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SHORT ABSTRACT (250 words max.)

Nineteenth-century cities in Britain have developed along the 'slums and suburbs' model, characterized by stark geographic segregation and class inequality. Industrial Manchester serves as a quintessential case study, yet the reliance of urban historians on qualitative sources has compromised the precision and comprehensiveness of this area of research. Recent developments in Geographic Information Systems (GIS) and the digitization of historical documents have created new opportunities for studies of the city and its patterns of segregation. This paper presents the development of a geodemographic methodology used to visualize residential differentiation at an unprecedentedly specific scale for this period — that of the building. This approach makes use of individual-level data from the 1851-1901 censuses of England from the Integrated Census microdata database in conjunction with cadastral and commercial maps of Manchester in this period. Using occupational variables from the census coded through HISCO, a set of class clusters are defined and subsequently mapped onto the urban landscape. The results of this process illustrate patterns — and lack thereof — of residential differentiation and occupational structure, which consequently undermine traditional assumptions about class dynamics in Manchester and highlight the importance of a scale-specific analysis of urban segregation.

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EXTENDED ABSTRACT

TOPIC

Historical studies of segregation in Victorian Britain have been limited in their accuracy due to a lack of appropriate technology and accessible data.<sup>1</sup> Recent developments in GIS and the digitization of data, however, have created openings in this area of research for more specific study. Geographers have begun to take advantage of these opportunities but the contextualization of their work remains limited, while historians have been slow to adopt these methods.<sup>2</sup> This paper presents a geodemographic methodology developed for the purpose of studying residential differentiation and class segregation from a historical perspective. It offers new insight into the composition of one Victorian city in particular, Manchester, over the period 1851-1901, and asserts the importance of interdisciplinary methods for the field of history.

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<sup>1</sup> David Ward, "Victorian Cities: How Modern?," *Journal of Historical Geography* 1, no. 2 (1975): 135–51; Colin G. Pooley, "The Residential Segregation of Migrant Communities in Mid-Victorian Liverpool," *Transactions of the Institute of British Geographers* 2, no. 3 (1977): 364–82, <https://doi.org/10.2307/621837>; H Carter and S Wheatley, "Residential Segregation in Nineteenth-Century Cities," *Area* 12, no. 1 (1980): 57–62.

<sup>2</sup> Tian Lan and Paul A. Longley, "Urban Morphology and Residential Differentiation across Great Britain, 1881–1901," *Annals of the American Association of Geographers*, March 10, 2021, 1–20, <https://doi.org/10.1080/24694452.2020.1859982>; Lan and Longley, "Geo-Referencing and Mapping 1901 Census Addresses for England and Wales," *ISPRS International Journal of Geo-Information* 8, no. 8 (July 24, 2019): 320, <https://doi.org/10.3390/ijgi8080320>.

DATA AND METHODS

The methodology presented in this paper relies on two sets of primary sources — historical maps and individual-level census data. The historical maps used in this project range from the period 1848-1903 and include commercial, cadastral, and sanitary surveys. Building footprints and street addresses are derived from these maps, as well as the locations of key social institutions such as pubs, churches, and hospitals, and cultural institutions such as the Mechanic’s Institution and the Royal Manchester Institution. Using GIS software, we aggregated this information into shapefiles representing Manchester's city-center over the period of study, at the building-scale. In parallel, we extracted census data for the years 1851-1901 from the Integrated Census Microdata database (ICeM) provided by the University of Essex, to assess the demographic composition of Manchester. Historiography has discussed the nuanced, yet strong relationship, between work and class in nineteenth-century Britain, and as such, this approach used occupation as a proxy for class.<sup>3</sup> While this limited the study to employed-individuals, it nevertheless offers a comprehensive portrait of Manchester’s working, middle, and upper-middle classes. Using the HISCO-defined occupational codes provided by the ICeM, this population was sorted into a series of socioeconomic ‘clusters’ —or categories— derived from HISCO’s own class-scheme which differentiate by employment sector and skill-level (Figure 1). These categories are defined as: professional; administrative, management and clerical; sales; service; agricultural; and production. Figure 2 presents the proportion of the population employed in each sector in 1851.

