



Miami Valley Land Suitability Assessment - Built Environment Factors

2008

Miami Valley Regional Planning Commission



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Miami Valley Suitability Assessment - Built Environment



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Please visit www.mvrpc.org for a copy of this report. Questions or comments should be directed to Martin Kim, Director of Regional Planning at mkim@mvrpc.org.

MVRPC is a voluntary association of governmental and non-governmental organizations serving as a forum and resource where regional partners identify priorities, develop public policy, and implement strategies to improve the quality of life and economic vitality throughout the Miami Valley Region.

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Introduction

Miami Valley Land Suitability Assessment - Built Environment Factors

Purpose

The Miami Valley Regional Planning Commission (MVRPC) conducted the Miami Valley Land Suitability Assessment - Built Environment Factors - as part of the existing conditions assessment phase of “Going Places - An Integrated Land Use Vision for the Miami Valley Region.” The main purpose of this assessment is to identify locations within the Region that are better suited for physical development than others. Additional goals of this assessment include:

- Compiling regional built environment data into one regional dataset
- Developing a systematic approach to combining this data into a meaningful single variable
- Using this single variable to create a Built Environment Factors Composite Map.

The built environment factors analyzed in this assessment, such as public water and wastewater service, airport noise, restricted development areas, potential environmental hazards, and employment clusters were included because of their significance in the context of land use planning. Technical analyses of each factor were conducted separately in order to determine the presence and conditions of each within a spatial context. This portion of the assessment is an accompanying study to the Miami Valley Land Suitability Assessment - Natural Environment Factors completed in 2007 and it provides geographically referenced information about opportunities and constraints for future land development. The Built Environment Suitability Measure is the result of overlaying maps of these opportunities and constraints in order to generate overall suitability scores within the planning area.

This assessment alone is not meant to be a comprehensive land suitability assessment as it only focuses on built environment factors. The Region’s development suitability must be considered in the context of both the natural environment and built environment factors to have a complete understanding of the Region’s physical landscape.

Study Area

The study area covers a three county region in the Dayton Metropolitan area, along with three cities in northern Warren County, located in southwest Ohio (see figure 1). It includes Greene, Miami, and Montgomery counties along with the cities of Carlisle, Franklin, and Springboro in Warren County, covering approximately 1,313 square miles with three interstates, I-70, I-75, and I-675.

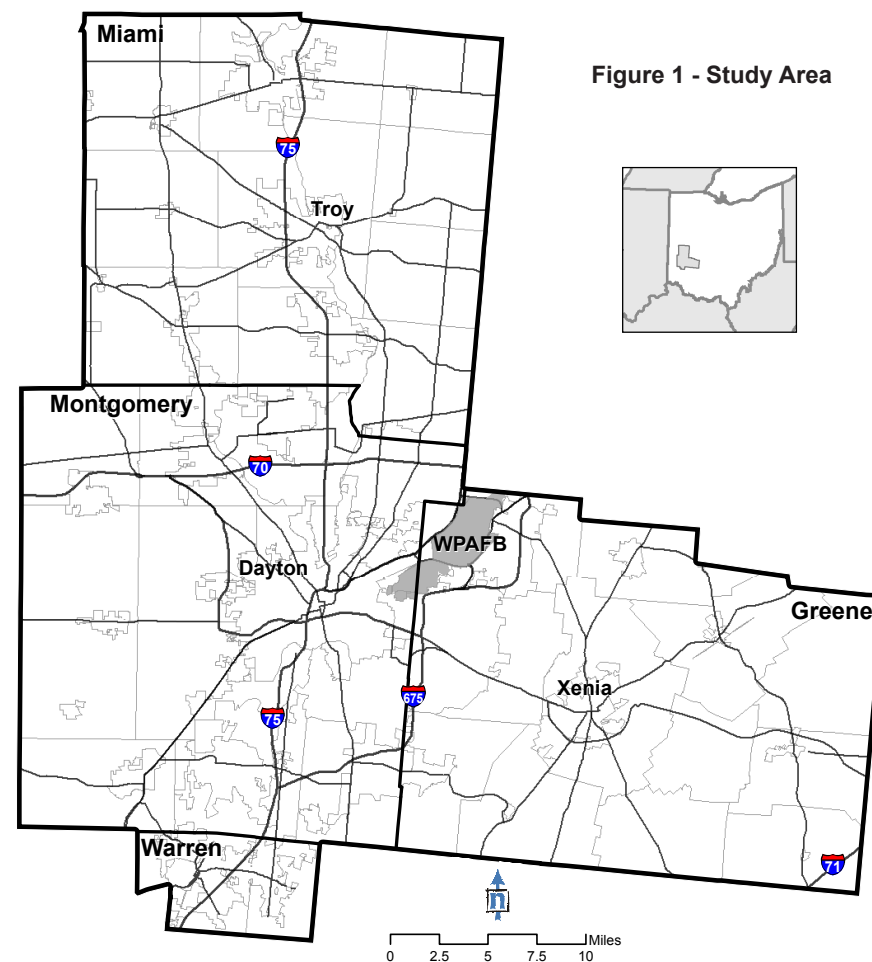


Figure 1 - Study Area

Built Environment Factors Considered

The 15 built environment factors analyzed in this study are:

- Airport Noise
- Educational Amenities
- Fire Protection Services
- Industrial Clusters
- Job Clusters
- Major Thoroughfare Access
- Other Amenities
- Potential Environmental Hazards
- Public Transportation Services
- Public Wastewater Services
- Public Water Services
- Recreational Amenities
- Restricted Development Lands
- Retail Clusters
- Transportation Network Connectivity

Report Structure

This report is a summary of the study and it is structured in five separate sections:

1. The Introduction section provides a brief overview of the study, which includes the purpose, the study area, factors included in the study, and report structure.
2. The Methodology section provides detailed information on how the study was implemented. Further, this section describes the methods used to generate the land suitability score from all 15 built environment factors.
3. The third section presents the individual built environment factors. Each page represents one factor and includes the definition, data sources, and data findings.
4. The fourth section presents the Built Environment Factors Composite Maps and a summary of the findings based on the land suitability score from all 15 factors. This section also presents findings from the comparative analysis of the composite map along with other land use data.
5. The Conclusion section provides a summary of the findings from the factor analyses and the analysis of the Built Environment Suitability Measure.

Acknowledgements

The study was made possible by datasets that were made available by various agencies listed throughout the report. MVRPC is grateful for this data and would like to thank those Federal, State, and local agencies for making the data available.

Miami Valley Land Suitability Assessment - Built Environment Factors

This assessment was carried out in four phases. In the first phase the built environment factors were identified and a regional dataset was developed. The second phase focused on the development of a suitability score for each factor. In the third phase of the assessment a land suitability composite map was developed based on the aggregated total suitability score. The last phase includes a technical analysis of the 15 built environment factors, a summary of data findings from the composite map, and a comparative analysis.

A Geographic Information System (GIS) was used to conduct the assessment due to its unique capacity of spatial database management and analysis. The data developed and acquired for individual built environment factors were all brought into the GIS environment for spatial overlay and analysis and the conceptual framework for combining suitability scores from all 15 factors into a single aggregated suitability score was implemented through GIS.

Regional Dataset Development

The first step was to identify the built environment factors to be included in the assessment and to develop a regional dataset for each factor. An extensive literature search was conducted to identify built environment factors that are commonly used in land suitability assessments. The 15 factors selected for this assessment encompass 4 dimensions of the built environment considerations: Public Infrastructure Provision, Accessibility, Existing Land Use, and Limitations.

The 15 factors in the study can be grouped into these four dimensions as following:

<u>Public Infrastructure Provision</u>	<u>Accessibility</u>	<u>Existing Land Use</u>	<u>Limitations</u>
• Fire Protection Services	• Educational Amenities	• Industrial Clusters	• Airport Noise
• Public Wastewater Services	• Major Thoroughfare Access	• Job Clusters	• Potential Environmental Hazards
• Public Water Services	• Other Amenities		• Restricted Development Lands
• Transportation Network Connectivity	• Public Transportation Services		
	• Recreational Amenities		
	• Retail Clusters		

Two considerations were prominent during the search for reliable data sources - the availability of consistent data throughout the study area and the availability of data in a GIS format.

Individual county data was aggregated into a single regional dataset and was stored in the GIS format for technical analysis and mapping purposes.

Suitability Score Development

A three-step process was developed for calculating the Suitability Score for each of the 15 factors. First, the data attributes for each factor were classified into a Suitability Measure. Second, a numeric Attribute Score was assigned for each Suitability Measure. Third, a Weight Factor was applied to each Attribute Score to generate the final Suitability Score (see Appendix for detailed tables). Also, separate residential and non-residential suitability scores were developed for each factor. This additional step was necessary because factors in the built environment affect residential and non-residential land uses differently. Therefore, the suitability scoring and resulting Residential and Non-Residential Development Suitability Composite Maps reflect these differences.

The *Suitability Measures* indicate whether certain data attributes are more or less suited to accommodate land development. The data attributes were classified into one of three general Suitability Measures: Suitable, Somewhat Suitable, or Not Suitable. In addition, when necessary, only two Suitability Measure categories were used. For example, the data attributes for the Fire Protection Services factor was classified simply as Suitable or Not Suitable.

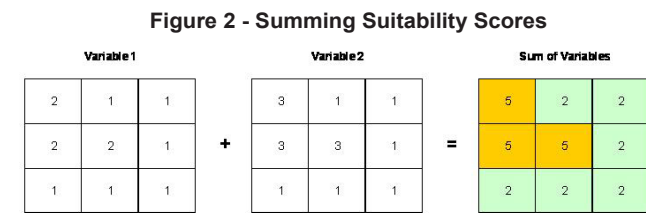
The *Attribute Score* translates the qualitative Suitability Measure into a quantitative measure ranging from one to five, with five representing the most suitable. This is a relative score within each factor, meaning that an Attribute Score of five does not mean that the attribute is five times more suitable than an attribute with a score of one.

The purpose of the *Weight Factor* is to weight the 15 factors against one another according to their importance in determining development potential. The Weight Factor ranges from one to four, with four indicating the highest degree of importance and is different between residential and non-residential factors. As with the Attribute Score, the Weight Factor is a relative measure.

The *Suitability Score* takes into account both of the measurements at the individual factor level and the relative importance of each factor among all 15 factors. It is derived by multiplying the Attribute Score by the Weight Factor. For example, for a data attribute from the Public Water Services factor classified as Suitable, the Attribute Score would be five. Multiply that by a Weight Factor of three and the Suitability Score would be 15.

Built Environment Suitability Measure Development

Conceptually, the Built Environment Suitability Measure was generated by overlaying spatial data representing the Suitability Scores of all 15 factors, as illustrated in figure 2.

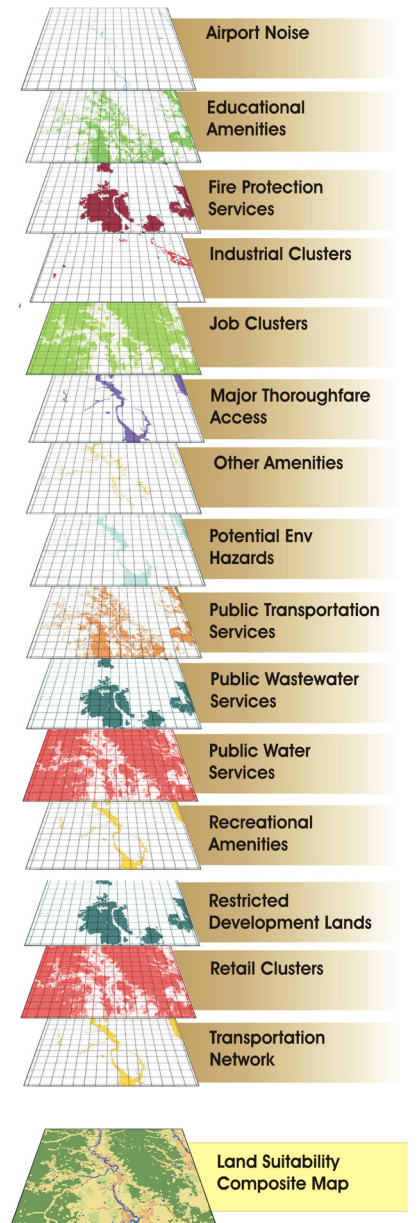


To make this possible, the entire study area was divided into a grid with cells measuring 2,500 square feet (50 feet by 50 feet). This grid was then applied to the GIS data layers representing the Suitability Scores for each factor. Finally, the grids were overlaid and the Suitability Scores in each grid cell were summed to create the Built Environment Suitability Measure, as illustrated in Figure 3.

Technical Analysis

Analyses at the regional and county levels were conducted for each of the built environment factors with a special emphasis on presenting the analysis results in a spatial context. A similar analysis was conducted for the Built Environment Factors Composite Maps.

Figure 3 - Built Environment Factors



Miami Valley Land Suitability Assessment - Built Environment Factors

What is Airport Noise?

According to the American Planning Association (APA), airport noise is measured and presented by noise contours that are:

“a series of lines geographically related and placed on maps to estimate the average noise impact at certain locations. They are the principal tool for analyzing land-use compatibility in the vicinity of airports and heliports. These lines are generated from the Federal Aviation Administration (FAA) Integrated Noise Model (INM), a computer program that simulates actual noise measurements. Noise contours identify existing and projected areas affected by noise but represent only averaged noise incidents.”

However, a noise contour map is not required for all airports. They are only required by airports belonging to the National Plan of Integrated Airport Systems (NPIAS), which is a group of 3,300 airports that are considered significant to the national air transportation system and thus eligible for Federal grants.

For this study, the Region’s land is divided into 4 classes: Below 65 Decibels, 65-70 Decibels, 70-75 Decibels, and 75+ Decibels.

Why is it Important?

Airport noise contours are important tools for community leaders to ensure that noise sensitive land uses (such as residential structures) have minimum exposure. According to the Federal Aviation Administration (FAA), “uses compatible with a noise-affected area are those that lack areas of constant human occupation (e.g., offices), or which limit such areas.”

How was the Data Developed?

In the study area, only four airports out of a total of seven belong to the NPIAS. Therefore, the noise contour data was collected for these four airports and then standardized to meet the classes used in the study. The data was then evaluated for development suitability using the *Guidelines for Considering Noise in Land-Use Planning and Control*, published by the Federal Interagency Committee on Urban Noise. The guidelines provide assistance in evaluating the effects of noise on people and determining land-use compatibility with various decibel ratings. The noise level and land-use compatibility charts assisted with the determination of suitability according to the four noise levels used in this study.

The analysis determines development suitability according to the noise level boundaries. In general, the areas with higher decibel ratings are less suitable for residential and non-residential development, while the areas outside the contours are more suitable. However, development suitability for residential and non-residential uses is not the same between the decibel ranges and this difference is reflected in the Suitability Measures and Attribute Scores.

Data Source

Dayton International Airport Noise Contours, City of Dayton Aviation Department, 2005.

Springfield National Guard Airport Noise Contours, Springfield National Guard Aviation Department, 2006.

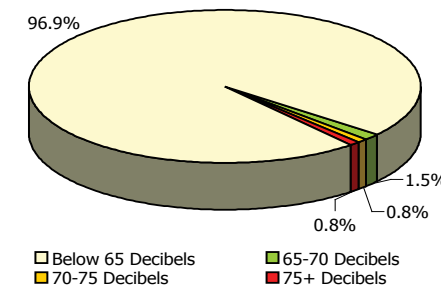
Wright Pat Air Force Base Airport Noise Contours, Wright Pat Air Force Base Aviation Department, 1995.

Wright Brothers Airport Noise Contours, City of Dayton Aviation Department, 2005.

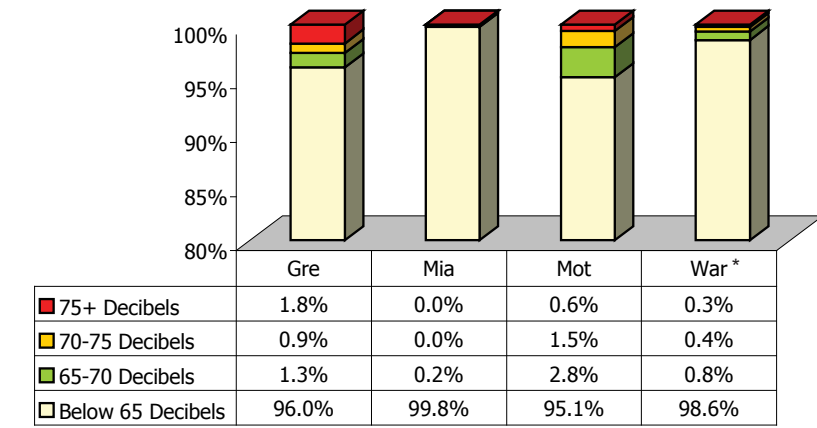
Data Findings

The majority of the land in the Region (96.9%) is outside the airport noise impacted areas (see figure AN.1). The areas with the highest noise level (noise level of 75 decibels and over) make up less than 1% of the Region’s total area (0.8%). Table AN.2 shows the results of the Airport Noise level data cross tabulated by county, illustrating each county’s acreage and percent share of land at different airport noise levels. The Wright-Patterson Air Force Base in Greene County and the Dayton International Airport in Montgomery County account for larger shares of the areas with noise levels of 75 decibels and over in Greene and Montgomery counties (71.5% and 27.9%, respectively).

AN.1 - Regional Land by Airport Noise Classification

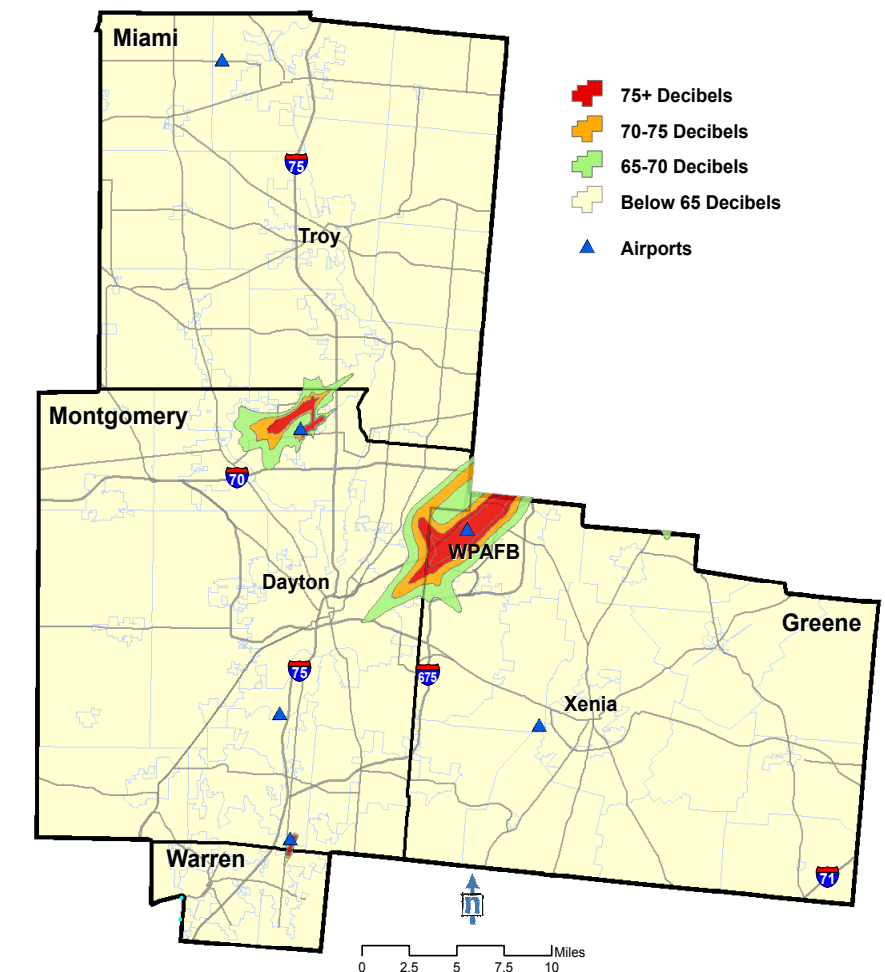


AN.3 - County Land by Airport Noise Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

AN.4 - Regional Distribution of Land by Airport Noise Classification



AN.2 - County Share of Land by Airport Noise Classification

County	Below 65 Decibels		65 - 70 Decibels		70 - 75 Decibels		75+ Decibels		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	255,953.6	31.4%	3,551.0	28.4%	2,367.1	34.4%	4,718.7	71.5%	266,590.5
Miami	261,889.9	32.1%	585.3	4.7%	0.2	0.0%	0.0	0.0%	262,475.3
Montgomery	283,104.4	34.7%	8,248.1	66.0%	4,461.5	64.8%	1,842.7	27.9%	297,656.8
Warren *	14,118.9	1.7%	114.7	0.9%	55.7	0.8%	36.2	0.5%	14,325.5
Regional Total	815,066.8	100.0%	12,499.1	100.0%	6,884.5	100.0%	6,597.6	100.0%	841,048.1

Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

Miami Valley Land Suitability Assessment - Built Environment Factors

What is an Educational Amenity?

The American Planning Association (APA) defines an amenity as an “aesthetic or other characteristic of a development that increase its desirability to a community or its marketability to the public.”

The educational amenities, for this study, include K-12 public and private schools, colleges, universities, technical schools, and public libraries. The study measures the accessibility of educational amenities using 3 accessibility classes: Good Accessibility, Medium Accessibility, and Poor Accessibility.

Why is it Important?

