The Restaurant Owner Database:

A Quantitative Study of Immigration, Identity, and Restaurant Ownership in Nineteenth and Twentieth Century New York

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Abstract

This paper discusses the relationship between immigrant experiences and restaurant ownership in New York City during the late nineteenth and early twentieth centuries through a quantitative study of the Restaurant Owner Database. The Restaurant Owner Database is a database of documented restaurant owners in New York City from 1870 to 1933, collected and cleaned by New York University Shanghai's Humanities Research Lab. Through the use of data visualization, geocoding, and other forms of data augmentation, the Humanities Research Lab was able to transform the Restaurant Owner Database into a robust historical resource. The qualitative and contextual research of Eastern European, Southern European, Germanic, and Anglo-Celtic immigrant groups built off of and informed a data-driven approach to historical research. A review of both secondary and primary sources illustrates potential correlations between historical events or attitudes and spatial shifts in the immigrant restaurant industry over time. Thus, a quantitative study, supplemented by contextual research, reveals interesting insights into immigrant identity and work among New York City restaurant owners in the late nineteenth and early twentieth centuries.

Introduction

There is no need greater than our need for food. Similarly, there is no desire greater than our desire for good food. Thus, food as both a need and desire has embedded itself in culture, and as societies advance, cultural shifts in what or how we eat are often not far behind. Nowhere is this more apparent than in the relationship between immigration and food in New York City. For most people, the idea of home is tied to the food they have grown up eating and the flavors to which they are accustomed. This allows them to carry their home across borders. Thus, to consider food as a cultural object is to understand its significance to both national and personal identity.

For much of history, the way the world dined stayed relatively consistent. Families ate at home, cooking and serving their own meals. Early institutions that can be considered precursors to the modern restaurant date back to Antiquity, but these institutions did not fundamentally change the way most people dined. However, in the mid nineteenth century, the modern restaurant was born, and the way we dined faced drastic changes.[1] The restaurant, as we understand it, is defined as a place of business, where customers may sit down and enjoy a meal selected and purchased from a fixed menu. Restaurants differ from taverns in that they are focused around food, as opposed to alcohol. In many ways, restaurants helped build a common consensus around cuisines, particularly in the case of immigrant-owned restaurants.

The great waves of immigration occurred primarily in the century preceding the boom of the restaurant industry, setting up New York City with a collection of rich cultures and foods moving into the nineteenth century. Though immigrants often arrived with little to nothing, leaving behind poverty and struggles in their home country, they brought with them

[1] Rebecca Spang, "The Invention of the Restaurant: Paris and Modern Gastronomic Culture," *Harvard University Press*, 2000.

their food practices, eventually transforming these traditions into a blossoming ethnic restaurant industry.

In the late nineteenth century, most immigrant-owned restaurants in New York City served ethnic foods and, at least initially, catered to the nationality group of the owner. Located primarily within the ethnic enclaves common throughout the city, these restaurants appealed largely to immigrants seeking a taste of home. In keeping to their cultures, Italian immigrants started Italian restaurants, German immigrants started German restaurants, and so on. In an effort to appeal to the widest variety of immigrants in their nationality group, many restaurants created food that bridged regional divides in taste and preparation.[2] Later, as the customer bases began to expand beyond the owner's nationality group, new foods emerged, informed by both the original culture, and the budding American culture. The intermingling of culture brought about by immigration and the fast-growing city led to hybrid cuisines and new trends in dining. These trends are also indicative of corresponding changes in immigrant identity, culture, and work.

This paper is concerned with the relationship between restaurant culture and immigrant identity in New York City during the late nineteenth and early twentieth centuries. Through a quantitative study of Manhattan restaurant owners from 1870 to 1933, paired with contextual research, this paper will introduce key trends in immigrant identity as it relates to food for Eastern European, Southern European, Germanic, and Anglo-Celtic immigrants. To further emphasize restaurants and food as a cultural product, this study will incorporate a spatial analysis of restaurant locations in relation to immigrant community locations into its discussion of identity and food.

[2] Cindy R. Lobel, *Urban Appetites: Food and Culture in Nineteenth Century New York*, University of Chicago Press, 2014.

Methods

This research project is motivated by the Restaurant Owner Database, a database of restaurant owners in New York City from 1870 to 1933 compiled and cleaned by New York University Shanghai's Humanities Research Lab. Our ultimate goal was to take a data driven approach to historical research. As a result, our methodology is largely focused on data augmentation. However, it is our belief that without context, no amount of raw data is enough to facilitate an understanding of a subject. Thus, a more accurate description of our goal would be to marry contextual and qualitative research with a quantitative, data driven approach to history in order to develop new understandings of people, places, and events. Key aspects of our methodology are detailed below.

In order to understand where different ethnic restaurants were located in Manhattan during the late nineteenth and early twentieth centuries, we assigned the restaurant owners in our database a nationality based on their name and birthplace. Thus, our research is predicated on the assumption that the ethnicity of the restaurant owner is indicative of the cuisine served at each restaurant.

Our approach to assigning nationality was twofold. First, we predicted the probability of a nationality assignment according to our full record of census data from 1920. The 1920 census data was used as a model for nationality assignment because each datapoint had been previously assigned a nationality based on manual archive research. Thus, through manual cross-checking each person listed in the 1920 data was matched to a verified immigration document that listed their birthplace. Our census-matching methodology consisted of checking the last name of each restaurant owner against the number of occurrences that last name appeared in the 1920 census data and the percentage of each birthplace associated with that last name. For example, if a restaurant owner's last name is "Eberhardt", and we have a total of 100 people in our 1920 census data named "Eberhardt", of which 80 were born in

Germany, 12 were born in Switzerland, and 8 were born in France, we would assign the restaurant owner an 80% probability of being German, 12% of being Swiss, and 8% of being French. The final nationality assignment would then fall to the most probable nationality. In this case, "Eberhardt" would be classified as German. Using the census-matching method, we were able to match around 70% of the restaurant database to a nationality assignment.

