

Appendix A - Glossary of Terms

Miami Valley Land Development Suitability Assessment

Developability Analysis – A spatial analysis to determine the amount and geographic location of developable land based on the Land Suitability Measure and the Land Development Condition Measure.

Developable – Land that is currently identified as undeveloped or partially developed from the Land Development Suitability Measure and identified as suitable from Land Suitability Measure.

Developed – Land identified as residential, commercial, industrial, right-of-way, or tax exempt properties and has a structure present. Developed land is further classified into Fully Developed and Partially Developed.

Fully Developed – Land identified as residential, commercial, industrial, right-of-way, or tax exempt properties with occupied structures.

Highly Suitable – Highest rank of the Land Suitability Measure.

Land Development Intensity – The extent to which land is used in terms of the concentration of activity measured by impervious surface, residential density, and non-residential intensity data.

Land Developability Measure – A measure that defines the land developability to accommodate potential future physical development based on the Land Suitability Measure and the Land Development Condition Measure.

Land Suitability Measure – A composite suitability score that defines whether land is suited for physical development or not based on land characteristics. Land characteristics are based on fifteen Natural Environment factors and fifteen Built Environment factors.

Land Development Condition Measure – A measure that defines the current condition of land development status. Conditions are classified as fully developed, partially developed, undeveloped, or protected.

Moderately Suitable – Middle rank of the Land Suitability Measure.

Not Developable – Land that is currently identified as undeveloped or partially developed from the Land Development Condition Measure and identified as not suitable from the Land Suitability Measure; Land that is currently identified as fully developed; or Land that is currently identified as protected.

Not Planned for Development – Areas not identified as residential, commercial, industrial, or institutional according to the future land use plan map.

Not Zoned for Development – Areas not zoned as residential, commercial, industrial, or institutional according to the latest zoning map.

Partially Developed – Land identified as residential, commercial, industrial, right-of-way, or tax exempt properties with vacant structures.

Planned for Development – Areas identified as residential, commercial, industrial, or institutional according to the land use plan map.

Protected – Land identified as park land, active recreation land, or land protected by conservation easements.

Suitable – Lowest rank of the Land Suitability Measure.

Transect – A planning theory developed by Andrés Duany and other members of the Congress for New Urbanism, which emphasizes urban form.

Transect Zone (T-Zone) – Classification of land based on varying degrees of development intensity.

Undeveloped – Land identified as agricultural, open space, or land that does not have a structure present.

Zoned for Development – Areas zoned as residential, commercial, industrial, or institutional according to the zoning map.

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Land Development Intensity

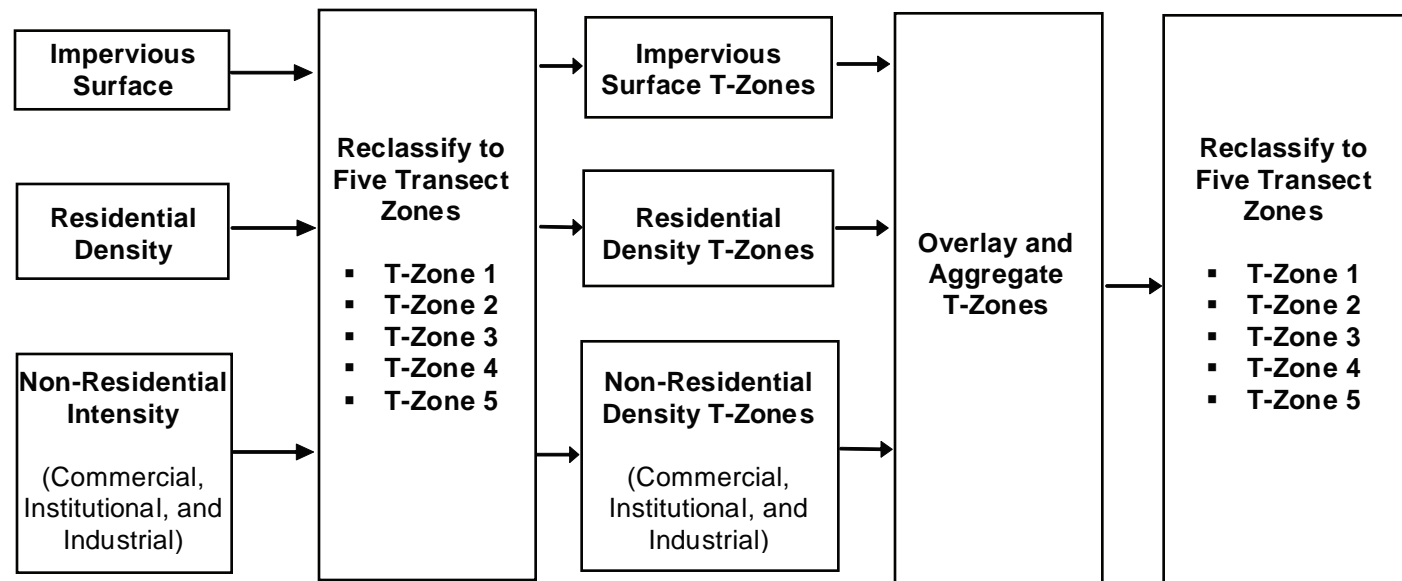
The landscape of the Miami Valley Region ranges from agricultural lands to dense urban core. Land development intensity was examined to identify the various levels of physical development concentration patterns that exist throughout the Region. The concept of development intensity used in this assessment draws from the idea of Transect, a planning theory developed by Andrés Duany and other members of the Congress for New Urbanism, which emphasizes urban form and development intensity. This appendix outlines the methodology used to measure the Region's development intensity, discusses the indicators used, and presents the findings.