Educational amenities are an asset to communities because they enhance the residents’ quality of life and strengthen locational appeal. The educational facility is not an amenity unless the facility is easily accessible and located near its potential patrons. The ease of access and locational distribution will enhance the likelihood of residents and local establishments using the facility.

How was the Data Developed?

The educational amenities data is derived from the Miami Valley Open Space Inventory, an MVRPC library inventory, and county parcel data. Accessibility is measured according to approximated distances the general public would likely travel on foot or on a bike. Walking distance is defined at 0.25 miles and the bicycling distance is defined at 2 miles. The K-12 public and private schools were buffered using both the walking and bicycling distances, while the other amenities only consider the 2-mile bicycling distance. The walking and bicycling distances were then overlaid to produce a gradient of most to least accessible areas.

Data Source

MVRPC Library Inventory, MVRPC, 2008.

2005 Miami Valley Open Space Inventory, MVRPC, 2006.

Greene County Parcel Data, Auditors Office of Green County, 2007.

Miami County Parcel Data, Auditors Office of Miami County, 2007.

Montgomery County Parcel Data, Auditors Office of Montgomery County, 2007.

Warren County Parcel Data, Auditors Office of Warren County, 2007.

Data Findings

Two-thirds of the Region offers good to medium accessibility to various educational amenities (see figure EA.1). The accessibility analysis revealed that 13.8% of the Region has good access and 52.9% has medium accessibility to the Region’s various educational amenities. Of the 115,835.2 acres identified as having good accessibility to educational amenities, Montgomery County has the largest portion (60.0%) with a total of 69,558.7 acres, followed by Greene County (27.5%) and Miami County (10.3%).

EA.1 - Regional Land by Access to Educational Amenities Classification

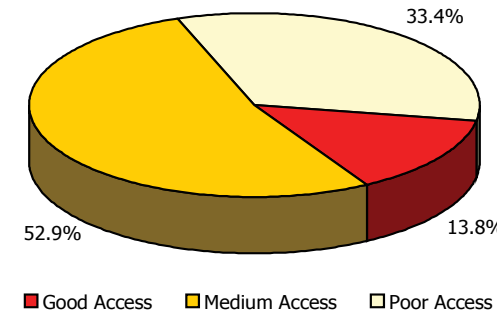


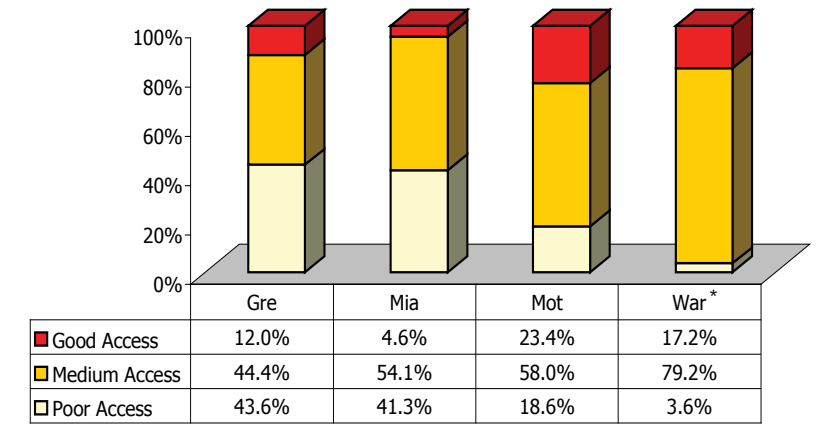
Figure EA.3 shows the composition of each county’s land according to the accessibility to educational amenities assessment. As seen in the chart, over 90% of the land in Warren County, over 80% in Montgomery, and over 50% in Miami and Greene Counties have good to medium access to educational amenities. The map presented in figure EA.4 shows the locations of the educational amenities examined and the results of accessibility assessment. Although the Region in general has good accessibility to various educational amenities, areas in eastern Montgomery County and western Greene County have better accessibility than other parts of the Region.

EA.2 - County Share of Land by Access to Educational Amenities Classifications

County	Good Accessibility		Medium Accessibility		Poor Accessibility		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	31,871.7	27.5%	49,653.1	27.1%	185,065.6	34.2%	266,590.5
Miami	11,955.4	10.3%	46,481.8	25.4%	204,038.2	37.7%	262,475.3
Montgomery	69,558.7	60.0%	77,164.7	42.1%	150,705.7	27.8%	297,429.2
Warren*	2,449.4	2.1%	9,785.6	5.3%	1,998.5	0.4%	14,233.4
Regional Total	115,835.2	100.0%	183,085.2	100.0%	541,808.0	100.0%	840,728.4

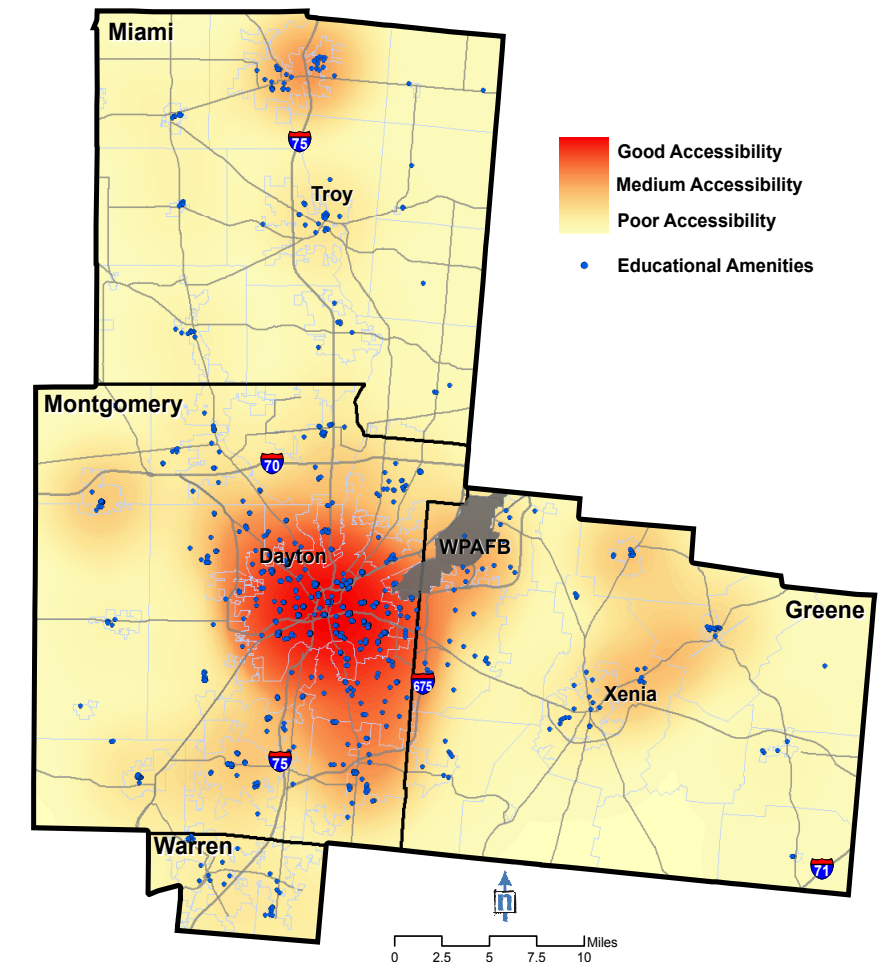
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

EA.3 - County Land by Access to Educational Amenities Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

EA.4 - Regional Distribution of Land by Access to Educational Amenities Classification



Fire Protection Services

Miami Valley Land Suitability Assessment - Built Environment Factors

What is Fire Protection Service?

According to the Department of Homeland Security U.S. Fire Administration (USFA), fire service is primarily concerned with incident response time, meaning that service is “usually measured from the time a call is received by the emergency communications center to the arrival of the first apparatus at the scene.” The USFA also indicates that the national average for response time is generally less than 8 minutes.

The study measures fire protection service by distances based on an 8 minute drive time and the Region’s land is classified into 2 classes: Inside Service Area and Outside Service Area.

Why is it Important?

According to the National Fire Protection Association (NFPA) 2006 Fire Loss Assessment for the United States, a fire department responded to a fire every 19 seconds and one structure fire was reported every 60 seconds. Clearly, the services provided by a municipal fire department are an important component in ensuring the community’s health and safety. Also, according to the Insurance Services Office (ISO), a community’s fire protection capabilities and distribution of fire stations affect the cost of property and casualty insurance paid by residents and businesses. Therefore, an adequate distribution of fire stations and emergency response times improve a community’s safety and the cost of living or doing business in that community.

How was the Data Developed?

Using MVRPC’s Fire Station GIS database, the 8 minute drive time service areas were developed using sample station locations and drive time estimates derived from MVRPC’s Travel Demand Forecasting Model. When fire stations were sampled, both urban and rural stations were selected using the Census Urbanized Area Boundary, and the appropriate service area buffer distances were measured and applied.

The service areas are different for urban (2 mile) and rural (3 mile) stations because the distance traveled is affected by permitted speed, traffic patterns, and roadway design.

Data Source

MVRPC Fire Station Database, MVRPC, 2008.

Data Findings

Most of the Region (70.2%) is well within the desirable response time for the fire protection service, while only 29.8% is outside the service area (see figure FPS.1). Figure FPS.2 shows each county’s share of regional land by the Fire Protection Service Area classification. Montgomery County contains the largest portion (43.5%) of land within the service area, followed by Greene (29.9%) and Miami (24.5%) counties.

FPS.1 - Regional Land by Fire Protection Services Classification

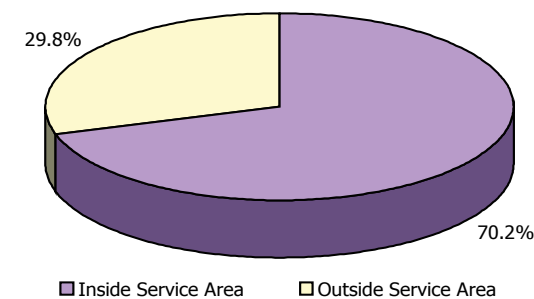


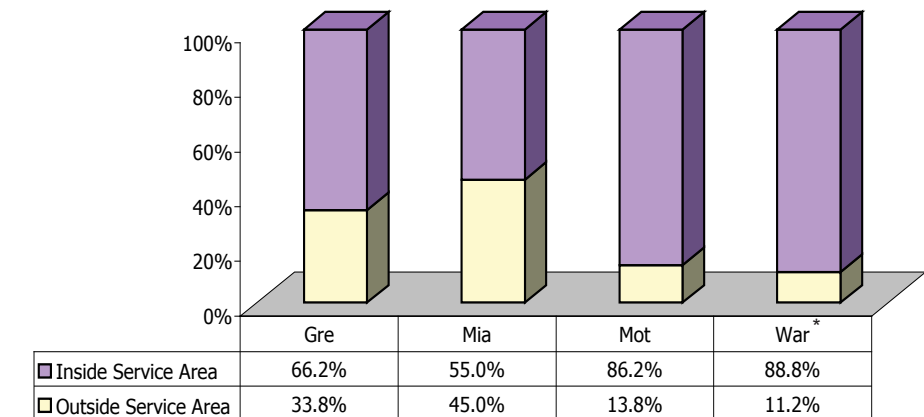
Figure FPS.3 illustrates the breakdown of each county’s land based on the fire protection service area classification. Over 80% of Warren (88.8%) and Montgomery (86.2%) counties is inside the fire protection service area. However, the data revealed that 45% of Miami County and 33.8% of Greene County is outside the fire protection service area. Figure FPS.4 shows locations of fire stations in both urban and rural areas and their respective service areas. As presented in the map, the Region, in general, has good fire protection service area coverage.

FPS.2 - County Share of Land by Fire Protection Services Classification

County	Inside Service Area		Outside Service Area		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	176,402.7	29.9%	90,187.8	36.0%	266,590.5
Miami	144,487.3	24.5%	117,988.0	47.1%	262,475.3
Montgomery	256,524.4	43.5%	40,904.7	16.3%	297,429.2
Warren*	12,634.9	2.1%	1,598.5	0.6%	14,233.4
Regional Total	590,049.3	100.0%	250,679.1	100.0%	840,728.4

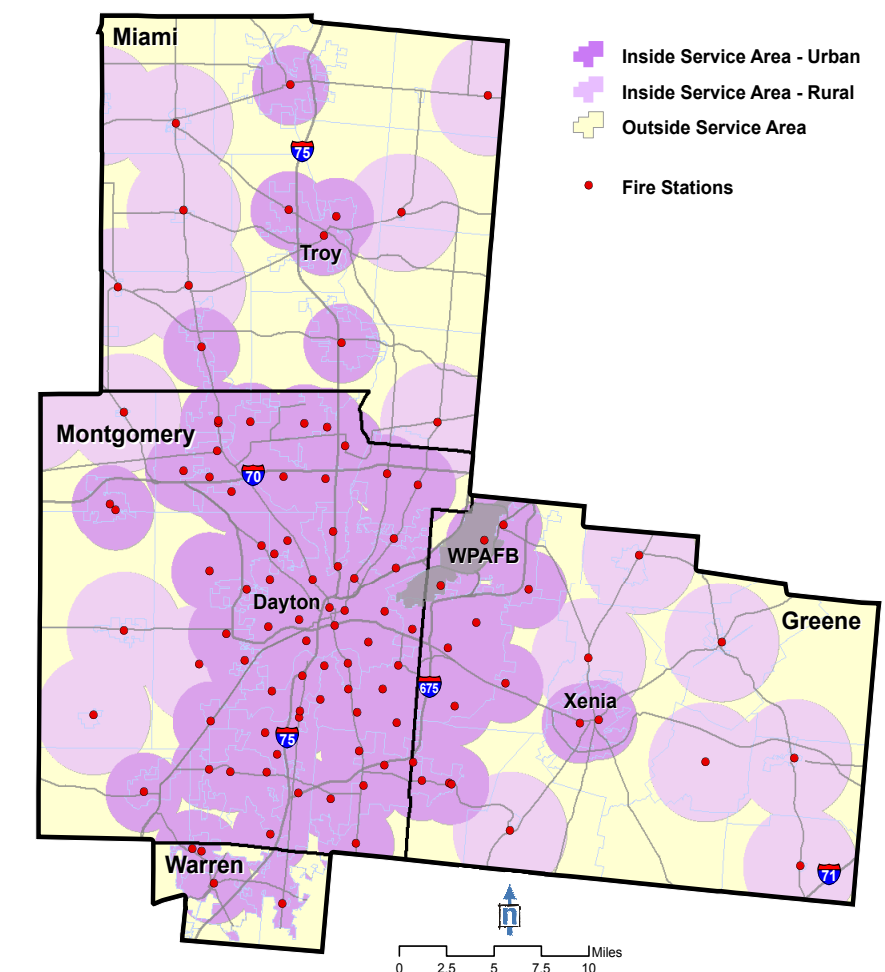
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

FPS.3 - County Land by Fire Protection Services Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

FPS.4 - Regional Distribution of Land by Fire Protection Services Classification



Industrial Clusters

Miami Valley Land Suitability Assessment - Built Environment Factors

What are Industrial Clusters?

The American Planning Association (APA) defines industry as “a business use or activity at a scale greater than home industry involving manufacturing, fabrication, assembly, warehousing, and/or storage.”

The study includes areas identified as having an industrial use and the surrounding properties and divides the Region’s land into 3 classes: Outside Industrial Cluster, Adjacent to Industrial Cluster, and Inside Industrial Cluster.

Why is it Important?

Industrial sites generate activities that greatly affect the community and surrounding properties. Typical impacts of industrial sites may include increased transportation volume and truck traffic, increased demand for certain services and utilities, pollution generation, and undesirable aesthetic properties. Also, local planning departments are diligent in preventing residential and certain non-residential uses from developing within close proximity of industrial uses.

How was the Data Developed?

The industrial sites were identified using parcel data obtained from county auditor’s offices. The land use categories for this factor include: Vacant Industrial, Food and Drink Processing Plants and Storage, Foundries and Heavy Manufacturing Plants, Manufacturing and Assembly Medium, Manufacturing and Assembly Light, Industrial Warehouses, Industrial Truck Terminals, Small Shops, Mines and Quarries, Grain Elevators, and Other Industrial Structures. The properties surrounding the industrial sites were included because they are more likely to experience the negative results of industrial activity.

The suitability measures for the residential considerations are scored such that the site is considered not suitable for development and the surrounding properties are somewhat suitable. On the other hand, the non-residential considerations are scored so that the industrial site itself is suitable for development and the surrounding parcels are somewhat suitable.

Data Source

Greene County Parcel Data, Auditors Office of Green County, 2007.

Miami County Parcel Data, Auditors Office of Miami County, 2007.

Montgomery County Parcel Data, Auditors Office of Montgomery County, 2007.

Warren County Parcel Data, Auditors Office of Warren County, 2007.

Data Findings

The examination of existing industrial land use revealed that industrial clusters make up approximately 2% of the Region’s total land while sites adjacent to clusters account for 5.7% (see figure IC.1). Montgomery County contains the largest amount of industrial land (41.5%) with 7,179.1 acres, followed by Miami (29.2%) and Greene (22.2%) counties (see figure IC.2).

IC.1 - Regional Land by Industrial Clusters Classification

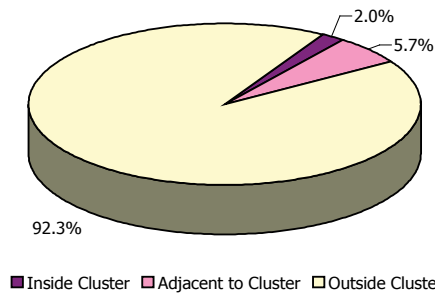


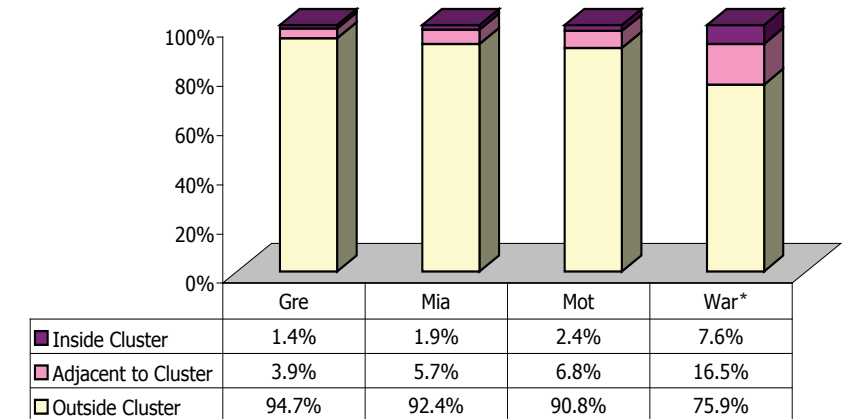
Figure IC.3 presents the percent share of industrial clusters for each county. The clusters only account for a very small amount of each county’s total land (1.4%, 1.9% and 2.4% in Greene, Miami and Montgomery counties, respectively). The industrial clusters, as presented in figure IC.4, are found along I-75 and I-70 in Montgomery and Miami counties. In addition, clusters are identified west and southeast of Xenia in Greene County.

IC.2 - County Share of Land by Industrial Clusters Classification

County	Inside Cluster		Adjacent to Cluster		Outside Cluster		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	3,761.7	22.2%	10,498.1	21.8%	252,331.6	32.5%	266,591.5
Miami	4,952.3	29.2%	14,963.3	31.1%	242,560.8	31.3%	262,476.3
Montgomery	7,179.1	42.3%	20,283.1	42.2%	269,969.6	34.8%	297,431.8
Warren*	1,080.8	6.4%	2,353.3	4.9%	10,802.1	1.4%	14,236.2
Regional Total	16,973.9	100.0%	48,097.8	100.0%	775,664.0	100.0%	840,735.8

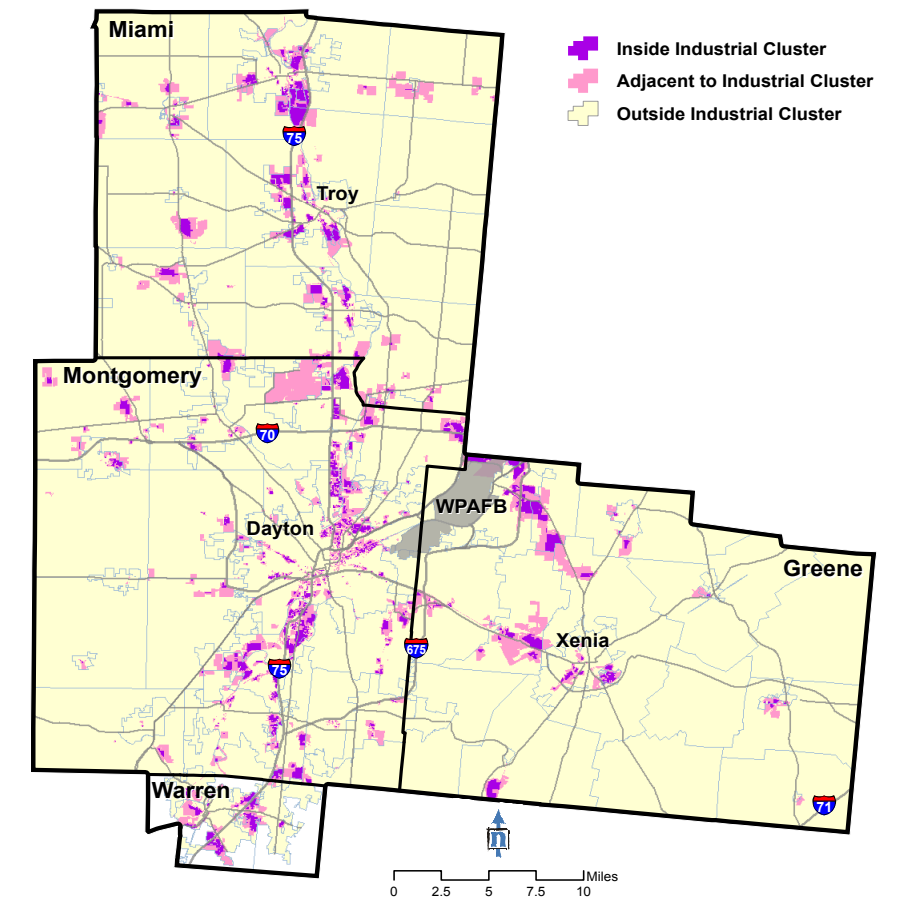
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

IC.3 - County Land by Industrial Clusters Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

IC.4 - Regional Distribution of Land by Industrial Clusters Classification



Job Clusters

Miami Valley Land Suitability Assessment - Built Environment Factors

What are Job Clusters?

