



Newburgh Area Transportation & Land Use Study



Short Term Transit Improvement Program *Draft Baseline and Existing Conditions*

Submitted to:
Orange County
Department of Planning

Submitted by:

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October 2010

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Introduction

The Newburgh Area Transportation and Land Use Study (NATLUS) is a response to the growth in population and jobs through in-fill and the construction of new residential and commercial development. Also influencing transportation decisions is the potential for growth related to aviation and the development at, and around, Stewart International Airport. Recognizing the importance of mobility, Orange County embarked on a comprehensive review of both transportation and land use issues facing the northeastern portion of Orange County. The study area includes the City of Newburgh and the surrounding Towns of Cornwall, Montgomery, Newburgh and New Windsor. The study is multi-modal in that it examines a wide range of public transportation systems including auto and transit as well as non motorized modes. Another dimension of the study is its focus on both near term and long range alternatives to improve access.

One aspect of the study is an examination of the short range public transportation needs of the study area. A widely held view is that the current service is not adequate to meet the mobility needs of residents and support the economic development of the community. The objective of this study phase is to recommend changes to the current bus and demand responsive services offered by public agencies and private firms which rely on tax support for operating assistance and capital improvements.

To prepare this public transportation plan, a work program of several sequential tasks was undertaken. Initial efforts were directed at developing a description of the study area in terms of key demographic and socioeconomic characteristics. Of particular interest are those groups that typically rely on transit for meeting their travel needs, such as incomes at or below poverty or households with no available automobiles.

Information was also obtained on the journey to work of individuals who either reside or work in the study area. Information on travel patterns and mode of travel are presented with the focus on transit users. Completing the inventory of conditions are major generators in terms of employment, shopping, education and medical facilities. Expected trends in population and employment are also presented. Combined, these data present a description of the setting in which public transportation operates, as well as a means to assess transit need.

This report also presents an inventory of current transit service which includes description of the route coverage, frequency of service and hours and days of operation. While all fixed route and demand responsive services are described, the focus is on the Newburgh Beacon Bus Corporation which is the primary local transit system in the study area. Key operating, ridership and financial information are presented for this carrier for the past several years. These data were compiled from forms prepared for the New York State Department of Transportation (NYSDOT) and the Federal Transit Administration (FTA). Other more detailed

information was gathered on customer characteristics and ridership patterns from on board surveys conducted as part of this analysis.

This interim report presents an assessment of the current situation and future need which will be the basis for subsequent route planning steps leading to a recommended plan. These results will be presented in other interim reports that will follow. The next interim report will present a series of alternatives in terms of alignment, coverage, frequency and span of service. The concluding interim report will indicate the impacts of each transit alternative and through an evaluation process delineate a recommended transit program. It will include a description of service and capital improvements along with key operating, ridership and financial forecasts.

Community Characteristics

This portion of this interim report should be viewed as a resource that will support subsequent study steps to assess how well current service meets existing development and help establish future needs based on expected changes to population and employment. Most of the information for this analysis was drawn from a variety of sources:

- **2000 U.S. Census** - The Census presents a wealth of detailed information on populations and their characteristics. Population cohorts for this interim report are presented in absolute terms, percent of the total population and density. It is recognized that the 2000 U.S. Census data is somewhat dated at this time; however, it still represents the most comprehensive and thorough information that is available. Additionally, comparisons can be made with 1990 results to assess growth in a consistent manner.
- **2000 U.S. Census Transportation Planning Package** - As part of the last Census, one in six residents were asked about their journey to work in terms of residence and work locations, as well as mode of travel. Similar to the population data, some comparisons were made with 1990 commuter patterns.
- **Orange County Department of Planning** - This agency which assembles a great deal of information regarding existing and future conditions in Orange County is directing the current study and has responsibility for administering transit programs to secure state and federal funding. The Planning Department has prepared an extensive list of travel generators and has also provided estimates of future growth in terms of population and employment.
- **Other** - Various agencies and organizations collect and prepare data on current and future conditions in Orange County. This includes the various public transportation service providers throughout the study area.

The discussion above highlights the types of information and the range of sources utilized in describing the current and future conditions in the Newburgh area. These data have mainly been analyzed at the census block group level, although some municipal level analysis has also been preformed. This interim report presents information primarily in graphic and tabular formats.

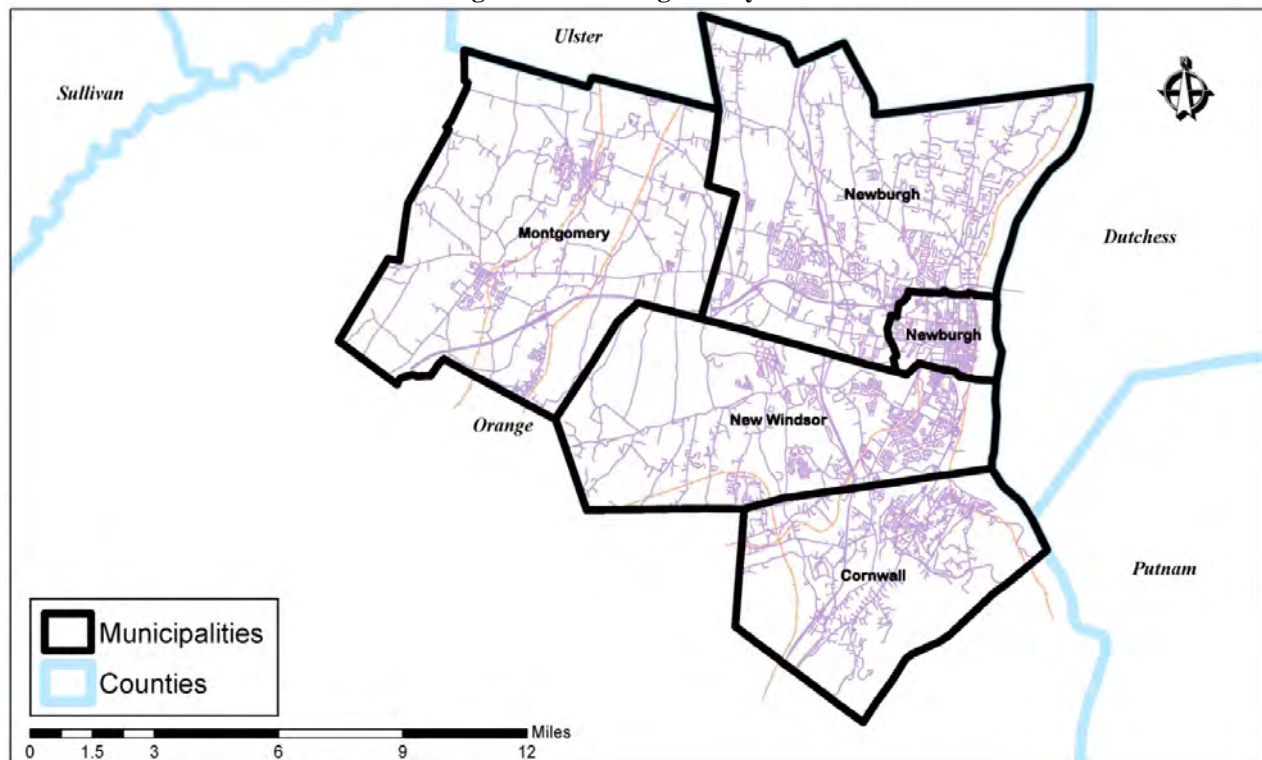
Socioeconomic Composition

One of the major elements of any transit analysis is an examination of the socioeconomic factors that influence overall travel and the needs for public transportation. This includes areas

with fixed route bus lines as well as communities with demand responsive service within the study area. The examination of the demographic characteristics of an area includes both the current situation, as well as the past and projected conditions. Any proposed changes to the transit system must meet the needs of the demographic environment where the service exists today as well as new areas. Transit demand can be better understood by analyzing the patterns that emerge from a demographic study. The decennial U.S. Census provides detailed information of the Newburgh area's population and its composition. The U.S. Census is useful for understanding the current needs of Newburgh area residents and the likelihood that different groups will use the available and proposed transit options. Population projections are also discussed in order to gain insight into future growth and needs.

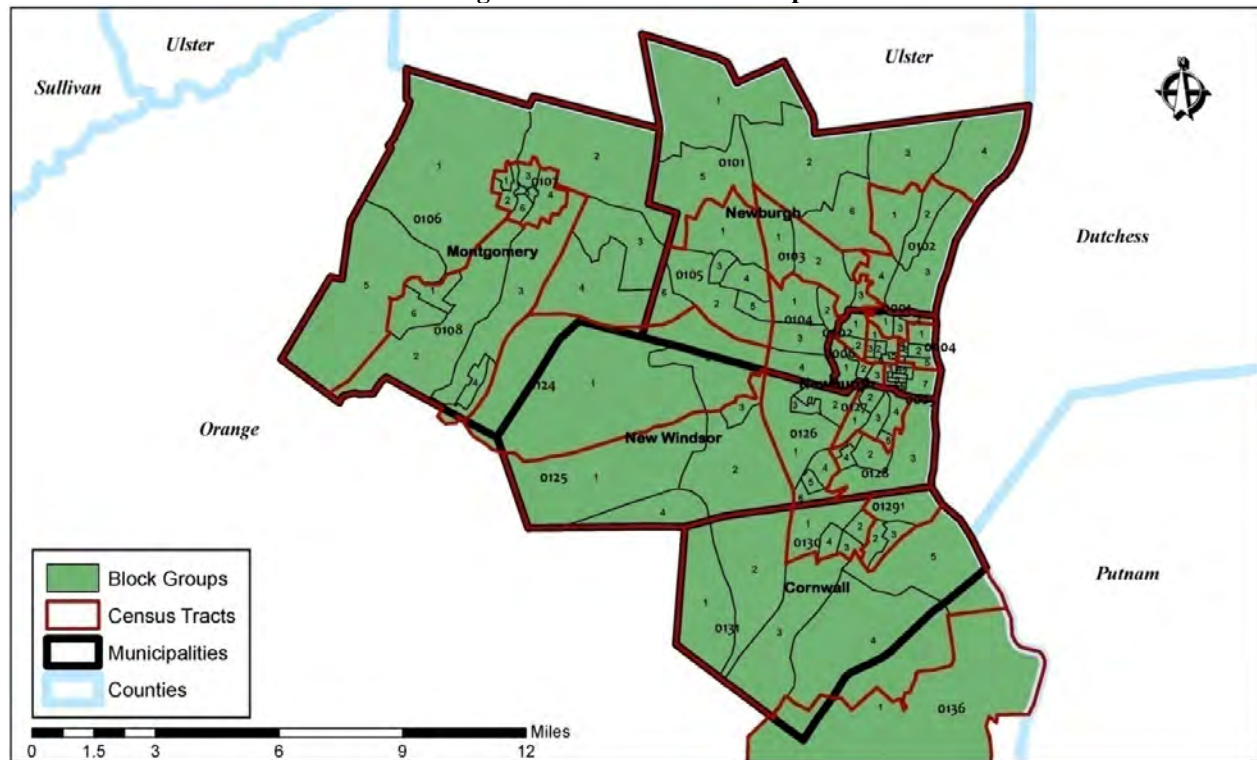
The Newburgh study area is located in the northeastern portion of Orange County and includes the City of Newburgh, the Town of Newburgh, the Town of Cornwall, the Town of New Windsor and the Town of Montgomery. The study area also includes the Villages of Walden, Montgomery and Maybrook, which are located within the Town of Montgomery, and the Village of Cornwall-on-Hudson, which is located within the Town of Cornwall. The study area is bordered by Ulster County to the north and the Hudson River and Dutchess and Putnam Counties to the east. The study area is surrounded by the rest of Orange County to the south and west (Figure 1).

Figure 1 - Newburgh Study Area



As noted previously, this interim report examines the study area at the census detailed block group level. Because of the nature of how census tracts are divided into block groups, some of the block groups extend beyond the municipal boundaries that comprise the study area. Figure 2 details the study area by municipality, census tract and block group.

Figure 2 - Census Block Groups



Population Trends - The City of Newburgh is an older urban community, with much of its land fully developed. Moreover, several neighborhoods and commercial areas may be ripe for redevelopment. Each of the surrounding towns in the study area is much less developed; however, the entire region is experiencing a population growth, which is expected to continue into the foreseeable future. Table 1 details the population growth in each of the municipalities from 1990 to 2000. As the table shows, the Towns of Montgomery and Newburgh have experienced the highest rate of growth, at 12.9 percent and 18.7 percent, respectively, while the Town of New Windsor has experienced a slight decline in population (less than one percent) from 1990 to 2000. The Newburgh study area as a whole has seen an increase in population of over nine percent between 1990 and 2000, while Orange County has experienced an 11 percent population growth during the same time period.

Table 1 - Population Growth

Location	1990 Population	2000 Population	% Change
Cornwall (T)	11,270	12,307	9.2
Montgomery (T)	18,501	20,891	12.9
Newburgh (C)	26,454	28,259	6.8
Newburgh (T)	24,058	28,568	18.7
New Windsor (T)	22,937	22,866	-0.3
Study Area Total	103,220	112,891	9.4
Orange County	307,647	341,367	11.0

Source: 2000 U.S. Census

Future population projections, provided by the Orange County Department of Planning, indicate that the study area's population will continue to grow. Table 2 details the estimated growth in the five municipality study area and shows that the area will experience a growth of over 33 percent by 2025. It is recognized that other projections of development will be prepared as part of this current analysis. The Town of New Windsor is expected to nearly double its current population, while the Towns of Cornwall, Montgomery and Newburgh are all expected to grow at very high rates. The City of Newburgh, while still expecting population gains will grow only moderately over the next generation. This is to be expected as much of the City of Newburgh is already developed, while the surrounding municipalities have vacant land to permit new development and population growth. By comparison, Orange County is expected to grow over 36 percent to 464,772 residents by 2025.

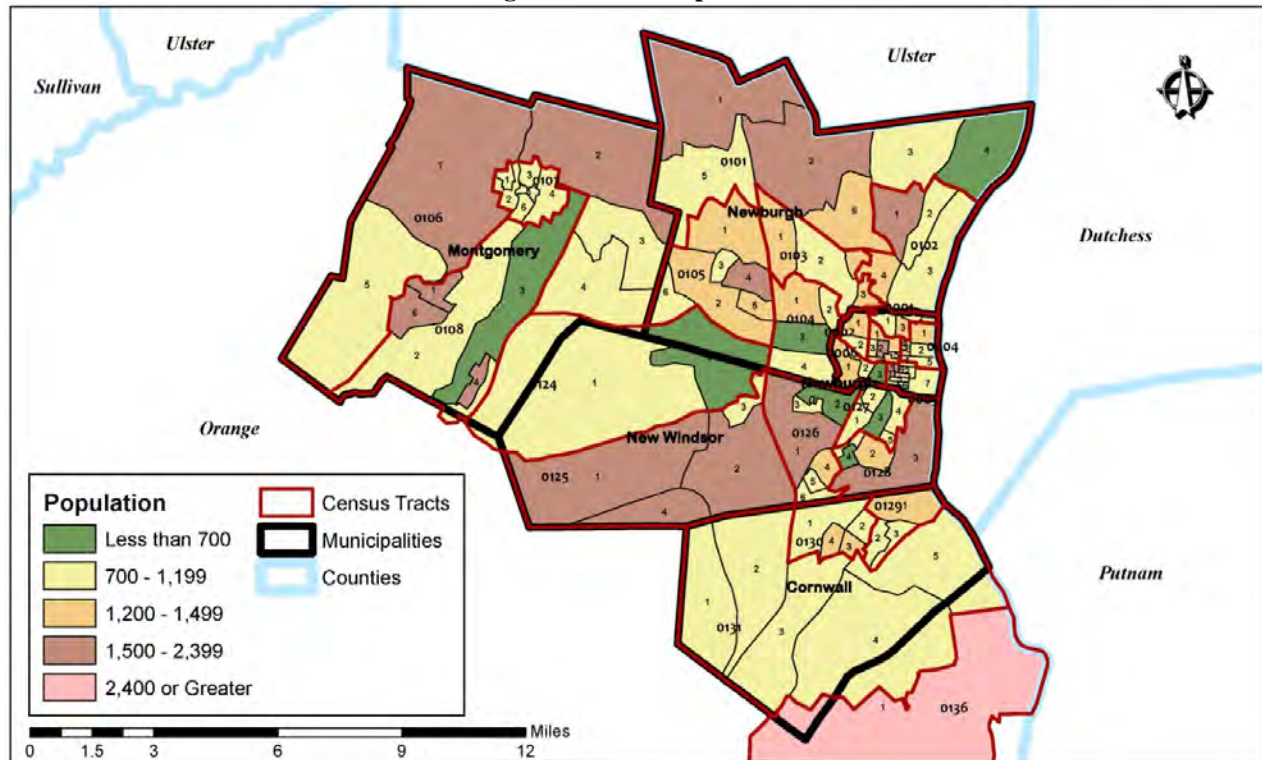
Table 2 - Population Projections

Location	2000	2010	% Change 2000-2010	2015	% Change 2000-2015	2025	% Change 2000-2025
Cornwall (T)	12,307	13,943	11.7	14,841	17.1	16,814	26.8
Montgomery (T)	20,891	23,976	12.9	25,685	18.7	29,477	29.1
Newburgh (C)	28,259	28,738	1.7	28,981	2.5	29,472	4.1
Newburgh (T)	28,568	34,489	17.2	38,576	25.9	48,261	40.8
New Windsor (T)	22,866	30,099	24.0	34,534	33.8	45,458	49.7
Study Area Total	112,891	131,245	14.0	142,617	20.8	169,482	33.4
Orange County	341,367	386,215	13.1	410,802	20.3	464,772	36.2

Source: 2000 U.S. Census and Orange County Department of Planning

Population and Population Density - The Newburgh study area has a total population of 112,891, while Orange County has a population of 341,367 (2000 U.S. Census). The population of the study area is presented by block group in Figure 3. As the exhibit shows, concentrations of residents are not scattered throughout the area. Since the size of the block groups vary greatly across the study area, population density provides a better understanding of the area in terms of its residential centers.

Figure 3 - Total Population



The density of residential development is a critical factor impacting the viability of public transportation. Transit tends to attract more riders in denser areas for many reasons, including the fact that densely populated regions may include a diversity of income and age groups. Also, denser development patterns allow bus service to be within a convenient walking distance of more residents. Higher density areas typically have more households without an available automobile, meaning the residents of these homes are more likely to rely on transit to complete their daily tasks.

The municipalities that are within the Newburgh study area encompass 168.1 square miles. The study area has an overall population density of 671.7 persons per square mile. Table 3 presents the densities of the five municipalities within the Newburgh study area. As the table demonstrates, the population densities are relatively low, with the exception of the City of Newburgh. This is to be expected due to its high population within a confined area and the type of housing offered residents (i.e., attached and multi-family).

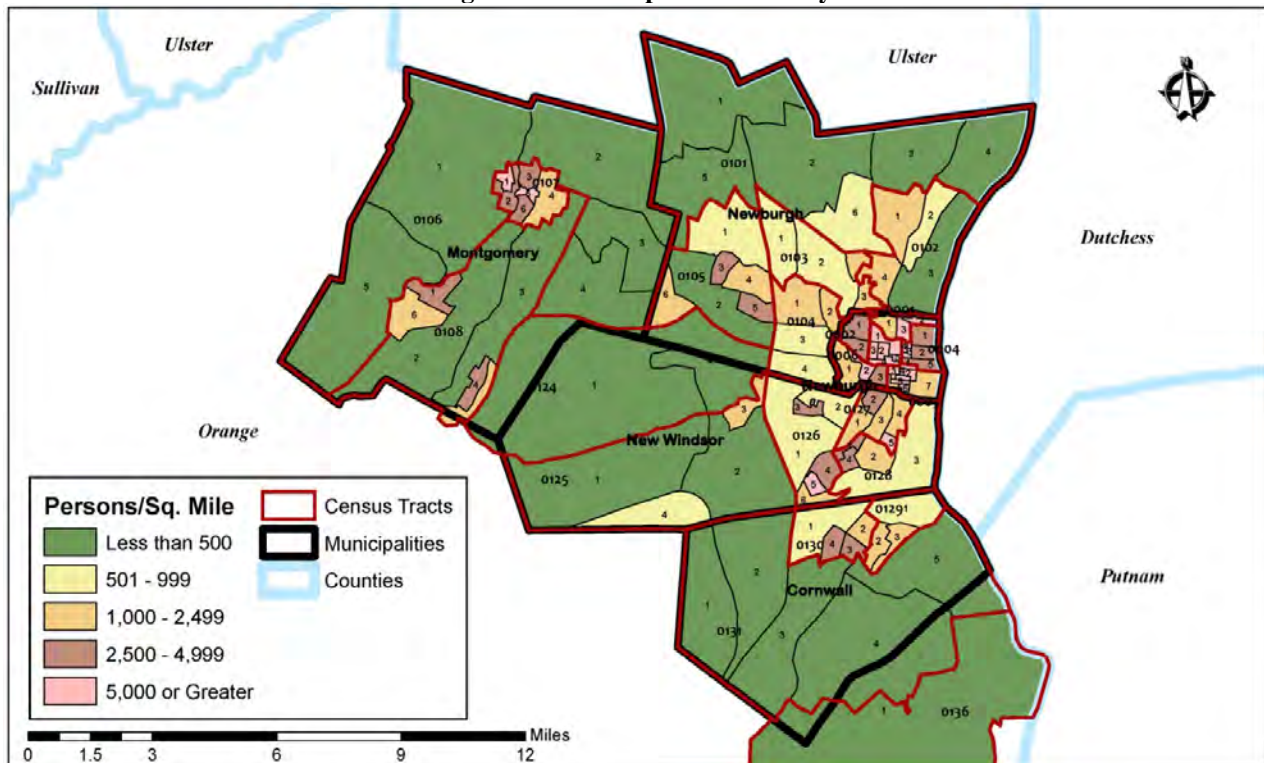
Table 3 - Population Density

Location	Square Miles	Population	Population Density
Cornwall (T)	28.2	12,307	436.9
Montgomery (T)	51.1	20,891	409.0
Newburgh (C)	4.8	28,259	5,911.9
Newburgh (T)	47.0	28,568	608.0
New Windsor (T)	37.0	22,866	617.3
Study Area Total	168.1	112,891	671.7
Orange County	838.4	341,367	407.2

Source: 2000 U.S. Census

While no single threshold exists, it is generally recognized that locations with population densities of over 2,500 persons per square mile are desirable to make frequent fixed route bus service viable. Lower values suggest less frequent service, other transit modes or possibly no service. Figure 4 presents population density of the block groups within the study area.

Figure 4 - 2000 Population Density



Of these block groups, 40 have population densities over the 2,500 persons per square mile threshold with a relatively high number within the City of Newburgh. Of these, 19 block groups have population densities of over 5,000 persons per square mile. The City of Newburgh has 15 of these block groups (Census Tract 1, Block Groups 2 and 3; Census Tract 3, Block Groups 1 through 5; Census Tract 4, Block Groups 3 and 4; Census Tract 5, Block Groups 1

through 6; and Census Tract 6, Block Group 2). Of the four remaining high density block groups, two are located within the Village of Walden (Census Tract 107, Block Groups 1 and 5), while the other two are located within the Town of New Windsor (Census Tract 126, Block Group 5; and Census Tract 128, Block Group 5).

The density chart does indicate that the corridors emanating from the City of Newburgh have higher density values. The lower density areas are located away from City of Newburgh, with the noted exceptions of the freestanding communities of the Villages of Walden, Montgomery and Maybrook. Development in the low density areas has remained sparse; however, as the population of the study area continues to increase, particularly during the long term, these areas will begin to see some development and an increase in population and population density. In the meantime, these areas would not suggest fixed route bus service as a viable transit mode.

Senior Citizen Population - There are several “target” market groups that a transit service should aim to serve. These groups generally have limited transportation mode choices so that, in some cases, they must rely on transit services in order to travel. Persons over 65 years old comprise one of these target market groups. Often, these individuals have limited incomes and have restricted or no access to an automobile. In some instances they may have some disability which limits their ability to operate an automobile. Senior citizens often tend to locate in the more urban areas, where access to healthcare and other activities are readily available. The senior citizen population for the study area has been examined in three ways: (1) the total population of senior citizens; (2) the percent of the total population that are senior citizens; and, (3) the density of senior citizens. This three-fold metric is a common feature of the analysis with other factors that indicate transit need and propensity to use.

There are 12,528 senior citizens living in the Newburgh study area (2000 U.S. Census), representing 11.1 percent of the area’s total population. In Orange County there are 34,279 people age 65 and older, which represents ten percent of the County’s population. Table 4, on the following page, details the senior population, the percent senior population and the density of senior citizens for each of the five municipalities in the study area, as well as for Orange County.

Figure 5 presents the total senior population by block group within the Newburgh study area. The largest population of senior citizens (243 senior residents or more) within the study area exist in Census Tract 6, Block Group 2 (City of Newburgh); Census Tract 105, Block Group 4 (Town of Newburgh); Census Tract 106, Block Groups 1 and 2, and Census Tract 108, Block Group 6 (Town of Montgomery); Census Tract 126, Block Group 1 and Census Tract 128, Block Group 2 (both in the Town of New Windsor); and Census Tract 131, Block Group 5 (Town of Cornwall), which is where the St. Luke’s Cornwall Hospital’s Cornwall Medical Pavilion is located.

Table 4 - Senior Citizen Population

Location	Senior Population	Percent Seniors	Seniors/Square Mile
Cornwall (T)	1,541	12.5	54.7
Montgomery (T)	2,216	10.6	43.4
Newburgh (C)	2,507	8.9	524.5
Newburgh (T)	3,440	12.0	73.2
New Windsor (T)	2,824	12.4	76.2
Study Area Total	12,528	11.1	74.5
Orange County	34,279	10.0	40.9

Source: 2000 U.S. Census

Figure 5 - Senior Citizen Population

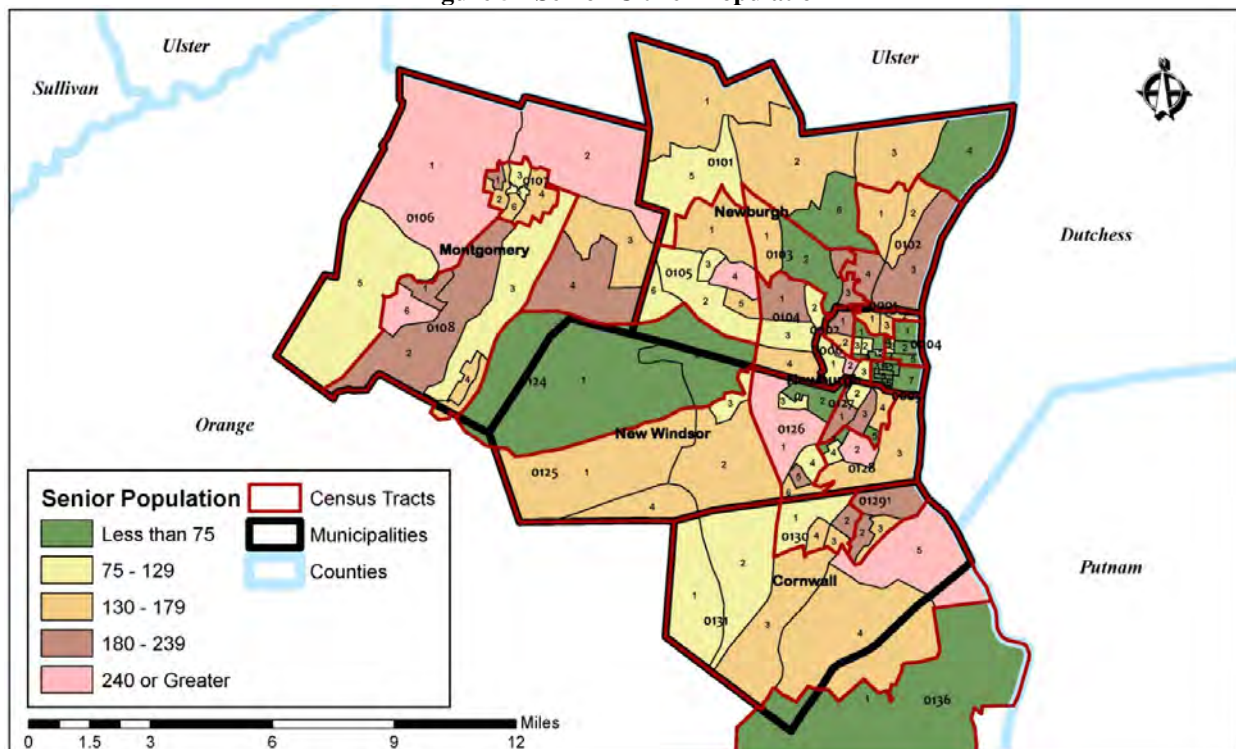


Figure 6 details the senior citizen population as a percent of the total population within the study area. The highest percentage of seniors citizens (22 percent or higher) exist in Census Tract 6, Block Group 2 (City of Newburgh); Census Tract 127, Block Group 3 and Census Tract 128, Block Group 2 (both located in the Town of New Windsor); and Census Tract 130, Block Group 2 and Census Tract 131, Block Group 5 (both in the Town of Cornwall). Figure 7 presents the population density of senior citizens within the Newburgh study area and details that the highest density of seniors (2,500 seniors per square mile) exists within the City of Newburgh in Census Tract 3, Block Group 5. Other areas of relatively high densities of senior citizen residents (1,500 seniors per square mile) also exist within the City’s boundaries in Census Tract 4, Block Group 3 and Census Tract 6, Block Group 2.

