in grey. As the top panel in Table 3 shows, janitors, truck, delivery, and tractor drivers, and cooks were the 3 largest black occupations in 1990; these 3 occupations, together with nursing aids, orderlies, and attendants, and laborers outside construction were among the top 10 largest black occupations in 2008. Blacks are overly represented in some of the occupations, especially private households cleaners and servants, and housekeepers, maids, etc. with niche index of 3 and 2.3 respectively. In 1990 black workers in these 10 occupations combined constituted 45 percent of black low-skilled workers, while for Latino immigrants these 10 occupations comprised 29 percent of Latino immigrant workers. In 2000 and 2008, some of the service and labor occupations decline in importance for black workers, especially private household cleaners and servants, housekeepers and maids, as well as construction laborers, as they are taken over by Latino immigrants, so that in 2000 and 2008 these occupations show up on their list of top 10 occupations. On the contrary, sales jobs like cashiers, stock and inventory clerks, and retail sales clerks grew in importance and appear on the list in 2000 and 2008. This again speaks to the substantial growth of black share in sales jobs seen in Table 2. In 2000, the top 10 largest black occupations employed 44 percent of black workers, and 35 percent of Latino immigrant workers; the numbers are 53 percent and 19 percent, respectively, in 2008. This suggests that while blacks are becoming more concentrated in a few occupation clusters over time, Latino immigrants are diverging from these high black occupation clusters.

Table 4 show the statistics for the top 10 Latino concentrated occupations by year. It is apparent that Latino immigrants share some of the same clusters with blacks, though the number declined from 5 in 1990 and 2000 to 2 in 2008. In 2008, 5 occupations remain among top 10 largest for low-skilled Latino immigrants, including construction laborers, painters, construction and maintenance, cooks, misc. food prep workers, as well as janitors. Carpenters, gardeners and groundskeepers, masons, tillers, and carpet installers, as well as drywall installers became significant niches for Latino immigrants during the recent decade, with the latter two occupations being completely dominated (100 percent) by Latino immigrants in 2008. Overall, the changes reflect Latino immigrants' growing concentration in

craftsmen and operative occupations, as opposed to blacks. The dominance of the top 10 occupations increase over time, employing 48 percent Latino immigrants in 1990, 57 percent in 2000, and 62 percent in 2008. On the contrary, only between 25 percent and 29 percent black workers are working in the occupations listed in Table 4. This is clear evidence of the labor market segmentation along racial and ethnic lines. Both blacks and Latino immigrants are reinforcing their employment clustering over time, while the disparity between the two groups is enlarging.

An Occupational Dissimilarity Index (ODI) is developed to capture the (dis)similarity between a pair of occupational distributions. An ODI of zero would mean that the distribution of occupations were the same for the two groups. An increase in ODI means a higher level of disparity or dissimilarity between the occupational distribution of the two groups, and that a higher percentage of black or Latino immigrant workers would need to change occupation to achieve a uniform distribution. A decrease in the value of ODI indicates a convergence between the two occupational distributions. This index is calculated between blacks and Latino immigrants for the three years of 1990, 2000 and 2008, as well as for each pair between Latino immigrants distribution in 1990, 2000, and 2008, and black distribution in 1990, 2000, and 2008. The rationale for calculating there 15 values of ODI is to investigate how the respective occupational structures for blacks and Latino immigrants evolve over time, and in relation to each other. The values of the ODI are presented in Table 5.

TABLE 5. DISSIMILARITY INDICES OF OCCUPATIONAL COMPOSITION BY YEAR

	Black 1990	**Latino 1990**	**Black 2000**	**Latino 2000**	**Black 2008**	**Latino 2008**
Black 1990	--	--	--	--	--	--
Latino 1990	**51.67**	--	--	--	--	--
Black 2000	29.27	53.34	--	--	--	--
Latino 2000	50.22	39.90	**49.17**	--	--	--
Black 2008	42.14	63.13	33.08	62.48	--	--
Latino 2008	52.95	47.21	53.08	23.18	**61.46**	--