A “job cluster” is a term used by MVRPC to describe areas of high employment density based on Traffic Analysis Zone (TAZ) boundaries.

The job clusters factor divides the Region’s land into 2 classes: Inside Job Cluster and Outside Job Cluster.

Why is it Important?

Job clusters are an important consideration for both residential and non-residential uses when considering development location. The advantages for households to locate near job clusters are shorter commute times and convenient access to a variety of consumer goods or services. Non-residential uses would benefit because areas with high employment may have unique locational opportunities for attracting employees and customers. Examples of such locational opportunities would include an abundance of non-residential zoning, better-quality office or retail space, and a highly skilled workforce.

How was the Data Developed?

This study used the 2005 employment data developed as part of the 2008 update of the 2030 Long Range Transportation Plan, which were available at the TAZ level. Using this data the study examined the distribution of employment patterns that exist throughout the Region and defined the top 25% most dense TAZs, measured by the number of jobs per acre, as the job cluster sites.

Development suitability is measured by whether or not the land is within a designated job cluster. The land within the clusters is suitable for development and that outside the clusters is not suitable.

Data Source

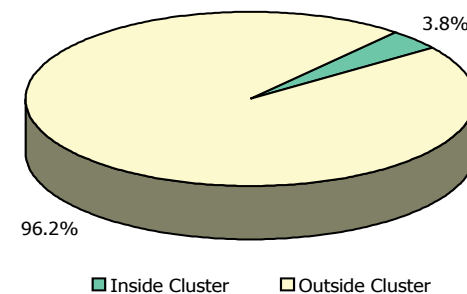
2005 Employment Data, MVRPC, 2008.

Data Findings

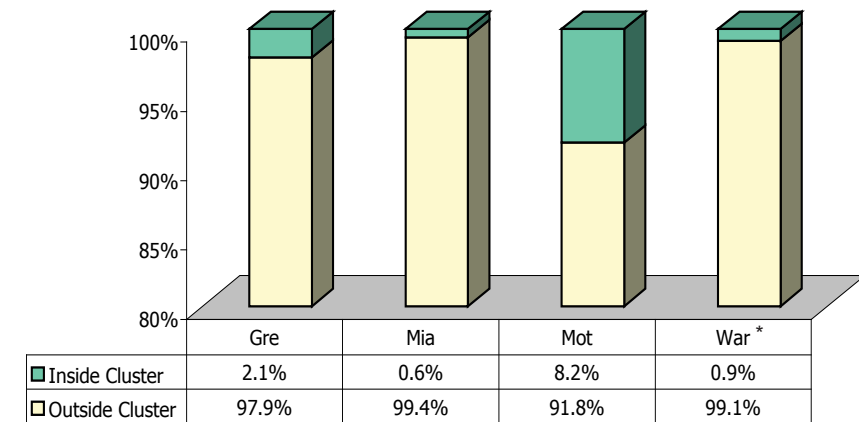
Job clusters account for 3.8% of the total regional acreage (see figure JC.1). Most (77.2%) of the clusters are located in Montgomery County, followed by Greene County (17.4%) (see figure JC.2).

Montgomery County, unlike other counties, has larger areas with higher job concentrations. As presented in figure JC.3, 8.2% of Montgomery County’s land contains job clusters. On the other hand, less than 1% of land in Miami County (0.6%) contains job clusters. The spatial distribution of job clusters in the Region, as shown in Figure JC.4, reveals that they are located within the City of Dayton, along I-75 and I-675 in Montgomery County, and near Wight Patterson Air Force Base. Wright Patterson Air Force Base, although it is the single largest employer in the State of Ohio, was not found to be a job cluster since the job clusters were measured by number of jobs per acre rather than simply a measure of the total number of jobs.

JC.1 - Regional Land by Job Clusters Classification



JC.3 - County Land by Job Clusters Classification



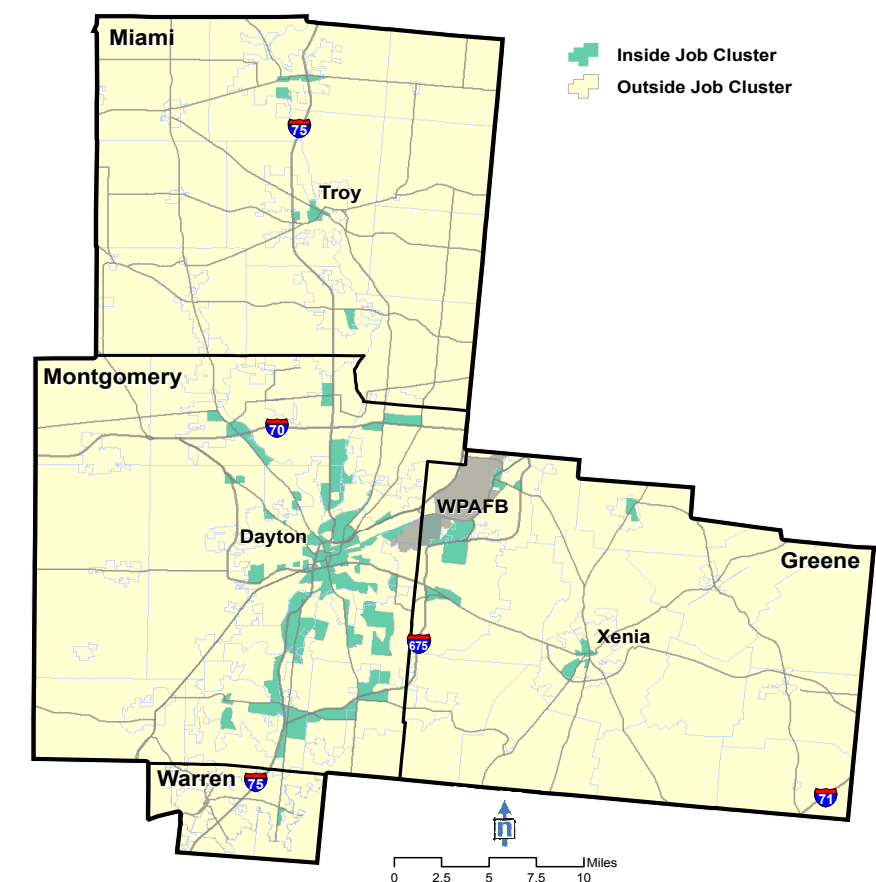
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

JC.2 - County Share of Land by Job Clusters Classification

County	Inside Cluster		Outside Cluster		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	5,493.2	17.4%	261,097.3	32.3%	266,590.5
Miami	1,580.8	5.0%	260,894.5	32.2%	262,475.3
Montgomery	24,377.0	77.2%	273,052.1	33.7%	297,429.2
Warren*	124.4	0.4%	14,109.1	1.7%	14,233.4
Regional Total	31,575.4	100.0%	809,153.0	100.0%	840,728.4

Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

JC.4 - Regional Distribution of Land by Job Clusters Classification



Major Thoroughfare Access

Miami Valley Land Suitability Assessment - Built Environment Factors

What is Major Thoroughfare Access?

The term 'Major Thoroughfare Access' is used to describe the land surrounding points of access to interstates, freeways, and expressways. The Federal Highway Administration (FHWA) defines interstates as a "limited access divided facility of at least four lanes designated by the FHWA as part of the Interstate System." Freeways and expressways are defined as roadways with "limited access but not part of the Interstate system."

The major thoroughfare access factor divides the Region's land into two classes: Good Accessibility and Poor Accessibility.

Why is it Important?

Access to major thoroughfares is an important development consideration because transportation infrastructure greatly shapes the built environment and influences how land is developed and ultimately used. For example, the land surrounding access points, such as interchanges, is typically zoned for non-residential uses and is a magnet for businesses that require the delivery or shipment of commodities. Having adequate access to major thoroughfares will shorten drive times, enhance vehicular visibility for non-residential sites, and improve the area's flow of traffic.

How was the Data Developed?

The thoroughfare access points were located and mapped using MVRPC roadway data. The FHWA Urbanized Area Boundary was then used to differentiate between urban and rural access points. Finally, the appropriate buffer distances were applied, 1.5 miles for urban and 3 miles for rural access points, according to FHWA recommendations. The buffered distances represent a distance measurement recommended by the FHWA for the spacing of interchanges. The FHWA recommended separate distances for urban and rural interchanges because of differences in traffic volume and roadway design.

The analysis measures development suitability based on a defined distance from the thoroughfare access points. The land areas within the buffers are considered suitable for development because they are easily accessible from the major thoroughfares using the ramps and interchanges.

Data Source

Roadway Centerlines, MVRPC, 2008.

Data Findings

Areas with good accessibility to major thoroughfares account for 34.1% of the regional land, while the remaining 65.9% has poor accessibility (see figure MTA.1). Figure MTA.2 illustrates each county's share of land by its accessibility to major thoroughfare classification. Greene (126,290.8 acres) and Montgomery (115,620.2 acres) counties have the largest areas with good accessibility to major thoroughfares.

MTA.1 - Regional Land by Major Thoroughfare Access Classification

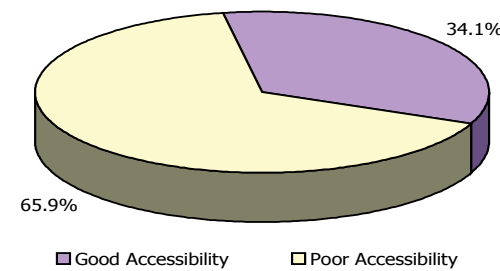


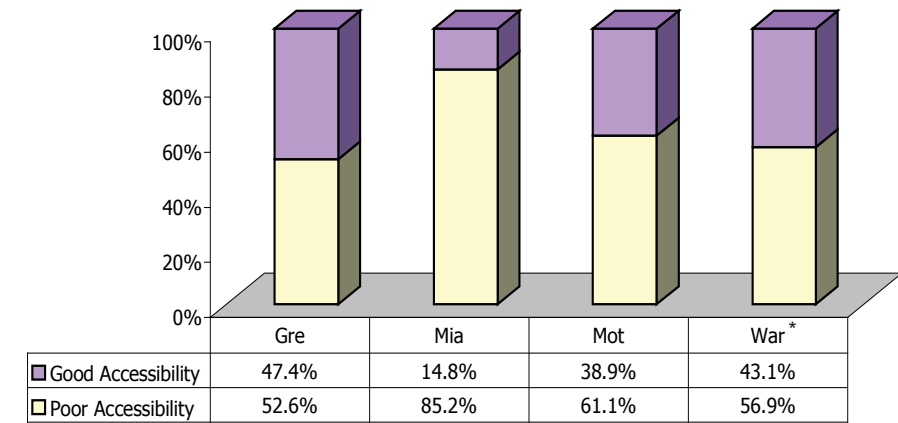
Figure MTA.3 illustrates the percent of land by major thoroughfare accessibility classification at the county level. Nearly half of Greene County (47.4%) has good access while only 14.8% of Miami County has good access to major thoroughfares. Figure MTA.4 shows the geographic distribution of land identified as having good accessibility to major thoroughfares with limited access points.

MTA.2 - County Share of Land by Major Thoroughfare Access Classification

County	Good Accessibility		Poor Accessibility		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	126,290.8	44.0%	140,299.7	25.3%	266,590.5
Miami	38,922.2	13.6%	223,553.1	40.4%	262,475.3
Montgomery	115,620.2	40.3%	181,809.0	32.8%	297,429.2
Warren*	6,132.4	2.1%	8,101.0	1.5%	14,233.4
Regional Total	286,965.6	100.0%	553,762.8	100.0%	840,728.4

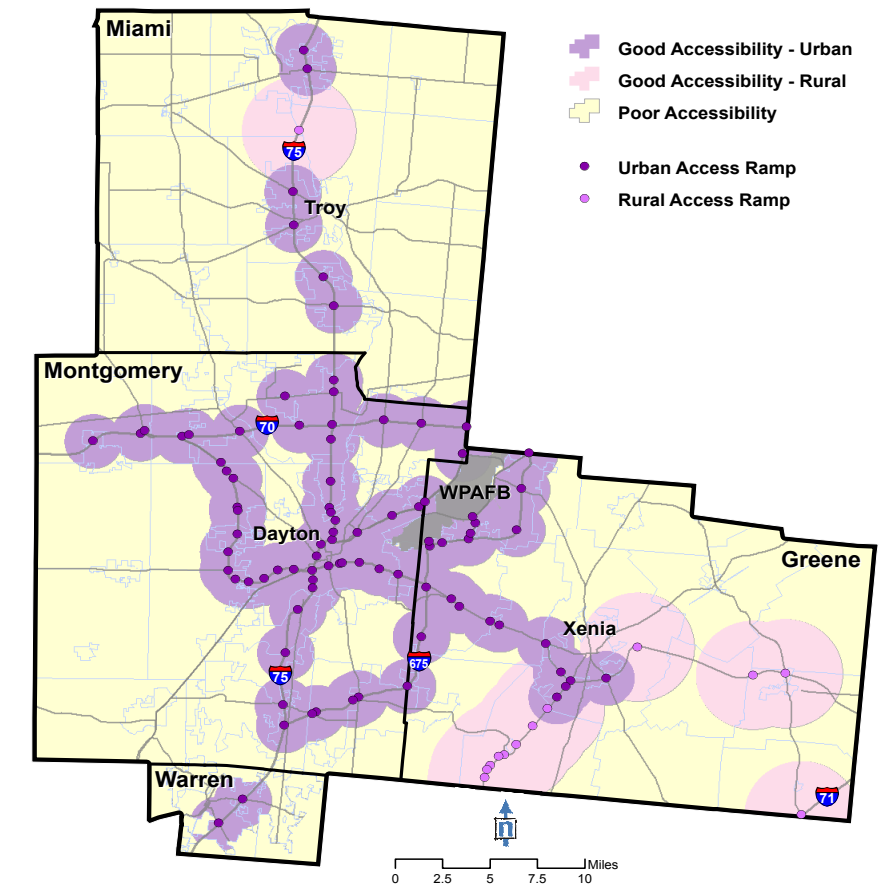
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

MTA.3 - County Land by Major Thoroughfare Access Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

MTA.4 - Regional Distribution of Land by Major Thoroughfare Access Classification



Other Amenities

Miami Valley Land Suitability Assessment - Built Environment Factors

What are Other Amenities?

The American Planning Association (APA) describes an amenity as an “aesthetic or other characteristic of a development that increases its desirability to a community or its marketability to the public.”

The other amenities, for this study, include hospitals, senior centers, and museums. The study measures the accessibility of other amenities by geographic area and classifies the Region into three accessibility classes: Good Accessibility, Medium Accessibility, and Poor Accessibility.

Why is it Important?

The amenities included in this factor are an asset to communities because they enhance the residents’ quality of life and provide an essential service to the community. The amenity facilities are not an amenity unless they are easily accessible and located near their potential patrons. Ease of access will increase the likelihood of area residents using the facility.

How was the Data Developed?

The other amenities data is derived from parcel data obtained from county auditor’s offices, the MVRPC Hospital Inventory, and the MVRPC Senior Center Inventory. The hospital buffer distances, which measure accessibility, were derived from the MVRPC Travel Demand Forecasting Model, which provided regional average distances to the closest hospital based on shortest path travel time. The accessibility of senior centers and museums is measured according to a two-mile distance from the facility. The two-mile distance approximates the distance that the general public would likely travel on bicycle. The accessibility distances were then overlaid to produce a gradient of most to least accessible areas.

Data Source

MVRPC Hospital Inventory, MVRPC, 2008.

MVRPC Senior Center Inventory, MVRPC, 2008.

Greene County Parcel Data, Auditors Office of Green County, 2007.

Miami County Parcel Data, Auditors Office of Miami County, 2007.

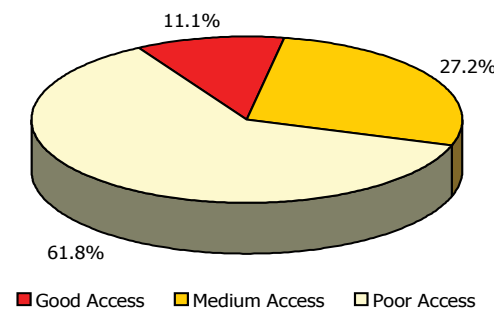
Montgomery County Parcel Data, Auditors Office of Montgomery County, 2007.

Warren County Parcel Data, Auditors Office of Warren County, 2007.

Data Findings

Nearly 40% of the land in the study area (38.3%) has good to medium accessibility to these amenities (see figure OA.1). Figure OA.2 illustrates the data findings regarding the county share of land by the accessibility assessment. Of those lands that have good accessibility to hospitals, museums, and senior centers, Montgomery County leads the Region with the largest share (74.5%). Figure OA.2 also shows that Montgomery County has the largest share (46.6%) of land identified as having medium accessibility.

OA.1 - Regional Land by Access to Other Amenities Classification



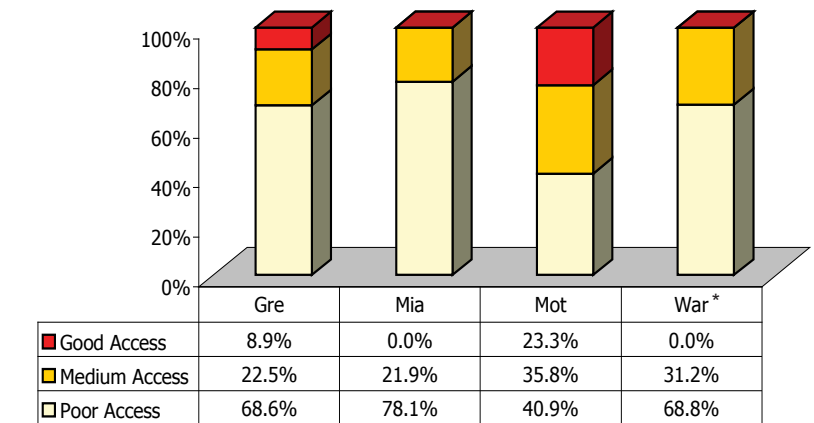
Nearly two-thirds of Montgomery County (59.1%) has good to medium accessibility (see figure OA.3). Smaller areas were found to have the same level of accessibility in Greene, Miami, and Warren counties, with 31.4%, 21.9% and 31.2%, respectively. Areas in eastern Montgomery County, around the City of Xenia in Greene County, and north of the City of Troy in Miami County have better accessibility than other areas in the Region (see figure OA.4).

OA.2 - County Share of Land by Access to Other Amenities Classification

County	Good Accessibility		Medium Accessibility		Poor Accessibility		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	23,719.5	25.5%	60,107.4	26.3%	182,763.5	35.2%	266,590.5
Miami	0.0	0.0%	57,547.8	25.2%	204,927.5	39.5%	262,475.3
Montgomery	69,368.7	74.5%	106,345.2	46.6%	121,715.2	23.4%	297,429.2
Warren*	0.0	0.0%	4,434.3	1.9%	9,799.2	1.9%	14,233.4
Regional Total	93,088.2	100.0%	228,434.7	100.0%	519,205.5	100.0%	840,728.4

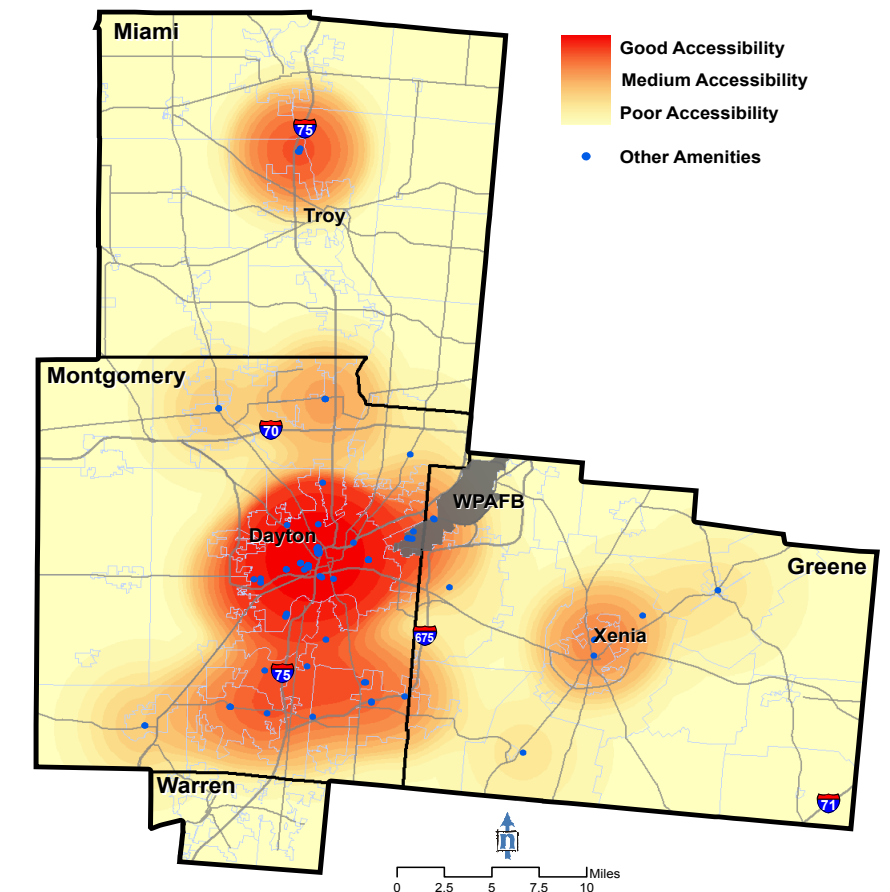
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

OA.3 - County Land by Access to Other Amenities Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

OA.4 - Regional Distribution of Land by Access to Other Amenities Classification



Potential Environmental Hazards

Miami Valley Land Suitability Assessment - Built Environment Factors

What are Potential Environmental Hazards?