Figure 6 - Percent Senior Citizen Population

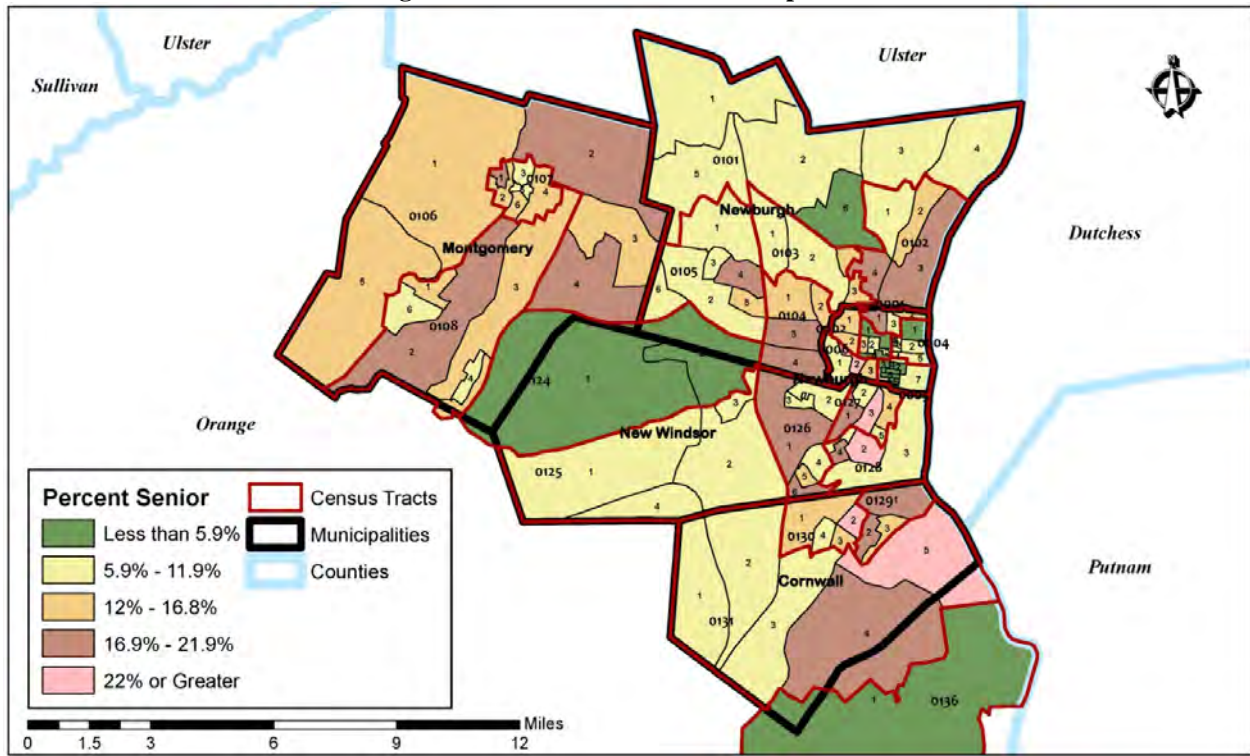
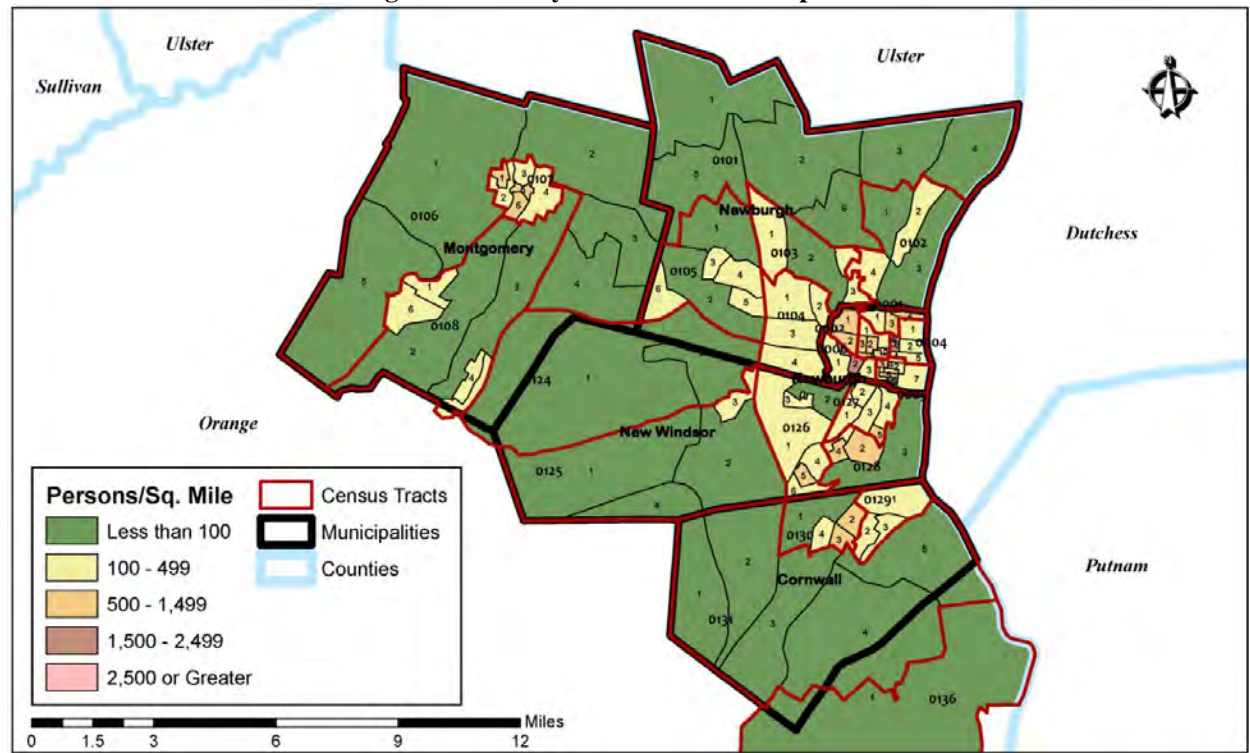


Figure 7 - Density of Senior Citizen Population



Youth Population - The youth population is considered another potential captive group for transit usage. Until the age of 16, younger residents are not eligible to drive, making them dependent on other people, public transportation or non-motorized modes of transportation for their mobility needs. Upon turning 16, limited incomes often restrict their ability to own and maintain a vehicle. For this study, youths are considered to be any person under the age of 18. Within the study area, there are 32,117 residents under the age of 18 (2000 U.S. Census), representing nearly 29 percent of the total population. Orange County has 98,863 youths, which is 29 percent of the County’s total population. Table 5 presents the youth population, the percent of the total population that are youths and the density of youths for each municipality in the study area.

Table 5 - Youth Population

Location	Youth Population	Percent Youths	Youths/Square Mile
Cornwall (T)	3,454	28.1	122.6
Montgomery (T)	6,150	29.4	120.4
Newburgh (C)	9,369	33.2	1,960.0
Newburgh (T)	7,050	24.7	150.0
New Windsor (T)	6,094	26.7	164.5
Study Area Total	32,117	28.4	191.1
Orange County	98,863	29.0	117.9

Source: 2000 U.S. Census

Figure 8 details the total youth population within the Newburgh study area by block group. The one block group with the highest youth population exists mostly outside of the study area (Census Tract 136, Block Group 1) and is the location of the United States Military Academy at West Point. No other block group within the study area has a youth population of over 383 persons; however, when looking at the relatively high percentage of youths by municipality it can be discerned that the youth population is spread out fairly evenly across the study area.

Figure 8 - Youth Population

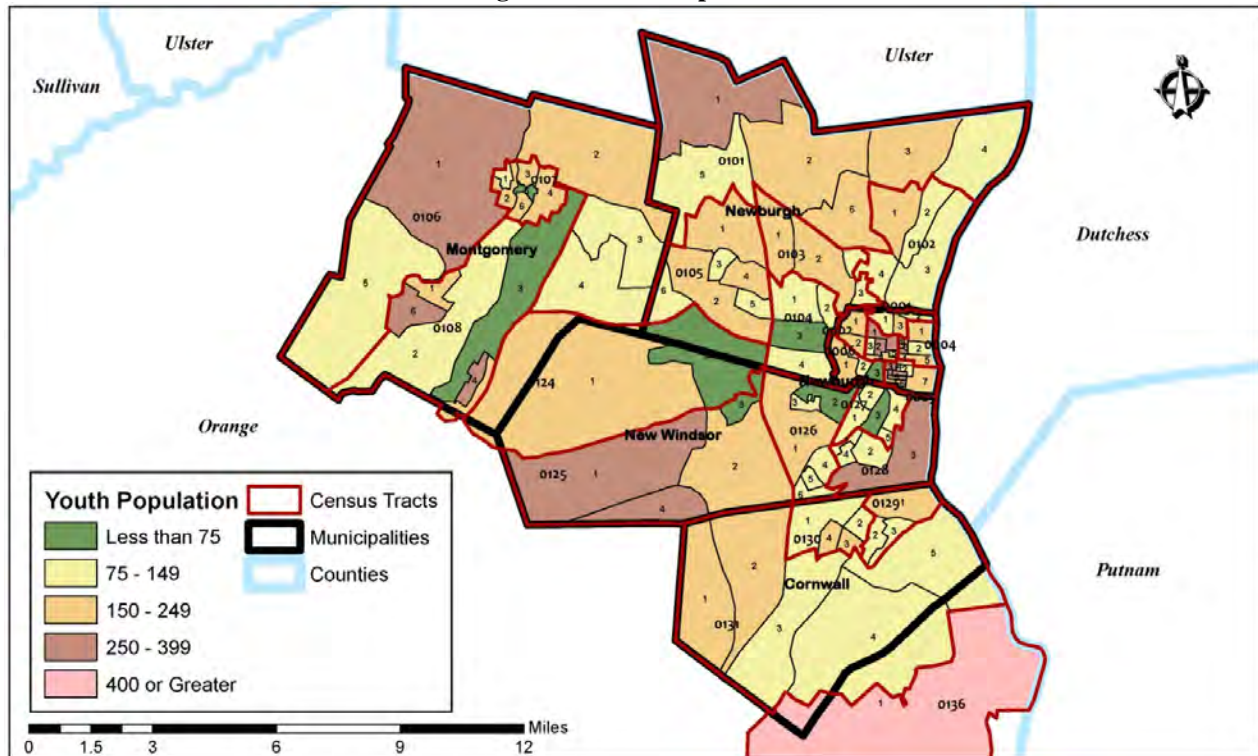


Figure 9 illustrates the youth population as a percent of the total population and demonstrates a similar finding as Figure 8. There are a few block groups where the percentage of youths is 19.2 percent or higher; however, a majority of the block groups have a youth population of between eight and 19 percent. The block groups with a high percentage of youths are: Census Tract 3, Block Group 1 (City of Newburgh); Census Tract 4, Block Groups 3 and 4 (City of Newburgh); Census Tract 5, Block Groups 1, 4 and 5 (City of Newburgh); Census Tract 124, Block Group 1 (Towns of Montgomery and New Windsor); and Census Tract 136, Block Group 1 (partly in the Town of Cornwall).

Figure 10 shows the density of the youth population within the Newburgh study area. The block groups with the highest densities of youths (over 5,000 youths per square mile) are all in the City of Newburgh and are Census Tract 4, Block Groups 3 and 4; and Census Tract 5, Block Groups 4 and 5. There are five other block groups within the City of Newburgh which have youth densities of over 2,500 youths per square mile. As the figure details, most of the study area has youth densities of under 500 persons per square mile.

Figure 9 - Percent Youth Population

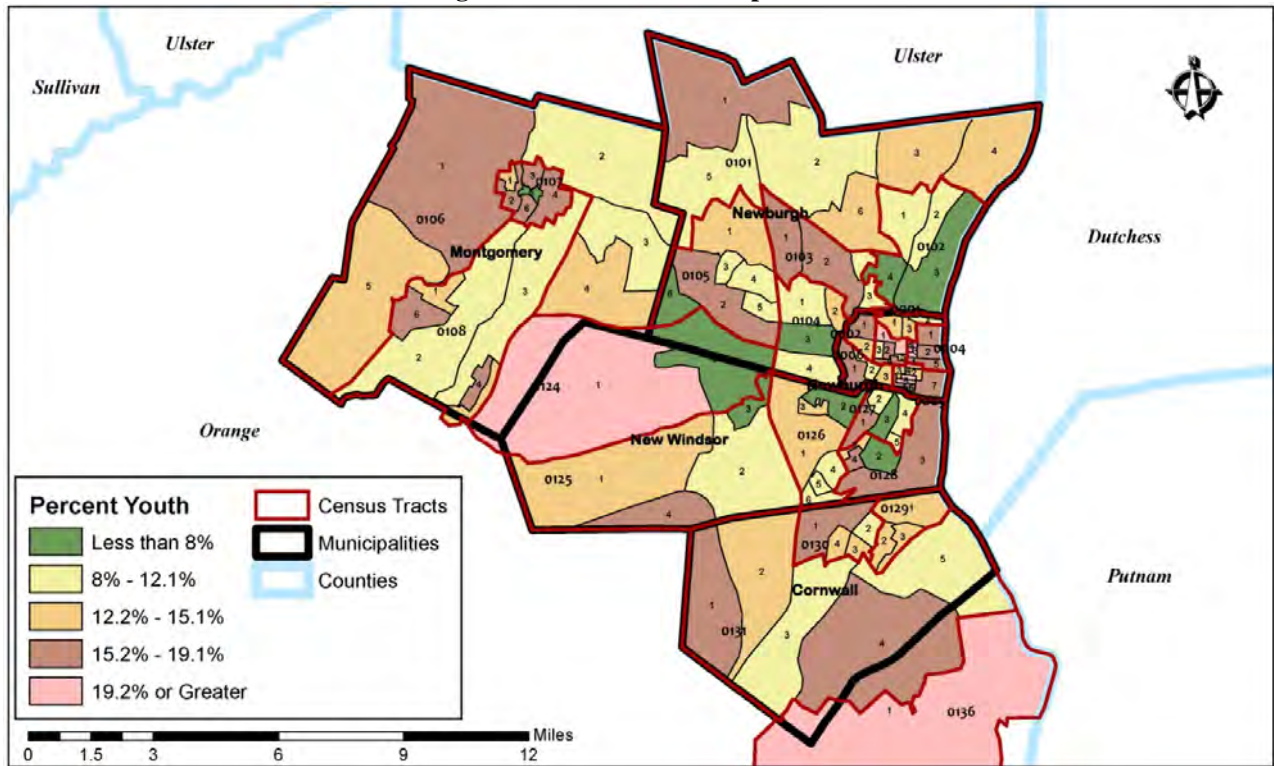
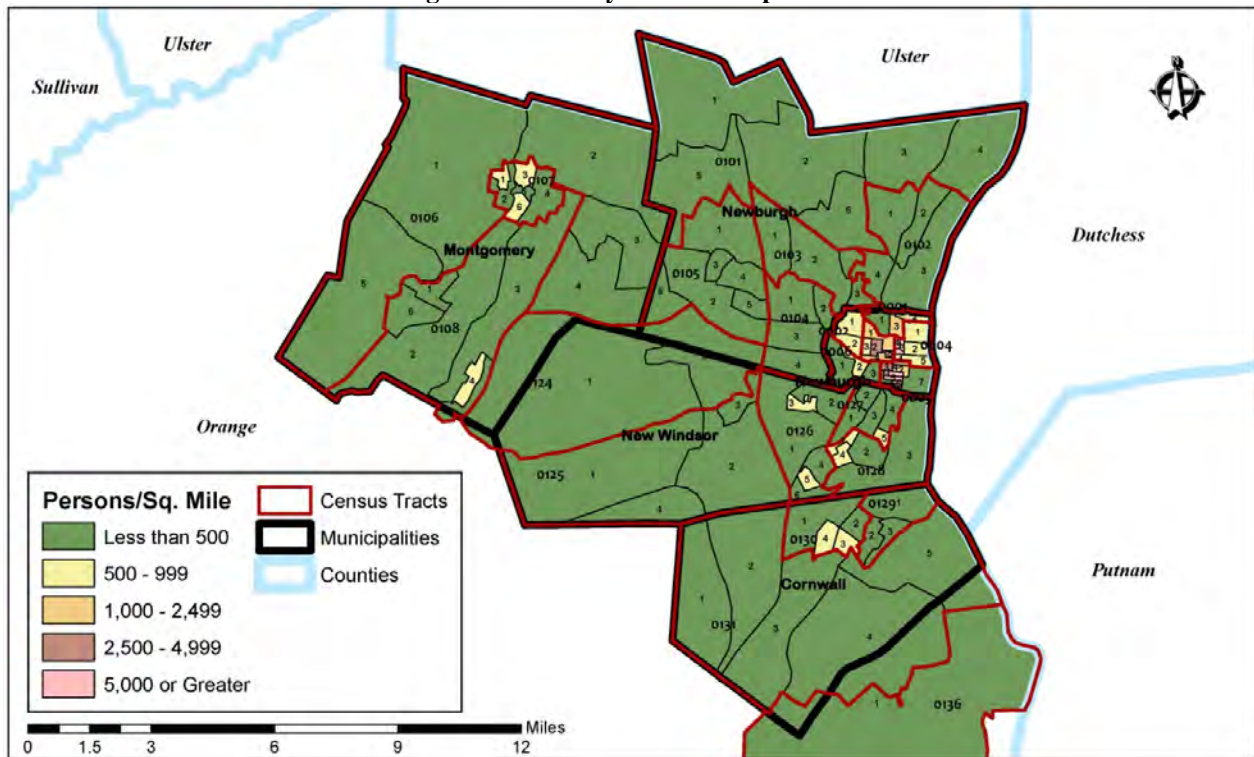


Figure 10 - Density of Youth Population



Disabled Population - People with disabilities are another segment of the population that is more likely to depend on public transportation, as some of them - for a variety of reasons - are not able to drive an automobile. Disabilities are far ranging in impact from work-related disabilities to mental disabilities to mobility disabilities. When analyzing disabilities for this study, all disabilities were considered together and are presented as a whole. Based on the 2000 U.S. Census, there are 35,527 persons with a reported disability within the Newburgh area, which represents nearly one third of the area's total population. For comparison, Orange County has a total of 100,532 persons with disabilities, which represents over 29 percent of the total Orange County population. Table 6 provides the disabled population data by municipality.

Table 6 - Disabled Population

Location	Disabled Population	Percent Disabled	Disabled Persons/ Square Mile
Cornwall (T)	2,806	22.8	99.6
Montgomery (T)	6,317	30.2	123.7
Newburgh (C)	12,313	43.6	2,575.9
Newburgh (T)	7,475	26.2	159.1
New Windsor (T)	6,616	28.9	178.6
Study Area Total	35,527	31.5	211.4
Orange County	100,532	29.4	119.9

Source: 2000 U.S. Census

Figure 11 displays the total population of disabled persons by block group within the study area. There are five block groups that have over 631 residents who have some sort of disability. These block groups are: Census Tract 3, Block Group 4 (City of Newburgh); Census Tract 5, Block Group 3 (City of Newburgh); Census Tract 6, Block Group 2 (City of Newburgh); Census Tract 125, Block Group 2 (Town of New Windsor); and Census Tract 128, Block Group 3 (Town of New Windsor).

Figure 12 illustrates the Newburgh Study Area's disabled population as a percent of its total population. There are ten block groups that have 51.4 percent or more of their population inflicted with a disability. The block groups with such populations in the City of Newburgh are: Census Tract 3, Block Group 4; Census Tract 4, Block Groups 2 and 5; Census Tract 5, Block Groups 2, 3 and 7; and Census Tract 6, Block Groups 2 and 3. The two other block groups that have high percentages of disabled persons are Census Tract 105, Block Group 3 (Town of Newburgh and Census Tract 107, Block Group 1 (Town of Montgomery) within the Village of Walden.

Figure 11 - Disabled Population

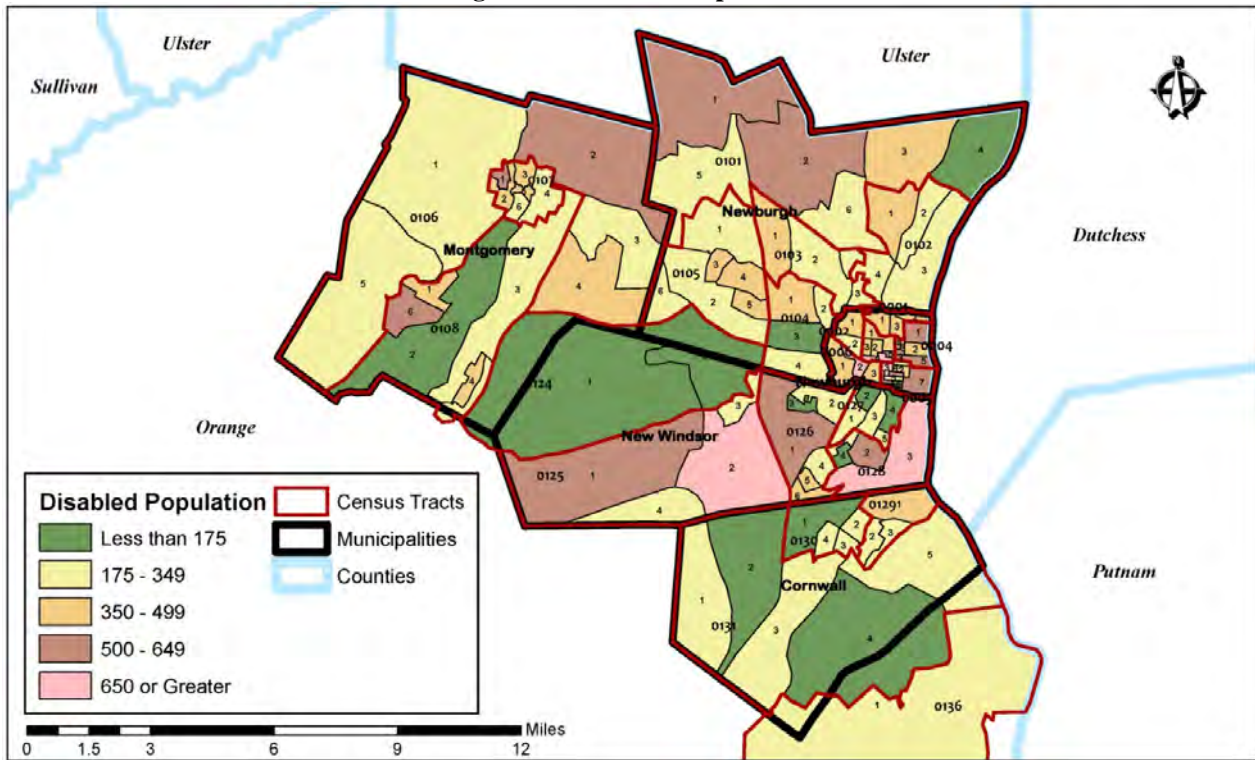


Figure 12 - Percent Disabled Population

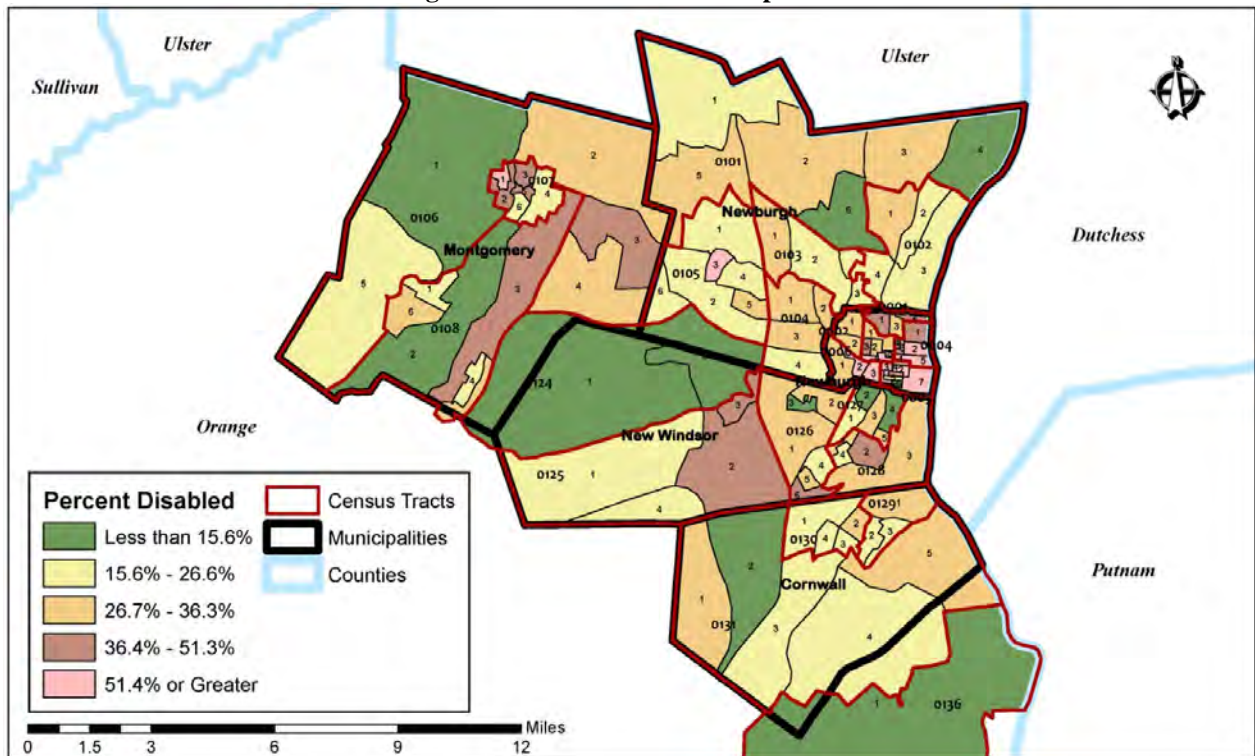
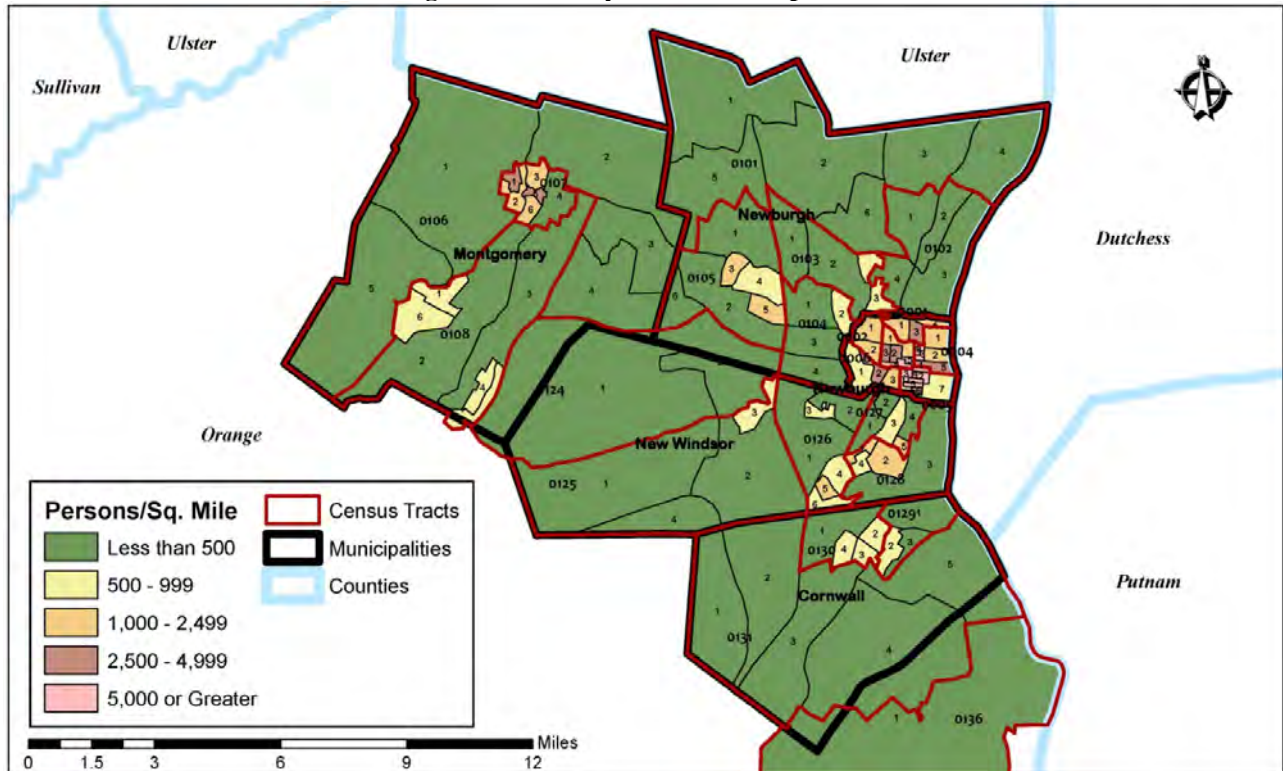


Figure 13 displays the disabled person's population density. All of the census block groups within the City of Newburgh, with the exception of two, have disabled person densities of above 1,000 persons per square mile. Nine of the block groups within the City of Newburgh have disabled persons densities of above 5,000 persons per square mile: Census Tract 3, Block Groups 4 and 5; Census Tract 4, Block Groups 3 and 4; and Census Tract 5, Block Groups 1, 2, 3, 4 and 5.