The occupational dissimilarity index is 51.67 between blacks and Latino immigrants in 1990, meaning 51.67 percent of either group need to change their occupational in order for the occupational distributions to be identical. In 2000, the ODI had declined slightly to 49.17 while by 2008, it rose to 61.46. This indicates that there is enlarging distributional disparity between the two groups. Comparing black occupational distribution through the decades, the ODI is 29.27 comparing the 1990 and 2000 distributions, 33.08 for the 2000 and 2008 distributions, and 42.14 for the 1990 and 2008 distributions. While blacks' employment pattern evolved over time, there remains a fair level of consistency. For Latinos immigrants the ODI is 39.90 comparing 1990 and 2000, 23.18 comparing 2000 and 2008, and 47.21 comparing 1990 and 2008. Again, Latino immigrants' employment structure changed within the last two decades, but remained relatively stable for the past decade. The dissimilarity between Latino immigrants in 2000 and blacks in 1990 answers the question of whether Latino immigrants are taking over black niches and that their 2000 occupational concentration resembles that of blacks in 1990. A high ODI of 50.22, or almost no change from the black 1990/Latino 1990 ODI suggests that convergence is not substantial. Similarly, the ODI between Latino distribution in 2008 and black distribution in 2000 is 62.48, and black distribution in 2008 is 63.13.

III. Compositional Change

The second question raised in the report is, how black and Latino immigrants' occupational composition change in relation to their own employment structure, as well as the change in the occupational composition of the other group. What we want to determine is whether the change, say a decrease, in black (Latino) composition in an occupation is associated with the change, say an increase in Latino (black) composition of that occupation. In other words, is there evidence that blacks (Latinos) are displaced in occupations by Latinos (blacks). To do this, regression models of compositional change are estimated. In particular, we regress the difference over time in one occupation's share of black (Latino immigrant) low-skilled workers on the difference over time in that occupation's share of Latino immigrant (black) low-skilled workers. We also include other explanatory variables, including the occupational composition in the beginning year and employment growth.

To explain, consider the regression for blacks as an example. The change in Latino immigrant composition in the same decade captures the effect of Latino immigrants' occupational concentration on blacks' occupational mobility. In other words, are blacks crowded out of certain occupations given the growth of Latino immigrants in these occupations? The inclusion of black composition in the beginning year measures whether and to what extent black workers converge to their existing employment concentration in the urban labor market through the decade. The total employment change in the occupation is included to measure the effect of labor market demand on workers' occupational choices. Since the metropolitan area experienced structural change in the labor market, change in the demand for different occupations would necessarily result in compositional change.[1] The model for Latino immigrant workers is essentially the same, but with one additional variable: the black occupational composition in the beginning year. Since Latino immigrants are the newcomers to Atlanta labor market, this variable indicates whether they are entering

[1] A vector of dummy variables indicating the 7 occupations are also included, using farming as reference. These are fixed effect variables that capture any unobserved variance and their relative appeal to the workers. These might include, but not limited to the different skill requirement, level of unionization, and locational concentration of these jobs, among other things.

the existing employment concentration of blacks and converging to their occupational pattern.

These models are run for each group, for the time periods of 1990-2000, 2000-2008, as well as 1990-2008 combined. Results seem to be quite consistent across the models. Consider first the regressions for the change in black composition. The share of black workers in an occupation in the beginning year is positively associated with the growth in the percentage of blacks in that occupation in subsequent years; the magnitude of this effect greater for the more recent period. In other words, black workers are reinforcing their existing occupational patterns with the dominant occupations experiencing faster growth. The coefficient on the change of Latino immigrant composition is statistically significant and negative through all models, indicating that the increasing presence of Latino immigrants in an occupation crowds out black workers in that occupation. A 10 percent increase in an occupation's share of all Latino immigrant workers is associated with a 1.7 percent decrease in the occupation's share of black workers in the 1990s, and 2.2 percent decrease in the 2000s. Thus, the competition between black and Latino immigrant workers appears to be quite substantial. Employment growth effect is positive and significant, signaling that increases in demand affects black workers' occupational redistribution. Share growth in almost all the occupational categories is faster than farm jobs (with the exception of operative occupations for 1990-2008), though most of the coefficients are not significant. This is not surprising given farming sector's declining importance for black low-skilled workers. Significant positive effects are only observed for sales occupations for all time periods examined. This speaks to the substantial growth of black workers in sales occupations in the past 20 years, as was observed in Table 2 as well.

