Mobility and Equity for New York's Transit-Starved Neighborhoods:

The Case for Full-Featured Bus Rapid Transit

A Report Funded by the Rockefeller Foundation and
Written by the Pratt Center for Community Development

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PRATT CENTER FOR COMMUNITY DEVELOPMENT | 50 YEARS

Rockefeller Foundation
Innovation for the Next 100 Years

In a year that marks the Rockefeller Foundation's centennial and the Pratt Center for Community Development's 50th anniversary, we turn our focus toward the future of New York City.

New York City's public transportation system moves millions of people every day. But an increasing number who live in outer borough neighborhoods are stuck with unreliable transit options and long travel times tracked in hours, not minutes.

It does not have to be this way.

Developed by the Pratt Center for Community Development and funded by the Rockefeller Foundation, this report highlights the limitations of New York City's current public transit system, the adverse effects those limitations have on our economy and quality of life, and the role Bus Rapid Transit (BRT) can play in remedying these transit inequities.

BRT has transformed cities across the world from Mexico City to Barcelona to Cleveland. At a fraction of the cost to build just a mile of subway rail, BRT gives riders a reliable way to get where they need to go.

BRT is effective. It is innovative. And it could be the solution for New York's transit-starved neighborhoods.

Sincerely,

Michael Myers
Senior Policy Officer and
Director of Centennial Programming
Rockefeller Foundation

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The Case for Full-Featured Bus Rapid Transit

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Pratt Center works for a more sustainable and equitable New York City by integrating research, advocacy, and technical assistance to community-based organizations. For more information, visit www.prattcenter.net

Additional Support

The Rockefeller Foundation is working with public affairs firm Global Strategy Group to support and promote bus rapid transit in New York City.

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Executive Summary

New York City's transit system is the largest and most heavily used in the United States, serving more riders each day than the twenty next largest systems combined. New York's density and economic vitality would be impossible without its bus and subway system.

But the system doesn't serve all New Yorkers equally. Over 758,000 New York City residents commute more than an hour each way. Two-thirds of those workers are traveling to jobs that earn their families less than $35,000 per year. And commutes are lengthening for more and more people. Skyrocketing housing costs push low- and moderate-income families farther from Manhattan and the well-connected communities that surround it, to the "two-fare zones" where the nearest subway station is a long, slow bus ride away. While free transfers now keep the cost of those trips to a single swipe, commuters on Staten Island and in outlying neighborhoods of the Bronx, Brooklyn, and Queens, pay an ongoing penalty in time spent away from their families.

Employers outside the Manhattan Central Business District pay a price for poor transit as well. The number of jobs in Manhattan below 60th Street declined by over 100,000 from 2000 to 2009 – during the same period, every other borough gained jobs. And while the recovery of the financial sector has brought some jobs back to Manhattan, growth in other industries – retail, education, health care, manufacturing, transportation, logistics, and more – has continued to add jobs in outer borough clusters that are poorly served by transit. Most New Yorkers work in the same borough where they live – but the subway system's radial design makes cross-borough commutes difficult. A trip that would take twenty minutes by car can take forty-five minutes by bus. Bus trips are not only slow but also unpredictable, forcing some employers to send vans or livery cars to pick up workers from subway stops that may be several miles away. Employers have trouble finding and keeping workers, and workers find their access to jobs severely limited – especially to the mid-skilled work that offers a ladder out of poverty.

Difficult trips to destinations other than work also undermine the health and quality of life for those living in underserved neighborhoods. Hospitals and the clusters of health services that surround them are often difficult to reach, especially for seniors and people with disabilities. Students face long trips to the high schools and colleges that offer access to the skills needed to succeed. Local retail strips struggling to compete with big box chains suffer from lack of transit access, and from car-oriented street designs that discourage foot traffic.

There is no realistic prospect of expanding the subway system to serve outlying neighborhoods. The Metropolitan Transportation Authority's capital budget is severely challenged to finish the expansion projects already underway, to maintain the system in good condition, and to repair the damage done by Hurricane Sandy. Cost aside, subway construction below New York City's streets and buried infrastructure is difficult and disruptive, subject to unpredictable delays and cost escalation.

Bus Rapid Transit for New York City

Bus Rapid Transit offers a cost-effective and achievable solution to the mobility needs of New York's transit-starved neighborhoods. The MTA and New York City's Department of Transportation have taken important steps toward improving the speed and reliability of bus travel with Select Bus Service, now implemented or planned for a total of seven routes since its 2008 launch on the Bx12 in the Bronx. Even without some of the key features that characterize true BRT, SBS has delivered significant reductions in trip time, and won high ratings for customer satisfaction.

New York's underserved communities need something more. They need Bus Rapid Transit – a full-featured system that performs as well or better than light rail, but can be implemented at a fraction of the time and cost.

The Institute for Transportation and Development Policy's (ITDP) BRT Standard 2013 identifies five features as essential for a system to qualify as Bus Rapid Transit. These features are referred to by ITDP as the 'BRT Basics' and are the elements that define the concept of 'full-featured' BRT. To achieve the speed, flexibility, reliability, and comfort that the world's most successful BRT systems have demonstrated, we need:

- Bus lanes located along center medians rather than next to the curb, where they can be physically protected and where conflict with traffic, parking, and loading is minimized;
- Traffic signal priority and turn restrictions to maximize both speed and safety;
- Visible and comfortable stations where
  - *Riders pay fares before the bus arrives, eliminating delays in boarding;*
  - *Platforms allow level boarding through multiple bus doors, providing universal access and further minimizing delay;*
  - *Maps and real-time bus information are available and clear.*

Fortunately, in many neighborhoods where the need for better transit is greatest, rapid implementation of full-featured BRT is physically feasible. Major streets in these areas are wide, often with six or more traffic lanes, and with center medians that could accommodate BRT stations. Long blockfronts minimize the number of intersections, and the long distances along these routes make the gains in speed from BRT truly significant in reducing travel time.

Full-featured BRT can offer riders in what are now transit-starved areas the speed, reliability, and comfort we normally associate with rail. It also provides a fully accessible ride for seniors, people with disabilities, and people traveling with children. And when BRT is implemented as a network, with well-planned connections between BRT corridors and existing subway and bus routes, it has the potential to greatly increase the mobility of a very large number of people who today are isolated from transit.

BRT improves travel time and safety for non-riders as well. On the M15 SBS corridor in Manhattan, taxi GPS data shows that overall congestion has decreased with the creation of separated bus and bike lanes. The changes have also led to fewer crashes and injuries. Local retail corridors benefit from increased foot traffic when BRT infrastructure is coordinated with pedestrian and bicycling improvements. Improved transit access may decrease demand for parking, and make it possible to redesign street fronts that are now made uninviting and chaotic by wide curb cuts and setbacks for parking.

Priority Corridors for BRT

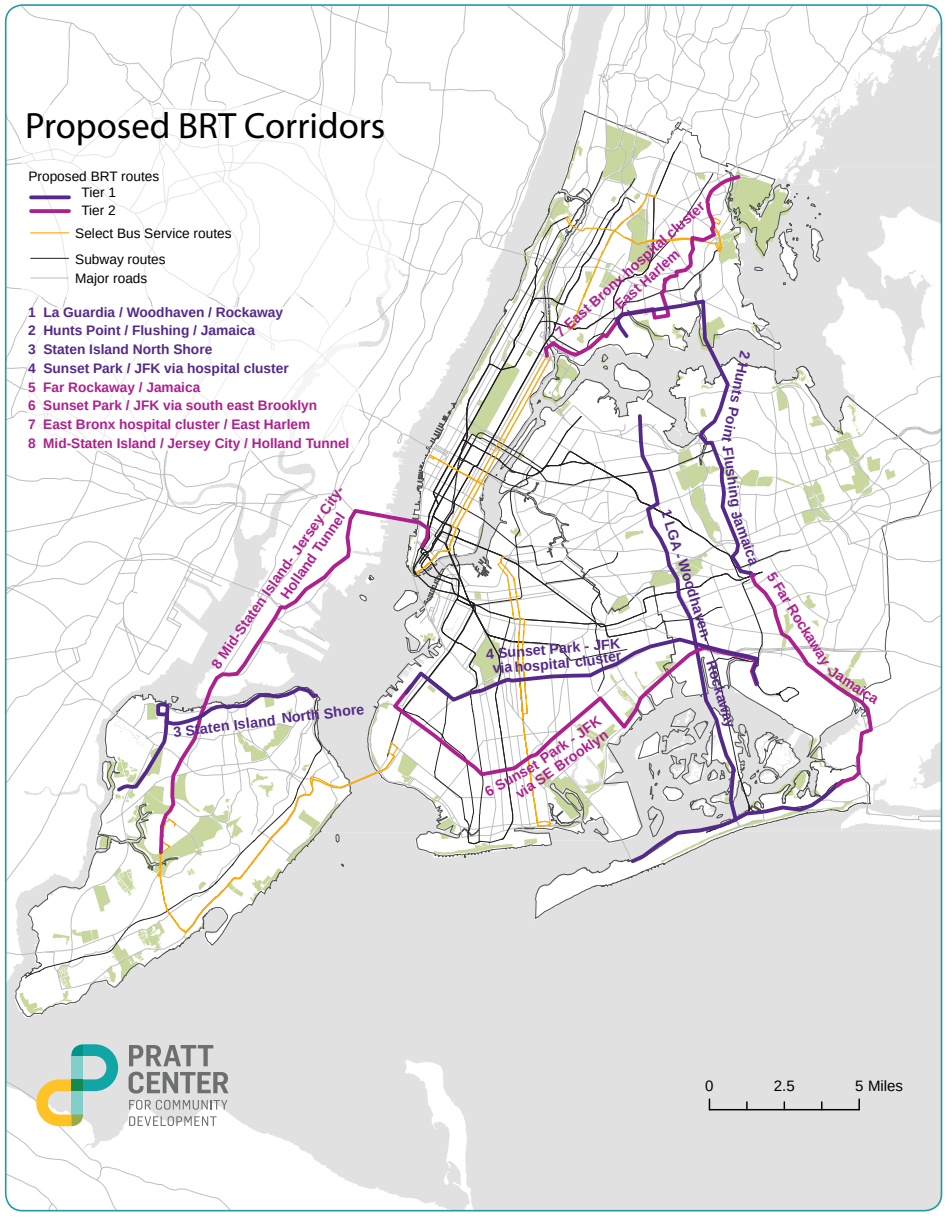
This report includes a recommendation for eight new, full-featured BRT corridors to be prioritized for further evaluation, planning, and implementation. The corridors were selected based on their potential benefits, and on their physical feasibility for BRT. Using data from the US Census, the Department of Labor, and the New York City Department of City Planning, we identified:

- **Areas where many people live more than ½ mile from any subway station**
- **Corridors connecting major job centers, especially those lacking good subway access**
- **Corridors connecting major health care and educational hubs**

We then prioritized corridors where BRT is physically feasible, selecting those where for most of their length, streets include:

- **Six or more traffic lanes**
- **Center medians**
- **Long distances between intersections**

A full-featured BRT network that would speed commutes and open up opportunity for millions of New Yorkers is achievable and affordable. It would build upon the framework of collaboration our agencies have established by implementing Select Bus Service; it would require the agencies to engage all stakeholders in identifying and overcoming obstacles to the more substantial interventions that BRT would entail. It would demand a modest commitment of capital dollars – backed by a real commitment of political capital by leaders at the City and State level.



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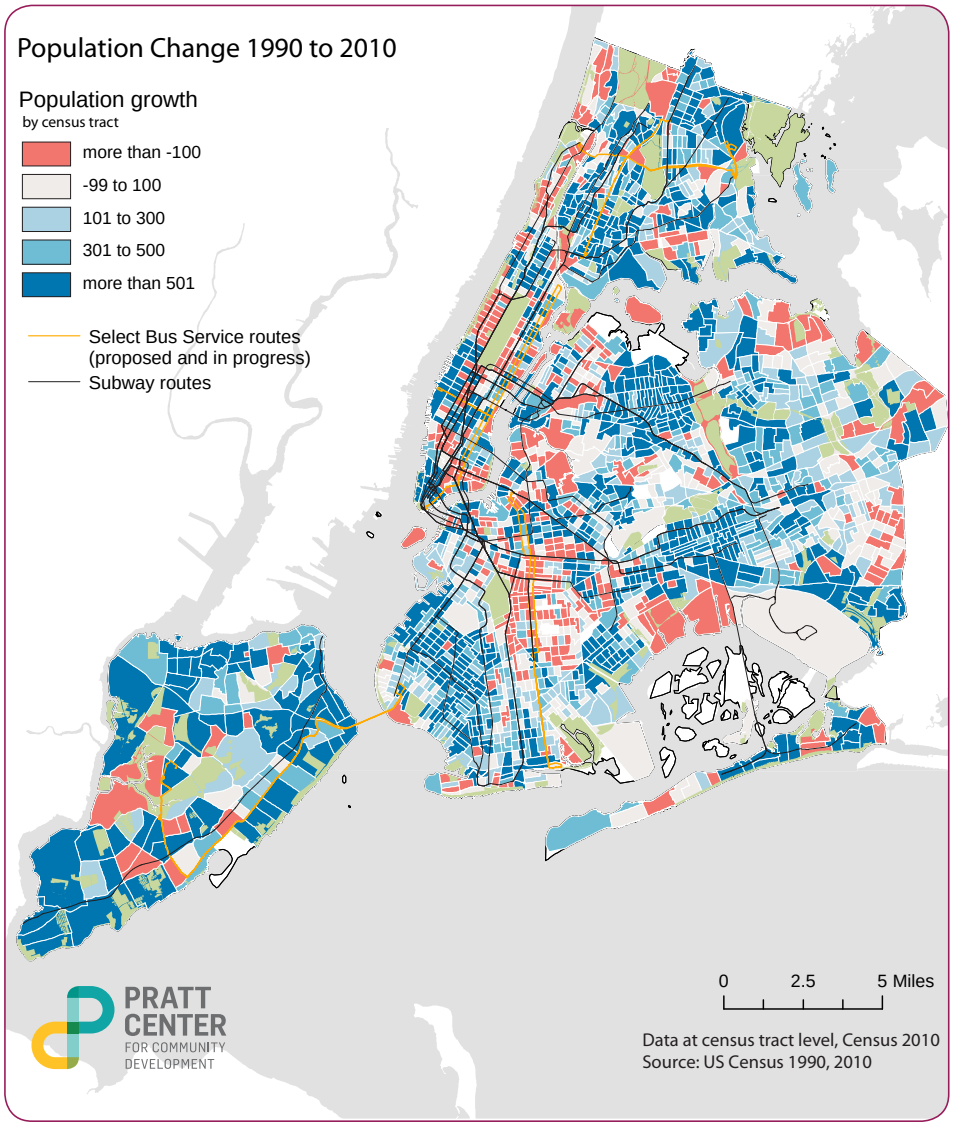
Mobility and Equity

Impact of Transit Deficits for New York's Underserved Neighborhoods

Lack of access to rapid and reliable transit exacts economic and non-economic costs on the families least able to bear them – households that are struggling to maintain their footing in New York City. As housing costs rise in neighborhoods close to Manhattan and areas well-served by subways, low- and moderate-income households are increasingly concentrated in farther-flung neighborhoods of the Bronx, Staten Island, Southern Queens, and Southeast Brooklyn.



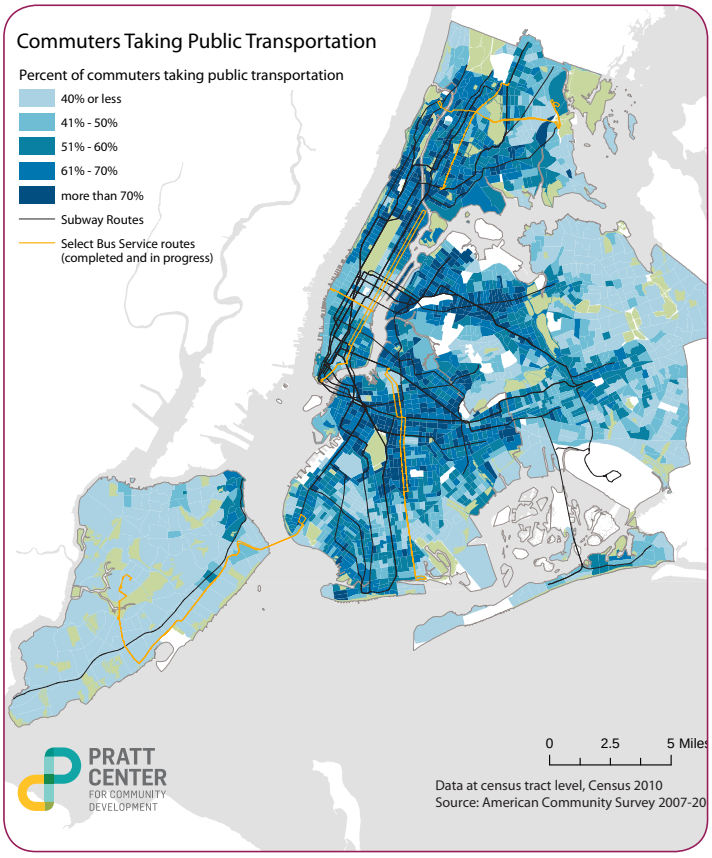
Population change,1990-2010: Neighborhoods without subway access have experienced significant growth.

