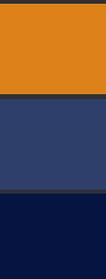




SUSTAINABLE COMMUNITIES

INTRODUCTION



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TRANSIT-ORIENTED DEVELOPMENT IN NEW YORK CITY & THE BRONX

With some of the highest densities and most robust transit networks in the western hemisphere, New York City is the apex of what transit-oriented development can achieve. Not only does the vitality of Grand Central Terminal and Penn Station support one of the largest Central Business Districts in the world, these regional transportation nodes anchor an enormous transit shed which extends throughout the tri-state area. While not every neighborhood in New York City is as intimately linked to transit as those in Manhattan, outer borough communities still have good transit access and low levels of vehicle ownership when compared to most other American cities.

Similar to transit access, the scale of development in New York City varies widely. Much of Manhattan, the core of the city, is characterized by high-density development. As one moves outward from the core, into the outer boroughs, density tends to decrease as transit options diminish and distance from core Central Business Districts increase, until neighborhoods are almost suburban in character. Similarly other outer borough neighborhoods characterized by low density residential development tend to be further from mass transit options and are often reliant upon vehicles, as seen in Figure 3. Conversely, outer-borough neighborhoods with higher density were often built because of their proximity to mass transit, especially elevated rail or subway lines. The South Bronx, with convenient mass transit options and proximity to Manhattan, tends to have higher densities than the rest of the borough.

In the Bronx, population growth initially followed a pattern of concentration near the subway lines and elevated rails out of the city center. The Metro-North lines historically did not experience the same population concentration along its rail corridors as the subway, as they predated development and were often located away from residential uses. Both of these trends can be clearly seen in Figure 3. Because of this, Bronx Metro-North stations have typically not been properly integrated into the traditional population centers.

As Figure 2, Population in New York City, 1850-2010 highlights, population in the Bronx has been historically tied to transportation access. The construction of the Subway system brought dramatic growth to the Bronx in the early 20th century, while the highway system in the 1950s coincided with a shrinking population and disinvestment. The Bronx today, however, is rapidly transforming; after decades of decline, investment is growing, crime is at an all time low, the median income is rising, and it is projected to be the fastest growing borough in the City in next twenty five years.¹

FIGURE 1 | (Top) River Avenue at 161st Street circa 1900. Elevated trains were some of the first forms of public transportation, greatly impacting the development and density of New York City. (Bottom) River Avenue today. The Bronx's neighborhoods were particularly shaped by large transportation projects following the 1950s that emphasized ease of access for vehicles.

Source: © The Museum of the City of New York



METRO-NORTH IN THE BRONX

This growing borough requires greater intermodal connectivity and expanded transit access to continue this momentum. Currently the Subway lines, MTA bus routes, and thirteen Metro-North stations provide concentrated access to certain areas in the Bronx. In addition, two new Select Bus Service (SBS) routes, Bx12 and Bx41 streamline access along key Bronx corridors. A comprehensive network that connects these various transit modes within the borough, to the City, and to regional job centers is critical to the development and quality of life in the Bronx. Re-assessing the role of underutilized resources like Metro-North can go a long way toward reconnecting Bronx residents and employees to viable transit assets.

The Metro-North commuter railroad provides service and access to job centers in Manhattan, Upstate New York, and Connecticut at thirteen stations in the Bronx, as seen in Figure 8. Strengthening Metro-North's connections in the Bronx holds considerable promise to help meet current transit and future access needs, to job opportunities within the Borough, the Manhattan Core and to employment centers north and east of the city. Additionally, the Penn Station Access Study currently underway by Metro-North would potentially provide access to the eastern Bronx with service on Amtrak's Hellgate Line