Figure 13 - Density of Disabled Population



Median Household Income - Income often times determines the type of transportation that people are able to use to get to and from work and for their other travel needs. People with lower incomes generally are more likely to be in need of public transportation options. Median household income describes the median income of households within the study area by block group. For purposes of this report, a household represents one occupied housing unit as measured by the 2000 U.S. Census. In the Newburgh Study Area there are 39,203 households.

The 2000 U.S. Census reported that the median household income for the Newburgh study area was \$50,084, which is just below the median household income of \$52,058 that was reported for Orange County. These numbers, along with the median household incomes for each of the five municipalities within the study area are shown in Table 7. The table shows that the median household incomes vary greatly throughout the study area.

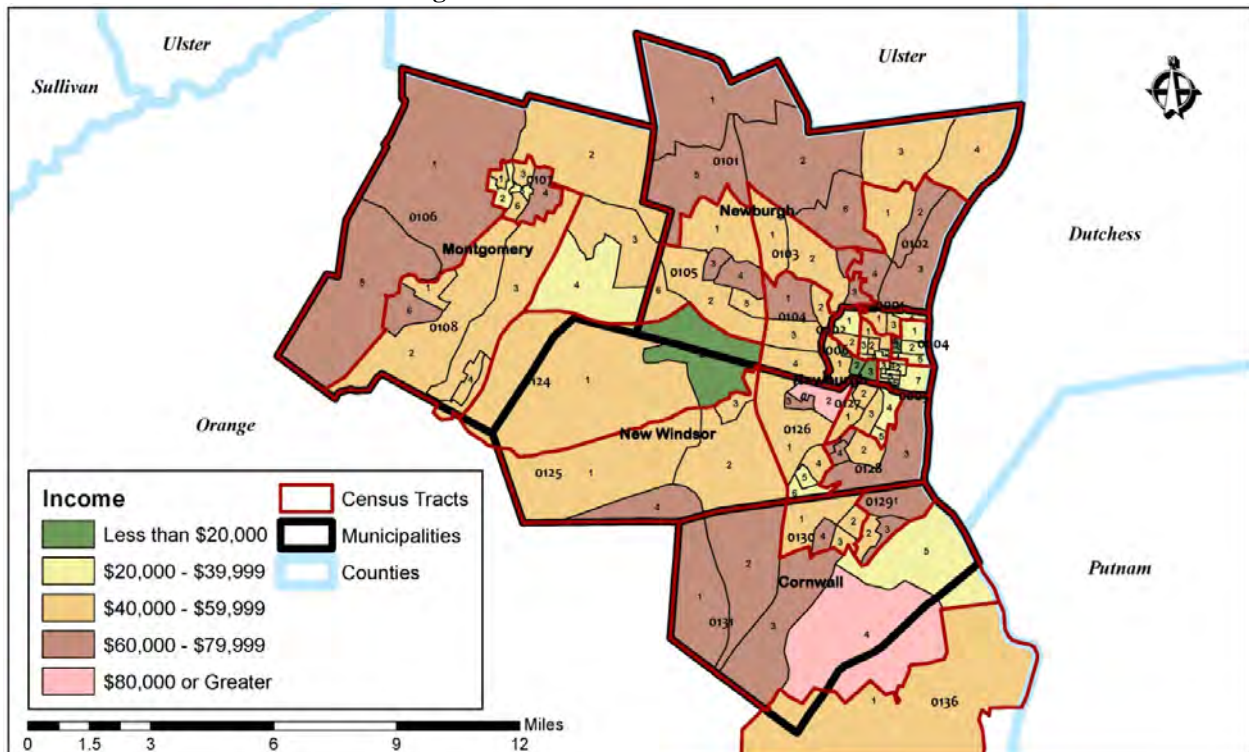
Table 7 - Median Household Income

Location	Households	Median Household Income
Cornwall (T)	4,625	\$59,537
Montgomery (T)	7,273	\$49,422
Newburgh (C)	9,144	\$30,332
Newburgh (T)	9,765	\$60,017
New Windsor (T)	8,396	\$51,113
Study Area Total	39,203	\$50,084
Orange County	114,788	\$52,058

Source: 2000 U.S. Census

Figure 14 presents the median household income by census block group for the Newburgh study area. A majority of the City of Newburgh census block groups have a median household income of below \$40,000, with four of the block groups having a median household income of below \$20,000: Census Tract 4, Block Groups 3 and 4; and Census Tract 6, Block Groups 2 and 3. There is one block group outside of the City of Newburgh that has a median household income of below \$20,000, Census Tract 124, Block Group 2, which is split between the Town of Newburgh and the Town of New Windsor, and which contains Stewart International Airport.

Figure 14 - Median Household Income



Poverty Population - Individuals with low incomes are not as likely to own automobiles and thus have fewer mobility options than people with higher incomes. The average income of an area's population is closely related to the potential transit demand in that area. The 2000 U.S. Census reported that there were 11,563 persons at or below the poverty line within the study area, which equates to over ten percent of the area's population. Orange County has 34,672 persons at or below the poverty line, which is also over ten percent of the county's population. The City of Newburgh had over 7,000 people at or below the poverty line, which is nearly a quarter of the city's population. Table 8 details the poverty status of the study area at the municipal level.

Table 8 - Population at or Below Poverty

Location	Poverty Population	Percent in Poverty	Density of Poverty
Cornwall (T)	661	5.0	21.7
Montgomery (T)	1,584	7.6	31.0
Newburgh (C)	7,020	24.8	1,468.6
Newburgh (T)	1,022	3.6	21.7
New Windsor (T)	1,326	5.8	35.8
Study Area Total	11,563	10.2	68.8
Orange County	34,672	10.2	41.4

Source: 2000 U.S. Census

Figure 15 details the poverty population in the study area by block group. As the figure shows, a majority of the persons living in poverty are located within the City of Newburgh. The block groups with the highest numbers of persons living in poverty are all in the city: Census Tract 4, Block Groups 3 and 4; and Census Tract 5, Block Groups 3, 4, 5 and 6. No block group outside of the city has over 250 persons living under the poverty line.

Figure 16 illustrates the poverty population as it relates to the total population of the study area. Once again, the block groups with the highest percentage of people living in poverty are all within the borders of the City of Newburgh. These block groups have a percent of poverty that is greater than 32.1 percent and are: Census Tract 4, Block Groups 2, 3 and 4; Census Tract 5, Block Groups 1, 2, 5 and 6; and Census Tract 6, Block Group 3.

Figure 17 shows the density of the poverty population across the Newburgh area. As the figure shows, the majority of the study area has less than 500 persons per square mile who are at or below the poverty line. The highest densities of poverty are located within the City of Newburgh in: Census Tract 3, Block Group 5; Census Tract 4, Block Groups 3 and 4; and Census Tract 5, Block Groups 1, 3, 4, 5 and 6.

Figure 15 - Population at or Below Poverty

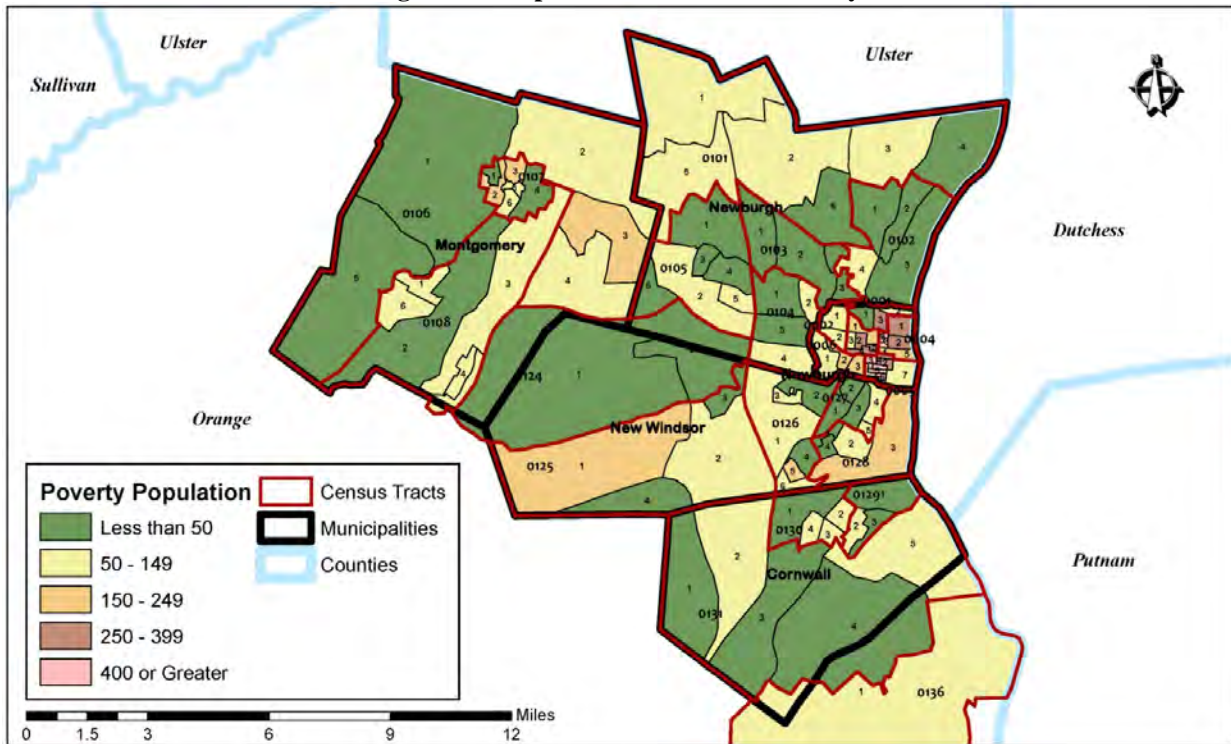


Figure 16 - Percent of Population at or Below Poverty

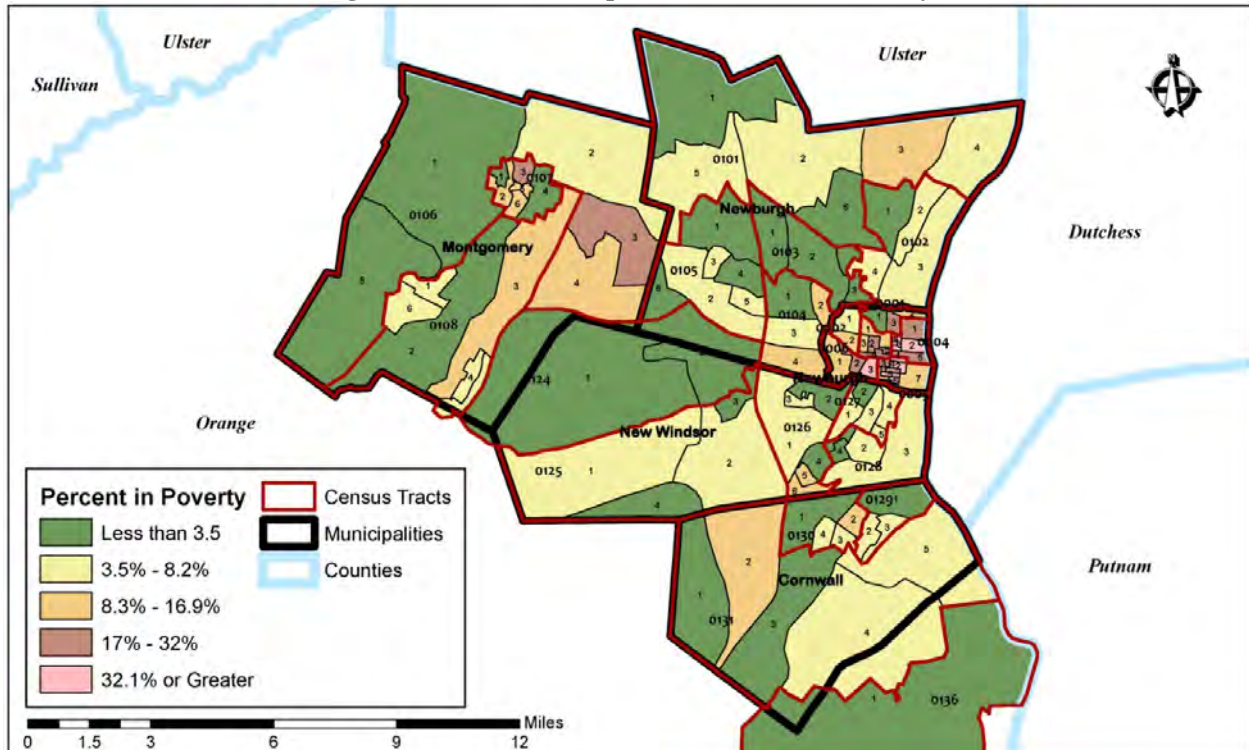
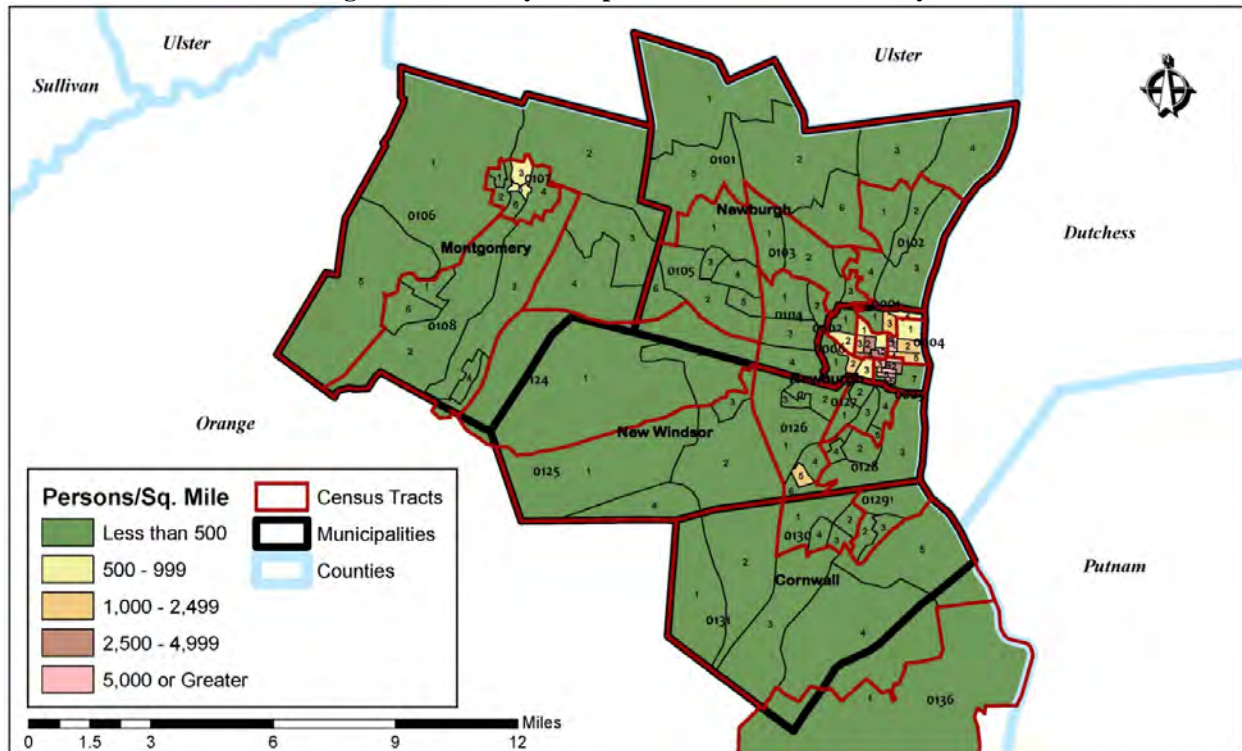


Figure 17 - Density of Population at or Below Poverty



Zero-Car Households - Automobile ownership is a key variable in transit analysis since many persons who do not have access to a vehicle are more dependent on public transportation as a mobility option. The availability of automobiles is a good indication of how “captive” a household is to transit. Zero-car households are considered to be entirely dependent upon alternative transportation modes, including an often heavy reliance on public transportation. An unusual situation in the City of Newburgh is a relatively high use of taxicabs. People can travel anywhere in the City for a flat \$5.00 fare. This accounts for the number of taxicabs in the City and their high utilization.

The Newburgh study area has 39,203 households, 4,851 of which do not have an available automobile, which equals 12.4 percent of the area’s population. In contrast, 10.6 percent of Orange County’s households do not have a vehicle at their disposal. Table 9 details the zero-car households by municipality. Not surprisingly, the City of Newburgh accounts for nearly two-thirds of zero-car households within the study area and just over a quarter of all of the zero-car households within the county. These statistics alone dictate the need for transit service in the City of Newburgh.

Table 9 - Zero-Car Households

Location	Zero-Car Households	Percent Zero-Car Households	Density of Zero-Car Households
Cornwall (T)	280	6.1	9.9
Montgomery (T)	508	7.0	9.9
Newburgh (C)	3,045	33.3	637.0
Newburgh (T)	384	3.9	8.2
New Windsor (T)	634	7.6	17.1
Study Area Total	4,851	12.4	28.9
Orange County	12,149	10.6	14.5

Source: 2000 U.S. Census

Figure 18 depicts the number of zero-car households by block group within the study area. As the figure confirms the data from Table 9 in that the majority of the zero-car households exist within the City of Newburgh. The highest number of zero-car households exists in Census Tract 5, Block Group 3 and Census Tract 6, Block Group 2. Both of these block groups have over 200 households with no access to a vehicle. The only block groups outside of the city limits that has over 100 households with no available automobile is Census Tract 107, Block Group 5, which is located in the Village of Walden.

Figure 18 - Zero-Car Households

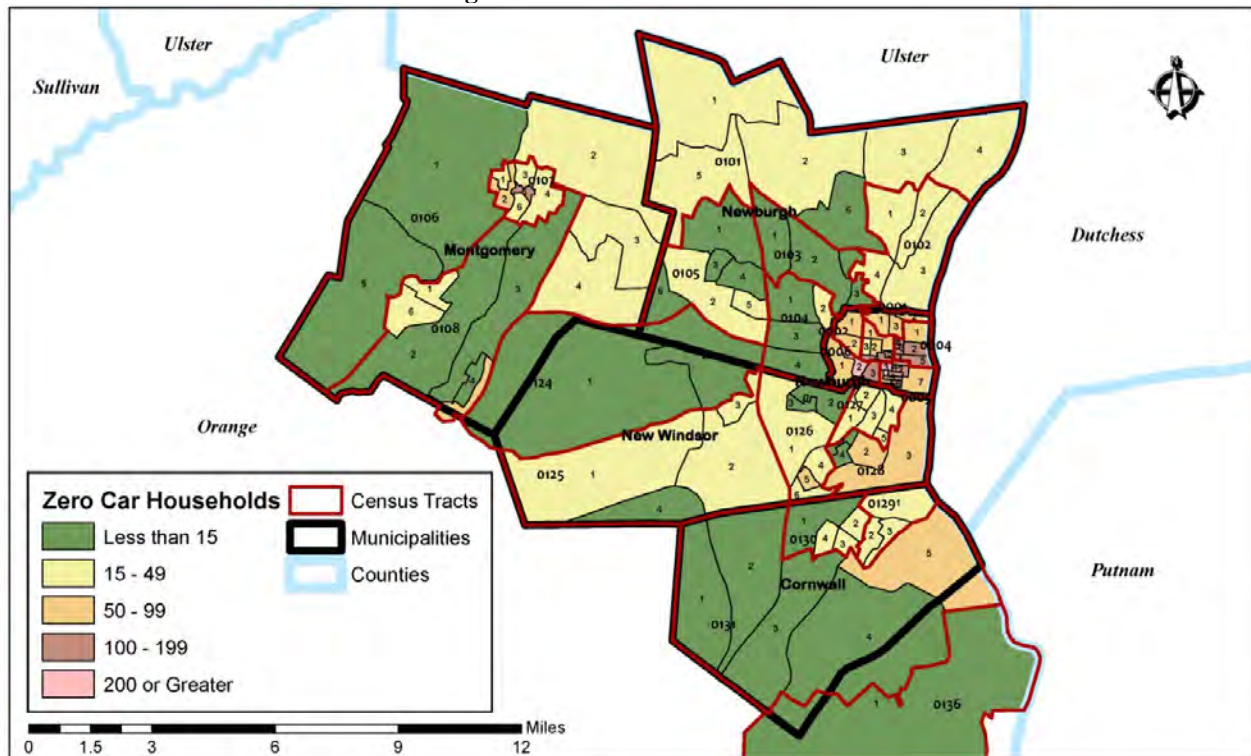


Figure 19 displays the percentage of the total number of households in a block group that do not have an available vehicle. The block groups with the highest percentage of zero-car households (31.6 percent or greater) are all in the City of Newburgh. These block groups are: Census Tract 3, Block Groups 4 and 5; Census Tract 4, Block Groups 2, 3, 4 and 5; Census Tract 5, Block Groups 1 through 6; and Census Tract 6, Block Groups 2 and 3.

Figure 19 - Percent Zero-Car Households

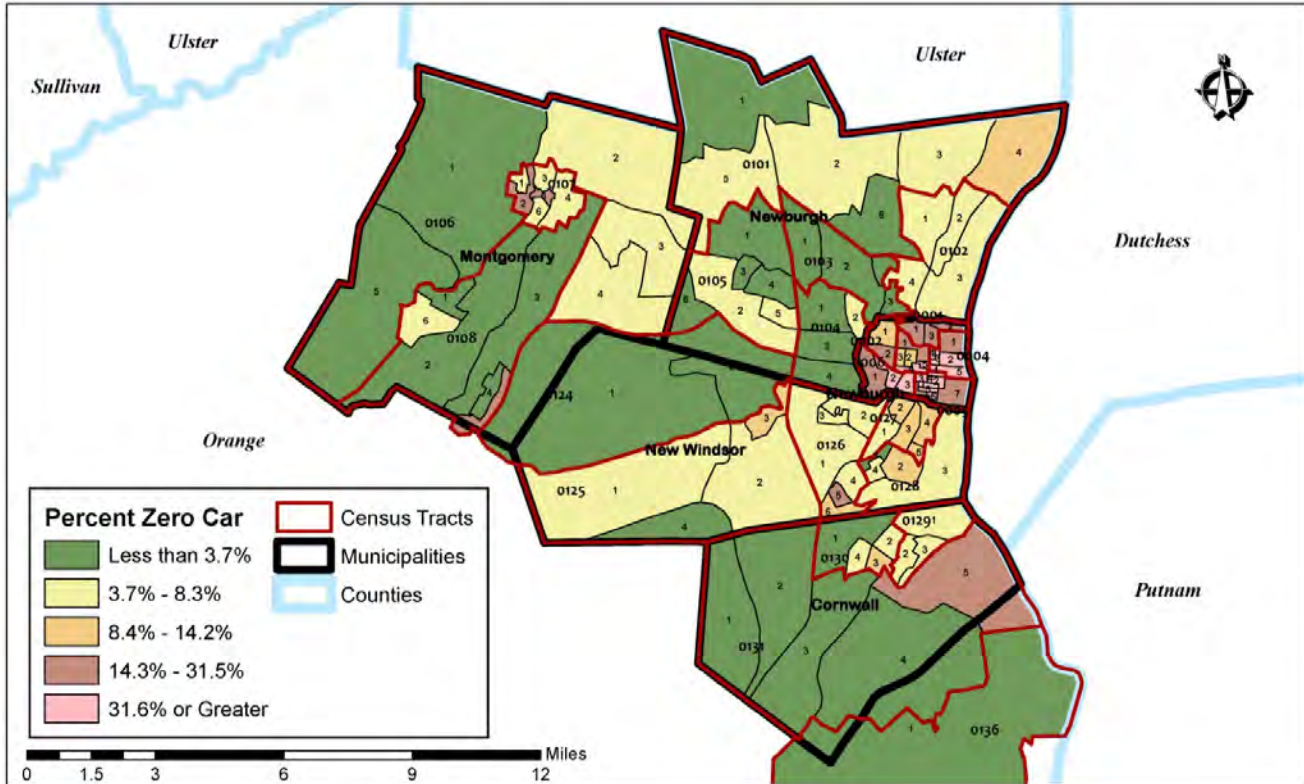
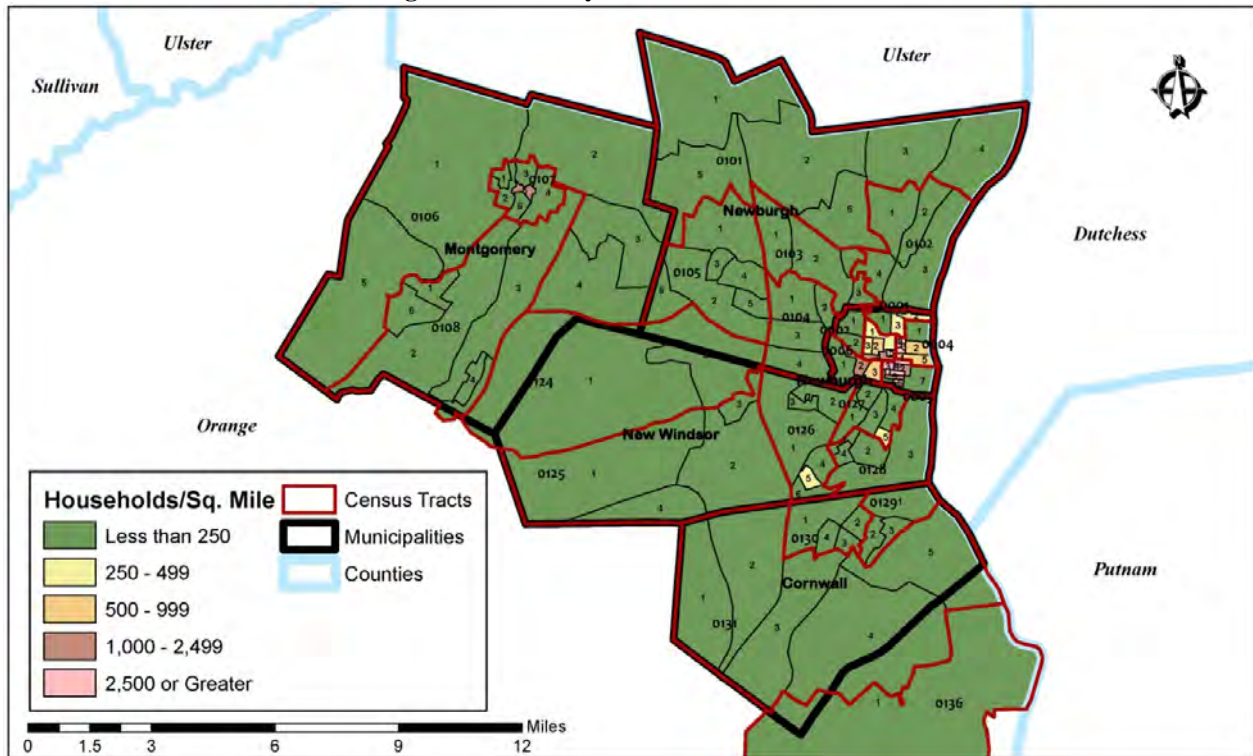


Figure 20 shows the density of zero-car households within the study area and with only three exceptions, all of the block groups that have over 250 households per square mile that have no access to an automobile exist within the City of Newburgh. Census Tract 3, Block Group 5; Census Tract 4, Block Groups 3 and 4; and Census Tract 5, Block Groups 1, 3, 4 and 6 all have zero-car densities of 2,500 households per square mile or more. The lone block group outside of the city limits that has over 1,000 households per square mile with no available automobile is Census Tract 107, Block Group 5 within the Village of Walden.

Figure 20 - Density of Zero-Car Households



Employment and Commuting

Employment and commuting trends are key factors in transportation because the trip to and from work is the most frequent and most important trip taken by most individuals. For example, high concentrations of employment within an area indicate potential common destinations for transit use. The following section describes the labor force (i.e., number of residents who are able to work), employment (number of residents who have a job) and commuting patterns for the study area.

Labor Force and Employment - The labor force of any given area is the number of persons 16 years of age or older that are able to be employed, regardless of their current employment status. This number includes persons in the armed forces and employed and unemployed residents. The 2000 U.S. Census indicates that the Newburgh study area had 54,530 residents who were considered to be in the labor force. Of those residents, 2,964 were unemployed, meaning the unemployment rate was 5.4 percent. The City of Newburgh has the highest unemployment rate among the municipalities in the study area with 11.3 percent of the city's population being unemployed. In comparison, Orange County had a labor force of 252,668 residents, of which 8,202 were unemployed; meaning just over three percent of the county's population was unemployed. Table 10 provides the labor force data by municipality.