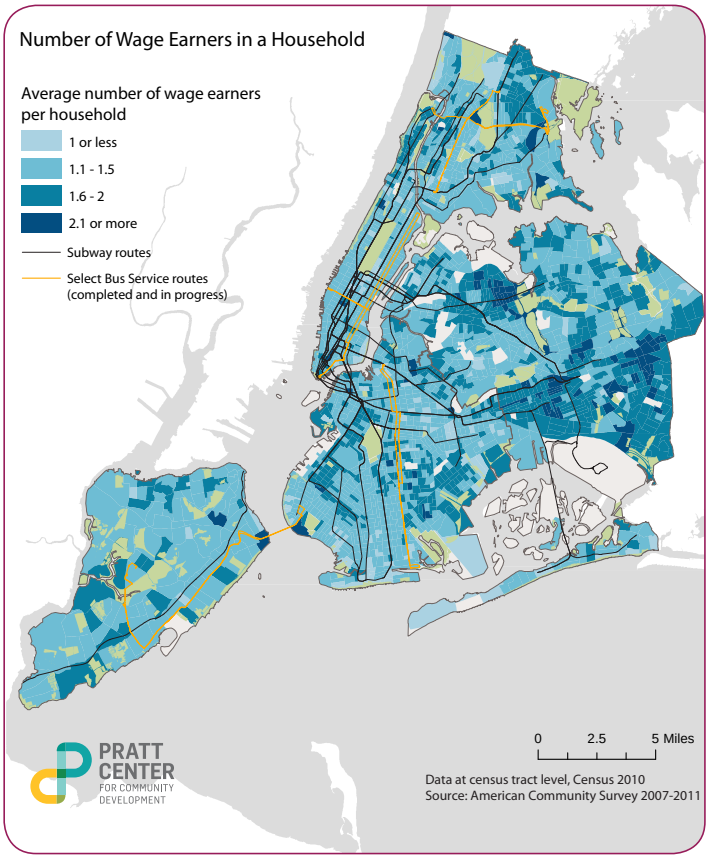
Demographics, Land Use Patterns Drive Demand for More and Better Transit

In contrast to other US cities, New York City's population has rebounded strikingly from the declines of the 1970s and 80s. Our housing stock and infrastructure are already straining to accommodate the million-plus people we have added since 1990, and recent census data shows our growth trend continuing with another million residents projected to live in New York City by 2040.

Large-scale, high-profile development initiatives have brought high-rise luxury construction to areas close to Manhattan's core, often transforming neighborhoods that were once affordable to low- and moderate-income families. But the populations of outlying neighborhoods have grown and changed as well. Immigrants from the Caribbean, as well as long-time New Yorkers pushed out of Central Brooklyn, for example, have changed the complexion of communities like Canarsie and Flatlands. Homeowner communities in the north and east Bronx, southeast Brooklyn, southern Queens, and on Staten Island's North Shore have added density – sometimes through the replacement of one- and two-family houses with apartment buildings (bringing traffic and parking problems that often lead to demands for downzoning.) Housing units have also been added illegally, through the conversion of basements and garages and the subdivision of existing units.

Many transit-poor neighborhoods that have experienced population growth during the past decade have also experienced declines in local median incomes, along with increases in average household size and percentage of multi-earner households. This reflects the growth of low-wage employment in the city and the region, as well as displacement caused by rising housing costs in close-in, transit-rich neighborhoods. Areas that were once quasi-suburban and car-dependent are increasingly dense and transit-reliant. As it becomes less possible for families to afford housing on the income of a single earner, households increasingly include extended families in which several adults work part-time or full-time. This means that even households with access to a car are likely to rely on public transportation for many work- and non-work trips. **Mapping the subway system over densities of workers and their commute modes graphically illustrates the need for more efficient transit options in these communities.**





Changing Commuting Patterns – Job Growth Outside Manhattan

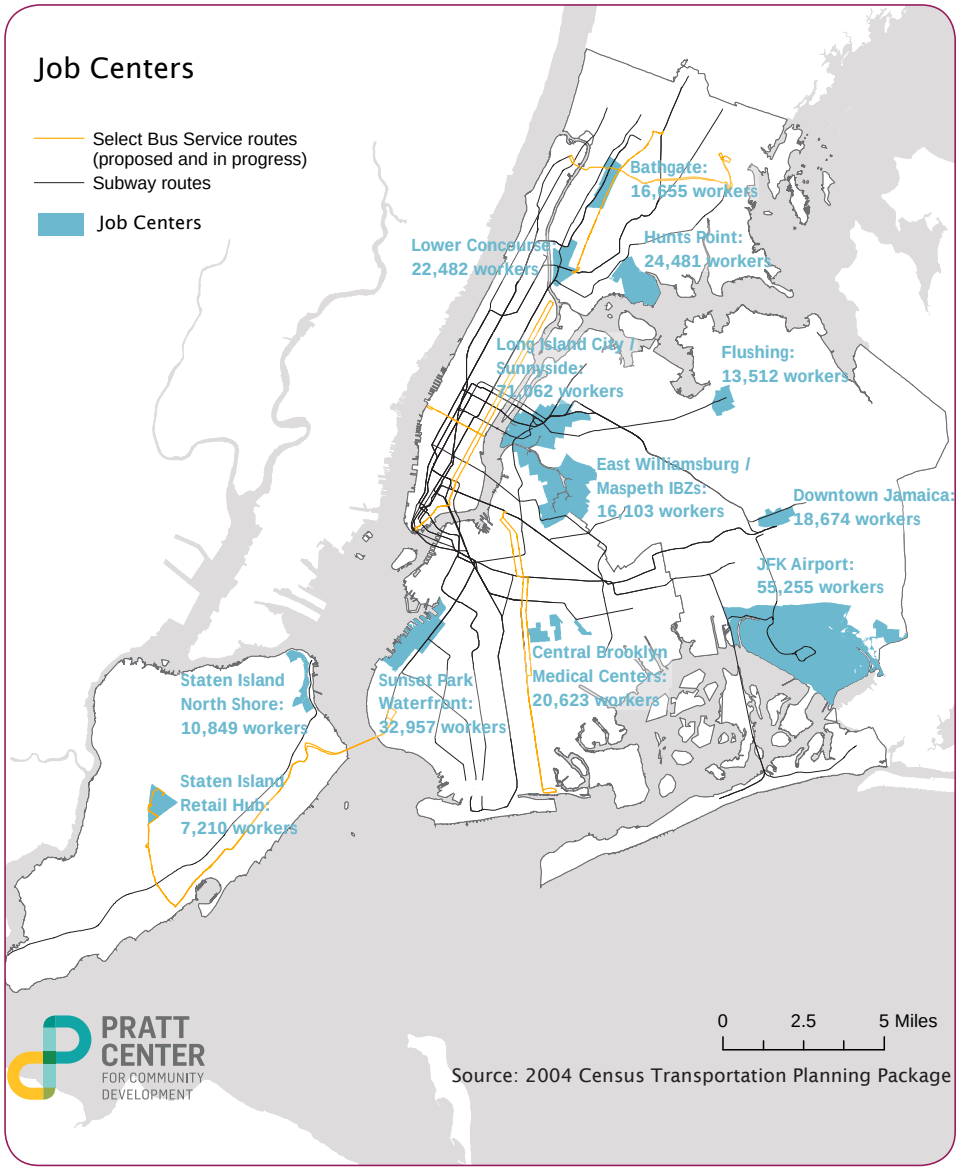
The subway system's design reflects the land use and employment realities of the 1950s, when over 67 percent of all New York City jobs were located in Manhattan. The other boroughs have steadily gained both share and absolute job numbers between 2001 and 2010. Most of the expansion in the boroughs has been in the health care and education sectors, though retail, transportation and distribution, and manufacturing have also experienced gains outside Manhattan.[1]

Centers of well-paid blue-collar employment, like the Brooklyn Navy Yard, Maspeth and College Point in Queens, and Hunts Point in the Bronx are particularly isolated from the subway and from reliable local bus service, often forcing employers to send vans or livery cabs to pick up workers stranded at subway stops that may be two miles away. JFK and LaGuardia airports, respectively the destinations of 55,000 and 11,000 workers, also lack efficient – and affordable – transit options.

For all of New York City, intra-borough commutes make up a substantial plurality of trips to work. Workers traveling within their home borough rely more on buses than their counterparts working elsewhere.[2]

In part because of New York City's infamously low conventional bus speeds, averaging eight miles per hour citywide, with many routes moving at less than four miles per hour, workers employed outside of the Manhattan Central Business District (CBD) pay a substantial time penalty for commuting by transit rather than by car. Low-wage workers in particular are likely to have commutes of 60 minutes or more.[3] Congestion means that conventional bus service is not only slow, but also wildly unreliable, making it difficult for workers to consistently arrive on time. Employers pay a price as well, since long and unpredictable commutes make it difficult to attract and retain qualified workers.

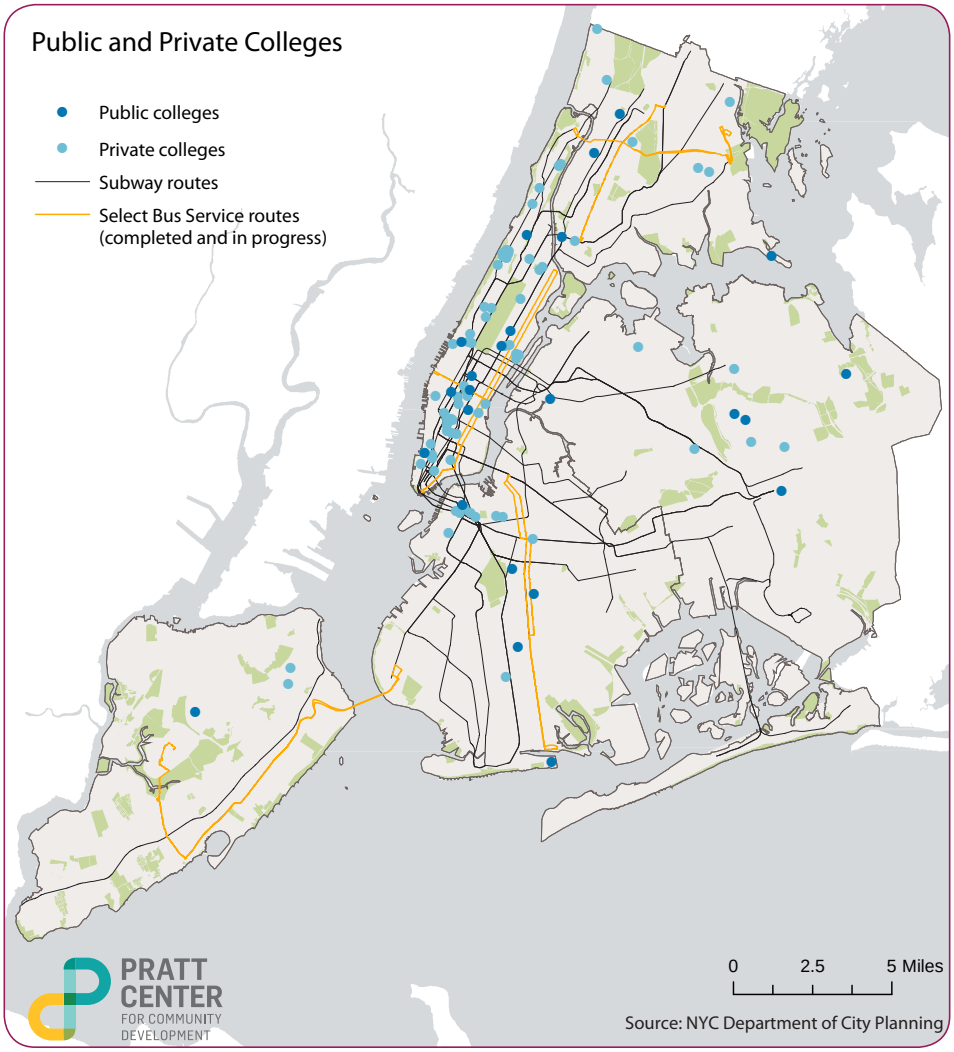
A lack of efficient, affordable transportation options outside of the Manhattan core burdens both workers and businesses, and inhibits economic growth – including growth in sectors that have the potential to diversify New York City's economy.



The Importance of Non-Work Trips: Access to Education and Healthcare

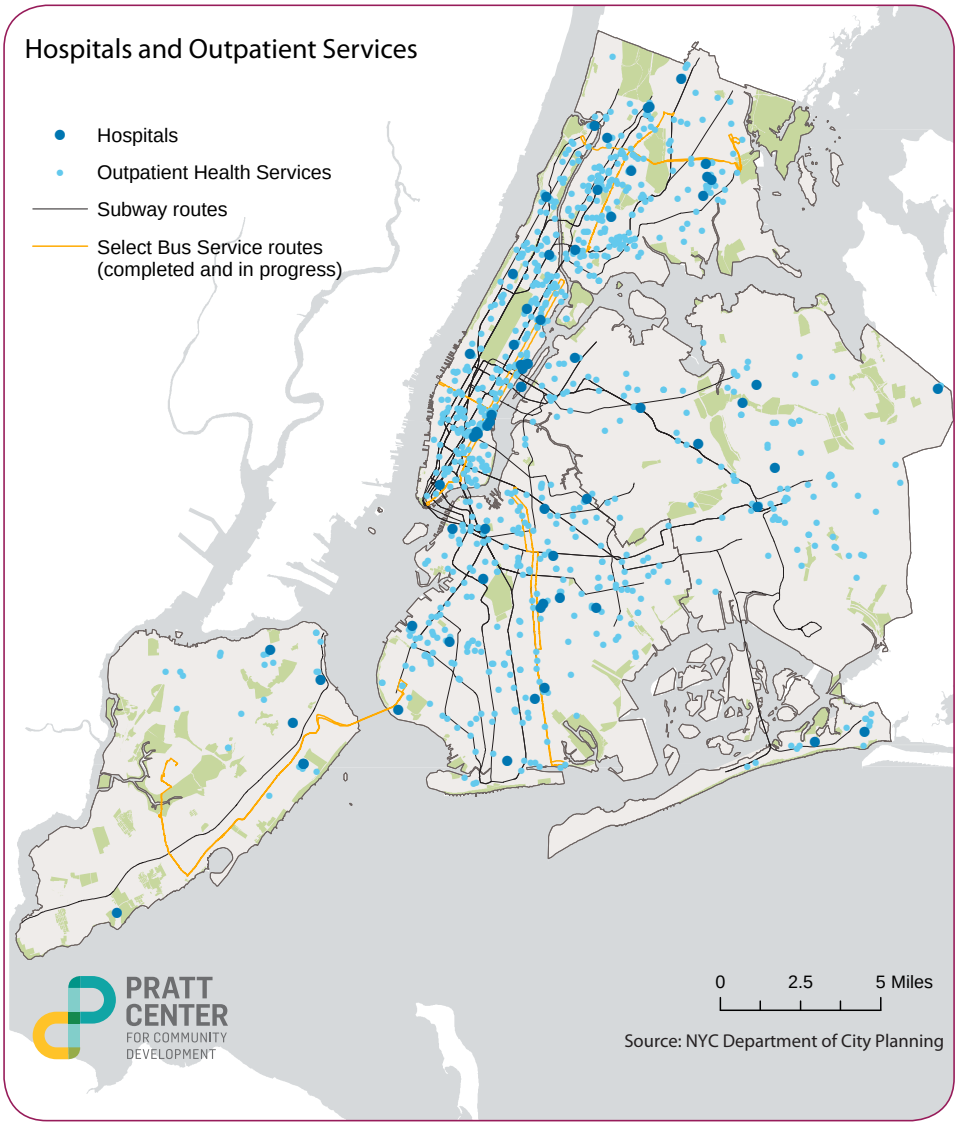
Access to destinations other than work also matters to communities' vitality and quality of life – and the absence of good transit options lays a heavy burden on the young and the old, those least likely to have the option of driving.

Mobility is a very significant challenge to young people, severely limiting their access to education and opportunity. New York City boasts an unparalleled array of educational assets, but many colleges and universities are geographically out of reach to young people in low- and moderate-income communities. Many major public institutions (e.g. Queens College, the College of Staten Island, and Kingsborough) are inaccessible by subway. So are many of our best high schools, forcing students across the city to leave their homes before dawn and return late in the evening.



> "New York's underserved communities need something more... Isolation is a key factor in the persistence of poverty..."

Seniors and people with disabilities are also disproportionately dependent on transit, and face additional obstacles to accessing the health services they need – particularly the primary care that is essential in managing chronic conditions. Many hospitals and outpatient facilities are remote from subway service, making trips difficult for many of the people they serve. Hospitals are also economic anchors, as 24/7 employers of people with a vast range of education and skills, including many low- and mid-wage workers.