Methodology

Three indicators were used to create the development intensity measure: impervious surface, residential density, and non-residential intensity. Impervious surface and residential density indicators are each made up of a single dataset; however, the non-residential intensity indicator is based on two data subsets: commercial and institutional development intensity data and industrial development intensity data.

In a GIS environment, the spatial data for each indicator was translated into a grid layer by dividing the data into grid cells measuring 2,500 square feet (50 feet by 50 feet). Based on the values of the grid cells, the regional land was classified into five Transect Zones, from T-Zone 1 (the lowest degree of development intensity) to T-Zone 5 (the highest degree of development intensity), to represent the relative level of land development intensity. Next, the T-Zone grids for each indicator were spatially overlaid and aggregated to produce a final grid layer. The aggregated values from this final grid layer were again re-classified into five T-Zones, which resulted in the Regional Land Development Intensity Map (see figure 20) and dataset. Figure B.1 illustrates this process.

Figure B.1 - Process for Measuring Land Development Intensity



Impervious Surface

According to The United States Geological Survey (USGS), "Impervious surfaces can be generally defined as any material of natural or anthropogenic source that prevents the infiltration of water into soil... The growth of impervious surfaces is directly related to human activity and habitation through the construction of buildings, roads, parking lots, sidewalks, and so on."

Impervious surface is a valuable indicator for identifying various degrees of development concentrations in the urban landscape. Therefore, this assessment examined impervious surface data as one of three indicators to measure the land development intensity across the Region.

