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Transit-oriented Development and Sustainability: A Case Study of the Williamsbridge Metro-North Station in the Bronx

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Abstract

The tenets of Transit Oriented Development, a planning philosophy developed during the late 20th century, has informed recent development visions in New York City. Mayor Bloomberg's *PlaNYC 2030: A Greener, Greater New York* identifies transit-oriented development as one of the theories it seeks to implement throughout the city as it shapes new development. Likewise, the Department of City Planning's Bronx Sustainable Communities Initiative seeks to implement the ideal of transit-oriented development in the areas surrounding the Bronx's largely underutilized Metro-North stations. However, recent rezonings in the Bronx surrounding the Williamsbridge Metro-North station seem to contradict the transit-oriented development ideal of increased residential capacity surrounding transit hubs. Through this thesis, I assert that reduced residential capacity surrounding the Williamsbridge Metro-North station warrants further investigation into the City's claim that it is seeking to promote transit-oriented development.

Introduction

'Transit-oriented development' is a term coined in the 1980s by Peter Calthorpe, a California-based city planner and architect. The concept emphasizes the establishment of communities located around public transportation hubs, incorporating pedestrian friendly streets, mixed uses, and dense building stock. The goal of transit-oriented development is to reduce communities' dependence upon automobiles, promoting sustainable living, and encouraging more sociable environments.[1]

During the past 12 years, the New York City Department of City Planning, along with the Department of Transportation and other city agencies coordinated under Mayor Bloomberg's PlaNYC blueprint, has encouraged aspects of transit-oriented development in various communities throughout the five boroughs. Bike lanes have become more prominent; mixed-used zoning has been introduced throughout the city; and major transit improvements are under development.[2] Within the Bronx, specific attention has been paid to the Borough's largely underutilized Metro-North stations. Through the Department of City Planning's Sustainable Communities Initiative, the City has examined ways to take advantage of existing transit infrastructure to promote transit-oriented development.

However, according to a study by the Furman Center, 59% of the Bloomberg administration's rezonings from 2003-2007 that decreased residential capacity were within a half-mile radius of a subway or train station entrance. That is, the rezonings reduced the potential

[1] The Next American Metropolis: Ecology, Community, and the American Dream (Calthorpe)
[2] The City of New York. *PlanYC: A Greener, Greater New York.* April, 2011. Mayor Michael R. Bloomberg.

residential density of areas surrounding transit hubs.[3] Additionally, according to Brian Paul, researcher at *The Common Cause*, the zoning text for many of these projects requires developers of new residential high-rises to provide a significant amount of off-street parking, giving incentive to New Yorkers living in these complexes to own and use a car. As such, there seems to be a profound disparity between the stated goals of PlaNYC of promoting transit-oriented development, and the persistence of anti-transit or automobile-centric zoning policies during the Bloomberg administration. This thesis considers one transit hub, the Williamsbridge Metro-North station in the Northwest Bronx, as a case study to explore this potential disparity. Through an analysis of the text of PlaNYC, the Sustainable Communities initiative, the rezoned residential capacity of the area surrounding the Metro-North station, and other factors, this paper asserts that reduced residential capacity surrounding the Williamsbridge Metro-North station warrants further investigation into the City's claim that it is seeking to promote transit-oriented development.

Theoretical Foundations

The transit-oriented development that has been encouraged through Bloomberg's PlaNYC and the Metro-North Sustainable Communities Initiative is, at its core, based upon the theories sociologist Jane Jacobs posited in her landmark text, *The Death and Life of Great American Cities.* Jacobs formulated a series of recommendations for urban development which she believed responded to the organic way neighborhoods and communities evolve over time. She reacted against urban form models like Le Corbusier's Radiant City and its real life

[3] Armstrong, Amy, Vicki Been, Josiah Madar, and Simon McDonnell. "How have recent rezonings affected the City's ability to grow?" Furman Center for Real Estate and Public Policy: 2010. Pg. 11.

manifestations in wide-spread urban renewal projects that began in the 1950s.[4] At the center of Jacobs's model is the pedestrian, not the automobile; all planning efforts should be geared towards encouraging pedestrian traffic. Through this lens, Jacobs criticizes the too common separation of urban uses and recommends that diversity of uses become the standard of neighborhood zoning.[5] By integrating residential dwellings with businesses, restaurants, churches, parks, public facilities, and other amenities, there is reason for residents to traverse their neighborhoods on foot for the majority of their daily needs. Ensuring a steady stream of pedestrians and reorienting city life towards the street discourages criminal activity as crime emerges where it can occur unwatched.[6] To further encourage pedestrian transit, Jacobs also advocates for small city blocks. The superblock which had become synonymous with urban renewal projects reduces pedestrians' options for traversing their neighborhoods. They create dead zones and isolate parts of neighborhoods from each other.[7] The significance of crime within large public housing projects built on entire superblocks and often isolated by areas of green space substantiates these claims that Jacobs made.

Leon Krier was also an early advocate for mixed-use development of cities. Through his varied essays, he sought to encourage the urban forms common in Europe as a replacement for modernist plans of segregated uses that dominated the planning scene in the United States.[8] Krier advocated for traditional architecture and for the traditional urban quarter, concepts that would

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[4] Jane Jacobs. *The Death and Life of Great American Cities.* Random House. New York: 1961. Pgs. 22-24.

[5] Ibid. 152-177
[6] Ibid. 29-54
[7] Ibid. 178-186

[8] Leon Krier and Dhiru Thadani. *The Architecture of Community.* Island Press. Washington D.C: 2009. Preface.

be later integrated into the theory of transit-oriented development. Regarding the urban quarter, Krier argues that cities have "optimum dimensions."[9] As such, the larger the city, the more urban quarters, or centers that integrate residential, commercial, and public uses, it must contain. These quarters may be synonymous with the strong neighborhoods Jacobs praises or the core commercial areas that subsequent theorists embrace.

Like Krier, Edmund Bacon believes that the increasing size of cities is critical to their modern-day functioning. He explains that the scale of metropolitan areas has grown dramatically during the 20th century, describing, for example, how the entire island of Manhattan has become the center core of the New York metropolitan region. This increase in scale has required a complex overlaying of transit systems that have differentiated modern cities from cities of the past through their use of "mechanical power" to move "man through space."[10] Likewise, cities of the past viewed different modes of transportation independently of each other. Bacon argues, however, that all transportation forms must be analyzed together to coordinate efficiency and coherence.[11] To illustrate this practice, Bacon describes aspects of designs for Market East in Philadelphia; specifically, he cites the "peoples' street" that connects City Hall with Independence Hall as a parallel artery to the automobile-based Market Street.[12] This relating of pedestrians and automobiles differs from the ideal of transit-oriented development, but is evidence of early thought on the importance of pedestrian activity in relation to automobile transit in cities.

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[9] Ibid. 107

[10] Edmund Bacon. *The Design of Cities.* Penguin Books, LTD. Middlesex, 1967. 252

[11] Ibid.

[12] Ibid.

In addition to enhancing the cultural and social health of a city, pedestrian activity also reduces the need for energy-consuming automobiles that contribute to environmental degradation. As Jacobs and others theorize, high levels of density are necessary to sustain pedestrian activity and public transit. Consequently, lower-density development forms, such as suburban neighborhoods, are not conducive to pedestrian traffic and, in turn, are not sustainable. The Real Estate Research Corporation's foundational work "The Costs of Sprawl" commissioned by the Department of Housing and Urban Development and other federal agencies was instrumental in proposing in the mid-1970s that density begets environmental health. Its findings created a stark comparison between high-density planned communities and low-density sprawl communities. The report defines low-density sprawl as a community "made up of single single-family homes, 75 % sited in a traditional grid pattern and the rest clustered" with neighborhoods "sited in a 'leapfrog' pattern with little contiguity." In contrast, high-density planned communities are those where "housing is composed of 40 percent high rise apartments, 30 percent walkup apartments, 20 percent townhouses, and 10 percent clustered single-family homes" and where "dwelling units are clustered together into contiguous neighborhoods."[13] High-density communities utilize less than 50% of the land that low-density communities need to house similarly sized populations.[14] This difference is important when considering the amount of open space included in each kind of community; when viewing private yards as open space, low density communities have two times the amount of open space than do high density communities. Yet, the overall amount of open space preserved is far greater as a result of the

[13]Real Estate Research Corporation. *The Costs of Sprawl: A Detailed Cost Analysis.* U.S. Government Printing Office. Washington D.C: 1974. Pg. 2

[14] Ibid. 1

land-use efficiency of high-density communities.[15] Economically speaking, high-density planned communities require an average of 44% fewer investment dollars with a smaller proportion of this investment coming from the government.[16] Maintenance costs are also lower. High-density communities also consume less energy through heating, cooling, and automobile use. They also introduce less net paved surfaces, thus reducing the amount of storm-water runoff.[17] Planning and density reduce overall energy consumption by an average of 44 percent.[18] The study acknowledges that crime rates may increase with higher densities,[19] that design is more critical in denser areas,[20] and that different development types may generate revenues that the study has not considered.[21]Still, its overall emphasis is on the net social costs dense development can greatly reduce. This preference for density is central to the later formulation of the theories of transit-oriented development.