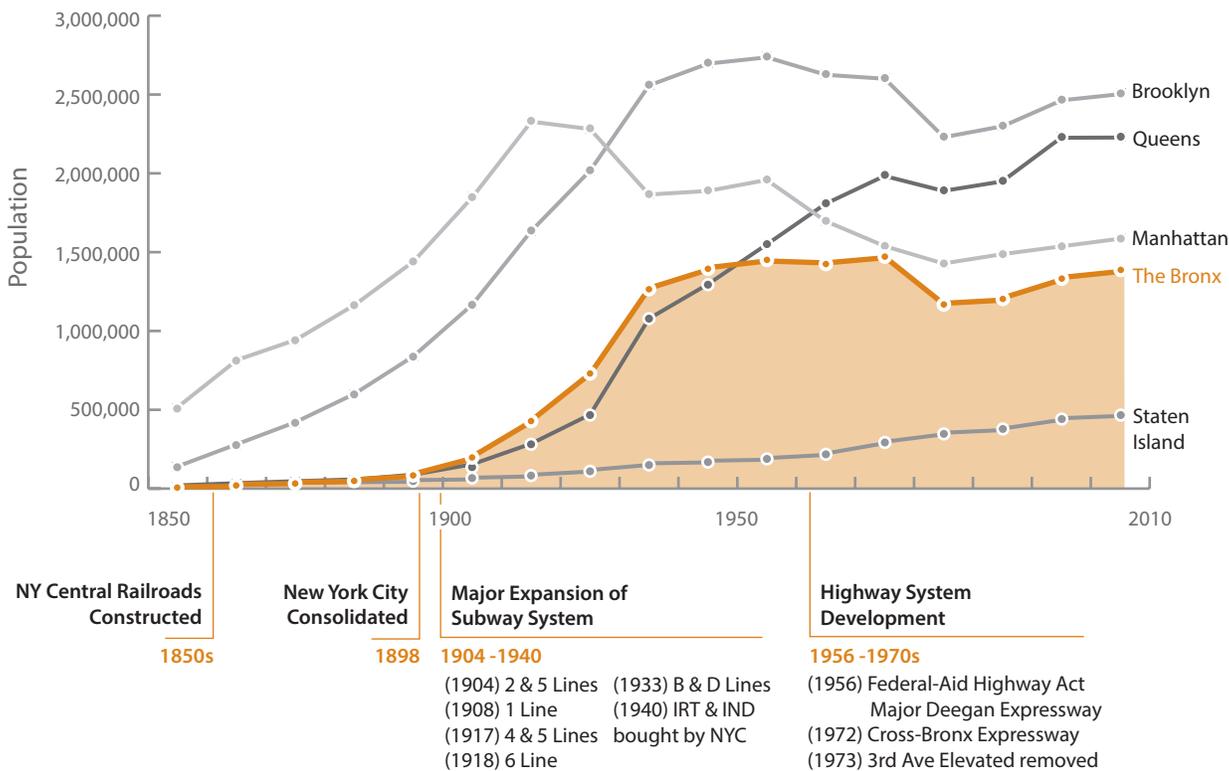


FIGURE 2 | Population of New York City, 1850-2010. The outer boroughs saw explosive growth following the construction of the Subway system, as many left crowded Manhattan in search of better living conditions. The period between the 1950s and 1970s saw a shift to suburban development, followed by an inner-city population decline due to disinvestment, slow economic growth, and a rise in crime. Renewed investment and interest in urban living have led to the current trend of steady population growth.

Note: all Subway lines listed refer to current Subway lines in the Bronx; originally, these were either Interborough Rapid transit Company (IRT) or Independent Subway System (IND) private lines. Sources: US Census, Wikipedia, Population 1790-1960: The World Almanac and Book of Facts. Evelyn, Gonzalez. Bronx: A History. 2004.