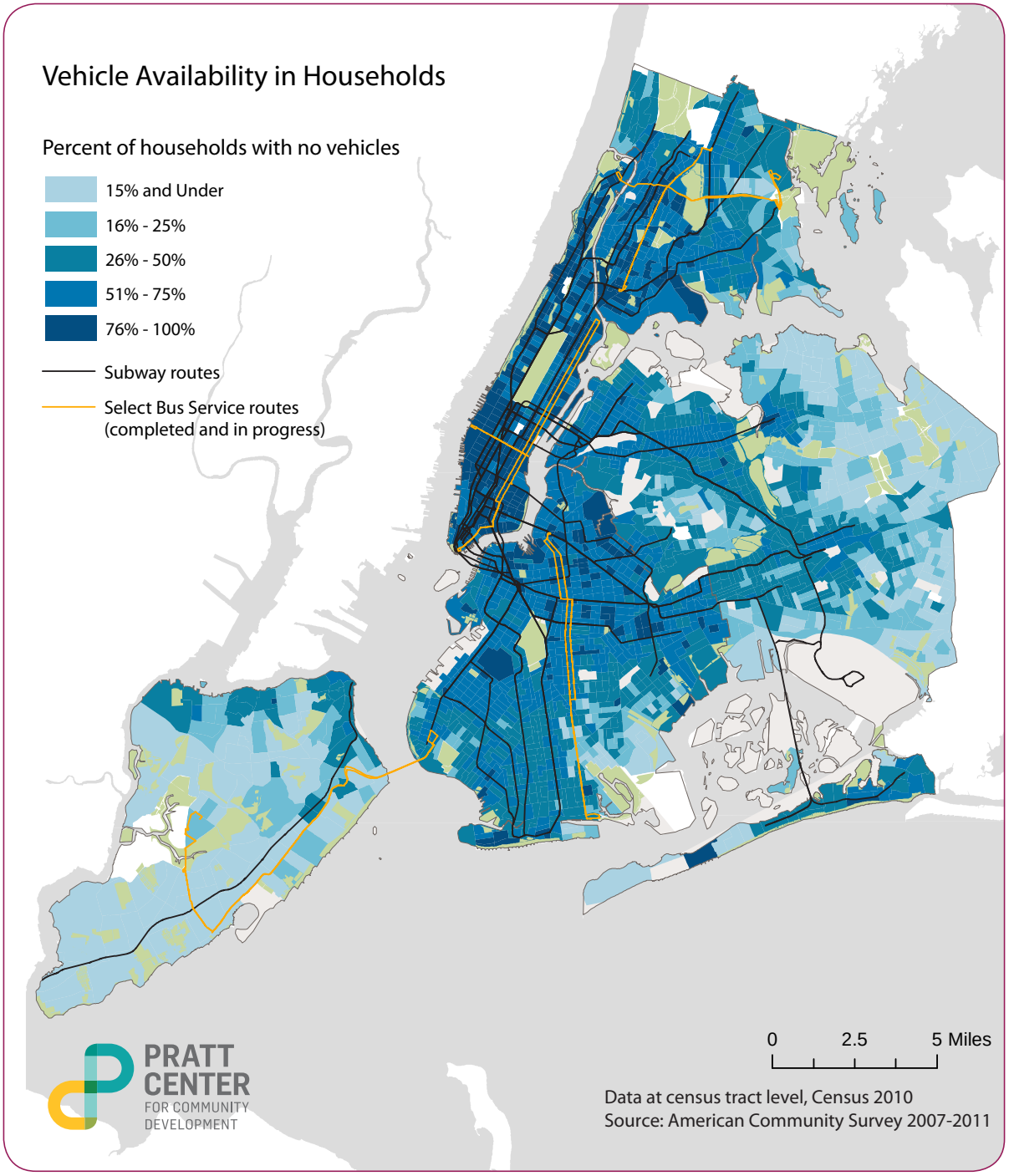


Retail corridors that took form under the auto-centric planning regime of the last century lack the density and continuity that are now recognized as generators of local identity and value. Parking requirements, codified in 1960s zoning, have created streetscapes on which parking lots and curb cuts make walking dangerous and uninviting, and where local merchants struggle to compete with big box chains.

Consumers will shop and spend their money in convenient and accessible places. In areas poorly served by public transit, residents with cars are likely to bypass local stores and instead drive to the mall. Those who rely on public transit may shop less frequently, or opt to shop near where they work instead of near their homes, rather than relying on infrequent and unreliable bus service. Bad bus service means less foot traffic, and less foot traffic is bad for local businesses.

Car Ownership is Unaffordable to an Increasing Share of Outer Borough Residents

Driving a car is not an option for many of the families now living in what were once auto-dependent outlying neighborhoods. At approximately $8,000 per year (the median cost of owning and operating a mid-priced car), the average cost of car ownership represents 20 to 25 percent of a moderate-income household's income, compared to the $2,688 cost for unlimited transit use by two adults. Congestion throughout the city already consumes hundreds of hours of residents' time each year; increased car traffic undermines community safety and quality of life, as well as adding to greenhouse gas emissions.



Funding Transit Expansion

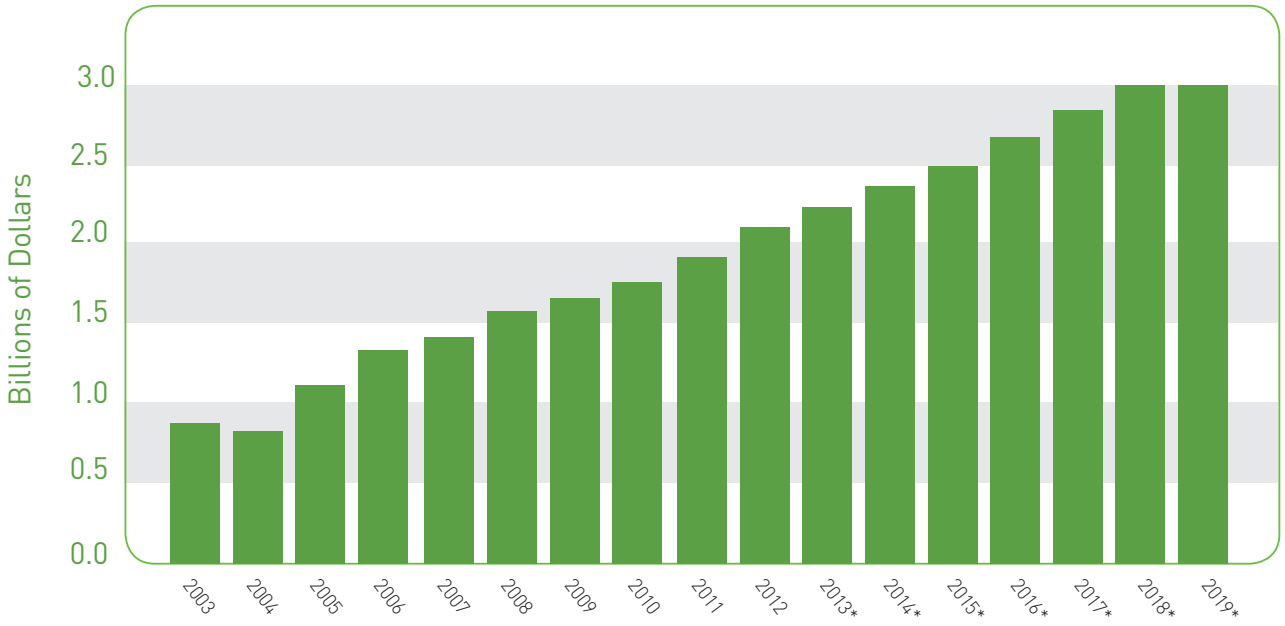
Growing Needs, Limited Resources

If New York City is to continue to offer opportunity to residents of all our neighborhoods, expanding our transit system is imperative. But our ability to meet the need through new subway lines and stations is limited by cost. The city's $2 billion capital contribution to the extension of the #7 line will buy approximately one mile of track and a single new station. Phase 1 of the Second Avenue subway, now scheduled for completion in late 2016, will cost $4.5 billion for the 1.5-mile, 3-station segment.

Subway ridership has grown steadily since 2000, rebounding after brief declines in 2001 and 2009 to the highest levels since 1950. The MTA projects that 2013 ridership will exceed 1.7 billion trips, and that growth will continue with the ongoing economic recovery. Population growth and new development, especially in the outer boroughs, has increased the number of subway lines operating at capacity.

Even as pressure to expand the system grows, the MTA estimates that it will need to spend $26.6 billion between 2014 and 2019 just to maintain the system in a state of good repair. Damage from Hurricane Sandy has widened the growing gap between capital need and resources. And while federal programs have funded approximately one-third of the MTA capital program in recent years, it is likely that the national politics of deficit reduction will lead to lower levels of federal funding for transportation beginning in 2014.

MTA Debt Service



*MTA forecast

Sources: Metropolitan Transportation Authority; Office of the State Comptroller analysis

The MTA anticipates that it will continue to borrow to fund the system's capital needs, and that debt service will make up a growing share of annual operating costs for the foreseeable future. Riders will continue to bear this burden, as they have during the past decade, through fare increases, service cuts, or both.

No less significant than the monetary cost of subway expansion are the physical disruption, delay, and uncertainty that are inevitable in tunneling through and below New York's dense, aging, and often fragile street infrastructure. Subway construction imposes heavy burdens on local residents and small businesses.

Small businesses during sewer main relocation for construction of Second Avenue Subway

Photo courtesy of Ben Heckscher, The Launch Box Blog
http://thelaunchbox.blogspot.com/2007/12/december-29-2007.html

Bus Rapid Transit

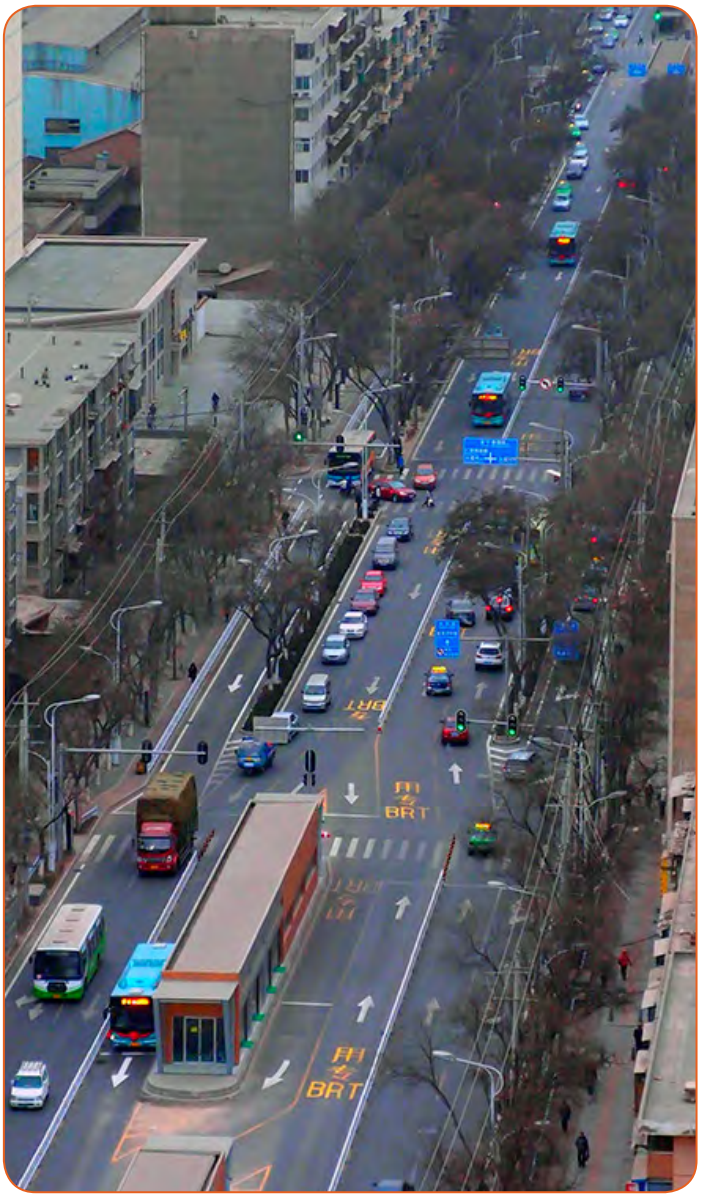
A Cost-Effective, High-Performance Solution for New York City

There is no imaginable scenario in which the subway system could be expanded to meet the needs of fast-growing outer borough neighborhoods. Residents of New York's transit-starved neighborhoods need higher performance than SBS can achieve – they need Bus Rapid Transit.

Since its introduction in Curitiba, Brazil in 1974, BRT systems and variants have been deployed in over 160 cities worldwide including Barcelona, Cleveland, Delhi, Istanbul, Jerusalem, and Mexico City. The highest-standard systems approach the performance of subway or surface rail in their speed, reliability, capacity, rider experience, and their transformative impact on the corridors they serve. BRT is already well-established as a cost-effective means of delivering the mobility benefits of rapid transit; there is also increasing evidence that BRT's ability to catalyze local development is comparable to that of streetcars or light rail – with substantially lower cost for implementation.

ITDP released an updated version of its BRT standards in 2013, with the goal of identifying international best practices in BRT, as well as enabling political leaders and transportation planners to better understand the benefits delivered by full-featured systems.[4]

New research shows that systems incorporating dedicated lanes, well-designed stations, and networked routes not only provide the greatest improvements in travel time and user satisfaction. Their permanence can transform BRT corridors, leveraging residential and commercial density, economic revitalization, and environmental quality.



What Makes Bus Rapid Transit *Rapid*?

The features that define BRT are those that enable it to deliver speed, reliability, and customer experience comparable to rail transit, but at a fraction of the cost. Key elements that qualify a system as BRT include:

Busway alignment

By locating bus lanes offset from the curb, BRT preserves space for parking and loading, minimizes conflicts with other traffic, speeds up bus travel, and reduces overall congestion. Lanes on center medians provide similar benefits.

Dedicated lanes

Physically protected bus lanes keeping other vehicles out ensure that buses can move without delay. Physical protection is less costly and more effective than relying on camera or police enforcement. Fully dedicated lanes can be most easily achieved on wide streets where multiple lanes remain available to other traffic.

Quality of service and passenger information systems

Frequent scheduling and real-time bus information speed passengers' door-to-door trip time, and greatly improve the predictability of trips, especially those involving transfers.

Off-board fare collection

Allowing customers to pay their fares before the bus arrives, either by using a physical barrier like a turnstile, or a proof-of-payment system like the one in use by SBS, allows people to board buses quickly through multiple doors. This significantly reduces "dwell time" – the time that buses spend at stops, and greatly improves speed and reliability.

Signal coordination

BRT buses communicate automatically with traffic signals, minimizing delays at intersections.

Platform-level boarding

Station designs featuring platforms that are level with bus floors reduce delays in boarding and provide universal access for users.

Highly visible and comfortable stations

Iconic station structures make BRT recognizable and easy to use, and provide additional features that improve customer experience, and increase bus speed and reliability.

Select Bus Service

Recognition of fiscal and logistical realities drove the MTA and the New York City Department of Transportation to begin studying the feasibility of BRT for New York in 2004. Implementation has required the agencies to collaborate, since the MTA operates the bus system, while DOT manages the city's streets. Janette Sadik-Khan was appointed commissioner of NYC DOT in 2007. Her working relationships with then-MTA CEO Lee Sander, and then-New York City Transit President Howard Roberts brought momentum to the project, culminating in the introduction of Select Bus Service. The interagency partnership enabled out-of-the-box solutions, including the off-board fare collection system that used already-existing hardware and required minimal sidewalk space. SBS debuted in 2008 on the Bx12, the heavily-travelled crosstown Fordham Road corridor in the Bronx. The new service quickly achieved trip time reductions of over 20 percent, 7 percent ridership gains during a period when the bus system as a whole saw declines, and high satisfaction ratings by customers, notwithstanding SBS's bare-bones version of BRT.[5]

Funding constraints, the desire to score relatively quick and demonstrable wins, and the reluctance to take on the political challenges of more extensive changes to street infrastructure all led to the strategic decision by MTA and DOT to move forward with SBS, rather than pressing for full-featured BRT. On most of the densely-built initial corridors, physical constraints were daunting, and pre-existing urban and economic activity were relatively high, reducing the increment of value that a more ambitious BRT model might have delivered. The political barriers have proven to be substantial, as evidenced in the resistance to what would have been a full-featured BRT corridor on 34th Street.

SBS nevertheless has proven that even modest changes can deliver real gains in bus performance. On every route where it has been introduced, SBS has improved speed, increased ridership, and enhanced customer satisfaction. And the lessons that MTA and DOT have learned from collaborating with each other and about engaging stakeholders in planning have laid a foundation for the introduction of BRT going forward.

B44 Select Bus Service stop at Church Avenue
Photo: © MTA / Patrick Cashin

B44 Select Bus Service stop on Nostrand Avenue
Photo: © MTA / Patrick Cashin

Bus Rapid Transit and Select Bus Service

ITDP's standards identify the following five features as essential for a system to qualify as Bus Rapid Transit and achieve significant increases in top speeds and reliability. Select Bus Service in New York City includes only some of these features and therefore does not qualify as BRT. This paper identifies eight corridors on which full-featured BRT would be achievable.