Still, Ivonne Audirac challenges the notion that dense development is both environmentally sustainable and an aspect of the ideal urban form. In contradicting these tenets of new urbanism, she also presents opposition to the ideals that transit-oriented development embrace. Audirac writes from the perspective of development in Florida, a state which is home to some of the most widespread urban sprawl. Growth management policies that respond to sprawl have been discussed in Florida since the 1960s but were limited to the goal of reducing

[15] Ibid. 2
[16] Ibid. 3-4
[17] Ibid. 4
[18] Ibid. 5
[19] Ibid. 5
[20] Ibid. 4
[21] Ibid. 6

environmental degradation.[22] Since the passing of the Growth Management Act of 1985, the complementary goal of improving quality of life has also been connected to the debate over density. As a result, statewide development regulations, which inform local development policies have sought to reduce sprawl and encourage compact urbanization. [23] Audirac argues that while the policies have found favor among state and local lawmakers – the political elite – they are not representative of the public's desires. Furthermore, these policies operate upon nebulous understandings of what constitutes sprawl. According to Audirac, "the term urban sprawl has been so abused that it lacks precise meaning, and defining urban sprawl has become a methodological quagmire."[24] With this understanding, Audirac questions the widespread assumption that dense development is less costly than low-density development patterns, claiming that there is not adequate evidence to make such assertions.[25] She also suggests that policymakers within major urban areas came to favor restrictions on sprawl because thinning urban populations during the 1970s posed a financial burden to local governments in need of lost tax revenues. Thus, policies promoting density have become popular among policymakers because they bolster local tax bases rather than actually promote the ideal urban form that policymakers seek to promulgate.[26] In this light, Audirac also accuses planners and politicians of ignoring the clear living preferences of Floridians in designing their policies. Among planners and politicians, there is little, if any acknowledgement of what makes less dense living attractive: increased privacy, rural tranquility, additional space, and other characteristics foreign to the

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[22] Ivonne Audirac, Anne H, Shermyen, and Marc T. Smith. "Ideal Urban Form and Visions of the Good Life: Florida's Growth Management Dilemma." *American Planning Association. Journal of the American Planning Association.* Autumn 1990; 56, 4; pg. 470

[23] Ibid. 470
[24] Ibid. 475
[25] Ibid. 471
[26] Ibid. 472

dense, urban landscape.[27] Residents also reject density because it forces them to interact with people different from themselves.[28] According to Audirac's analysis of the Bureau of Economic and Business Research Survey published in March of 1989, Floridians maintain strong preferences for low density neighborhoods, as evidenced by their dislike for old, denser suburbs surrounding major cities, their willingness to commute rather than live in denser areas close to work, and their penchant for single-family, detached homes largely unavailable in denser environments. These findings support "50 years of public opinion studies on residential preference across the nation."[29]

Audirac criticizes planners who view urban forms of traditional towns and strong urban cores as developmental ideals that would generate naturally if it were not for policies that promoted automobile usage and single-family home-ownership. Rather, Audirac characterizes sprawl as the new organic growth pattern that has responded to revolutionary advancements in transportation and communication technologies. Urban forms of the past are contrary to naturally occurring development patterns. At the very least, this difference between sprawl and density must be acknowledged by planners seeking to limit decentralization.[30] But to go further, Audirac cites some of the developmentally and environmentally advantageous aspects of sprawl. In many instances, decentralization has reduced automobile congestion, thus shortening commuting times and reducing overall fuel consumed.[31] Furthermore, sprawl reduces the concentration of storm water pollutants and impervious building materials in specific areas, alleviating intense

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[27] Ibid. 473
[28] Ibid. 474
[29] Ibid. 474-475
[30] Ibid. 474
[31] Ibid. 476

degradation of water quality.[32] Still, for all of her criticisms of density planning, Audirac does support certain aspects of transit-oriented development. She, like Calthorpe and others, argues that density alone cannot respond to growth challenges, but that it must be combined with other planning policies. She writes, "Density without livability could return us to the slums of the pre-war era."[33]

Architect and city planner Peter Calthorpe, does not subscribe to Audirac's thoughts on density. Instead, he responds to the problem of urban sprawl and environmentally degrading development practices stemming from automobile use by proposing a series of guidelines for sustainable development. These guidelines do not rely upon aesthetic or architectural principles, but rather upon the functioning of the built environment.[34] The overarching principles he establishes are that development should be dense and tied to mass transit; that mixed-use zoning encouraging pedestrian activity should be favored over segregated, single uses; and that urban design should emphasize "the public domain and human dimension rather than the private domain and auto scale."[35] It is these priorities that inform the concept of transit-oriented development, the term Calthorpe coined to describe his view of the ideal urban form.[36] Specifically, Calthorpe defines transit-oriented development as "a mixed-use community within an average 2,000-foot walking distance of a transit stop and core commercial area…[that] mix residential, retail, office, open space, and public uses in a walkable environment, making it

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[32] Ibid. 477
[33] Ibid. 477

[34] Peter Calthorpe. *The Next American Metropolis: Ecology, Community, and the American Dream.* Princeton Architectural Press. 1993. Pg. 41.

[35] Ibid. 41
[36] Ibid.

convenient for residents and employees to travel by transit, bicycle, foot, or car."[37] What differentiates transit-oriented developments from similar concepts such as "Pedestrian pockets, Traditional Neighborhood Developments, Urban Villages, and Compact Communities" is their emphasis on regional transit, rather than focusing only on individual neighborhoods and communities.[38]

As a regional concept, transit-oriented developments can exist throughout a metropolitan area in a variety of forms. Transit-oriented developments may be created as part of redevelopment areas, infill sites, or as components of new growth. In the urban context, transit-oriented developments would most likely be found in redeveloped or infill sites.[39]All transit-oriented developments support mixed-use "core commercial areas" that operate adjacent to transit hubs. These may range in size and diversity of retail, depending on the size of the transit-oriented development and the popularity of the transit stop. While serving a variety of purposes, the core commercial area incentivizes residents to use transit to get to work because they can combine their commute with essential errands.[40] Specifically, the core commercial area should rest on a minimum of 10% of a transit-oriented development's land and should provide at least 10,000 square feet of retail space next to the transit hub. Supermarkets serve as one of the most fundamental anchors of a core commercial area but a variety of recreational and retail business services can also support activity surrounding transit hubs. Core commercial areas can also be situated to create links between transit and other parts of the transit-oriented development.[41]

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[37] Ibid 56
[38] Ibid 41
[39] Ibid. 61
[40] Ibid. 58
[41] Ibid. 77

While the core commercial area should be adjacent to the transit stop, residential areas can be located farther away, but still within the 2,000-foot radius or ten-minute trip by foot, depending on terrain, climate, and street conditions. In general, diversity of housing is desired, such as a combination of "small lot single-family homes, townhomes, condominiums, and apartments."[42] This diversity helps attract an economically varied community of residents and reduces class-based segregation.[43] The overall residential area should meet a minimum density requirement which will differ depending on the services the transportation hub provides.[44] Generally speaking, it should vary between 10-25 dwelling units per residential acre.[45]

To service the commercial and residential areas, public spaces should be provided. These can assume the form of plazas, parks, or public facilities. These shared spaces encourage community participation, convey a sense of identity, and, in turn contribute to a sense of safety – a critical requirement for residents to feel comfortable walking around a transit-oriented development. Public buildings, such as libraries, can often be combined with parks or other public open spaces to generate a more active meeting area for the community. It is important for primary public uses to be centrally located within a transit-oriented development and integrated with the core commercial area.[46] Small parks of one to four acres should be scattered throughout the residential areas of a transit-oriented development, ideally within two blocks of any residence. Larger parks with a variety of recreational options should be located at the edge of a transit-oriented development. Parks larger than 30 acres should be incorporated into regional open space networks that incorporate bicycle trails. It is important to separate larger parks from

[42] Ibid. 58
[43] Ibid. 64
[44] Ibid. 58-59
[45] Ibid. 64
[46] Ibid. 59

the main uses of a transit-oriented development so that the area is not divided and segregated. Total park area should equal about 5% to 10% of the transit-oriented development or a minimum of 3.5 acres per thousand residents.[47] Parks should not only be relegated to irregular land parcels or otherwise difficult-to-develop areas.[48]

Less intense uses, such as low-density housing, schools, large parks, and parking lots should be located in "secondary areas" surrounding transit-oriented developments. These areas should be well connected to the transit provided within the transit-oriented development, but they should not compete with any of the uses present within the transit-oriented development. That is, the transit-oriented development and its secondary area should not both be home to a large retail center, for example. Likewise, transit-oriented developments must be strategically distributed to promote regional health. Any transit-oriented developments that contain similar uses that may compete with each other should be situated at least one mile apart.[49]Uses such as rural residential development, storage facilities, auto dealers, industrial uses, and motels should not be located within transit-oriented developments or their secondary areas, but rather near highways.[50] Calthorpe calls for the implementation of Urban Growth Boundaries on the edge of metropolitan regions. Within the boundaries, land should be slated for development and connected to the transit system.[51]

Transit-oriented development must relate to the different types of transit that make up a transit system. The "trunk line network" is a region's express transportation system while the "feeder bus network" is the secondary transit system that connects more areas to the trunk line

[47] Ibid. 91
[48] Ibid. 92
[49] Ibid. 67
[50] Ibid. 60-61
[51] Ibid. 73

network.[52] Urban transit-oriented developments are those communities located directly on the trunk line network of a metropolitan area. Because Urban transit-oriented developments provide direct access to core transit without transfers, they can support more intense uses, such as office space, retail centers, and high-density housing. Neighborhood transit-oriented developments are less intense areas that surround feeder bus stops.[53] Not all transit stops will be transit-oriented developments.[54]

Transit-oriented developments, while they may vary in land-use make-up, should have minimum land-use thresholds. Neighborhood transit-oriented developments should have 10%-15% public use, 10%-40% core/employment use, and 50%-80% housing. Urban transit-oriented developments should have 5%-15% pubic use, 30%-70% core/employment, and 20%-60% housing.[55] This mix of uses encourages consistent pedestrian traffic. Vertical mixed-use buildings are useful for achieving a balance of uses, but because they may be difficult to implement due to zoning restrictions, single-use buildings will also need to be utilized.[56]

While Transit-oriented developments place an intrinsic emphasis on mass transit, they must also take into consideration the flow of automobiles. If possible, street systems should be designed with different parallel routes between the different areas of the transit-oriented development and the commercial and transit core. This will help prevent cars making short, local trips, from using major automobile arteries, thus reducing congestion for cars making longer trips.[57] Arterial streets should not pass through transit-oriented developments as they are barriers