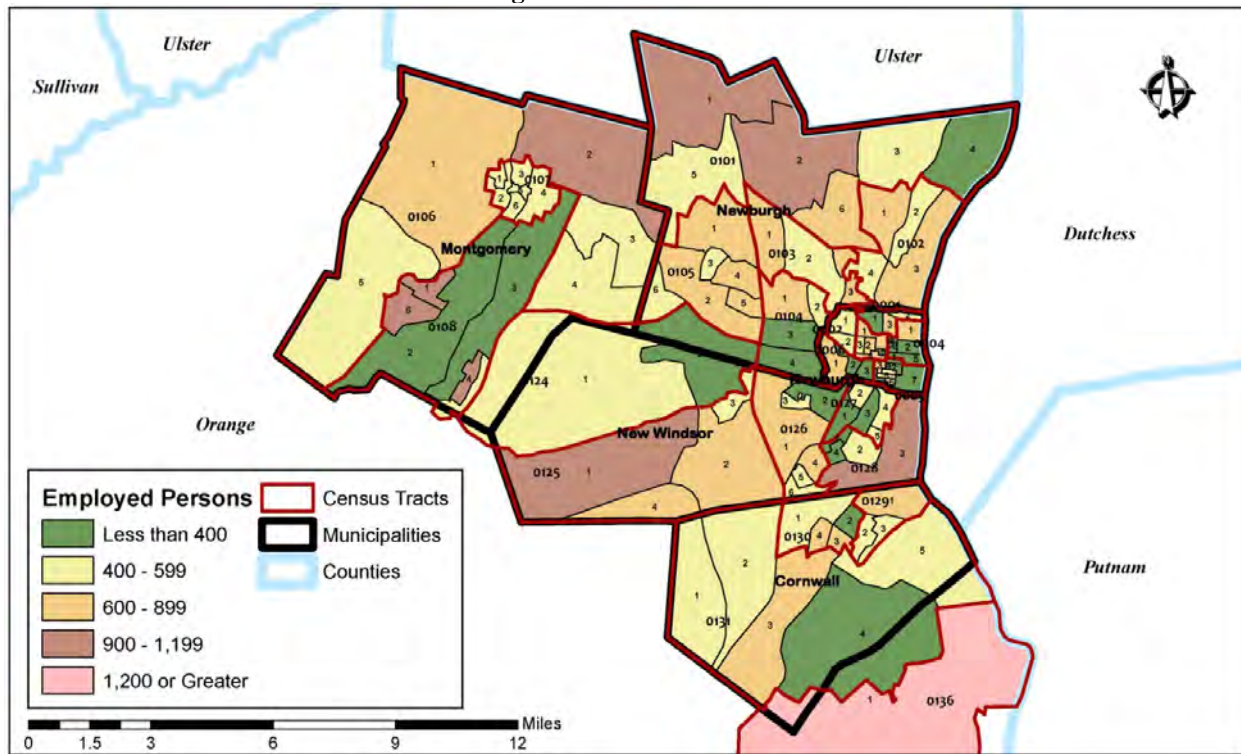
Table 10 - Labor Force

Location	Labor Force	Density of Labor Force	Employed Residents	Unemployed Residents	Percent Unemployed
Cornwall (T)	6,205	220.3	5,998	207	3.3
Montgomery (T)	10,432	204.2	9,988	444	4.3
Newburgh (C)	11,938	2,497.5	10,589	1,349	11.3
Newburgh (T)	14,254	303.3	13,773	481	3.4
New Windsor (T)	11,701	315.9	11,218	483	4.1
Study Area Total	54,530	324.5	51,566	2,964	5.4
Orange County	164,858	196.6	156,656	8,202	3.3

Source: 2000 U.S. Census

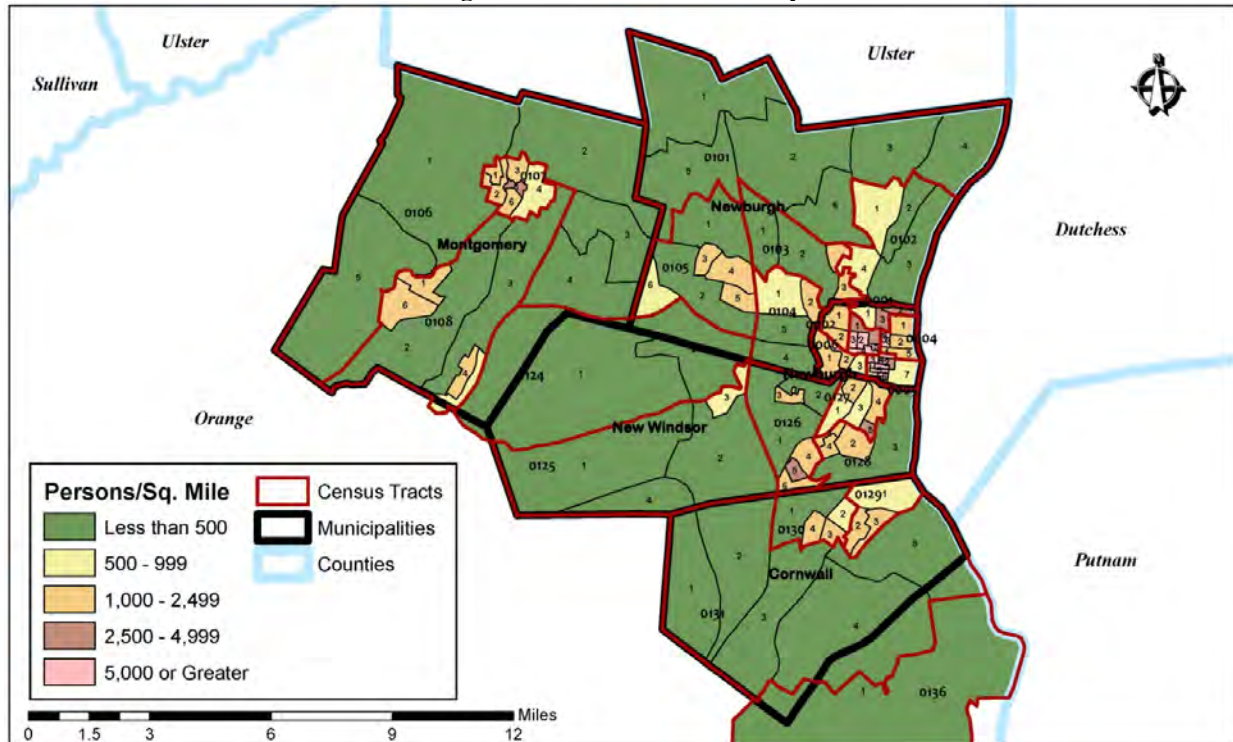
Figure 21 details the labor force by block group within the study area. The figure shows that the labor force is spread out across the entire study area. The largest populations of labor force exist (with the exception of Census Tract 136, which is mostly outside of the study area and is the location of the United States Military Academy at West Point) in Census Tract 101, Block Groups 1 and 2 (Town of Newburgh); Census Tract 106, Block Group 2 and Census Tract 108, Block Groups 1, 4 and 6 (Town of Montgomery); and Census Tract 125, Block Group 1 and Census Tract 128, Block Group 3 (Town of New Windsor).

Figure 21 - Labor Force



The density of the labor force is displayed in Figure 22 and shows that the density of the labor force is higher in proximity to the City of Newburgh and the Villages of Walden, Montgomery, Maybrook and Cornwall-on-Hudson. The highest densities of labor force by block group are located within the City of Newburgh and are located in: Census Tract 3, Block Groups 2, 3, 4 and 5; Census Tract 4, Block Groups 3 and 4; and Census Tract 5, Block Groups 1, 3, 4, 5 and 6.

Figure 22 - Labor Force Density



The employed residents of the Newburgh study area perform a variety of jobs which are detailed in Table 11. The “Service” category includes jobs such as public administrators, teachers and the arts. The “Professional & Sales” category includes jobs such as management, administrative, financial and real estate. The “Production and Transport” category includes jobs such as manufacturing, construction and transportation. The “Agriculture” category includes farming, fishing and mining.

Table 11 - Labor Force Occupations

Location	Service	Professional & Sales	Production & Transport	Agriculture	Armed Forces	Unemployed	Total
Cornwall (T)	2,802	1,814	1,329	27	26	207	6,205
Montgomery (T)	4,067	3,189	2,554	141	37	444	10,432
Newburgh (C)	4,300	3,128	3,052	67	42	1,349	11,938
Newburgh (T)	6,238	4,192	3,240	61	42	481	14,254
New Windsor (T)	4,903	3,577	2,247	110	381	483	11,701
Study Area Total	22,310	15,900	12,422	406	528	2,964	54,530
Orange County	67,590	47,826	34,782	1,546	4,912	8,202	164,858

Source: 2000 U.S. Census

Figure 23 displays the Newburgh study area's employment population by block group. The highest populations of employed persons are located in: Census Tract 101, Block Group 1 (Town of Newburgh); Census Tract 108, Block Groups 4 and 6 (Town of Montgomery); Census Tract 125, Block Group 1 and Census Tract 128, Block Group 3 (Town of New Windsor); and Census Tract 136, Block Group 1 (Partially in the Town of Cornwall).

Figure 23 - Employed Population

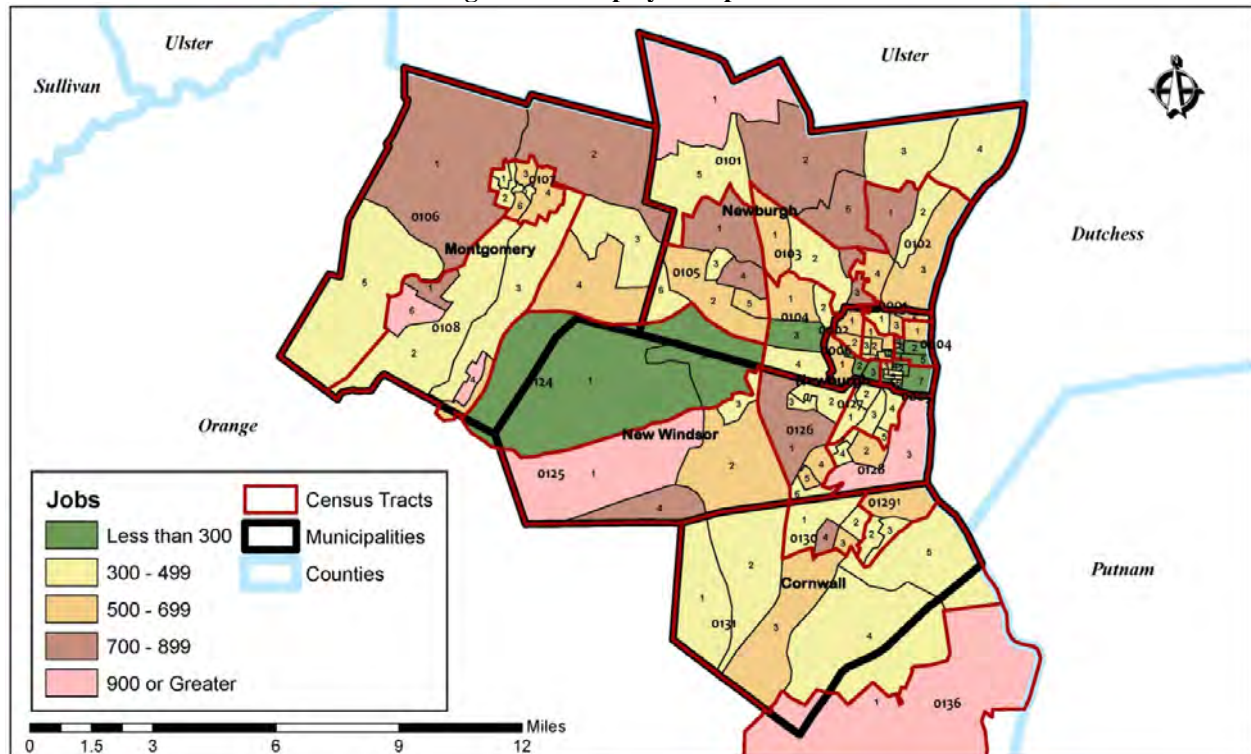
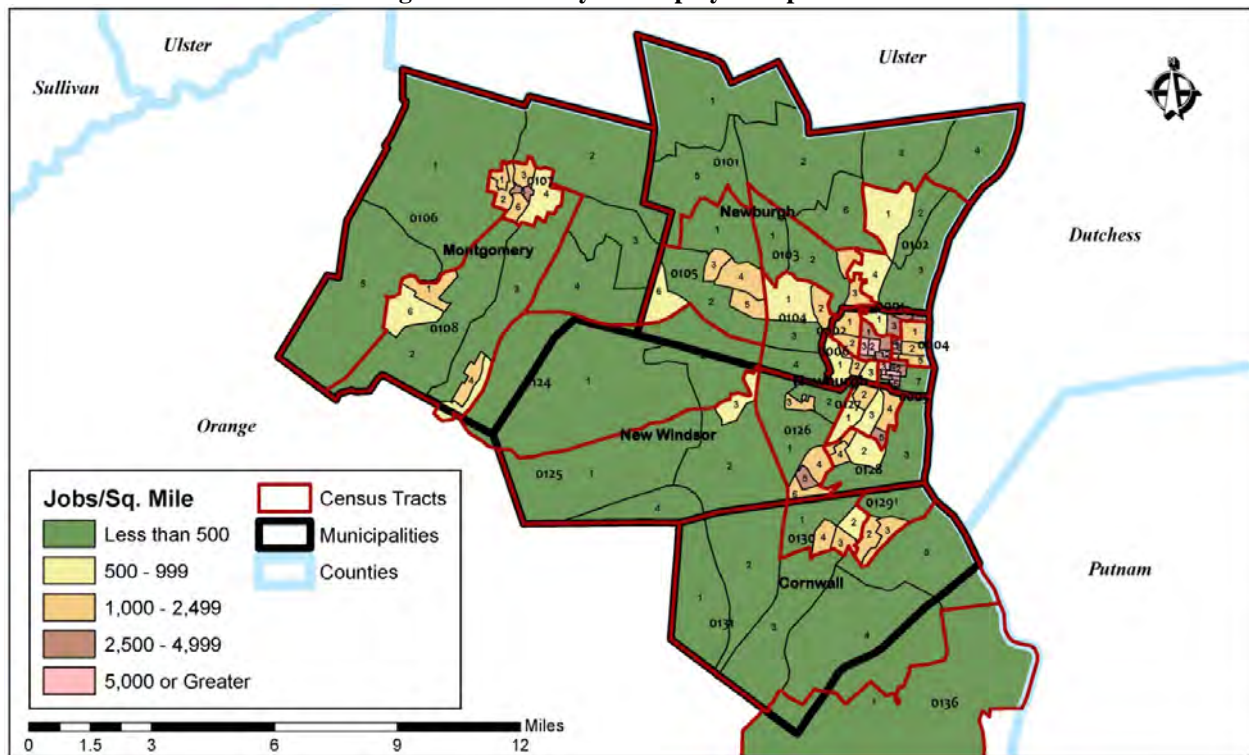


Figure 24 illustrates the density of the employed population within the study area and shows similar results as the density of the labor force. Once again, the block groups with the highest densities of employed persons exist within the City of Newburgh, while other high

density areas of employed residents exist in and around the Villages of Walden, Montgomery, Maybrook and Cornwall-on-Hudson. The Block Groups with the highest density of employed residents are: Census Tract 3, Block Groups 2, 3 and 5; Census Tract 4, Block Group 4; and Census Tract 5, Block Groups 3, 4, 5 and 6.

Figure 24 - Density of Employed Population



The 2000 U.S. Census journey to work data provides the residence locations of all Newburgh study area employees (those people who work in the area, who may or may not live in the area). These statistics can be used to calculate the total number of jobs in the study area. Table 12 presents this data by municipality and the Town of Newburgh has the largest job population.

Table 12 - Number of Jobs

Work Location	Jobs
Cornwall (T)	2,899
Montgomery (T)	7,882
Newburgh (C)	12,677
Newburgh (T)	13,315
New Windsor (T)	7,912
Study Area Total	44,685
Orange County	127,659

Source: 2000 U.S. Census

Commuting - The 2000 U.S. Census provides considerable information on mode to work, including persons who use public transportation. These statistics are important because people who use transit services for their work commutes are more likely to use the service for other purposes as well. The Newburgh study area has a total of 49,457 residents who commute to work. Of those travelers, an overwhelming majority drives alone or use carpools (Table 13). This table details the various modes that residents employ to accomplish their commutes by municipality.

Table 13 - Mode of Travel

Location	Auto	Transit			Taxi	Other	Total
		Bus/Other	Railroad	Total			
Cornwall (T)	5,343	60	140	200	2	160	5,705
Montgomery (T)	9,067	59	192	251	6	310	9,634
Newburgh (C)	8,241	237	159	396	418	1,019	10,074
Newburgh (T)	12,738	56	303	359	43	112	13,252
New Windsor (T)	10,104	158	214	372	57	259	10,792
Study Area Total	45,493	570	1,008	1,578	526	1,860	49,457
Orange County	133,644	3,300	2,875	6,175	1,028	7,557	148,404

Source: 2000 U.S. Census

Commuting to work via the railroad is the most prevalent transit mode used by the municipalities within the study area, with the exception of the City of Newburgh, where more transit commuting employees use a bus. Of interest to note is the number of residents who live in the City of Newburgh who use a taxi for their daily commute, which is more than the total number of transit users for the City. When considering that the City of Newburgh has the highest levels of zero car households and realizing that more people are choosing to pay a higher taxi fare than a relatively inexpensive transit trip, this figure suggests that an improved bus system is needed to better serve the residents of the City.

Figure 25 illustrates the total number of residential transit users (persons who commute via bus, railroad and ferry) throughout the Newburgh Study area. Transit use is minimal within the study area, with only three block groups having more than 60 residents who rely on transit to get to and from work. Within the City of Newburgh Census Tract 3, Block Group 4 and Census Tract 5, Block Group 3 have the highest number of residents who commute by transit. Outside of the City, only Census Tract 125, Block Group 2, in the Town of New Windsor has more than 60 persons commuting via transit.

Figure 25 - Residential Transit Commuting Population

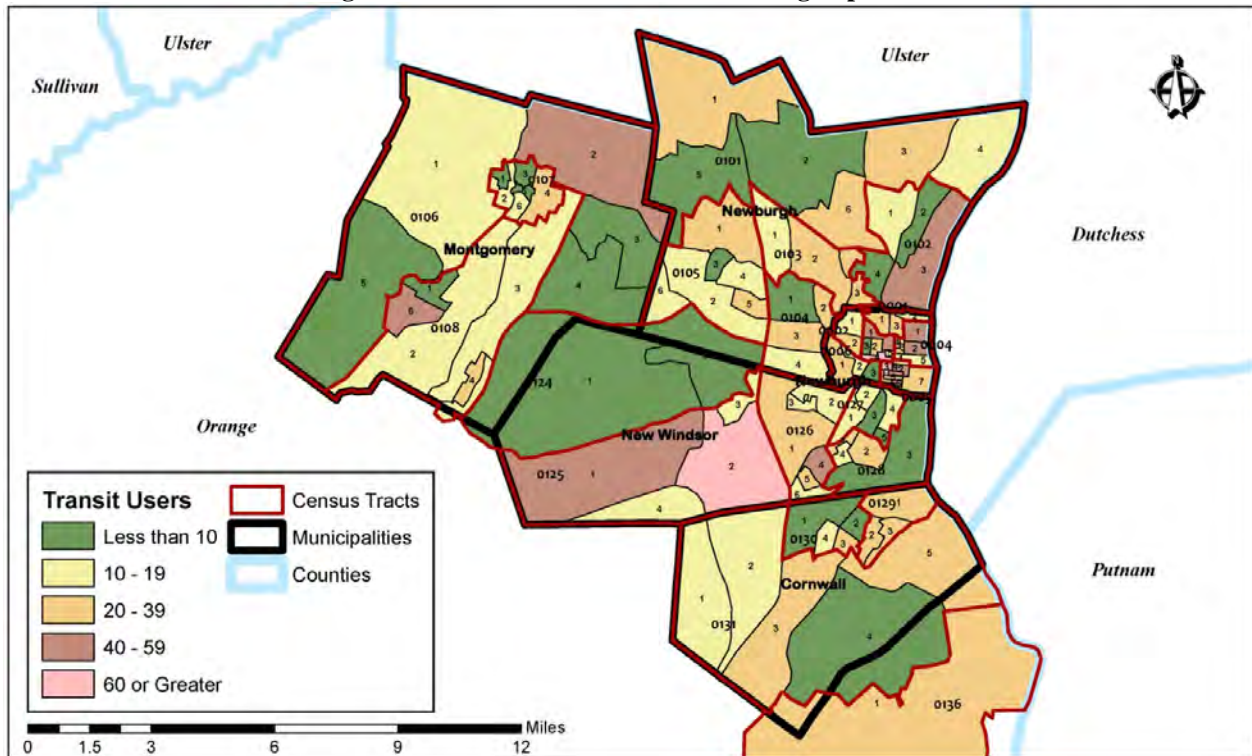


Figure 26 on the following page examines the percent of the total residential population that commutes via transit. The largest percentage of transit commuters by block group reside within the city limits, with one exception: Census Tract 125, Block Group 2. The block groups within the City that have the highest percentage of transit commuters are: Census Tract 1, Block Group 1; Census Tract 3, Block Groups 4 and 5; Census Tract 4, Block Group 2; and Census Tract 5, Block Groups 2, 3 and 4.

Figure 27 displays the density of residential transit commuters by block group and shows that the highest densities of transit commuters all exist with the City of Newburgh. Census Tract 3, Block Group 5 and Census Tract 5, Block Groups 3, 4 and 6 all have transit commuting densities of over 750 persons per square mile.

Figure 26 - Percentage of Residential Transit Commuters

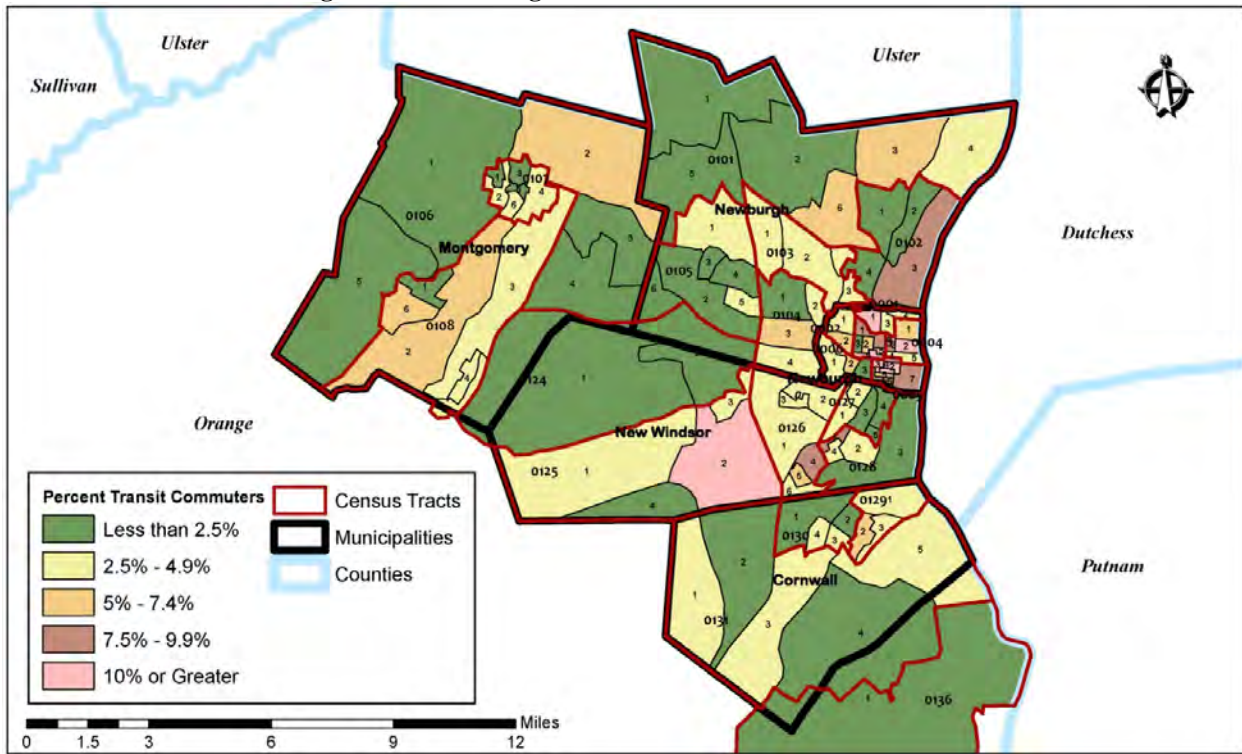
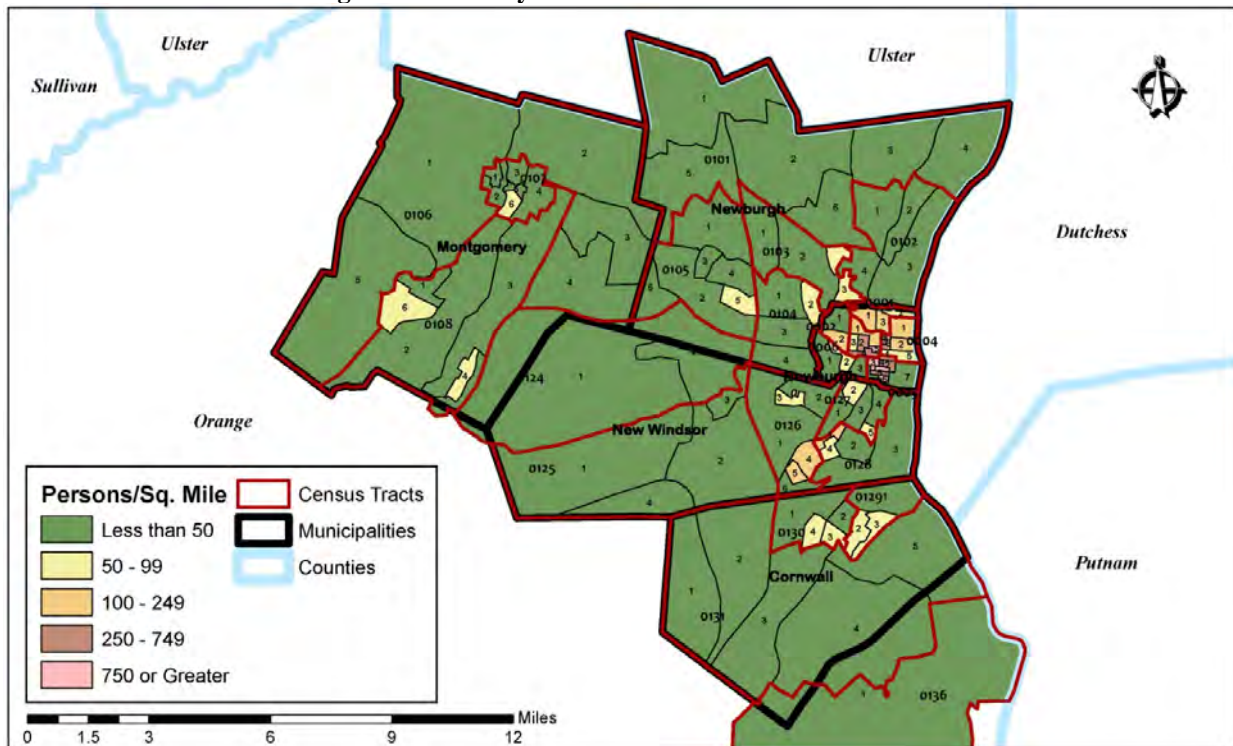


Figure 27 - Density of Residential Transit Commuters



Another way to look at the commuting trends of an area is to examine the change in mode choice over a period of time. To accomplish this, the 2000 U.S. Census data for commuting mode choice is compared with the 1990 U.S. Census data. Table 14 examines the percent of the residential commuting populations in the study area in terms of auto use (auto driver and auto passenger) and transit use and how these populations have changed over a decade. The table shows that transit use has experienced a minimal growth over the ten year period; however, its growth has been outpaced by the growth in auto usage over the same time period.

Table 14 - Residential Commuting Mode Split Trends

Location	Percent Transit			Percent Auto		
	1990	2000	Percent Change	1990	2000	Percent Change
Cornwall (T)	3.3	3.4	0.1	92.6	93.6	1.0
Montgomery (T)	1.9	2.5	0.6	92.9	94.1	1.3
Newburgh (C)	3.8	3.9	0.1	79.4	81.8	2.4
Newburgh (T)	2.2	2.6	0.4	95.3	96.1	0.8
New Windsor (T)	3.5	3.4	-0.1	93.6	93.6	--
Study Area Total	2.9	3.2	0.3	90.8	92.0	1.2
Orange County	3.9	4.2	0.3	89.8	90.5	0.7

Source: 2000 U.S. Census

Additionally, the 2000 U.S. Census provides journey to work data by residence and work locations. This data provides information on where Newburgh study area residents are traveling to work and also where people employed within the Newburgh study area are commuting from. Table 15 presents this data which focuses on the top five work destinations of Newburgh area residents and top five employee resident locations. The table shows that a majority of the commuting patterns from the Newburgh study area start and end their commute in Orange County.

Table 15 - Commuting Patterns

Residents Commuting to:	Number of Persons	Employees Commuting from:	Number of Persons
Within Orange County	32,873	Within Orange County	32,873
Dutchess County	3,747	Ulster County	5,118
New York City (Five Boroughs)	2,847	Dutchess County	2,525
Westchester County	2,253	Sullivan County	936
Rockland County	2,231	Westchester County	521

Source: 2000 U.S. Census

Tables 16 through 20 detail the commuting patterns for each municipality within the Newburgh study area by showing the top five destinations from each, respectively. All locations are within Orange County unless otherwise noted. As Table 16 shows, a majority of the Cornwall commuters remain within the town. The most common commuter pattern for each of the municipalities is for the resident/employee to remain within his or her respective

municipality. The majority of the other top five commuting patterns for each municipality remain within the Newburgh Study Area, regardless of commuting direction. In fact, only two other locations - Manhattan and the Town of Shawangunk (Ulster County) - appear in any of top five lists for residents commuting to a location or employees commuting from a location.