Full-Featured Bus Rapid Transit	BRT Features	Select Bus Service
Placement of busways to minimize delays from obstructions and conflicts with turning traffic. Corridors located in the center of roadways instead of along curbs are preferred to minimize conflicts from turns onto and off of the roadway and curbside activities such as parking and loading.	**Busway Alignment**	Most SBS lanes are located along the curb, or offset by one lane to maintain parking.
Full-featured BRT systems utilize either physically protected lanes or permeable dedicated lanes with full enforcement measures in place.	**Dedicated Right-of-Way**	SBS uses a combination of colorized pavement and bus-lane cameras to enforce dedicated rights-of-way. Enforcement cameras are only authorized for one route in each borough and face political opposition and uncertainty.
To reduce travel time, BRT systems rely on fare collection in advance of boarding. Two approaches are currently used – "barrier controlled," where passengers have to pay fare in order to gain access to the station, or "proof-of-payment," in which passengers pay at a kiosk to collect a ticket that is subject to inspection on board the vehicle by an inspector.	**Off-Board Fare Collection**	SBS uses a proof-of-payment system that allows riders to pay their fares before the bus arrives using MetroCards or cash. The system works well in the limited space available on New York sidewalks.
To minimize delays at intersections, full-featured BRT coordinates traffic signals to prioritize bus movements, minimizing the time buses spend at red lights. In addition, most or all intersections are configured to prohibit other traffic from turning across bus lanes.	**Intersection Treatments**	SBS has introduced traffic signal priority and has limited turns on some routes.
Full-featured BRT systems feature bus station platforms that are at the same level as bus floors. This provides universal access, improves comfort and safety, and speeds boarding.	**Platform-Level Boarding**	SBS stops are generally at sidewalk level, several inches below even low-floor buses.

Bang for the Buck: Value vs. Cost of Full-Featured BRT

Cleveland's 6.8-mile HealthLine is widely hailed as the most advanced BRT corridor in the United States with vehicles operating on dedicated busways, serving iconic stations that provide real-time bus arrival information. HealthLine bus speeds average 12.5 miles per hour compared to 7.4 miles per hour for Select Bus Service, and less than 5 miles per hour for typical local bus lines. The HealthLine was completed at a total cost – for stations, buses, and street improvements - for under $200 million, less than $30 million per mile – compare this to the $3 billion per mile cost of Phase 1 of the Second Avenue Subway.

In its first five years of operation, the HealthLine has catalyzed over $4.3 billion in development by connecting Cleveland's downtown to its anchor institutions – the Cleveland Clinic and university cluster seven miles to the east. The city coordinated the modest capital investment in the HealthLine with zoning changes that encouraged residential development and ground floor retail uses in downtown's historic but underutilized office buildings to strengthen the area as a 24/7 live-work neighborhood. At the east end of the corridor, new development has focused on leveraging the economic activity of the anchor institutions through businesses that provide goods and services to the hospitals, universities, staff, and students. **In all, every dollar invested in the HealthLine has generated $29 in new direct investment.**

HealthLine Station, Downtown Cleveland

Buses for Resiliency

Upgraded bus infrastructure brings additional benefits in resiliency. In the days after Hurricane Sandy, the vulnerability of our subway system was exposed. From floodwaters entering the East River tunnels to salt water corroding critical wiring and switches to the destruction of the rail connection from Howard Beach to the Rockaways, Hurricane Sandy was a wake-up call: New York's subway system could be knocked out by a powerful storm. Now, more than a year later, riders on the R and G lines are dealing with long-term service disruptions as the MTA works to address "latent damage."

In the days following Sandy, the network of "bus bridge" over the East River demonstrated the flexibility and capacity of a bus system to meet unexpected demands. Staging and loading were challenging, but with dedicated bus lanes, aggressively enforced by NYPD, riders saw first-hand how efficiently buses can move them to their destinations.

What Bus Rapid Transit Could Mean for Underserved Neighborhoods

BRT would be transformative for areas of New York City that now lack access to rapid transit. Many of these are neighborhoods whose demographics and land use patterns have changed dramatically during the past two decades. Southeast Brooklyn, eastern Queens, the northeast Bronx, and much of Staten Island have gained population as housing costs have escalated in closer-in neighborhoods. Residents of outlying areas include more immigrants, more people of color, more families of lower incomes, and more households with multiple wage-earners than they did in the decades up to 1990.

Longtime residents of public housing developments in these same neighborhoods also suffer from isolation. Twenty-eight percent of New York City Housing Authority residents live more than one-half mile from the nearest subway station. Lengthy trips to work create an additional barrier for people who already face significant challenges in finding good jobs.

Communities not served by the subway system need more than just the upgrading of individual bus lines. They need rapid transit that provides high-speed service to entire corridors, including those spanning multiple boroughs. Travel distances in these communities are long, and the penalty now imposed by underperforming standard bus service is heavy.

The potential BRT corridors examined in this report are characterized by distances and destinations that demand greater improvements in bus speed and reliability, and where street geometries can easily accommodate robust BRT infrastructure, including physically protected lanes and visible, comfortable stations. The dearth of other rapid transit options in these areas justifies more substantial investment in BRT.

There is also a greater imperative in outlying areas to improve pedestrian safety, especially along wide streets that are now dangerous to cross, and difficult to walk along. Excessive street and lane widths encourage speeding and dangerous driving. Sidewalks are interrupted by wide curb cuts, and vehicle movements in and out of parking lots are often unpredictable.

Bringing full-featured BRT to transit-starved neighborhoods would dramatically signal a commitment to bridging the gap in quality of life that has mirrored New York City's increasing polarization of incomes and wealth.

Car-oriented planning undermines retail corridors

Planning for Transformation

Large parking lots now consume extensive frontage in many corridors that have the potential for more productive uses. Demand for housing, especially affordable housing, is strong in a market where rental vacancy rates have not dipped below 5% since 1965. Additional residential density would strengthen demand for more retail, especially in communities where customers are increasingly diverse. And unlike rail projects, BRT is unlikely to trigger land speculation and displacement.

BRT has the potential to transform corridors in areas of New York City whose vitality is now undermined by lack of transit access and blighted by 1960s-era planning. To fulfill that potential, BRT corridor planning needs to be holistic, inclusive, and informed by local aspirations and concerns. If new land value is created by the combination of infrastructure investment and rezoning for greater densities, that value must be invested in ways that maximize public good.

The experience of implementing SBS has provided valuable lessons for the MTA and NYC DOT – including building the agencies' ability to collaborate in the planning, development, and operation of the system. They have also established processes to engage stakeholders in the planning of new corridors, and gained understanding of the range of their concerns. This has enabled the agencies to develop a palette of solutions to mitigate them, many of which are applicable to SBS and to potential full-featured BRT including:

- Ensuring that local bus service is preserved or enhanced rather than degraded by the introduction of SBS/BRT. This is especially important to assure that improved service strengthens retail corridors, most of whose customers walk or use transit;
- Lane and curb configurations that minimize loss of parking and loading;
- Using design improvements (such as turn restrictions) that decrease congestion and enhance safety for other road users, including both pedestrians and drivers.

The success of SBS has built a reservoir of good will, as communities experience the benefits of improved service, and in most cases, discover that anticipated negative impacts are minor or nonexistent. Based on input from local retailers, for example, bus lanes have been located away from the curb, preserving parking and loading space. And traffic speeds along the M15 route in Manhattan have actually increased since the introduction of SBS, where physical barriers and restrictions on turns have reduced congestion and lowered the number of injury-producing crashes.[6]

Bx41 Select Bus Service on Webster Avenue – parking and loading space maintained

Priority Corridors for a Full-Featured BRT Network

The following proposal draws upon the earlier studies by the MTA, New York City DOT, and Pratt Center, but emphasizes corridors in which BRT has the greatest potential to benefit underserved residential neighborhoods and employment clusters. These are corridors where essential BRT features, including exclusive bus lanes and visible stations, are physically feasible over most of their length, and where subway service is not available within walking distance.

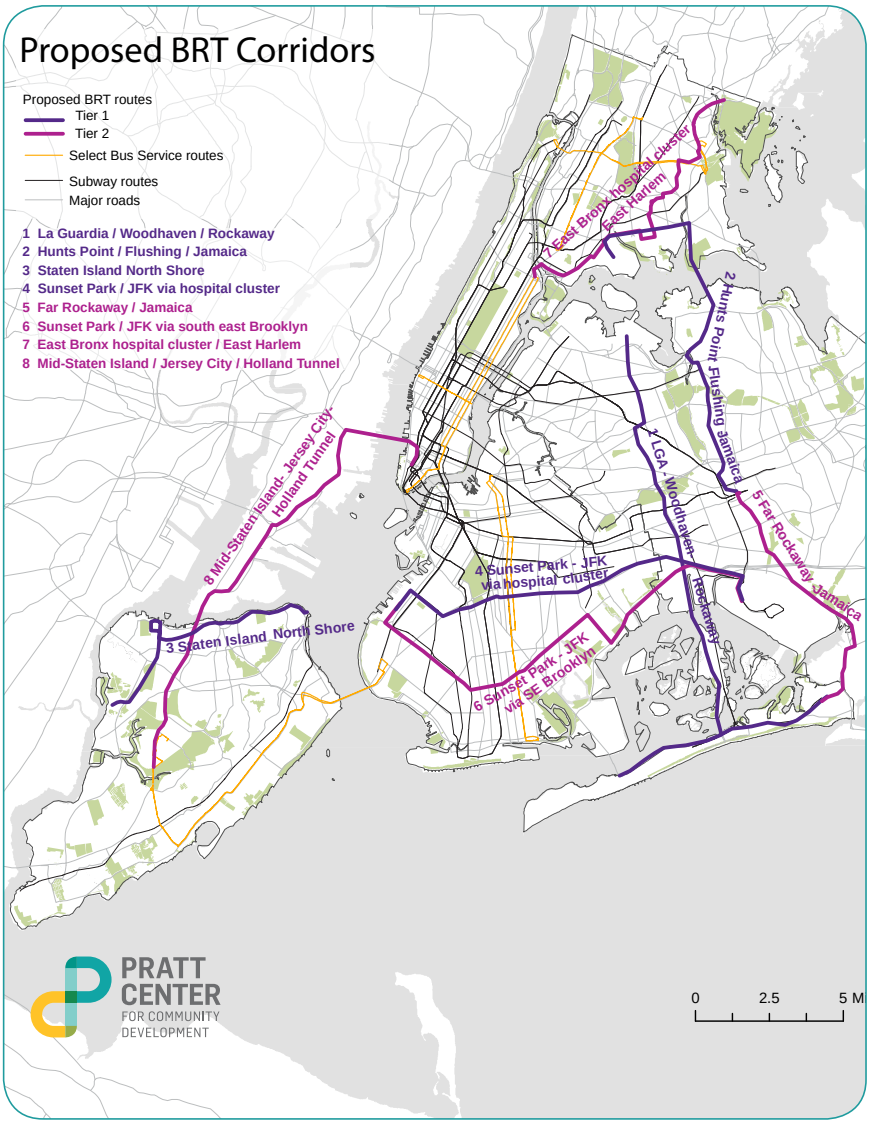
It also considers these corridors as elements in a network that would make a greater range of destinations accessible to riders while minimizing transfer penalties and maximizing ease of use. Similar to the subway system, a BRT network allows users to access large areas, but keeps the length of each route to operationally feasible lengths. BRT features, including the use of enclosed stations with multiple docking bays, as well as centralized monitoring and dispatching, allow for comfortable and efficient interline connections which increase the utility of the network.

While further analysis is needed to identify detailed street alignments for the proposed routes, we are proposing these corridors as strong candidates for full-featured BRT, which could offer significant benefits by connecting now-underserved residential communities, job clusters, and anchor institutions.

The corridors below are prioritized based on their:

- Potential to benefit underserved populations (equity impacts)
- Potential to catalyze development that would benefit low- and moderate-income residents (transformative potential)
- Physical feasibility of essential BRT characteristics (full-featured BRT potential)

Corridors in the first tier are those that provide the most substantial benefits to riders and their communities, and where full-featured BRT would appear to be physically feasible over most of the proposed routes' length. Second-tier corridors are those which provide significant benefits, but where achieving full-featured BRT may be more difficult because of limited street widths over a greater percentage of corridor length. While the first-tier corridors may offer opportunities to more easily implement BRT, all eight corridors are worthy of further analysis. As has been the case for Select Bus Service, successful implementation in the most promising corridors will generate support for expansion of the network.



Conceptual map of proposed full-featured BRT network

Priority Corridors for a Full-Featured BRT Network – Summary

#	Route Name	Communities Served	Boroughs Served	Full-Featured BRT Potential	Transformative Potential	Equity Impacts
1	**LaGuardia / Woodhaven / Rockaway**	Jackson Heights, Woodside, Elmhurst, Rego Park, Woodhaven, Ozone Park, Howard Beach, Broad Channel, Rockaway (west branch to Neponsit, east branch to Far Rockaway)	Queens	***	***	***
2	**Hunts Point/ Flushing / Jamaica**	Hunts Point, Soundview, Castle Hill, Zerega Industrial Park, Flushing, Queens College, Kew Gardens, Jamaica	Bronx / Queens	***	***	***
3	**Staten Island North Shore**	West Shore Plaza / Arlington, Mariners Harbor, Port Richmond, New Brighton, St. George	Staten Island	***	**	***
4	**Bush Terminal to JFK via hospital cluster**	Bush Terminal / Sunset Park / Flatbush / SUNY Downstate Medical Center / Brookdale Hospital / Brownsville / East New York / JFK	Brooklyn / Queens	**	***	***
5	**Far Rockaway / Jamaica**	Far Rockaway / Rosedale / Locust Manor, Jamaica	Queens	**	**	***
6	**Sunset Park / JFK via south east Brooklyn**	Sunset Park, Bay Ridge, Gravesend, Marine Park, Flatlands, Canarsie, Spring Creek, Lindenwood, South Ozone Park	Brooklyn / Queens	**	**	***
7	**East Bronx / East Harlem**	Bay Plaza / Co-Op City / Hutchinson Metro Office Park / Jacobi / Einstein / Calvary / Hospitals / Parkchester / Soundview / Hunts Point / Port Morris / East Harlem	Bronx / Manhattan	**	**	***
8	**Mid-Staten Island / Manhattan via Holland Tunnel**	Eltingville Transit Center, Staten Island Mall, College of Staten Island, Port Richmond, Bayonne Bridge, Hudson-Bergen Light Rail (Jersey City), Holland Tunnel to Lower Manhattan	Staten Island / Jersey City / Manhattan	**	*	**

"Full-Featured BRT potential" is greatest for corridors with wide, multi-lane streets over most of their length, and lower for corridors where a greater proportion of the route would travel on narrower streets where creating exclusive rights-of-way and enclosed stations is more difficult.

"Transformative potential" is greatest for corridors with large areas of underutilized land, such as parking lots that offer potential for new development without displacing existing residents or businesses.

"Equity impacts" are highest for corridors that would serve large numbers of low- and moderate-income residents, and make connections to important employment and institutional destinations.

First Tier Corridors

1 LaGuardia / Woodhaven / Rockaway

Branches serving Rockaway Park/ Neponsit / Belle Harbor and Arverne / Edgemere / Far Rockaway (extending beyond the Q52 / Q53 routes)

Community Districts Served: Queens 3,4,5,6,9,10,14

Neighborhoods served: Elmhurst, Rego Park, Woodhaven, Ozone Park, Howard Beach, Broad Channel, Rockaway

Total Population: 1,007,312

Percentage of residents using transit: 57%

Major destinations: Far Rockaway, Riis Park / Rockaway Beaches, local retail along entire corridor, Forest Park, Queens Center Mall, Woodside transit hub, LaGuardia Airport

Sample trip times: Howard Beach to La Guardia, 8.5 miles

65 minutes via best existing transit route;
45 minutes via BRT – a 30 percent improvement

30% improvement

This corridor has strong potential for full-featured BRT over the entire length of Woodhaven and Cross Bay Boulevards, and on most of the Rockaway Peninsula. These streets have six to eight traffic lanes separated by center medians, in addition to side medians in parts of Woodhaven.

Dense residential development, separated from local retail by eight street lanes. BRT along the center median would create safer walking and driving conditions

Northern portions of the corridor are densely developed with multi-story apartment complexes and ground-floor retail. South of Atlantic Avenue, Woodhaven and Cross Bay Boulevards pass through lower-density areas, with street frontage dominated by low-rise commercial buildings. Along this segment, retail frontage is discontinuous, and sidewalks are frequently interrupted by driveways and parking strips. Lack of foot traffic puts locally-owned stores at a disadvantage to chain stores; if a shopping trip requires getting into the car, shoppers are likely to bypass small businesses in favor of malls and big box stores. Implementing BRT here would make local retail more accessible and competitive, by enabling the development of shopping hubs around BRT stops. Experience in other cities shows that BRT is unlikely to trigger land speculation and displacement. But when BRT is implemented as part of a coordinated revitalization strategy, it can support targeted development of affordable housing and retail.

A BRT route on this corridor would connect to the **A, E, F, J, M, R, Z,** and **7** trains as well as the Long Island Railroad at Woodside. It would also provide an important backup to the A Train in the Rockaways during service disruptions caused by disasters or construction work.