Potential environmental hazards include properties identified by the U.S. Environmental Agency (USEPA) as Superfund sites on the National Priority List (NPL), active landfills, and wastewater treatment plants. These sites are regarded as potential environmental hazards because they may have substances on-site that pose development or redevelopment challenges to the land they occupy and the surrounding parcels.

Superfund sites are designated through the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), which was enacted in response to a growing national concern about the release of hazardous substances from abandoned industrial facilities and waste disposal sites. Sites are listed on the NPL once evaluated by the USEPA according to the Hazard Ranking System (HRS), and once public solicitation of comments about the proposed site have been gathered and addressed.

The USEPA defines landfills as “engineered ground vaults with a controlled method to encapsulate waste that prevents leaching and other pollutants from escaping into the environment.”

The American Planning Association (APA) defines a wastewater treatment plant as “the facility or group of units used for the treatment of industrial or domestic wastewater for sewer systems and for the reduction and handling of solids and gases removed from such wastes, whether or not such facility or group of units is discharging into state waters.”

The study classifies the Region’s land into three classes: Not a Potential Hazard Site, Adjacent to a Potential Hazard Site, and Potential Hazard Site.

Why is it Important?

Potentially hazardous sites, and to some degree the properties immediately surrounding the site, should be separated from land uses that are inhabited for an extended period of time. Residential consumers, for example, are less tolerant and less willing to invest in property that is near a potentially hazardous site than a commercial or industrial owner. The sites may also be difficult to develop or redevelop because of costly remediation needs and a negative reputation.

How was the Data Developed?

The locations of Superfund NPL site locations, landfills, and wastewater treatment plants were collected from the U.S. and Ohio EPAs. The data was then mapped to the county parcel layer to produce the geographic information necessary for the analysis. The surrounding properties were also selected and included in the factor dataset.

The analysis measures development suitability according to an area’s proximity to potential environmental hazard sites. This factor is scored such that the potential hazard site is not suitable, the neighboring properties are somewhat suitable, and the rest of the Region is suitable for development.

Data Source

Ohio Active Landfills, Ohio EPA, Division of Solid and Infectious Waste Management, 2008.

Ohio Wastewater Treatment Plants, Ohio EPA, Division of Solid and Infectious Waste Management, 2008.

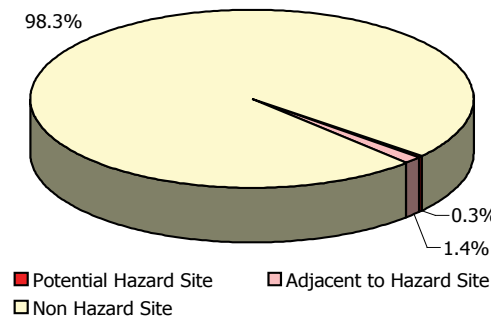
Superfund National Priorities List (NPL), US EPA, 2008, available at <http://www.epa.gov/superfund/sites/npl/npl.htm>.

Data Findings

Potential environmental hazard sites account for less than 1% of the Region’s land (see figure PEH.1). Figure PEH.2 shows that Montgomery County’s share is the largest with 65.7%, followed by Greene (18.5%) and Miami (14.3%) counties.

Figure PEH.3 illustrates the percentage of land adjacent to and considered potentially hazardous. The percent of each county’s land considered potentially hazardous is very small, ranging from 0.1% in Miami County to 0.5% in Montgomery County. Figure PEH.4 shows the spatial distribution of potential environmental hazard sites and their corresponding adjacent sites in the Region.

PEH.1 - Regional Land by Potential Environmental Hazard Classification

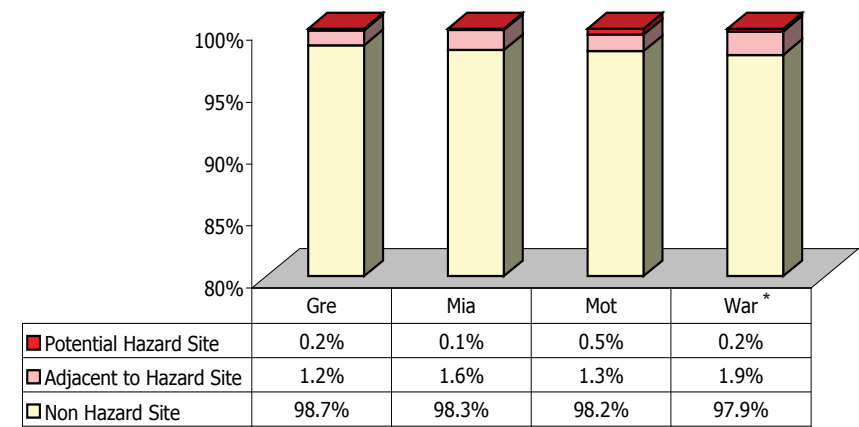


PEH.2 - County Share of Land by Potential Environmental Hazard Classification

County	Potential Hazard Site		Adjacent to Hazard Site		Non Hazard Site		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	406.1	18.5%	3,181.2	27.2%	263,231.4	31.8%	266,818.7
Miami	313.0	14.3%	4,244.2	36.3%	257,918.2	31.2%	262,475.3
Montgomery	1,439.1	65.7%	4,000.7	34.2%	291,989.4	35.3%	297,429.2
Warren*	33.4	1.5%	268.2	2.3%	13,931.8	1.7%	14,233.4
Regional Total	2,191.6	100.0%	11,694.3	100.0%	827,070.8	100.0%	840,956.7

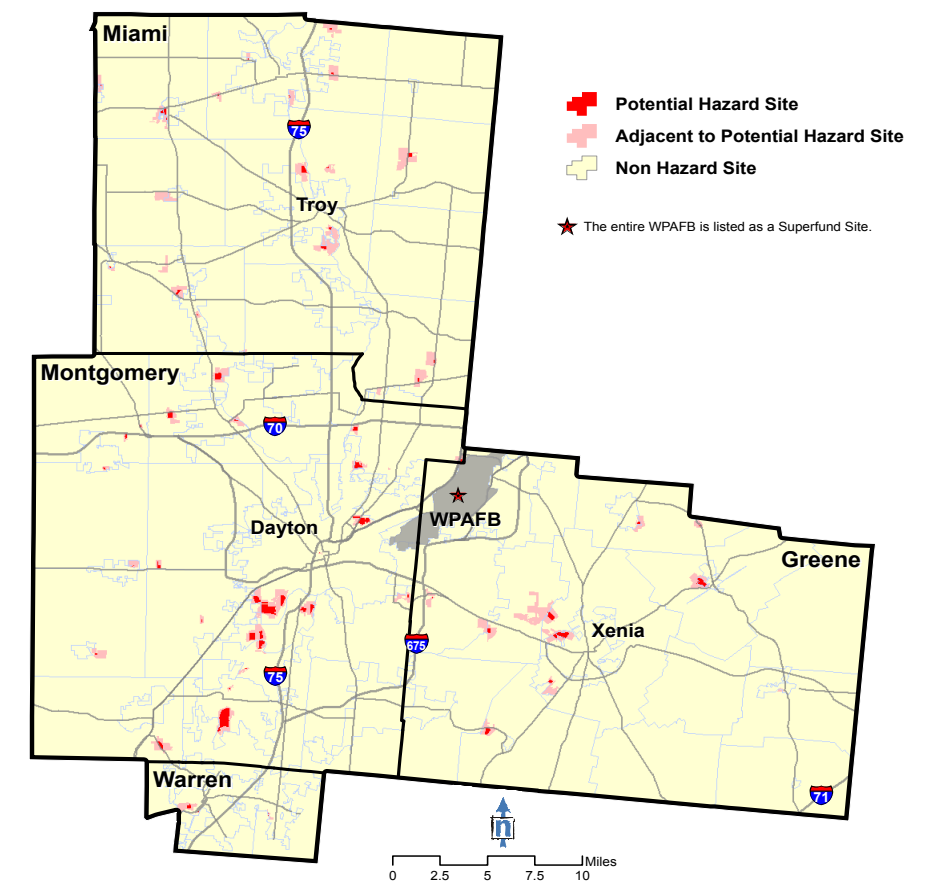
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

PEH.3 - County Land by Potential Environmental Hazards Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

PEH.4 - Regional Distribution of Land by Potential Environmental Hazard Classification



Public Transportation Services

Miami Valley Land Suitability Assessment - Built Environment Factors

What is Public Transportation?

The American Planning Association (APA) defines public transportation as “services provided for the public on a regular basis by vehicles such as bus or rail on public ways, using specific routes and schedules, and usually on a fare-paying basis.”

For this study, public transportation services were based on accessibility to fixed-route services and the Region’s land was divided into three classes: Good Accessibility, Medium Accessibility, and Poor Accessibility.

Why is it Important?

Public transportation is beneficial for both residential and non-residential uses for multiple reasons. The Transportation Research Board (TRB) states that “living in a neighborhood that allows one to drive less and use public transit more, some feel, reduces stress, enables one to meet neighbors more often and spend more time with the family, increases physical activity, and offers a safer living environment.” The American Public Transportation Association (APTA) indicates that businesses benefit from public transportation because it “lowers household expenses and frees up more income for other needs.” Public transit also enhances employee recruitment and “businesses tied to public transportation are experiencing more employee reliability and less absenteeism and turnover.” Also, public transportation allows low-income residents access more employment opportunities, and assists non-driving and disabled residents to reach their destinations.

How was the Data Developed?

In the study area, there are four transit agencies providing public transportation services. The Greater Dayton Regional Transit Authority (GDRTA) serves Montgomery County residents with an extensive network of fixed routes. Greene County Transit Board (Greene CATS) operates general demand-responsive service to all points in Greene County and to some points in Montgomery County. Greene CATS also provides a flex route service within and between the cities of Xenia and Fairborn. The Miami County Transit System provides demand-responsive services for Miami County residences and the Warren County Transit System provides demand-responsive services in Warren County.

The fixed transit routes, provided by the Greater Dayton Regional Transit Authority (GDRTA), were buffered at 0.25-mile and two-mile distances to represent estimated walking and bicycling distances the general public is willing to travel.

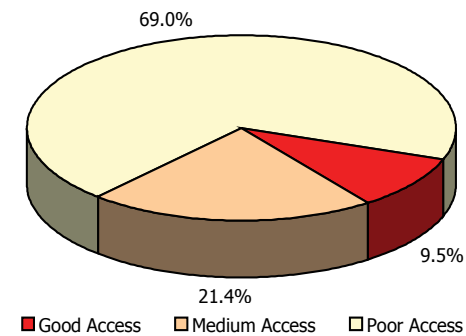
Development suitability is based on proximity to the public transit routes. The land area within the 0.25-mile buffer is regarded as suitable for development while the two-mile buffer is somewhat suitable and anything outside is not suitable.

Data Source

Fixed Transit Routes, The Greater Dayton Regional Transit Authority, 2007.

Data Findings

PTS.1 - Regional Land by Access to Public Transportation Services Classification



At the regional level, approximately one-third of the Region has good to medium access to public transportation services. More specifically, 9.5% of the Region has good access while 21.4% has medium access to fixed-route transit services (see figure PTS.1). Montgomery County has the largest share of areas with good to medium accessibility (97.2% of areas with good accessibility and 83.7% of areas with medium accessibility). This is because Montgomery County is the only county in the Region that is serviced by a fixed-route service (see figure PTS.2).

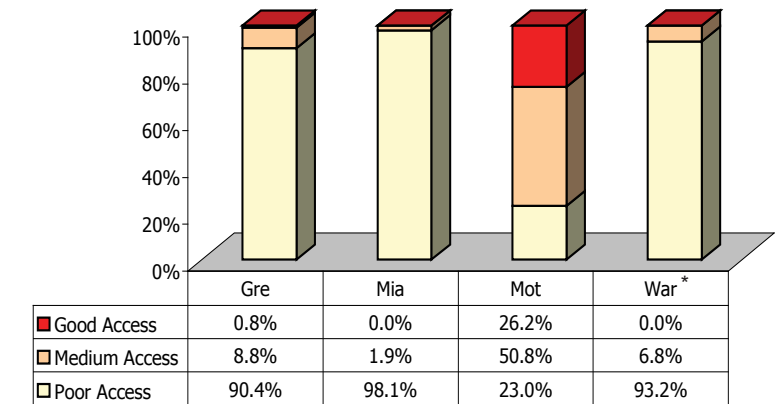
Figure PTS.3 illustrates the percent distribution of land by accessibility measures at the county level. Over three-fourths of Montgomery County (77.0%) and 9.6% of Greene County have good or medium access to public transportation services. The map presented in figure PTS.4 provides an overview of the Region based on accessibility to public transportation. As shown in the figure, areas of good and medium accessibility are centered on the eastern part of Montgomery County.

PTS.2 - County Share of Access to Land by Public Transportation Services Classification

County	Good Accessibility		Medium Accessibility		Poor Accessibility		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	2,230.4	2.8%	23,418.5	13.0%	240,941.6	41.5%	266,590.5
Miami		0.0%	5,000.5	2.8%	257,474.8	44.4%	262,475.3
Montgomery	77,974.4	97.2%	150,946.5	83.7%	68,508.2	11.8%	297,429.2
Warren*		0.0%	963.9	0.5%	13,269.6	2.3%	14,233.4
Regional Total	80,204.8	100.0%	180,329.5	100.0%	580,194.1	100.0%	840,728.4

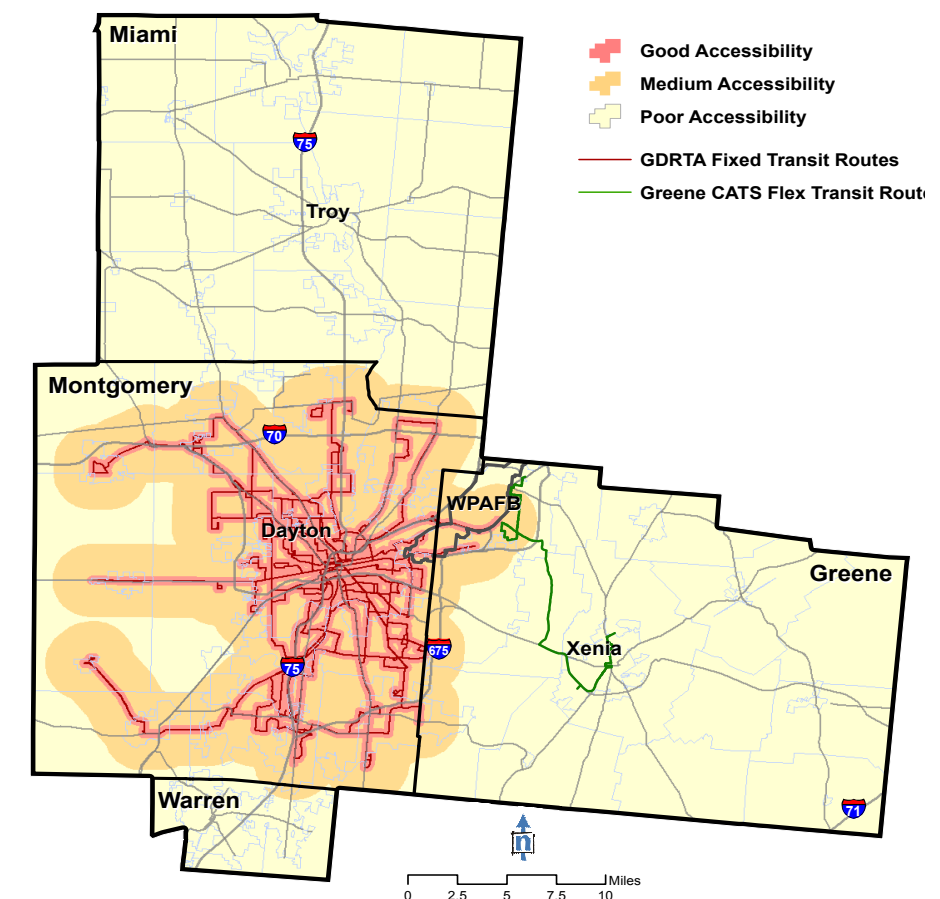
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

PTS.3 - County Land by Access to Public Transportation Services Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

PTS.4 - Regional Distribution of Land by Access to Public Transportation Services Classification



Public Wastewater Services

Miami Valley Land Suitability Assessment - Built Environment Factors

What is Public Wastewater Service?

The U.S. Environmental Protection Agency (USEPA) defines a public wastewater system as “a system of sewers and wastewater treatment plants that collect municipal wastewater from homes, businesses, and industries and delivers it to facilities for treatment before it is discharged to water bodies or land, or reused.”

For this study, the public wastewater system is analyzed and displayed according to the availability of service using three classes: Currently Serviced, Potential Future Service, and Not Serviced.

Why is it Important?

A public wastewater system, as indicated by the USEPA, is important because it is a reliable method for wastewater collection and treatment. Also, an appropriate wastewater treatment system ensures that a community has clean surface and ground water by treating or removing the waste before the water is returned to the environment. This analysis emphasizes the development suitability of areas currently serviced or with the potential to be serviced in the future because, according to the USEPA, “directing development to areas served by existing infrastructure and maintaining that infrastructure can make systems more efficient. Development on and beyond the fringe can reduce return on investment in infrastructure and raise costs.”

How was the Data Developed?

The public wastewater system data were compiled from digital and hard copy maps of wastewater trunk lines collected from city and county offices. The data was then standardized to meet the needs of the analysis and assembled into a regional database. The methodology for determining service area is based on the 2006 Miami County Comprehensive Plan.

The areas identified as currently serviced are a selection of parcel centroids within 200 feet of the wastewater trunk lines. The future service areas are parcels whose centroids are within 1,000 feet of the wastewater trunk lines and those that have public water service but no public wastewater service.

Development suitability is measured by the presence, or potential presence, of wastewater service. The areas currently serviced are suitable for development, while the potential future service areas are somewhat suitable.

Data Source

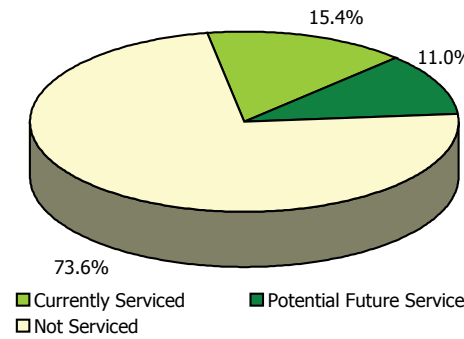
Miami Valley Public Wastewater Service Inventory, MVRPC, 2008.

Data Findings

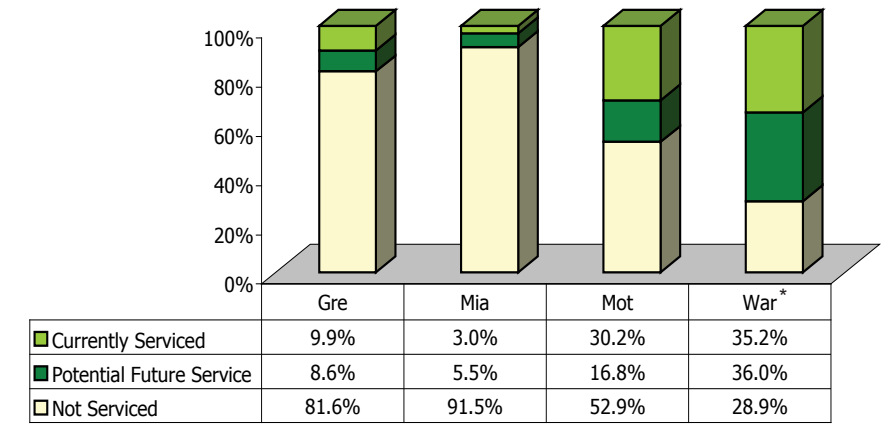
Over 15% of the Region currently has public wastewater service (see figure PWWS.1). Further, it is estimated that additional 11% of the Region has the potential to be serviced by a public wastewater system. Nearly 70% of the areas that are currently serviced by a public wastewater system are found in Montgomery County (69.6%), followed by Greene County, with 20.4%. Montgomery County also has the largest share of areas that have the potential to be serviced by a public wastewater system (54.2%) (see figure PWWS.2).