Consistent results can be found for all three models on Latino immigrants as well. Interestingly, Latino immigrant composition in the beginning year is significantly negative while black composition in the beginning year is significantly positive in all models. Latino immigrants seem to be shifting away from their original occupational patterns, but towards black workers' occupational concentrations of the previous decade. At the same time, coefficients on black

composition change are all negative and significant. This suggests that while the change trajectory of black and Latino immigrant workers are diverging into different occupations, immigrants have taken over certain occupations abandoned by black workers. Again, these are the physical-intensive craftsmen and operative jobs left behind by black workers as they move into language-intensive sales and service jobs. The same significant positive effect of employment growth holds for Latino immigrants as well.

In sum, competition between black and Latino immigrant workers is quite pronounced on the occupational level. There exists a clear crowding out effect of Latino immigrant workers on black workers, and vice versa. As Latino immigrants penetrate into the manual labor occupations, blacks shifted away from these jobs and become more concentrated in service, sales, and public administration jobs, which usually require English proficiency, inter-personal communications, and a formal recruiting process.

IV. Wage Growth

In this section, we address the third question raised in this report: does the presence and growth of Latino immigrants in certain occupations dampen the wage growth of blacks employed in that occupation, and vice versa. A first look at the metropolitan mean hourly wage[2] for all low-skilled workers (including whites), and for black and Latino immigrant low-skilled workers in Atlanta for all three years is provided in Table 6.

TABLE 6. MEAN HOURLY WAGE FOR LOW-SKILLED WORKERS IN ATLANTA

	All	Black	Latino Immigrants	Black with 1990 Composition
1990	9.03	8.71	7.82	
2000	12.43	14.07	9.60	11.88
2008	13.73	14.24	11.24	13.35

The mean hourly wage of all low-skilled workers rose from $9.03 in 1990, to $12.43 in 2000, to $13.73 dollars in 2008. Wages are unadjusted for inflation. In all cases, low-skilled black mean wage exceeds the mean wage of their Latino immigrant counterpart. In 2000 and 2008, their wages even exceed the overall level of all workers. Mean wage of Latino workers saw a steady increase as well, from less than $8 in 1990 to $9.60 in 2000, and over $11 in 2008, though still lagging behind the wage rate of all workers and black workers.

It is of interest to calculate what the mean wage would be for blacks in 2000 and 2008 if blacks had the same occupational composition in 2000 and 2008 as blacks did in 1990. In the last column of Table 6, hypothetical black mean wages are presented. These were obtained by applying the 1990 black distribution across 8 occupational categories to each occupation's mean wage in 2000 and 2008, as presented in Table 7. If black occupational composition shifted to higher wage occupations, then the actual wage for blacks in 2000 and 2008 would be greater than the wage reported in the last column of Table 6. And, that is what we do observe.

[2] Hourly wage is obtained by dividing annual wage earnings by weeks worked last year times usual hours worked per week. Results are calculated using sample weights.

TABLE 7. MEAN HOURLY WAGE BY OCCUPATIONAL GROUPS

	1990	2000	2008
Managerial Occupations	17.47	16.19	28.22
Professional Occupations	10.83	16.02	21.17
Sales Occupations	8.30	10.84	17.89
Clerical Occupations	8.21	11.64	15.19
Craftsmen Occupations	9.95	15.68	13.58
Operative Occupations	8.93	12.02	12.18
Service Occupations	7.26	10.14	11.90
Farm Occupations	7.29	8.40	10.30

Mean wage levels and growth rates differ by occupational groups over the period. Of all the occupational groups (excluding management and professional occupations), sales occupations feature both the highest hourly wage for low-skilled workers in 2008 (almost $18) as well as the highest growth rate between 1990 and 2008 (215 percent). It is followed by clerical occupations with an hourly wage of $15 in 2008 and a growth rate of 185 percent over the past 18 years. Service and farm jobs have the lowest hourly wage in 2008 ($12 and $10, respectively), while craftsmen and operative occupations experienced the slowest growth during this time period (both at 136 percent). By both measures, service and clerical jobs are the better paid jobs in the current low-skill labor market. These are exactly the occupations that native black low-skilled workers have a comparative advantage over immigrant workers, face the least competition, and have established their dominance. On the contrary, Latino immigrant workers are increasingly concentrated in the less well-paid jobs of craftsmen, operative, and farm work. Therefore, though native-born black workers have been crowded out of certain occupations, they have moved into better occupations and the two groups are in occupation niches pertinent to their specialized skills.