[52] Ibid. 62
[53] Ibid. 57
[54] Ibid. 62
[55] Ibid. 63
[56] Ibid. 63
[57] Ibid. 64

to the flow of pedestrians. They should instead travel through secondary areas.[58] The size of streets should be minimized. Narrower streets reduce car speeds, thus reducing noise and the likelihood of accidents. Travel speeds should be limited to 15 miles per hour and lanes should be between 8 and 10 feet wide.[59] The design of streets can also ensure that they serve pedestrians and bikers as well as automobiles. Streets should be clearly laid out and direct and they should meet at critical destinations, including but not limited to transit stops. Streets must deemphasize arterial automobile corridors. Pedestrian and bicycle paths should be provided alongside automobile streets instead of following different routes. In this way, pedestrians and cyclists should be provided with the shortest and most direct routes to critical destinations within the transit-oriented development.[60] Additionally, separate pedestrian paths can be dangerous, as they lack proper surveillance.[61] Sidewalks should be at least 5 feet wide, but larger sidewalks are desirable, especially within the core commercial areas.[62] Landmarks should be visible and emphasized by the street pattern. This will make it easier for pedestrians and bikers to traverse the transit-oriented development.[63] Streets should "frame vistas of the core area, public buildings, parks, and natural features."[64] Trees should be planted along all streets in intervals of no more than 30 feet. Trees reduce temperatures, provide habitat for wildlife, and create aesthetic appeal.[65] On-street parking should be provided on non-arterial streets. This helps generate more street activity and creates a barrier between pedestrians and traffic. It also slows traffic and

[58] Ibid. 99
[59] Ibid. 95
[60] Ibid. 64
[61] Ibid. 101
[62] Ibid. 96
[63] Ibid 65
[64] Ibid. 95
[65] Ibid. 96

reduces the need for parking lots.[66] Intersections should be designed to reduce the length of crosswalks and should refrain from using turning lanes.[67]

The design of buildings is also important for generating healthy street activity. Buildings should be orientated towards the street, creating an even wall.[68] Buildings in core commercial areas especially should minimize setbacks as much as possible. Residential unit setbacks should be between 10 and 15 feet, but should match existing setbacks in infill development.[69] Only multi-story office buildings should be permitted to be set back more than 20 ft. This space should then be utilized for outdoor cafes or plazas.[70] Where appropriate, clear entryways, balconies, and porches should be included to engage buildings with the street.[71] Facades should be varied but should not clash. Detailed architecture should be included at street level to visually stimulate pedestrians. Window shopping should be encouraged, but glass curtain walls should be avoided.[72] If included in building designs, parking lots and garages should be located behind buildings with secondary entrances. When redeveloping areas, internal, pedestrian streets may be utilized to engage buildings with activity below.[73]

Bicycle parking facilities should be provided at key areas of the transit-oriented development, such as transit stops and the commercial core. Signs should clearly indicate the availability of bike parking.[74] Transit stops themselves should not be isolated by parking lots or bus areas. They must be configured for easy access by pedestrians who require the most

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[66] Ibid. 97
[67] Ibid. 97
[68] Ibid. 65
[69] Ibid. 84
[70] Ibid. 79
[71] Ibid. 65
[72] Ibid. 80
[73] Ibid. 65
[74] Ibid. 103

convenience to regularly frequent mass transit. Streets surrounding transit stops must facilitate this access.[75]

In their formulation of the new urbanist school of thought, Andres Duany, Elizabeth Plater-Zyberk, and Jeff Speck affirm many of the principles Calthorpe proposes while also offering several important elaborations. Regarding the actual transit systems themselves, they must provide frequent, predictable, and affordable service to rival the convenience of the car. A density threshold of at least seven units per acre can ensure that transit units are self supporting. Areas with less density must rely on the coordination of their neighborhood centers to connect with a broader transportation network for support.[76] Transit systems must also be efficient and easy to navigate. The authors cite riders' preference for light rail over bus service as an example of the importance of regularity and efficiency.[77] To further enhance ridership satisfaction, transit stops must be "safe, dry, and dignified." Ideally, they will be combined with some sort of retail option, such as a café or corner store. Reducing discomfort during a riders' waiting period will help elevate the perceived status of taking public transportation.[78] In the spirit of the narrow streets Calthorpe encourages, Duany, Plater-Zyberk, and Speck suggest that in low-traffic areas, single-lane, two-way yield streets should be utilized because they slow traffic.[79] Regarding row houses, a common residential form in denser urban areas, first floors should be raised at least two feet off of the ground level to provide a degree of privacy in the absence of setbacks that should be avoided because they disrupt the street wall.

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[75] Ibid. 106

[76] Andres Duany, Elizabeth Plater-Zyberk, and Jeff Speck. *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream.* North Point Press. New York: 2000. Pg. 202

[77] Ibid. 203
[78] Ibid. 203
[79] Ibid. 204

Duany, Plater-Zyberk, and Speck were the designers of the widely acclaimed town Seaside, Florida, and other neighborhoods based upon traditional design principles. These towns were designed in traditional architectural styles as well, largely to appeal to the tastes of the middle-class residents they would house.[80] When it comes to convincing municipalities to adopt new urbanist planning principles, cutting edge modernist architecture may need to be sacrificed as it does not yet have wide appeal among more conservative audiences.[81] In this same light, when avant-garde styles are utilized, not every building must be a work of art. An oversaturation of expressive, unique architecture can create a sense of disorder and chaos. More subdued architectural styles must serve as the backdrop that showcases high-concept pieces. This is not to say that traditional architecture does not require skill and taste to implement well; the default style of modern America seems to be kitschy, vulgar corruptions of traditional styles.[82]

David Lewis and Fred Laurence Williams describe the trends of 20th century urban renewal against which theories of new urbanism are now working. During the great depression and Second World War, cities in the United States experienced little development activity. In response, the federal and state governments invested heavily in renewal projects intended to transform struggling neighborhoods and communities. While cities benefited in the short term from the increase in construction jobs, the widespread razing of entire neighborhoods and the new developments that replaced them left huge social wounds that still affect cities transit-oriented developmentay. More housing was demolished than was created. The general ideals of urban renewal rested upon the emergence of the automobile, the use of streets for automobile transportation only, the separation of pedestrian traffic from automobile traffic, using malls and

[80] Ibid. 209
[81] Ibid. 210
[82] Ibid. 211

walkways, single-use land zoning, tower-in-the-park development adapted from the theories of Le Corbusier, and the isolation of larger buildings from other parts of the city.[83] These ideals converged in the quintessence of mid-century urban renewal: public housing projects built between 1950 and 1970. Entire neighborhoods were cleared to make way for huge, single-use residential high rises resting in park-like settings within newly created superblocks.[84] Principles of new urbanism seek to remedy the problems developments in this model introduced to cities.

Brian Paul argues that plans for a sustainable, transit-oriented New York City outlined in Mayor Michael Bloomberg's PlaNYC2030 have not been realized in the Bloomberg administration's neighborhood rezonings. Paul cites the Plan as embracing transit-oriented development, seeking to concentrate new housing and commercial districts in close proximity to major transit hubs. Rather than accomplish this goal, recent rezonings have required off-street parking, thus encouraging automobile use. This is quite clearly the antithesis of the sustainable transportation PlaNYC desires and transit-oriented development recommends.

Paul argues that the term 'transit oriented development' has been corrupted, having been overused in the last decade, especially within the real estate industry, to signify denser development or proximity to public transit options. But unless development simultaneously discourages car use and encourages socio-economic diversity, it is not truly transit-oriented, according to Paul. The majority of development permitted by new rezonings fails to fulfill these criteria, and cannot be deemed transit-oriented, as the Bloomberg administration has attempted to claim they are.

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[83] Lewis, David and Fred Laurence Williams. *Policy and Planning as Public Choice: Mass Transit in the United States.* Ashgate Publishing Limited. Burlington: 1999. Pgs. 198-199

[84] Ibid. 199

The rezonings have not discouraged car use because they require abundant and free off-street parking – an incentive for people to own cars and use them in place of transit. Of the many examples Paul provides, his focus on Dutch Kills is particularly telling. A rezoning the Bloomberg administration has touted specifically as being transit-oriented, Dutch Kills incorporates "minimum parking requirements of half to two thirds of a parking space per apartment." This, in combination with other developments near Long Island City in Queens will add more than 6,000 new parking spaces to the area. While introducing parking to new residential neighborhoods through zoning requirements, the Bloomberg administration has also failed to fortify transit options in residential areas with increased density. Rather, the MTA has received further cuts in funding, and no funding backup plan has been offered to replace the failed congestion-pricing proposal.[85]

Robert Cevero examines several other approaches to managing transit in urban areas beyond the complex implementation of transit-oriented developments. Transportation Systems Management (TSM) uses low-cost methods, such as improved signage, to enhance existing transportation options.[86] Transportation Demand Management (TDM) is the practice of shifting demand away from over-burdened transportation systems. This has been a common practice in the United States as it seeks to manage an increasingly congested automobile transit system. Carpooling initiatives, parking management, and other restrictive practices are examples of TDM.[87] One of the most fruitful TDM options is charging for parking. The ubiquity of free

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[85] Brian Paul. "How 'Transit-oriented development' Will Put More New Yorkers in Cars." Gotham Gazette. April 21, 2010.