Nearly 50% of Montgomery County is either currently serviced by a public wastewater service system (30.2%) or has the potential to be serviced (16.8%) (see figure PWWS.3). In contrast, 3.0% of Miami County’s land is currently serviced and 5.5% is identified as a potential future service area. Figure PWWS.4 shows the spatial distribution of areas that are currently serviced and areas for potential future service. Most of the urban areas are serviced by a public wastewater system and the areas adjacent to those currently serviced areas are identified as areas for potential service.

PWWS.1 - Regional Land by Public Wastewater Services Classification

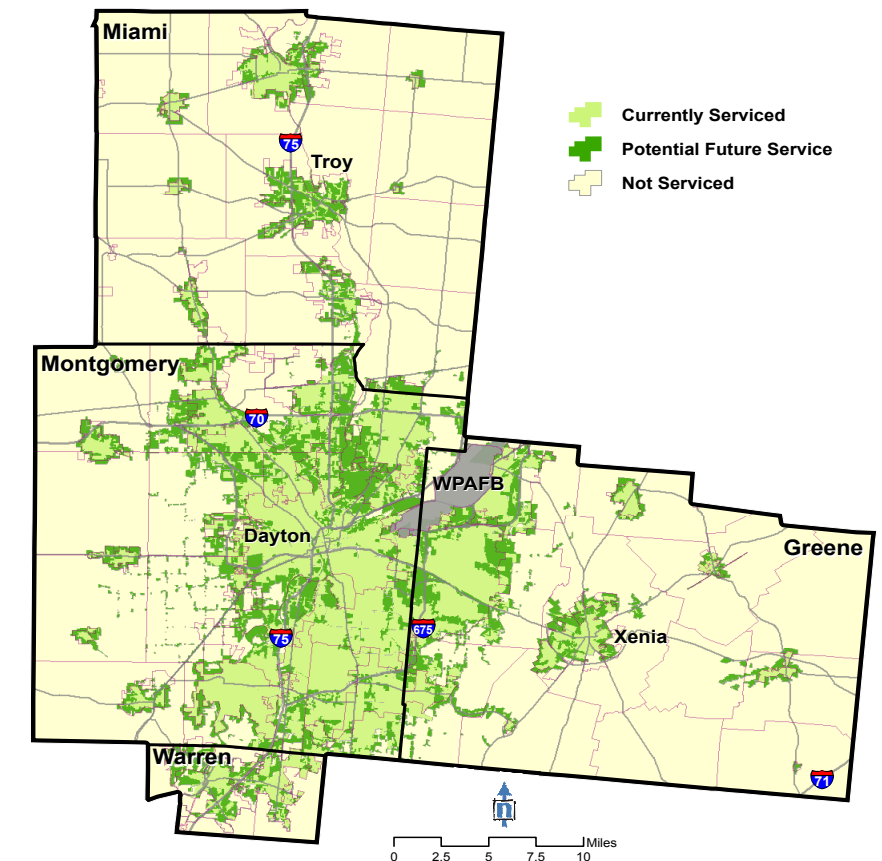


PWWS.3 - County Land by Public Wastewater Services Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

PWWS.4 - Regional Distribution of Land by Public Wastewater Services Classification



PWWS.2 - County Share of Land by Public Wastewater Services Classification

County	Currently Serviced		Potential Future Service		Not Serviced		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	26,366.9	20.4%	22,808.2	24.7%	217,415.3	35.1%	266,590.5
Miami	7,913.8	6.1%	14,353.9	15.5%	240,207.7	38.8%	262,475.3
Montgomery	89,898.7	69.6%	50,108.5	54.2%	157,422.0	25.4%	297,429.2
Warren*	5,004.7	3.9%	5,118.3	5.5%	4,110.3	0.7%	14,233.4
Regional Total	129,184.1	100.0%	92,388.9	100.0%	619,155.3	100.0%	840,728.4

Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

Public Water Services

Miami Valley Land Suitability Assessment - Built Environment Factors

What is Public Water Service?

The American Planning Association (APA) defines a public water supply system as “all property involved in a water utility, including land, water sources, collection systems, dams and hydraulic structures, distribution systems, and other appurtenances, pumping stations, treatment works, and general properties, or any parts thereof.”

For this study, public water supply systems are analyzed and displayed according to the availability of service using three classes: Currently Served, Potential Future Service, and Not Served.

Why is it Important?

The supply of water through public infrastructure is important for residential and non-residential uses because it sustains essential household and commercial activities. Commercial and industrial businesses, such as hospitals and food processing plants, cannot continue to operate unless they have a plentiful and dependable supply of water. Also, according to the U.S. Environmental Protection Agency, “directing development to areas served by existing infrastructure and maintaining that infrastructure can make systems more efficient. Development on and beyond the fringe can reduce return on investment in infrastructure and raise costs.”

How was the Data Developed?

The public water supply system data were compiled from digital and paper maps of water trunk lines collected from city and county offices. The data were assembled and mapped into a regional database. The methodology for determining service area is based on the 2006 Miami County Comprehensive Plan.

The areas identified as currently served consist of a selection of parcels whose centroids are located within 200 feet of the water trunk lines. The future service areas were identified by selecting the parcel centroids within 1,000 feet of the water trunk lines and the parcels that have public wastewater service but no public water service.

Development suitability is measured by the presence or potential future presence of public water service. The areas currently served are suitable for development, while the potential future service areas are somewhat suitable.

Data Source

Miami Valley Public Water Service Inventory, MVRPC, 2008.

Data Findings

The examination of water service areas revealed that 16.0% of the land in the Region is currently serviced by a public water system and another 11.9% has the potential to be serviced (see figure PWS.1). Nearly two-thirds of the areas that are currently serviced by a public water system are found in Montgomery County (67.8%), followed by Greene County with 19.4%. Montgomery County also has the largest share of areas that have the potential to be serviced by a public water system (56.1%) (see figure PWS.2).

PWS.1 - Regional Land by Public Water Service Classification

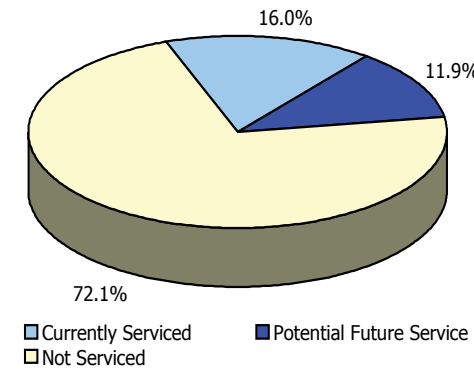


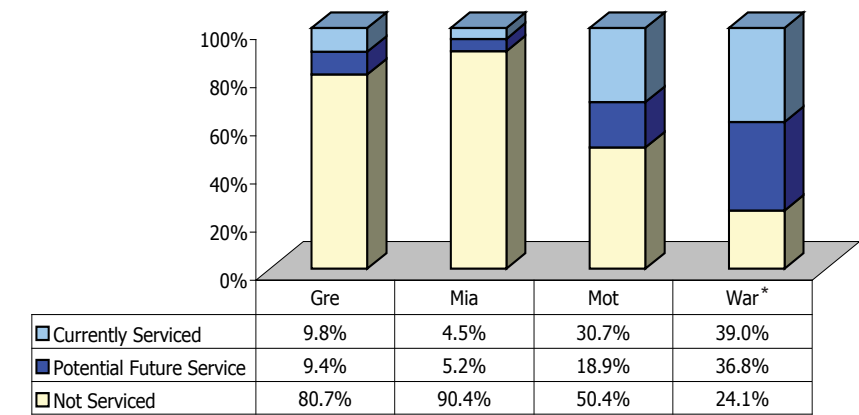
Figure PWS.3 presents the county level percent distribution among land areas that are currently serviced, areas with potential future service, and non-served areas for public water. Nearly 50% of Montgomery County is either currently serviced (30.7%) or has the potential to be serviced (18.9%). In contrast, 4.5% of Miami County’s land is currently serviced and 5.2% is identified as a potential future service area. Figure PWS.4 shows the spatial distribution of areas that are currently serviced and areas with the potential for future service. Similar to the spatial distribution of the wastewater service map, most of the urban areas are serviced by a public water system and areas adjacent to those currently serviced areas are identified as potential service areas.

PWS.2 - County Share of Land by Public Water Services Classification

County	Currently Served		Potential Future Service		Not Served		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	26,179.7	19.4%	25,181.7	25.2%	215,229.1	35.5%	266,590.5
Miami	11,691.1	8.7%	13,526.5	13.5%	237,257.8	39.2%	262,475.3
Montgomery	91,330.4	67.8%	56,129.7	56.1%	149,969.0	24.8%	297,429.2
Warren*	5,556.5	4.1%	5,243.6	5.2%	3,433.3	0.6%	14,233.4
Regional Total	134,757.7	100.0%	100,081.5	100.0%	605,889.2	100.0%	840,728.4

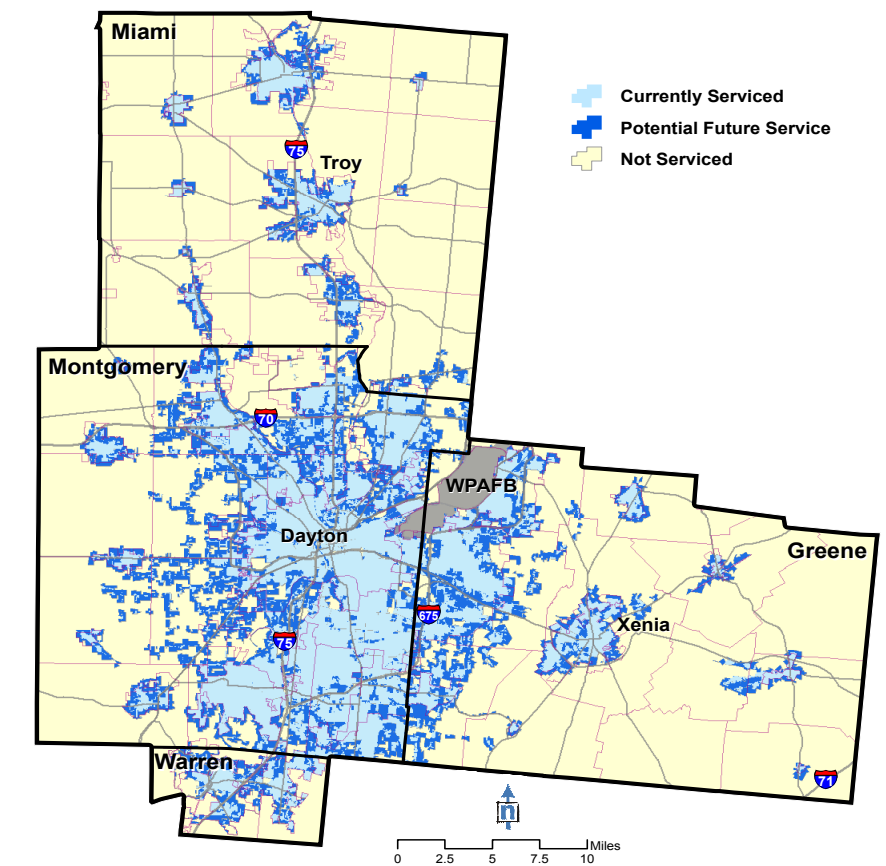
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

PWS.3 - County Land by Public Water Services Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

PWS.4 - Regional Distribution of Land by Public Water Services Classification



Recreational Amenities

Miami Valley Land Suitability Assessment - Built Environment Factors

What are Recreational Amenities?

Recreational amenities are identified as areas that have existing active or passive recreational opportunities. The American Planning Association (APA) defines open space as “land or water areas retained for use as active or passive recreation areas or for resource protection in an essentially undeveloped state.”

The study measures the accessibility of recreational amenities rather than simply documenting their locations and measures three levels of accessibility: Good Accessibility, Medium Accessibility, and Poor Accessibility.

Why is it Important?

Open spaces and other recreational sites are a vital component of a healthy and attractive community. They perform multiple functions, such as providing recreation opportunities and protecting natural resources. Recreational amenities also affect economic development by attracting tourists and providing employment. Many local governments include an open space provision in their comprehensive plans to better prepare for their residents’ recreational needs and to enhance their community’s quality of life.

How was the Data Developed?

The recreational amenities data were collected from the Miami Valley Open Space Inventory and county parcel data. The factor includes public park land that is over one acre in size, golf courses, and regional bikeways. The public park land was grouped into the following categories: Regional, Community, and Neighborhood Parks. Each of the park sites were buffered to measure accessibility based on an Open Space Guidelines and Standards document prepared by the National Recreation and Park Association.

Regional Parks were defined as recreational amenities of unusually large size and impact, including state parks and land belonging to the Five Rivers Metro Parks system. Community Parks are recreational amenities that are larger than 15 acres and are not categorized as a Regional Park. Neighborhood Parks are recreational amenities that are larger than one acre but less than 15 acres.

The Neighborhood and Community Parks were buffered using distances based on Federal and local recommendations for park land service areas. The service area for Neighborhood Parks is 0.25 miles and for Community Parks it is two miles. The existing regional bikeway was assigned a service area of two miles based on an estimation of the distance people are willing to bike in order to reach a destination. Golf courses were not assigned a service area because of their ability to draw people from various distances. The service area for Regional Parks is not a defined distance, but rather encompasses the entire study area, as it has unique characteristics that draw visitors from all parts of the Region.

Development suitability is based on the accessibility to recreational amenity sites.

Data Source

2005 Miami Valley Open Space Inventory, MVRPC, 2006.

Greene County Parcel Data, Auditors Office of Green County, 2007.

Miami County Parcel Data, Auditors Office of Miami County, 2007.

Montgomery County Parcel Data, Auditors Office of Montgomery County, 2007.

Warren County Parcel Data, Auditors Office of Warren County, 2007.

Data Findings

The Region offers many recreational amenities that are easily accessible. As shown in figure RA.1, areas with good to medium access account for 43.8% and 27.2% of the Region. Table RA.2 shows each county’s acreage and share of regional land by accessibility to recreational amenity classification. Of all the areas that have good access measures, Montgomery County has the largest portion, accounting for more than half of the regional total (59.7%) (see figure RA.2). On the other hand, Miami County has the largest amount of land measured to have poor accessibility to recreational amenities (46.0%).

RA.1 - Regional Land by Access to Recreational Amenities Classification

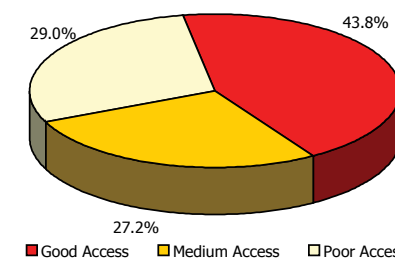


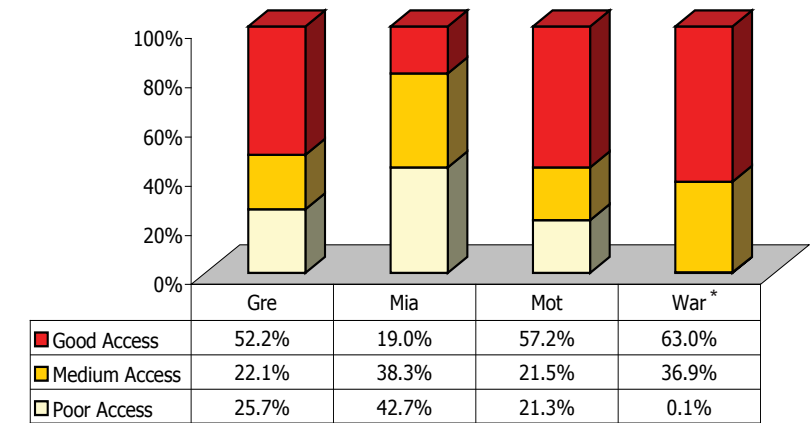
Figure RA.3 shows the percentage distribution of each county’s land by accessibility to recreational amenity classification. Over 50% of the land in Warren (63.4%), Montgomery (57.2%), and Greene (52.2%) counties has good accessibility to various recreational amenities. Figure RA.4 shows the spatial location of various recreational amenities in the Region as well as the results of the accessibility analysis. Areas in eastern Montgomery County and western Greene County are found to have better accessibility than the rest of the Region.

RA.2 - County Share of Land by Access to Recreational Amenities Classification

County	Good Accessibility		Medium Accessibility		Poor Accessibility		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	10,688.9	23.5%	187,317.0	34.0%	68,584.5	28.1%	266,590.5
Miami	6,218.3	13.7%	144,189.9	26.2%	112,067.2	46.0%	262,475.3
Montgomery	27,121.2	59.7%	207,084.6	37.6%	63,223.4	25.9%	297,429.2
Warren*	1,422.7	3.1%	12,801.0	2.3%	9.8	0.0%	14,233.4
Regional Total	45,451.1	100.0%	551,392.4	100.0%	243,884.8	100.0%	840,728.4

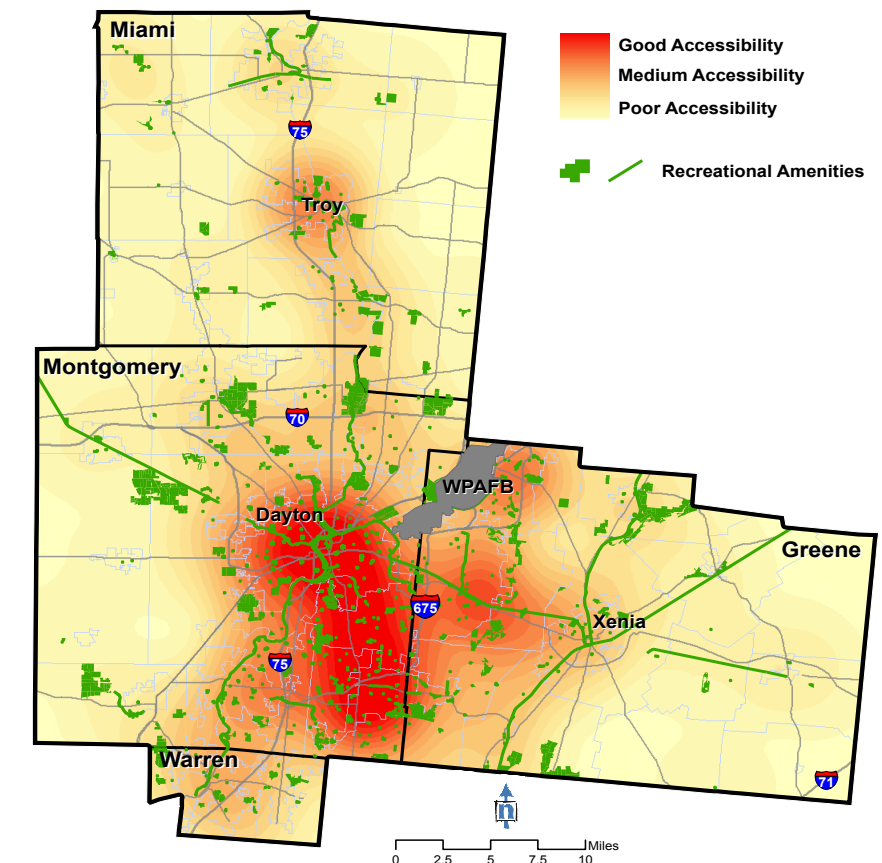
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

RA.3 - County Land by Access to Recreational Amenities Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

RA.4 - Regional Distribution of Land by Access to Recreational Amenities Classification



Restricted Development Lands

Miami Valley Land Suitability Assessment - Built Environment Factors

What are Restricted Development Lands?

In general, restricted development lands are reserved for public use or service, which means that development or changes in land use are less likely to occur due to their function. Examples of restricted development lands include public parks, school properties, government owned land, and historic properties.

The restricted development lands factor divides the Region's land into two classes: Restricted Site and Non-Restricted Site.

Why is it Important?

Restricted development sites are important for providing public services to the Region's residents. Also, identifying restricted development sites is an important component of a regional land use study because they are the least likely to be developed or redeveloped. The restrictions placed on these properties are such that neither residential nor non-residential uses have the ability to locate to or redevelop these sites.

How was the Data Developed?

The areas identified as restricted development lands were assembled using county parcel and land use data, the Miami Valley Open Space Inventory, and a listing of registered historical sites. Land use categories for this factor include: sites owned by a government entity, sites used for public services, cemeteries, landfills and mineral extraction sites, and sites listed on the National Register of Historical Sites.

Development suitability is measured by whether or not the land is designated as restricted. The unrestricted lands are suitable for development, while those that are restricted are not suitable.

Data Source

- 2005 Miami Valley Open Space Inventory, MVRPC, 2006.
- National Register of Historical Places, 2008, available at www.nps.gov/nr/index.htm
- Greene County Parcel Data, Auditors Office of Green County, 2007.
- Miami County Parcel Data, Auditors Office of Miami County, 2007.
- Montgomery County Parcel Data, Auditors Office of Montgomery County, 2007.
- Warren County Parcel Data, Auditors Office of Warren County, 2007.

Data Findings

Approximately 13.2% of the Region has development restrictions, while the remaining 86.8% does not (see figure RD.1). Figure RD.2 shows each county's share and acreage of regional land by development restriction classification. Among the 111,249 acres of land with development restrictions, Montgomery County has the largest portion with 41,886 acres (37.7%), followed by Greene and Miami counties (33.1% and 27.7%, respectively).