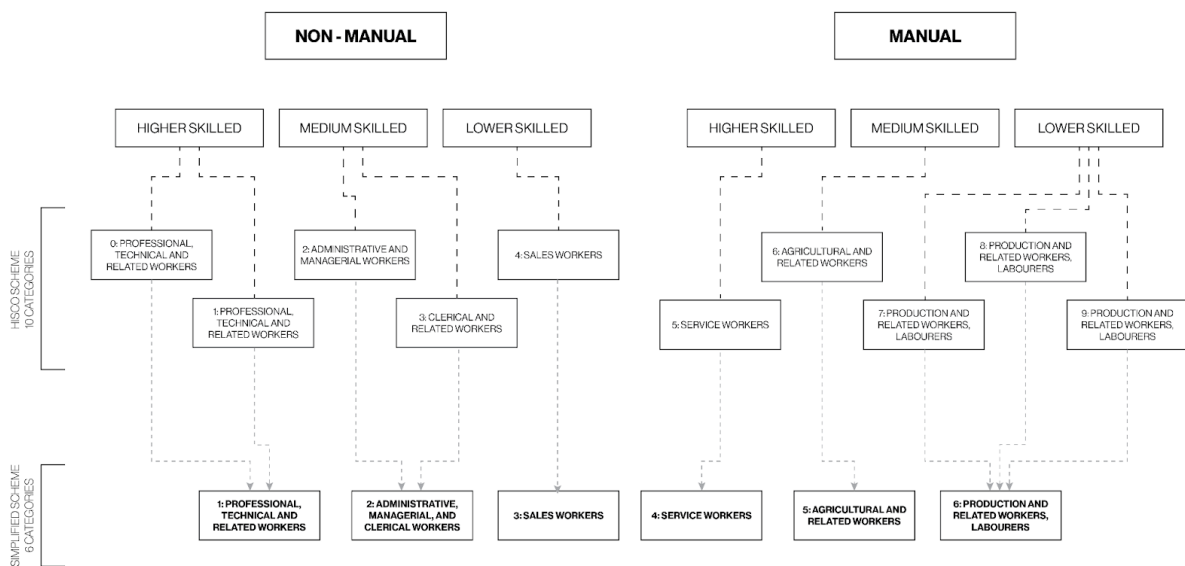


Figure 1. Class categorization scheme.

<sup>3</sup> Patrick Joyce, “Work,” in *The Cambridge Social History of Britain, 1750–1950*, ed. F. M. L. Thompson, 1st ed. (Cambridge University Press, 1990), 131–94, <https://doi.org/10.1017/CHOL9780521257893.004>; Patrick Joyce, *Work, Society, and Politics* (Great Britain: The Harvester Press Limited, 1980).