However, we noticed that some entries in our database were recorded as "First Name, Last Name" as opposed to "Last Name, First Name" which was the assumption coded into the census-matching program. This explained our inability to match the remaining 30% of the database. To resolve this problem, we flipped our census-matching program to get the nationality assignment of restaurant owners with a different last name placement. This allowed us to match an additional 14% of the database. The last step of the census-matching process was to remove entries that were listed under a business name as opposed to the owner's name and entries that we could not infer nationality from. This brought the percentage of successfully matched nationalities to over 90% using the census-matching method.

The second method of nationality assignment involved referencing a third-party API. At first, we used an API called Namsor. Namsor works by splitting names into substrings and mapping substrings to different features using machine learning. Based on this mapping, Namesor then outputs a nationality. However, based on sanity checks and a substantial lack of matches, we turned to another API called NamePrism. NamePrism differs from Namsor in that it not only splits the names into substrings and maps the features, but also uses communication patterns extracted from a major internet company to see what features of names communicate and are pooled together. NamePrism had less missing matches and spontaneous mismatches than Namesor, so we switched our API method to use NamePrism. The nationality assignments from NamePrism were then compared to the nationality

assignments defined by the census-matching method. This comparison was intended to verify the census-defined nationality assignments. We found consistent results for restaurant owners labelled as English, Irish, and Italian across both methods. However, the API method was less reliable than the census-matching method. In many cases, we defaulted to the census-defined nationality. As a supplemental step in the nationality matching process, we developed a web scraping program designed to search Ancestry's Immigration and Travel database for records on each restaurant owner. This step was considered a last resort for restaurant owners that could not be classified using the census-matching and API methods.

To further augment the database, we took the included restaurant addresses and geocoded them to make the database mappable. Geocoding is the process of taking an address and returning coordinates. However, addresses first needed to be cleaned. This was done by applying extensive Regular expression replacement, based on New York City road naming conventions—which tend to be somewhat consistent (cardinal directions at the beginning, numbers have ordinals, etc). After cleaning the addresses, we were able to convert the street names and house numbers into a latitude and longitude.

Our approach to contextualize research began with a broad review of different immigrant groups and their respective food cultures, both in their home countries and after their arrival in the United States. We divided ourselves into four groups focusing on the Eastern European, Southern European, Anglo-Celtic, and German communities respectively. Drawing on secondary sources of food history in New York City, we tried to understand how different ethnic restaurants emerged, developed, and thrived during the late nineteenth and early twentieth century. In addition to scholarly articles, we explored primary sources through ProQuest and other databases to build our understanding of the immigrant experience in New York City and the language around immigrant and food culture. We explored class, cultural imagination of ethnic cuisines, cultural fusion and authenticity, restaurant locations and

customer bases, menu prices, immigrant occupations and wages, and so on. Furthermore, as we got closer to the visualization process, we consulted data visualization resources, books on the digital humanities, and articles on human-computer interaction.

Overall, our research methodology was evenly split between data augmentation and contextual study. Furthermore, our process did not begin with one aspect, qualitative or quantitative, over the other. It began with both. From the beginning, we used data to inform our reading, and readings to inform our data. Through a balance of data and context, we were able to create a dynamic research process that took full advantage of both qualitative and quantitative study. This is evident in our insights on each focus group, as detailed below.

Eastern European Immigrants

From the year 1885 to 1905, restaurants owned by Eastern Europeans in Manhattan flourished (Figures 1.1 and 1.2). After 1905, these restaurants, especially those in the south, experienced a sharp decline (Figure 1.2). These two processes may be interestingly backed by the context of the Russian Revolution.

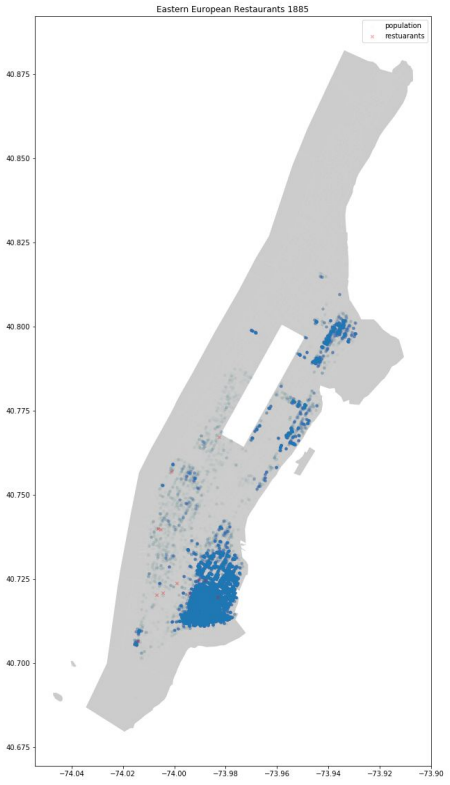

Figure 1.1. Eastern European population (blue) and restaurants (red) in 1885

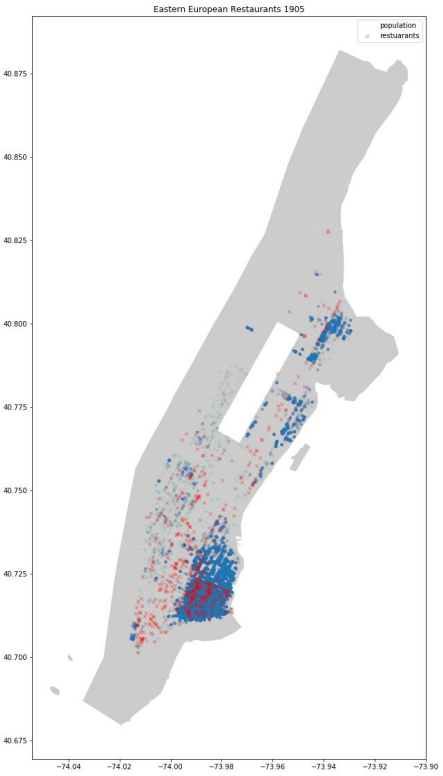

Figure 1.2. Eastern European population (blue) and restaurants (red) in 1905

During the late nineteenth century, New York was the target for a large influx of Eastern Europeans, known as the first wave of Russian immigrants. Due to limitations of the jobs they can perform in the Empire for their ethnicity, these Jewish immigrants were mostly unskilled laborers working minimum wage jobs. The increase in restaurant locations on the maps may reflect the growing waves of immigration. It should also be noted that the Jewish were in favor of delicatessens and pushcarts in their Lower East Side neighborhood that may have not been registered as restaurants[3]. It is possible that the actual restaurants were targeting customers from other ethnicities. The restaurants were dominated by Jewish culture, Russian cuisines were in fact very rare in New York City because many of the ingredients needed to be imported.[4]