Table 16 - Town of Cornwall Commuting Patterns

Residents Commuting to:	Persons	Employees Commuting from:	Persons
Within Town of Cornwall	997	Within Town of Cornwall	997
Town of New Windsor	546	Town of New Windsor	287
Town of Highlands	449	Town of Newburgh	272
City of Newburgh	408	City of Newburgh	175
Town of Newburgh	339	Town of Woodbury	131

Source: 2000 U.S. Census

Table 17 - Town of Montgomery Commuting Patterns

Residents Commuting to:	Persons	Employees Commuting from:	Persons
Within Town of Montgomery	2,563	Within Town of Montgomery	2,563
Town of Newburgh	939	Town of Newburgh	451
City of Newburgh	613	Town of Shawangunk (Ulster)	440
Town of Wallkill	550	City of Newburgh	369
Town of New Windsor	417	Town of Wallkill	347

Source: 2000 U.S. Census

Table 18 - City of Newburgh Commuting Patterns

Residents Commuting to:	Persons	Employees Commuting from:	Persons
Within City of Newburgh	3,526	Within City of Newburgh	3,526
Town of Newburgh	1,434	Town of Newburgh	1,868
Town of New Windsor	1,105	Town of New Windsor	1,363
Town of Highlands	386	Town of Montgomery	613
Town of Montgomery	369	Town of Cornwall	408

Source: 2000 U.S. Census

Table 19 - Town of Newburgh Commuting Patterns

Residents Commuting to:	Persons	Employees Commuting from:	Persons
Within Town of Newburgh	3,317	Within Town of Newburgh	3,317
City of Newburgh	1,868	City of Newburgh	1,434
Town of New Windsor	993	Town of New Windsor	1,244
Borough of Manhattan	590	Town of Montgomery	939
Town of Montgomery	451	Town of Shawangunk (Ulster)	389

Source: 2000 U.S. Census

Table 20 - Town of New Windsor Commuting Patterns

Residents Commuting to:	# of Persons	Employees Commuting from:	# of Persons
Within Town of New Windsor	1,942	Within Town of New Windsor	1,942
City of Newburgh	1,363	City of Newburgh	1,105
Town of Newburgh	1,244	Town of Newburgh	993
Town of Highlands	689	Town of Cornwall	546
Manhattan Borough (New York Co.)	620	Town of Montgomery	417

Source: 2000 U.S. Census

While a majority of the residents living in the Newburgh study area remain in the area for their respective jobs, there are a number of residents who commute to one of the five boroughs that make up New York City. Table 21 illustrates this commuting trend by municipality and for the study area as a whole. The table also details the mode of transportation that this residential commuting population employs.

Table 21 - Newburgh Study Area to New York City Commuting Trends

Location	Auto	Percent	Transit				Other	Total
			Bus/Other	Rail	Total	Percent		
Cornwall (T)	316	64.0	50	124	174	35.2	4	494
Montgomery (T)	315	60.6	18	187	205	39.4	0	520
Newburgh (C)	155	49.2	30	130	160	50.8	0	315
Newburgh (T)	590	63.4	39	297	336	36.2	4	930
New Windsor (T)	620	66.0	105	215	320	34.0	0	940
Study Area Total	1,996	62.4	242	953	1,195	37.4	8	3,199
Orange County	9,275	65.3	2,199	2,605	4,804	33.8	121	14,200

Source: 2000 U.S. Census

The table shows that, with the exception of the City of Newburgh, over 60 percent of each municipality's commuting population who travel to New York City get there by a personal automobile (either their own or in a carpool), while the remaining residents who travel to New York City for their job mainly use the available rail services. On the other hand, a slim majority of the City of Newburgh residents who travel to New York City for work use one form of transit or another as opposed to driving. As noted earlier, the City of Newburgh has the highest levels of zero-car households in the study area, which helps explain this situation.

Transit Needs Assessment

This section presents an overview of the likelihood of transit use and a composite measure of transit need. An assessment of transit need was performed to identify those areas with the greatest need and potential demand for public transportation. It should be recognized that the needs index is based on residences; however, there are other factors that influence travel needs. This could include industrial and commercial parcels that generate travel. Nonetheless,

residents of the Newburgh study area represent potential markets for any new or revised transit service.

Over two dozen variables were used to rate each census block group in terms of transit potential. These variables included both the rate and aggregate measures of transit need. Rates, such as percentage of senior citizens of the total population and density of senior citizens are useful in understanding the composition of an area. Aggregate measures, such as the total senior citizen population, indicate the absolute potential for travel in general and transit trip making in particular.

The variables used to analyze transit need for the service area were: population; population density; senior citizen population (65 years of age and older) in terms of number, percent and density; youth population (18 years of age and younger) in terms of number, percent and density; disabled population in terms of number, percent and density; poverty population in terms of number, percent and density; median household income; labor force and labor force density; employed residents and employed residents density; transit commuters in terms of number, percent and density; and zero car households in terms of number, percent and density.

For all variables, higher values are indicative of greater need and likelihood of transit use. For example, a block group with a higher senior citizen density or a high number of zero car households exhibits greater mobility need and a propensity for transit use. In this analysis, a standardized score has been used to combine the different variables. With this approach for each variable, the block group with the lowest value is assigned a score of zero, while the block group with the highest value is assigned a value of 100. The other areas are computed by interpolating between maximum and minimum values. These scores can then be added for the 25 variables as shown in Figure 28, where the highest possible score would be 2,500.

A majority of the Newburgh study area has a relatively low transit score. The City of Newburgh is the one location that has the highest transit needs in the area based on the needs methodology used, with 14 of the top 15 transit need scores within the City boundaries. The results by municipality within the Newburgh study area are shown in Table 22.

Figure 28 - Transit Need Score

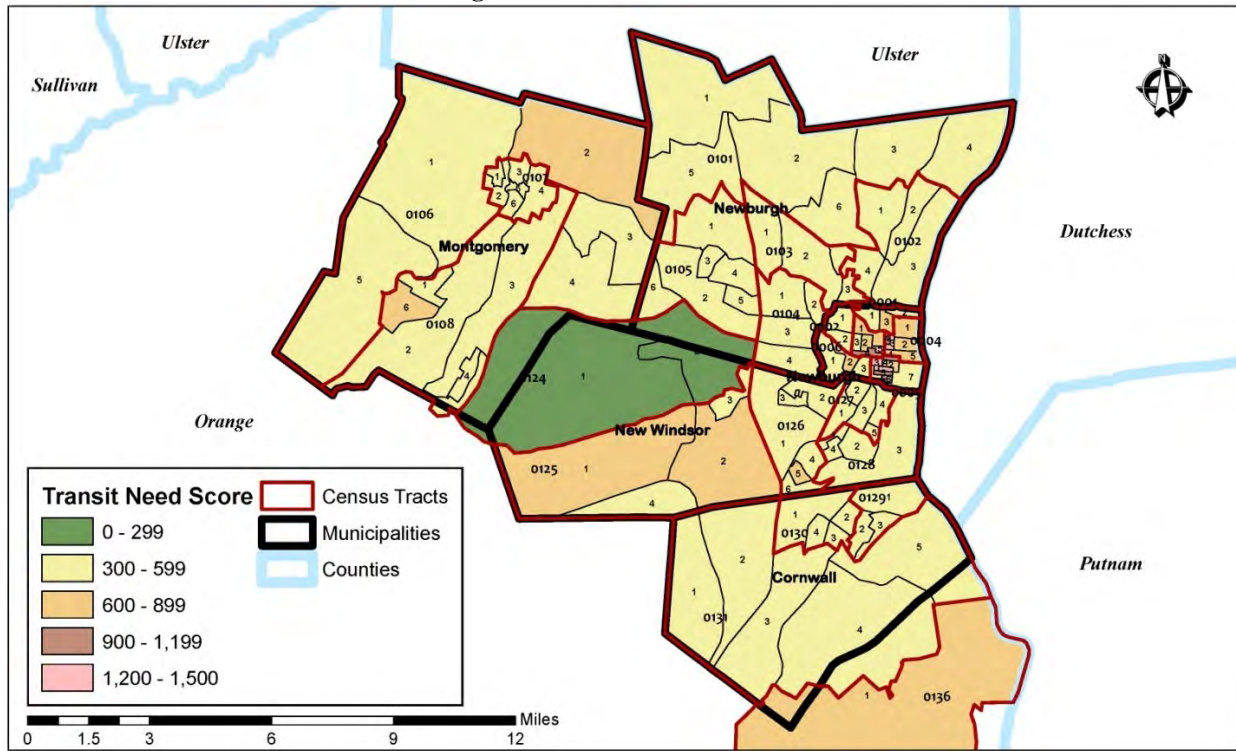


Table 22 –Municipal Transit Needs Score

Location	Transit Need Score	Percent Difference
Cornwall (T)	470	-13.8
Montgomery (T)	487	-10.6
Newburgh (C)	834	153.0
Newburgh (T)	419	-23.1
New Windsor (T)	435	-20.2
<i>Study Area</i>	545	--

Major Generators

Within the Newburgh study area there are a number of major generators that include residential, commercial and industrial uses. There are a few employers who employ 250 persons or more within the study area. These companies are described in Table 23. A majority of the larger employers within the study area are located in the City of Newburgh and along the Route 17K corridor near Stewart International Airport in the Town of Newburgh.

Table 23 - Major Employers

Employer	Specialization	Employees	Municipality
St. Luke's Cornwall Hospital	Healthcare/Hospice	1,700	Newburgh (C)
AHRC	Developmental Disabilities Assistance	750	Newburgh (C)
C&S Wholesale Grocers, Inc.	Food Distribution	600	Newburgh (T)
Mid-Hudson Processing & Distribution	Mail Distribution	550	Newburgh (T)
Mount Saint Mary College	Education	429	Newburgh (C)
Verla International LTD	Cosmetics Manufacturing	400	New Windsor (T)
Staples	Office Supply Distribution	400	Montgomery (T)
Epicor/CRS Retail Systems, Inc.	Software Manufacturing	320	Newburgh (T)
Newburgh Auto Auction	Auto Auction	300	Newburgh (T)
Cardinal Health	Medical Equipment Distribution	300	Montgomery (T)
Keybank N.A.	Banking	280	Newburgh (C)
Maser Consulting	Engineering	250	Newburgh (T)
Contract Packaging Services, Inc.	Manufacturing, Packaging & Labeling	250	Cornwall (T)

Tables 24 through Table 29 present other types of major generators that may attract trips and warrant transit service.

Table 24 - Shopping Centers

Shopping Center	Municipality
Newburgh Mall (65 Stores)	Newburgh (T)
Mid-Valley Mall	Newburgh (T)
WalMart	Newburgh (T)

Table 25 - Hospitals and Health Facilities

Facility	Beds	Municipality
St. Luke's Cornwall Hospital - Newburgh Campus	242	Newburgh (C)
St. Luke's Cornwall Hospital - Cornwall Campus	125	Cornwall (T)

Table 26 - Universities and Colleges

University/College	Students	Municipality
Mount Saint Mary College	2,600	Newburgh (C)
SUNY Orange, Newburgh Campus	1,000	Newburgh (C)

Table 27 - Retirement/Senior Citizen Living Centers

Facility	Beds	Municipality
Elant at Newburgh, Inc.	190	Newburgh (T)
Burton Towers	125	Newburgh (C)
The Evergreens	124	Maybrook (V)
Montgomery Nursing Home	100	Montgomery (T)
Hudson Pointe	90	Newburgh (C)
Montgomery Manor	86	Montgomery (T)
New Windsor Country Inn	86	New Windsor (T)
Senior Horizons of Newburgh	83	Newburgh (T)
High Pointe Apartments	82	Newburgh (C)
Visions of Newburgh	78	Newburgh (C)
Ann S. Bourne	70	Newburgh (C)
Lake Street High-Rise	66	Newburgh (C)
Joseph Fogarty Apartments	65	Newburgh (C)
Maybrook Gardens	36	Maybrook (V)
Goldsmith & Johnes Home	31	Newburgh (T)
The Cedars	27	Walden (V)
John T. Kenny	26	Newburgh (C)
Amos & Sarah Holden Home	25	Newburgh (C)
New Windsor Town House	21	New Windsor (T)

Table 28 - Social Service Agencies

Agency	Municipality
Cornwall Public Library	Cornwall (T)
Independent Living, Inc.	Newburgh (C)
Josephine-Louise Public Library	Walden (V)
Montgomery Free Library	Montgomery (T)
Newburgh Free Library	Newburgh (C)
Newburgh Housing Authority	Newburgh (C)
Newburgh Social Security Office	Newburgh (C)
Orange County Department of Motor Vehicles	Newburgh (C)

Table 29 - Affordable Housing

Housing Complex	Municipality
Ann S. Bourne	Newburgh (C)
The Cedars	Walden (V)
John T. Kenny	Newburgh (C)
Joseph X. Mullin Apartments	Newburgh (C)
Lake Street High-Rise	Newburgh (C)

Prior Studies

There have been a few studies that have taken place over the last decade that concern the Newburgh study area. This includes studies oriented to both transportation and land use. These reports are presented in this section, along with a brief description of each.

- **Orange County Transit Improvement Study** - This study examined the existing transportation services through data analysis and market research in order to identify the changing travel needs within the county. It also outlined alternative strategies for improving transit services, estimated the cost of improvement strategies and outlined potential funding and an implementation plan.

The recommendations for improving the fixed route services offered throughout Orange County included offering a trip planner for the general public, the addition of several new bus routes (as suggested by the service providers), coordination of schedules, timed transfers between the major hubs within the county (Newburgh, Middletown and Port Jervis) and the implementation of a county-wide transit system.

- **Orange County Transportation Council Coordinated Public Transit Human Services Transportation Plan** - This plan addresses the changes to planning requirements set forth by the Safe, Accountable, Flexible and Efficient Transportation Equity Act (SAFETEA). The report was prepared in response to the federal United We Ride Initiative.
- **Unified Planning Work Program** - The UPWP describes the planning and administrative activities that will occur during a given year by the Orange County Transportation Council (OCTC). The most recent UPWP highlights the 2009-2010 program, looked at the funding outlook for the next fiscal year, and identified the upcoming activities of the OCTC, which includes the Newburgh Area Transportation & Land Use Study.
- **Orange County Comprehensive Plan: Strategies for Quality Communities** - This document is intended to serve as a guide for all county, municipal and other community leaders for decisions on land use, development and preservation. All county land acquisitions and public improvement projects must be in accordance with this Comprehensive Plan.
- **West of Hudson Regional Transit Access Study** - Metro North, in cooperation with PANYNJ, is examining extension of rail service to Stewart International Airport. The study is considering a number of rail and bus options as part of an FTA-compliant Alternatives Analysis. The study is underway.

Existing Transit Services

To provide a basis for subsequent planning activities, a review of the existing transit services - including bus, rail and ferry modes - in the Newburgh study area has been undertaken. This includes a description of the services offered by the Newburgh Beacon Bus Corporation, which provides two fixed route local services within the City of Newburgh and a fixed route commuter shuttle between Stewart International Airport, the City of Newburgh and the MTA Metro-North Rail Station in the City of Beacon. The study area's transit inventory also presents the ShortLine bus services operated by Coach USA, the New Paltz-Newburgh Route provided by Ulster County Area Transit, Adirondack Trailways' Newburgh-Poughkeepsie-Kingston-Albany-Oneonta service, and the Newburgh-Beacon Ferry operated through MTA Metro-North with a grant from NYSDOT.

In addition to these fixed route services, demand responsive services are provided within each municipality, along with a paratransit system funded by Orange County which offers corresponding service to the fixed route bus services operated by the Newburgh Beacon Bus Corporation. This chapter provides key information regarding the frequency, span of service and fare structure of the current transit services in the Newburgh study area.

This section also describes the operating and financial trends of the system as a whole, looking at a five year period between 2004 and 2008. Data acquired from the National Transit Database (NTD), including the revenue hours, revenue miles and ridership of the system, was analyzed, while passengers per hour and passengers per mile were calculated from these data. The current funding streams were examined by source for the same time period.

A route diagnostic analysis was performed on the Newburgh Beacon bus system to allow for an examination of each individual route's performance against a number of different variables. A three-variable cost model was employed to gather the unit costs per revenue hour, revenue mile and peak vehicle. The financial performance was analyzed per route, as well as the contribution to the deficit.

Lastly, the survey and outreach results of users and non users of the transit system was documented. The results of an on-board survey are presented, as well as the ride check data which was collected at the same time that the rider survey was performed. The survey results detail the trips taken by current passengers along with the patrons' rating of the system on a number of different variables. The ride checks provide a glimpse of current ridership patterns by bus stop boarding and alighting locations, as well as passenger load data throughout the operating day. In addition, the study included an outreach program which provided the views of residents, who don't use transit, on the current system and desired improvements.

Fixed Route Transit Services

This section provides a description of the fixed route transit options that serve the Newburgh study area. The inventory reflects services operated in spring 2009 and are summarized in Table 30.

Table 30 - Route Description

Route Designation	Between	And
<i>Newburgh Local Service</i>		
Northside	Mid-Valley Mall	Newburgh Mall/WalMart
Southside	Price Chopper	Newburgh Mall/WalMart
<i>Commuter Shuttle</i>		
Newburgh-Beacon Shuttle	City of Newburgh/ Stewart Airport	Beacon Station
<i>Coach USA ShortLine</i>		
Newburgh/Poughkeepsie	Rhinebeck, NY	New York, NY (PABT)
Orange County Local 2	Newburgh, NY (17K P-R)	Middletown/Monticello, NY
Orange County Local 4	Newburgh, NY (17K P-R)	Harriman/Central Valley, NY
Orange County Local 5	Newburgh, NY (17K P-R)	Bear Mountain
<i>Other Bus Services</i>		
Ulster County Area Transit	New Paltz, NY	Newburgh Mall
Adirondack Trailways	Newburgh, NY (17K P-R)	Oneonta, NY
<i>Newburgh-Beacon Ferry</i>		
Newburgh-Beacon Ferry	Newburgh, NY	Beacon, NY
<i>MTA Metro-North Rail Service</i>		
Hudson Line (Beacon Station)	New York, NY (Grand Central)	Poughkeepsie, NY
Port Jervis Line (Campbell Hall and Salisbury Mills/Cornwall Stations)	Hoboken, NJ	Port Jervis, NY

Route Description - The Newburgh Beacon Bus Corporation provides two fixed route bus services - the Northside and the Southside - which operate in the City of Newburgh and to several locations just outside of the city. Both routes operate continuously along Broadway/New York State Route 17K from Liberty Street in the City of Newburgh to the shopping destinations in the Town of Newburgh along Union Avenue/NY State Route 300 (including the Newburgh Mall and WalMart). Where the services differ is in their alignments after turning off of Broadway: the Northside route provides service to the residential areas directly to the north of Broadway and to the Mid-Valley Mall and the Shop-Rite in the Town of Newburgh, while the Southside route offers service to the residential areas south of Broadway in the City of Newburgh and the Town of New Windsor to the shopping destinations in Vails Gate (including the Big V Shopping Plaza and Price Chopper).

As mentioned previously, the Newburgh Beacon Bus Corporation also operates a commuter shuttle, the Newburgh-Beacon Shuttle, which offers service to the Beacon MTA

Metro-North rail station from Broadway in the City of Newburgh, and from the 17K Park-Ride lot and Stewart International Airport in the Town of Newburgh. This route is operated with two buses for its entire service day, with the exception of one additional bus added to the service to provide one evening peak hour trip from the Beacon rail station.

Coach USA offers four different ShortLine services within the Newburgh study area. A route that offers service between Rhinebeck, NY and the Port Authority Bus Terminal (PABT) in New York City, NY, with stops at the 17K Park-Ride lot in the Town of Newburgh and at the intersection of Broadway and Lake Street in the City of Newburgh. ShortLine offers service between Broadway and Lake Street in the City of Newburgh to Middletown, NY with the Orange County Local Route 2, providing service to the Village of Walden and to the Galleria at Crystal Run Mall in the City of Middletown. The Orange County Local Route 4 provides service between Harriman, NY and Newburgh study area, with stops in Vails Gate, Broadway and Fullerton in the City of Newburgh and the 17K Park-Ride lot in the Town of Newburgh and Woodbury Commons. The final ShortLine service is the Orange County Local Route 5, which offers service between Bear Mountain, NY and the Newburgh study area. Destinations offered by the Orange County Local Route 5 include three stops in West Point, NY, and stops in the Town Cornwall, the Town of New Windsor, the City of Newburgh at Broadway and Robinson Avenue/US Route 9W/NY State Route 32/NY State Route 218 and the Town of Newburgh at the 17K Park-Ride lot.

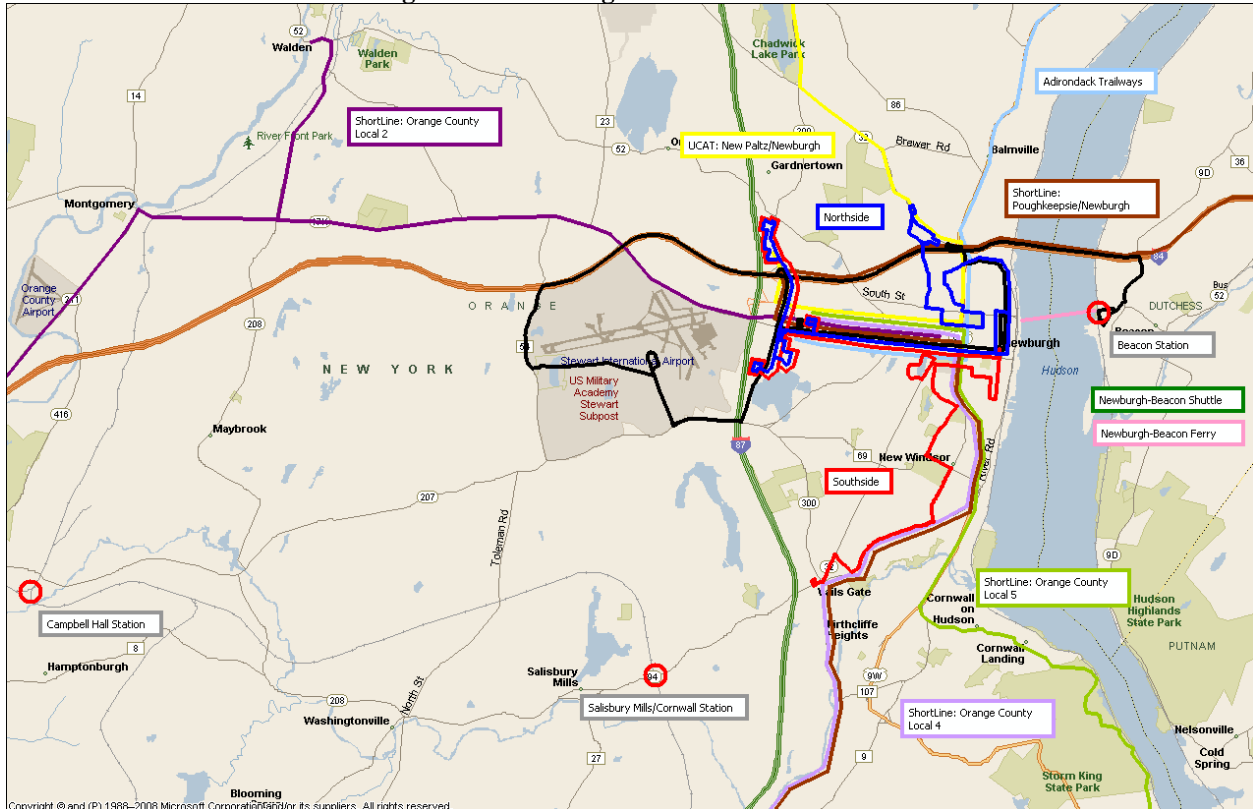
Ulster County Area Transit (UCAT) operates a route from New Paltz through the Town of Newburgh via NY State Route 32, the City of Newburgh via Broadway/NY State Route 17K and back into the Town of Newburgh offering service to the 17K Park-Ride lot and the Newburgh Mall. Other stops within the study area include the Shop-Rite and Mid-Valley Mall in the Town of Newburgh. Adirondack Trailways provides service between the 17K Park-Ride lot in the Town of Newburgh and Oneota, NY, with stops in Poughkeepsie, Kingston and Albany. Table 30 describes each of the fixed route transit services in terms of the areas that they serve.

The Newburgh-Beacon Ferry offers boat service across the Hudson River to the Beacon rail station. Currently, commuters who use this service cannot make any transit transfers to services on the Newburgh side of the river as none of the Newburgh area transit routes operate to the pier where the ferry departs.

Two rail services are operated in the vicinity of the Newburgh study area, one that offers service within and the other just outside of the study area. MTA Metro-North's Port Jervis line operates between Hoboken and Port Jervis and this line permits connections with other NJ Transit rail lines at Secaucus and with transfers into New York City via PATH or ferry in Hoboken. The stop on the Port Jervis Line that is inside the Newburgh study area is Salisbury Mills-Cornwall Station. Another stop, the Campbell Hill Station, is located just outside of the study area in Hamptonburgh, to the west of the Town of New Windsor. The Port Jervis service is operated by NJ Transit under contract to the MTA Metro-North

The Hudson Line offers service between Poughkeepsie in Dutchess County and Grand Central Terminal in New York City, with a stop at the Beacon Station. As such it offers a one-seat ride between Beacon and Manhattan. This station is accessible to Newburgh area residents by way of the Newburgh-Beacon Shuttle and ferry service, which was previously discussed in this section. Figure 29 illustrates the public transportation options available within the Newburgh study area.

Figure 29 - Newburgh Area Transit Services



In addition, the Orange County Department of Social Services (DSS) operates two shuttle routes that transport Medicaid eligible residents between home and medical/dental appointments. This service is not available to the general public and restricted to only those persons on Temporary Assistance to Needy Families (TANF).

Frequency of Service - The level of transit service within the Newburgh study area in terms of frequency varies by service type. These frequencies are presented in Table 31 by time period for weekday service and during the Noon hour for Saturday and Sunday. Since the interval between buses is not always uniform, the values presented in the exhibit should be viewed as representative for each time period and service day.

Table 31 - Frequency of Service

Route Designation	Direction	Weekday					Saturday	Sunday
		AM Peak	Midday	PM Peak	Evening	Night	Noon	Noon
<i>Newburgh Local Service</i>								
Northside	EB/NB	120	120	120	--	--	120	--
	SB/WB	120	120	120	--	--	120	--
Southside	EB/SB	120	120	120	--	--	120	--
	NB/WB	120	120	120	--	--	120	--
<i>Commuter Shuttle</i>								
Newburgh-Beacon Shuttle	EB	48	60	48	92	43	60	60
	WB	85	60	42	32	33	60	60
<i>Coach USA ShortLine</i>								
Newburgh/Poughkeepsie	SB	90	120	105	148	--	120	120
	NB	44	135	42	20	106	135	135
Orange County Local 2	EB	1 trip	125	1 trip	77	--	127	127
	WB	1 trip	125	1 trip	57	--	125	125
Orange County Local 4	SB	90	135	1 trip	148	129	135	135
	NB	1 trip	135	64	50	--	135	135
Orange County Local 5	SB	1 trip	1 trip	--	--	--	1 trip	1 trip
	NB	--	1 trip	1 trip	1 trip	--	1 trip	1 trip
<i>Other Bus Services</i>								
Ulster County Area Transit	SB	1 trip	1 trip	1 trip	1 trip	--	--	--
	NB	1 trip	1 trip	1 trip	1 trip	--	--	--
Adirondack Trailways	SB	--	1 trip	--	--	--	1 trip	1 trip
	NB	--	1 trip	--	--	--	1 trip	1 trip
<i>Newburgh-Beacon Ferry</i>								
Newburgh-Beacon Ferry	EB	25	--	--	--	--	--	--
	WB	--	--	17	13	--	--	--
<i>Rail Service</i>								
Hudson Line (Beacon Station)	SB	17	60	46	90	73	60	60
	NB	29	60	24	17	60	60	60
Port Jervis Line (Campbell Hall and Salisbury Mills/Cornwall Stations)	EB	48	124	--	--	1 trip	1 trip	1 trip
	WB	--	193	81	25	107	85	85

Both the Northside and Southside routes offer relatively infrequent service due to the length of each trip and the assignment of one bus to each line, with each bus offering 120 minute headways throughout their service day. Since both routes operate the same routing along the Broadway/NY State Route 17K corridor and the shopping areas on NY State Route 300, service on the trunk portion of the lines offer hourly bus service in these areas.

The Newburgh-Beacon Shuttle offers morning peak service that is more frequent eastbound, to accommodate the Newburgh area residents who are traveling towards New York City on the MTA Metro-North Hudson Line, while offering more frequent service westbound

during the afternoon peak, evening and late night service. The Newburgh-Beacon Shuttle is scheduled to meet the majority of each northbound and southbound MTA Metro-North Hudson Line trains throughout the shuttle's service day.

Most of the ShortLine services offer relatively infrequent service throughout the day, with the Newburgh/Poughkeepsie line having the most frequent service. Most of the Orange County Local services that operate within the study area offer a few trips during each time period (i.e., morning, midday and afternoon).

The Ulster County Area Transit service that operates between the City of New Paltz and the City of Newburgh offers one trip per time period, Monday through Friday, with no late night or weekend service. The Adirondack Trailways route offers one early morning northbound trip which is not reflected in Table 30 (prior to the AM peak period), one midday trip in each direction, and one southbound trip that is offered between the midday and the afternoon peak periods.

The Newburgh-Beacon Ferry is a commuter service and is operated only during the morning and afternoon peak periods, offering services to the Beacon station in the morning peak period and from the Beacon station in the afternoon peak period. MTA Metro-North's Hudson and Port Jervis lines are also described in the table, with the Hudson line offering a richer level of service.

Span of Service - Equally important to how often buses operate is when service is available to the public. The information on span of service for each of the Newburgh area transit routes is presented in Table 32 on the following page. The table contains data by route direction and is further broken down by the day of the week. The bus and ferry span of services are specified from the first departure to the last arrival at the final destination terminal. For the MTA Metro-North rail services, span of service is described by the station location.