[86] Robert Cevero. *The Transit Metropolis: A Global Inquiry*. Island Press. Washington D.C: 1998. Pg. 63

[87] Ibid. 63-64

parking in the United States is one of the biggest deterrents to using mass transit.[88] To lessen the impact of automobile use in neighborhoods, traffic calming practices, such as speed bumps, textured paving, and other deterrents to speeding can be implemented on a citywide scale, pushing traffic from pedestrian-heavy streets and onto main arteries.[89] Some European cities have implemented extreme examples of TDM, banning automobile use altogether from urban cores. This practice can dramatically transform the atmosphere of a downtown.[90] Patterned restriction on driving may also be used, especially if the reduction of pollution is the end goal. In Sao Paulo, for example, drivers are required to not use their cars at least one day week, effectively removing 600,000 cars daily from the city's streets.[91] Many of these practices would face intense political backlash in the United States. More realistic TDM approaches include enforcing standards of automobile performance. In fact, the United States is the leading country when it comes to regulating automobile performance. This may be because these regulations do not discourage automobile use, but rather encourage standards so that automobiles can be used more freely.[92] Similarly speaking, pricing strategies, such as congestion fees and carbon taxes, have also not gained popularity in the United States. However, these methods could very effectively de-incentivize automobile dependency.[93]

Lewis and Williams argue that both public policies and developmental practices are necessary for an overhaul of unhealthy transportation patterns because they work hand-in-hand to reinforce each other. If development patterns continue to emphasize automobile-oriented development (AOD), public policies that seek to reduce car use will be limited in their

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[88] Ibid.
[89] Ibid. 65
[90] Ibid. 66
[91] Ibid.
[92] Ibid.
[93] Ibid. 67

effectiveness. Initiatives such as gas taxes or congestion pricing will only generate frustration among the public as it continues to travel by automobile because that remains the most convenient and efficient transportation means. Likewise, investments in public transportation without policies that support transit-oriented development will leave new transportation infrastructure underutilized: "Transit-oriented development will likely have a positive feedback effect into transit usage while AOD has a positive feedback into automobile usage."[94] As cities in the United States break out of the AOD cycle in favor of the transit-oriented development model, they will likely experience a period of difficult adjustment and transition.

Methods and Methodology

My thesis investigates the potential disparity between the Bloomberg administration's stated desire to promote transit-oriented development and the actual activities of the Department of City Planning that have shaped the way New York City can grow. I am specifically interested in analyzing how this potential disparity relates to the New York and Connecticut Sustainable Communities Initiative, which seeks to promote transit-oriented development around the Bronx's Metro-North stations. Therefore, I focus my research on a case study of the Williamsbridge Metro-North station and how the Department of City Planning has envisioned its role in establishing transit-oriented development in the Bronx. I have selected this station for several reasons. First, it is one of six Metro-North stations in the Bronx that the Bronx Office of the Department of City Planning has chosen to study through its Sustainable Communities Initiative. Second, the Department of City Planning, while not in direct connection to the Sustainable Communities Initiative, recently completed two rezonings that have altered the development potential of the land surrounding the station. In fact, the Williamsbridge station is the only

[94] Ibid. 209

station in the Bronx that has been subject to comprehensive rezoning efforts to date. Therefore, the station provides a unique opportunity at the onset of the Sustainable Communities Initiative to evaluate the City's understanding of what it means to promote transit-oriented development.

Much of my research relies upon analyses of the PlaNYC text and Sustainable Communities Initiative goals as they relate to the Williamsbridge station. I also qualitatively evaluate the Department of City Planning's public presentations on and adopted zoning text of the Webster Avenue/Bedford Park/Norwood and Williamsbridge/Baychester rezonings, the two rezonings approved in 2011 that surround the Williamsbridge station. While the Olinville rezoning is also adjacent to the station, I do not examine it as part of my study because it was approved in 2005, two years before the first version of PlaNYC was published. Therefore, it cannot be easily evaluated against the framework that PlaNYC provides. To provide context for my analysis of these rezonings, I take note of institutions, community amenities, cultural elements, housing stock, and transportation options near the station. I also consider select statistics from the 2009-2011 American Community Survey (ACS) 3-year estimates compiled by the Department of City Planning to better understand the area's demographics, commuting habits, and car-ownership rates.

To help substantiate these subjective observations, I also conduct a quantitative assessment of the change in residential capacity surrounding the Williamsbridge station as a result of the Webster Avenue/Bedford Park/Norwood and Williamsbridge/Baychester rezonings. To do so, I modify and apply the methodology of a recent study the Furman Center for Real Estate and Urban Policy conducted on the 76 rezonings adopted citywide between 2003 and 2007. The study sought to evaluate how these rezonings changed the City's ability to accommodate new growth, where residential capacity has been added or removed, and how these

locations relate to the City's public transportation infrastructure, among other objectives.[95] To answer such questions, the Furman Center used tax lots' Floor Area Ratios (FAR) to measure an area's residential capacity. The FAR is the primary factor that limits the size of a building on an individual property by establishing a ratio of total building floor area in relation to the lot's square footage. When the designated FAR is multiplied by the lot size, the maximum amount of floor area allowed on the lot is produced.

For each of the 188,000 lots rezoned between 2003 and 2007, the Furman Center used FARs to determine what the residential capacity was for each lot in 2003 and adjusted this figure based on other factors the zoning text stipulated. It then repeated this process, taking into account the new FARs established by the rezonings as of 2007. Lots with at least 10% greater residential capacity were considered *upzoned,* while lots whose capacity was decreased to less than 90% of its 2003 capacity were considered *downzoned.* The Furman Center aggregated the upzoned and downzoned lots' square footage to determine the overall zoning area's new residential capacity.[96]

I adopt the Furman Center's reliance on tax lots and FARs to determine residential capacity near the transit hub, one factor that is central to transit-oriented development. However, instead of focusing on all of the lots within the Webster Avenue/Bedford Park/Norwood and Williamsbridge/Baychester rezonings, I only calculate the residential capacity for the lots found within a quarter-mile radius of the Williamsbridge Metro-North station. This quarter-mile designation is based on the Sustainable Communities Initiative's emphasis on the amenities and characteristics of the neighborhoods found within a quarter mile of the Bronx's Metro-North stations. It is also loosely based on Peter Calthorpe's stipulation that a transit-oriented development concerns the 2,000-foot radius surrounding a transit hub. Finally, in accordance

[95] Armstrong, 1
[96] Armstrong, 3-4

with the principles of transit-oriented development, residential capacity should be highest closest to a transit hub. By focusing my research on a smaller area surrounding the Metro-North station, I am better able to assess the residential capacity immediately surrounding the Metro-North station, where, in theory, it should be greatest. If I calculate a larger radius and increases in residential capacity occur within parts of the rezoning that are farther away from the Metro-North station while decreases occur closer to the station, I may be led to false conclusions regarding the relationship between residential capacity and proximity to the station.

To determine the quarter mile radius surrounding the Williamsbridge station, I used the GIS-produced map of the Williamsbridge station and its surrounding tax lots that the Department of City Planning published on its website (see appendix A.[97] To determine the tax lot square footage within this radius, I selected each tax lot within the quarter mile radius of the station on the New York City Open Accessible Space Information System (OASIS), which compiles data from the Department of City Planning's Bytes of the Big Apple, PLUTO, and Tax Block and Tax Lot database files into an interactive map interface. After selecting each of the 435 relevant properties, I was able to determine the lot's address, square footage, zoning designation, maximum FAR, and built FAR. Because OASIS only contains data as of 2010, I was able to use this program to determine the zoning and FAR of each property before the rezonings that I am considering were adopted.

To determine the zoning designations and FARs of each tax lot after the two rezonings were approved, I then input the addresses pulled from OASIS into the Department of City Planning's Zoning and Land Use Application (ZoLA) database which contains up-to-date

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97 http://www.nyc.gov/html/dcp/html/sustainable_communities/sustain_com3_williamsbridge.shtml

information on the rezonings I am considering (but does not contain tax lot sizes). With these two sets of data gathered for each property within a quarter mile radius of the Williamsbridge station, I was able to determine whether each rezoning upzoned or downzoned the area immediately surrounding the station.

My methodology is limited in that it does not consider other factors that affect residential capacity in addition to FARs due to limitations of the public databases that I used. While the FAR is the primary determinant of building volume, other regulations such as maximum height requirements or street wall regulations may alter building sizes. However, given the significance of the FAR, the figures I produce can be used as first level estimates of the impact of the rezonings on residential capacities.

PlaNYC

An analysis of the 2011 version of PlaNYC confirms that it emphasizes transit-oriented development and even directly refers to enhancing development around Metro-North stations in the Bronx. PlaNYC's most significant references to transit-oriented development are in its section on "Housing and Neighborhoods." The first goal listed under this section is to "continue transit-oriented rezonings" as part of "[creating] capacity for new housing." The document explains that for much of the 20th century, development in New York City followed the expansion of the subway system, meaning that transit-oriented neighborhoods arose organically. However, as the dominance of the automobile grew and the City's highway system spread throughout the five boroughs, development shifted away from areas well serviced by transit. The report states, "The percentage of New Yorkers living within a half mile of transit decreased, as many of our neighborhoods with the best subway access either lost population or experienced only modest growth. Development accelerated in parts of the city that depend more heavily on

cars." Again, PlaNYC reiterates that his kind of development increases congestion, reduces air quality, and contributes to climate change through automobile carbon emissions.[98]

To combat these trends, PlaNYC identifies zoning as "the primary tool we have." It explicitly states "by increasing allowable densities at appropriate locations in areas of the city near transit, and decreasing them in more auto-dependent areas, we can direct growth to more transit-oriented parts of the city."[99] Still, PlaNYC tempers this framework by acknowledging the need to implement some restrictions on development, even in areas near transit. It says, "By increasing density along key corridors, while putting in place appropriate limits on the height and bulk of buildings, we can reinforce the current character of neighborhoods, while increasing capacity and promoting a diversity of housing types."[100] While grouped here as complementary efforts, these two objectives—the preservation of neighborhood character and the increasing of neighborhood capacity—are contradictory in nature. While increasing capacity almost always means liberalizing zoning regulations to permit taller, bulkier buildings that can house more people, neighborhood preservation almost always means implementing greater zoning restrictions to prevent development that exceeds the scale of currently established housing stock. In fact, PlaNYC's discussion of neighborhood preservation echoes Audirac's claims that the public desires lower density residential living and that politicians should adhere to those requests. Determining exactly how the City balances these two potentially contradictory goals through its rezonings is at the heart of the criticism levied at the Bloomberg administration by scholars such as Brian Paul and is at the center of this paper's objectives.