Going back to Table 6, should black workers have kept their occupational distribution in 1990, their mean wage would have been $11.88 in 2000 instead of $14.07, and $13.35 in 2008 instead of $14.24. In other words, the occupational mobility and reallocation of blacks towards better paid jobs explain part of their overall wage growth through the two decades.

We regressed black/Latino immigrant occupation-level mean wage growth for each time period on the change in occupational composition of their own group,

as well as of the other group, among other variables. The most consistent and significant effect for black wage growth is the mean wage at the beginning year. Through all periods and specifications, an occupation with a high mean wage at the beginning year is associated with a significantly slower growth in the ensuing decade. Linking back to Table 7, these might be the jobs that were decently paid back in the 1990s but experienced relatively slow growth ever since due to economic structuring. Examples include craftsmen and operative occupations. On the contrary, those jobs with lower beginning wage in 1990, especially sales and clerical jobs, saw substantial wage growth in the past two decades. Job demand in an occupation hurts wage growth in 1990-2000, but affects wage growth positively in 2000-2008, as well as during the 18 years combined, though these effects are not significant. The main variable of interest is the composition change of Latino immigrant in an occupation. The coefficients on this variable are positive in all models, but not significant. No negative earnings effect is found, which suggests that the share growth in the share of Latino immigrants in an occupation drives down the wage growth of blacks working in the same occupation. The model specification here traces the wage growth over time and controls for any time-invariant factors intrinsic to the different occupations that determine their wage level. No consistent significant effect exists on black composition in the beginning year, but black composition change in 2000-2008 as well as 1990-2008 has a significant positive effect on wage growth. This might speak to the increased bargaining power of black workers in certain occupations, or that the causal relationship can be the other way around: black workers are attracted to those jobs with higher wage growth. From previous discussions, we see they shifted away from operative and craftsmen jobs towards higher paid sales and clerical jobs.

For Latino immigrant workers, occupational mean wage in the beginning year also has a negative effect on wage growth. The job demand in each occupation is positively associated with wage growth, but this effect is not significant. Latino immigrant composition in the beginning year has a significant negative effect on the occupation's wage growth, that is, occupations with larger Latino immigrant presence seem to have slower wage growth. This might be the negative labor supply effect. Neither black composition change nor Latino immigrant composition change play a

significant role. In sum, the occupation-level wage growth for both groups seem to tie more with the wage level of the occupation, the presence and growth of their own group in the occupation and the nature and variation among occupations. We observe no effect on earnings from the share and share growth of the other group. These results seem to echo again the discussion earlier on labor market segmentation and skill specialization. As these two groups gravitate towards the occupations that maximize the returns to their respective skills, the competition for jobs really come from their own group, rather than the other group.

V. Conclusion

This report provides a detailed occupational-level analysis that documents the dynamic competition between low-skilled Latino immigrant and native-born black workers in Atlanta labor market from 1990 to 2008. Three major findings emerge:

First, Latino immigrant and black low-skilled workers are heavily concentrated in disparate occupations in Atlanta, and they are more clustered in their occupation niches now than two decades ago. Janitors, truck and delivery drivers, as well as cooks remain among top 10 largest black occupations for all three years observed (1990, 2000, and 2008), while cashiers, sales clerks and other sales jobs appear for the first time in 2008 among top 10 largest black occupations. These top 10 occupations alone employed 52 percent of low-skilled black workers in 2008. For Latino immigrants, construction laborers comprised 7 percent of this workforce in 1990, 13 percent in 2000, and up to 20 percent in 2008. Other construction and craftsmen trades like painters, carpenters and drywall installers also rank high on their occupational distribution. The top 10 largest Latino immigrant occupations employed 62 percent of low-skilled Latino immigrants in 2008. Both groups became increasingly concentrated in their own occupation niches, evidenced by the increasing occupational dissimilarity index over time. In 1990, 52 percent of workers would have needed to change occupations for the two groups to achieve identical occupational distribution, while in 2008, 61 percent workers would have had to change occupation.

