

# Regional Transit Gap Analysis

Southwest Ohio Regional Transit Authority (SORTA)  
Ohio-Kentucky-Indiana Council of Governments (OKI)

*In conjunction with BCRTA, TANK, CTC, CAR, and Warren County Transit*

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**FINAL**

*Submitted by*



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[Appendix A: Appendix A. Public Outreach Comments Summary](#)

[Appendix B: Appendix B. Average Daily Person-trips by County](#)

[Appendix C: Appendix C. Home-Based Work Trips by County](#)

**GIS Map Tool Link** <https://arcg.is/1Hua0D0>

## 1.0 Introduction

The Southwest Ohio Regional Transit Authority (SORTA) recently completed a detailed and comprehensive strategic plan (Reinventing Metro), which guided phasing and recommendations for future transit improvements. In addition, SORTA also recently completed a mobility-on-demand (MOD) Service Development and Recommendations study to identify and recommend areas within Hamilton County for the development and deployment of MOD services to better connect users to/from the fixed route network. Thus, the purpose of this study is to incorporate the results of those findings and expand that footprint to identify and assess regional transit mobility gaps within the Greater Cincinnati Area (GCA).

### Study Statement

For the purposes of this study, a regional mobility gap is defined as a gap in connectivity to the existing fixed route networks operating in the GCA, which include BCRTA, CTC, SORTA, TANK, and Warren County. Regional mobility gaps occur when people lack direct access to the regional transit network outside of ¼-mile service area buffer. There are many variables contributing to mobility gaps such as, but not limited to, population change, employment change, sprawl, accessibility, transit connectivity, and topography.

### Study Objectives

Identifying the regional mobility gaps in the GCA will allow transit agencies to make refinements to provide more suitable connections to transit network in the (Ohio-Kentucky-Indiana) OKI region, especially for areas with high latent demand. In addition, by identifying regional mobility gaps, transit providers and stakeholders can increase the percentage of population who need access to jobs, healthcare, and other essential needs, as well as a more affordable transportation option for the public while subsequently increasing economic benefits for the OKI region. Once mobility gaps were identified and assessed through the comprehensive measures outlined in the following sections of this report, strategies were made. These strategies consist of actions, along with recommendations that reduce the mobility gaps identified in the GCA.

### Study Components and Recommendations

To begin the regional gap analysis study, an assessment of the regional transit market was completed; this effort included analyzing various socioeconomic indicators to hone in on regional mobility gaps within the GCA. This step was followed by an in-depth analysis of the public outreach results and regional travel flows and trends observed within the region. It should also be noted, while local routes were examined, more emphasis was placed on regional connectedness by thoroughly examining the regional network.

This report includes the following sections:

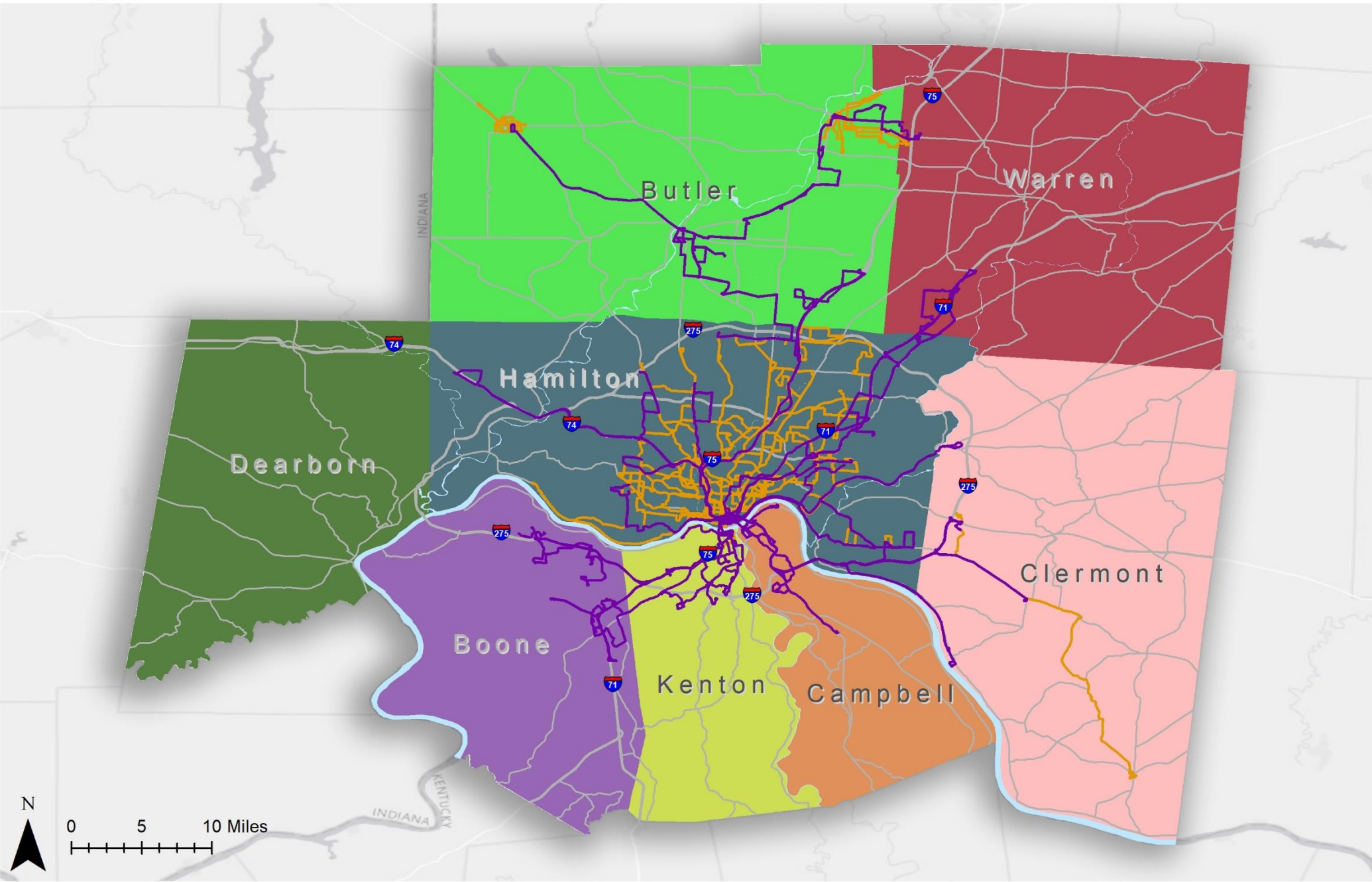
- Market Analysis
- Existing Regional Transit Service
- Job Hubs
- Regional Travel Gaps Summary
- Gap Mitigation Strategies
- Outreach Summary
- Regional Gap Analysis Findings



Map 1-1 illustrates the eight counties within the OKI Regional Council of Governments that are being examined as a part of the study. Indiana is represented in this study through Dearborn County; Kentucky is represented in this study through Boone, Kenton, and Campbell Counties; Ohio is represented in this study through Butler, Warren, Hamilton, and Clermont Counties.

Overall, the findings in this study identified distinct gaps between populations with a higher propensity to use transit and the current regional transit networks. The focus area was established to identify regional mobility gaps arising outside of the typical transit walkshed of a ¼-mile, but within an established distance (2 miles) from existing fixed route services. Any areas beyond the two-mile threshold should be considered for car/vanpool, and park-and-ride improvements.

Recommendations were made for mobility gap strategies for each county and for the top ten origin zip codes within the region where access to the regional transit services was absent. Our review determined that the GCA provides adequate connections via the existing roadway network. A GIS Map Tool was developed and the link is provided in the table of contents for staff use to examine travel desire lines and gaps in the GCA.



**OKI Region  
Counties**

- Boone
- Butler

- Campbell
- Clermont
- Dearborn
- Warren

- Hamilton
- Kenton
- Warren

- Regional Routes
- Local Routes
- Major Roads

**Map 1-1: Regional Gap Analysis Study Area**

## 2.0 Market Analysis

The market analysis establishes a baseline for identifying and understanding the juxtaposition of traditional mobility needs and latent travel demand relative to the existing regional transit network.

### Socioeconomic Indicators

The analysis of key socioeconomic and demographic indicators were examined to better understand the existing characteristics of communities throughout the OKI region. These key factors will be analyzed based on their relativity to the existing transit networks throughout the region, specifically, routes that foster regional connectivity (cross jurisdictional boundaries).