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[98] PlaNYC, 20
[99] Ibid. 20
[100] Ibid. 24

Regarding the specific rezonings that this paper considers, the report includes a map of the "Recent, Planned, and Potential Initiatives to Increase the Capacity for Residential Growth" which highlights the Webster Avenue/Bedford Park/Norwood rezoning as an "approved initiative" and the Williamsbridge/Baychester rezoning as a "pending and planned initiative (see appendix B).[101] Additionally, on another map entitled, "City-Initiated Rezonings since 2002," the Webster Avenue/Bedford Park/Norwood rezoning is highlighted as an initiative that promoted "both development and preservation" (see appendix B).[102] In some ways, these two maps contradict each other in their portrayal of the Webster Avenue/Bedford Park/Norwood rezoning. The first map clearly labels it as a rezoning meant to increase the city's residential capacity; yet the second gives the rezoning a dual identity that also prioritizes neighborhood preservation alongside development. Given PlaNYC's previous discussion of growth and preservation, it can be reasonably hypothesized that the portions of the rezoning study area that have the best access to transit will be areas of growth, whereas those that are more isolated from transit will be opportunities for the preservation of neighborhood character. The analysis of the rezoning's impact on the FAR of the rezoning's tax lots that this thesis conducts will help to test this hypothesis.

Beyond its section on housing and neighborhoods, PlaNYC makes several other references to transit-oriented development. For example, it cites transit-oriented development as an opportunity related to the redevelopment of brownfields[103] and as an ideal that can be furthered through new technologies that integrate transit data and property searches.[104] For the purposes of this thesis, the report's most important reference to transit-oriented development is

[101] Ibid. 22
[102] Ibid. 23
[103] Ibid. 55
[104] Ibid. 53

found in it's timeline for the completion of its stated objectives. Here, it lists "Explore opportunities for transit-oriented development and related improvements around Metro-North stations in the Bronx" as a milestone to be completed by December 31, 2013 and coordinated by the Department of City Planning.[105] Thus, PlaNYC explicitly makes a connection between transit-oriented development and the Bronx's Metro-North services. It is clear that PlaNYC views transit-oriented development as an objective relevant not only to neighborhoods near subway stations, but also to those near commuter rail services.

The Sustainable Communities Initiative

New York City's recent participation in the U.S. Department of Housing and Urban Development's (HUD) Sustainable Communities Initiative further solidifies PlaNYC's commitment to promoting transit-oriented development around Metro-North stations. On April 15th, 2011, representatives from HUD, the mayors of nine cities in New York and Connecticut, The New York City Department of City Planning, four metropolitan planning organizations, and other agencies launched a multi-year project to coordinate regional and local transportation and development planning with the goal of promoting greater sustainability. As part of this goal, the Initiative seeks to establish livable "growth centers around the region's commuter rail network," improve residents' commutes, encourage energy-efficient development, reduce congestion, and enhance transportation options. Specifically, the Sustainable Communities Initiative seeks to enable "large-scale transit-oriented development and neighborhood sustainability projects at key nodes in the MTA Metro-North Railroad and MTA Long Island Rail Road commuter rail systems..." The Initiative is funded by grants made available through the Obama Administration's *Partnership for Sustainable Communities*, and monitored by the Environmental

[105] Ibid.183

Protection Agency, U.S. Department of Housing and Urban Development, U.S. Department of Agriculture, and the U.S. Department of Transportation. [106]

In the Bronx, the New York City Department of City Planning (DCP) is conducting a study of select Metro-North stations to reveal ways to best utilize the available grant money. DCP states that this analysis will "identify opportunities for transit-oriented development based on an inventory of existing conditions, zoning, land use, population and residential/commercial density, and station signage, and pedestrian amenities." The selected stations are broken into three groups: Melrose and University Heights are "land use opportunity stations" that have the most potential to accommodate growth; Tremont, Williamsbridge, and Morris Heights are "access planning stations" that could be better integrated into their surrounding areas; and Fordham and the planned Parkchester and Morris Park stations are "visioning stations" that will be reviewed holistically to identify areas for improvement.[107] The Williamsbridge Station was likely grouped with the access planning stations and not the land use opportunity stations because the Webster Avenue/Bedford Park/Norwood and Williamsbridge/Baychester rezonings (as well as the Olinville rezoning which was adopted in 2005) fully reviewed and modified the station area's ability to grow prior to the commencement of the Sustainable Communities Initiative. Thus, it has "existing density or potential density already in the area" as DCP explains. For this reason, an analysis of the rezonings' impact on residential capacity is critical to understanding how well they complement the stated goals of the Sustainable Communities Initiative, given the framework for transit-oriented development provided by PlaNYC.

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[106] Daglian, Lisa. "Adolfo Carrion, NY-CT Mayors, County Execs, Planning Orgs Launch Unprecedented Bi-State Sustainability Collaboration." New York City Department of City Planning. http://www.nyc.gov/html/dcp/html/about/pr041511.shtml.

[107] New York City Department of City Planning. Sustainablie Communities Bronx Metro-North Study: Overview. http://www.nyc.gov/html/dcp/html/sustainable_communities/sustain_com3.shtml

The Williamsbridge Area

There is no coherent identity to the area surrounding the Williamsbridge Metro-North station. That is, the station is not found at the center of a unified community, but is instead wedged between several distinct neighborhoods. Because the station entrance is located on the portion of Gun Hill Road that spans the Bronx River Parkway, it is partially isolated from nearby commercial and residential neighborhoods. Likewise, the Bronx River Parkway and the Metro-North train tracks effectively divide the community surrounding the station, creating a barrier that has resulted in distinct neighborhood identities to the East and West of the station. This is part of the challenge that the Bronx Metro-North Sustainable Communities Initiative faces in better integrating the station with its surrounding area.

To the West and Southwest of the station is the Norwood neighborhood. Gun Hill Road serves as one of its primary commercial corridors, extending past the nearby Montefiore Medical Center, whose towering health facilities dominate the landscape. The Williamsbridge Oval Playground provides significant outdoor recreational facilities for area residents. The Mosholu Preservation Society headquarters and Bronx Museum of History are two non-profit institutions located near the station in Norwood.

To the East and Northeast of the Station are the Olinville and Williamsbridge neighborhoods. White Plains Road, which runs beneath the 2/5 elevated subway line, serves as the primary commercial corridor for this area, which is home to a significant population of West Indian immigrants. Both sides of White Plains Road are lined with Jamaican, Antiguan, and other West Indian restaurants, bakeries, and grocery stores. Dominican and other Latino businesses, such as hair salons, are also prevalent, as are West African establishments, such as "Kande African Hair Braiding" located between 214th and 215th streets. Several locations along

White Plains Road boast nighttime bar and club scenes, often featuring Hispanic Caribbean and West Indian performers. The strip is a cultural hub for the surrounding area. White Plains Road is also home to several places of worship, such as King's Chapel and Lion of Judah Assembly, two predominantly black Pentecostal Christian churches. Along E Gun Hill Road, Immaculate Conception Church and Immaculate Conception School serve the area's Catholic residents. South of Gun Hill Road is the New York City Housing Authority's Gun Hill Houses and related community facilities.

To the North of the Williamsbridge station are residential portions of the Olinville neighborhood, the Bronx River Parkway, and the Woodlawn Cemetery. However, because the Cemetery's entrance is located nearly one mile away from the station, it is not an institution that is well integrated into the fabric of the neighborhoods this paper considers. To the South of the station is the northernmost section of Bronx Park, which contains several unique recreational facilities, such as an electric racecar track.

The station straddles two different community districts (CDs); it is technically located in CD 7, but CD 12's border is located immediately to the West of the station. While these CDs encompass areas far larger than the quarter-mile radius surrounding the Williamsbridge station that this paper considers, they are the smallest unit for which relevant demographic information is available. According to the 2009-2011 American Community Survey 3-year estimates compiled by the Department of City Planning, CD 7 has a total population of 121,926 residents, 46.7% of whom are white, 53.3% are black or African American, and 17.0% are Hispanic or Latino of any race. The average household income is $41,509. Regarding CD 7's transportation patterns, 69.9% of households do not own a vehicle and 26.7% have access to only one vehicle. The average commute to work is 42 minutes, with only 19% of workers 16 years and over taking

a car, truck, or van to their job (either alone or in a carpool). Conversely, 65.4% of workers use public transportation (excluding taxis) and 11.1% walk. Thus, more than two-thirds of CD 7's workforce uses modes of transportation that transit-oriented development seeks to promote. Unfortunately, the American Community Survey does not report on bicycle usage.

Bronx CD 12 boasts similar statistics. 45% of its 143,244 residents are white, 55% are black or African American, and 13.3% are Hispanic or Latino of any race. The mean household income is 56,458. 46.3% of all households do not own a car and 53.7% have access to one or more cars. This larger degree of car ownership as compared to CD 7 may be due to the preponderance of single-family homes and lower-density neighborhoods with limited access to subway service that are located in the Eastern portions of the CD. These areas are well beyond the quarter-mile radius surrounding the Williamsbridge station that this paper analyzes. It can be hypothesized that car-ownership rates are far lower in the more densely developed portion of CD 12 near the Metro-North station. Given these statistics on car ownership, 38.9% of the workforce take a vehicle to work (either alone or in a carpool), 52.3% use public transportation, and 5.3% walk.

The neighborhoods surrounding the Williamsbridge station are serviced by a variety of transit options in addition to the Metro-North line. The Norwood station of the D train subway line is 0.6 miles away, or about a 13-minute walk from the Williamsbridge station. Likewise, the Gun Hill Road station of the elevated 2/5 line is only 0.3 miles, or a six-minute walk from the station. Stops for the BX 41, 55, 38, 30, 39, and M11 buses are also all within a ten-minute walk of the station. Furthermore, beginning in June 2013, the MTA will be operating a select bus service route along the BX41 line on Webster Avenue. This express bus line, one of only nine planned or operating throughout the city, will connect The Hub at E 149th Street with E Gun Hill

Road, with a stop less than a five-minute walk from the Williamsbridge station and at the 2/5 station on White Plains Road.[108] The Bronx Metro-North Sustainable Communities Initiative seeks to better connect all of these transit options to the Williamsbridge Station.