POPULATION DENSITY IN THE BRONX

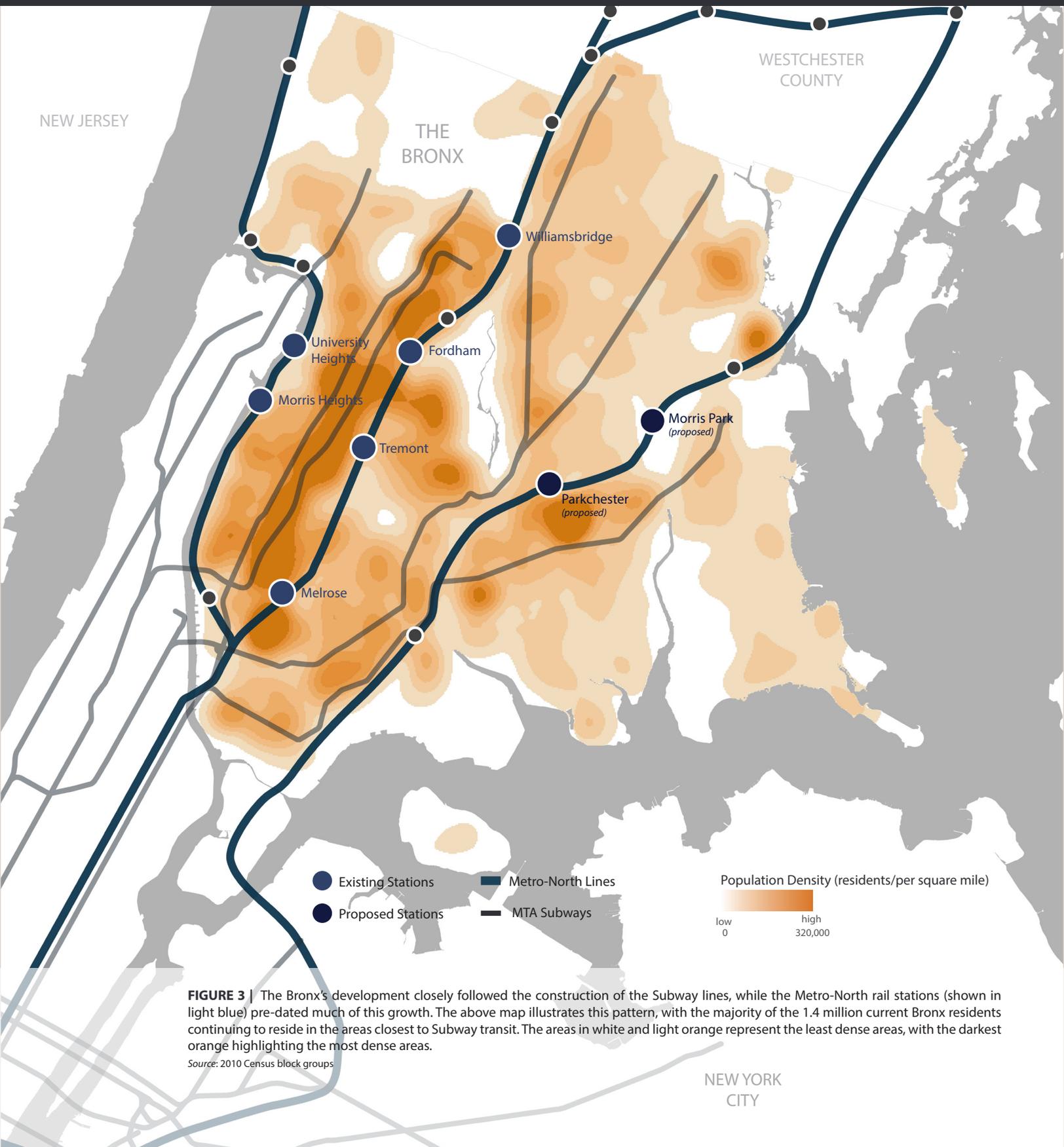


FIGURE 3 | The Bronx's development closely followed the construction of the Subway lines, while the Metro-North rail stations (shown in light blue) pre-dated much of this growth. The above map illustrates this pattern, with the majority of the 1.4 million current Bronx residents continuing to reside in the areas closest to Subway transit. The areas in white and light orange represent the least dense areas, with the darkest orange highlighting the most dense areas.

Source: 2010 Census block groups

which would stop at four new stations in the Bronx. Ridership at Bronx stations has increased 150% since 1990; however, outside of a few select stations, such as Fordham, ridership remains very low at many of the Bronx stations, as shown in Figure 4.

In fact, many of these stations have some of the lowest ridership in the system despite being in some of the densest neighborhoods served by Metro North. This may be a product of many factors: price; service and frequency; difficult intermodal and pedestrian connections; lack of surrounding amenities; and incompatible land uses. Due to these challenges, the existing stations are not designed to meet the needs of urban commuters and are therefore underutilized by Bronx residents

Cost can be a deterring factor for Bronx residents especially for inbound trips where the shorter commutes to Manhattan do not necessarily outweigh paying the higher Metro-North price. Redundan-

cies along inbound routes, such as subway and bus lines into Manhattan, deter Metro-North from lowering costs as Metro-North is not designed to compete with these transit options. Many inbound Metro-North trips also require an additional transfer on a subway or bus to reach a final destination. Outbound rides are priced much more favorably for Bronxites. For example, while a weekday fare traveling inbound from Melrose to Grand Central Terminal costs \$8.25, the outbound cost from Melrose to White Plains is only \$3.50, despite being more than twice as far away.² However, despite price favorability, as transit patterns for these outbound users are typically the reverse of the majority of rush hour commuters into Grand Central Terminal, train service is less frequent. Additionally, outbound ridership is very reliant on the accessibility and connectivity of the station to their final destination, the so called "last mile". Distant office parks which do not provide shuttle service may be inaccessible to transit riders.