Using Geographic Information Systems (GIS) analyses of Census Block Group-level data obtained from the latest 2020 ACS 5-Year Estimates, along with data provided by the OKI Council of Governments in the form of Traffic Analysis Zones (TAZ), population characteristics were identified and analyzed for their mobility needs in relation to regional transit services. The following socioeconomic and demographic indicators were examined, analyzed, and mapped:

- Population Density
- Young Adults
- Older Adults
- Poverty
- Employed Persons in Poverty
- Zero Vehicle Households
- Minorities
- Education Attainment
- Median Income
- Single Parent Households

### Population Density

Transit thrives in areas that have a higher population density. Higher population density means that transit can effectively serve the population in the area with direct service. While on-demand services can, and do, thrive in lower population density areas, areas that have a high population density and lack transit service are markets where on-demand services are likely to be successful.

Map 2-1 presents the population density of the OKI region per square mile based on TAZ data. TAZ data is widely utilized in transportation modeling and is based on developed socioeconomic data. This figure shows that neighborhoods surrounding Downtown Cincinnati and areas towards the west side of Downtown Cincinnati have the highest population density in the OKI Region, as well as areas along major corridors in the first ring of suburbs, radiating from Downtown Cincinnati. Other concentrations exist south into Boone County towards Erlanger, and in central Butler County north of I-275. Medium population density, where the transit network may not be effectively providing adequate coverage, also exists in portions of western Clermont County, southeastern Warren County, and straddling I-75 northbound into Butler and Warren County.

### **Young Adults (Ages 15-24)**

The young adult population represents those who may not have a personal automobile; but require mobility options to reach work, school, and recreational activities. For populations in this age cohort, they may not have acquired a driver's license, or they are open to other transportation alternatives.

Map 2-2 illustrates the distribution of the young adult populations (ages 15–24) in the study area. The greatest concentration of the young adult population is particularly evident in downtown Cincinnati surrounding the I-75 corridor and northwest Butler County in the areas surrounding Miami University, as well as area in Kenton County south of I-75. Other areas that have higher concentrations of young adult populations are located along the river between Boone and Dearborn County, such as Lawrenceburg Indiana.

### **Older Adults (65 and above)**

Older adults can be mobility-limited due to physical or cognitive restrictions in operating an automobile, and therefore, are a population that has a higher need to use transit. The older adult population is less concentrated within the City of Cincinnati and more concentrated in suburban and rural areas of the region; this trend is opposite of the population density trend. Concentrations of older adults are overserved sporadically throughout the OKI region, such as in Dearborn County south of I-74, northeast Warren County between I-75 and I-71. Other concentrations of older adults are also observed heavily along the I-275 corridor in the suburban areas throughout Hamilton County north of Cincinnati, as shown in Map 2-3.

### **Poverty**

Income is another major indicator of transit propensity, as many lower income citizens utilize the transit network for transportation in lieu of one or more privately owned vehicles. Lower income individuals tend to experience longer travel times and longer walk distances when using the transit network. Therefore, income is generally a very important indicator of latent demand, and based on land use and walking distance, an indicator that shows where gaps in the transit networks are most problematic. Households in poverty are illustrated throughout the OKI region, as shown in Map 2-4. The highest concentration of households in poverty are located in areas surrounding Downtown Cincinnati, along with southeast of I-275 in Clermont County towards Amelia, and between I-75 northbound and SR 129 northbound into Butler and Warren Counties.

### **Employed Persons in Poverty**

Employed persons in poverty allows a closer look into the previously outlined households in poverty analysis. By looking directly at employed persons who are also in poverty, one can begin to identify different areas across the region that are potentially lacking connectivity to the regional transit system throughout the OKI region. High concentrations of employed persons in poverty are observed along the CR 4 corridor between Hamilton (Butler County) and Evandale (Hamilton County), along with areas throughout the suburban areas north of Cincinnati. Other notable areas include a scattering of areas throughout Clermont County due east of I-275 towards Cincinnati, and south Clermont along the river bordering Campbell County. These trends can be observed in Map 2-5.