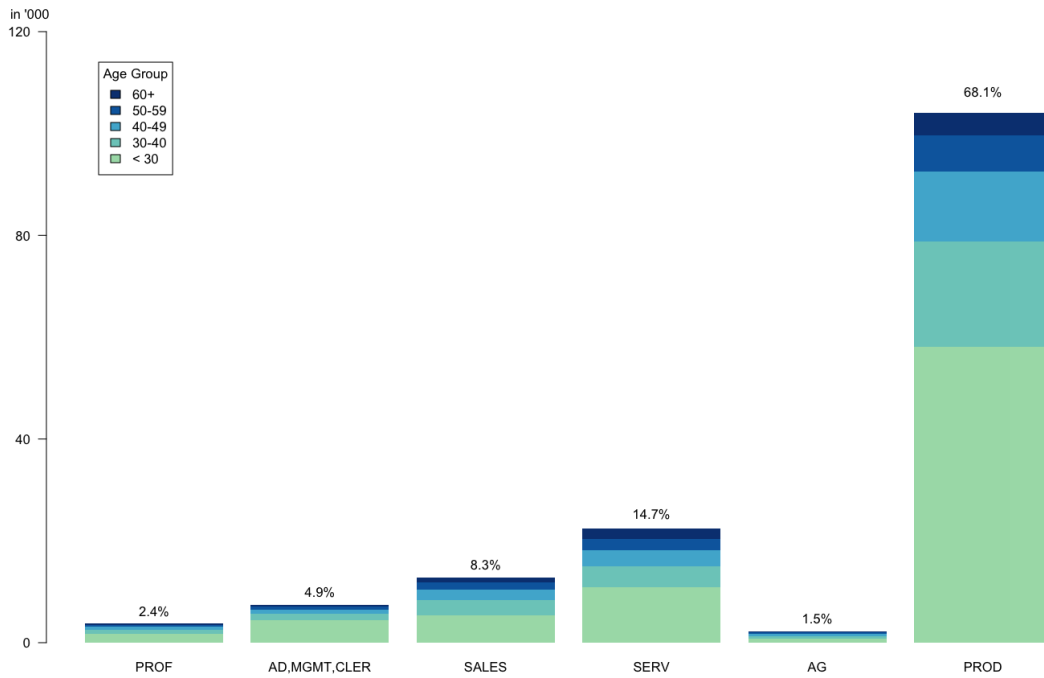


Figure 2. Population distribution across categories, Manchester 1851.

Finally, we projected the census data onto the generated shapefiles using individual addresses as the common variable. The maps thus produced represent two dimensions of residential differentiation: the distribution of each category across the area of study, and the range of categories in each building. The resulting graphics demonstrate that despite having been characterized as severely concentrically segregated, Manchester was in fact very much a class-integrated city.

## FINDINGS

At the time of this submission, only the data from 1851 have been processed. It is our expectation, however, that applications of this methodology will have been completed for the subsequent decades through to 1901 by the time of the conference. The figures shown below, therefore, are derived from the 1851 data.

The first set of maps generated represent the residential distribution for each of the six aforementioned class-categories for the area of study (Figure 3). As is to be expected given the proportion of the population employed in the production class, they are the most represented across the area of study. Importantly, this set of maps suggests that each class was, in fact, widespread across the city, rather than geographically clustered in separate neighborhoods.



Figure 3. Residential distribution for each of the six classes defined in 1851.

While these maps suggest substantial overlap in class-differentiated patterns of residential occupation, an additional analysis was necessary to study the internal composition of buildings. Figure 4 presents the range of occupational categories (OC) present in each building for the same area of study. For this figure, range was calculated as:

$$R = |\text{lowest occupational class present} - \text{highest occupational class present}|$$

For example, a building with a professional employee (OC<sub>1</sub>) and several production workers (OC<sub>6</sub>) would return an R<sub>5</sub>; while a building with one member of the service sector (OC<sub>4</sub>) and one of the sales sector (OC<sub>3</sub>) would return an R<sub>1</sub>.



Figure 4. Range of occupational classes present per address, Manchester 1851.

When held in comparison to Figure 3, we note that the majority of buildings with members of the highest professional class also appear as R<sub>5</sub> buildings; this demonstrates the diversity of building composition. This paper will include further figures which assert that not only were the populations of neighborhoods across the city diverse, but so were the compositions of residential buildings as members of very different classes lived at the same addresses.

The findings reveal that contrary to previous claims of severe spatial segregation in mid-nineteenth century Manchester, the city was in fact quite mixed. Applying this method to the rest of the period from 1861 to 1901 will offer additional insight into the city's residential patterns and their changes over the Victorian period. The application of interdisciplinary methodology therefore holds strong implications for revisiting traditional historical theories, as we may reassess conditions of segregation at precise scales.