The Northside route operates Monday through Saturday, offering service through the City of Newburgh to the Mid-Valley Mall between 6:55AM and 5:30PM on the weekdays and between 8:55AM and 5:30PM on Saturdays. Similarly, the Southside route offers service Monday through Saturday, providing transit service through the City of Newburgh to Vails Gate from 7:30AM to 6:00PM on the weekdays, and between 8:50AM and 6:00PM on Saturdays.

The Newburgh-Beacon Shuttle operates between the NY State Route 17K Park-Ride lot, Stewart International Airport and the Beacon station between the hours of 4:55AM and 11:00PM on the weekdays, and between 8:12AM and 10:25PM on Saturdays and Sundays.

Table 32 - Span of Service

Route Designation	Direction	Weekday		Saturday		Sunday	
		Start	End	Start	End	Start	End
<i>Newburgh Local Service</i>							
Northside	EB/NB	6:55AM	5:30PM	8:55AM	5:30PM	--	--
	SB/WB	7:50AM	4:55PM	9:50AM	4:55PM	--	--
Southside	EB/SB	7:30AM	6:00PM	8:50AM	6:00PM	--	--
	NB/WB	8:00AM	5:10PM	10:00AM	5:10PM	--	--
<i>Commuter Shuttle</i>							
Newburgh-Beacon Shuttle	EB	4:55AM	10:55PM	8:12AM	10:25PM	8:12AM	10:25PM
	WB	5:50AM	11:00PM	8:40AM	9:52PM	8:40AM	9:52PM
<i>Coach USA ShortLine</i>							
Newburgh/Poughkeepsie	SB	4:40AM	10:50PM	8:30AM	10:50PM	8:30AM	10:50PM
	NB	6:55AM	12:31AM	7:15AM	12:31AM	7:15AM	12:31AM
Orange County Local 2	EB	6:28AM	7:23PM	10:25AM	7:23PM	10:25AM	7:23PM
	WB	7:35AM	10:30PM	7:35AM	10:30PM	10:25AM	10:30PM
Orange County Local 4	SB	5:10AM	9:35PM	5:45AM	9:35PM	5:45AM	9:35PM
	NB	8:17AM	12:31AM	8:17AM	12:31AM	8:17AM	12:31AM
Orange County Local 5	SB	6:50AM	3:19PM	8:00AM	5:19PM	8:00AM	5:19PM
	NB	10:15AM	5:15PM	10:15AM	8:34PM	10:15AM	8:34PM
<i>Other Bus Services</i>							
Ulster County Area Transit	SB	5:00AM	6:58PM	--	--	--	--
	NB	6:25AM	8:45PM	--	--	--	--
Adirondack Trailways	SB	10:50AM	4:05PM	10:50AM	4:05PM	10:50AM	4:05PM
	NB	5:30AM	2:20PM	5:30AM	2:20PM	5:30AM	2:20PM
<i>Newburgh-Beacon Ferry</i>							
Newburgh-Beacon Ferry	EB	5:41AM	8:04AM	--	--	--	--
	WB	5:37PM	8:24AM	--	--	--	--
<i>Rail Service</i>							
Hudson Line (Beacon Station)	SB	4:32AM	11:16PM	4:50AM	11:16PM	4:50AM	11:16PM
	NB	8:05AM	3:33AM	8:05AM	3:33AM	8:05AM	3:33AM
Port Jervis Line (Campbell Hall)	EB	4:29AM	10:07PM	5:25AM	9:25PM	5:25AM	9:25PM
	WB	10:02AM	1:54AM	10:52AM	1:54AM	10:52AM	1:54AM
Port Jervis Line (Salisbury Mills/Cornwall Stations)	EB	4:41AM	10:18PM	5:36AM	9:36PM	5:36AM	9:36PM
	WB	9:43AM	1:42AM	10:41AM	1:42AM	10:41AM	1:42AM

The spans of service for the ShortLine routes vary by service, with the Newburgh/Poughkeepsie route operating Monday through Friday from 4:40AM until 12:31AM, the Orange County Local 2 operating Monday through Friday from 6:28AM to 10:30PM, the Orange County Local 4 offering service Monday through Friday between 5:10AM and 12:31AM and the Orange County Local 5 operating Monday through Friday from 6:50AM until 5:15PM. For the most part, weekend service offers a reduced span of service from weekdays.

The New Paltz to Newburgh service operated by Ulster County Area Transit operates Monday through Friday between the hours of 5:00AM and 8:45PM. Adirondack Trailways offers service between 5:30AM and 4:05PM, Monday through Friday, and between 10:50AM and 4:05PM on Saturdays and Sundays.

The Newburgh-Beacon Ferry offers service to the Beacon station from 5:41AM through 8:04AM and from the Beacon station starting at 5:37PM and ending at 8:24PM. As mentioned previously, this service is only operated during the peak periods and in the peak direction.

Fare Structure - The fares for each individual service are presented in Table 33. The Northside and Southside Newburgh Local services offers one way, adult trips for \$1.50, while senior citizens, aged 60 and older, and the disabled can ride at half-fare. Currently, a patron can transfer between routes for \$0.50. There are no multi-ride fare options (e.g., passes) for the Newburgh Local services.

Adult patrons of the Newburgh-Beacon Shuttle pay \$1.00 per one-way trip, while senior citizens and the disabled can use the shuttle at half-fare. The shuttle does offer weekly and monthly Uni-Tickets, which combine the cost of the shuttle and the MTA Metro-North Hudson service. Effective June 17, 2009, the price for a weekly Uni-Ticket is \$127.50, while the monthly Uni-Ticket can be purchased for \$378.00.

The fares for the ShortLine services are zone-based and dependent on the origin and destination of any one-way trip. Seniors and the disabled are offered a ten percent discount for their fare. The UCAT service between New Paltz and Newburgh can be used for \$0.75 for the first zone and \$0.25 per each additional zone, meaning a trip from New Paltz to Newburgh - which crosses one zone boundary - would cost \$1.00. Another feature of the UCAT service is that the bus can deviate from the route to pick up and drop off riders at their origin or destination. The fares for Adirondack Trailways are zone-based and dependent on the origin and destination of the patron's trip. There are fare discounts for children, students, seniors and the military. Ten trip tickets can also be purchased at a discount, ranging from 20 to 35 percent, depending on the time period within which the ticket will be used.

The Newburgh-Beacon Ferry costs \$1.00 per trip, with a weekly pass selling for \$5.00. Similar to the Newburgh-Beacon Shuttle, a Monthly Uni-Ticket can be purchased for \$378.00, which includes the cost of the ferry and Hudson Line train.

The fares for the MTA Metro-North rail services are dependent on the service used (i.e., the Hudson Line or the Port Jervis Line), time period, and the origin and destination of the patrons trip. There are monthly and weekly passes available for purchase, as well as ten-trip tickets for the peak and off-peak periods. Senior citizens and the disabled can purchase a discounted one-way or ten-trip ticket, while children are discounted for the peak and off-peak periods. Tickets purchased on the train are more costly than those purchased prior to boarding.

Table 33 - Fare Structure

Fare Category	Amount (\$)
<i>Newburgh Local Service</i>	
One-Way, Adult	\$1.50
One-Way, Seniors & Disabled	\$0.75
Transfers	\$0.50
<i>Commuter Shuttle</i>	
One-Way, Adult	\$1.00
One-Way, Seniors & Disabled	\$0.50
Weekly Uni-Ticket*	\$127.50
Monthly Uni-Ticket*	\$378.00
<i>Coach USA ShortLine</i>	
One-Way, Adult	Dependent on origin and destination
One-Way, Seniors & Disabled	10% Discount
<i>Other Bus Services</i>	
UCAT One-Zone, Adult	\$0.75
UCAT Seniors & Disabled	1/2 Fare (10AM-2PM)
UCAT Each Additional Zone	\$0.25
UCAT Additional Off Route Service	\$0.50
UCAT Off Route to Off Route Service	Double the single off route fare
Adirondack One-Way, Adult	Dependent on origin and destination
Adirondack One-Way, Child (2-12 years)	75% Discount
Adirondack One-Way, Students	15% Discount
Adirondack One-Way, Seniors	10% Discount
Adirondack One-Way, Military	10% Discount
Adirondack 10 Trips over 15 Days	35% Discount
Adirondack 10 Trips over 30 Days	25% Discount
Adirondack 10 Trips over 60 Days	20% Discount
<i>Newburgh-Beacon ferry</i>	
One-Way, Adult	\$1.00
Weekly, Adult	\$5.00
Monthly Uni-Ticket*	\$378.00
<i>Rail Service</i>	
Hudson Line*	Dependent on origin and destination
Port Jervis Line*	

*Effective June 17, 2009

Demand Responsive Transit Services

There are a number of demand responsive services within the Newburgh study area, including Dial-A-Bus services operated by the Town of Newburgh, and jointly by the Towns of Montgomery and Crawford, and the Towns of New Windsor and Cornwall. Each of these services requires an advance reservation for use. The adult fare for these services is \$1.00, while

seniors and the disabled can ride for half-fare. The service in the Town of Newburgh is operated Monday through Friday from 8:00AM through 4:00PM, the same service days and time period offered by the service in the Towns of New Windsor and Cornwall. The Towns of Montgomery and Crawford operate their service Monday through Friday from 7:45AM through 4:00PM. The Town of Newburgh is the only municipality that operates Dial-A-Bus service on Saturdays, offering service between 8:30AM and 2:30PM.

The Town of Newburgh and the Towns of Montgomery and Crawford also operate Senior Buses, which offers service with fixed destinations that change depending on the day. Destinations include WalMart, Target, the various area grocery stores, the Newburgh Mall and a medical run, among other destinations. Reservations must be made for these services at least a day in advance. There is no set charge for these services; however, the Town of Newburgh suggests a \$0.75 donation for each one-way trip, and the Towns of Montgomery and Crawford suggest a \$0.50 donation for trips within the two towns and a \$1.00 suggested donation for trips outside of the two towns.

The Americans with Disabilities Act (ADA) mandates that there must be a paratransit service provided in all areas with fixed route bus service, so that patrons who - for whatever reason - cannot use the fixed route bus service can have service. The service is generally limited to three-fourths of a mile radius from the fixed route bus alignment. Advance reservations are required for service. Orange County pays for the ADA mandated service which reflects the route coverage. The Newburgh Beacon Bus Corporation is presently the contracted operator of this paratransit service. Medical transportation services are provided by Orange County Department of Social Services.

There are eight taxicab companies that provide service within the study area. For trips within the City of Newburgh a set \$5.00 fee is charged, while senior citizens age 65 and older are charged a half-fare. The fare increases per mile once the vehicle crosses the city boundary for trips to areas outside the City of Newburgh. The eight cab companies that offer service in the area are: All Family, Bob's Taxi, Express Taxi, Limo Express, Perusa, Taxi Rapido, Tony's Taxi and Vasquez Taxi. An unusual feature of the transportation service in Newburgh is the relatively high number of taxicabs and their utilization in the City of Newburgh.

Operating and Financial Trends

In order to provide a context for the analysis of the current system, operating, ridership and financial information was collected and tabulated for the time period covering the past five years, 2004 through 2009. The statistics include key operating statistics, such as revenue hours and revenue miles, as well as the ridership, revenue and operating cost. The information presented here is for the Newburgh Beacon Bus Corporation since the focus of the study is on the fixed bus system and primarily this transit operator. For the other bus carriers, the statistics they report are for their operations in all of Orange County and New York State.

The primary source of information was the National Transit Database (NTD), which is prepared by the bus company and submitted annually to the Federal Transit Administration (FTA). Another source of information reviewed were the NYSDOT 17A reports which also provide data on operating, ridership and financial statistics. In some instances, supplemental information was provided by the bus operator. While NTD provides a consistent way to track transit results and has been in place for many years, there are still instances where data anomalies occur. The anomalies may reflect how certain shared costs are allocated between the fixed route service and the other operations of Leprechaun Lines of which the Newburgh Beacon bus service and demand responsive system are only one part. Other explanations may be changes in reporting procedures and simple errors in data gathering. These inconsistencies are evident when viewing the same statistics and measures over a five year period. Accordingly, the results presented here may be representative, but that would not preclude data anomalies in the inventory. It should be recognized that efforts are underway by Orange County to assure accurate and consistent reporting in the future.

An overview of the operating and productivity trends for the fixed route services operated by Newburgh Beacon Bus Corporation is presented in Table 34. Over the six year period, service levels were initially decreasing, followed by an increase in service during the most recently observed two years. Revenue vehicle miles were at their highest in 2004; however, revenue vehicle hours were at their highest in 2009. The number of vehicles operating during the daily peak periods has remained the same throughout the six years. Ridership has ebbed and flowed in correlation with level of service. When the service was cut back, ridership declined. With the recent increase in service, ridership has once again increased; however, the ridership was at its highest during the first year of the six year period. The current ridership level is under ten percent less than what it was in 2004. While some of the trends reflect system changes, it is reasonable to conclude that some results reflect on the accuracy of the information presented and its consistency over time.

Table 34 - Operating and Productivity Trends (Fixed Route)

Item	2004	2005	2006	2007	2008	2009
Revenue Miles	270,595	254,897	213,805	215,207	263,922	262,680
Revenue Hours	15,288	14,994	13,978	13,815	18,028	18,118
Ridership	138,713	116,213	100,229	101,281	132,015	124,170
Passengers/Hour	9.07	7.75	7.17	7.33	7.32	6.85
Passengers/Mile	0.51	0.46	0.47	0.47	0.50	0.47

Source: National Transit Database

In terms of productivity, the passengers per hour level was at its highest in the first year of the six year period and then decreased the following two years. In 2007, passengers per hour rose slightly and remained consistent throughout 2008 and then declined in 2009. The productivity described by passengers per mile has remained relatively consistent throughout the six year period.

The financial results are illustrated in Table 35, detailing the operating costs, revenue, and deficit along with farebox recovery rates over a five year period from 2004 through 2009. With the exception of 2006, the operating costs have risen each year, the largest increase coming between 2008 and 2009, when operating costs rose over 24 percent. The revenue has fallen and risen similarly to the revenue vehicle hours, with the highest revenue coming in the 2008. Between 2007 and 2008, revenue was up 24 percent. The deficit has risen over \$320,595 over the course of the six year period. Since the deficit is currently at its highest, the farebox recovery rate has decreased nearly 24 percent between 2008 and 2009. The highest farebox recovery rate occurred in 2004, when the rate was over 24 percent. The values for farebox recovery are reasonable for a small bus system, such as Newburgh Beacon Bus. The deficit is underwritten by subsidies from Orange County, NYSDOT and FTA as well as contract payments for the service to Stewart International Airport.

Table 35 - Financial Trends (Fixed Route)

Item	2004	2005	2006	2007	2008	2009
Operating Cost (\$)	695,444	739,140	712,911	772,499	814,705	1,012,753
Revenue (\$)	167,415	160,044	137,042	131,711	173,492	164,129
Deficit (\$)	528,029	579,096	575,869	640,788	641,213	848,624
Farebox Recovery (%)	24.1	21.7	19.2	17.0	21.3	16.2

Source: National Transit Database

Table 36 provides a look at the financial performance of the bus system on a per unit basis, including operating costs, revenues and the systems deficit by revenue hour, revenue mile and per passenger. The operating costs per each measured unit have increased overall between 2004 and 2009. The results for 2008 indicate a significant reduction in operating cost per revenue hour. This does not appear reasonable and is indicative of errors in recording of information and inconsistencies in data gathering methods from one year to the next. The operating unit costs returned to more consistent values in 2009.

Table 36 - Financial Performance Measures Trends (Fixed Route)

Item	2004	2005	2006	2007	2008	2009
Financial Results Per Revenue Hour						
Operating Cost (\$)	45.49	49.30	51.00	55.92	45.19	55.90
Revenue (\$)	10.95	10.67	9.80	9.53	9.62	9.06
Deficit (\$)	34.54	38.62	41.20	46.38	35.57	46.84
Financial Results Per Revenue Mile						
Operating Cost (\$)	2.57	2.90	3.33	3.59	3.09	3.86
Revenue (\$)	0.62	0.63	0.64	0.61	0.66	0.62
Deficit (\$)	1.95	2.27	2.69	2.98	2.43	3.23
Financial Results Per Passenger						
Operating Cost (\$)	5.01	6.36	7.11	7.63	6.17	8.16
Revenue (\$)	1.21	1.38	1.37	1.30	1.31	1.32
Deficit (\$)	3.81	4.98	5.75	6.33	4.86	6.83

Funding

In a similar manner to the trend analysis presented above, the source of funding for Newburgh Beacon Bus Corporation was also examined. Accordingly, this review includes the revenues and costs of both the fixed route system and the demand responsive services. Since passengers only cover a small portion of the costs of the system, it is important to understand the sources of funding that make up the difference between the generated revenue and the overall cost of the system. This section provides an overview of the six year funding trends and details the operating costs per service type, revenue streams and other payments made to the system (Table 37). Based on NTD reporting, there were some years when Newburgh Beacon Bus indicated no FTA funding. According to Orange County staff, FTA funding has occurred in every year with the 2009 payment of \$173,268.

Table 37 - Funding Trends (Dollars)

Item	2004	2005	2006	2007	2008	2009
Operating Costs						
Fixed Route	695,444	739,140	712,911	772,499	814,705	1,012,753
Demand Responsive	146,786	168,175	164,981	162,755	171,024	202,802
<i>Subtotal</i>	842,230	907,315	877,892	935,254	985,729	1,215,555
Reconciled Items	174,084	180,284	221,127	206,295	553,453	92,580
Total	1,016,314	1,087,599	1,099,019	1,141,549	1,539,182	1,308,135
Revenue						
Fixed Route	167,415	160,044	137,042	131,711	173,492	164,129
Demand Responsive	5,836	6,762	7,799	11,852	12,587	14,179
<i>Subtotal</i>	173,251	166,806	144,841	143,563	186,079	178,308
Advertising	10,800	9,900	9,000	10,800	10,800	900
Total	184,051	176,706	153,841	154,363	196,879	179,208
Contract Payments						
Fixed Route	243,550	245,447	403,783	416,629	625,849	427,909
Demand Responsive	229,000	295,578	308,893	419,973	436,331	440,781
Total	472,550	541,025	712,676	836,602	1,062,180	868,690
Subsidies						
NYSDOT (STOA)	241,901	243,868	263,422	290,426	308,319	309,895
FTA (5307)	142,078	127,157	0	51,598	0	0
Total	383,979	371,025	263,422	342,024	308,319	309,895

Source: National Transit Database

- Operating Costs** - The table shows that the operating costs include both the fixed route and demand responsive services between 2004 and 2009. While the total cost of the system has continually risen over the six year period, the costs for the fixed route system and the demand responsive system have fluctuated. As noted previously, the change in costs does not appear commensurate with the change in revenue hours and revenue miles. Based on the NTD information, the Newburgh Beacon Bus Corporation incurred costs of nearly a million dollars annually to operate the bus and demand responsive services.

Another cost item not associated with mode and captured in the NTD financial form is what is referred to as reconciling items which includes leases and rentals as well as depreciation. The cost for the reconciled items has also oscillated, with the largest sum coming in the most recent year of 2008, when the reconciled items totaled \$553,453. For the period from 2004 through 2007, the reconciled items accounted for about one fifth of the combined costs of fixed route and demand responsive services which increased significantly in 2008 to about 36 percent. As noted previously, these large swings suggest the need to more fully investigate the NTD reporting process and results.

- **Revenue** - There are three revenue streams that combined account for the total revenue earned by the services operating by the Newburgh Beacon Bus Corporation: revenue generated by the fixed route service (adult fares and senior fares), revenue generated by the demand responsive service (i.e., fares paid by ADA eligible riders) and revenue generated by advertisements. As the table details, the fixed route farebox provides the largest source of farebox revenue. The revenue for the fixed route system has ebbed and flowed along a similar trend as the revenue miles, revenue hours and particularly passengers carried. The advertising revenue has remained stable and is relatively insignificant as a revenue source.

- **Contract Payments** - Newburgh Beacon Bus Corporation receives payments from Orange County, The Port Authority of New York and New Jersey (PANYNJ) and NYSDOT. These payments are separate and distinct from subsidy payments which are described later in this section. The Newburgh Beacon shuttle service is primarily designed to provide a connection between the Beacon rail station and Stewart International Airport. The shuttle is viewed as necessary to provide mobility to commuters and serve as an economic development strategy in providing access to the airport. Accordingly, NYSDOT and PANYNJ make payments to Newburgh Beacon Bus Corporation for the shuttle service. NYSDOT underwrites the costs of weekday service with the PANYNJ making payments for weekend shuttle bus service. The other payment is made by Orange County and is for the cost of the ADA mandated paratransit service operated by Newburgh Beacon Bus Corporation.

- **Subsidies** - The other payments account for the funding provided by NYSDOT to Orange County through the State Transit Operating Assistance (STOA) program and the Federal Transit Administration through Section 5307. STOA funds are appropriated to help transit agencies in New York State to close the gap between operating costs and fares paid by riders. These payments are subject to the state budgeting process are made on the basis of designated amounts or in relation to service provided and ridership levels. During the past six years, STOA funding has increased about 28 percent.

The Section 5307 funds are paid to urban transit agencies by the federal government. In areas, such as Orange County, where population of the urbanized area exceeds 200,000, payments are made on the basis of a formula that considers population, service supplied

and service consumption variables. For the larger urban areas, there are restrictions on using the funds for operating assistance; however, the costs of maintaining assets such as buses are allowed. The Section 5307 funds for the Newburgh Beacon Bus have decreased, and in some years, including 2009, no payments have been made which reflects the National Transit Database reported by Newburgh Beacon Bus. As noted previously, Orange County has provided federal funds to the operator in each of the last six years. Some differences may be attributable to when funds are earned and receipt of funds. During this period, the urban area population increased to over 200,000 which restrict the use of Section 5307 funds for operating assistance. Overall, funds received by Orange County from FTA have increased substantially during this period.

Table 38 - Financial Summary

Item	2004	2005	2006	2007	2008	2009
Without Reconciling Items (\$)						
Operating Cost (All Modes)	842,230	907,315	877,892	935,254	985,729	1,215,555
Revenue, Contract Payments and Subsidies	1,040,580	1,088,576	1,129,939	1,332,989	1,567,378	1,357,793
Surplus (Deficit)	198,350	181,261	252,047	397,735	581,649	142,238
With Reconciling Items (\$)						
Operating Cost (All Modes)	1,016,314	1,087,599	1,099,019	1,141,549	1,539,182	1,308,135
Revenue, Contract Payments and Subsidies	1,040,580	1,088,576	1,129,939	1,332,989	1,567,378	1,357,793
Surplus (Deficit)	24,266	977	30,920	191,440	28,196	49,658

Source: National Transit Database

Route Analysis and Surveys

The concluding element of the analysis of existing conditions was a more in depth examination of the fixed route bus service operated by the Newburgh Beacon Bus Corporation. This includes the three bus lines described previously: Northside, Southside and the Newburgh-Beacon Shuttle. This analysis was accomplished utilizing various analytical techniques and the conduct of surveys. The former relied on a statistical review of the three individual bus lines using a diagnostic procedure that presents key route level performance measures.

In addition, two survey efforts were undertaken to better understand the characteristics of riders and their travel patterns. In particular, it is helpful to understand where people board and alight by stop and the utilization of each segment of the three bus routes. These surveys supplement information obtained from the transit operator on boardings by route and time of day.

Route Diagnostics Analysis

This process is designed to delineate the characteristics of the Newburgh Beacon Bus Corporation routes utilizing a few analytical techniques. Through this approach, each bus route is treated as if it was an individual operating entity. Each bus route is then compared to the performance of the other routes, as well as to the performance of the system averages. This route level analysis is quantitative and focuses on financial and productivity measures.

An initial decision regarding the analysis was to determine the time period for which data would be assembled, manipulated, analyzed and the results reported. It was decided that the analysis should be based on recent conditions at current service levels. The analysis was performed for a one year period ending December 31, 2007 (i.e., Fiscal Year 2007). This year was selected since its results were consistent with trends observed from 2004. As noted previously, there were some anomalies noted with some of the statistics in 2008.

Accordingly, data were gathered for this relatively recent fiscal year, since it is a useful benchmark to assess performance for each individual bus route. As such, the results presented in this section are for a recent one year period. All three bus routes have been included in this analysis: Northside, Southside and the commuter shuttle operating between Newburgh and Beacon.

Data Assembly - The route level analysis requires considerable information on operating, financial and patronage statistics. The process employed five statistical inputs: revenue miles, revenue hours, peak vehicles, farebox revenue and passenger boardings. Detailed information is available by route because the Newburgh Beacon Bus Corporation compiles

information on each individual bus route to comply with various reporting requirements. The data are recorded on a daily basis and then aggregated by month and year. Statistics are presented in a summary fashion for all bus routes for reporting to the National Transit Database (NTD) by the Newburgh Beacon Bus Corporation. Limited manipulation was required to establish a route level database for the recent one year period.

- **Revenue Miles** - Information on revenue miles by individual route is routinely accumulated and reported. Daily results by route are determined for each service day, including the weekday and weekend services, and accumulated for each month and then summed for 2007. The resulting annual values by route were summed, which are compatible with the system annual vehicle miles reported in the NTD.
- **Revenue Hours** - The results for this operating statistic were computed in a similar manner to that utilized for revenue miles.
- **Peak Vehicles** - This statistic reflects the number of vehicles in service during a typical day during the peak service period on weekdays.
- **Passengers** - Drivers record passenger boardings as part of their routine duties. Farebox data by route for each month were summarized for January through December, 2007.
- **Revenue** - As noted above, drivers record passenger boardings and the fares for each passenger. In turn, the fares charged times the number of passengers generates revenue estimates by route which should match the revenue counts from the fareboxes.

The five data items were compiled for each route and represent a recent one year period of the fixed route services operated in the Newburgh area.

Diagnostic Techniques - The above discussion provides an overview of the necessary data assembly and manipulation. Three procedures were utilized to assess current route performance and provide different perspectives of gauging route level efficiency and effectiveness, as summarized below:

- **Cost Centers** - This technique establishes the revenue, cost and resulting deficit for each of the three bus routes. Emphasis is placed on the farebox recovery, which is the percentage of operating costs that is covered by the fares paid by each passenger. A major element of the cost centers analysis is the development of a financial model that relates operating costs to service levels. A three variable cost model was utilized for this effort in which the cost of a bus route was related to the revenue hours, revenue miles and peak vehicles.
- **Contribution Analysis** - This procedure also places emphasis on the financial results of each of the bus routes. The deficit is examined in terms of both relative amounts (i.e.,

farebox recovery) and absolute amounts (i.e., each of the route's contribution to the system deficit). This method allows each route to be assigned to one of four categories, which reflect the route's performance in each measure and whether it is better or worse than the system average.

- **Ordinal Ranking** - This bus route evaluation procedure numerically ranks all bus routes from best to worst for seven performance indices. Three measures relate to productivity, while another four examine deficit relative to operating and passenger statistics. In turn, these results are combined for each group of criteria to arrive at a combined score and overall rank.

The discussion above provides a brief summary of each technique that was utilized for the current analysis. As previously noted, the results are for a recent one year period that reflects the route structure and service levels in 2007. There are several points that should be noted at the outset. First, the techniques are *diagnostic* in that they indicate the need for more detailed analysis (e.g., a review of the ride check data) to remedy deficiencies and exploit opportunities. Second, they examine route level performance from a variety of perspectives to assure a comprehensive review of efficiency and effectiveness. Last, this diagnostic review is only one input to the service development process, since other issues must also be considered through the planning process.

Cost Centers - The primary objective of the cost centers analysis approach is that bus system operating, patronage, revenue and cost statistics can be disaggregated by individual route. Conversely, route-by-route costs are more difficult to ascertain, since transit expenditures are recorded by expense accounts that track costs by function and object account in accordance with the NTD reporting system. Costs are also presented by mode (i.e., fixed route and demand responsive), although only the costs of the fixed route bus system are analyzed using the route diagnostic approach. Utilizing these statistics, the deficit and other various measures (e.g., farebox recovery) can be computed.

To convert the system-wide data into results by individual route, a two-step process is required. First, a cost allocation model is quantified based on operating and financial experience. In the case of the current analysis, the analysis relies on a three variable formula that relates the costs of providing bus service to the revenue hours, revenue miles and peak vehicles. Second, each operating statistic for each bus route is multiplied by the appropriate unit cost to determine route operating costs.

- **Cost Allocation Model** - The basic concept underlying the cost allocation model is that each operating expense is influenced or driven by one or more operating statistics or resource levels. Consideration of the nature of various operating expenses identified three major resources that drive each particular expense. As mentioned above, these three resources are revenue hours, revenue miles and peak vehicles. While other cost models exist that take into account numerous other variables, the three variable cost

allocation model is preferred due to the ease of development and application while keeping a high degree of accuracy. The three-variable model is superior to a single unit cost factor since it provides more accurate results and is sensitive to the different characteristics of each route such as speed.

The model proposed for analyzing the bus system is termed a fully allocated cost formula. The method receives its name since all costs for bus services are included in the model's development. No distinction is made between fixed and variable expenditures. This is consistent with the objective of the analysis, which is to compare financial performance by route. Most costs allocated to peak vehicles are typically fixed expenses, which do not vary by the amount of service provided.

The fully allocated formula for the bus system could be readily converted to variable costs by eliminating those expenses allocated to peak vehicles. In turn, this would then result in a variable cost model with only two resource levels - vehicle hours and vehicle miles. This formula can be used to estimate the incremental costs of service changes.