## **Zero Vehicle Households**

Zero-vehicle households are considered transit dependent given that the lack of access to a privately owned vehicle means that bus service is typically the primary transportation mode for many zero vehicle households. The zero-vehicle household distribution throughout the OKI region is presented on Map 2-5. The highest concentration of zero-vehicle households is observed throughout Downtown Cincinnati, east of I-75, and south of I-74 in the more suburban area of Hamilton County. Other areas of high concentrations with zero-vehicle households are observed along the I-275 corridor bordering Hamilton and Butler Counties, as well as further north in Butler County specifically in the town of Hamilton. Some other notable areas of zero-vehicle households are observed east of I-275 in Clermont County along the SR 68 corridor.

## **Minority Population**

While there are many other socio-demographic indicators that are more explanative as to the reasons, this indicator is important not just because of the minority preponderance to transit, but it is also a major indicator for Title VI purposes. Map 2-6 illustrates the minority population concentrations through the greater OKI region. The highest concentrations of minority populations are observed east and west of the railroad tracks within Hamilton County, specifically within suburban areas east and west of Cincinnati. This trend of minority population is observed from Covington north into Hamilton in Butler County, typically west of I-71 and east of I-74.

## **Education Attainment**

Education Attainment for purposes of this analysis is defined as a bachelor's degree or better. There are high concentrations of persons with higher education levels throughout the OKI region. One of the major trends observed is the trend of education attainment spanning towards the northeast of the OKI region into Warren County from eastern Cincinnati. Based on Map 2-7, the concentration of education throughout the OKI region corresponds to areas that are suburban in nature. These areas are highly concentrated along the I-71 corridor northbound and is bounded by the I-75 corridor northbound within Hamilton County whereafter the concentration begins to diffuse throughout Butler and Warren Counties on either side of I-75 and I-71.

## **Median Income**

Building off of the previously outlined sections, median income begins to show areas around the OKI region that typically would be transit users that are currently served by the regional transit network, along with areas regionally that could lean towards transit, but are currently underserved or not served by the existing regional network. High median income by block groups are observed in areas that are seemingly suburban in nature, typically along the major interstates radiating from south central Hamilton County outward into the surrounding counties. Specifically, areas of southern Warren and Butler County have a high median income, along with the majority of Boone County west of I-275, falling into the very high (\$100,001 or more) and the high (\$75,001-\$100,000). Areas of low median income are observed throughout the OKI region and are typically found to be adjacent to either moderate or high median income block groups and are observed heavily in south central Hamilton County and areas in northeast Butler County and western Clermont County (Map 2-9).