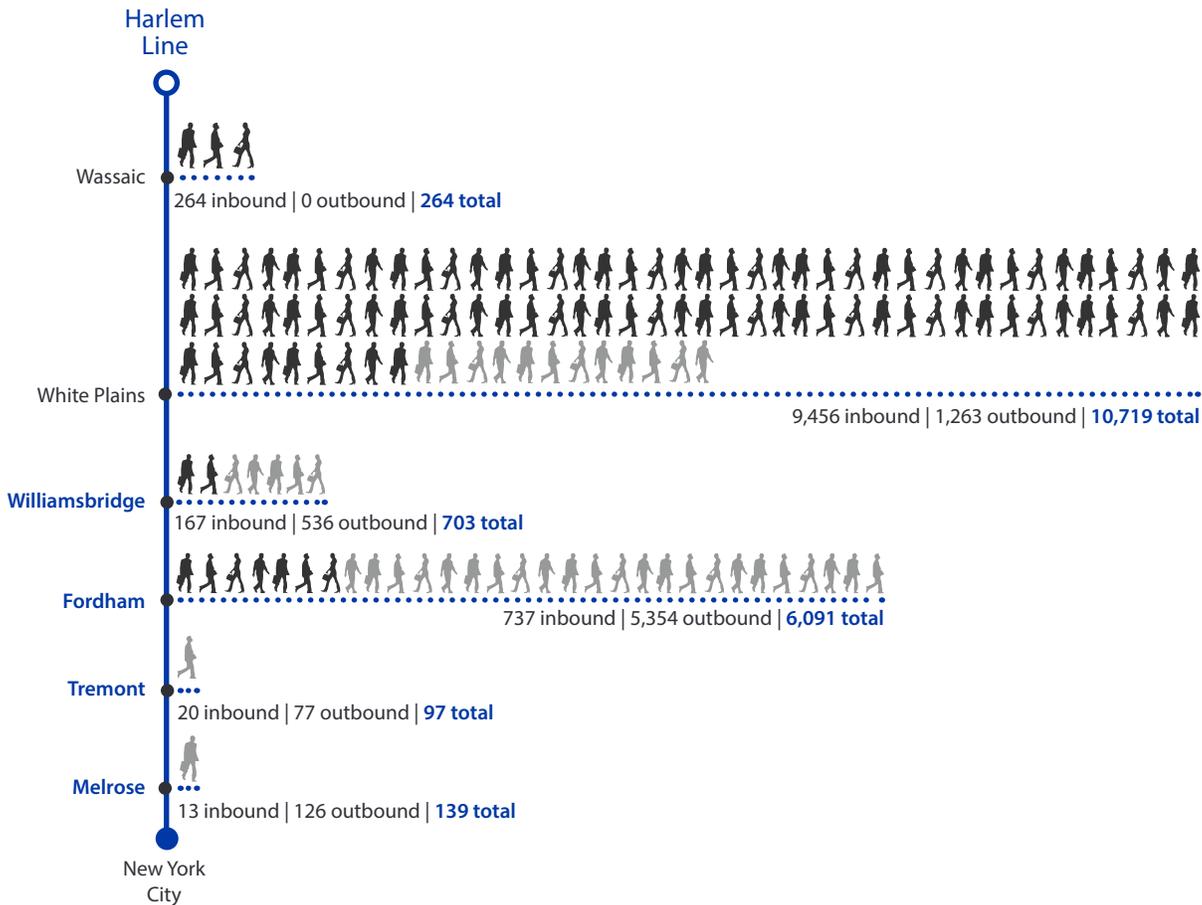


FIGURE 4 | Metro-North station boardings for select stations, per weekday. The six current stations in this study are bolded in color, and (with the Fordham Station as an exception) have some of the lowest ridership rates in the system. (Left) Harlem Line. (Opposite) Hudson Line. Source: MTA, 2011.

Finally, through our community outreach process we also heard that residents around Metro-North stations were unaware of schedule, service or even location of the station. Often this is due to station layout, design and lack of way-finding and integration with surrounding uses. Nonetheless, despite all the current deterrents and low ridership levels, according to Metro-North, the outbound commute from Manhattan and Bronx stations represents the largest rail reverse commute market in the country.³ This figure would undoubtedly rise exponentially if the ridership levels of Fordham could be reproduced in other station areas.

BRONX COMMUTING PATTERNS

Figure 7 depicts where Bronxites travel for employment. In 2011, of the roughly half a million Bronx residents working, almost 40% of them are working in Manhattan, while roughly a quarter remain in the Bronx. Although trips to Manhattan still account for

the majority of the Bronx commute share, trips to the outer boroughs and destinations outside of the city are a substantial and growing share. In fact, the number of Bronx residents commuting to adjacent counties grew at an explosive 38% between 1990-2008.⁴ As of 2011, about 10% of Bronx residents commute to Brooklyn, roughly 8% commute to Westchester, and another 7% commute to Queens for work.