- **Model Calibration** - The primary source of data for the cost allocation model was the National Transit Database submission to the Federal Transit Administration (FTA) for fiscal year 2007, which ended December 31, 2007. One point to note is that the bus operating costs are for the fixed route system and do not include the reconciling items (e.g., leases) which are for the entire system and both modes. The cost formula is calibrated by performing the following three tasks:
 - Assign each individual expense in the system's financial statement to one of the three selected resources that influence costs;
 - Sum the costs assigned to each resource to obtain the overall cost allocated to the resource; and
 - Divide the overall resource cost by the quantity of the resource used by the system. These calculations produce the unit cost of each resource, which are the coefficients of the cost model.

The allocation of each expense item is made on the basis of judgment, although the relationship between the expense item and variable is typically quite evident. It should be noted that some statistical analyses have been performed on the data from other transit systems that confirm the allocation process. This cost allocation process also reflects the prevailing practice within the industry where it is applied.

For example, operators' wages are allocated to revenue hours, since bus operators are hourly employees. The costs of their fringe benefits are also assigned to revenue hours. Some costs, such as the mechanics' compensation, fuel and replacement parts, are a

direct function of the revenue miles operated and are categorized as such. In addition, vehicle insurance costs are a function of accident exposure in terms of miles of service. Many of the expense accounts do not vary as a function of either revenue hours or revenue miles. The costs resulting from providing an operating base and vehicle storage are determined by the number of peak vehicles in service. Also, administrative expenses vary based on the bus system scale as measured by the number of vehicles required to operate the designed bus system. The results of this allocation process for the Newburgh area fixed route services are presented in Table 39.

Table 39 - Cost Allocation Model

Variable	Amount (\$)	Operating Statistics	Unit Cost (\$)
Revenue Hours	331,706	13,815	24.01
Revenue Miles	311,520	215,207	1.45
Peak Vehicles	129,273	4	32,318.25
Total	772,499	--	--

About 43 percent of all bus system expenses were assigned to revenue hours, while revenue miles account for just over 40 percent of the bus systems expenses. The remaining 17 percent is assigned to the peak vehicle costs. The three-variable analysis for the Newburgh area fixed route system results in the following cost allocation formula:

$$C = (24.01 * H) + (1.45 * M) + (32,318.25 * V)$$

where:

C = Cost

H = Revenue Hours

M = Revenue Miles

V = Peak Vehicles

The calibrated three-variable cost formula differs substantially from the traditional transit industry yardstick for measuring costs. The traditional approach is to compute a simple cost per mile or hour statistic. For fiscal year 2007, average unit costs for the Newburgh area fixed route system was approximately \$55.92 per revenue hour or \$3.59 per revenue mile for a single variable cost model.

The deficiency of a single unit cost approach can best be illustrated by the following example: two routes each operate for one hour; one of the routes operates at ten miles per hour while the other route operates at a higher speed and travels 15 miles. With the single hourly unit cost, both routes would have the same cost. Considering the single mileage unit cost, the faster route would have one and a half times the cost. The results with either single unit cost are not logical. Accordingly, a model that incorporates more than a single variable is more accurate and logical. The use of both revenue hours and

revenue miles permits the cost allocation model to be sensitive to operating speed. Similarly, the cost model should include peak vehicles since the hours per peak vehicle (i.e., vehicle utilization) vary by bus route.

- **Route Financial Performance** - The previous sections describe the data collection procedures for establishing a database of route information and the calibration of the three-variable cost model. The next step was to apply the cost model to the route level operating statistics to establish the cost of each bus route.

The results of the cost centers analysis for each of the Newburgh area’s fixed route services are presented in Table 40, indicating the revenue, cost and necessary subsidy for the one year analysis period. The Northside and Southside services are subtotaled in order to differential between these local services and the commuter service provided by the Newburgh-Beacon Shuttle.

Table 40 - Financial Results by Route

Route	Farebox Revenue (\$)	Cost (\$)	Deficit (\$)	Farebox Recovery (%)	Rank	Percent Higher (Lower)
Northside	39,620	145,520	105,900	27.23	2	59.71
Southside	45,580	153,370	107,790	29.72	1	74.31
<i>Subtotal</i>	<i>85,200</i>	<i>298,890</i>	<i>213,690</i>	<i>28.51</i>	--	<i>67.21</i>
N-B Shuttle	46,510	473,620	427,110	9.82	3	(42.40)
System	131,710	772,510	640,800	17.05	--	0.00

The first method utilized to rate bus routes and to categorize their financial performance is to examine their farebox recovery. Overall, the bus routes achieved a farebox recovery rate of just over 17 percent, which implies a subsidy of \$4.87 for each dollar paid in fares.

When looking at the farebox recovery rate for each route individually, both of the local routes achieved a farebox recovery rate that greatly exceeds the system average. The Southside route has a farebox recovery rate of nearly 30 percent, while the Northside route recovered over 27 percent of the cost of service through its farebox. Conversely, the Newburgh-Beacon Shuttle failed to attain a farebox recovery rate of ten percent.

The difference between the local services and the commuter shuttle can partially be explained by the difference in fare, where the local fixed route services charge \$1.50 per trip, while the commuter shuttle’s fare is merely \$1.00. That being said, the more obvious reasons for the commuter shuttle’s lower farebox recovery rate is that it operates more hours per day than the local services and operates with few fare paying passengers. This accounts for the need to have substantial contract payments from NYSDOT and PANYNJ. This dichotomy of performance is a recurring theme in the route level analysis.

Contribution Analysis - The next method utilized to rate the system’s bus routes and to categorize their financial performance is to examine both their farebox recovery rates and deficit amounts in combination. Table 41 details the farebox recovery rate and the contribution to the deficit for each route relative to the system average and rates each route as being either “better” or “worse” than the system average.

Table 41 - Farebox Recovery and Contribution to Deficit

Route	Farebox Recovery		Contribution to Deficit		Category
	Value	Rating	Value	Rating	
Northside	27.23	Better	0.50	Better	1
Southside	29.72	Better	0.51	Better	1
<i>Subtotal</i>	<i>28.51</i>	--	<i>1.01</i>	--	--
N-B Shuttle	9.82	Worse	1.99	Worse	4
System	17.05	--	3.00	--	--

As discussed previously, in terms of the farebox recovery rate both of the local services, the Northside and the Southside routes, performed “better” than the system average, while the Newburgh-Beacon Shuttle’s farebox recovery rate was “worse.” In a similar manner, the three bus routes were rated with respect to their contribution to the systems deficit. For ease of presentation, the deficit amounts have been calculated relative to each route contributing 1/3rd of the overall deficit. On average, each bus route should contribute about 33.3 percent of the system deficit, or about \$213,600. However, whether a route actually contributes more or less to the cumulative deficit is reflected in Table 41. If a route were to achieve a contribution to the deficit value of one, the route would be contributing the expected amount to the deficit. If the value is greater than one, that route is contributing more than expected, while a value less than one means the route is contributing less than expected to the cumulative deficit. It should be recognized that the financial analysis above only considers the fares paid by patrons and excludes government subsidies and contract payments.

The ratings relative to each route’s farebox recovery rate and contribution to the deficit have created four route categories which are described as follows:

- **Category 1** - Bus routes that have a superior rating in terms of both relative and absolute measures of the deficit. Both the Northside and Southside services fall into this category
- **Category 2** - Bus routes that have a superior rating for the farebox recovery measure, but an inferior rating for the contribution to the deficit. None of the routes are categorized as such.
- **Category 3** - Bus routes that exhibit a superior rating in the contribution to the deficit, but an inferior rating for the farebox recovery rate. None of the route fall into this category.

- **Category 4** - Bus routes that exhibit poor ratings for both measures. The Newburgh-Beacon Shuttle is placed into this category.

The Category 4 rating for the Newburgh-Beacon Shuttle suggests that consideration should be given to making changes which can more closely balance the supply and demand characteristics of the service. One option would be to operate less service during the off peak periods, eliminating the cost of one vehicle from the service during these periods of the day. The rationale for the shuttle service is to provide commuter service and access to Stewart International Airport for both air travelers and employees.

Ordinal Ranking - Another type of evaluation procedure is termed ordinal ranking since the three bus routes are ranked from best to worst across several performance indices. In turn, these results are combined to provide an overall assessment of route performance across the system. The application of this route evaluation technique consists of three sequential steps. The first step is the selection of measures to gauge each bus route's performance. For the current analysis, the criteria have been grouped into two broad categories to assess productivity and deficit.

In all cases, the indices are specified as rates in that they compare ridership and deficit relative to various operating statistics. This definition of each evaluation yardstick permits routes with different service levels and requirements to be readily compared. As with other evaluation measures, these results are informative and useful inputs to the planning process.

The next step in the route diagnostic process is to rank the routes based on their performance for each of the seven evaluation criteria. In the case of the productivity measures, higher route values indicate favorable performance, with these routes assigned low rankings. The route with the highest productivity value and exhibiting the best performance would be assigned a rank of one.

Conversely, routes that exhibit relatively low productivity results would denote deficient performance. For example, the route with the lowest productivity value would exhibit the worst performance and therefore would be ranked 3rd. In a similar fashion, each of the routes comprising the bus system was ranked for deficit measures. One difference is that for these measures, lower values indicate better relative performance and higher values denote relatively poor performance.

The concluding step in the ordinal ranking process is to combine results for the individual criteria into aggregate ratings for productivity and deficit requirements. For the three productivity measures, the ranks for each route were summed to determine a score. In turn, this score was used to establish an overall ranking for each route for both productivity measures. Similarly, scores and ranks were computed for the four deficit indices.

- **Productivity Results** - Three distinct measures were specified which relate the ability of each route to attract patrons relative to the resources necessary to provide bus service. Consistent with factors that influence costs, productivity measures utilized were passengers per revenue hour, revenue mile and peak vehicle, which is displayed in Table 42.

All three measures were calculated and each bus route was ranked. The table displays the range of results, which vary by service type. The results for the local services (i.e., the Northside and Southside routes) were quite similar to each other, but in stark contrast to the results attained by the Newburgh-Beacon Shuttle. The table also illustrates how the rankings were then combined to generate an overall score, which itself was ranked. The ranking by route remained constant across each of the three productivity measures. In terms of passenger productivity, the most productive route is the Southside service, followed closely by the Northside route.

Table 42 - Passenger Productivity Score and Rank

Route	Per Revenue Hour		Per Revenue Mile		Per Peak Vehicle		Combined	
	Value	Rank	Value	Rank	Value	Rank	Score	Rank
Northside	9.61	2	0.77	2	25,930	2	6	2
Southside	11.14	1	0.78	1	30,195	1	3	1
<i>Subtotal</i>	<i>10.38</i>	--	<i>0.78</i>	--	<i>28,063</i>	--	--	--
N-B Shuttle	5.37	3	0.32	3	22,578	3	9	3
System	7.33	--	0.47	--	25,320	--	--	--

- **Deficit Results** - In a similar manner, four subsidy criteria were specified, as detailed in Table 43. The first three record the deficit by operating statistic in which performance is related to revenue mile, revenue hour and peak vehicle. The fourth measure is the ratio of subsidy (i.e., deficit) per passenger. It should be recognized that the subsidy per passenger not only relates to route performance, but also measures the equity in distributing funds to support the bus system. Consistent with the previous analyses, each route is ranked relative to each other and the results summed to attain a score which is subsequently the basis for an overall deficit ranking.

The route performance in terms of the deficit was more varied by route than the performance measures by productivity; however, the final rankings produced a similar result. Typically, routes that attain a particular rating in terms of productivity achieve similar performance results for the deficit measures, although some differences are noted because of different operating speeds and vehicle utilization. The Southside route returned the best overall score in terms of deficit, followed closely by the Northside service.

Table 43 - Deficit Score and Rank

Route	Per Revenue Hour		Per Revenue Mile		Per Peak Vehicle		Per Passenger		Combined	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Score	Rank
Northside	39.27	1	3.17	3	105,900	1	4.08	2	7	2
Southside	39.76	2	2.79	1	107,791	2	3.57	1	6	1
<i>Subtotal</i>	<i>39.51</i>	--	<i>2.96</i>	--	<i>106,845</i>	--	<i>3.81</i>	--	--	--
N-B Shuttle	50.80	3	2.99	2	213,555	3	9.46	3	11	3
System	46.38	--	2.98	--	160,200	--	6.33	--	--	--

The results presented in this section indicate a number of ways to assess individual route performance. Regardless of the analysis method, the Northside and Southside routes have better performance than the shuttle bus line. This explains the need for contract payments from NYSDOT and PANYNJ. Also, the two local routes have generally consistent performance with respect to financial and productivity measures.

Non Rider Comments

Public transportation plays an important transport role in the study area, particularly for those individuals without a car. However, the overwhelming majority of trips are made by automobile. In view of this potential travel market, information was solicited from this group to solicit their comments on the current transit system and desired improvements. The comments from the various sources are highlighted below:

- **Service Frequency** - A common theme during the outreach program was that the current bus service is not frequent enough to attract new riders. Buses operate every hour or less frequent, which deters most people from using the bus. While no specific values for the proper interval between buses, the current system is not able to divert travelers to transit.
- **Service Span** - A few suggestions were related to the hours and days of bus service. The comments included proposals for later weekday and more weekend bus service. One comment related to the times when buses operate and shift changes at some generators (e.g., West Point). Similar observations related to span were made for the Newburgh-Beacon ferry. For some people originally from New York City, they were surprised regarding the limited hours of service.
- **Transit Destinations** - Several comments were received regarding corridors and generators that warrant additional transit service. These include Routes 17K and 300, West Point, SUNY Orange, St. Lukes-Cornwall Hospital and Woodbury Commons. Other comments related to coverage were the need for the bus system to connect communities through linkages between neighborhoods and the waterfront and neighborhoods with other neighborhoods.

- **Transit Identity/Awareness** - With the exception of seeing buses on the street occasionally, comments were received that the bus system is not readily visible. This includes the lack of bus stop signs, information kiosks, telephone information, web pages and readily available schedules and maps. Persons who have lived in the area for some time do not know how to use the bus and this situation is even worse for newcomers to the Newburgh area.
- **Transit Dependent** - In addition to comments calling for improvements to attract choice riders, some comments related to focusing changes on those people without an automobile. Captive riders' mobility options are limited to not making trips, riding with friends or using taxicabs.
- **Taxicabs** - Several individuals have commented on the number of taxicabs in Newburgh which is an important public transportation component. The reliance on this mode reflects the fares charged and the limited bus service. In contrast, taxicabs are convenient and afford a door-to-door service.
- **Broadway Redevelopment** - Many felt that Broadway should be rebuilt and transit made an important part of the street redesign. Many noted the width of the street affords ample opportunity for a transit preferential strategy. Specific comments include Bus Rapid Transit, street car and light rail. The comments for new modes included proposals for transit facilities in the median of Broadway. The view was that the redesign and transit could be a catalyst for the redevelopment of this important arterial roadway. Also, construction of permanent facilities for transit would encourage businesses to make investment at their establishments on Broadway.
- **Economic Development** - Some participants indicated that an important goal of the current study is the link between transit and economic development.
- **ADA Service** - One person observed that the limited coverage of the fixed route bus system restricts people who cannot use the bus. The bus system uses the FTA minimum coverage of three-quarters of a mile which leaves some destinations unserved.
- **Modes** - In addition to the comments for Broadway, some individuals suggested the introduction of other modes in the study area. This included street cars and light rail which have proven successful in other communities. One comment was that in an initial stage, buses could be used that have a vintage streetcar appearance. In contrast, some individuals indicated that bus service should be the preferred mode. One comment was related to the lack of adequate parking at the commuter rail stations in Orange County.
- **Intermodal Facilities** - The various transit links and modes should be better connected with hubs created that also afford amenities to transit customers. Possible locations

suggested were the ferry slip, Water Street opposite Broadway, other olocations on Broadway, Stewart Airport and the existing park-ride on Route 17K.

- **Sustainability-** Frequent comments were made regarding non vehicle modes (i.e., walk and bike) as a way to reduce pollution and fossil fuels. In some cases, these suggestions were related to availability of bus to complete longer trips. One concern was the lack of sidewalks in outlying areas.
- **Tourism** - The majority of public transportation related comments were for trips made by residents of the area. Some comments were made that the transit system should also focus on meeting the mobility needs of tourists.

Rider Survey

The on-board survey was designed to solicit input from current passengers from the local bus services and the Newburgh-Beacon Shuttle. Surveys cards were distributed by on-board survey staff on all three routes with the survey conducted on April 8, 9 and 15, 2009. A key dimension of the survey was the ability of the survey team to issue and collect the survey cards from patrons. The team issued a survey card to each passenger as they boarded the bus. The passengers then had the option to either fill out the survey during their trip on the vehicle, or take the survey home and return it to their driver during their subsequent trip.

- **Survey Method** - The survey team consisted of Consultant staff who had both an understanding of the Newburgh local and Newburgh-Beacon Shuttle routes, as well as a complete understanding of the survey procedures. Survey cards were issued to riders as they entered their respective vehicle. Riders were provided the option to complete the survey card while on the bus, or take the card with them to complete later. If the rider selected the former, a pencil was provided for their use. Riders were instructed to complete only one survey card throughout the day, should they find themselves on the bus again.
- **Survey Instrument** - The survey card, which is shown in Figure 30 (the survey card in Figure 30 is for the Newburgh-Beacon Shuttle), consisted of 19 questions. A very similar survey card was prepared for riders of the Northside and Southside bus routes. With the exception of four open-ended questions, riders were only required to check off a box to provide their response. The survey questions were primarily focused on three areas. The first group of questions concerned the passenger's trip itinerary, riding habits, including questions relating to how the patron accessed the bus, the length of time riding the bus and the rider's trip purpose.

The second group of questions requested attitudinal information regarding the riders view of the existing bus services and the system overall. The last group of questions focuses

on the socioeconomic characteristics of the respondent. These questions asked for information pertaining to key factors influencing travel habits including age, automobile availability and household income, among other questions. Additionally, the survey requested some information useful for marketing purposes, such as where the rider obtains information about Newburgh area transit services. The survey provided a space for each respondent to suggest the single most important improvement necessary for the system.

Figure 30 - Rider Survey Card (Not Actual Size)

Newburgh-Beacon Shuttle – Rider Survey – 2009

Dear Customers, We'd like to learn more about you and your travel needs to help the Newburgh-Beacon Shuttle plan its future services. Please read each question and mark the most appropriate answer. Thank you!

1. Please list the route you were on when you received this survey?
Route Name/Direction _____
2. How did you get to this bus? Walked _____ block(s) Bike
 Drove car Another bus (Route _____) Dropped off in car Other _____
3. After leaving this bus, how will you complete your trip to your final destination? Walk _____ block(s) Bike Drive car Other
 Will be picked up in car Another bus (Route _____)
4. How did you pay your fare on this bus? \$1 Fare \$50 Senior
 \$50 Disabled Monthly Uni-Ticket Weekly Uni-Ticket
 Other _____
5. How long have you been riding the Newburgh-Beacon service?
 Less than a year 1-2 years 3-4 years 5 or more years
6. How many one way bus trips do you make each week? (Count a round trip as two trips.) _____ trips
7. What is the purpose of this trip today? School Work Shopping
 Personal Business Medical/Dental Social/Recreation
 Other _____
8. How do you rate the Newburgh-Beacon service for each of the following:

	Excellent	Good	Very Good	Fair	Poor
Buses running on time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vehicle cleanliness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Value received for fare charged	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Driver courtesy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
System safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Printed information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Places served	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How often buses run	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hours of operation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall satisfaction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. Compared to a year ago, the Newburgh-Beacon service is:
 Getting better Getting worse Staying about the same
10. Which sources of information about the Newburgh-Beacon service do you most often use? Select top 3: Bus schedules
 System map Drivers Radio/TV Calling office
 Newspapers Word-of-mouth Notices on buses
 Phone book Other _____
11. Compared to last year, you are riding: More Less
 About the same I am a new rider
12. Could you have made this trip if this service were not available?
 No Yes Yes, but with inconvenience
13. Do you have a valid driver's license? Yes No
14. How many autos are there in your household?
 0 1 2 3 or more
15. Your sex: Male Female 16. Your age: _____ years
17. What is your occupation? Student Manager/Professional
 Technical/Skilled Clerical Service Homemaker
 Retired Unemployed Other _____
18. What is your total family income in a year? Less than \$10,000
 \$10,000-\$24,999 \$25,000-\$39,999 \$40,000-\$54,999
 \$55,000-\$69,999 \$70,000 and above
19. What is the single most important improvement that you would suggest for the Newburgh-Beacon service?

After completing this card, return it to the survey worker. You can also take it with you and return it to the driver on your next trip on the Newburgh-Beacon Shuttle. Thank you for your help!

- **Survey Response** - During the survey period, a total of 162 survey cards were issued and 125 valid survey cards were returned. This is a response rate of over 77 percent, which is a more than acceptable return for this type of survey. In terms of each service, there were 85 returned survey cards from the Newburgh-Beacon Shuttle service and 40 returned survey cards from the Northside and Southside routes of the Newburgh Local service. Clearly the response rate differed for each bus route. Another point is that all survey results are presented on a percentage basis with no response and extraneous answers eliminated from the data.

Survey Results - After completion of the survey, responses from the 125 completed surveys were tabulated. Responses for both services were evaluated separately and together to gain a sense of perspective for each service individually and the fixed route system in the Newburgh area as a whole. Results from each of the survey questions are presented in this section of the report. The key findings for each question are identified and discussed.

- Geographical Distribution** - Riders were asked to identify the origin and destination of their trip. For the local routes, common locations were in the City of Newburgh and the major shopping centers in the study area served by the local bus system. Another important bus stop is the 17K Park & Ride lot which is also the ShortLine bus terminal. For the Newburgh-Beacon Shuttle, the Beacon train station, where a connection to MTA Metro-North’s Hudson Line can be made, was the most popular destination. Somewhat interesting is the relatively small number of riders destined for Stewart International Airport which reflects the current level of flight activity.

Table 44 - Route Utilization

Route/Destination	Percent
<i>Newburgh Local</i>	
Broadway	19.0
Newburgh Mall	14.3
Vail’s Gate	14.3
17K Park & Ride	9.5
WalMart	9.5
Other	33.4
Total	100.0
<i>Newburgh-Beacon Shuttle</i>	
Beacon Station	71.2
Stewart Airport	2.5
City of Newburgh	13.8
17K Park & Ride	12.5
Total	100.0

- Mode of Accessing Vehicle** - Riders were asked to identify how they got to the bus they were riding. They were given several choices from which to select their response, including walked, biked, and drove a car or another bus, among other responses. As table 45 details, over 90 percent of those people using the local service walked to access their route, while about 45 percent of the Newburgh-Beacon Shuttle patrons accessed the bus by driving their car.

Table 45 - Access Mode

Service	Walked	Biked	Drove Car	Another Bus	Dropped Off	Other/ Train	Total
Newburgh Local	91.6	0.0	0.0	5.6	2.8	0.0	100.0
N-B Shuttle	19.5	2.4	45.1	4.9	9.8	18.3	100.0
System	41.5	1.7	31.4	5.1	7.6	12.7	100.0

- Mode to Complete Trip** - Riders were then asked to identify how they would complete their trip after leaving the bus. They were given several choices from which to select their response. Table 46 details the response to this question, and similarly to the previous question, walked was the most popular response among patrons of the Newburgh Local services, with nearly 74 percent of the respondents selecting this option. The second most popular response was another bus, with over 21 percent of the response, which represents those people who transferred to the other Newburgh Local service, the Newburgh-Beacon Shuttle, or any of the bus services that operate out of the 17K Park & Ride facility. The Newburgh-Beacon Shuttle respondents selected other/train to complete their trip, which is reasonable since a majority of the people who use the service are riding it to get to Beacon train station to continue their trip on MTA Metro-North's Hudson Line.

Table 46 - Mode to Complete Trip

Service	Walked	Biked	Drove Car	Another Bus	Picked Up	Other/ Train	Total
Newburgh Local	73.7	0.0	0.0	21.1	2.6	2.6	100.0
N-B Shuttle	21.4	1.3	7.1	7.1	17.9	45.2	100.0
System	37.7	0.8	4.9	32.0	13.1	11.5	100.0

- Form of Payment** - The next question asked the survey respondents how they paid to board the vehicle. As shown in Table 47, a majority of riders from both of the services use the standard adult fare (i.e., \$1.50 for the Newburgh Local services; \$1.00 for the Newburgh-Beacon Shuttle). Beyond that, for the Newburgh Local services, over 20 percent of the riders said that they paid half-fare available to senior citizens, while nearly 38 percent of the Newburgh-Beacon Shuttle patrons employed the monthly Uni-Ticket to gain access to the bus.

Table 47 - Form of Payment

Service	Standard	Half-Senior	Half-Disabled	Monthly Uni-Ticket	Weekly Uni-Ticket	Other	Total
Newburgh Local	71.8	20.5	5.1	0.0	2.6	0.0	100.0
N-B Shuttle	55.3	3.5	0.0	37.7	3.5	0.0	100.0
Total	60.5	8.9	1.6	25.8	3.2	0.0	100.0

- Length of Time Riding** - Patrons were then asked to select a length of time that they have been using the service for their transit needs. Table 48 details the response for this question for both services. The response shows that for the Newburgh Local service, a majority of the riders have been using the service for over five years, indicating that many patrons who use the Northside and Southside routes, rely solely on the service for their transit needs. Conversely, a majority of the Newburgh-Beacon Shuttle passengers have been using the service for a much shorter amount of time, indicating that the commuter service from the 17K Park & Ride is a potentially growing market; however, the other market served is dependent on activity at Stewart International Airport.

Table 48 - Years as a Passenger

Service	< 1 Year	1-2 Years	3-4 Years	5 + Years	Total
Newburgh Local	12.5	27.5	15.0	45.0	100.0
N-B Shuttle	34.1	27.1	21.2	17.6	100.0
Total	27.2	27.2	19.2	26.4	100.0

- Comparative Use** - Survey respondents were then asked if they were using the service more, less or the same amount as last year (Table 49). Passengers who had not used the service until recently were given the option to say that they are new riders. A majority of the passengers from both of the services say that they are using their respective bus route about the same amount as they were a year ago; however, nearly one-third of the patrons from both services mentioned that they were using transit more than in the previous year. Both statistics show promise since it indicates that people are not using the service less than before.

Table 49 - Comparative Use

Service	More	Less	Same	New	Total
Newburgh Local	28.9	5.3	57.9	7.9	100.0
N-B Shuttle	31.3	5.0	47.4	16.3	100.0
Total	30.5	5.1	50.8	13.6	100.0

- Trip Purpose** - Riders were asked to identify the purpose of the trip that they were making the day that they were surveyed. Table 50 shows that work trips dominate the use of both services; however, three out of every four patrons of the Newburgh-Beacon Shuttle are using the service for work, while every other person on the Newburgh Local routes are going to work on the bus. Personal business was the second most cited trip purpose for both services, with over 22 percent of the Newburgh Local respondents citing that purpose and nearly ten percent of the Newburgh-Beacon Shuttle passengers. To help further explain the disparity among the various trip purposes per fixed route service, Figures 31 and 32 graphically depict the results.

Table 50 - Trip Purpose

Service	School	Work	Shopping	Personal Business	Medical	Social	Other	Total
Newburgh Local	0.0	47.5	25.0	22.5	0.0	0.0	5.0	100.0
N-B Shuttle	5.9	77.6	0.0	9.4	1.2	4.7	1.2	100.0
Total	4.0	68.0	8.0	13.6	0.8	3.2	2.4	100.0

Figure 31 - Newburgh Local Routes Trip Purpose

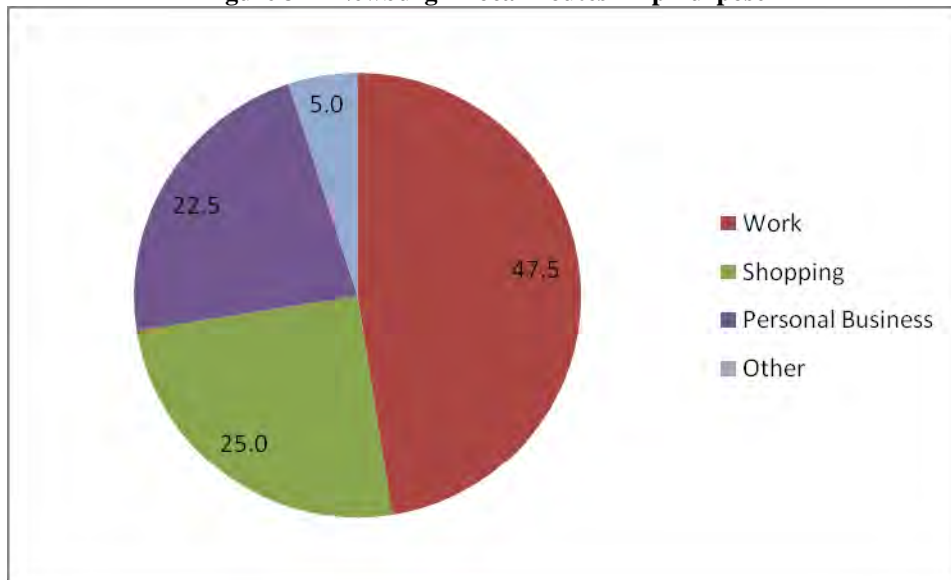
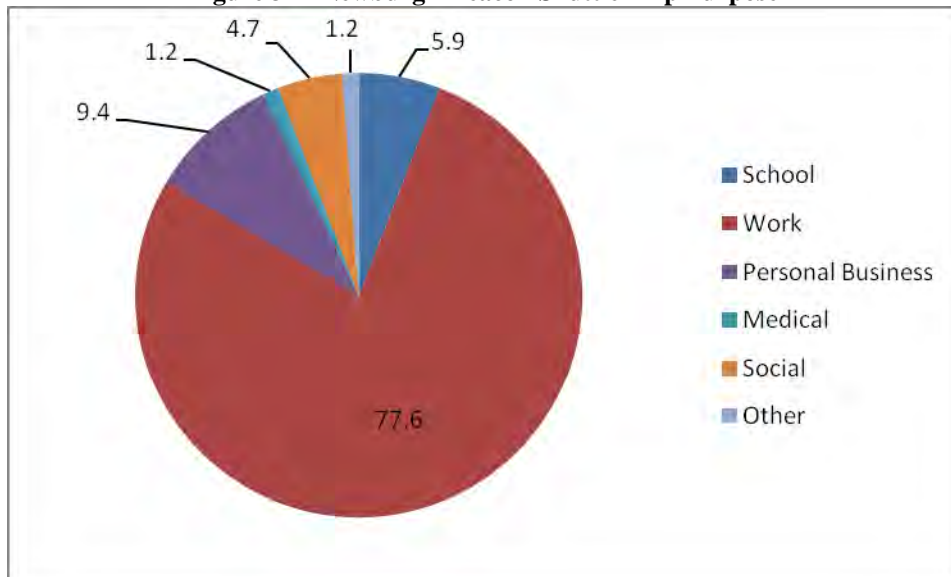


Figure 32 - Newburgh-Beacon Shuttle Trip Purpose



- Service Evaluations** - The next question asked the survey respondents to rate the performance of the Newburgh Local and Newburgh-Beacon Shuttle services in ten different categories. Table 51 provides a breakdown of the responses for the Newburgh Local service, while Table 52 does the same for the Newburgh-Beacon Shuttle. Each table demonstrates that differences occur between the specific responses in the various categories. For example, on the Newburgh Local service, places served and vehicle cleanliness received the smallest percentage of “excellent” responses (25.0 and 28.2 percent, respectively), while driver courtesy received the largest percentage of “excellent” responses at 46.1 percent. On the Newburgh-Beacon Shuttle, printed information and how often buses run received the smallest amount of “excellent” responses (37.7 and 38.2 percent, respectively), while driver courtesy received the largest percentage of “excellent” responses at over 73 percent. It is interesting to note the more favorable response towards the Newburgh-Beacon Shuttle when compared to the responses for the Newburgh Local services even though both are operated by the same company.