[3] Katherine Leonard Turner, *How the Other Half Ate: A History of Working-Class Meals at the Turn of the century*, University of California Press, 2014.
[4] "Russian Beginnings" Library of Congress.

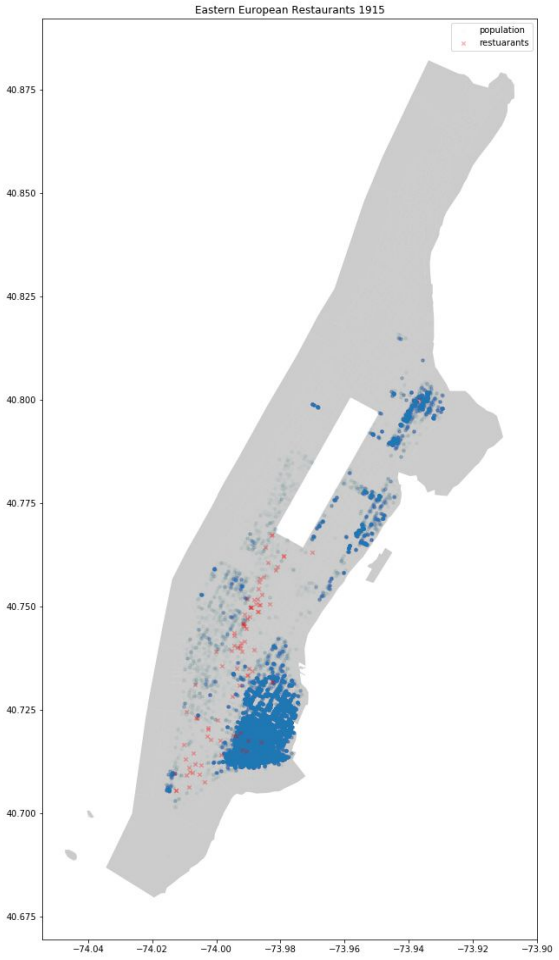

Figure 1.3. Eastern European population (blue) and restaurants (red) in 1915

However, this growth pattern took a sharp turn around 1915 (Figure 1.3). With the rise of Russian communism, the class of the immigration changed from the poorest peasants to more prominent members of the Empire. The United States responded to the 1917 Revolution with the First Red Scare beginning in 1919, which led to anti-immigration and xenophobic views against Eastern Europeans. Consequently, the Eastern Europeans experience harsher job opportunities; this decline can be reflected in a decrease in the number of Eastern European restaurants (Figures 1.3 and 1.4). Yet, although many restaurants in southern Manhattan were closed, there was a slight increase in the number of Eastern European restaurants near Midtown—an arguably more expensive neighborhood to live in. This could potentially hint at a shift in the class for the immigrant Russian restaurant owners.

Figure 1.2. Eastern European population (blue) and restaurants (red) in 1920

Southern European Immigrants

A large number of Southern European immigrants arrived in America during the Great Migration from Europe, beginning in the late nineteenth century. The high demand for cheap manual labor in America drew in an abundance of newcomers, including those fleeing poor conditions in their home countries, from poverty to political hardships, such as the Italians and Spanish. As a result, the top occupations for Southern Europeans in America at the turn of the century typically involved manual labor, where the pay tended to hover around $1.50 per day[5]. Italian immigrants also commonly held jobs as housekeepers and later tailors and barbers, while Greek immigrants worked in the mills and on the railroads. Given these common occupations, these immigrant groups generally led modest lives—a trend that was reflected in much of their food, which ultimately appealed to the working and middle classes.

For example, despite the subsequent boom of the Italian restaurant industry, many of the Italian restaurants were initially held in generally low regard, with low standards for quality of accommodation and appearance. While the food was gaining popularity, the owners themselves were often viewed with contempt and suspicion, as many onlookers claimed a "low moral character" of the owners, calling their venues "vile"[6]. The spread of Southern European ethnic restaurants in 1870 indicates a minor presence, at best, despite the prevalence of solid ethnic enclaves (Figure 2.1).

[5] "Notes on Labor, 1875-1900," Georgetown Preparatory School.
[6] "A Step Toward the Reformation of That Thorough-fare," *Chicago Daily Tribune*, May 18, 1879.