The Webster Avenue/Bedford Park/Norwood Rezoning

The Department of City Planning's public overview of the rezoning explains that it commenced the rezoning study at the request of "Bronx Community Board 7, local institutions and elected officials" to "allow mid-density housing and retail on Webster Avenue and preserve the existing character of the adjacent residential areas." Furthermore, the overview explicitly states that the rezoning's two primary objectives are "To shape Webster Avenue into a vibrant, inviting, and walkable residential and commercial corridor" and "To preserve existing low density character in the residential areas of Bedford Park and Norwood, and encourage new development to concentrate on Webster Avenue."[109] The rezoning seeks to preserve a low-density character for the residential neighborhoods, but to spark more commercial development along Webster Avenue. This stated goal again contradicts PlaNYC's designation of this rezoning as one that would promote residential growth.[110]

The zoning overview does not refer to the Metro-North station as a factor that determined the proposed amendments. However, it does state, "The area is well served by mass transit, including three Metro-North stations, access to the D, 4 and 2/5 trains, and multiple bus lines."[111] Given this acknowledgement of the study area's proximity to multiple forms of transit, it is

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[108] Metropolitan Transportation Authority. "BX 41 Webster Avenue SBS." Select Bus Service. http://web.mta.info/mta/planning/sbs/webster_ave.html

[109] Department of City Planning. "Webster Avenue/Bedford Park/Norwood Rezoning – Approved!" http://www.nyc.gov/html/dcp/html/webster_norwood_bedford/index.shtml

[110] PlaNYC, 22

[111] Ibid.

reasonable to question why the rezoning seeks to decrease the residential capacity of the neighborhood and preserve neighborhood character instead.

The portion of the study area that falls within a quarter-mile radius of the Williamsbridge station was previously zoned for mid-density residential and heavy commercial uses (see appendix C). Most of the blocks between the Williamsbridge Oval and Webster Avenue were zoned R7-1, which permits buildings with a maximum FAR of 3.44, resulting in buildings of typically between 5-6 stories, but as tall as 14 stories.[112] Blocks bordering Gun Hill Road were also zoned with a C1-3 commercial overlay, which permitted a commercial FAR of up to 2 for the R7-1 zoned lots. This typically resulted in small retail stores located on the first floor of residential buildings along Gun Hill Road.[113] Finally, the relevant portion of Webster Avenue was zoned C8-2 which resulted in "automotive service shops and light industrial facilities." C8 districts, which unlike commercial overlays do not permit residential development, are often found under elevated train lines, which make an area less suitable for residences. Until 1973, the Third Avenue El ran along Webster Avenue, resulting in this C8-2 designation; the rezoning is the first time the zoning text will be updated since the El's demolition.[114]

Again, DCP explicitly states that the goal of the rezoning is to reduce the incentive to replace "lower density residential development" with "larger-scale, higher density development." To do so, it implements several scaled-back zoning designations (see appendix C). Within the quarter mile radius of the Williamsbridge station, DCP proposed R5B, R6B, and R7B designations to replace the blanket R7-1 designation. R5B zoning allows all housing types but typically restricts them to a maximum of 33 feet and usually results in attached rowhouses. R6B

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[112] Department of City Planning. Zoning Handbook. New York City: 2011. Pg. 32.
[113] Ibid., 54
[114] Department of City Planning. "Williamsbridge/Baychester Rezoning – Approved!" http://www.nyc.gov/html/dcp/html/will_bay/index.shtml

designations usually result in slightly taller attached rowhouses. R7B zoning is conducive to six to seven story apartment buildings of no more than 75 feet.[115] City council adopted these zoning changes on March 23, 2011.

The Williamsbridge/Baychester Rezoning

The DCP states that the goals of the Williamsbridge/Baychester Rezoning are to "protect neighborhood scale and character by reinforcing existing development patterns," "update and add new commercial overlays to reinforce existing patterns of commercial uses," and "create growth opportunities for areas around major corridors and mass transit." This last goal falls directly in line with PlaNYC's promotion of transit-oriented development. While the rezoning considers three large areas located within Community District 12, only a small portion in the southwest corner of the rezoning falls within the quarter mile radius of the Williamsbridge Metro-North station. This area was originally zoned under R5A and R6 districts (see appendix D). The 1.1 FAR and other restrictions of the R5A designation permitted small, one- and two-family homes with both on- and off-street parking. R6 districts usually contain medium-density apartment buildings that generally range from seven to thirteen stories.[116]

The rezoning maintains the R5A designations of the lots that fall within a quarter-mile radius of the Williamsbridge station (see appendix D). However, it modifies R6 lots to R6A and R7A zonings. It also adds C2-4 or C1-4 commercial overlays to those areas zoned as R7A. The R6A designation encourages six or seven story apartment buildings that cover the majority of their lots. The R7A designation permits similar buildings of seven and eight stories. The relevant

[115] Zoning Handbook 26, 31, 35
[116] Zoning Handbook 25,28

commercial overlays generally permit ground-floor retail uses in residential buildings. [117]These proposed designations were approved by City Hall on October 5, 2011.

Zoned Residential Capacity Results

Aggregations of FAR data for tax lots before and after the adoption of the Webster Avenue/Bedford Park/Norwood rezoning confirm that the Department of City Planning reduced the potential residential capacity of the portion of the study area that falls within a quarter mile radius of the Williamsbridge station. Within this area, 226 properties were downzoned (meaning that they have less than 90% of their residential capacity prior to the rezoning's adoption), six were upzoned (meaning that they have at least 10% more residential capacity than before the rezoning) and 1 property experienced no change. In total, the potential residential capacity decreased from 3,796,108.24 square feet to 2,655,329.90 square feet. This means that the area only possesses 69.95% of its original residential capacity, well below the 90% capacity that the Furman Center deems significant enough to be a downzoning.

In contrast, the portion of the Williamsbridge/Baychester rezoning within the quarter mile radius of the station was upzoned. Of the 173 total properties, 90 were upzoned, 83 experienced no change, and zero were downzoned. In total, the area went from having 1,522,849.39 square feet of potential residential capacity to having 2,015,371.40 potential residential capacity, an increase of 32.05%. Again, this is well above the 10% increase that the Furman Center deems significant enough to be an upzoning.

Adding the data together for both rezonings to determine if the quarter-mile radius surrounding the station was upzoned or downzoned *as a whole* reveals that it was in fact downzoned. The area went from having 5,318,957.63 square feet of potential residential capacity

[117] Ibid. 30, 34, 54

to having 4,670,701.3 square feet, meaning it only retained 87.76% of its original residential capacity.

Conclusions and Further Research

This data suggests that the presence of the Williamsbridge station was not a significant factor in determining the zoning amendments of the Webster Avenue/Bedford Park/Norwood and Williamsbridge/Baychester rezonings. Instead, for the Webster Avenue/Bedford Park/Norwood rezoning, neighborhood preservation was the dominant priority, so much so that even the rezoning's proximity to other forms of transit, such as the D train and planned BX 41 select bus service did not result in any significant increases in residential capacity. Given this data, promoting transit-oriented development appears to not have been a priority for this portion of the rezoning. To confirm such a claim, it would be necessary to analyze the passenger capacity of all nearby transit options and compare this to the new potential residential capacity of the area to see if the Department of City Planning failed to maximize the existing transportation infrastructure's potential.

In contrast, the relevant portion of the Williamsbridge/Baychester rezoning does appear to promote the tenets of transit-oriented development. However, it does this by increasing residential capacity in relation to the 2/5 subway line and not in relation to the Williamsbridge Metro-North station. Properties bordering the subway line are those granted the greatest residential capacity, while the FARs of tax lots closer to the Williamsbridge station were not augmented as significantly. Nonetheless, the increases in residential capacity still fall within walking distance of the Metro-North station, meaning that the new potential growth of the area may result in increased Metro-North ridership.

A simplistic understanding of the data may result in criticisms of the Department of City Planning similar to those that Brian Paul has levied. However, it must be understood that the data is but one piece of information necessary to make the broad-based claim that the ideals of PlaNYC are not being realized. The City has never asserted that transit-oriented development is the only, or even the primary objective of its rezonings. To the contrary, even PlaNYC acknowledges that at times, neighborhood preservation will be the primary reason a rezoning is undertaken, as seems to have been the case for the Webster Avenue/Bedford Park/Norwood rezoning. Still, for this very reason, it would be beneficial to investigate why PlaNYC marketed this rezoning as one that expanded residential capacity in its map on page 22 of the document. Are other rezonings in this and other maps also misrepresented?

It must also be noted that even though the Sustainable Communities Initiative has placed emphasis on the Bronx's Metro-North stations, that the community does not perceive these stations in the same way as it perceives subway stations. Less frequent service and higher fares relegate Metro-North service to a secondary status in relation to subway service. While the Sustainable Communities Initiative is seeking ways to reduce this disparity, for the time being, Metro-North lines and subway lines cannot necessarily be viewed as warranting equal levels of transit-oriented development.

Finally, potential residential capacity is but one element of transit-oriented development. As Peter Calthorpe articulates, commercial amenities and the treatment of automobiles also contribute to the overall function of a transit-oriented development. Further research into these two realms as they relate to the Williamsbridge station could provide a more holistic analysis of the area's promotion of transit-oriented development. First, while my FAR calculations only concerned those lots zoned for residential use, I also encountered 29 properties reserved for

exclusive commercial use in the Webster Avenue/Bedford Park/Norwood rezoning. Of these, 26 were upzoned, three did not change, and zero were downzoned (following the same standards that the Furman Center established for residential zonings). In fact, the area of the rezoning within a quarter mile radius of the station saw an increase from 296,384 to 465,092.4 square feet of potential commercial capacity (an increase of 36.27%). If developers seize the potential of this increase, many more businesses may be located near the Metro-North station, in accordance with the principles of transit-oriented development. Further research into ways to evaluate commercial capacity would be necessary to adequately assess this change. Yet, at the very least, it provides an example of how focusing solely on residential capacity ignores other relevant aspects of the City's rezonings.