2 Hunts Point / Flushing / Jamaica

Community Districts Served:
Bronx 2,9; Queens 7,8,12

Neighborhoods Served:
Hunts Point, Soundview, Castle Hill, Flushing, Kew Gardens, Jamaica

Total Population: 848,924

Percentage of residents using transit: 50%

Major destinations:
Hunts Point Food Distribution Center; Zerega Industrial Park; Downtown Flushing; Citi Field, Flushing Meadows Corona Park, New York Hospital Queens; CUNY Law School; Queens College; Downtown Jamaica; Jamaica LIRR; York College

Sample trip times: Downtown Flushing to Jamaica, 7.2 miles

55 minutes via best existing transit route;
36 minutes via BRT – a 35 percent improvement

35% improvement

This corridor connects Bronx and Queens communities that include dense residential areas, vital job centers, and institutions not served by the subway system. The percentage of residents who commute by transit understates the transit reliance of the corridor as a whole. Workers in Hunts Point, shoppers on Flushing Main Street, and Queens College students overwhelmingly use transit, and many suffer lengthy and uncertain trips on local buses. Both the Bronx and Queens portions of this corridor have gained residents and jobs during the past decade, but lack of transit access threatens their continued growth.

Shoppers in Flushing's vibrant downtown overwhelmingly arrive by transit or on foot
photo by nycgo.com

Parts of the corridor are now served by the Q44 and the Q50, the only direct transit connection between the two boroughs. The proposed BRT service would follow the current Q44 route in Queens, but would connect the Bronx neighborhoods of Hunts Point and Soundview, both of which are distant from the subway system. Dense residential development in Soundview is separated from the closest subway line by the Bruckner Expressway, with access available only via isolated pedestrian bridges. BRT on this corridor would serve the residents of 8,207 public housing units, in six Bronx and four Queens developments, most of which are over one-half mile from the nearest subway.

Residents of Soundview's Mitchell-Lama apartments and public housing developments, many of whom are seniors and retirees, are poorly served by local retail, and poorly connected to other neighborhoods.

Flushing's Main Street is a key north-south corridor connecting important residential, commercial, and institutional centers. Its width, from six to eight lanes over most of its length, and its connections to major east-west transit lines, as well as to Jamaica's regional hub, makes it a high priority candidate for BRT.

Q44 stop at Queens College

3 Staten Island North Shore

Community Districts Served:
Staten Island 1

Neighborhoods served:
Arlington, Mariners Harbor, Port Richmond, New Brighton, St. George

Total Population: 175,756

Percentage of residents using transit: 31%

Major destinations:
West Shore Plaza, Howland Hook container port; Snug Harbor Cultural Center; Staten Island Ferry

Sample trip times:
West Shore Plaza to St. George Ferry Terminal 7.2 miles

43 minutes via best existing transit route;
23 minutes via BRT – a 47 percent improvement

47% improvement

The total population of the North Shore Corridor is smaller than those we have examined in the other boroughs – 175,756 as of the 2010 Census. But this represents an increase of 8.1 percent over 2000, the highest rate of growth of all of the study corridors. While the percentage of commuters using transit in this area is relatively low, the North Shore's demographics suggest that many residents rely on transit for other trips. Twenty-six percent of Staten Island Community District 1 residents attend grades K-12 or college; 40 percent of residents receive some form of income support. Among commuters, 31 percent travel 60 minutes or more to work – so full-featured BRT would measurably improve quality of life for many North Shore residents.

The North Shore also presents an outstanding opportunity to establish a full-featured BRT corridor, using the 7.5-mile inactive rail right-of-way that runs from Arlington to the ferry terminal at St. George. Using rail infrastructure already in place would allow for a fully dedicated busway over most of the route, including grade separations at intersections. This would allow for the highest BRT speeds of any corridor proposed in this paper.

Illustration from MTA North Shore Alternatives Analysis, 2012

The MTA completed an analysis in 2012 comparing BRT to alternatives including light and heavy rail, and found that a BRT corridor, using the rail line as an exclusive busway, would result in trip times comparable to light rail - 23 minutes for BRT vs. 21 minutes for light rail. BRT would actually serve more riders, because it would provide better connections to other major bus routes, including the other Staten Island route included in our recommendations.

The MTA also compared capital and operating costs for each alternative on a present value basis and determined that the combined capital and 20-year operating cost of full-featured BRT for the full-length route would be approximately $538 million, vs. $874 million for electric light rail, the next lowest-cost option. The BRT option also produces fewer environmental impacts than the other alternatives. BRT would support the North Shore's continued growth and economic development by providing an efficient and attractive alternative to driving in an area that suffers from traffic congestion, and whose residents are less likely than their predecessors to own cars.

4 Bush Terminal to JFK via Brooklyn Hospital Cluster

Community Districts Served:
Brooklyn 7,14,17,18,5; Queens 10

Neighborhoods served:
Sunset Park, Flatbush, East Flatbush, East New York, Lindenwood

Total Population: 969,044

Percentage of residents using transit: 61%

Major destinations:
Bush Terminal, SUNY Downstate, Kings County Medical Center, Kingsboro Psychiatric Center, Kingsbrook Jewish Medical Center, Brookdale Hospital

Sample trip times:
NYCHA Pink Houses, East New York to SUNY Downstate Medical Center, 4.9 miles

55 minutes via best existing transit route;
21 minutes via BRT – a 62 percent improvement

62% improvement

This corridor contains five major hospitals and numerous primary care facilities and medical practices, directly employing over 20,000 workers and serving hundreds of thousands of residents – including over 7,800 public housing residents in Brownsville and East New York developments that are now isolated from subway lines.

Linden Boulevard in Brownsville – wide streets, lined with dense housing and isolated from transit

BRT would provide a circumferential connection between subway lines that run north-south through the area, enabling more efficient trips to destinations within and beyond the corridor. The mobility benefits of this corridor are very substantial, particularly as they connect residents to several major employment clusters. Full-featured BRT appears feasible over most of the corridor, including where Linden Boulevard provides a multi-lane connection to Conduit Avenue near JFK. Between Bedford Avenue and Sunset Park, the east-west streets are narrower, but efficient connections to the Sunset Park waterfront appear to be possible.

Narrower segment of Linden Boulevard in Flatbush

Second Tier Corridors

Full-featured BRT would bring substantial benefits to these corridors, which include populous underserved residential areas and important destinations. We have designated them as "Second Tier" because implementing full-featured BRT would be more challenging than for the first tier corridors. The second tier corridors include wide streets over a lower proportion of their length. And some are already densely built-up, and would present fewer opportunities for new development that would complement BRT. Still, these corridors are well worth evaluating, especially as a second phase in a full-featured BRT network, where their value would be enhanced by the connections they would enable to first-tier corridors already in place.

5 Far Rockaway / Jamaica

Community Districts Served:
Queens 12, 13, 14

Neighborhoods served:
Far Rockaway, Rosedale, Locust Manor, Jamaica

Total Population: 539,283

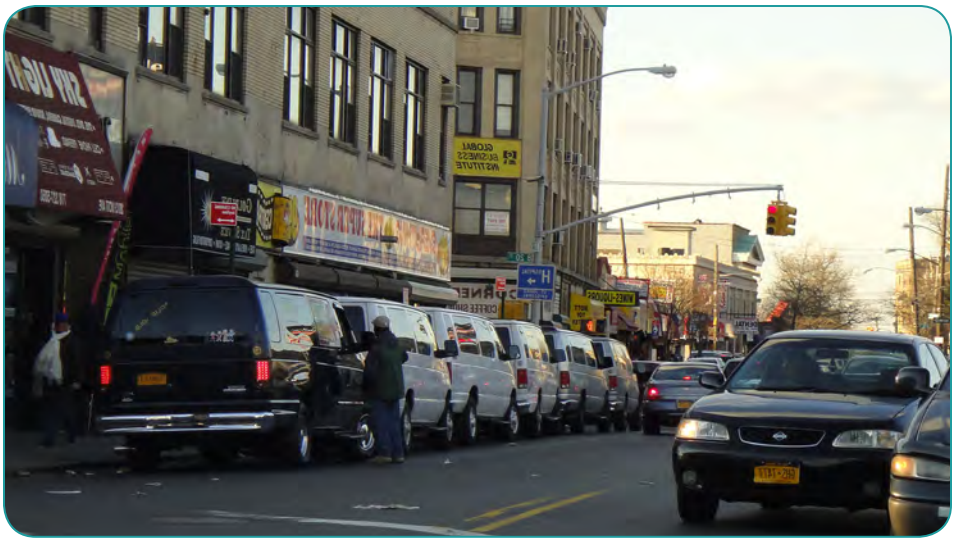
Percentage of residents using transit: 42%

Major destinations:
Jamaica Center, York College

Sample trip times:
Mott Avenue A train station to Queens College 12 miles

76 minutes via best existing transit route;
55 minutes via BRT – a 28 percent improvement

28% improvement



Dollar vans fill transportation gap in Far Rockaway

Current demographics and travel patterns in Far Rockaway strongly recommend BRT for this corridor. Isolation is a key factor in the persistence of poverty on the east end of the Rockaway Peninsula. The long distances to job opportunities, health care, shopping, education, culture, and recreation impacts all Rockaway residents, but perhaps its young people above all. Twenty-seven percent of Rockaway residents are students; many more young people of college age are deterred from enrolling because of the distance and lengthy travel time to even the nearest post-secondary institutions.

While both Long Island Railroad and local bus routes connect Far Rockaway to Jamaica, LIRR fares are unaffordable to daily commuter, and current bus service to Jamaica takes over 60 minutes.

Most travelers take the "dollar van," the informal commuter vans that pick up passengers outside the Mott Avenue A Train station. The dollar vans make the trip much faster, making few intermediate stops, and the $2 fare is nominally lower than a full-price MetroCard swipe. But unlike MetroCard, there is no volume discount, and no transfers to other services, and the safety and reliability of the often unlicensed vans is questionable.

A BRT corridor making a direct connection from eastern Rockaway communities to Jamaica would open employment and educational opportunities to tens of thousands of residents. Full-featured BRT could be implemented for much of the route, using the Nassau Expressway and Rockaway Boulevard, but north of JFK, local streets are narrower and more congested.

6 Sunset Park / JFK via Southeast Brooklyn

Community Districts Served:
Brooklyn 7,10,11,14,15,18; Queens 10

Neighborhoods served:
Sunset Park, Bay Ridge, Gravesend, Marine Park, Flatlands, Canarsie, Spring Creek, Lindenwood, South Ozone Park

Total Population: 1,068,103

Percentage of residents using transit: 55%

Major destinations:
Industry City, Brooklyn Army Terminal, 58th Street Ferry pier, Jamaica Bay parkland including Marine Park, Canarsie Pier, and Spring Creek Park; Gateway Center Mall, and JFK

Sample trip times:
Bush Terminal to JFK 16 miles

90 minutes via best existing transit route;
75 minutes via BRT – a 17 percent improvement

17% improvement

Residential density and wide right-of-way, Kings Highway

Brooklyn Army Terminal and entrance to 58th Street Ferry

Thirty-six percent of workers residing in the community districts on this corridor travel 60 minutes or more each way to their jobs. Incoming commuters also suffer from poor connections, especially to blue collar job clusters including the Sunset Park waterfront, industrial areas north of Flatlands Avenue, and the numerous logistics operations in and around JFK airport.

This corridor connects disparate residential areas. Many neighborhoods are dominated by owner-occupied small homes, with higher density elevator buildings lining Kings Highway and clustering near the north-south subway lines that cross the area. Demographics vary markedly, with the values of many homes in Bay Ridge and Dyker Heights exceeding $1 million, while the Spring Creek complex (completed in 1974 as Starrett City) was sold in 2009 under a financing arrangement that ensured long-term affordability for most of its 5,881 units.

Kings Highway and Flatlands Avenue make up most of the length of this corridor. Both are very wide streets. Kings Highway features side medians separating through and local traffic. Buses are also allowed to use the Belt Parkway in this area, which could create a high-speed BRT connection from Canarsie to Spring Creek and on to JFK. Creating full-featured BRT at the western end of this corridor will be less straightforward; few east-west streets are wide enough to allow both exclusive bus lanes and mixed traffic.

7 East Bronx Hospital Cluster / East Harlem

Community Districts Served:
Bronx 1,2,9,10,11,12; Manhattan 11

Neighborhoods served:
Eastchester, Co-Op City, Parkchester, Soundview, Longwood, Mott Haven, Port Morris, East Harlem

Total Population:
822,520

Percentage of residents using transit: 57%

Major destinations:
Bay Plaza Shopping Center, Jacobi, Einstein, & Calvary Hospitals

Sample trip times:
Parkchester to Jacobi Medical Center 2.2 miles

25 minutes via best existing transit route;
13 minutes via BRT – a 48 percent improvement

48% improvement

East Bronx hospitals, underserved by transit

Commercial and institutional expansion in this area has led to traffic congestion that threatens to stifle future job growth. Poor subway connections have also limited access of Bronx residents to job opportunities in this important hub. Developing full-featured BRT in this corridor is complicated by the complexity of the historic street pattern which features many irregular intersections, and which is additionally fragmented by major highways. Some streets are wide enough to accommodate dedicated BRT lanes and stations, but potential routes are circuitous. Still, BRT in this corridor could reduce congestion and support continuing economic growth, so further evaluation is justified.

8 Mid-Staten Island / Manhattan via Holland Tunnel

Community Districts Served:
Staten Island 1,2; Manhattan 1,2; Bayonne, Jersey City

Neighborhoods served:
Eltingville, New Springville, Willowbrook, Bulls Head, Bayonne, Jersey City

Total Population: 521,777

Percentage of residents using transit: 39%

Major destinations:
Staten Island Mall, College of Staten Island, Port Richmond, Hudson-Bergen Light Rail, Tribeca, Lower Manhattan

Sample trip times:
College of Staten Island to Lower Manhattan 16.3 miles

97 minutes via best existing transit route (standard fare); 50 minutes via BRT – a 48 percent improvement

48% improvement

BRT on Richmond Avenue would serve Staten Island Mall and the College of Staten Island

This corridor would connect the retail hub around the Staten Island Mall, as well as the College of Staten Island, to the proposed North Shore BRT line, and to Bayonne, Jersey City, and Lower Manhattan. The New Jersey portion of the corridor also provides access to NJ Transit's Hudson-Bergen Light Rail line, a connection that is now only possible by car or by local bus.

While residential densities on the Staten Island portion of the corridor are relatively low, population in this area is growing quickly (8.9 percent from 2000 to 2010), and traffic congestion is already threatening Staten Island's economic vitality and quality of life. This corridor would provide much greater benefits if the North Shore corridor is also developed than it would do on its own, and it should be evaluated as an element of a network.

Advancing BRT in New York City

Challenges, Strategies, and Next Steps

Planning Strategy

To deliver full-featured BRT in a form that achieves its full potential to improve mobility, enhance equity, and transform communities, agency planners will need to expand upon the collaboration MTA and DOT have begun. BRT planning must integrate consideration not only of transportation, but of land use and density, housing affordability, economic development, and public realm design. This will require a multi-disciplinary, cross-agency team with leadership from the mayor's office, including the Departments of Transportation, City Planning, Housing Preservation and Development, Environmental Protection, and Parks, as well as the NYC Economic Development Corporation and the MTA. Though the agencies have gained experience in cross-sector planning through several recent initiatives, mayoral leadership will be essential.

Planning will not only need to be integrated across agency domains, but must also engage stakeholders in the affected communities, and substantively address the concerns that are brought forward.

Resistance to the kinds of changes that full-featured BRT entails – especially the reallocation of lane space – is often based on concerns that can be dispelled with accurate information. Many retailers, for example, assume that on-street parking is essential for their customers, and are often surprised when surveys reveal that most arrive on foot or by transit. And designers are often able to achieve best-of-both solutions – street designs that accommodate BRT, improve traffic flow, preserve parking, and create a safer and more attractive pedestrian environment. Successful examples need to be shared with local stakeholders, and planners need to use their tools to adapt to particular local needs.

Planning for transformative BRT must identify development opportunities linked to transit improvement, and ensure that they benefit and not displace low- and moderate-income people. This requires serious attention to concerns about displacement, analysis of housing affordability, tenure, rent-regulated status, and the incorporation of measures to protect incumbent residents. Planning must also recognize that most small businesses occupy rented space and are highly vulnerable to displacement as land values rise.

Innovative financing of full-featured BRT and associated local redevelopment, for example, through value capture mechanisms such as Tax Increment Financing, must be designed so that reliance on revenue derived from increased land values does not add to displacement pressure.

Finally, the experience of planning SBS corridors shows that even modest changes to streetscape and street operation may be resisted on highly localized grounds. Problems raised by stakeholders can often be resolved by design treatments – but they need to be taken seriously to avoid exacerbating distrust.

"... designers are often able to achieve best-of-both solutions – street designs that accommodate BRT, improve traffic flow, preserve parking, and create a safer and more attractive pedestrian environment."

Political Strategy

Implementing full-featured BRT will require political champions at the local and citywide level. BRT corridors will cross multiple neighborhoods and community districts, often with vastly differing landscapes and demographics. City Council representatives can ensure that the vision of corridor-wide benefits is not obscured by local objections and can also ensure that local concerns are addressed. It is important that council members act not only as champions, but as conveners of disparate interests.