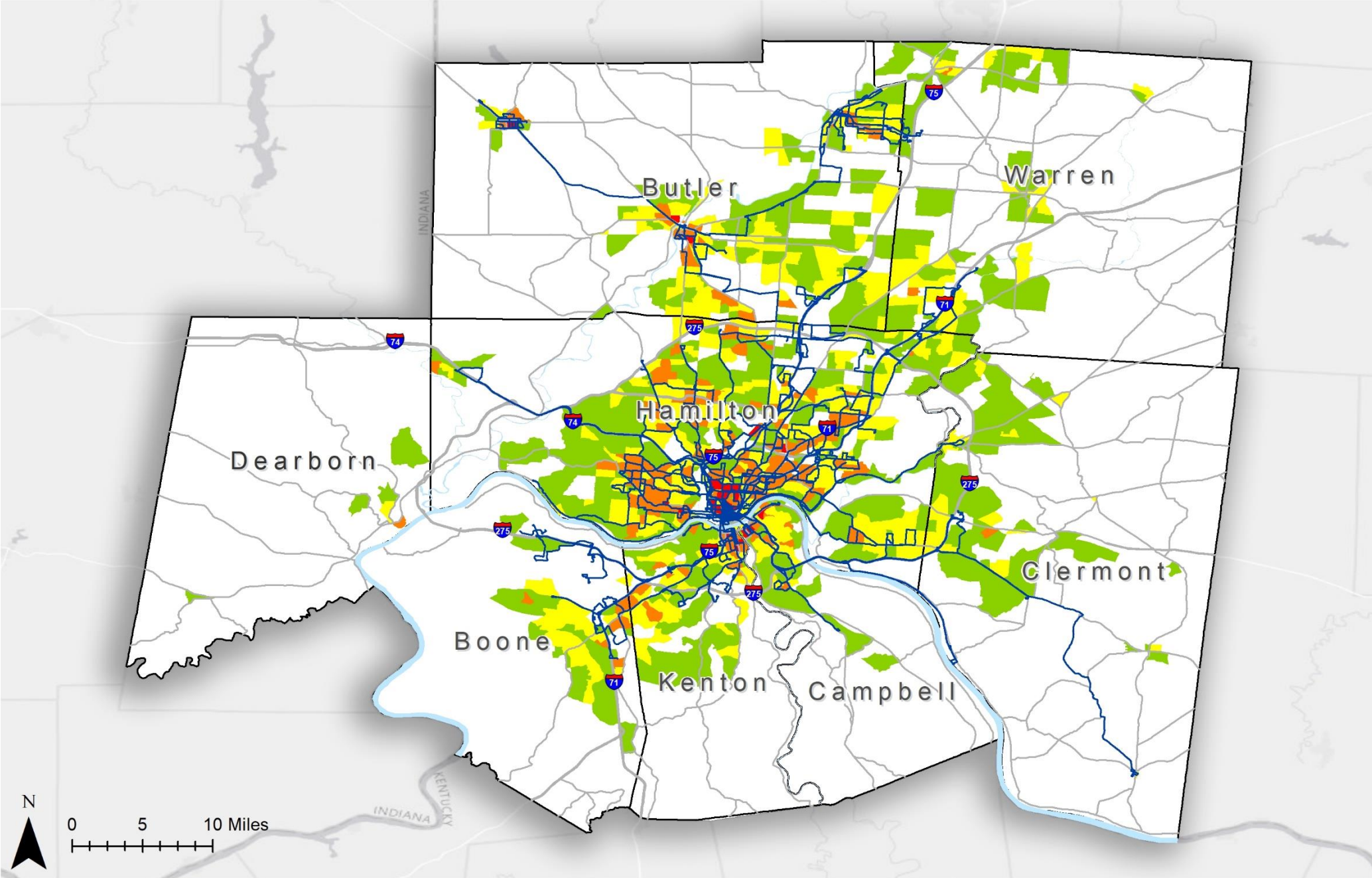
## **Single Parent Households with Children**

Furthering the analysis of key socio-economic and demographic groups; the identification of locations where concentrations of single-parent families (with children under 18) reside was undergone. For the purposes of this section, both male and female heads of households were analyzed. Maps 2-10 and 2-11 show the distribution of these two key groups.

Single female heads of households are observed in various areas within the OKI region, such as heavily throughout Hamilton County, specifically radiating from Downtown Cincinnati northward into Butler County. Other areas of high female single family households are witnessed throughout Boone County in the areas surrounding the CVG Airport, and southbound along the I-71 corridor. Other notable areas of female head of households are observed throughout Dearborn County with little to no access to local transit services, let alone regional connectivity. The same trend is observed in Clermont County as well, specifically, in areas east of I-275 and north to the Warren County line. Overall, female-only heads of households with children are observed to be spread throughout the county, though are most commonly concentrated in the areas radiating outward from Downtown Cincinnati's urban core.

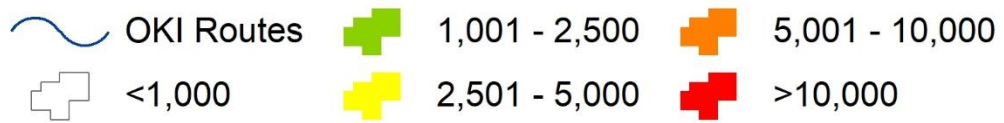
The trend observed for single female head of households is drastically different than the distribution pattern associated with single male head of households. Where female head of households showed widespread concentrations throughout the OKI region, single male head of households are far less concentrated to specific areas and are more sporadic throughout the OKI region as a whole. The same areas of Dearborn County exist for both male and female head of households, but the drastic difference between the two groups is the lack of concentration of males in the Downtown Cincinnati area. The majority of male head of households are located in more suburban, and or rural areas, compared to female head of households which tend to be more urban and suburban in nature.