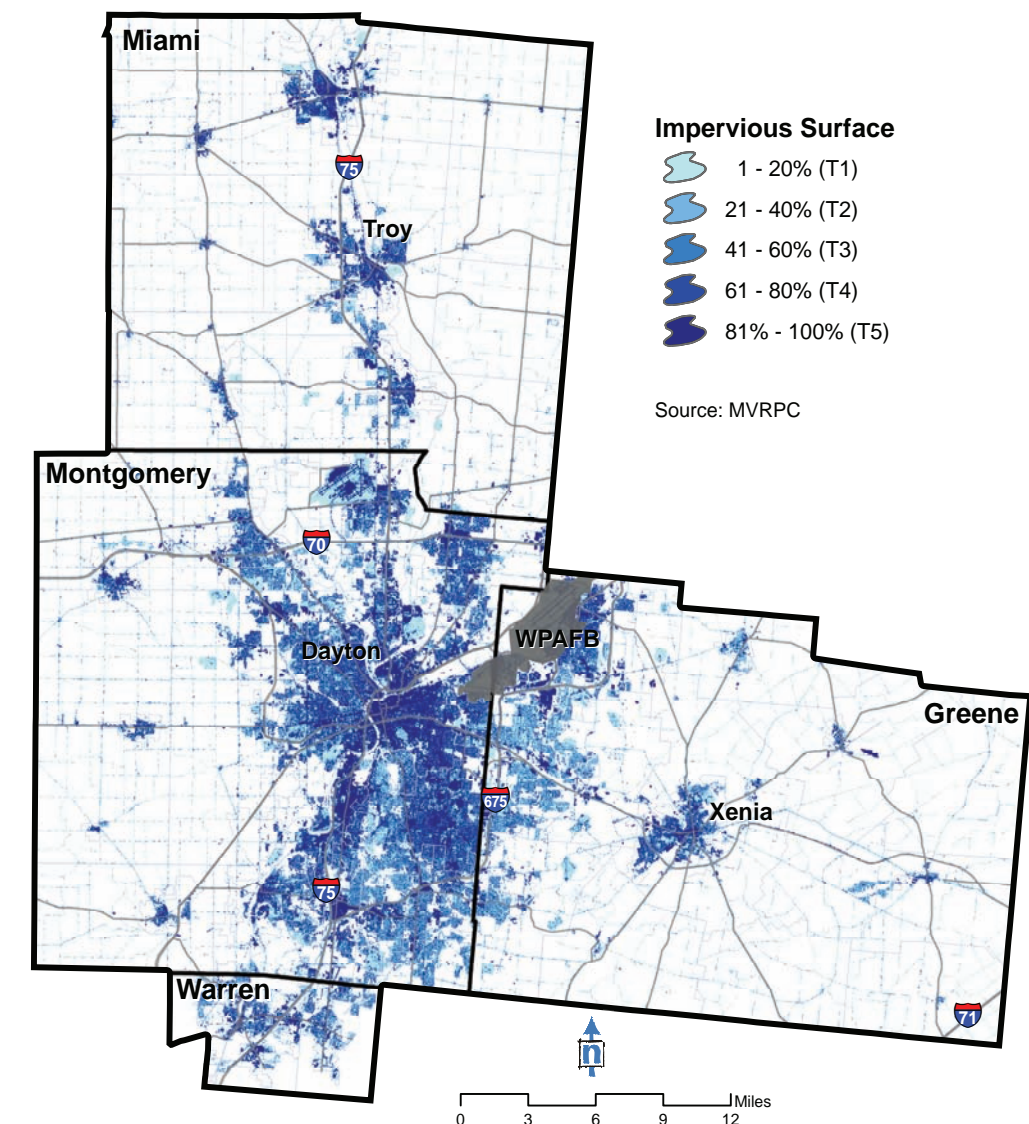
Impervious surface data were developed based on the 2001 National Land Cover Database from the Multi-Resolution Land Characteristics (MRLC) Consortium. However, this data was only accurate to 2001. Therefore, MVRPC updated the impervious surface data to account for key areas that experienced land development between 2001 and 2007 using 2007 orthophotographs. Using the impervious surface data, the regional land is classified into five T-Zone categories as follows:

- Impervious Surface
- T-Zone 1: 1 – 20%
 - T-Zone 2: 21 – 40%
 - T-Zone 3: 40 – 60%
 - T-Zone 4: 61 – 80%
 - T-Zone 5: 81 – 100%

Data Source

Impervious Surface Database developed from the National Land Cover Database from the the Multi-Resolution Land Characteristics (MRLC) Consortium, MVRPC, 2008

Figure B.2 - Regional Distribution of Land by Impervious Surface



Appendix B - Land Development Intensity Measure

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Residential Density

Residential density is often measured using housing unit density in land use analysis. The residential density indicator complement the impervious surface indicator not only because it is another good indicator for measuring land development intensity, but also because it has the added value of identifying areas of high population concentration. Therefore, this study uses Housing Unit per Acre (HUA) as the unit of analysis to measure the density of residential areas.