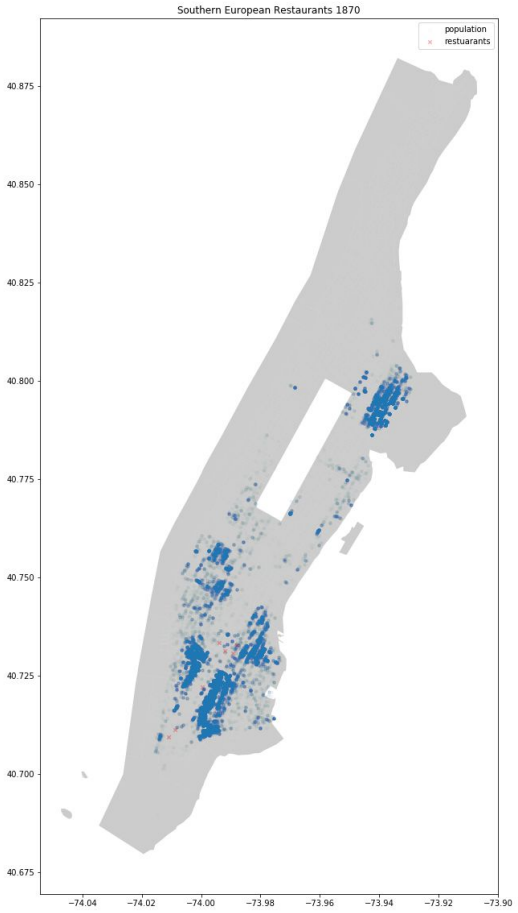

Figure 2.1. Southern European population (blue) and restaurants (red) in 1870

As America approached the turn of the century, near the end of the 1890s, the reputation of Italian restaurants faced a slight shift, and came to be regarded as places where one could obtain consistently cheap and high-quality meals. Much of this success was attributed to the fact that Italian restaurants were often "distinctly cheaper than the average," allowing them to draw in both locals and tourists[7]. Regardless, Italian and other Southern European establishments became more widespread and well-recognized. Their increased prevalence outside of the ethnic enclaves indicate the increasing focus on appealing to foreigners, and not simply immigrants (Figure 2.2).

[7] "March of the Italian Chef," *The Sun*, December 20, 1908.

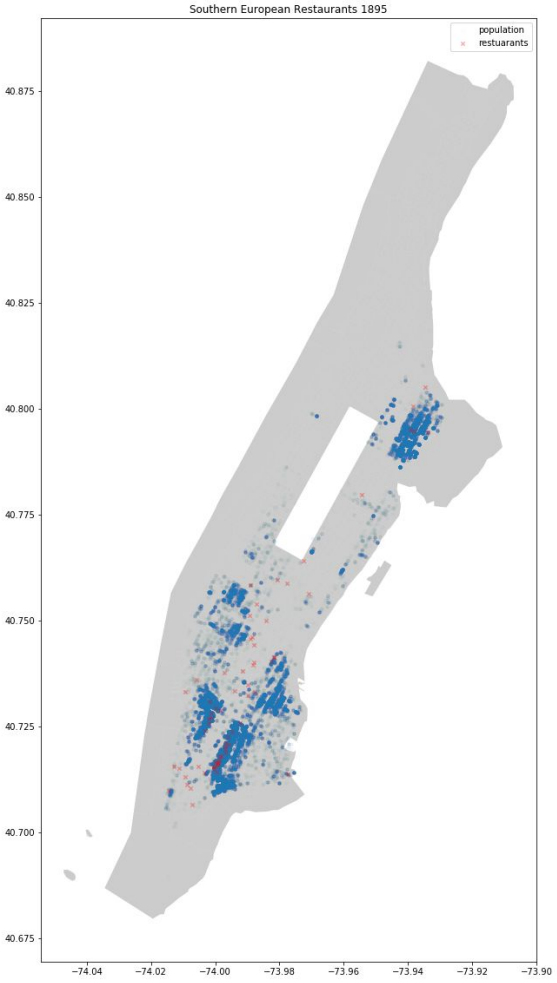

Figure 2.2. Southern European population (blue) and restaurants (red) in 1895

Shortly after, Greek establishments experienced a similar improvement in public perceptions in the early 1900s, prior to which they were not particularly relevant. Initially, they were viewed as unappealing alternatives to other restaurants, in a time when "nobody who could dine elsewhere dined at a Greek restaurant," but eventually gained popularity[8]. Throughout this transition, their prices remained low, a characteristic that was perhaps also used as a selling point, much like the Italian restaurants of the time. There does seem to be some indication, however, that these low prices yielded a lower quality of food than did their Italian counterparts, though this quality seemed to have been accepted by the public as standard. By 1910,

[8] "At a Greek Restaurant," *The Pacific Commercial Advertiser*, April 2, 1905.

Southern European restaurants seemed to have reached their peak, at which point they possessed a strong presence both within and outside the enclaves (Figure 2.3).

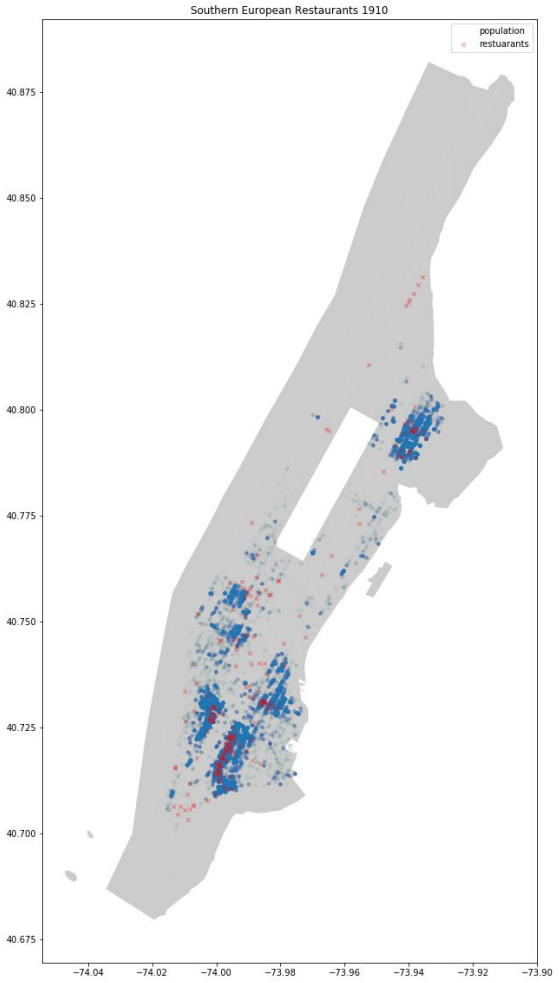

Figure 2.3. Southern European population (blue) and restaurants (red) in 1910

In particular, their increased presence in tourist-heavy areas such as Times Square alludes to their rising popularity outside of the immigrant communities, and their locations along the avenues indicates an appeal to those in transit. The aforementioned changes in perceptions of these restaurants likely contributed to the industry's ability to expand throughout the time period, and evidently, expand it did.

