
DESCRIPTION OF CENSUS ANALYSIS

To determine the areas of the region where transit service is appropriate, Wilbur Smith Associates conducted an analysis of Census data. The 1990 Census was used for the analysis since the 2000 Census data have not been fully released.

The Census data were analyzed at the Block Group level. The Block Group is the smallest geographic unit for which the Census Bureau reports the necessary data. Two separate calculations were made from the Census data. One calculated the propensity of the Block Group's population to use transit. This calculation determined the relative percentage of the population that would be likely to use transit at a given level of service, or the "need" for service. The second calculation looked at the theoretical ridership levels in each Block Group, or the "demand" for service. The two calculations give a more complete picture of ridership potential and complement one another.

The following discussion references the attached tables showing the Census data for each block group.

IDENTIFICATION OF TRANSIT PROPENSITY

To identify the transit propensity for each of the 83 Block Groups, eight demographic factors were considered. These factors were carefully selected based upon industry research regarding the potential users of transit. The majority of the background analysis is contained in TCRP Report 28: *Transit Markets of the Future, The Challenge of Change*.

The specific factors examined were:

- Population density
- Percentage of households without cars
- Percentage of persons with mobility limitations
- Percentage of persons with work disabilities
- Percentage of persons who were not White, non-Hispanic
- Percentage of low-income households
- Percentage of female persons
- Percentage of persons in the workforce age 65 or older

An index for each of these factors was developed that determined the relative rank of the Block Group compared with the county as a whole. For example, the population density for Pitt County in 1990 was 164.8 persons per square mile. Block Group 1 in Tract 1 (in east-central Greenville) had a density of 6,564.3 persons per square mile. The density index is 39.83, which is the ratio of the Block Group's density to the County's density. This same calculation was made for each of the eight factors for all Block Groups and an index factor was developed for each factor.

After each factor index was calculated, a Composite Score for each Block Group was determined. The Composite Score is the sum of each factor index multiplied by its relative weight based upon the industry research. The weights for each factor are shown in **Exhibit A-1**. The weight factors add to a total weight of 30, which each factor weight based upon the relative importance of the factor in predicting transit usage. The density factor received the highest weight (10) since the research indicates that approximately one-third of the propensity to use transit can be explained by the density of the location.

Exhibit A-1
Propensity Factor Weights

Factor	Weight	Factor	Weight
Density	10	Mobility Limitation	5
Work Disability	2	Minority	2
Female	1	Low Income	2
Zero Car Households	7	Older Workers	1

These weighted indexes were summed to develop the Composite Score. Block Group 1 in Tract 1 received a Composite Score of 412.60.

The Composite Scores were then statistically grouped into five categories, from “Very Low” to “Very High” based upon their relationship to the scores of the other Block Groups. “Very Low” is defined as the average score (137.07 for this calculation) minus the standard deviation of all scores. In this instance, this level is negative, meaning no Block Group is “Very Low.” “Low” propensity is defined as the range between the average score minus one-third of the standard deviation to the level of “Very Low.” For Pitt County, this range is from a Composite Score of 69.55 to a Composite Score of –65.49. “Average” is the range between the average score plus or minus one-third standard deviation. “High” propensity is the average score plus one-third standard deviation (a level of 204.59), and “Very High” is the average score plus one standard deviation (a level of 339.62).

While this approach is complex to describe, what it implies is that the residents of a “High” Block Group are 50 percent more likely to use transit than residents of an “Average” Block Group. “Very High” Block Groups are approximately 1.5 times as likely to use transit, as are residents in an “Average” Block Group. The resulting classification indicates which Block Groups in Pitt County have a higher propensity to use transit compared with every other Block Group in Pitt County. Block Group 1 in Census Tract 1, with its score of 412.60 is three times as large as the average Block Group indicating that residents in this area are three times as likely to take transit.

RIDERSHIP INDEX

Using the same industry research used for the propensity calculation, it is possible to calculate a ridership index for each Block Group. This calculation is based upon the relative percentage of each demographic group that uses transit in similar locales around

the country. Inherent in the calculation is the assumption that a similar level of transit service is provided for each Block Group in Pitt County as for the “average” similar locale in the rest of the country.

The calculation of the ridership index complements the calculation of transit propensity. It is possible for a Block Group to rank high in one calculation and low in another. For example, Block Group 1, Tract 1, has a “Very High” propensity, but a “Very Low” ridership index. In other words, almost all residents of the Block Group are likely to use transit, but since there is such a small population base, the overall ridership index is “Very Low.”

Using the average capture rate (percentage of the population who uses transit) for low-density, low-population areas for each of the demographic categories, a ridership index was calculated. Using Block Group 1, Tract 1 as the example, 1.60% of the population as a whole could be expected to use transit. Of the 919 residents, this translates into 15 riders. For the 33 residents with mobility limitation, an average of 10.48% could be expected to use transit, or 6 riders. This calculation is applied to each of the eight factors for all Block Groups.

The ridership index is the sum of the estimated riders for each category. To account for residents who are in more than one category, for example low-income women, the resulting sum is divided by the overall population weights. Total population (the density equivalent) accounts for 100% of the population, mobility limitations accounts for 3.40%, and so forth. The total weight is 307.74%, implying that everyone is counted an average of three times.

The resulting ridership index is the number of individuals who could be expected to use transit on the typical day, assuming an equivalent level of service was provided to the average county in the US. It is not the same as the average daily ridership on transit, which is expressed in terms of “unlinked trips” or boardings.

LOCATIONS OF TRANSIT OPPORTUNITY

The rankings above can be used to identify those Block Groups where the opportunity for transit use and need is the greatest. An “opportunity weight” was developed for each Block Group based upon the ranking received for the propensity and ridership examination. A “Very High” score in propensity or ridership was given a weight of five, while a “Very Low” score was given a weight of one. These weights were summed to derive the “opportunity weights.” These weights could range from “10” for a Block Group with “Very High” propensity and ridership index to “2” for a Block Group with “Very Low” propensity and ridership index. The Block Groups were then allocated to priority levels based upon the opportunity weights. The following priority levels were established:

- Priority 1: Opportunity weight of 9 or 10 (5 Block Groups)
- Priority 2: Opportunity weight of 7 or 8 (19 Block Groups)

- Priority 3: Opportunity weight of 6 (18 Block Groups)
- Priority 4: Opportunity weight of 4 or 5 (34 Block Groups)
- Priority 5: Opportunity weight of 2 or 3 (7 Block Groups)

The priority levels are a rough approximation of the relative importance of each Block Group in the county relative to transit.

The following pages contain the tables showing the results for the Propensity, Ridership Index, and Priority analyses for each block group.