As in many realms of planning, the stakeholders who stand to benefit from a proposed change are less likely to mobilize in support than those who prefer the status quo. Bus riders, suffering as they do from severe time constraints and competing demands on their energy, have organized effectively in other US cities, but have been less prominent in New York. Since those same individuals are often actively engaged in their congregations, schools, and other organizations, a range of community institutions could play a constructive role, and advocates can help to forge connections with others – hospital workers, for example – who could directly benefit. Grassroots organizing is essential if elected officials are to be pushed and kept on task. And organized communities can be highly effective partners in corridor-level planning and design, articulating local concerns, dispelling myths, and problem-solving alongside agency staff.

"... organized communities can be highly effective partners in corridor-level planning and design, articulating local concerns, dispelling myths, and problem-solving alongside agency staff."

Leadership from the top is indispensable. Governor Cuomo's NYS 2100 Report, commissioned to map a resiliency strategy for the State, points to BRT as a way to both strategically expand New York's transit system, and to build in redundancy and flexibility that will be critical in meeting future disasters.

Mayor-Elect Bill de Blasio has the opportunity to build on the progressive transportation legacy of the Bloomberg Administration, while advancing an agenda to more broadly share its benefits. De Blasio must appoint DOT leadership that is fully committed to bringing full-featured BRT to New York City, and to collaborating with agencies and communities to deliver on its potential. No less important, he must communicate the importance of transit in uniting our city, and that extending its benefits to all New Yorkers is both essential and achievable.

Appendix 1: FAQs About BRT

- **Will BRT take away parking spaces?**

  Corridors where BRT can be supported have six to eight lanes of traffic, and ideally can accommodate BRT service either along the center median, or one lane out from the curb. Both options preserve curbside parking.

- **Is BRT going to harm local businesses?**

  BRT has proven to be a boon for local businesses and an engine for economic growth in cities where it has been implemented. In the areas where New York City could and should accommodate BRT, residents now often choose big box stores over local businesses in part because of the ease of driving to these establishments. BRT gives shoppers the ability to reach locally-owned businesses in now under-visited neighborhoods with ease thanks to quick and reliable bus service. Studies consistently show that better transit service is a positive for local shops. According to the American Public Transportation Association, every $10 million invested in transit operating costs yield $32 million in increased business sales.

- **What impact will BRT have on congestion?**

  BRT is not only a positive for bus riders; it benefits people who continue to stay behind the wheel of a car. The APTA found that people living in areas served by public transportation save 865 million hours in travel time and 450 million gallons in fuel annually. After SBS was introduced on Manhattan's East Side, taxi GPS data showed a decrease in overall congestion, along with fewer crashes and injuries. With increased capacity, quicker trips, and more reliable service over SBS, BRT carries even more passengers. By giving commuters an appealing alternative to driving, just one bus can remove dozens of cars from the road each day. That's a lot of cars no longer on the road.

- **Will BRT lead to increased gentrification in neighborhoods with the new service?**

  While BRT will make getting from far-flung neighborhoods to commercial centers, transit hubs and other destinations a quicker and more reliable trip, the experience in other cities has been that BRT has not triggered land speculation or gentrification. By building a network of BRT corridors across the city, the buses will bring access to job stability, improved quality of life, and educational opportunity to current residents of these communities.

- **Does BRT have a negative impact on local bus service?**

  BRT is not a replacement for local bus service. On BRT corridors, it will be important to preserve robust local service, since one of BRT's features is fewer station stops. The MTA has done this with the M15 service on Manhattan's East Side and the Bx12 along Fordham Road in the Bronx. That's why the strong working relationship between the MTA and NYC DOT highlighted in the report, and input from members of the community where BRT is introduced, will be important in ensuring sufficient levels of local bus service.

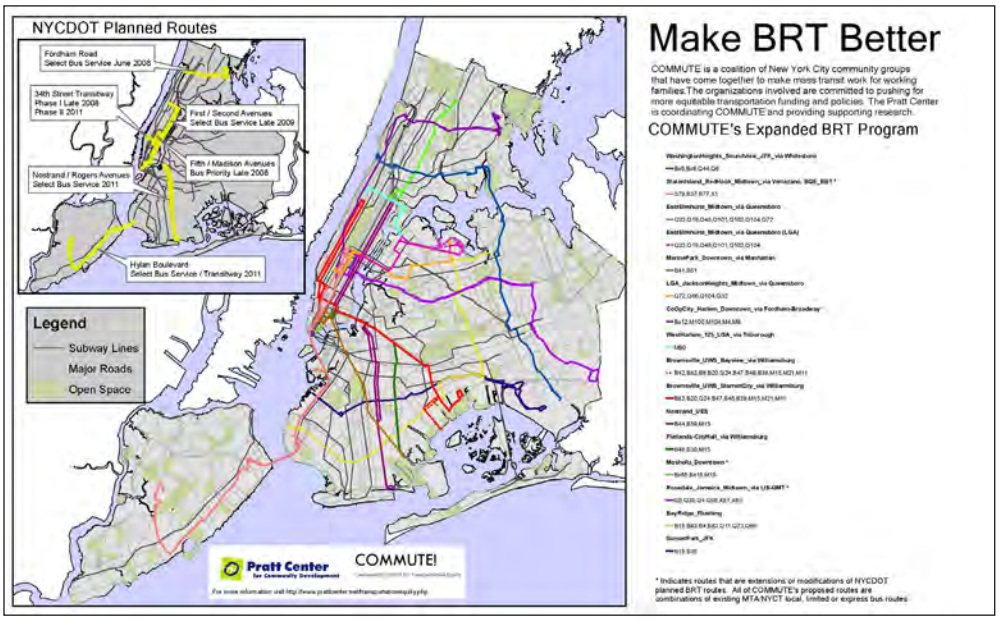
Appendix 2: BRT Networks

Evolving Visions

Conceptual proposals for BRT networks in New York City have been put forward by the Pratt Center for Community Development / COMMUTE! Communities United for Transportation Equity (2007), The New York City Department of Transportation (BRT Phase 2 / Future Corridors (2009) and the Metropolitan Transit Authority (2013). Equity criteria informing all three plans include:

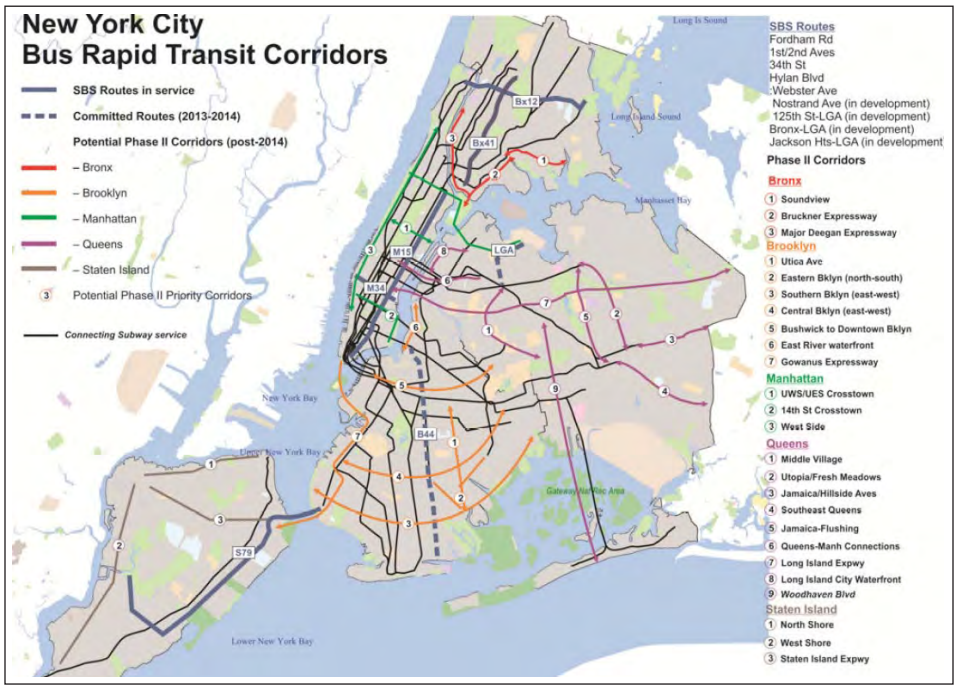
- Underserved areas – population and employment density in areas isolated from the subway system;
- Difficult trips – long travel times, slow bus speeds, and high volumes of transfers in corridors that include major trip generators;
- Underserved areas experiencing growth in numbers of housing units.

DOT's study has provided the basis for selection of several routes now being developed as Select Bus Service Phase 2. All three proposals represent an evolution from the DOT/MTA's Phase 1 program, which selected a single standard bus route in each borough for upgrading to Select Bus Service based primarily on rider volume. The Pratt Center /COMMUTE! vision is the most explicit of the three in projecting a citywide BRT network, with an emphasis on trips between boroughs. The utility of such connections may not be apparent based on assessment of current travel patterns, because these trips are now so difficult to make by transit that few commuters make them. But inter-borough BRT routes may be justified based on the locations of important job clusters and of dense residential communities.



Pratt Center / COMMUTE! BRT Network Vision, 2007
http://prattcenter.net/sites/default/files/maps/COMMUTE_BRT_network.pdf

NYC DOT Future BRT corridors, 2009
http://www.nyc.gov/html/brt/downloads/pdf/brt_future_corridors.pdf



MTA BRT proposal, 2013
http://www.streetsblog.org/wp-content/uploads/2013/07/sbs.png

[1] http://nycfuture.org/research/publications/behind-the-curb

[2] US Census Transportation Planning Package, 2006-2008 data as analyzed by Pratt Center and by the Center for an Urban Future

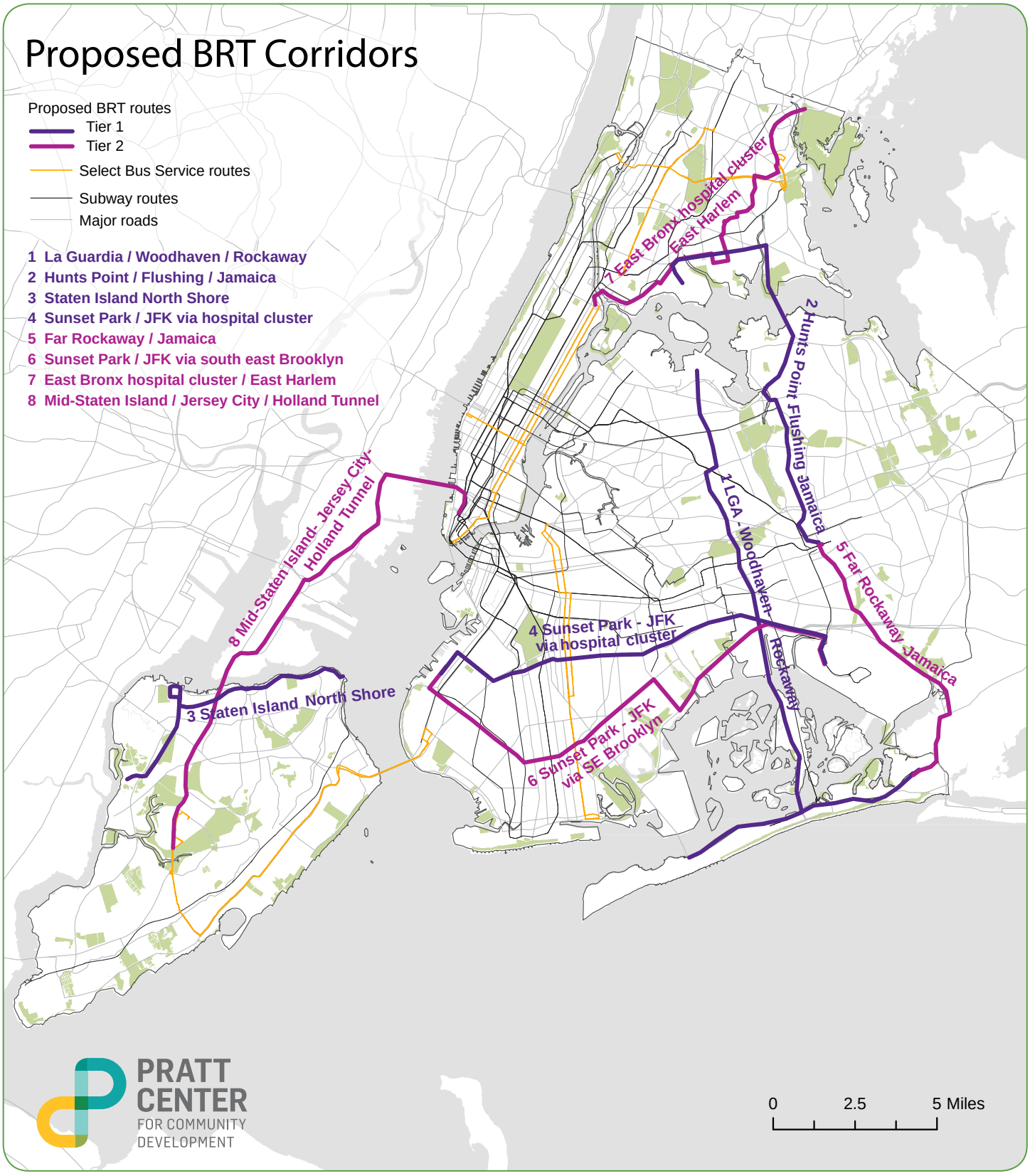
[3] http://prattcenter.net/transportation-equity-atlas

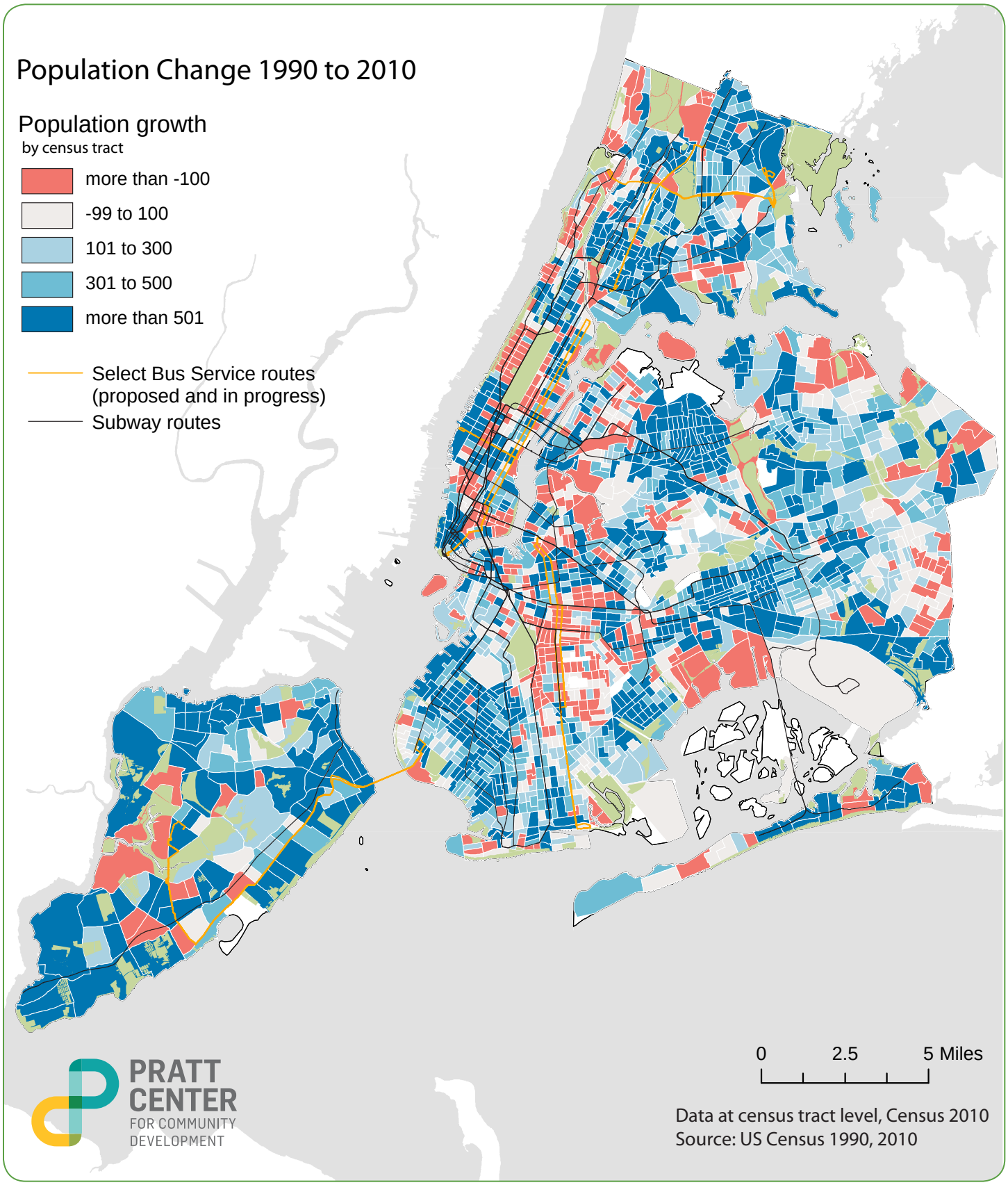
[4] http://www.itdp.org/documents/BRT_Standard_ENGLISH_pub.pdf