RD.1 - Regional Land by Restricted Development Classification

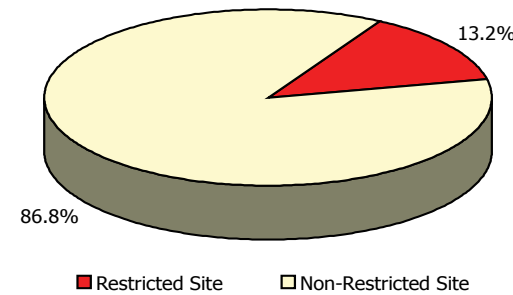


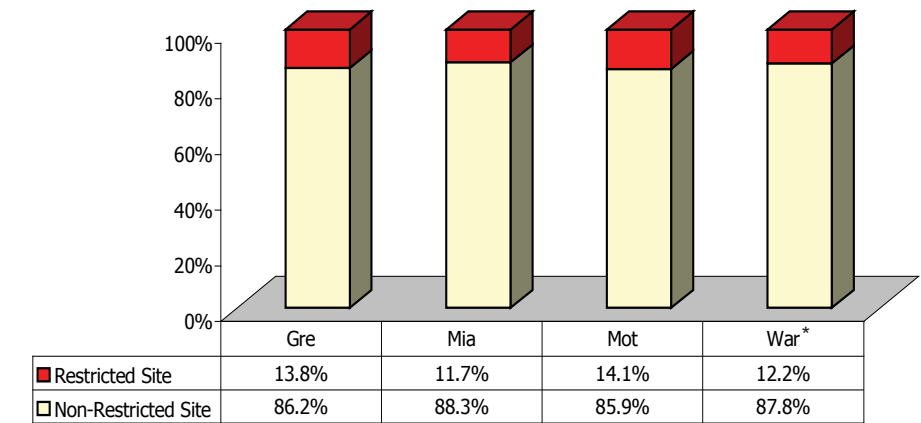
Figure RD.3 illustrates the percentage distribution of each county's land according to the development restriction classifications. The analysis found that 14.1% of Montgomery County and 13.8% of Greene County is classified as restricted land. The map presented in Figure DR.4 shows the spatial distribution of development restricted areas.

RD.2 - County Share of Land by Restricted Development Classification

County	Restricted Site		Non-Restricted Site		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	36,810.6	33.1%	229,779.8	31.5%	266,590.5
Miami	30,817.5	27.7%	231,657.8	31.8%	262,475.3
Montgomery	41,886.4	37.7%	255,542.8	35.0%	297,429.2
Warren*	1,734.8	1.6%	12,508.4	1.7%	14,243.2
Regional Total	111,249.4	100.0%	729,488.8	100.0%	840,738.2

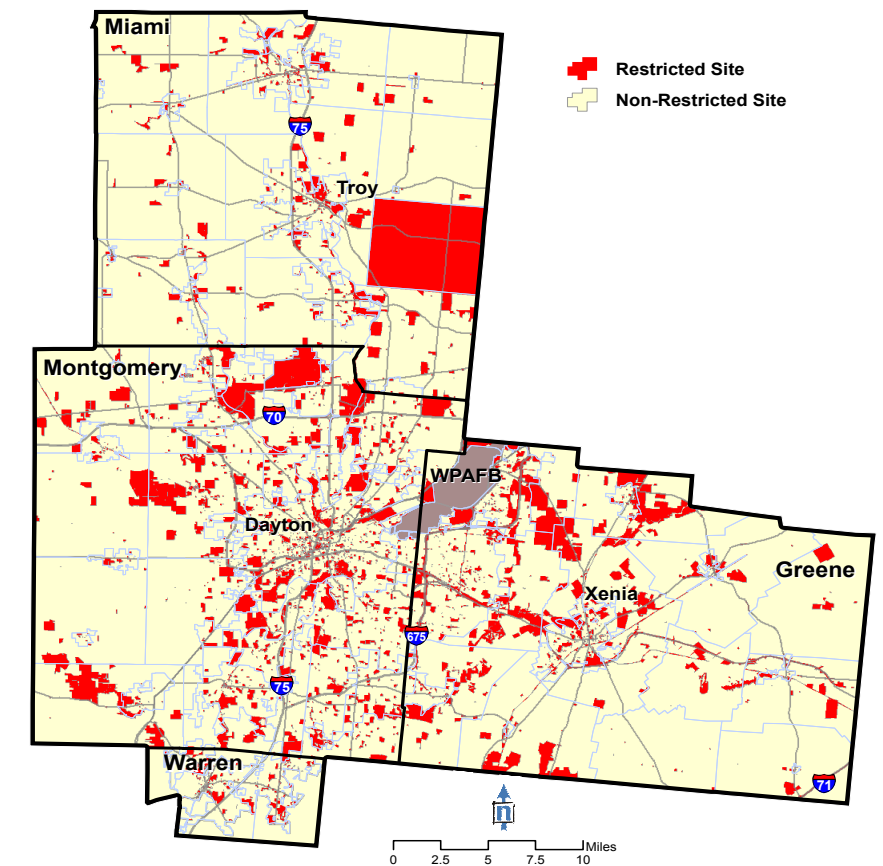
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

RD.3 - County Land by Restricted Development Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

RD.4 - Regional Distribution of Land by Restricted Development Classification



Retail Clusters

Miami Valley Land Suitability Assessment - Built Environment Factors

What are Retail Clusters?

The American Planning Association (APA) defines a retail sales establishment as “a commercial enterprise that provides goods and/or services directly to the consumer, where such goods are available for immediate purchase and removal from the premises by the purchaser.” A “retail cluster” is a term used by MVRPC to describe groups of non-residential establishments located in close proximity to one another and having 50% or more of its floor space dedicated to retail.

The study measures the accessibility of retail clusters and divides the Region’s land into three classes: Good Accessibility, Medium Accessibility, and Poor Accessibility.

Why is it Important?

Being located in close proximity to retail clusters is an advantage because retail clusters are a source of employment and consumer needs can be easily met without traveling very far. Also, living and working within close proximity to retail opportunities increases the likelihood of using alternative transportation.

How was the Data Developed?

Retail clusters were derived from parcel and commercial land use information. The clusters were created by mapping individual commercial parcels and then manually grouping the commercial parcels into clusters based on distribution and professional knowledge of the Region. The clusters of commercial parcels were then analyzed for the percent of retail floor area. The clusters having 50% or more retail floor area were included in the retail cluster factor dataset.

The retail cluster groupings and service areas were determined using the Shopping Center Types and Characteristics Table (Table 13-2) in *Urban Land Use Planning*. The retail clusters were grouped into three classes based on floor area (Neighborhood, Community, and Regional) and then service area distances were estimated for each class to measure accessibility.

The Neighborhood retail clusters are between 30,000 and 299,999 square feet and they have service areas of 0.25, 1, and 2 miles. The service areas represent a close, medium, and far distance for customer accessibility. The Community retail clusters are between 300,000 and 999,999 square feet and they have service areas of 0.5, 2, and 4 miles. The Regional retail clusters include the major regional shopping malls, are at least 1,000,000 square feet, and they have service areas of 2, 4, and 8 miles. The accessibility distances were then overlaid and processed to produce a gradient of most to least accessible to the amenities.

Data Source

Greene County Parcel Data, Auditors Office of Green County, 2007.

Miami County Parcel Data, Auditors Office of Miami County, 2007.

Montgomery County Parcel Data, Auditors Office of Montgomery County, 2007.

Warren County Parcel Data, Auditors Office of Warren County, 2007.

Data Findings

Approximately one-third of the Region has good to medium accessibility to retail centers. To be more specific, land with good and medium accessibility makes up 8.9% and 21.7% of the Region, respectively (see figure RC.1). Montgomery County leads the Region in offering better accessibility to retail clusters than any of the other counties. Of those areas identified to have good and medium accessibility to retail clusters, Montgomery County’s shares are the largest with 66.3% and 52.5% (see figure RC.2).

RC.1 - Regional Land by Access to Retail Clusters Classification

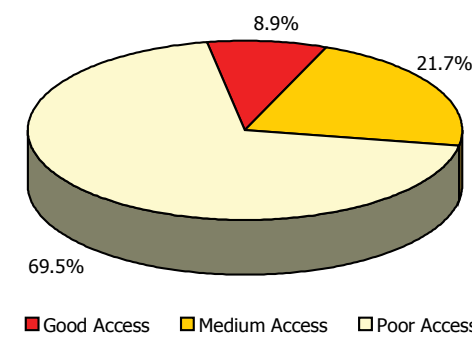


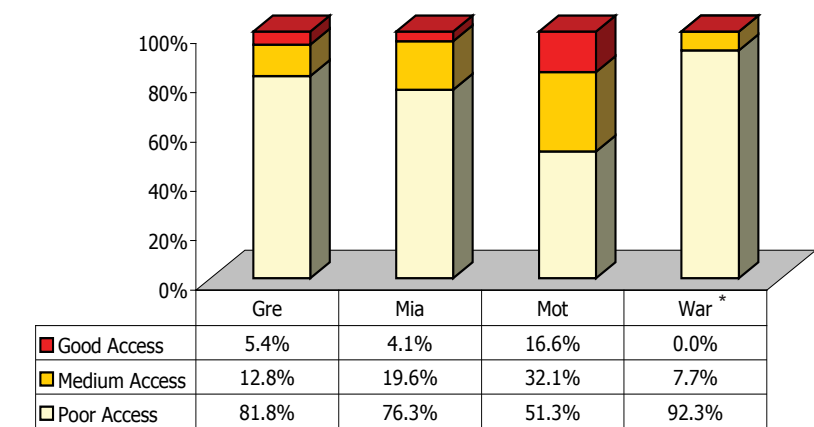
Figure RC.3 shows the percent of each county’s land based on access to retail clusters measures. As illustrated in the chart, nearly half of the areas in Montgomery County are identified as areas with either good (16.6%) or medium (32.1%) accessibility to retail clusters. Figure RC.4 shows the locations of retail clusters as well as the spatial distribution of retail accessibility in the Region. As seen in the map, areas in southeastern Montgomery County along I-675 and I-75, northwest of Dayton, and south of Wright Patterson Air Force Base along I-675 in Greene County have better access to retail clusters than other parts of the Region.

RC.2 - County Share of Land by Access to Retail Clusters Classification

County	Good Accessibility		Medium Accessibility		Poor Accessibility		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	14,448.4	19.4%	34,000.8	18.7%	218,141.3	37.3%	266,590.5
Miami	10,700.0	14.3%	51,450.3	28.3%	200,325.1	34.3%	262,475.3
Montgomery	49,435.9	66.3%	95,540.3	52.5%	152,453.0	26.1%	297,429.2
Warren*		0.0%	1,089.9	0.6%	13,143.6	2.3%	14,233.4
Regional Total	74,584.3	100.0%	182,081.2	100.0%	584,062.9	100.0%	840,728.4

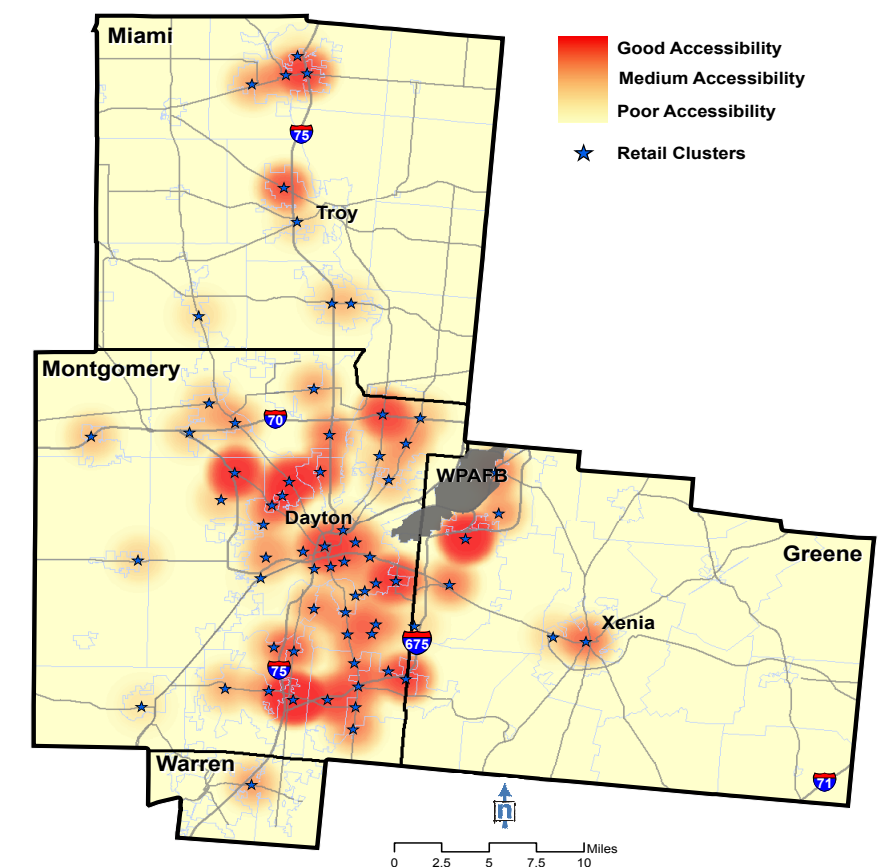
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

RC.3 - County Land by Access to Retail Clusters Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

RC.4 - Regional Distribution of Land by Access to Retail Clusters Classification



Transportation Network Connectivity

Miami Valley Land Suitability Assessment - Built Environment Factors

What is a Transportation Network Connectivity?

The transportation network factor is comprised of principal and minor arterial roadways. The Federal Highway Administration (FHWA) defines an arterial as “a class of roads serving major traffic movements (high-speed, high volume) for travel between major points.” A principal arterial is defined as “major streets or highways, many with multi-lane or freeway design, serving high-volume traffic corridor movements that connect major generators of travel.” A minor arterial is defined as “streets and highways linking cities and larger towns in rural areas in distributing trips to small geographic areas in urban areas (not penetrating identifiable neighborhoods).”

Not included in the transportation network connectivity factor are limited access roadways such as interstates, freeways, and expressways because they were examined as a separate factor. Also, proximity to access points for limited access roadways is not a measure of connectivity.

The study measures the transportation network connectivity and divides the Region’s land into two classes: Good Connectivity and Poor Connectivity.

Why is it Important?

Arterials are an important factor in development suitability because of their capacity for transporting vehicles efficiently. Also, major roadways require a large financial investment and are constructed for the purposes of serving residential and non-residential needs. Transportation infrastructure greatly shapes the built environment and is related to how land is developed and ultimately used.

The areas surrounding arterials are typically zoned for non-residential uses and are a magnet for businesses seeking a site that has high visibility and is easily reached by consumers. Also, non-residential uses typically require the delivery or shipment of commodities and would benefit from being located near an arterial

How was the Data Developed?

The principal and minor arterials were identified using the MVRPC roadway data layer and the Ohio Department of Transportation Functional Classifications for urban principal arterial, urban minor arterial, rural principal arterial and rural minor arterial. The arterials were then buffered according to FHWA recommendations. Urban principal arterials are buffered at 0.5 miles, urban minor arterials at 0.25 miles, rural principal arterials at 1.5 miles, and rural minor arterials at 1 mile.

Development suitability is based on defined distances from the principal and minor arterials. The areas within the arterial buffers are considered suitable for development for reasons of connectivity.

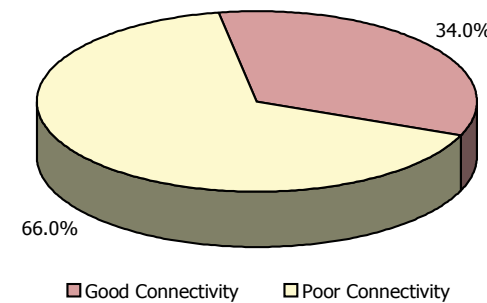
Data Source

Road Centerlines, MVRPC, 2008.

Data Findings

Areas with good transportation network connectivity make up 34% of the Region while the remaining 66% has poor connectivity (see figure TN.1). Figure TN.2 shows that Montgomery County has the largest share (47.7%) of the Region’s areas with good transportation connectivity, followed by Greene and Miami counties with 29.4% and 20.4%, respectively.

TN.1 - Regional Land by Transportation Network Connectivity Classification



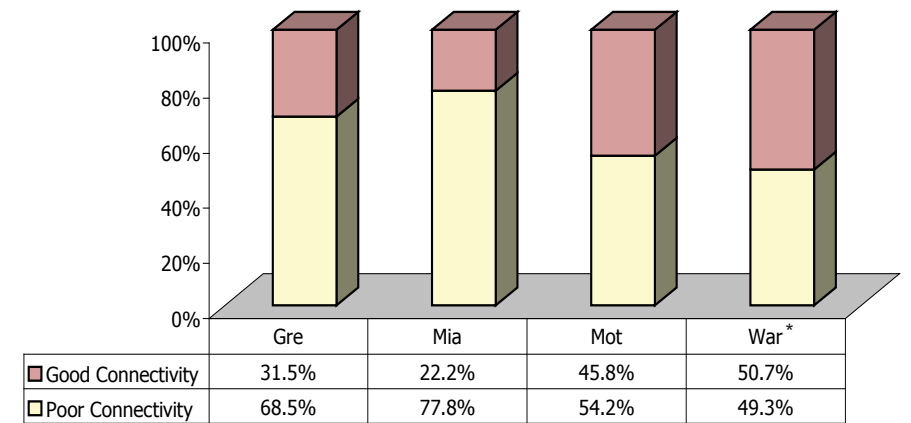
As presented in figure TN.3, over half of the combined areas of the cities of Carlisle, Franklin and Springboro have good transportation network connectivity. Also, areas with good connectivity make up 45.8%, 31.5% and 22.2% of Montgomery, Greene, and Miami counties, respectively. Figure TN.4 shows the spatial layout of the transportation network system and areas with good connectivity to those networks.

TN.2 - County Share of Land by Transportation Network Connectivity Classification

County	Good Connectivity		Poor Connectivity		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	84,072.9	29.4%	182,517.6	32.9%	266,590.5
Miami	58,157.6	20.4%	204,317.7	36.8%	262,475.3
Montgomery	136,308.1	47.7%	161,121.0	29.0%	297,429.2
Warren*	7,216.6	2.5%	7,016.9	1.3%	14,233.4
Regional Total	285,755.2	100.0%	554,973.2	100.0%	840,728.4

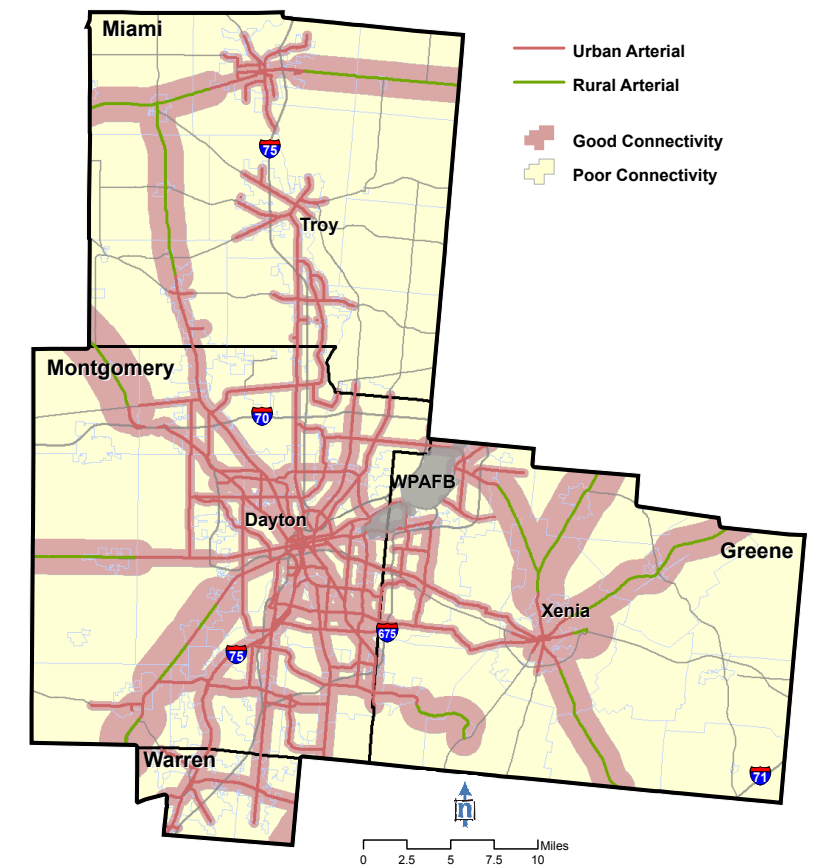
Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

TN.3 - County Land by Transportation Network Connectivity Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

TN.4 - Regional Distribution of Land by Transportation Network Connectivity Classification



Miami Valley Land Suitability Assessment - Built Environment Factors

The Built Environment Residential Suitability Composite Map presents the result of the comprehensive land suitability measure from a built environment perspective at the regional level.

As described in the methodology section of this report, the weight factor was applied to all 15 factors examined in this study to differentiate between each factor's importance in determining development potential. However, because of the dissimilar needs and values placed on each factor between residential and non-residential considerations, the process for assigning weight factor numeric values for Residential Land Suitability Scoring System was carried out independently from the process for Non-Residential Land Suitability Scoring System.

The different weight factor values for the same built environment factor can be found by comparing the Residential and Non-Residential Land Suitability Scoring Systems. For example, the Residential Land Suitability Scoring System has a higher weight factor value assigned to the Recreational Amenities factor (a value of 3) than the Non-Residential Land Suitability Scoring System (a value of 2). The reason for this is that recreational amenities are more valued for residential development than non-residential development. However it is important to note that the two scoring systems were compared and adjusted so that the total suitability score remain the same between the Residential and Non-Residential Land Suitability Scoring Systems.