Germanic Immigrants

In the early 1870s, ethnic restaurants were still not popular in New York City, despite the city's increasing acceptance of international fashion and other cosmopolitan features. German restaurants, for example, were considered unclean and full of dirt. But in the late 1870s, things began to change and German restaurants were the first to become popular, as German immigrants were the most prominent ethnic group in New York City back then.[9] As shown in Figure 3.1 and 3.2, the number of German restaurants increased dramatically from 1875 to 1890, not only in the areas where German population concentrated, but across Manhattan.

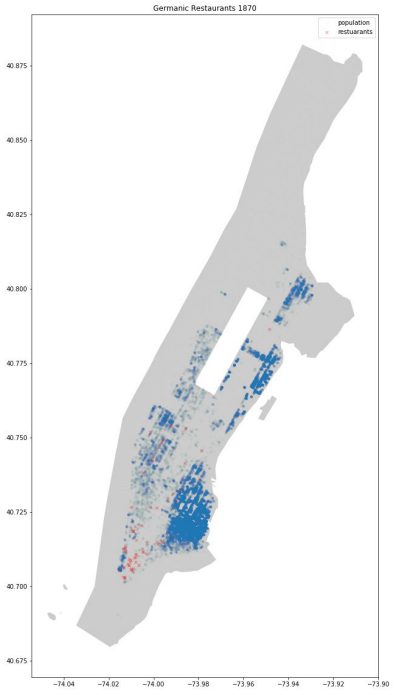

Figure 3.1. Germanic population (blue) and restaurants (red) in 1870

[9] Andrew Haley, "The Restauration: Colonizing the Ethnic Restaurant." *Turning the Table*. University of North Carolina Press, 2013.

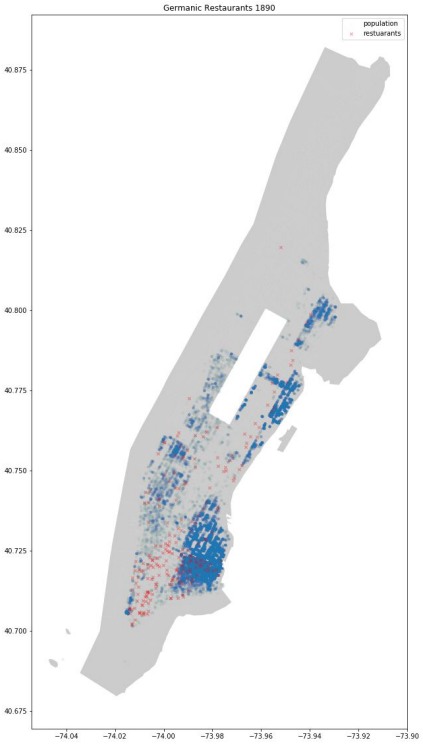

Figure 3.2. Germanic population (blue) and restaurants (red) in 1890

As *The New York Times* writes in 1873, a German restaurant was one of the few places where a worker could find cheap and abundant food for less than 35 cents.[10] Although there were also expensive ones, most German restaurants were affordable and therefore crowded. The general wage for servant girls in 1883 was around $4 a week, while some more experienced servants were paid $5 or $6 a week.[11] Considering that the top occupation in that period for Germans was servant, dining out in German restaurants was still quite a luxury. In 1914, the price for a good meal had risen to 45 cents in a German restaurant, according to the same newspaper, and popular imagination of a German meal included "plenty of brown bread and butter," "the sausages in all its varieties and kennel names," "the herring," "the pig's knuckle," "the potato salad," and "the pot cheese," plus beer. Three strategies were employed

[10] "German Restaurants." The NYT, Jan 19, 1873.
[11] "Servant Girls." Chicago Daily Tribune, Nov 11, 1883.

in a German restaurant to keep the price relatively low: "the right place to market," "the proper way to cook," and "serving at the right time."[12]

At the turn of the century, another important trend of restaurant dining was the rise of middle-class patrons. Germans were usually more successfully assimilated into the middle class due to their longer history of immigration. The top German occupations experienced a shift during this time. Back in 1880, German immigrants were most likely to be housekeepers, domestic servants or laborers. In the next thirty years, however, more Germans worked as waiters, bakers, clerks and salesmen. This professional turn indicates that Germans were earning more wages, and consequently had more money to dine out in the middle-class ethnic restaurants. At the turn of the century, managers, bureaucrats, small-scale entrepreneurs, and professionals alike became increasingly dissatisfied with aristocratic dining represented by the French menu, and more middle-class customers chose to patronize German restaurants, which were generally considered inexpensive and customer-friendly. This popularity was only surpassed later by Italian restaurants, which were famous for their big portions and abundant offerings.[13] As shown in Figure 3.2 and 3.3, German restaurants kept expanding from 1890 to 1910, not only in the Lower East Side where there were a great number of German enclaves, but also in the more central areas of Midtown Manhattan. This shift indicates that more German restaurants were catering to upper middle class customers who were not necessarily of German descent. This trend becomes more obvious compared with the map of 1920, when German restaurants in German enclaves significantly decreased.

[12] "Old High Cost of Living Has Missed Some Cafes." The NYT, April 19, 1914.
[13] Andrew Haley, "The Restauration: Colonizing the Ethnic Restaurant." *Turning the Table*.