Figure 7 also demonstrates that roughly a quarter million people work in the Bronx. Of this total, almost half are living in the Bronx as well. Nearly 10% of Bronx employees live in Westchester County, which constitutes a greater segment of the number of Bronx employees than those that live in Manhattan, Queens or Brooklyn, respectively.

Similar to much of New York City, Bronx residents rely heavily on public transit to make their commutes, with roughly 65% using public transit daily. However,

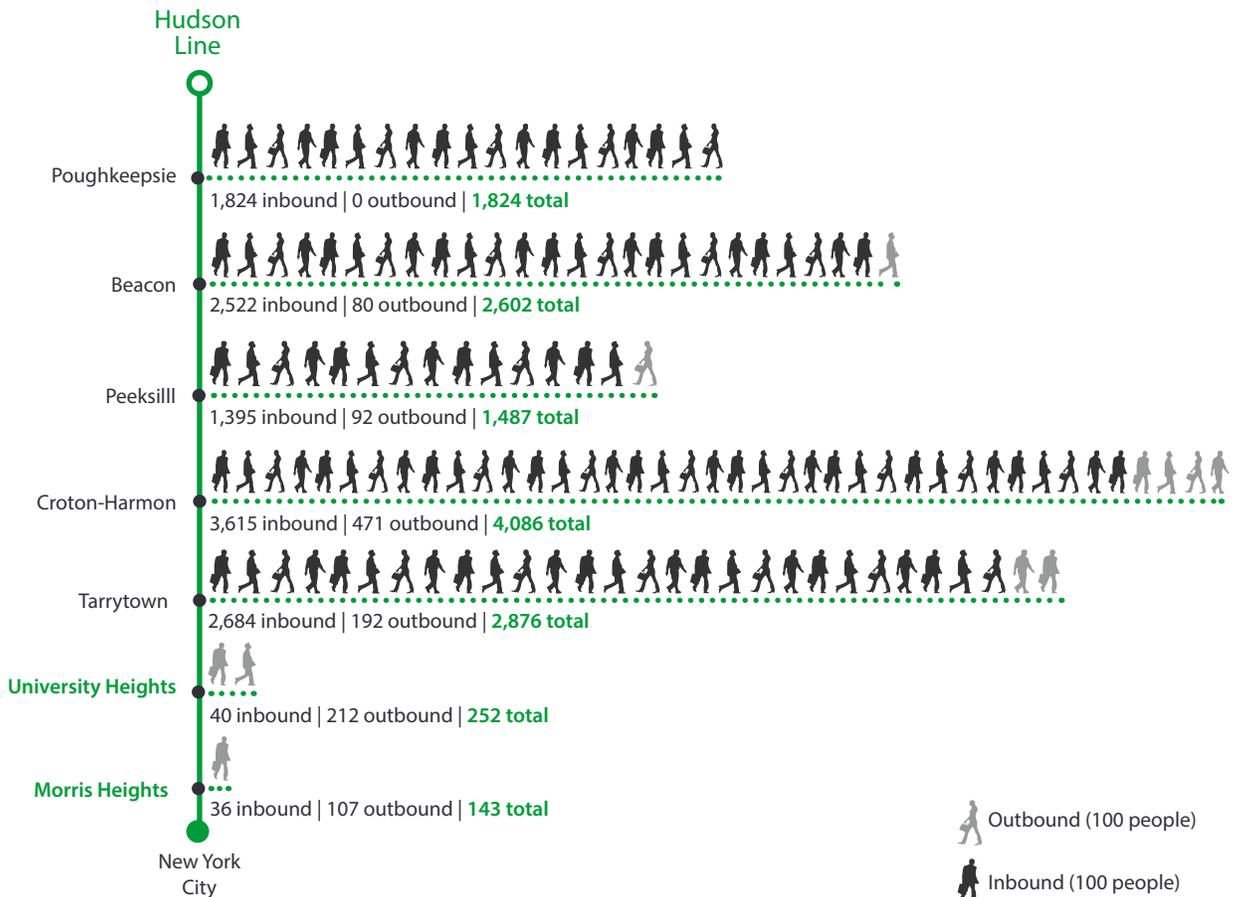




FIGURE 6 | Fordham Metro-North Station on the Harlem Line, one of the busiest stations in the system. Many Bronx residents depend on this public transportation option to commute to and from work.

er, in the Bronx the percentage of transit riders using different transit modes, or the mode split, is different from other boroughs, and varies greatly depending on destination. For example, while inbound trips to Manhattan are made largely through subway, at percentages comparable to other boroughs, Bronx commuters depend on buses more than other city residents, especially commuters who live and work in the Bronx, which was indicated in DCP's 2010 Peripheral Travel Study and evidenced during our outreach process.⁵ Similarly, many commuters traveling from one part of the Bronx to another, or traveling to and from adjacent counties are likely to rely on vehicles for their journey.