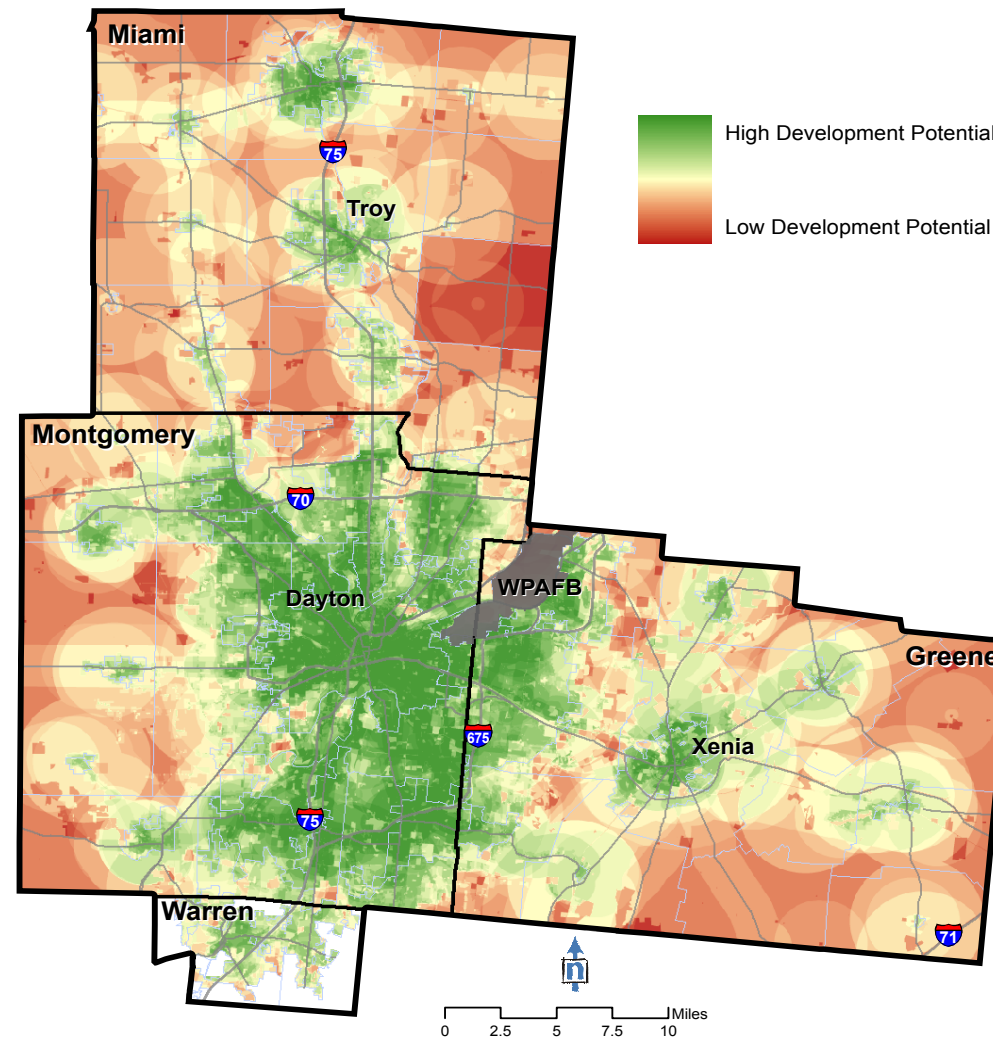
The Residential Land Suitability Scoring System in the Appendix presents a more precise description of the factors and their attributes that characterize the Region's residential development potential.

The Residential Suitability Measure takes all 15 factors into consideration, as described in the methodology section and provides information pertaining to where opportunities and constraints exist for residential development.

In general, land with high development potential for residential development is characterized as:

- Being located outside airport noise affected areas, potential environmental hazard sites, industrial clusters, and restricted development lands
- Having good access to the Region's educational, recreational, and other amenities
- Having adequate public wastewater, water, and fire protection services
- Having certain levels of transportation network connectivity and access to major thoroughfares, public transportation services, and job clusters

LSM.1 - Built Environment Residential Suitability Composite Map



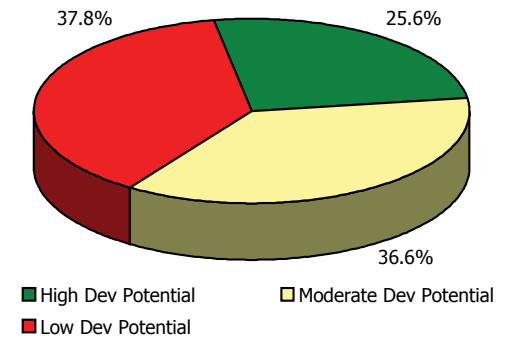
LSM.3 - County Share of Land by Residential Development Potential Classification

County	High Dev Potential		Moderate Dev Potential		Low Dev Potential		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	47,977.5	22.3%	115,442.5	37.6%	103,163.2	32.5%	266,583.2
Miami	17,348.9	8.0%	93,751.0	30.5%	151,350.7	47.6%	262,450.7
Montgomery	143,827.0	66.7%	91,117.5	29.6%	62,466.8	19.7%	297,411.2
Warren*	6,382.1	3.0%	7,057.5	2.3%	776.0	0.2%	14,215.6
Regional Total	215,535.5	100.0%	307,368.5	100.0%	317,756.7	100.0%	840,660.6

Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

Figure LSM.1 shows the distribution of high to low development potential for the residential suitability measures. The areas with high development potential are, for the most part, located within areas that are currently urbanized and have existing infrastructure.

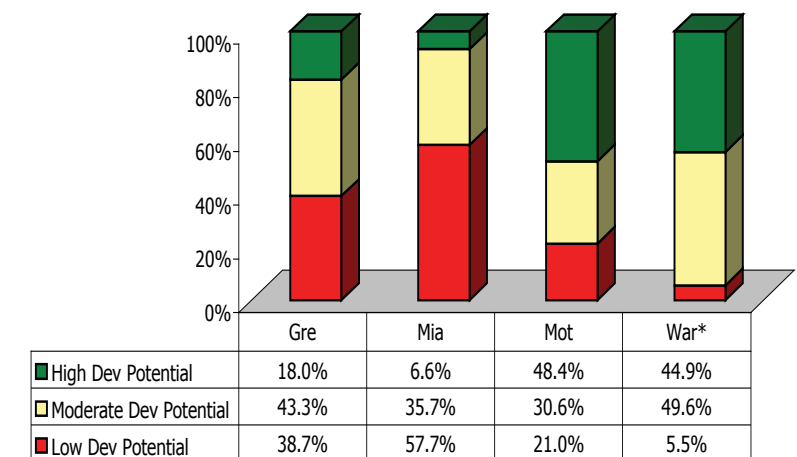
LSM.2 - Regional Land by Residential Development Potential Classification



The majority of the Region (62.3%) has a high or moderate residential development potential (see figure LSM.2). Approximately, 37.8% of the Region has a low development potential. Figure LSM.3 shows that Montgomery County has the largest share (66.7%) of the Region with high development potential based on residential considerations, followed by Greene (22.3%) and Miami (8.0%) counties.

Montgomery (48.4%) and Warren (44.9%) counties have the largest portions of land deemed suitable for residential development (see figure LSM.4). Miami (57.7%) and Greene (38.7%) counties have the largest portions of land with low development potential.

LSM.4 - County Land by Residential Development Potential Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

Miami Valley Land Suitability Assessment - Built Environment Factors

The Built Environment Non-Residential Suitability Composite Map presents the result of the comprehensive land suitability measure from a built environment perspective at the Regional level.

As described in the methodology section of this report, the weight factor was applied to all 15 factors examined in this study to differentiate between each factor's importance in determining development potential. However, because of the dissimilar needs and values placed on each factor between residential and non-residential considerations, the process for assigning weight factor numeric values for Non-Residential Land Suitability Scoring System was carried out independently from the process for Residential Land Suitability Scoring System.

The different weight factor values for the same built environment factor can be found by comparing the Residential and Non-Residential Land Suitability Scoring Systems. For example, the Non-Residential Land Suitability Scoring System has a higher weight factor value assigned to the Public Wastewater Services factor (a value of 4) than the Residential Land Suitability Scoring System (a value of 3). The reason for this is that, while both residential and non-residential land uses depend on the transport and treatment of waste, residential development can exist without public wastewater service by using a septic system. A septic system, however, may not be a desirable option for non-residential uses, particularly those that dispose of large quantities of waste. It is important to note that the two scoring systems were compared and adjusted so that the total suitability score remains the same between the Residential and Non-Residential Land Suitability Scoring Systems.

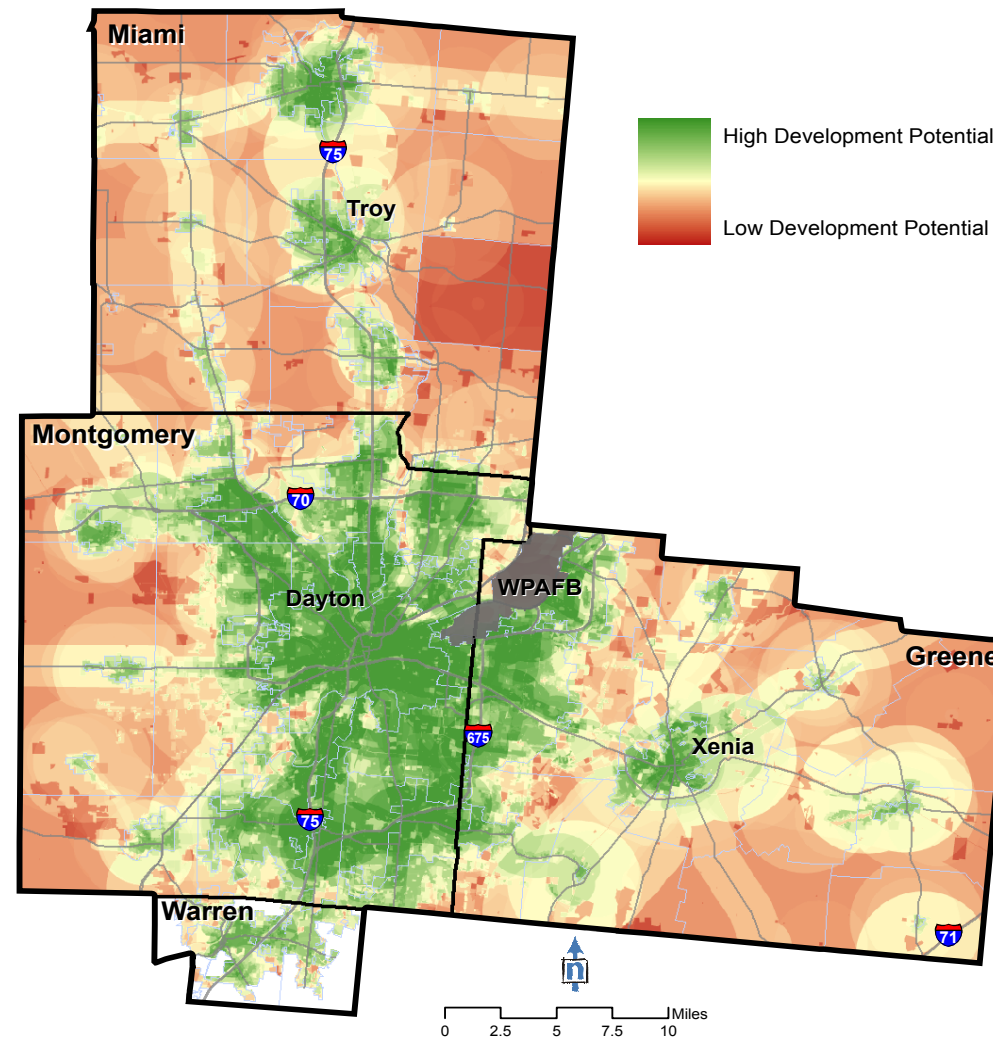
The Non-Residential Land Suitability Scoring System in the Appendix presents a more precise description of the factors and their attributes that characterize the Region's non-residential development potential.

The Non-Residential Suitability Measure takes all 15 factors into consideration, as described in the methodology section and provides information pertaining to where opportunities and constraints exist for residential development.

In general, land with high development potential for non-residential development is characterized as:

- Being located outside potential environmental hazard sites and restricted development lands
- Having good access to major thoroughfares and adequate public wastewater and water supply systems
- Being in close proximity to existing industrial clusters, job clusters, and retail clusters with good transportation network connectivity
- Having certain levels of access to educational and recreational amenities and public transportation and fire protection services

LSM.5 - Built Environment Non-Residential Suitability Composite Map



LSM.7 - County Share of Land by Non-Residential Development Potential Classification

County	High Dev Potential		Moderate Dev Potential		Low Dev Potential		Total
	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	Acreage	County Share of Regional Total	
Greene	45,197.0	21.1%	115,353.7	41.1%	106,032.5	30.6%	266,583.2
Miami	22,303.1	10.4%	73,305.3	26.1%	166,842.2	48.2%	262,450.7
Montgomery	139,088.0	65.0%	85,981.4	30.7%	72,341.8	20.9%	297,411.2
Warren*	7,397.0	3.5%	5,797.6	2.1%	1,020.9	0.3%	14,215.6
Regional Total	213,985.2	100.0%	280,438.1	100.0%	346,237.3	100.0%	840,660.7

Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

LSM.6 - Regional Land by Non-Residential Development Potential Classification

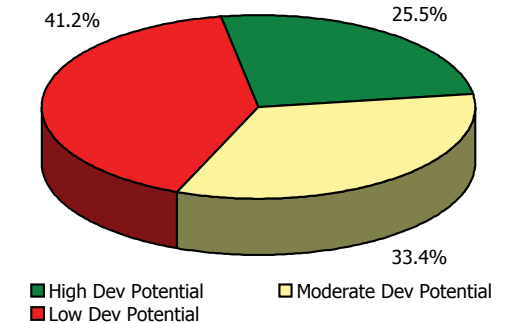
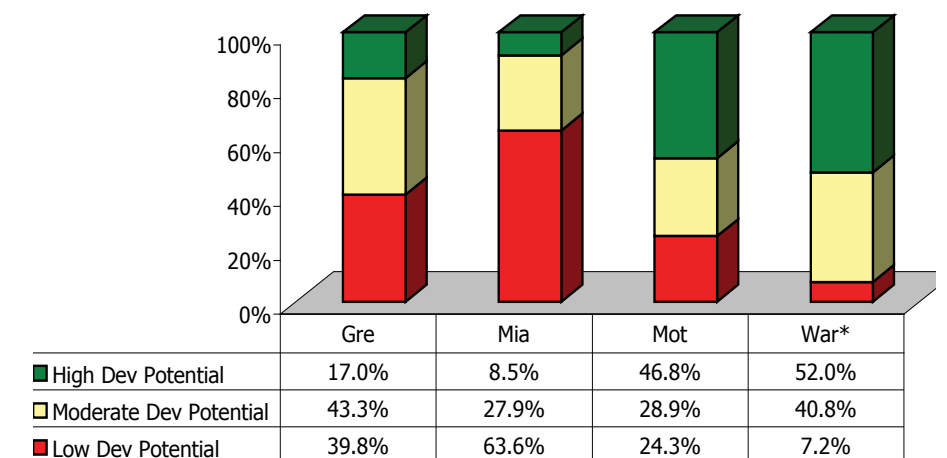


Figure LSM.5 shows the distribution for the non-residential development potential. Similar to the Residential Suitability Composite Map, the areas categorized as having high development potential are located, for the most part, inside urbanized areas.

The majority of the Region (62.3%) has a high or moderate non-residential development potential (see figure LSM.6). Figure LSM.7 shows that Montgomery County has over half of the Region's land (65%) categorized as having a high development potential for non-residential development. Miami County has the lowest Regional share of land, excluding Warren County, with a high development potential (10.4%).

Figure LSM.8 shows that Montgomery (48.4%) and Warren (44.9%) counties have the largest portions of land categorized as having high development potential for non-residential development. Miami (57.7%) and Greene (38.7%) counties have the smallest portions of land categorized as having high development potential.

LSM.8 - County Land by Non-Residential Development Potential Classification



Note: * Warren County includes only the cities of Carlisle, Franklin, and Springboro

Built Environment Suitability Comparative Analysis

Miami Valley Land Suitability Assessment - Built Environment Factors

CA.1 - Residential and Non-Residential Land Development Suitability: Built Environment Factors

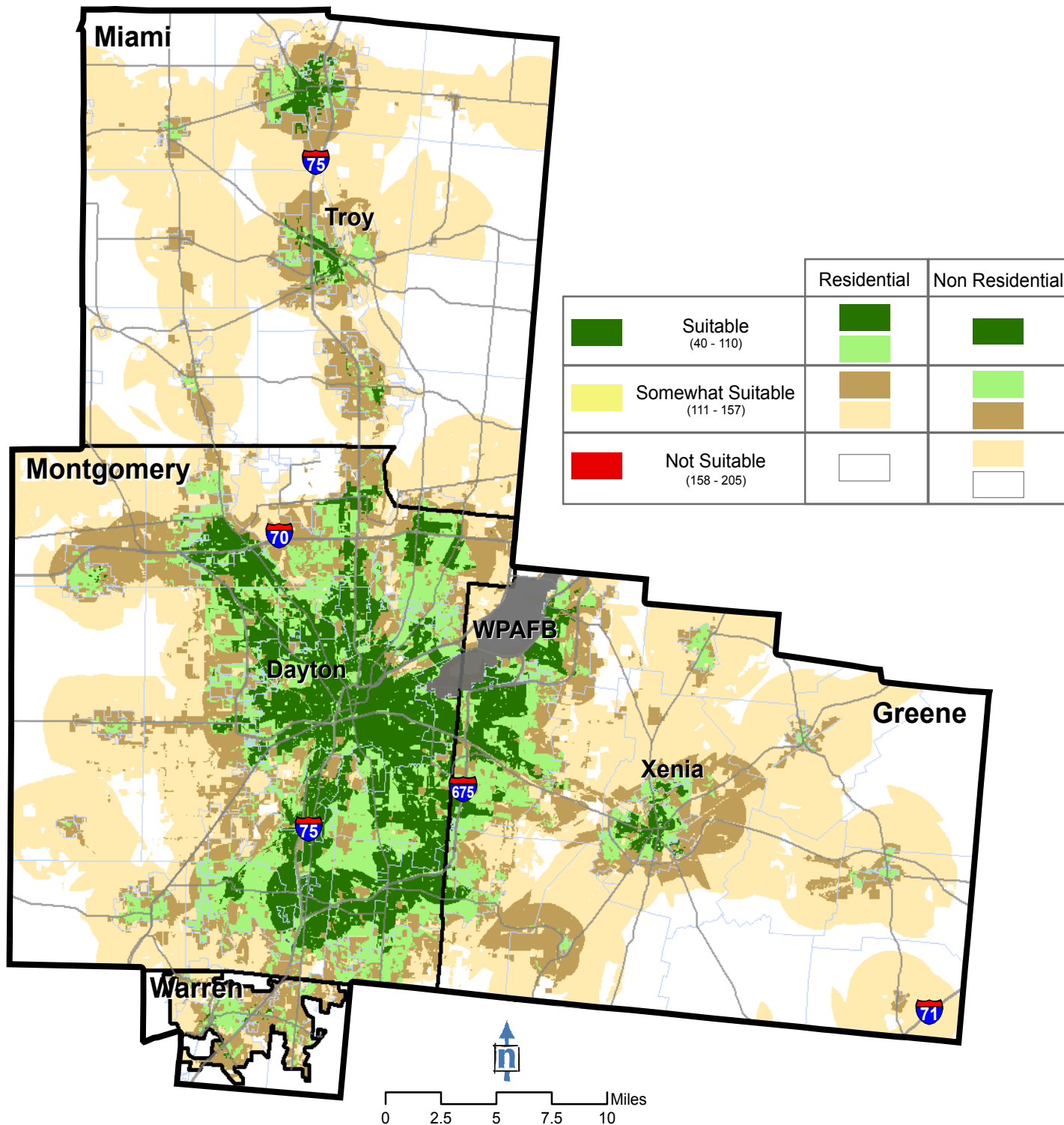


Figure CA.1 is a presentation of the Residential and Non-Residential Land Development Suitability Map based on the Built Environment Factors.

The map in CA.1 was created from both the residential and non-residential composite maps. The suitability scores for both land use considerations were standardized into equal intervals and separated to more clearly show the differences in development suitability between residential and non-residential considerations. The legend is presented as a matrix to graphically display the map's color combinations that represent development suitability for both residential and non-residential considerations. The number ranges listed below the suitability categories are the numerical groupings of the final suitability scores used to create the map.