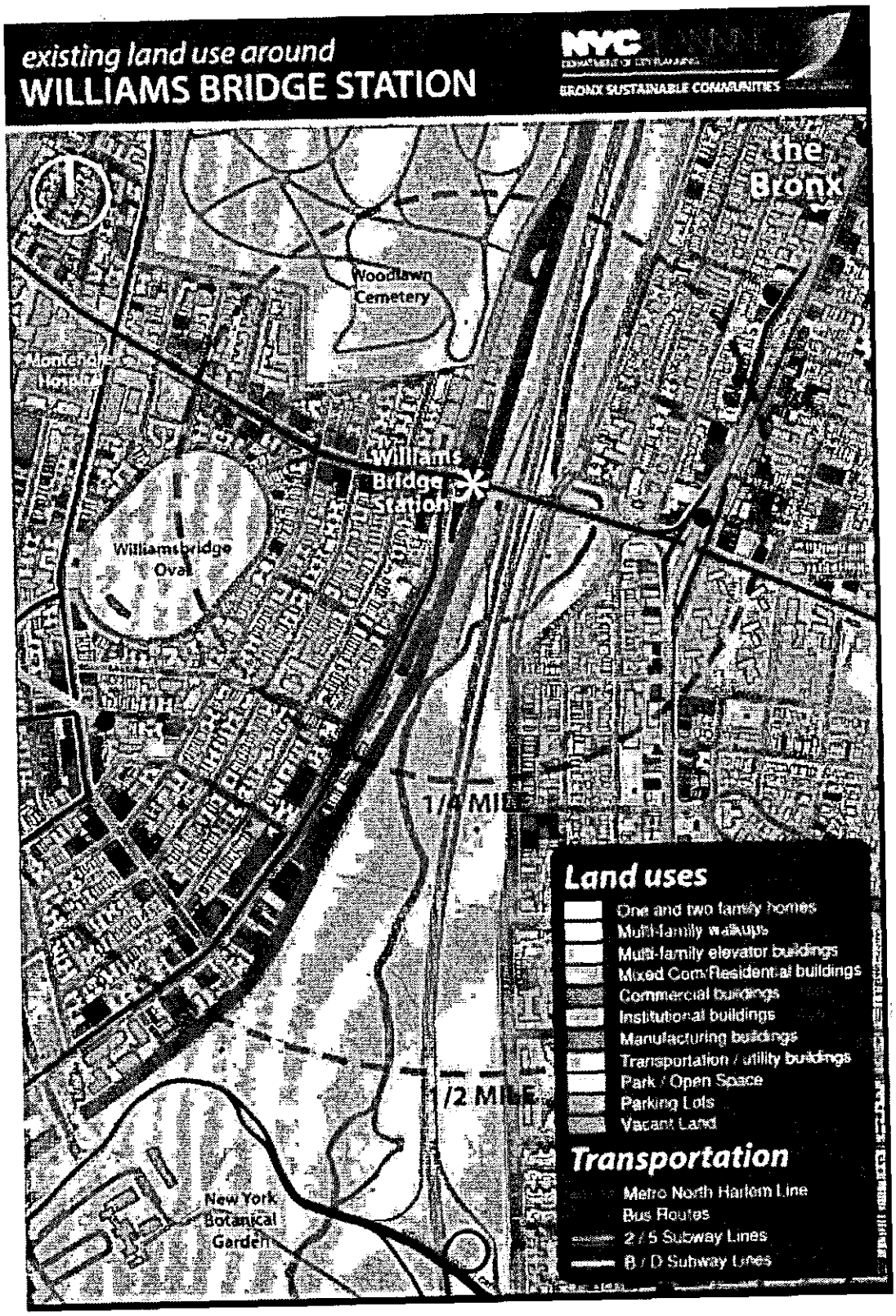
Additionally, the Furman Center also conducted a study in 2011 on the changes in parking requirements that the City's rezonings mandated. It analyzed the minimum on- and off-street parking that each zoning designation mandates and calculated the potential increase in required parking spaces that the City has introduced through its rezonings.[118] Increased parking spaces, especially in areas that have adequate transit options, violates the tenets of transit-oriented development by providing incentive for residents with enough money to own automobiles to purchase and use a car instead of public transportation. In areas where above-ground lots are constructed, it also represents inefficient land-use practices. Regarding the Williamsbridge station, it would be beneficial to calculate the net increase or decrease in the percentage of properties that require parking after the Webster Avenue/Bedford Park/Norwood and Williamsbridge/Baychester rezonings were completed. A significant increase in required

[118] Been, Vicki, Caitlyn Brazill, Josiah Madar, and Simon McDonnell. "Searching for the Right Spot: Minimum Parking Requirments and Housing Affordability in New York City." Furman Center for Real Estate and Urban Policy. 2011. Pg. 1.

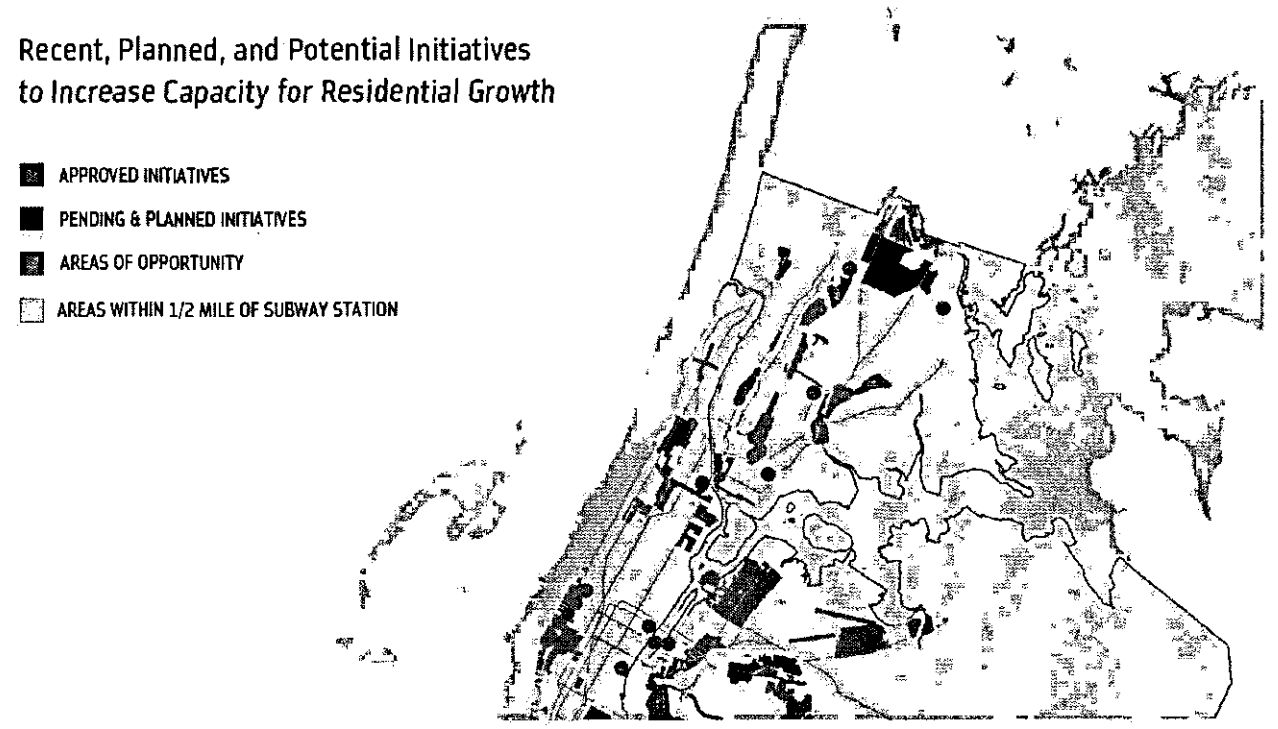
parking would further suggest that the City has not seriously considered genuine ways to promote transit-oriented development in this area of the Bronx.

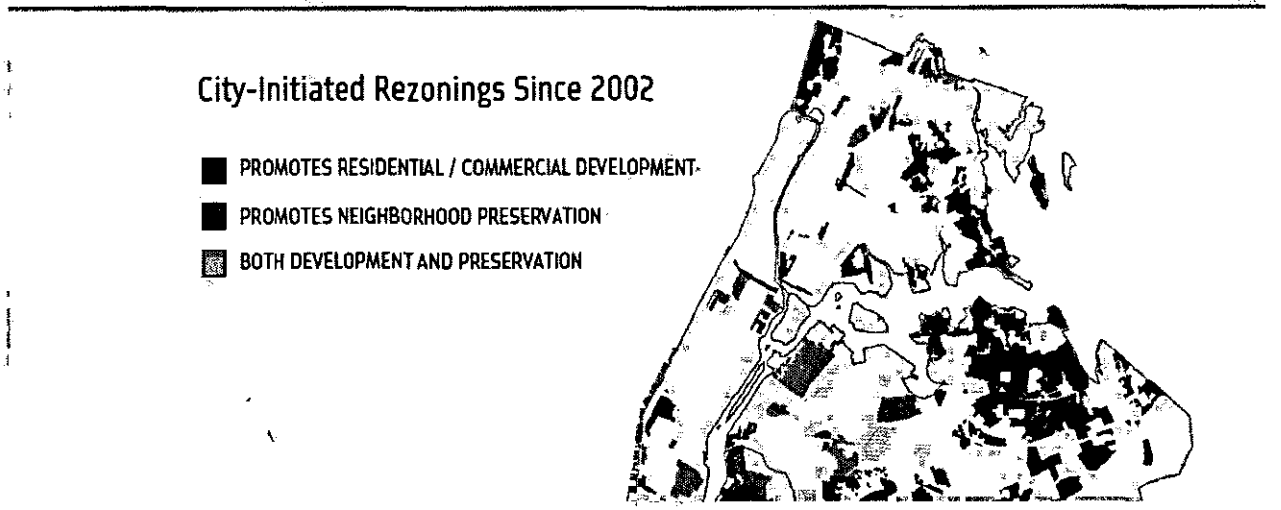
Thus, while the conclusions of this research paper cannot be used alone to cast judgment upon the Bloomberg administration's commitment to transit-oriented development, it provides enough evidence to warrant further investigation into the City's claims and motivations. The significant reduction of residential capacity immediately surrounding the Williamsbridge station, despite evidence that PlaNYC and the Sustainable Communities Initiative have sought to do otherwise, requires continued analysis into what the City means when it says "transit-oriented development" and how this meaning will shape development in the Bronx during the next several decades.