Within this group of commuters traveling to Upstate New York and Southern Connecticut for work, most commuters are driving to their destinations, despite the existence of Metro-North.⁶ The same is true of Upstate New Yorkers that are working in the Bronx. While there have been steady increases in Metro-North ridership, specifically in reverse commuters, there still remains a gap between ridership and potential demand. A larger portion of this demand could be captured through Metro-North.

WHY METRO-NORTH

With thirteen existing Metro-North stations and four additional planned, Bronx residents have unique access to growing job markets and amenities in northern suburbs. Like other transit modes, Metro

North plays a critical role in bolstering and sustaining the economic health of the Bronx. Whereas the subway and bus lines make connections largely to other neighborhoods and adjoining boroughs, the Metro-North offers connections to a much larger transit shed, including locales in up-state New York and southern Connecticut; Figure 8, highlights these major job centers with Metro-North access which include White Plains and Yonkers in New York and Stamford, Bridgeport and New Haven in Connecticut. This means that the Metro-North could play an integral role in connecting Bronxites to job opportunities outside the city, and, reciprocally, could shuttle residents in the region to jobs and other destinations within the Bronx.

Figure 8 demonstrates that the transit shed of Metro-North does in fact connect the Bronx to several major employment centers, each with varying economic bases and dominant sectors. Several of these cities have dominant sectors with strong multiplier effects, meaning that for every job directly created by a sector, jobs in another sector may be indirectly created. For example, high-tech companies like IBM near Poughkeepsie contribute to the local economy not only by hiring well-paid software developers, but also by indirectly contributing to the myriad of retail services and products these employees consume. Highly educated individuals procuring high salaries, such as financial services employees in Stamford, CT and these high-tech employees in Poughkeepsie, generate a large demand for retail

COMMUTING PATTERNS IN THE BRONX

472,210 Bronx working population (2011)

- 23.3% (109,860) work in Bronx
- 38.7% (182,617) work in Manhattan
- 18.3% (88,775) work in other NYC boroughs
- 9.1% (37,112) work in Upstate New York
- 4.4% (20,775) work in Long Island
- 3.3% (15,657) work in New Jersey
- 0.7% (3,187) work in Connecticut
- 2.3% (10,645) work in other locations

240,309 people work in the Bronx (2011)

- 45.7% (109,860) live in Bronx
- 9.6% (23,042) live in Manhattan
- 17.3% (41,526) live in other NYC boroughs
- 13.4% (32,201) live in Upstate New York
- 5.5% (13,324) live in Long Island
- 5.1% (12,200) live in New Jersey
- 0.8% (1,837) live in Connecticut
- 2.63% (6,319) live in other locations