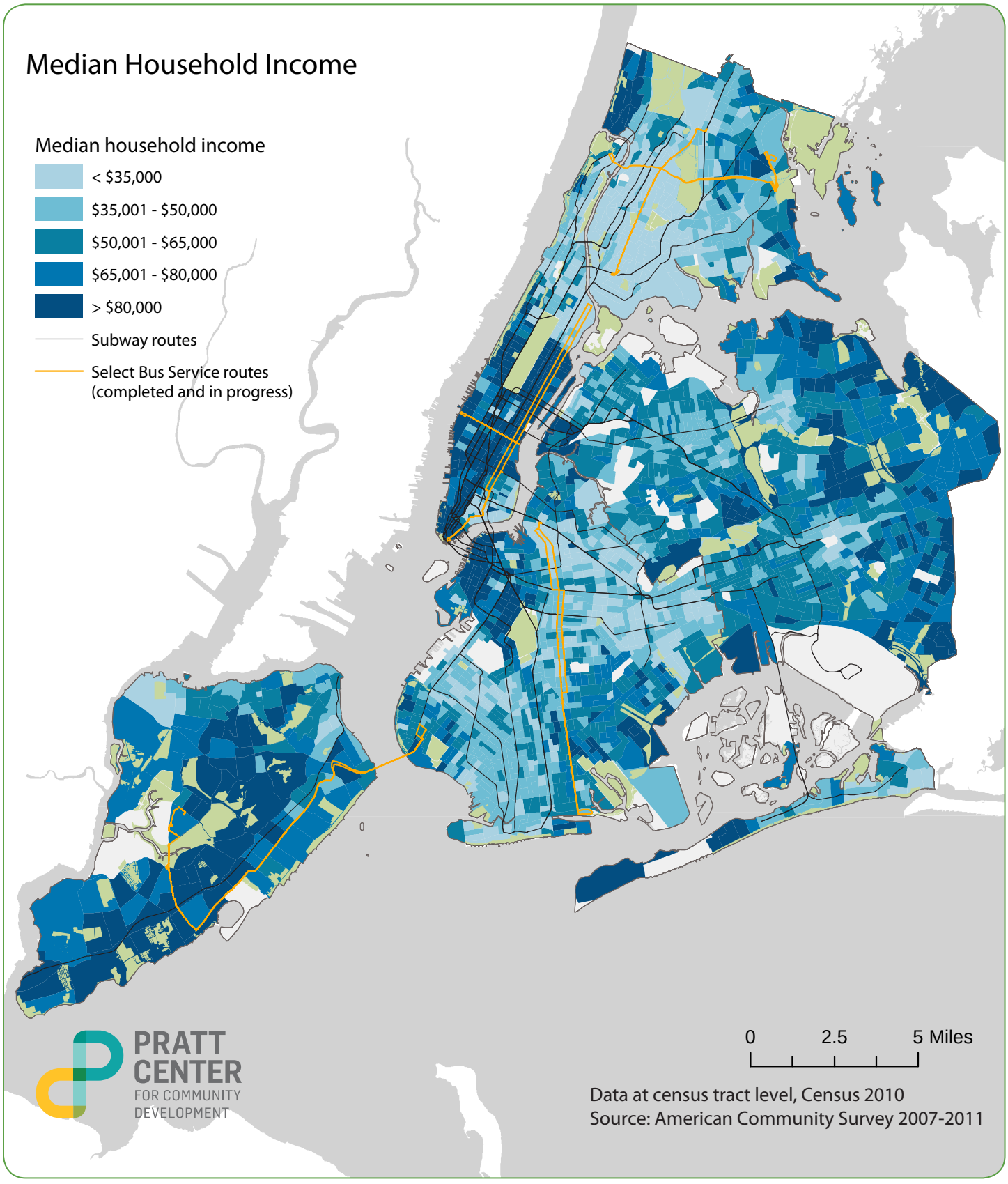
[5] http://web.mta.info/mta/planning/sbs/docs/Bx12-SBS-OneYearReport.pdf

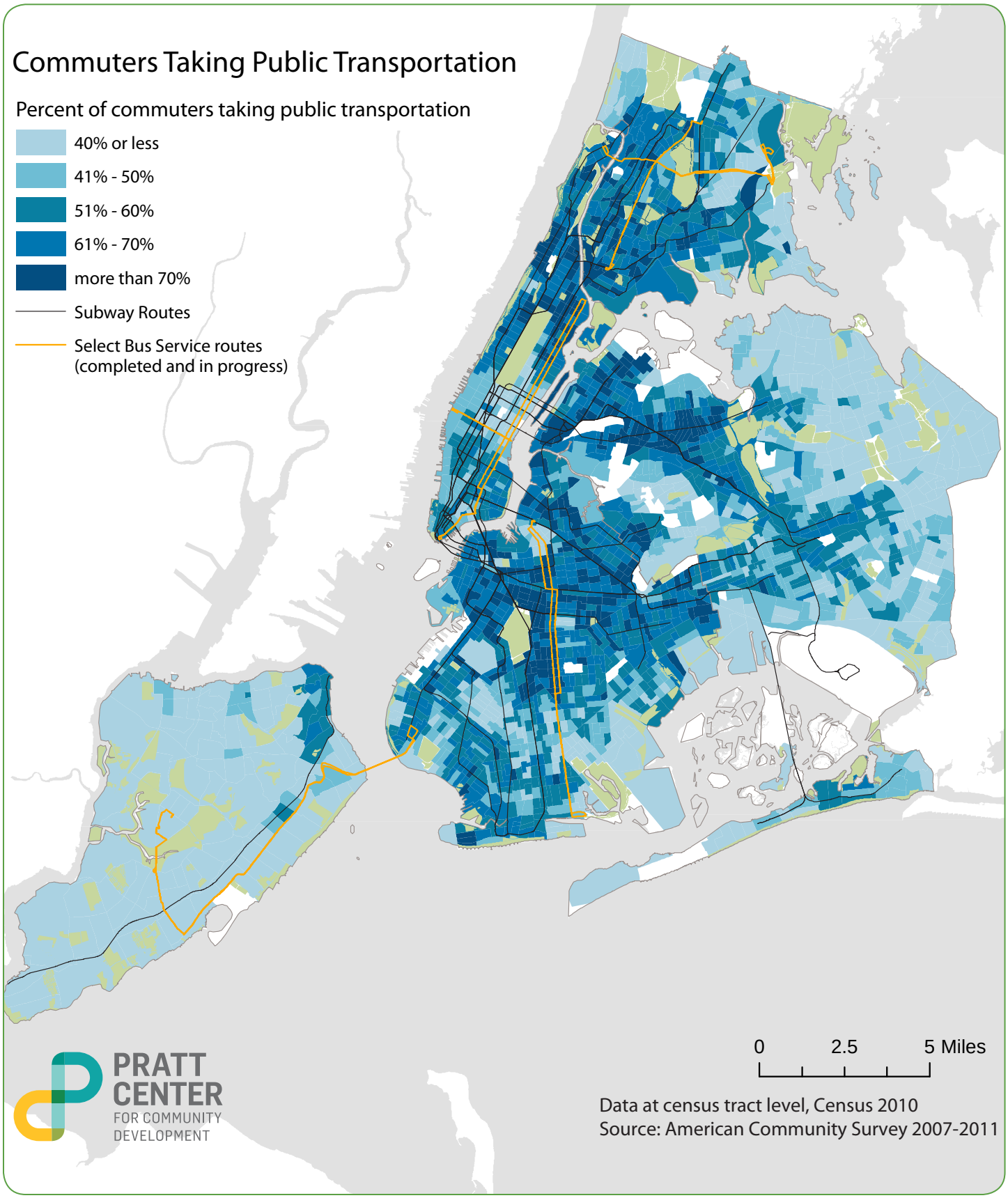
[6] In its first year of operation, M15 Select Bus Service reduced travel time during peak hours by 18% and increased ridership by 12%. On segments where pedestrian refuge islands and other street design changes were implemented, crashes involving pedestrian injuries were reduced by 37%, and crashes involving injuries to motor vehicle occupants were reduced by 27%. Data reported in NYC Sustainable Streets Index, 2011, www.nyc.gov/html/dot/downloads/pdf/sustainable_streets_index_11.pdf.

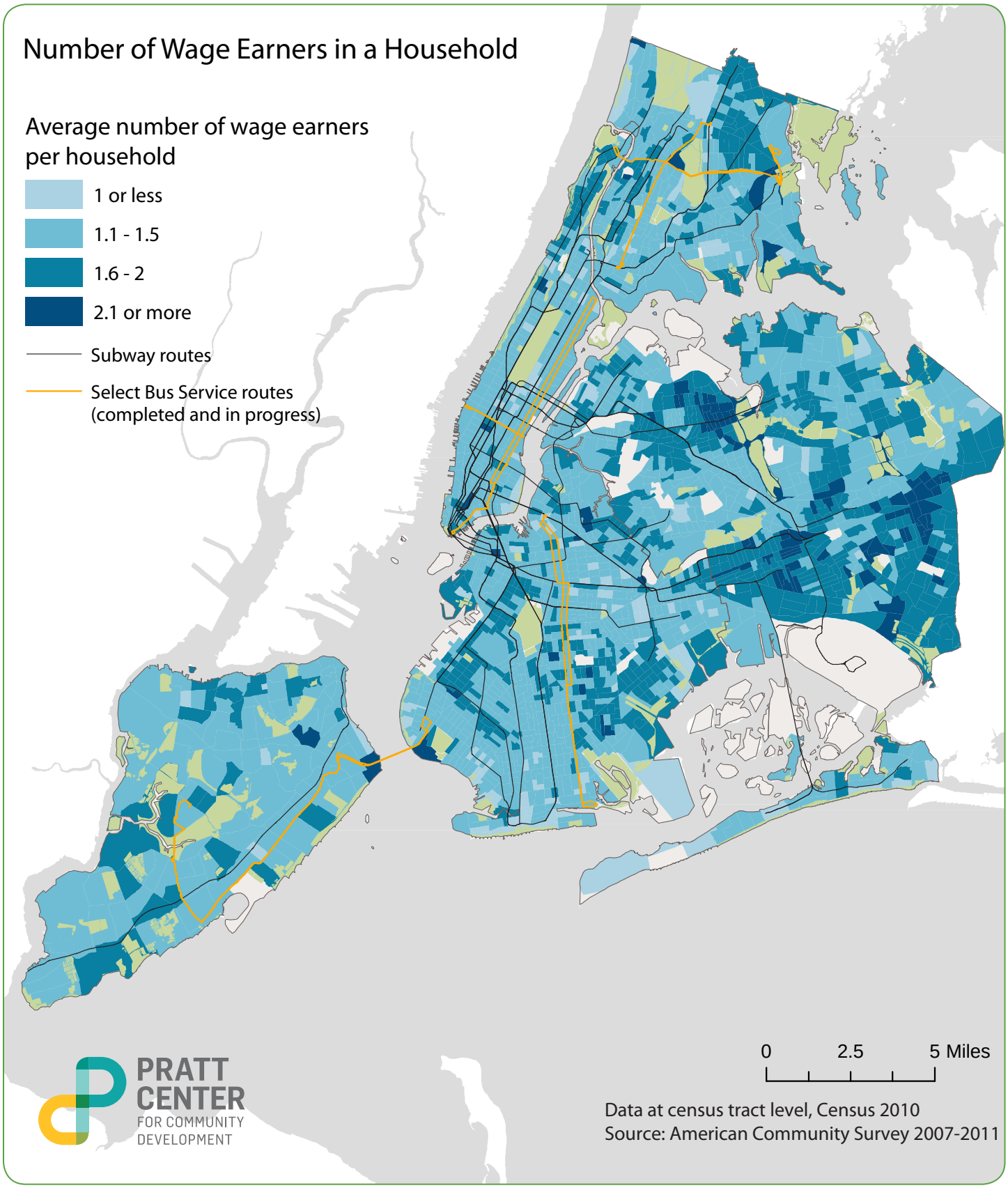
Appendix 3: Maps

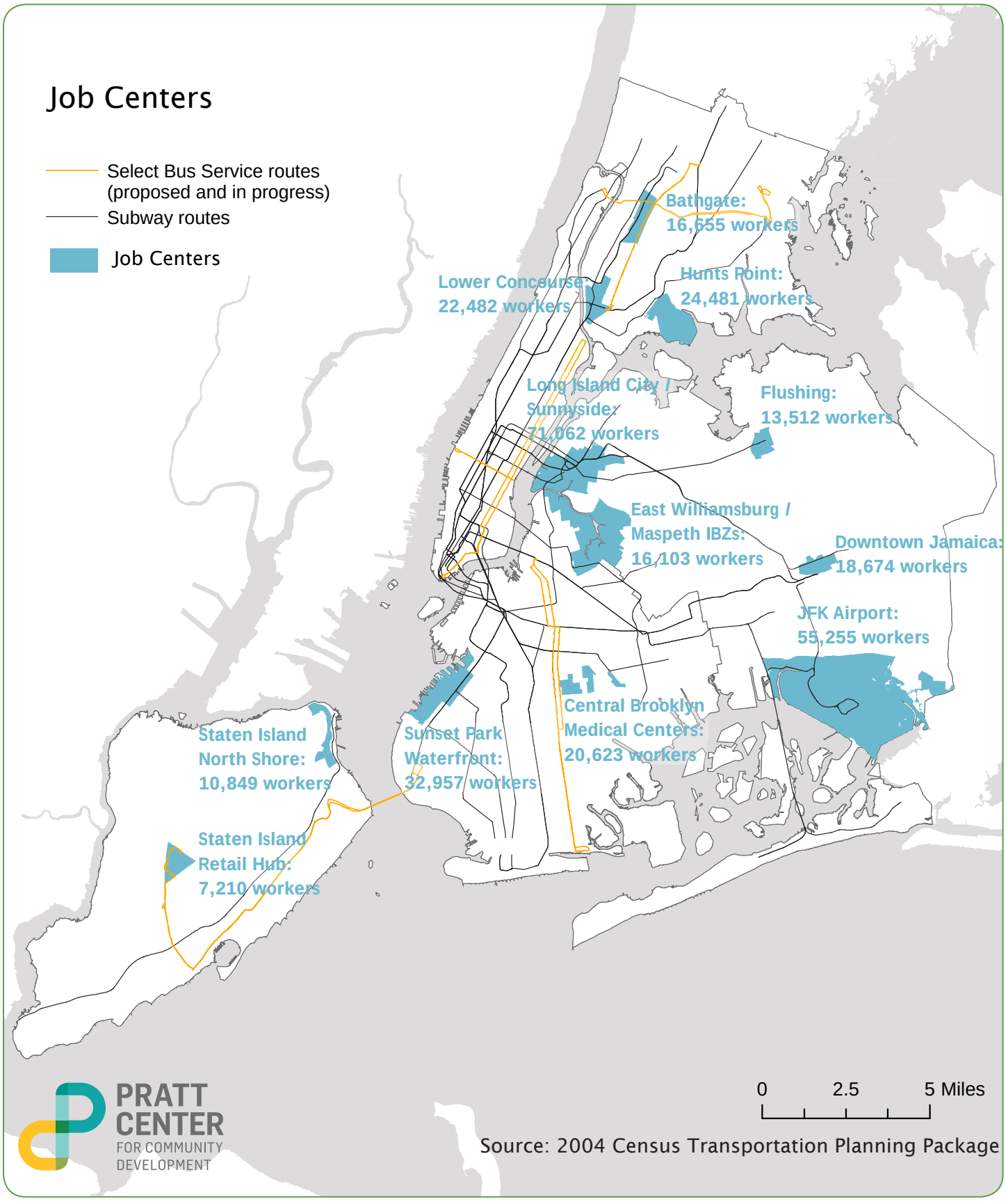


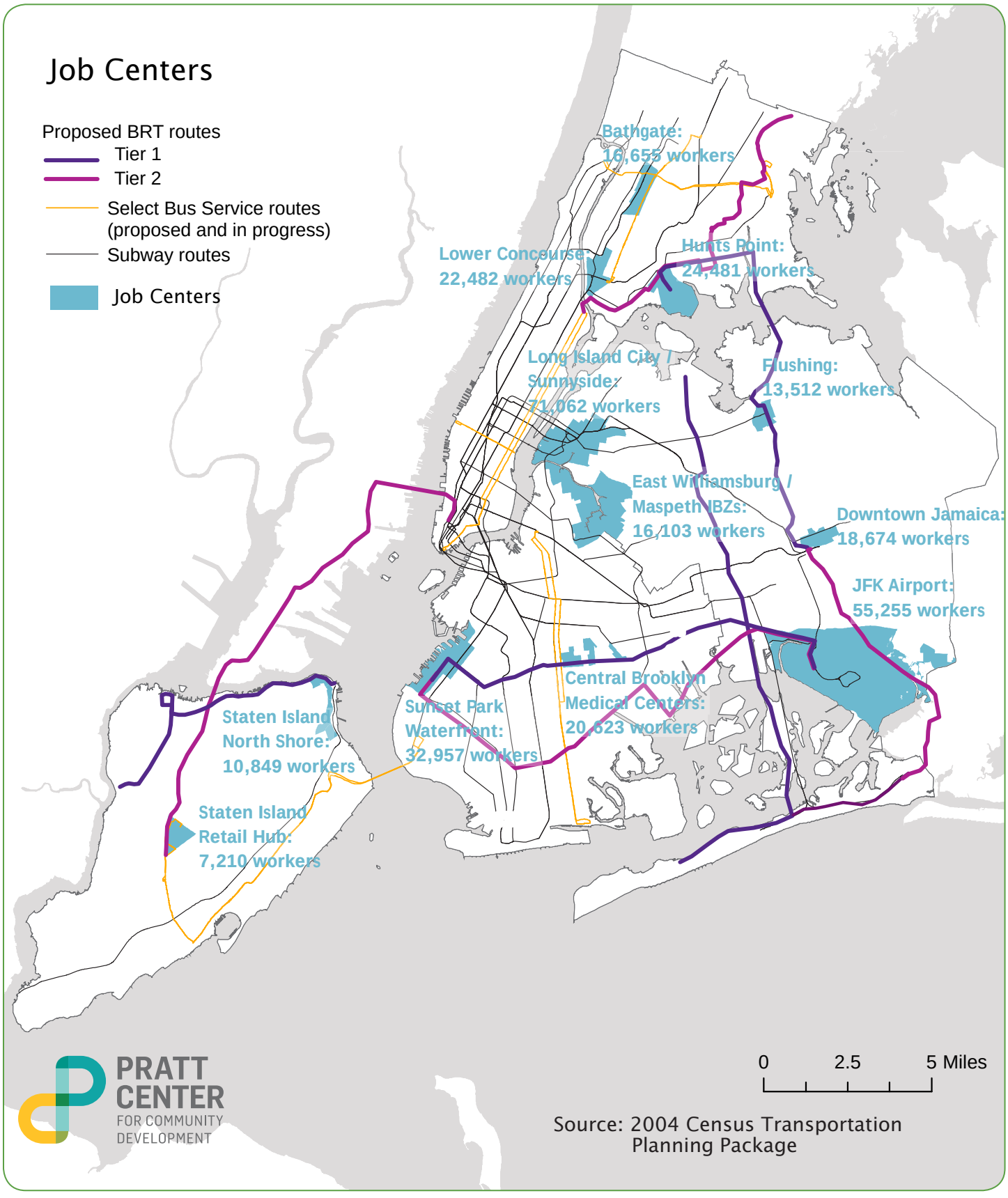

Population Change 1990 to 2010
Population growth
by census tract
more than -100
-99 to 100
101 to 300
301 to 500
more than 501
Select Bus Service routes
(proposed and in progress)
Subway routes
PRATT CENTER
FOR COMMUNITY
DEVELOPMENT
0
2.5
5 Miles
Data at census tract level, Census 2010
Source: US Census 1990, 2010