Table 51 - Newburgh Local Service Evaluation

Category	Rating - All Figures in Percent (%)						
	Excellent	Very Good	Good	Total Favorable	Fair	Poor	Total
Bus Running Time	36.6	43.9	7.3	87.8	12.2	0.0	100.0
Vehicle Cleanliness	28.2	38.5	10.3	77.0	17.9	5.1	100.0
Value Received for Fare Charged	37.8	35.1	8.1	81.0	16.3	2.7	100.0
Driver Courtesy	46.1	30.8	7.7	84.6	12.8	2.6	100.0
System Safety	43.2	40.5	10.8	94.5	5.5	0.0	100.0
Printed Information	38.2	38.2	8.9	85.3	14.7	0.0	100.0
Places Served	25.0	55.6	11.1	91.7	8.3	0.0	100.0
How Often Buses Run	30.6	41.6	11.1	83.3	5.6	11.1	100.0
Hours of Operation	29.7	37.8	8.1	75.6	16.3	8.1	100.0
Overall Satisfaction	30.6	50.0	8.3	88.9	11.1	0.0	100.0

Table 52 - Newburgh-Beacon Shuttle Service Evaluation

Category	Rating - All Figures in Percent (%)						
	Excellent	Very Good	Good	Total Favorable	Fair	Poor	Total
Bus Running Time	47.6	36.6	7.3	91.5	7.3	1.2	100.0
Vehicle Cleanliness	39.5	24.7	7.4	71.6	22.2	6.2	100.0
Value Received for Fare Charged	64.5	25.0	6.6	96.1	3.9	0.0	100.0
Driver Courtesy	73.5	12.0	10.9	96.4	2.4	1.2	100.0
System Safety	48.1	35.4	10.1	93.6	3.8	2.6	100.0
Printed Information	37.7	40.2	9.1	87.0	9.1	3.9	100.0
Places Served	38.2	44.7	5.3	88.2	9.2	2.6	100.0
How Often Buses Run	39.5	32.1	9.9	81.5	12.3	6.2	100.0
Hours of Operation	42.8	24.7	10.4	77.9	16.9	5.2	100.0
Overall Satisfaction	43.7	41.3	7.5	92.5	7.5	0.0	100.0

For this type of survey, a response is considered favorable if the combined total of responses in the “excellent,” “very good,” and “good” categories is greater than or equal to 90 percent of all responses. Both tables provide the total of these three categories, which are listed under the total favorable heading. For the Newburgh Local services, only system safety and the places served categories attained a favorable result, while bus running time, value received for fare charged, driver courtesy, system safety and overall satisfaction are considered favorable for the Newburgh-Beacon Shuttle service.

Figures 33 and 34 detail the overall satisfaction for the Newburgh Local services and the Newburgh-Beacon Shuttle, respectively.

Figure 33 - Newburgh Local Routes Overall Satisfaction

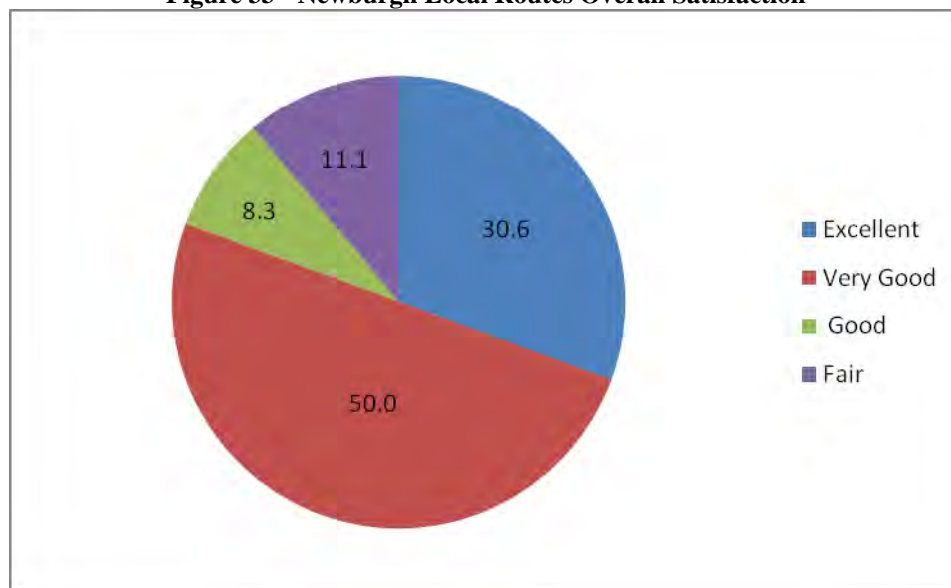
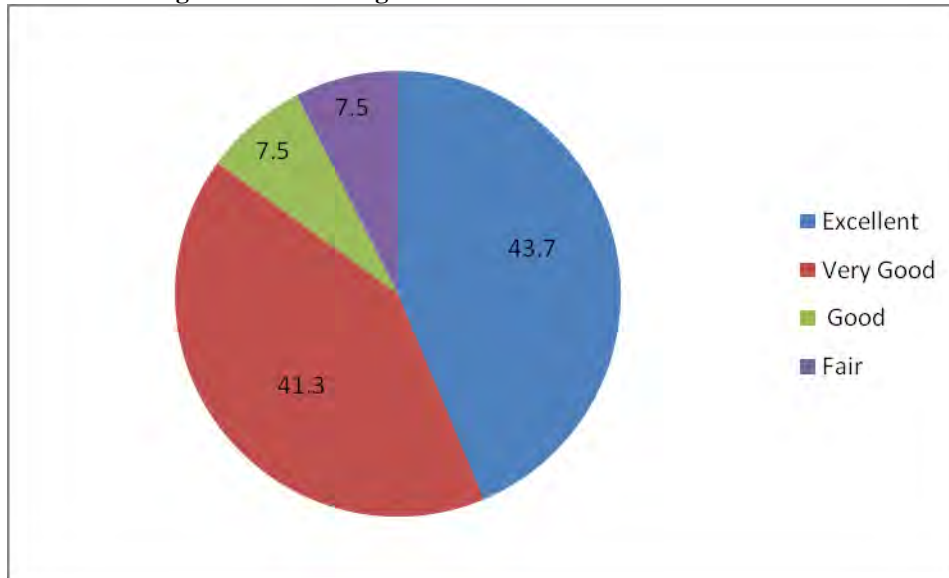


Figure 34 - Newburgh-Beacon Shuttle Overall Satisfaction



As the figures illustrate, the Newburgh-Beacon Shuttle passengers feel that their service is more than satisfactory, as nearly 44 percent felt that the service is “excellent” and another 41 percent suggesting that the service is “very good.” Exactly half of the Newburgh Local patrons felt that their service was “very good,” while another 30 percent said the service was “excellent.” While the overall satisfaction of the Newburgh Local service does not match that of the Newburgh-Beacon Shuttle, the rating is still positive.

- Quality of Service Trend** - Riders of both services were asked to answer whether or not their respective service has improved during the past year. Table 53 details the results of this question and shows that a majority of the patrons of the system feel that their respective service has remained the same since last year. Less than three percent of the respondents felt that the service has gotten worse over the past year.

Table 53 - Quality of Service Trend

Service	Getting Better	Getting Worse	Stayed the Same	Total
Newburgh Local	41.7	0.0	58.3	100.0
N-B Shuttle	33.8	4.1	62.1	100.0
Total	36.4	2.7	60.9	100.0

- Sources of Information** - Survey respondents were asked to identify what sources of information they use to find out about service. The patrons were given several options to choose from and were asked to identify up to three sources. Table 54 details the response, and as shown, the most popular medium used to get service information was bus schedules, followed by getting information from the drivers and word-of-mouth.

Table 54 - Sources of Information

Service	Bus Schedules	Service Map	Drivers	Radio/TV	Calling Office	Newspaper	Word-of-Mouth	Notices on Vehicles	Phone Book	Other	Total
Newburgh Local	43.9	9.1	18.2	0.0	4.5	3.0	12.1	7.6	0.0	1.6	100.0
N-B Shuttle	35.0	4.5	23.9	3.0	7.5	0.7	12.7	8.2	0.0	4.5	100.0
Total	38.0	6.0	22.0	2.0	6.5	1.5	12.5	8.0	0.0	3.5	100.0

- Extent of Transit Dependency** - The next series of questions relate to the dependency of the Newburgh Local and Newburgh-Beacon Shuttle riders on transit services for their travel needs. These questions help to determine the level at which the systems ridership base is made up of choice or captive riders. A ridership base that is heavily transit dependent indicates that only certain population groups are using the service, rather than a broad cross-section of the population in the service area.

The first of these questions asked riders to indicate whether or not they could have made their trip if the transit service that they were riding on when they participated in the survey were not available. For the Newburgh Local services, about one third of the respondents would not be able to make the trip if the service was not available, while another one third would be able to make the trip. The last one-third would be able to make the trip if service was not available, but expressed that it would be an inconvenience. Conversely, on the Newburgh-Beacon Shuttle, one-third of the respondents would not be able to make the trip, while only 16 percent said that they would be able to make the trip if service were not available. Lastly, over half of the Newburgh-Beacon Shuttle survey respondents said that they would be able to make their trip, but that it would be an inconvenience.

Table 55 - Ability to Make Trip

Service	No	Yes	Inconvenience	Total
Newburgh Local	31.6	34.2	34.2	100.0
N-B Shuttle	30.5	15.9	53.6	100.0
Total	30.8	21.7	47.5	100.0

The next question in this series was designed to further gauge the level of transit dependency among passengers of the fixed route services; it asked whether or not the rider has a valid driver's license. Table 56 details the response to this question and shows that two-thirds of the systems riders do have a valid driver's license; however, a majority of the riders who do have a driver's license are using the Newburgh-Beacon Shuttle, where nearly 80 percent of the passengers have a license. Nearly 63 percent of the Newburgh Local patrons do not have a driver's license, which confirms their need for public transportation.

Table 56 - Driver's License

Service	Yes	No	Total
Newburgh Local	37.1	62.9	100.0
N-B Shuttle	79.3	20.7	100.0
Total	66.7	33.3	100.0

The final question in the transit dependency series requested information regarding the number of automobiles in the rider's household. Table 57 lists these results, and as can be seen, over 55 percent of the Newburgh Local passengers have zero cars available for their use, compared to fewer than 20 percent of the Newburgh-Beacon Shuttle patrons. More than 55 percent of the Newburgh-Beacon Shuttle commuters have two or more cars available for their use. These numbers detail the captive nature of the Newburgh Local passengers, while a majority of the Newburgh-Beacon Shuttle passengers are choice riders.

Table 57 - Household Vehicles

Service	0	1	2	3+	Total
Newburgh Local	56.8	18.9	16.2	8.1	100.0
N-B Shuttle	18.5	25.9	42.0	13.6	100.0
Total	30.5	23.7	33.9	11.9	100.0

This series of questions demonstrate the transit dependency of the Newburgh Local patrons, indicating their reliance on public transportation for their mobility needs. This is especially the case when compared to the choice ridership level of the Newburgh-Beacon Shuttle. It is important to note that a portion of this disparity can be explained by the nature of the services that are represented by the data. The Newburgh-Beacon Shuttle is a commuter service intended to take passengers to and from work (or, in this case, to and from the train) with relatively high auto access (e.g., 17K Park & Ride) while the Northside and Southside routes are services intended to take patrons to local stores, jobs and other destinations.

- **Socioeconomic/Demographic Measures** - The next series of questions concerned the socioeconomic and demographic characteristics of the rider. This information allows for comparisons between the riders of the Newburgh Local and Newburgh-Beacon Shuttle services ridership base to the population of the study area, as described earlier in this report. The first of these questions asked the rider to identify their gender. As Table 58 shows, the ridership by gender for both services is nearly identical at around 35 percent male and 65 percent female.

Table 58 - Gender

Service	Male	Female	Total
Newburgh Local	34.2	65.8	100.0
N-B Shuttle	35.8	64.2	100.0
Total	35.3	64.7	100.0

The next question asked the respondent to identify their age, which is displayed in Table 59. The age of the rider for both services is spread uniformly throughout the listed age groups. For the Newburgh Local service, the age group of 26 to 35 years olds were represented the most, while the 18 to 25 and 36 to 45 year old age groups were the ones selected the most by the Newburgh-Beacon Shuttle commuters. It should be noted that while there were no survey respondents who said that they were younger than 18 years old, there were a few younger riders on the bus who did not complete a survey form.

Table 59 - Age

Service	Under 18	18-25 Years	26-35 Years	36-45 Years	46-55 Years	56-65 Years	65 and Over	Total
Newburgh Local	0.0	20.0	23.3	10.0	20.0	16.7	10.0	100.0
N-B Shuttle	0.0	23.6	16.4	23.6	16.4	14.5	5.5	100.0
Total	0.0	22.4	18.8	18.8	17.6	15.3	7.1	100.0

Passengers were then asked to identify their occupation, with the results listed in Table 60. As the table shows, for the Newburgh Local services, greater than 24 percent listed themselves in the “other” category, while nearly 22 percent said that they work in the service industry. For the Newburgh-Beacon Shuttle more than one-third of the respondents said that they were a manager or professional - by far the highest response for this service - while another 16 percent said that they have a technical or skilled job. The results for the commuter shuttle are to be expected, as most of the patrons are using the service to get to jobs in or around New York City via MTA Metro-North’s Hudson Line. Conversely, the Newburgh Local services were being used by people with a variety of different job types locally, including eight percent who are currently unemployed.

Table 60 - Occupation

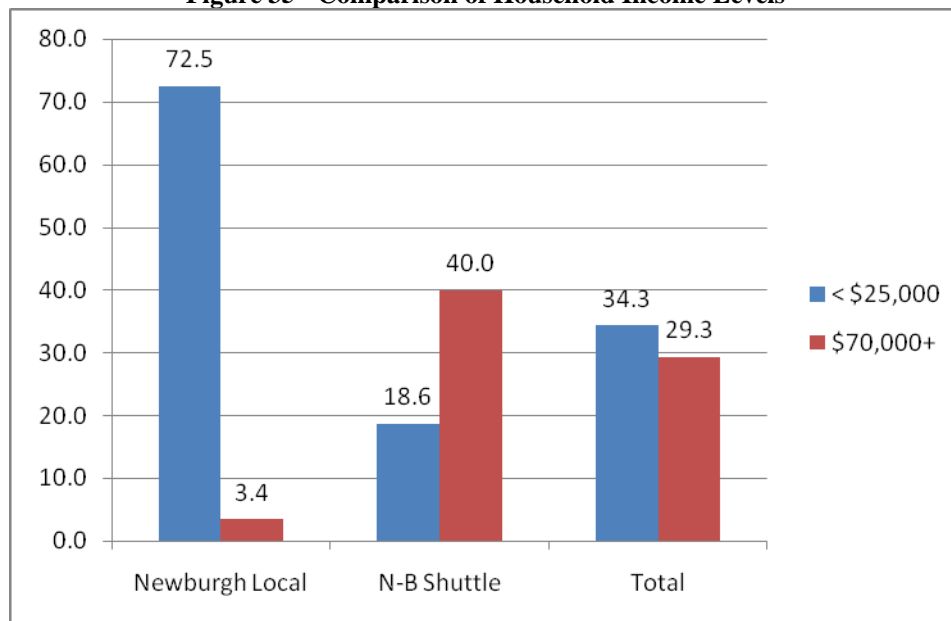
Service	Student	Manage/ Professional	Technical/ Skilled	Clerical	Service	Homemaker	Retired	Unemployed	Other	Total
Newburgh Local	2.7	5.5	10.8	2.7	21.6	10.8	13.5	8.1	24.3	100.0
N-B Shuttle	11.0	35.3	15.9	13.4	4.9	1.2	7.3	0.0	11.0	100.0
Total	8.4	26.1	14.3	10.1	10.1	4.2	9.2	2.5	15.1	100.0

Riders were then asked to provide their annual household income (Table 61). The survey provided a series of income ranges and patrons were asked to mark the appropriate box. Nearly all of the riders of the Newburgh Local service reported relatively low household incomes, while patrons of the Newburgh-Beacon Shuttle exhibited much higher income levels. To further detail the differences between the household income levels of both of the services, Figure 35 illustrates the number of respondents whose households earn less than \$25,000 per year versus those that earn more than \$70,000 per year, by route and overall.

Table 61 - Annual Household Income

Service	< \$10,000	\$10,000- \$24,999	\$25,000- \$39,999	\$40,000- \$54,999	\$55,000- \$69,999	\$70,000 +	Total
Newburgh Local	24.2	48.3	17.3	3.4	3.4	3.4	100.0
N-B Shuttle	7.2	11.4	15.7	15.7	10.0	40.0	100.0
Total	12.1	22.2	16.2	12.1	8.1	29.3	100.0

Figure 35 - Comparison of Household Income Levels



As the figure shows, greater than 72 percent of the Newburgh Local service’s passengers’ households earn less than \$25,000 per year, while fewer than 19 percent of the Newburgh-Beacon Shuttle patrons’ households earn less than that amount. Conversely, 40 percent of the Newburgh-Beacon Shuttle passengers’ households earn over \$70,000, compared to fewer than four percent of the Newburgh Local passengers’ households.

- **Service Improvements** - Survey respondents were asked to suggest the most important improvement that needs to be made to their respective service in order to keep the service viable. The five most cited suggestions are listed for each service type in each of the exhibits.

As Table 62 shows, the need for evening service was the number one cited service improvement for the Newburgh Local services. Currently, the Northside and Southside routes end their daily service around 6:00 PM, which severely limits the ability for many of these captive riders to accomplish any kind of task that they may have or their ability to get to and from a job that does not offer daytime working hours (e.g., between 9:00 AM and 5:00 PM). Additional suggestions include the need for more frequent service, as points not along Broadway are served only every two hours; and the need for Sunday service, as service on the Newburgh Local routes is currently only operated Monday through Saturday.

For the Newburgh-Beacon Shuttle, the most cited suggestion for improvement is the need for cleaner buses, with ten passengers suggesting this improvement. The need for more frequent service was addressed by eight patrons, while five passengers said that everything about the Newburgh-Beacon Shuttle was good.

Table 62 - Suggested Service Improvements

Suggestion	Times Cited
Newburgh Local	
Need for Evening Service	10
More Frequent Service Needed	6
Sunday Service Needed	4
Have Bus Stops/Cease Flag Stop Service	2
On-time Performance	2
Newburgh-Beacon Shuttle	
Bus Cleanliness	10
More Frequent Service Needed	8
Need for Earlier/Later Service	5
Better Weekend Service Needed	5
Everything is Good	5

Ride Check Survey

Ongoing with the rider survey, on-board consultant personnel also conducted ride checks on all three routes. The ride checks detailed how many people were boarding and alighting the vehicles at each bus stop, as well as recording the times that the vehicle reached the stop. These

data are useful in understanding ridership patterns and the utilization of each segment. Since overcrowding is not a current concern, the analysis focused on those route segments where there are few, if any, riders. The ride check information is also helpful in better understanding running times and on-time performance.

Weekday ridership results were conducted for both the Northside and Southside services of the Newburgh Local system, as well as for the Newburgh-Beacon Shuttle. As mentioned previously, the ridechecks for the Newburgh Local services were performed on April 9, 2009, while the ridechecks for the Newburgh-Beacon Shuttle were conducted on April 8 and 15, 2009. The weekend services were not surveyed for this effort. All peak period trips were surveyed. One midday trip on each of the Northside and Southside routes were not surveyed to allow survey personnel a break. Since information was also available from farebox readings, the impact on survey results from the fact that the ridecheck survey was not a 100 percent sample is minimal.

To obtain the ridecheck data, consultant personnel staffed each route and manually counted the number of boarding and alighting passengers, as well as recording the number of passengers currently on board the vehicle (passenger load) at each stop. In the end, three types of data were compiled - boardings, alightings and passenger loads. Each provides a more in-depth understanding of different aspects of the local fixed route services in the Newburgh study area.

Analyzing boardings and alightings reveals which stops have the highest demand. Stops with the highest level of activity are good candidates for new or improved rider amenities, such as benches, or bus shelters. Evaluating route loads exhibit the most popular and least utilized portions of each route. This information is important for planning route coverage, service frequency and scheduling the appropriate number of vehicles. Stops and route segments that are not frequently used could be considered for adjustments in order to better serve the riders.

- **Route Results** - Table 63 provides a summary of the findings obtained from the ride check count for the three fixed route services. The table details the number of trips, the ridership per bus trip as well as showing the average boardings per revenue hour. Finally, the table shows details peak load information (i.e., the highest number of passengers on the bus at any one time), including the location when the highest load began, the trip start time and the number of passengers at its peak load.

As the table shows, the ride check count recorded a total of 383 boardings. The Newburgh-Beacon Shuttle exhibited the highest number of boardings with 194 (which accounted for two vehicles operating for 17.25 hours per day, each), which represents half of the systems boardings (i.e., all three bus routes) for the day that the ridechecks took place. The Northside route had 104 boardings during the ridecheck period, which accounted for over 26 percent of the boardings that day, while the Southside route had 95 boardings, which equated to 24 percent of the systems boardings.

Table 63 - Ride Check Results

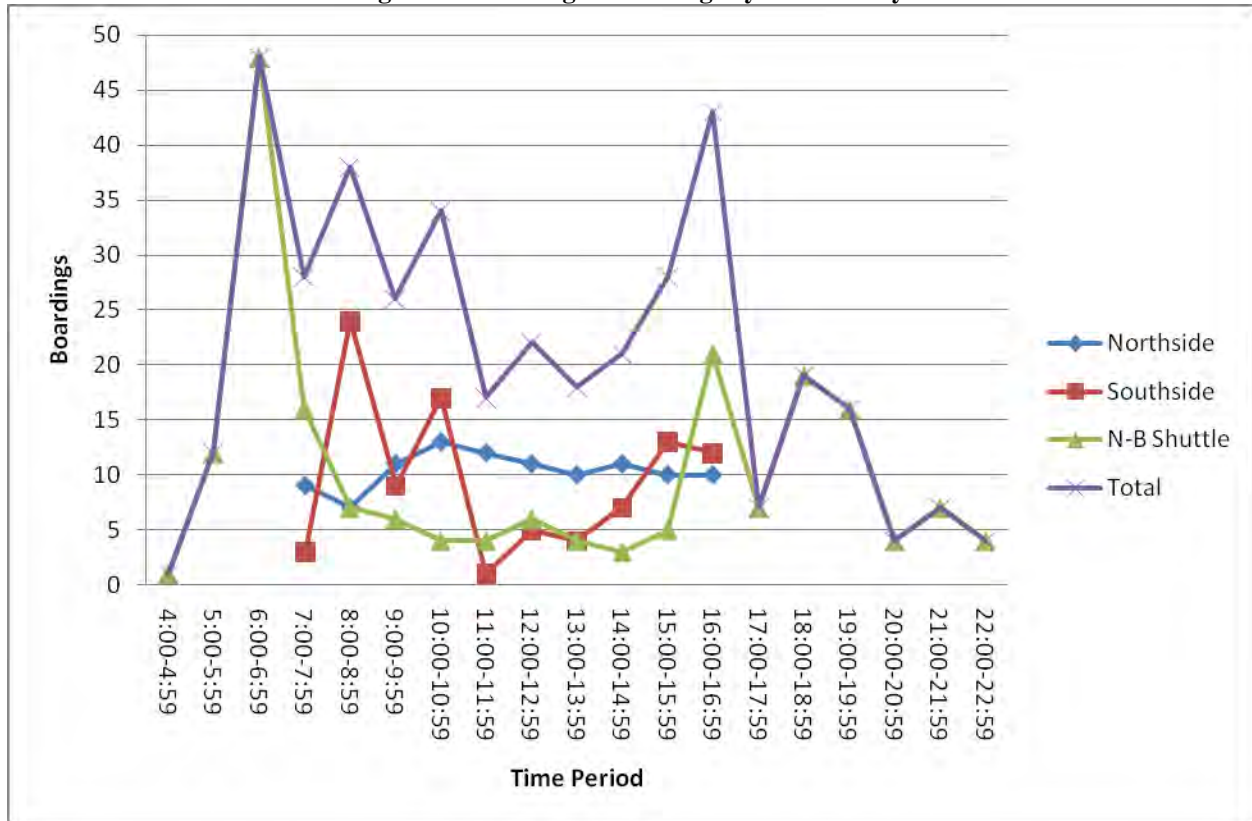
Route	Daily Trips	Ridership		Percent of Boardings	Boardings/ Trip	Boardings/ Rev Hour	Max Load Point
		Ons	Offs				
Northside	5	104	92	26.5	20.8	12.2	1st & Grand 8:47 AM Trip/11 Passengers
Southside	5	95	97	24.2	19.0	10.2	Broadway & Fullerton 7:30 AM Trip/ 19 Passengers
N-B Shuttle	37	194	194	49.4	5.2	5.6	17K Park & Ride Lot 5:52 AM Trip/ 20 Passengers
Total	47	393	383	100.0	8.4	7.5	

Another way to examine the boarding statistics is to examine the number of boardings per surveyed trip. The boardings per hour measure describes the concentration of ridership, holding constant for differences in number of buses and service hours. The Northside route, which operates the fewest revenue hours of the system, had the highest value for boardings per revenue hour at 12 persons per revenue hour, while the Southside route had greater than ten patrons per revenue hour. The Newburgh-Beacon Shuttle had fewer than six persons boarding per surveyed revenue hour.

The peak load on the Northside route came during the 8:47 AM trip and occurred at 1st and Grand Streets when 11 passengers were on the vehicle. For the Southside route, the peak load occurred during the 7:30 AM trip when 19 passengers were on the vehicle starting at Broadway and Fullerton Street. Lastly, the peak load for the Newburgh-Beacon Shuttle began at the 17K Park & Ride Lot when 20 people were on the vehicle on the trip that began at 5:52 AM.

Figure 36 displays passenger boardings by time of day for the system and per route. As the figure details, the Newburgh-Beacon Shuttle's boardings are at their highest during the early morning, late afternoon and early evening, with very few people utilizing the service between 8:00 AM and 4:00 PM. The boardings on the Northside route remain consistent throughout its service day, while the boardings on the Southside route rise and fall during the course of the day.

Figure 36 - Passenger Boardings by Time of Day



- Geographical Results** - For the purpose of this analysis, boardings, alightings and total activity (i.e., boardings and alightings combined) are discussed. Table 64 illustrates this data for the Northside route, the Southside route and the Newburgh-Beacon Shuttle, respectively. These condensed tables detail the stops with the highest level of activity (i.e., total ons and offs).

Table 64 - Passenger Activity

Stop	Total Activity
Northside	
Shoprite	9
Broadway & Liberty	28
Route 300 & Route 84 (Gateway Diner)	8
Newburgh Mall	21
WalMart	22
Target-Ames Plaza	14
Mid-Valley Mall (Price Chopper)	9
Southside	
Newburgh Mall	23
WalMart	20
Adams Fairacre Farms	8
Price Chopper/Rite Aid	10
Broadway & Liberty	10
Broadway & Fullerton	11
Stop & Shop	9
Newburgh-Beacon Shuttle	
17K Park & Ride Lot	162
Broadway & West	8
Beacon Station	181

These data will prove valuable as decisions are made on modifying existing routes since it is the only source of information on the ridership patterns by bus stop and segment.