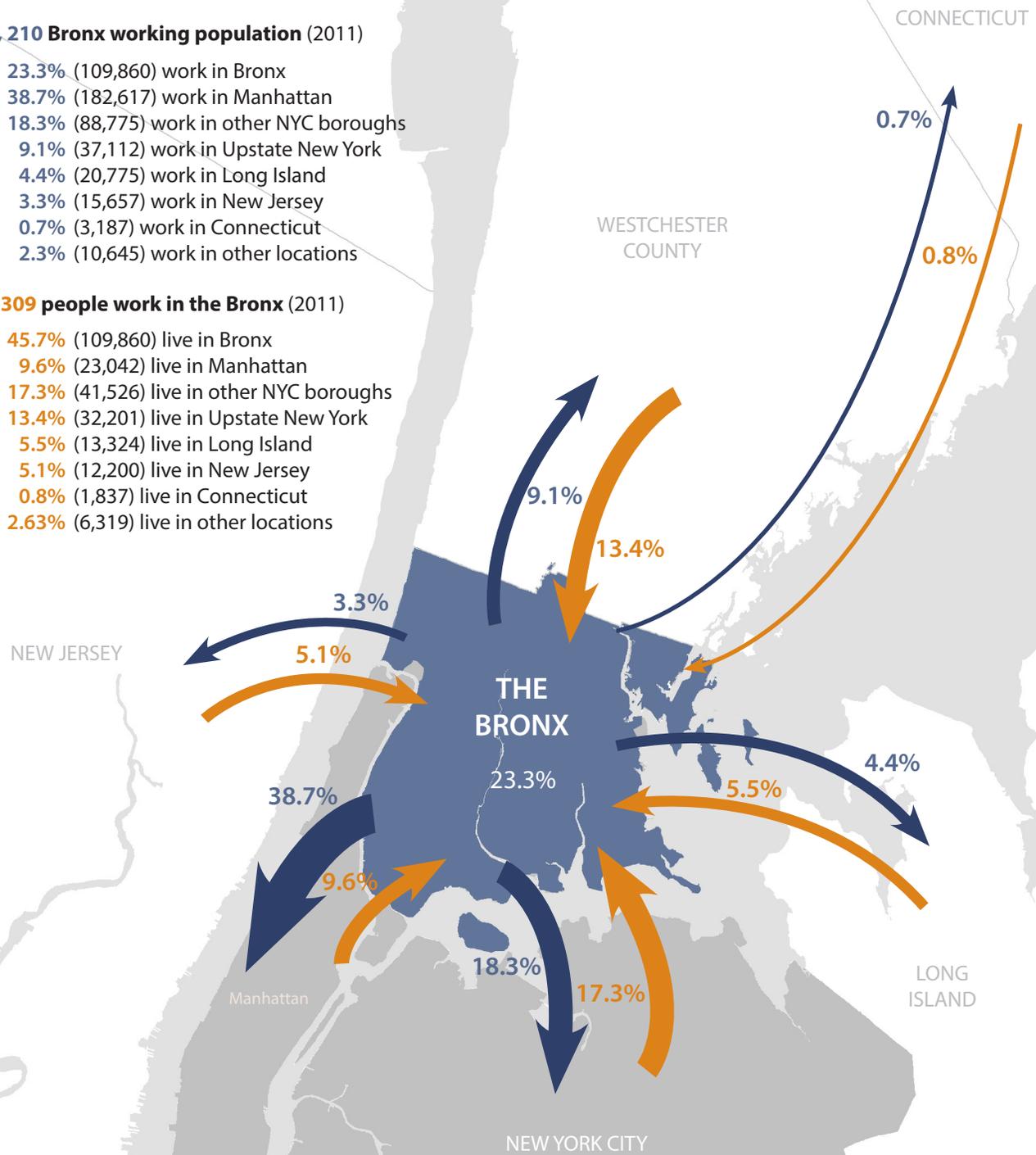


FIGURE 7 | Commuting patterns originating and ending in the Bronx. Although a majority of Bronx residents currently work in New York City, the borough has seen the largest expansion of reverse commuting in the country over the past two decades. This trend could be expanded with greater use and improved access to the Metro-North rail lines. Metro-North also provides a convenient transportation option for those living outside of the city to the Bronx's many job centers, hospitals, and attractions.

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2011).