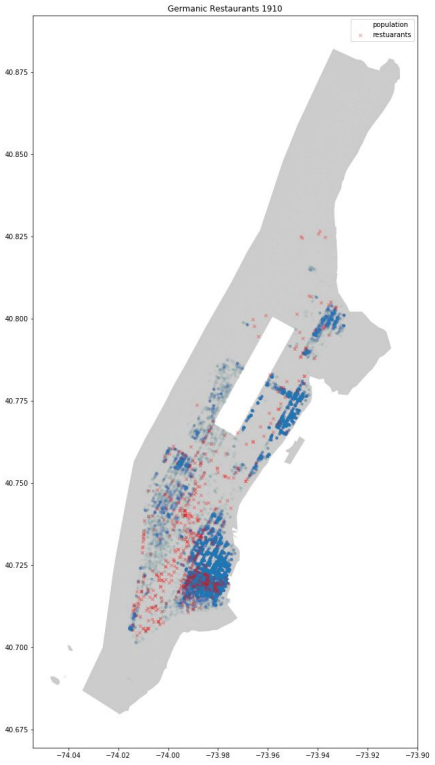

Figure 3.3. Germanic population (blue) and restaurants (red) in 1910

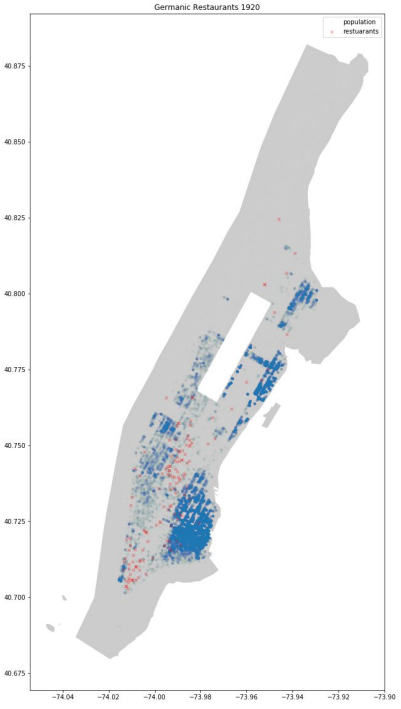

Figure 3.4. Germanic population (blue) and restaurants (red) in 1920

Anglo-Celtic Immigrants

Anglo-Celtic refers to restaurant owners that are either English, Scottish, Welsh, or Irish by nationality. These nationalities were grouped together due to a close relationship between their cultures and a similarity in their food. The majority of Anglo-Celtic cuisine is characterized by a simplicity of flavor and ingredients. A meal at an Anglo-Celtic restaurant during the late nineteenth century would typically consist of a plate of roast meat, either turkey, beef, lamb, or veal, a slice of ham, a side of vegetables, potatoes or beans, and pudding or pie.[14]

The nationality that makes up the majority of the Anglo-Celtic datagroup in the restaurant owner database is Irish. Of the 985 restaurant owners classified as Anglo-Celtic, 758 or 77% are from Ireland. The remaining 23% is made up of 174 restaurant owners from England, 52 restaurant owners from Scotland, and one restaurant owner from Wales. While the nationalities of the Anglo-Celtic immigrant group are closely related, their socioeconomic status, and success, in the New World was dramatically different, particularly in the case of Irish and English immigrants. In early historical accounts of the immigrant experience in New York City, there is a general consensus among historians that Irish immigrants were at the bottom of the socioeconomic hierarchy and had little to no upward mobility. In one account, Irish immigrants are described as "desperately poor... widely despised, and often subsisting on the bare edge of starvation."[15] In another, historian Kerby A. Miller finds "a gloomy picture of Irish-American deprivation… Irish experience in the New World was one of poverty and hardship."[16]

[14] Paul Freedman, "American Restaurants and Cuisine in the Mid-Nineteenth Century," *The New England Quarterly*, 2011.
[15] Tyler Anbinder, "Moving Beyond Rags to Riches: New York's Irish Famine Immigrants and Their Surprising Savings Accounts," *Journal of American History*, 2012.
[16] Kerby A. Miller, *Emigrants and Exiles: Ireland and the Irish Exodus to North America*, Oxford University Press, 1985.

In contrast, English immigrants had enjoyed remarkable success and access to opportunity. In fact, English immigrants showed the most economic advancement out of all the immigrant groups in the United States during the mid to late nineteenth century. As a result, the English were among the highest paid immigrant groups, while the Irish were among the lowest paid. The immigrant experience associated with each group is also markedly different due to differing social attitudes. The English assimilated easily, while the Irish battled discrimination and mistrust as a result of their unprecedented migration.[17] Thus, English immigrants were much more likely to succeed than Irish immigrants. This is important to keep in mind when considering Anglo-Celtics as a group because the dataset is skewed towards Irish immigrants as opposed to the other nationalities. Considering the fact that English and Irish immigrants existed on opposite ends of the socioeconomic spectrum, it is difficult to make any all encompassing claims about the Anglo-Celtic immigrant group as a whole. Furthermore, the dataset is neither representative of all restaurants operating in New York City from 1870 to 1933 nor scaled to represent the immigrant population at the time. Thus, Irish being a majority nationality within the Anglo-Celtic datagroup is not indicative of any relational economic or cultural power.

Beginning in 1845 and lasting until 1852, the Irish Potato Famine led to an unprecedented wave of migration from Ireland to the United States. Prior to the famine, Ireland was mired in poverty and dominated by absentee British landlords. Potatoes were cheap and easy to grow, and thus became the center of Irish diets. The average working man consumed 14 pounds of potatoes per day and the average woman consumed 11.2 pounds per day. When the famine struck and potato crops were affected by a spreading virus, the Irish had no alternative. Over seven gruesome years, the Irish fell victim to mass starvation, death, and disease. Approximately one million people died as a result of the famine, and nearly two

[17] Anbinder, "Moving Beyond Rags to Riches" *Journal of American History*, 2012.

million people fled the country in the largest single population movement of the nineteenth century.[18] Much of this immigration was concentrated in New York where, by 1850, Irish immigrants made up a quarter of the city's population. Although the Irish Potato Famine effectively ended in 1852, Ireland would spend years recovering and generations of irish immigrants would continue to travel to the shores of the New World in search of a way to quell their hunger. From 1820 to 1880, almost four million Irish immigrants entered the United States.[19] The substantial presence of Irish, and Anglo-Celtic, immigrants in New York City is evident in the spread of Anglo-Celtic restaurants in 1870 (Figure 4.1).