CA.2 - Regional Land by Residential and Non-Residential Land Development Suitability Classification

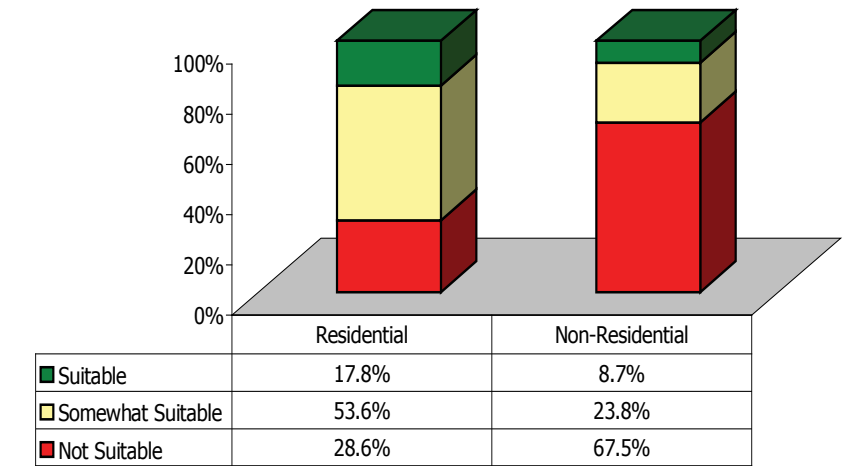
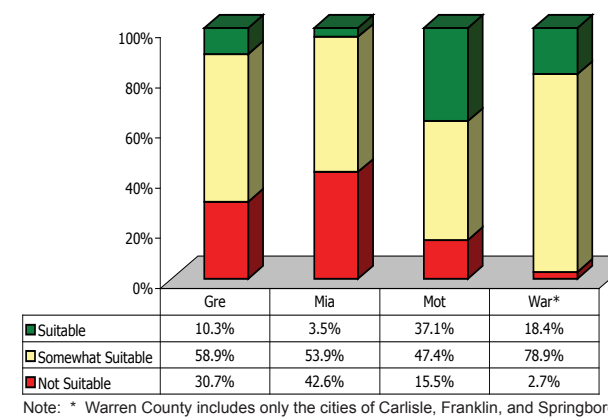


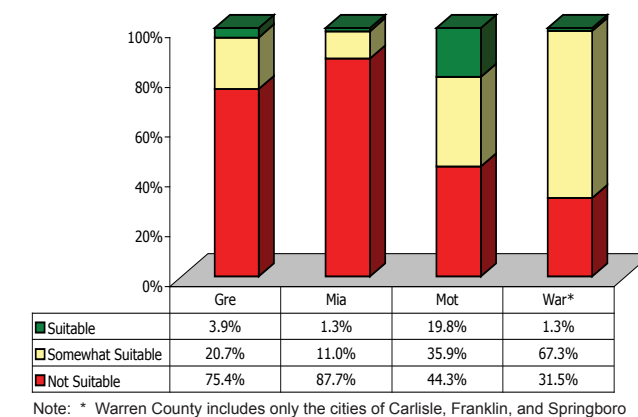
Figure CA.2 illustrates the percent of regional land categorized as Suitable, Somewhat Suitable, and Not Suitable for residential and non-residential considerations based on standardized scoring. Figure CA.2 illustrates that more than half (53.6%) of the Region's land is somewhat suitable for residential development and 17.8% is Suitable. Figure CA.2 also illustrates that more than half (67.5%) of the Region's land is Not Suitable for non-residential development and only about 32.5% is either Suitable or Somewhat Suitable.

Figures CA.3 and CA.4 illustrate the findings at the county level based on the standardized scoring between the residential and non-residential composite maps. Figure CA.3 shows that the majority the land in each county is either Suitable or Somewhat Suitable for residential development. Warren (97.3%) and Montgomery (84.5%) counties, in particular, have the largest percent of their land categorized as Suitable or Somewhat Suitable. Figure CA.4 illustrates that Montgomery (55.7%) and Warren (68.6%) Counties have the greatest percent of county land that is either Suitable or Somewhat Suitable for non-residential development.

CA.3 - County Land by Residential Land Development Suitability Classification



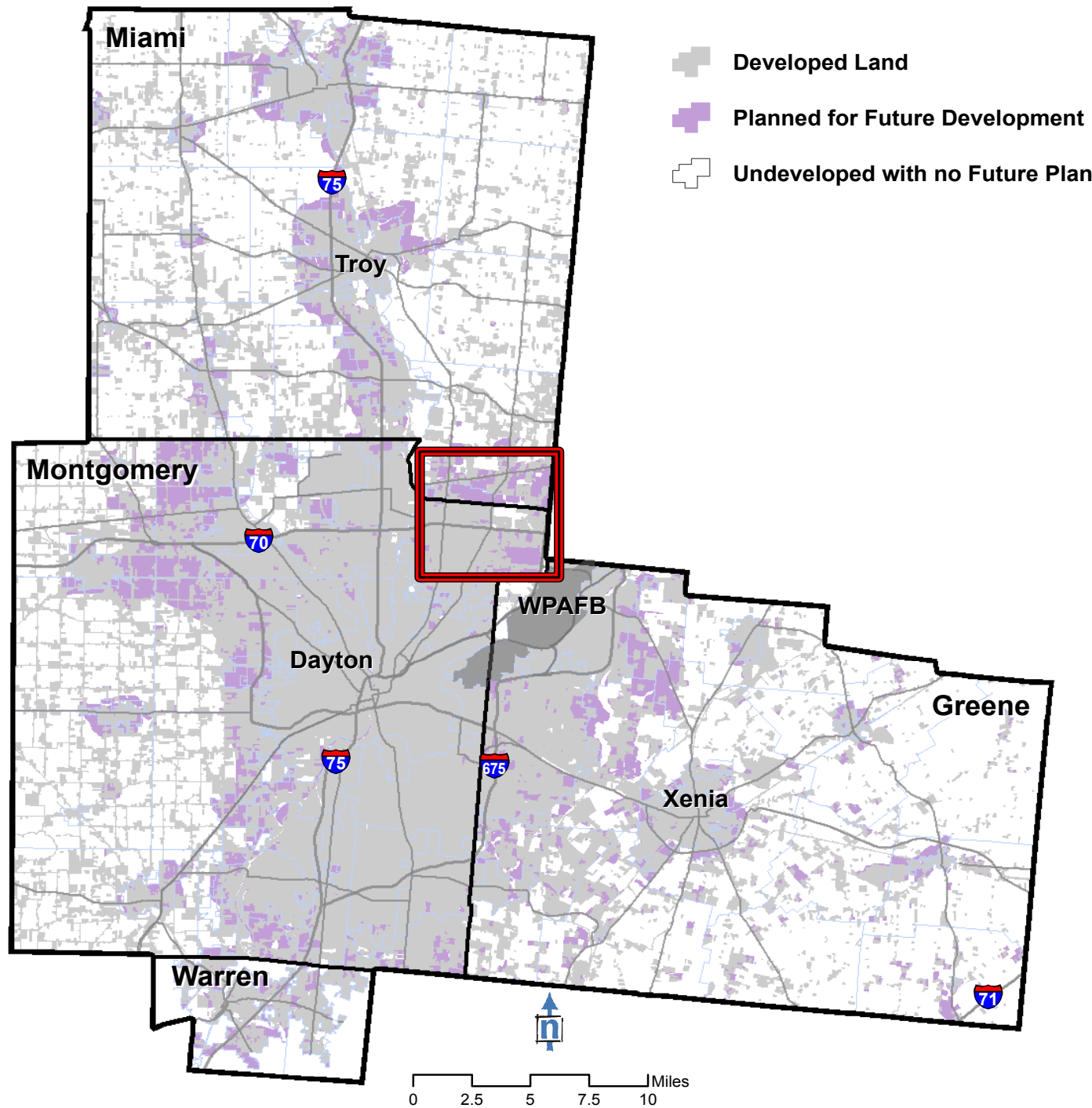
CA.4 - County Land by Non-Residential Land Development Suitability Classification



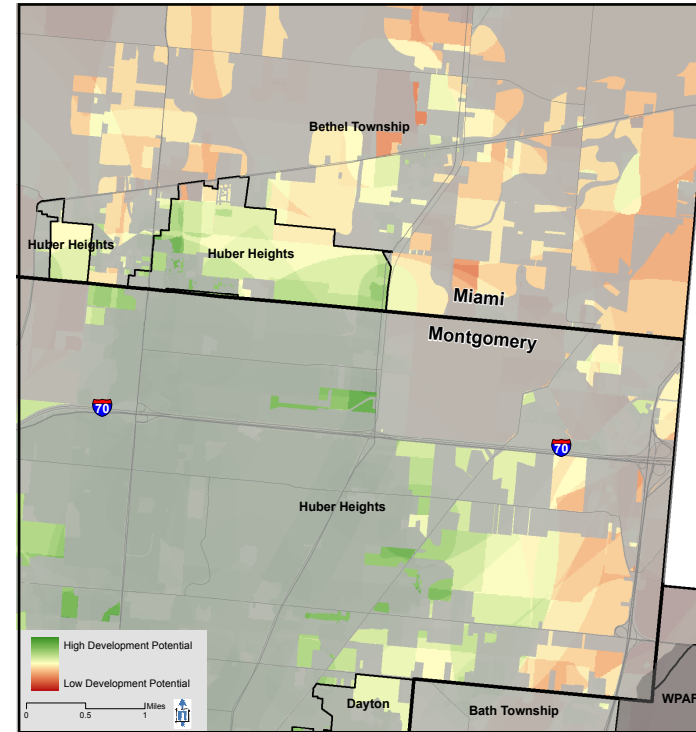
Built Environment Suitability Comparative Analysis

Miami Valley Land Suitability Assessment - Built Environment Factors

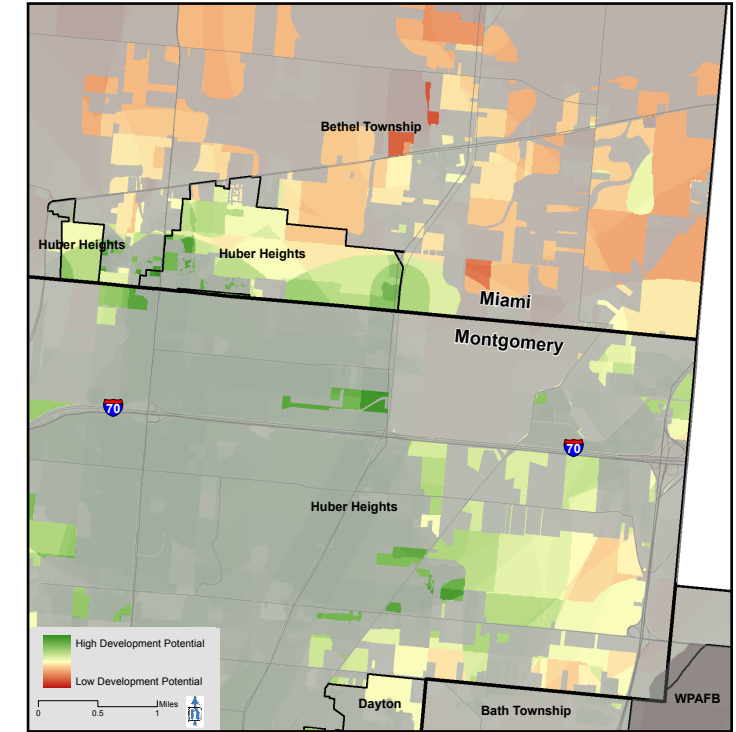
CA.5 - Existing and Future Development Map



CA.6 - Lands Planned for Future Development overlaid with Residential Suitability Composite Map



CA.7 - Lands Planned for Future Development overlaid with Non-Residential Suitability Composite Map



CA.8 - Lands Planned for Future Development overlaid with Residential and Non-Residential Land Development Suitability

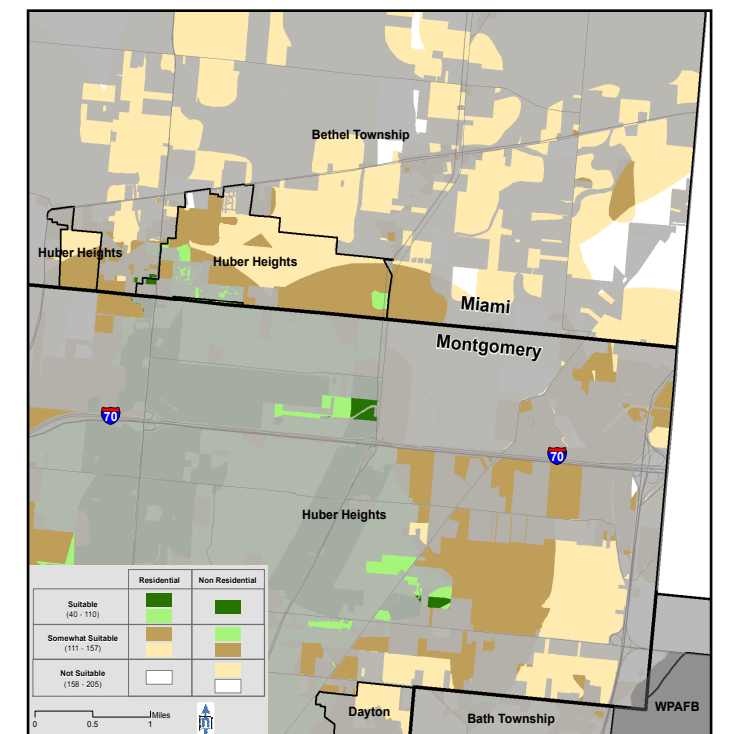


Figure CA.5 represents land that is currently developed, as well as the land that local jurisdictions plan to develop in the future. The developed land (shown in grey) is based on county auditor property data. The land planned for future development (shown in purple) is based on a compilation of local future land use plans.

Figures CA.6 and CA.7 show the overlay of the individual residential and non-residential Suitability Composite Maps with land that is planned for future development. These two maps are intended to illustrate relative land suitability measures for residential and non-residential development independently rather than in comparison. Figure CA.8 illustrates whether certain areas are better suited for residential development than non-residential and vice-versa.

These insets provide an example of how the Built Environment Suitability Measure can be incorporated into local future land use planning efforts. This information should help local authorities make sound decisions when approving development plans.

Miami Valley Land Suitability Assessment - Built Environment Factors

Conclusion

The Miami Valley Land Suitability Assessment – Built Environment Factors provides a comprehensive overview of the Region’s constructed landscape. Fifteen built environment factors were analyzed both individually and in relation to one another in order to identify locations within the Region that are better suited for further physical development. Separate Suitability Composite Maps were created for residential and non-residential development considerations because of the differences in the way that the built environment suitability factors affect development potential for residential and non-residential development. This assessment alone is not meant to be a comprehensive land suitability assessment, but rather focuses exclusively on the built environment. The results of this analysis must be considered with the results of the natural environment suitability analysis for a more comprehensive assessment of the Region’s physical landscape.

The entire Region will benefit if development is planned and executed in a manner that takes advantage of existing infrastructure before paying for new construction. Each of the 15 factors were mapped and analyzed at both the regional and county levels to provide a broad scope that is often lacking when land use decisions are made at the local level. Each page in this assessment report graphically illustrates the geographic location of the factor and offers a regional and county-level analysis of each factor.

This assessment revealed that the land in the Region generally exhibits the following characteristics:

- Located outside airport noise affected areas, potentially hazardous areas, industrial clusters, and restricted development lands
- Has good access to the Region’s educational, recreational, and other amenities
- Has adequate public wastewater, water, and fire protection services
- Has certain levels of transportation network connectivity and access to major thoroughfares, public transportation services, and job clusters

The Built Environment Suitability Composite Maps provide a comprehensive spatial overview for residential and non-residential uses. In general, the map showed that over 55% of regional land is highly or moderately suited to accommodate residential or non-residential development. More specifically, approximately 62% of the Region’s land is highly or moderately suited for residential development and approximately 58% is highly or moderately suited for non-residential development. Also, the Comparative Analysis section is an example of how this data can be used in making land use decisions at the local level.

The Miami Valley Region is composed of a variety of different types of communities, from densely built core cities to newly developed suburban cities and townships to rural agricultural communities. These municipalities each have unique constraints and opportunities for improving the quality of life of their residents. The data in this report, however, does not focus on individual municipalities, but rather on the Region as a whole. This emphasis on the need for everyone to consider how their actions contribute to the quality of the Miami Valley is especially important when considering the efficient use of existing infrastructure and the appropriate areas for expansion, which do not always adhere to municipal boundaries.

With the variety of information presented in this report, it is MVRPC’s hope that it raises awareness about the Region’s built environment in the planning process. Through examining development suitability in relation to these factors and examining the potential effects of development, the Region can achieve the goal of maximizing and leveraging existing infrastructure.

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Appendix A: Residential Land Suitability Scoring System

Miami Valley Land Suitability Assessment - Built Environment Factors

Built Environment Factors	Residential Considerations				
	Data Attributes	Suitability Measures	Attribute Score	Weight Factor	Suitability Score
Airport Noise	Below 65 Decibels	Suitable	5	2	10
	65 - 70 Decibels	Somewhat Suitable	3		6
	70 - 75 Decibels	Not Suitable	1		2
	75+ Decibels	Not Suitable	1		2
Educational Amenities	Good Accessibility	Suitable	5	3	15
	Medium Accessibility	Somewhat Suitable	3		9
	Poor Accessibility	Not Suitable	1		3
Fire Protection Services	Inside Service Area	Suitable	5	3	15
	Outside Service Area	Not Suitable	1		3
Industrial Clusters	Outside Industrial Cluster	Suitable	5	4	20
	Adjacent to Industrial Cluster	Somewhat Suitable	3		12
	Inside Industrial Cluster	Not Suitable	1		4
Job Clusters	Inside Job Cluster	Suitable	5	2	10
	Outside Job Cluster	Not Suitable	1		2
Major Thoroughfare Access	Good Accessibility	Suitable	5	2	10
	Poor Accessibility	Not Suitable	1		5
Other Amenities	Good Accessibility	Suitable	5	2	10
	Medium Accessibility	Somewhat Suitable	3		6
	Poor Accessibility	Not Suitable	1		2
Potential Environmental Hazards	Not a Potential Hazard Site	Suitable	5	4	20
	Adjacent to Potential Hazard Site	Somewhat Suitable	3		12
	Potential Hazard Site	Not Suitable	0		0
Public Transportation Services	Good Accessibility	Suitable	5	2	10
	Medium Accessibility	Somewhat Suitable	3		6
	Poor Accessibility	Not Suitable	1		2
Public Wastewater Services	Currently Serviced	Suitable	5	3	15
	Potential Future Service	Somewhat Suitable	3		9
	Not Serviced	Not Suitable	1		3
Public Water Services	Currently Serviced	Suitable	5	3	15
	Potential Future Service	Somewhat Suitable	3		9
	Not Serviced	Not Suitable	1		3
Recreational Amenities	Good Accessibility	Suitable	5	3	15
	Medium Accessibility	Somewhat Suitable	3		9
	Poor Accessibility	Not Suitable	1		3
Restricted Development Lands	Non-Restricted Site	Suitable	5	4	20
	Restricted Site	Not Suitable	0		0
Retail Clusters	Good Accessibility	Suitable	5	2	10
	Medium Accessibility	Somewhat Suitable	3		6
	Poor Accessibility	Not Suitable	1		2
Transportation Network Connectivity	Good Connectivity	Suitable	5	2	10
	Poor Connectivity	Not Suitable	1		2

Appendix B: Non-Residential Land Suitability Scoring System

Miami Valley Land Suitability Assessment - Built Environment Factors

Built Environment Factors	Non-Residential Considerations				
	Data Attributes	Suitability Measures	Attribute Score	Weight Factor	Suitability Score
Airport Noise	Below 65 Decibels	Suitable	5	1	5
	65 - 70 Decibels	Somewhat Suitable	3		3
	70 - 75 Decibels	Somewhat Suitable	3		3
	75+ Decibels	Not Suitable	1		1
Educational Amenities	Good Accessibility	Suitable	5	2	10
	Medium Accessibility	Somewhat Suitable	3		6
	Poor Accessibility	Not Suitable	1		2
Fire Protection Services	Inside Service Area	Suitable	5	2	10
	Outside Service Area	Not Suitable	1		2
Industrial Clusters	Inside Industrial Cluster	Suitable	5	3	15
	Adjacent to Industrial Cluster	Somewhat Suitable	3		9
	Outside Industrial Cluster	Not Suitable	1		3
Job Clusters	Inside Job Cluster	Suitable	5	3	15
	Outside Job Cluster	Not Suitable	1		3
Major Thoroughfare Access	Good Accessibility	Suitable	5	4	20
	Poor Accessibility	Not Suitable	1		4
Other Amenities	Good Accessibility	Suitable	5	1	5
	Medium Accessibility	Somewhat Suitable	3		3
	Poor Accessibility	Not Suitable	1		1
Potential Environmental Hazards	Not a Potential Hazard Site	Suitable	5	3	15
	Adjacent to Potential Hazard Site	Somewhat Suitable	3		9
	Potential Hazard Site	Not Suitable	0		0
Public Transportation Services	Good Accessibility	Suitable	5	2	10
	Medium Accessibility	Somewhat Suitable	3		6
	Poor Accessibility	Not Suitable	1		2
Public Wastewater Services	Currently Serviced	Suitable	5	4	20
	Potential Future Service	Somewhat Suitable	3		12
	Not Serviced	Not Suitable	1		4
Public Water Services	Currently Serviced	Suitable	5	4	20
	Potential Future Service	Somewhat Suitable	3		12
	Not Serviced	Not Suitable	1		4
Recreational Amenities	Good Accessibility	Suitable	5	2	10
	Medium Accessibility	Somewhat Suitable	3		6
	Poor Accessibility	Not Suitable	1		2
Restricted Development Lands	Non-Restricted Site	Suitable	5	4	20
	Restricted Site	Not Suitable	0		0
Retail Clusters	Good Accessibility	Suitable	5	3	15
	Medium Accessibility	Somewhat Suitable	3		9
	Poor Accessibility	Not Suitable	1		3
Transportation Network Connectivity	Good Connectivity	Suitable	5	3	15
	Poor Connectivity	Not Suitable	1		3