Second, in terms of their compositional change, while black workers reinforce their distributional pattern, Latino immigrants converged to blacks' occupational composition from a decade ago. Blacks were crowded out of certain jobs by Latino immigrants, or Latino immigrants penetrate into the jobs abandoned by blacks as blacks moved up to more desirable occupations. A 10 percent increase in an occupation's share of all Latino immigrant workers is associated with a 1.7 percent decrease in the occupation's share of black workers in the 1990s, and 2.2 percent decrease in the 2000s. In general, black workers became increasingly clustered in sales, clerical support and service jobs, as Latino immigrants shifted towards craftsmen, operative, and farm jobs. This is partly explained by the task

specialization of both groups, as black workers take the more language and communication-intensive jobs and Latino immigrants take the manual and physical-intensive jobs. Public administration is also a sheltered niche for black workers due to its formal recruitment process and eligibility requirement that to a large extent excludes Latino immigrant workers. Changes in the economic structure, or variations in the demand for different occupations, drive the occupational change of both groups.

Last, black workers exceed their Latino immigrant counterparts in mean hourly wages for all three years observed. Black hourly wage rate is $8.71 in 1990, $14.07 in 2000, and $14.24 in 2008, while for Latino immigrants, wages were $7.82, $9.60 and $11.24, respectively. Breaking down by occupational categories, sales occupations are the most highly paid in 2008 among low-skilled occupations at $17.89 per hour, followed by clerical at $15.19 per hour. Both categories saw the largest growth from their 1990 wage rates of $8.30 and $8.21. On the contrary, farm occupations are the least paid across all years. This is an indication that black workers are gradually shifting towards better jobs in sales and clerical occupations. Their upward mobility in occupational reallocation partly explains their wage increase between 1990 and 2000, and between 2000 and 2008. Should they maintained their occupational distribution in 1990 through the past two decades, their wage rate would have been $11.88 in 2000 instead of $14.07, and $13.35 in 2008 instead of $14.24. The presence and growth of Latino immigrants in certain occupations do not have a significant impact on the wage growth of blacks in those occupations. The occupation-level wage growth for both groups seems to tie more with the wage level of the occupation and the presence and growth of their own group in the occupation. As these two groups cluster more heavily in the occupations that maximize the returns to their respective skills, the competition for jobs appears to come more from within the group than from outside of the group.

Despite the fact that Atlanta region experienced substantial employment growth over the past two decades, the size of the low-skilled labor market remains relatively stable. Latino immigrants continue to enter the Atlanta region, and now comprise 42 percent of the low-skilled workforce. From 1990 to 2008, their

increasing presence crowded out black low-skilled workers from certain occupations. As Latino immigrants become increasingly clustered in manual-intensive craftsmen, operative and farm occupations, blacks gravitate towards the better paid and language-intensive sales, clerical and service occupations, forming a segmented low-skill labor market. The reinforcement of their respective occupational niches also tends to create closure to the other groups and intensify within-group competition. Economic development initiatives aimed at expanding employment opportunities for both groups need to open up more information and recruitment channels to facilitate the matching of workers to jobs. Skills training geared towards specific job requirements would also equip workers with the tools to successfully perform various tasks in the labor market.

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APPENDIX. OCCUPATIONAL CLASSIFICATION AND CORRESPONDING SOC CODES

Group	PUMS Classification	Standard Occupation Code
Management	Management and related	003-037
Professional	Professional specialties	043-199
	Technicians	203-235
Sales	Sales	245-285
Clerical	Administrative support	303-389
Craftsmen	Mechanics and repairers	503-549
	Construction trades	553-617
	Precision production	628-699
Operatives	Labor: machine operators	703-799
	Labor: assemblers	783-799
	Labor: transportation	803-865
	Labor: helpers	866-889
Services	Services: private household	403-407
	Services: protective	413-427
	Services: food preparation	433-444
	Services: health	445-447
	Services: building	448-455
	Services: personal	456-469
Farm	Farm workers	475-498

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