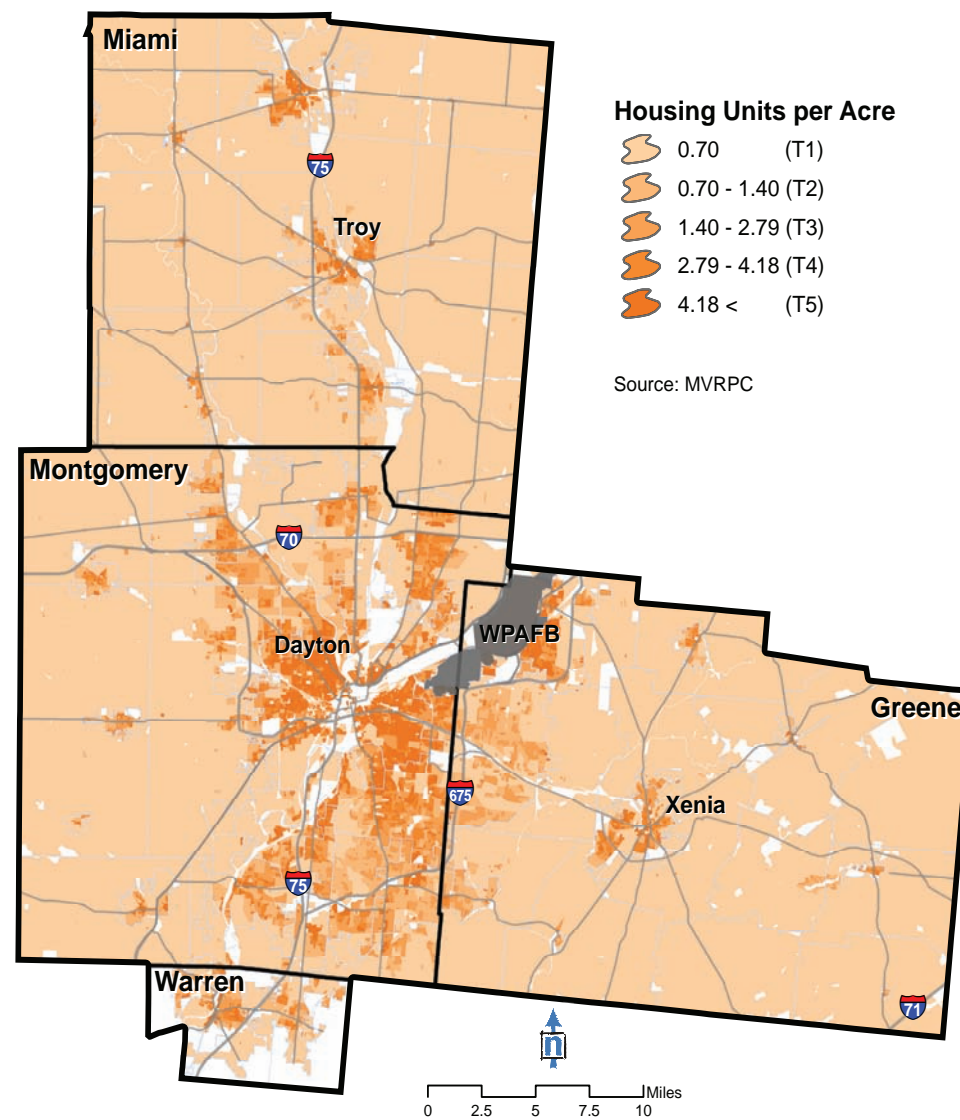
The HUA was calculated using block-level data from the 2000 U.S. Census. Using the HUA data, the regional land is classified into five T-Zone categories as follows:

- Housing Units per Acre
- T-Zone 1: 0.70
- T-Zone 2: 0.70 - 1.40
- T-Zone 3: 1.40 - 2.79
- T-Zone 4: 2.79 - 4.18
- T-Zone 5: 4.18 <

Data Source

Census 2000 SF1, U.S. Census Bureau, 2000

Figure B.3 - Regional Distribution of Land by Housing Unit Density



- Housing Units per Acre**
- 0.70 (T1)
 - 0.70 - 1.40 (T2)
 - 1.40 - 2.79 (T3)
 - 2.79 - 4.18 (T4)
 - 4.18 < (T5)

Source: MVRPC

Non-Residential Intensity

Non-residential intensity is commonly measured by using the Floor Area Ratio (FAR), which is calculated by dividing the total floor area of a building on a lot by the area of the lot it occupies, to determine the scale of development concentration. The non-residential intensity indicator complements the impervious surface and the residential density indicators by highlighting the varying development intensities of the Region's non-residential land. Therefore, the study uses FAR as the unit of analysis to measure the non-residential intensity.

Non-residential data is divided into two groups: commercial/institutional and industrial. Due to data availability and type, it was necessary to separate the two for accurate data classification. However, the data for both groups were created through the same process. The two datasets are mutually exclusive, meaning they do not overlap or contradict one another. Therefore, elsewhere this data is treated as a single non-residential variable. Based on the FAR data developed from the 2007 regional parcel database, regional land was classified into five T-Zone categories as follows:

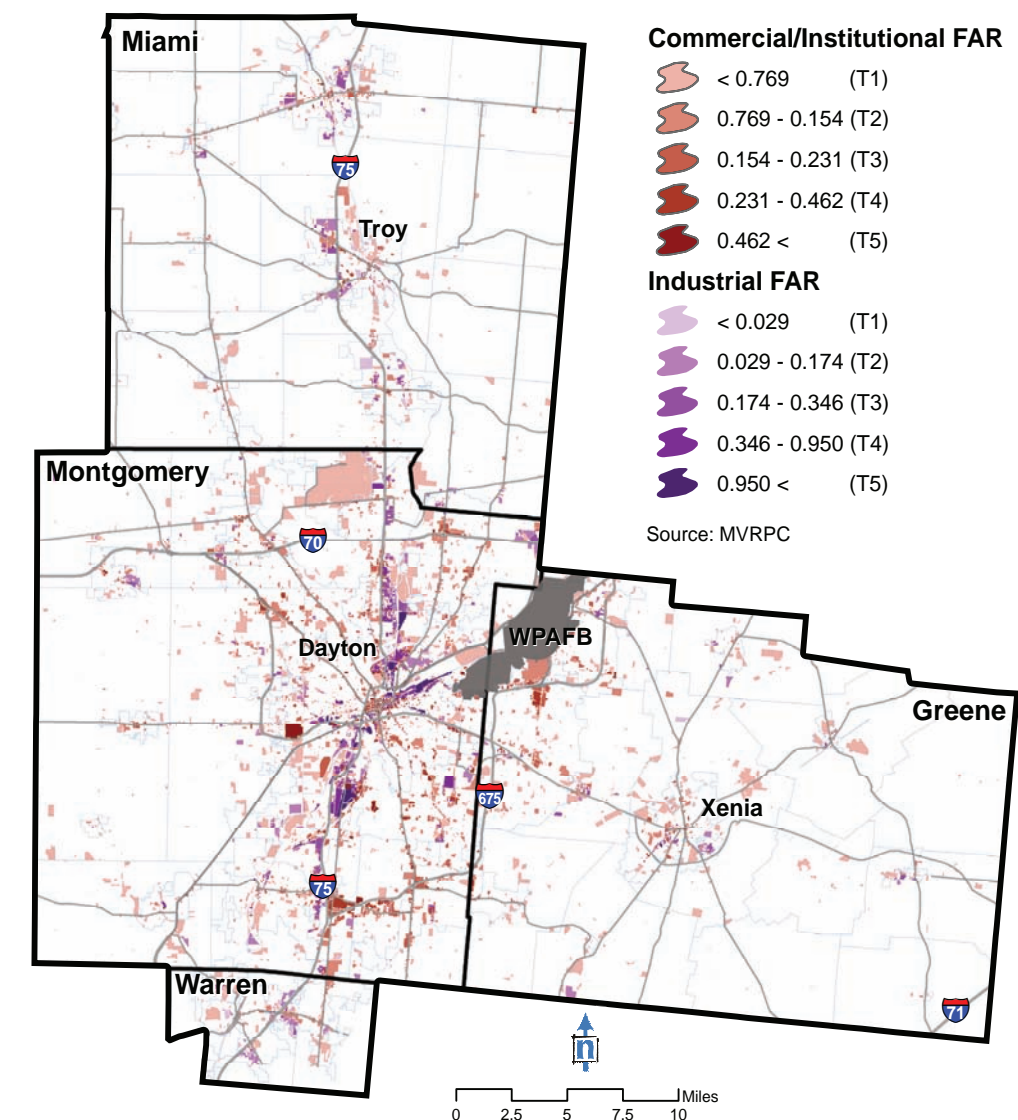
- Commercial/Institutional FAR**
- T-Zone 1: < .0769
 - T-Zone 2: 0.769 - 0.154
 - T-Zone 3: 0.154 - 0.231
 - T-Zone 4: 0.231 - 0.462
 - T-Zone 5: 0.462 <

- Industrial FAR**
- T-Zone 1: < 0.029
 - T-Zone 2: 0.029 - 0.174
 - T-Zone 3: 0.174 - 0.346
 - T-Zone 4: 0.346 - 0.950
 - T-Zone 5: 0.950 <

Data Source

Regional Parcel Database, MVRPC 2007 (compiled from Greene, Miami, Montgomery, and Warren county parcel databases)

Figure B.4 - Regional Distribution of Land by Non-Residential Intensity



- Commercial/Institutional FAR**
- < 0.769 (T1)
 - 0.769 - 0.154 (T2)
 - 0.154 - 0.231 (T3)
 - 0.231 - 0.462 (T4)
 - 0.462 < (T5)
- Industrial FAR**
- < 0.029 (T1)
 - 0.029 - 0.174 (T2)
 - 0.174 - 0.346 (T3)
 - 0.346 - 0.950 (T4)
 - 0.950 < (T5)

Source: MVRPC