Median Household Income
Median household income
< $35,000
$35,001 - $50,000
$50,001 - $65,000
$65,001 - $80,000
> $80,000
Subway routes
Select Bus Service routes
(completed and in progress)
PRATT CENTER
FOR COMMUNITY
DEVELOPMENT
0
2.5
5 Miles
Data at census tract level, Census 2010
Source: American Community Survey 2007-2011


Commuters Taking Public Transportation
Percent of commuters taking public transportation
40% or less
41% - 50%
51% - 60%
61% - 70%
more than 70%
Subway Routes
Select Bus Service routes
(completed and in progress)
PRATT CENTER
FOR COMMUNITY
DEVELOPMENT
0
2.5
5 Miles
Data at census tract level, Census 2010
Source: American Community Survey 2007-2011


Number of Wage Earners in a Household
Average number of wage earners per household
1 or less
1.1 - 1.5
1.6 - 2
2.1 or more
Subway routes
Select Bus Service routes (completed and in progress)
PRATT CENTER FOR COMMUNITY DEVELOPMENT
0
2.5
5 Miles
Data at census tract level, Census 2010
Source: American Community Survey 2007-2011


Job Centers
Select Bus Service routes (proposed and in progress)
Subway routes
Job Centers
Bathgate: 16,655 workers
Lower Concourse: 22,482 workers
Hunts Point: 24,481 workers
Long Island City / Sunnyside: 71,062 workers
Flushing: 13,512 workers
East Williamsburg / Maspeth IBZs: 16,103 workers
Downtown Jamaica: 18,674 workers
JFK Airport: 55,255 workers
Central Brooklyn Medical Centers: 20,623 workers
Sunset Park Waterfront: 32,957 workers
Staten Island North Shore: 10,849 workers
Staten Island Retail Hub: 7,210 workers
PRATT CENTER FOR COMMUNITY DEVELOPMENT
0 2.5 5 Miles
Source: 2004 Census Transportation Planning Package


Job Centers
Proposed BRT routes
Tier 1
Tier 2
Select Bus Service routes (proposed and in progress)
Subway routes
Job Centers
Bathgate: 16,655 workers
Lower Concourse: 22,482 workers
Hunts Point: 24,481 workers
Long Island City / Sunnyside: 71,062 workers
Flushing: 13,512 workers
East Williamsburg / Maspeth IBZs: 16,103 workers
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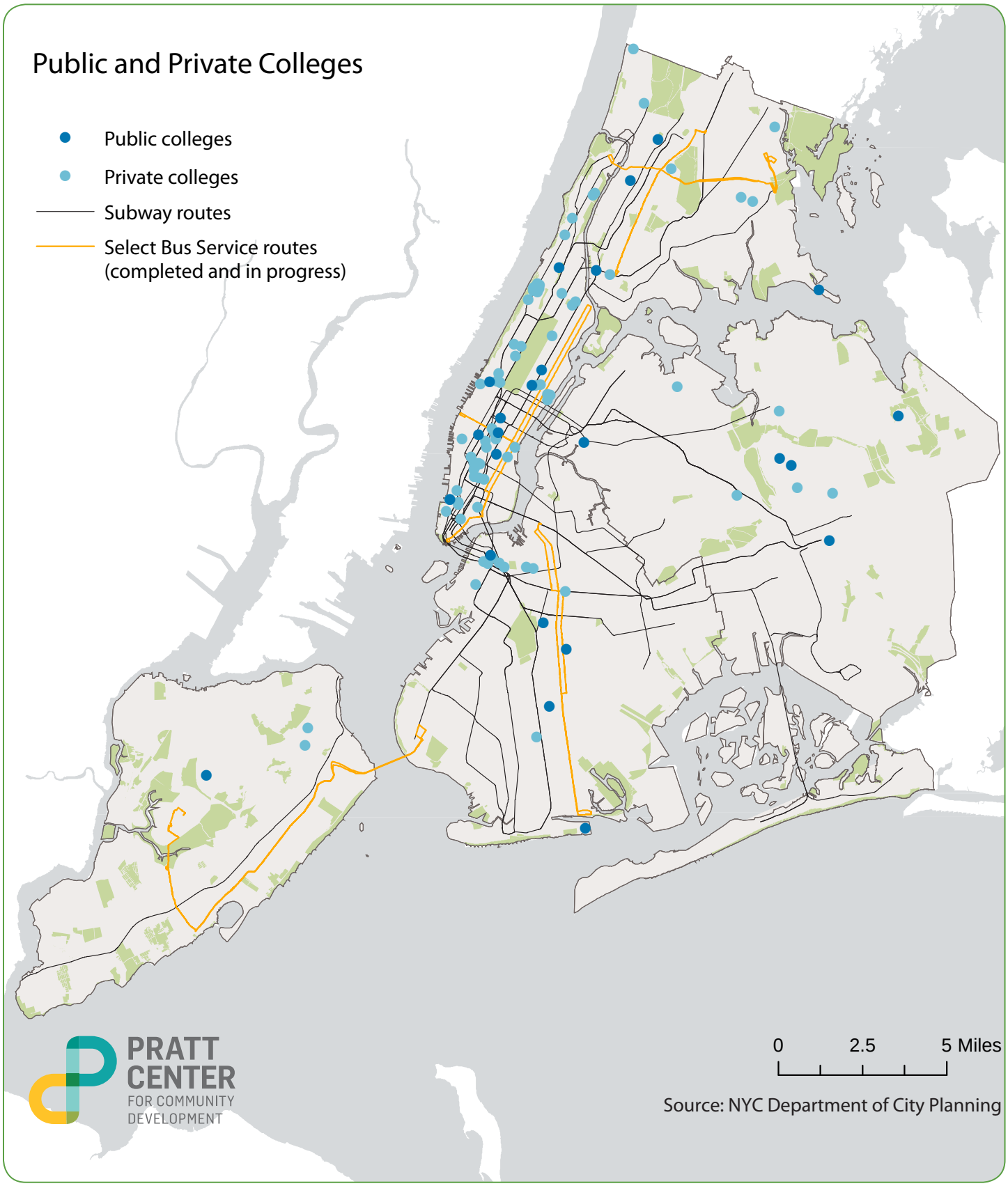
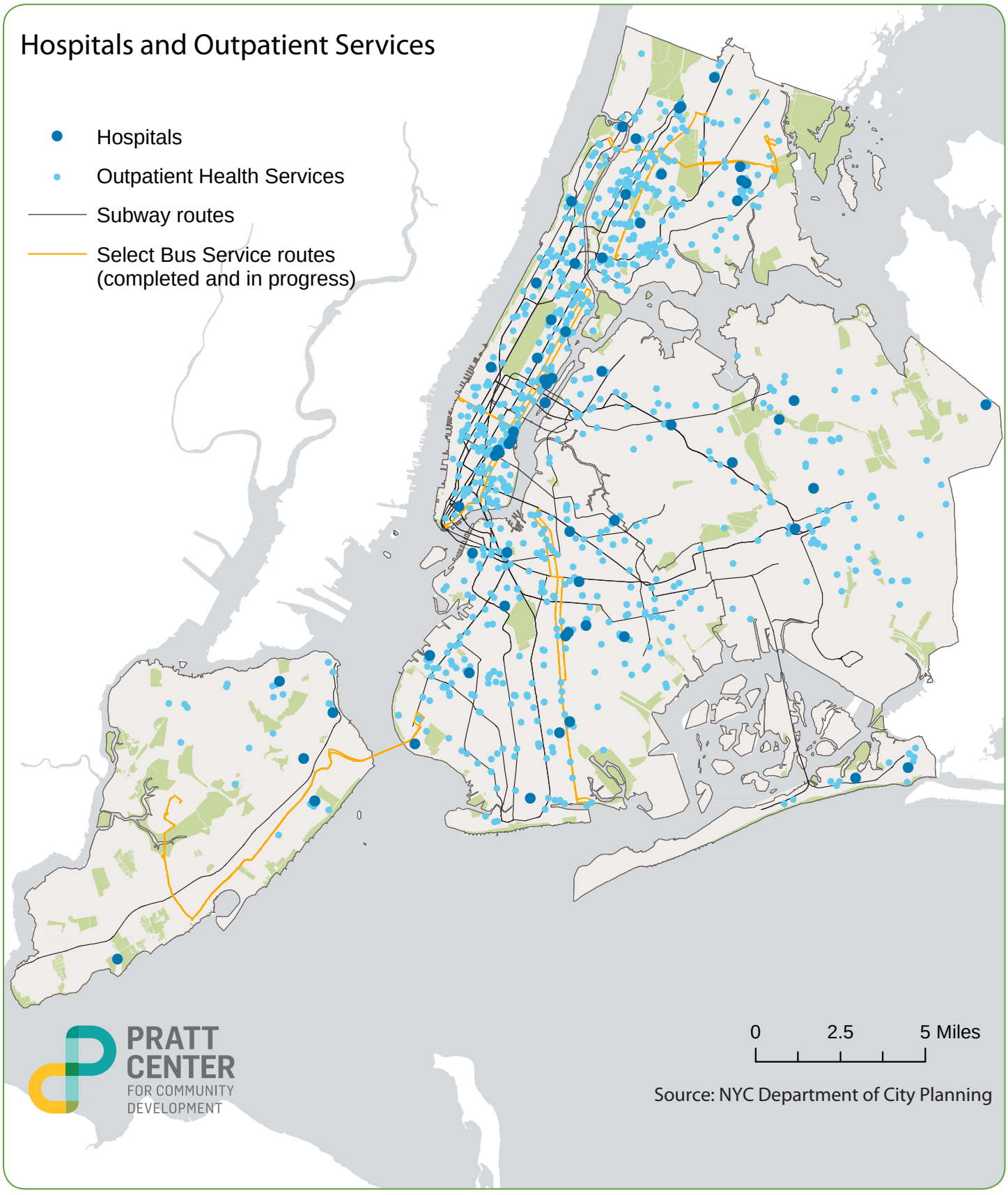
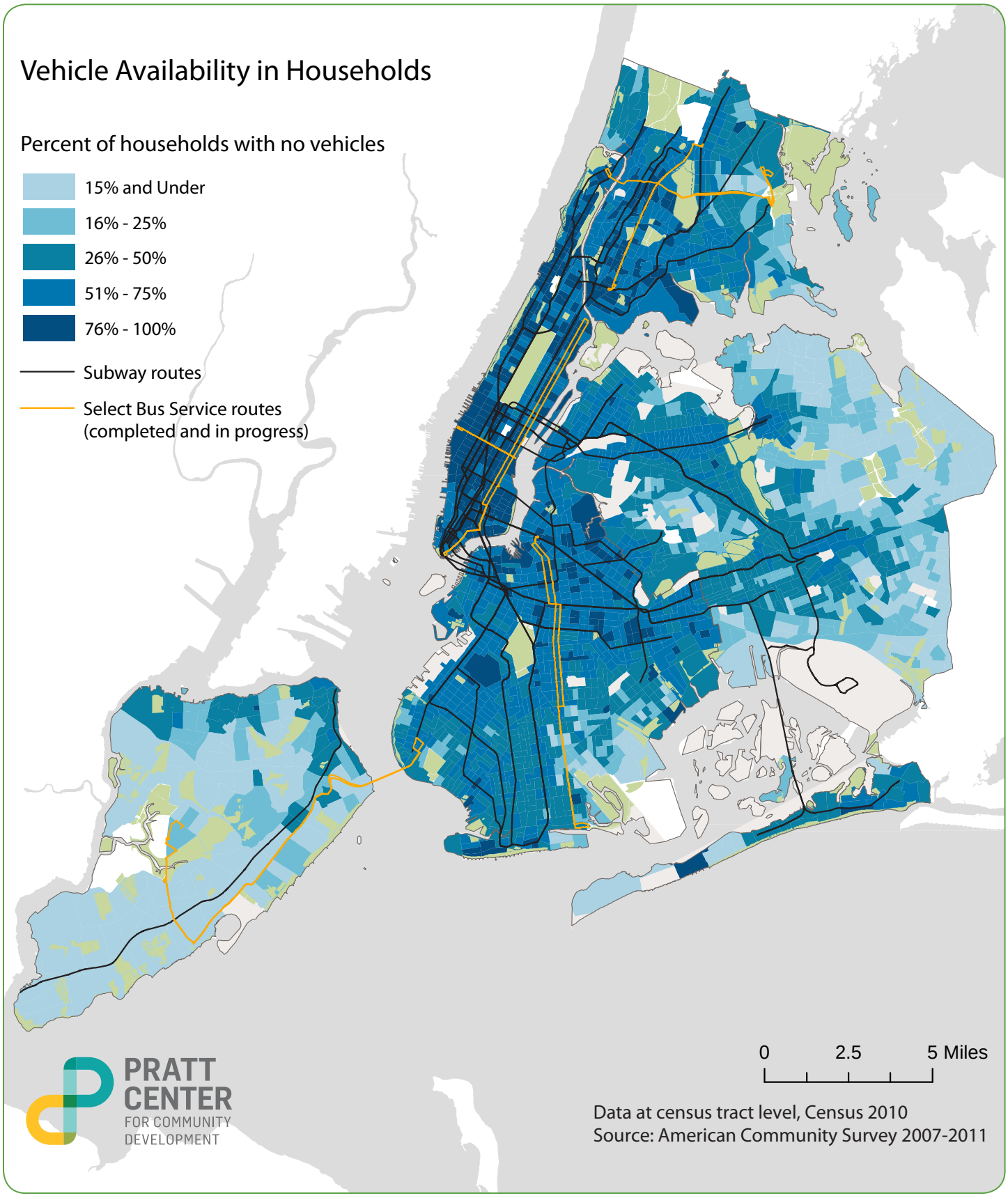
PRATT CENTER FOR COMMUNITY DEVELOPMENT
0 2.5 5 Miles
Source: 2004 Census Transportation Planning Package


Public and Private Colleges
Public colleges
Private colleges
Subway routes
Select Bus Service routes
(completed and in progress)
PRATT CENTER
FOR COMMUNITY
DEVELOPMENT
0
2.5
5 Miles
Source: NYC Department of City Planning


Hospitals and Outpatient Services
Hospitals
Outpatient Health Services
Subway routes
Select Bus Service routes
(completed and in progress)
PRATT CENTER
FOR COMMUNITY
DEVELOPMENT
0
2.5
5 Miles
Source: NYC Department of City Planning


Vehicle Availability in Households
Percent of households with no vehicles
15% and Under
16% - 25%
26% - 50%
51% - 75%
76% - 100%
Subway routes
Select Bus Service routes
(completed and in progress)
PRATT CENTER
FOR COMMUNITY
DEVELOPMENT
0
2.5
5 Miles
Data at census tract level, Census 2010
Source: American Community Survey 2007-2011

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