Appendix A


existing land use around
WILLIAMS BRIDGE STATION
NYC
BRONX SUSTAINABLE COMMUNITIES
the Bronx
Woodlawn Cemetery
Williams Bridge Station
Williamsbridge Oval
1/4 MILE
1/2 MILE
New York Botanical Garden
Land uses
One and two family homes
Multi-family walkups
Multi-family elevator buildings
Mixed Com/Residential buildings
Commercial buildings
Institutional buildings
Manufacturing buildings
Transportation / utility buildings
Park / Open Space
Parking Lots
Vacant Land
Transportation
Metro North Harlem Line
Bus Routes
2 / 5 Subway Lines
B / D Subway Lines

Appendix B (from PlaNYC)





Appendix C


LAND USE AND EXISTING ZONING
Webster Avenue/Bedford Park/Norwood Zoning Study
July 2010
COMMUNITY DISTRICT 7 & 12 • THE BRONX
Legend
R6A
R4A
R6
R7-1
R5
R5A
R4
NORWOOD
C8-2
M1-1
R8
WEBSTER AVE CORRIDOR
BEDFORD PARK
C4-4
C8-1
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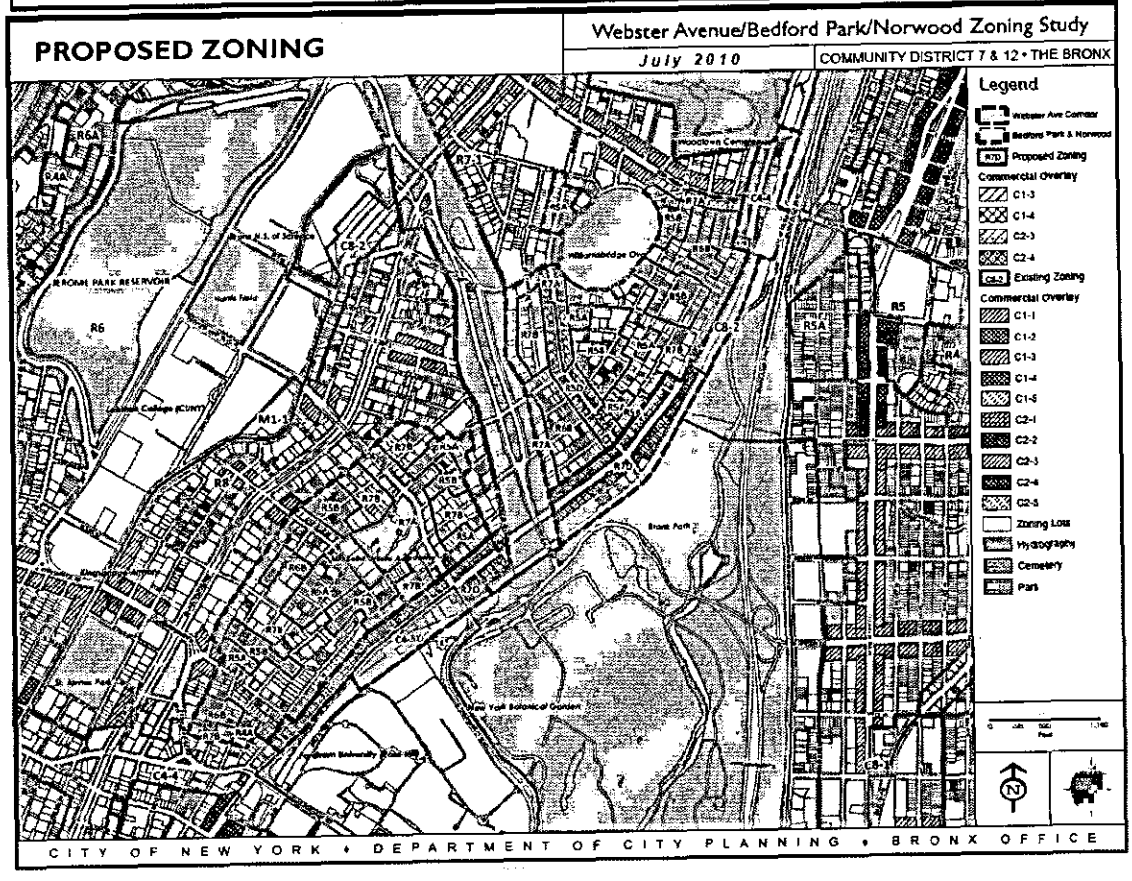
PROPOSED ZONING
Webster Avenue/Bedford Park/Norwood Zoning Study
July 2010
COMMUNITY DISTRICT 7 & 12 • THE BRONX
Legend
Proposed Zoning
Commercial Overlay
C1-3
C1-4
C2-3
C2-4
Existing Zoning
Commercial Overlay
C1-1
C1-2
C1-3
C1-4
C1-5
C2-1
C2-2
C2-3
C2-4
C2-5
Zoning Loss
Hydrography
Cemetery
Park
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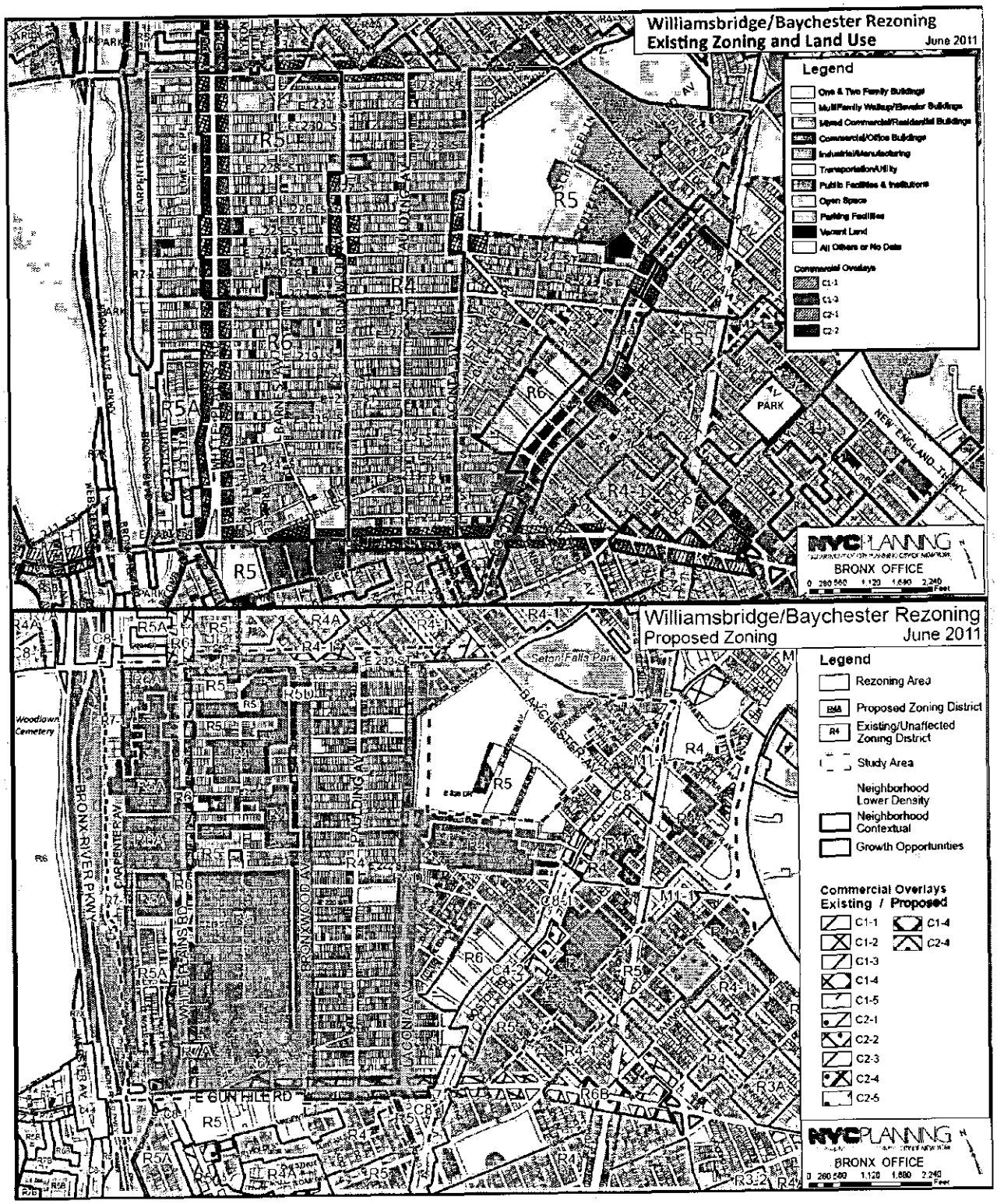
Appendix D


Williamsbridge/Baychester Rezoning
Existing Zoning and Land Use
June 2011
Legend
One & Two Family Buildings
Multi Family Walkup/Elevator Buildings
Mixed Commercial/Residential Buildings
Commercial/Office Buildings
Industrial/Manufacturing
Transportation/Utility
Public Facilities & Institutions
Open Space
Parking Facilities
Vacant Land
All Others or No Data
Commercial Overlays
C1-1
C1-3
C2-1
C2-2
NYCPLANNING
BRONX OFFICE
Williamsbridge/Baychester Rezoning
Proposed Zoning
June 2011
Legend
Rezoning Area
Proposed Zoning District
Existing/Unaffected Zoning District
Study Area
Neighborhood Lower Density
Neighborhood Contextual
Growth Opportunities
Commercial Overlays Existing / Proposed
C1-1
C1-2
C1-3
C1-4
C1-5
C2-1
C2-2
C2-3
C2-4
C2-5
C1-4
C2-4
NYCPLANNING
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