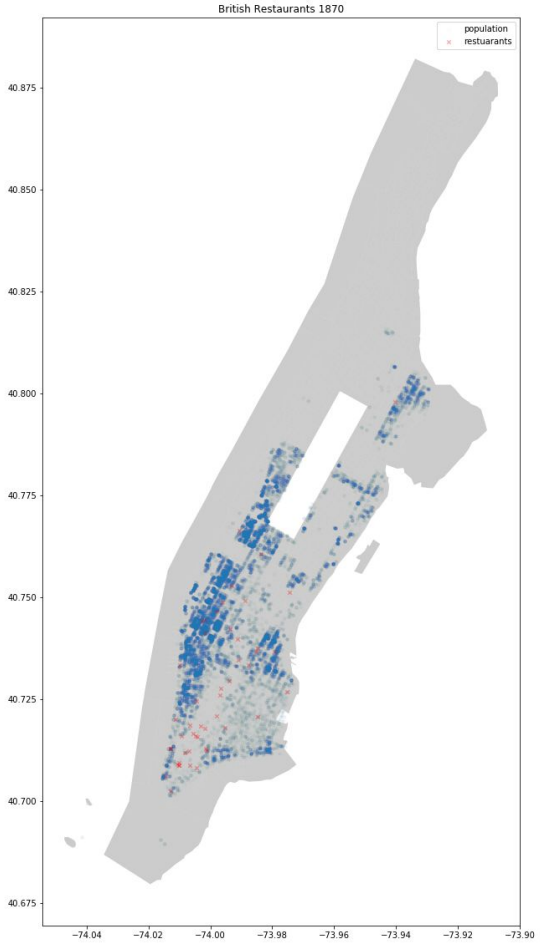

Figure 4.1. Anglo-Celtic population (blue) and restaurants (red) in 1870.

[18] John Keating, *Irish Famine Facts* (Teagasc 1996).
[19] Miller, *Emigrants and Exiles*, Oxford University Press, 1985.

The Irish Potato Famine generation of immigrants were met with widespread distrust and hatred due to their poverty and lack of skills. This antagonism was further exacerbated by their religion. In contrast to other, primarily protestant and Anglo-Saxon immigrants, the new Irish immigrants were Catholic. Anglo-Saxon Protestants who dictated much of American culture originally immigrated to the New World in order to escape Catholicism and thus chose to vilify the Irish more so than other immigrant groups that had similar immigration rates like Germans. In fact, the Protestant-Catholic relationship was so antagonistic in the New World that in 1844, prior to the famine and influx of immigrants, anti-Catholic, anti-Irish mobs took to the streets of Philadelphia to burn Irish Catholic houses and churches. In a series of riots from May to July 1844, Protestant American attacks led to the death or injury of over 80 people.[20] Thus, Irish Potato Famine Immigrants were entering a country already fraught with anti Irish sentiment. However, as the immigrant population grew over the mid to late nineteenth century, Irish Catholics were able to establish political power and, as a result, cultural power. In 1880, William R. Grace became the first Irish Catholic mayor of New York.[21] While Irish immigrants started to gain a degree of political power in the early 1880s, this shift was marginal, and in 1885 there was a noticeable decrease in the number of Anglo-Celtic restaurants (Figure 4.2).

[20] Amanda Beyer-Purvis, "The Philadelphia Bible Riots of 1844: Contest Over the Rights of Citizens," *Pennsylvania History: A Journal of Mid-Atlantic Studies*, 2016.
[21] Oliver Rafferty and David Doyle, *Irish Catholic Identities*, Manchester University Press, 2013.

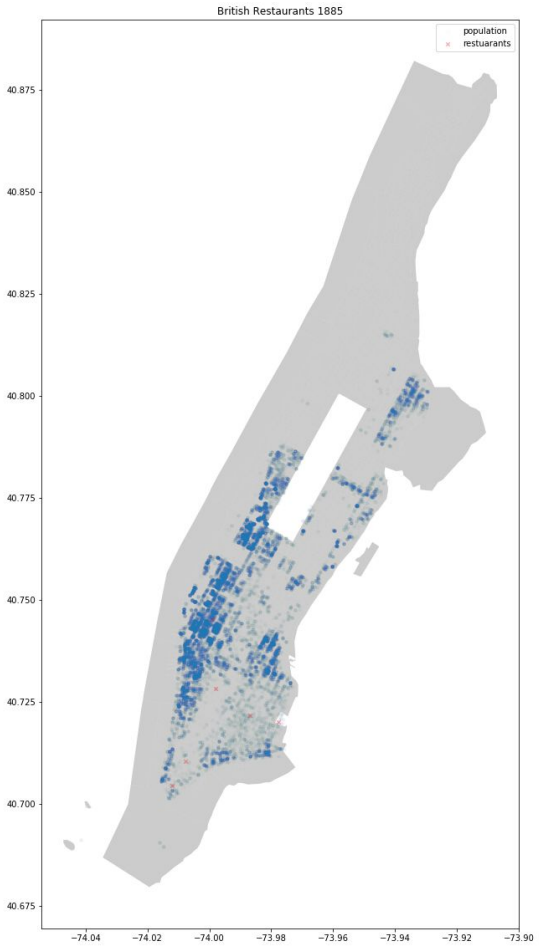

Figure 4.2. Anglo-Celtic population (blue) and restaurants (red) in 1885.

In contrast to Figure 4.1, Figure 4.2 shows less restaurants along the spine of Lower Manhattan. This decrease may be related to the difficulties and discrimination faced by the majority of Anglo-Celtic immigrants and may reflect a consolidatin of Anglo-Celtic businesses within Anglo-Celtic communities. It is possible that in response to anti Irish, anti Catholic sentiment, Irish Catholic restaurant owners were forced to close their restaurants or relocate to areas that were more densely populated by other Anglo-Celtic immigrants.