REGIONAL JOB DENSITY ALONG METRO-NORTH CORRIDOR

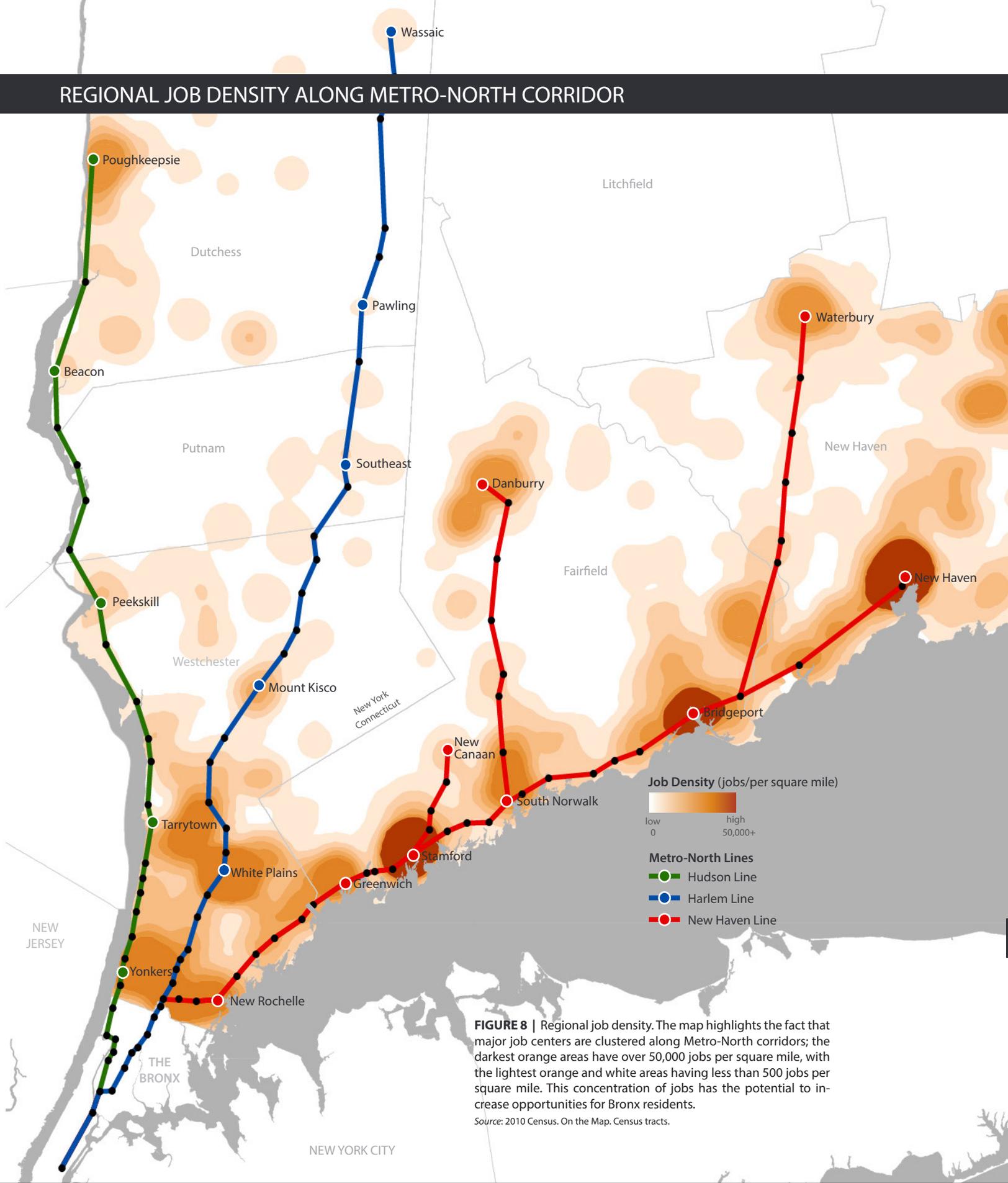


FIGURE 8 | Regional job density. The map highlights the fact that major job centers are clustered along Metro-North corridors; the darkest orange areas have over 50,000 jobs per square mile, with the lightest orange and white areas having less than 500 jobs per square mile. This concentration of jobs has the potential to increase opportunities for Bronx residents.

Source: 2010 Census. On the Map. Census tracts.



FIGURE 9 | Stamford Transportation Center. The Metro-North station is near many employment centers in the city including UBS, Royal Bank of Scotland, Thomson Reuter, and Stamford Town Center.

Source: Noroton/CC-BY-SA-3.0, via Wikimedia Commons from Wikimedia Commons

products and services, which in turn will generate employment opportunities -- be it for doctors, nurses, architects, construction workers, baristas, waiters or retail clerks. This increased demand lifts the average wages of employees across all sectors in the local economy -- even for employees without a college education.

These are opportunities that Bronxites should capitalize on, and Metro-North is a unique resource in that it provides affordable access to a variety of economic centers in the region. Increased accessibility to regional employment centers improves economic opportunity for Bronx residents, and access to a regional workforce improves business opportunities in the Bronx

CONCLUSION

Metro-North corridors in the Bronx currently represent an untapped resource to support the borough's growth and access to jobs and the region. As the Bronx continues to grow, providing job opportunities at a regional scale is increasingly important. Capitalizing on the access afforded by Metro North service connects the Bronx to the larger regional economy, and has the potential to increase job and

housing opportunities for Bronx residents, strengthen access for commuters to and from the Bronx, and help strengthen the surrounding neighborhoods.

The following section identifies TOD strategies to support these corridors and maximize them as assets for the Bronx. This includes strategies for supporting walkable pedestrian environments, providing access to community amenities, ensuring a highly integrated multi-modal transit system, and ensuring the highest and best land uses are located within close proximity to the station.

SOURCES

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⁶ U.S. Census Bureau, 2006-2010 American Community Survey