However, in 1890, there seems to be a resurgence of Anglo-Celtic restaurants along the spine of Manhattan in both Lower Manhattan and Midtown (Figure 4.3).

Figure 4.3. Anglo-Celtic population (blue) and restaurants (red) in 1890.

A generation after the influx of Irish Potato Famine immigrants, the Irish were moving up the social ladder in a similar way to their English counterparts. This was due in large part to their growing control of political institutions around the country. Furthermore, as a large influx of Chinese, Southern European, and Eastern European immigrants entered the United States in the late 1880s and early 1890s, Irish Catholic immigrants and politicians were able to inspire the same hatred they once faced against a new cohort of immigrants. In this way, the Irish were no longer just Irish, but also American.

Visualization

This research project is a data driven study of history, and as such, it was important to consider data visualization. Thus, the question of visualization was raised early in the research process and, in many ways, informed our subsequent research. The dissemination or communication of research became inseparable from its creation.[22] An early part of our research was mapping our restaurant database on top of immigrant populations in order to understand whether ethnic restaurants were serving their own population (Figure 5.1).

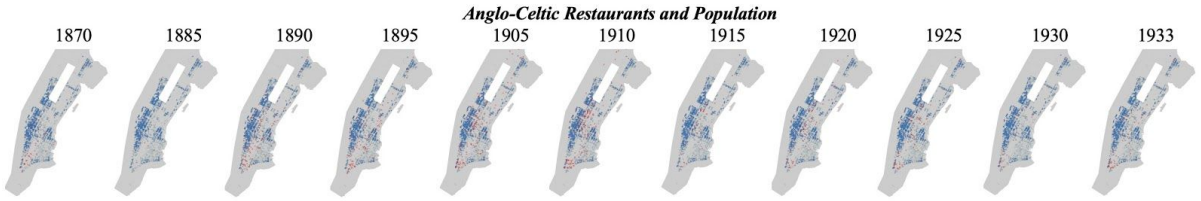

Figure 5.1. Anglo-Celtic Restaurant and Population Mapping from 1870 to 1933

Through this initial mapping we were able to identify trends we were otherwise blind to; and, since we were dealing with an expanding database, we realized that this ability would be invaluable not only to our own research, but also to future research. Thus, we began exploring the idea of animated or interactive maps as both a companion visualization to our research and a method for other researchers to explore the database. In service of this goal, we first conducted a literature review of data visualization trends in the digital humanities and human-computer interaction. Stanford University's *Spatial History Project* was important to our understanding of visualization in a historical context.[23]

The *Spatial History Project* is a database of visualizations produced by the Spatial History Lab at Stanford University. The goal of the *Spatial History Project* is to experiment with visualization as a tool to develop new arguments about historical processes and understandings of major historical events. Through in depth study of Spatial History Lab

[22] Katrina Jungnickel, *Transmissions: Critical Tactics for Making and Communicating Research*, The MIT Press, 2020.
[23] "Stanford History Project," Stanford University Spatial History Lab.

visualizations, we developed a method of integrating narrative techniques and visual forms into data presentation. Furthermore, this process allowed us to gain a deeper understanding of visualization as it applies to patterns in time and space.

The main tenet of our data visualization method is storytelling. Data, whilst objective, often has a human dimension and, as a representation of real life, is filled with stories.[24] The job of a data visualizer is thus to make these stories more apparent to the casual observer. The key to this is to take advantage of emotional force while establishing conceptual coherence.[25] The first step in taking advantage of emotional force is to think character development. Every datapoint is essentially a character. As a character, every datapoint has a past, present and future. Furthermore, no character exists in a vacuum and thus data groups should not be treated as separate compartments, but as several characters that interact and form relationships over time.

To expand on the theoretical framework behind our approach to data visualization, we began experimenting with D3. D3 is a JavaScript library designed to work with data to produce web-based visualizations. In D3 we were able to test features like using a slider to navigate through time, dropdown menus to filter by datagroup, and viewport size to create focus. However, these experiments remain in early stages of development. Future iterations of this project will expand upon our visualization work.

[24] Nathan Yau, *Visualize This: The Flowing Data Guide to Design, Visualization, and Statistics*, Wiley Publishing, 2011.
[25] David M. Berry and N. Katherine Hayles, "How We Think: Transforming Power and Digital Technologies," *Understanding Digital Humanities*, Palgrave Macmillan, 2012.

Conclusion

The process of cleaning, geocoding, and further augmenting the restaurant database through nationality assignment was crucial to finding patterns across time and space. Data cleaning and augmentation informed the immigrant focus groups in this study; Eastern European, Southern European, Germanic, and Anglo-Celtic immigrants were among the top immigrant categories in the database.

Fuelled first by the Russian Revolution and later curtailed by the American Red Scare, Eastern European immigration and restaurant ownership is marked by great influxes and steady declines, as evidenced by the database mapping. However, preliminary mapping also hints at a possible shift in class circumstances over time for Eastern Europeans as more restaurants are concentrated in expensive areas. Southern European immigrants fled their native countries in search of wealth and opportunity. Initially, Southern European restaurants were considered low quality. However, over time, these restaurants were able to gain popularity and acceptance by the larger American culture. Germanic owned restaurants started popular and managed to maintain popularity over the course of the late nineteenth and early twentieth centuries. Finally, Anglo-Celtic restaurant owners were able to transcend anti-Irish, anti-Catholic sentiments and establish a growing restaurant industry and immigrant community.

The trends highlighted in this paper became increasingly apparent with mapping and visualization. Thus, visualization became an integral part of the research process, and further development of this project would no doubt include a polished interactive visualization. This visualization would act as both a window into our research and a starting point for new research. In conclusion, a quantitative study of the Restaurant Owner Database supplemented with contextual research reveals interesting insights into immigrant identity and work among Manhattan restaurant owners in the late nineteenth and early twentieth centuries.

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