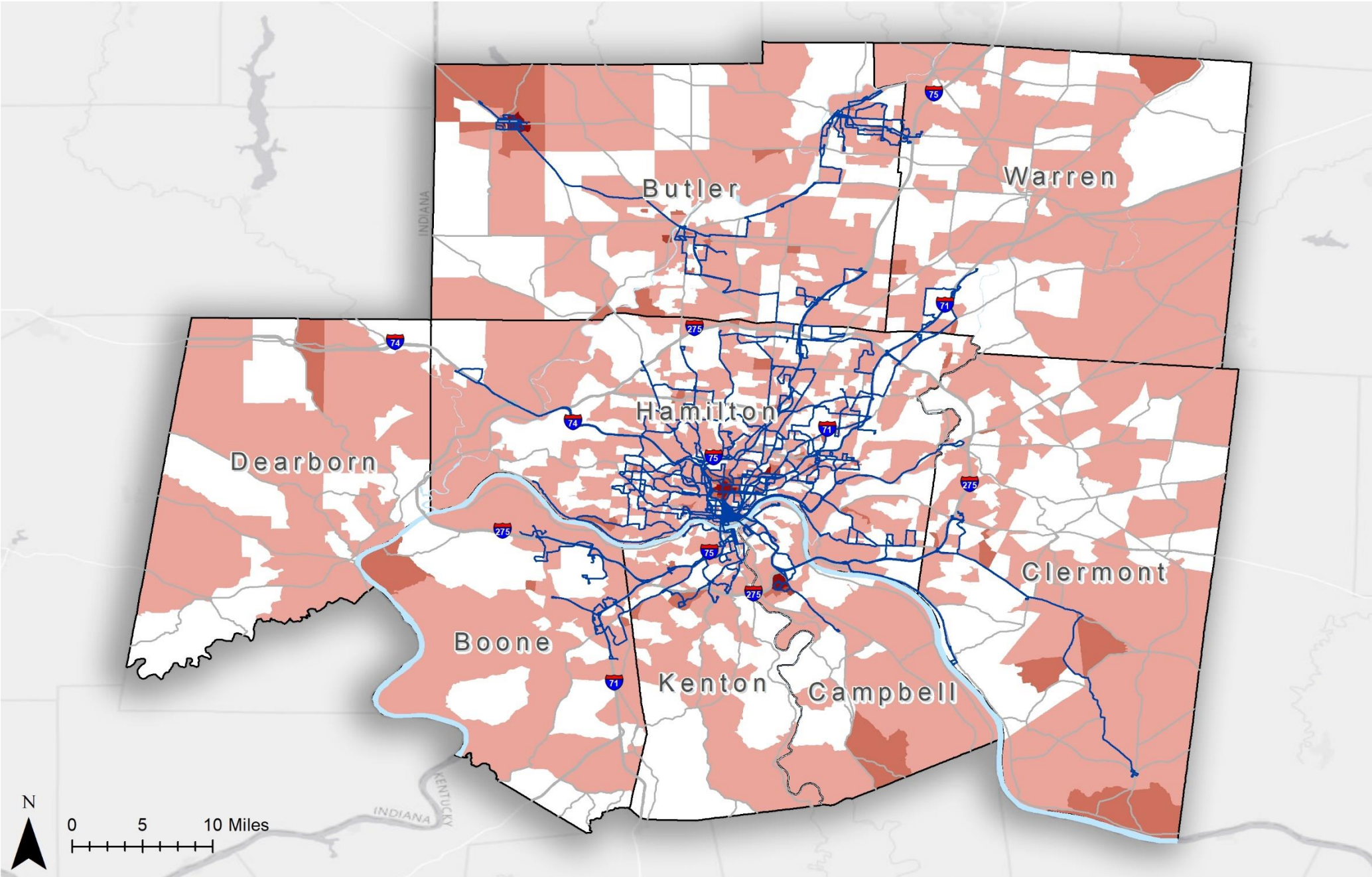




Population per Square Mile by TAZ

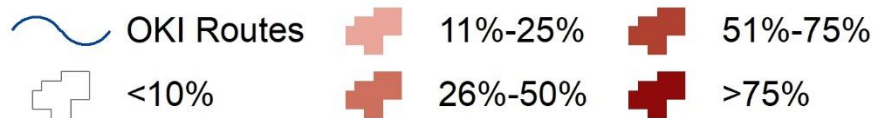
Map 2-1: Population Density per Square Mile



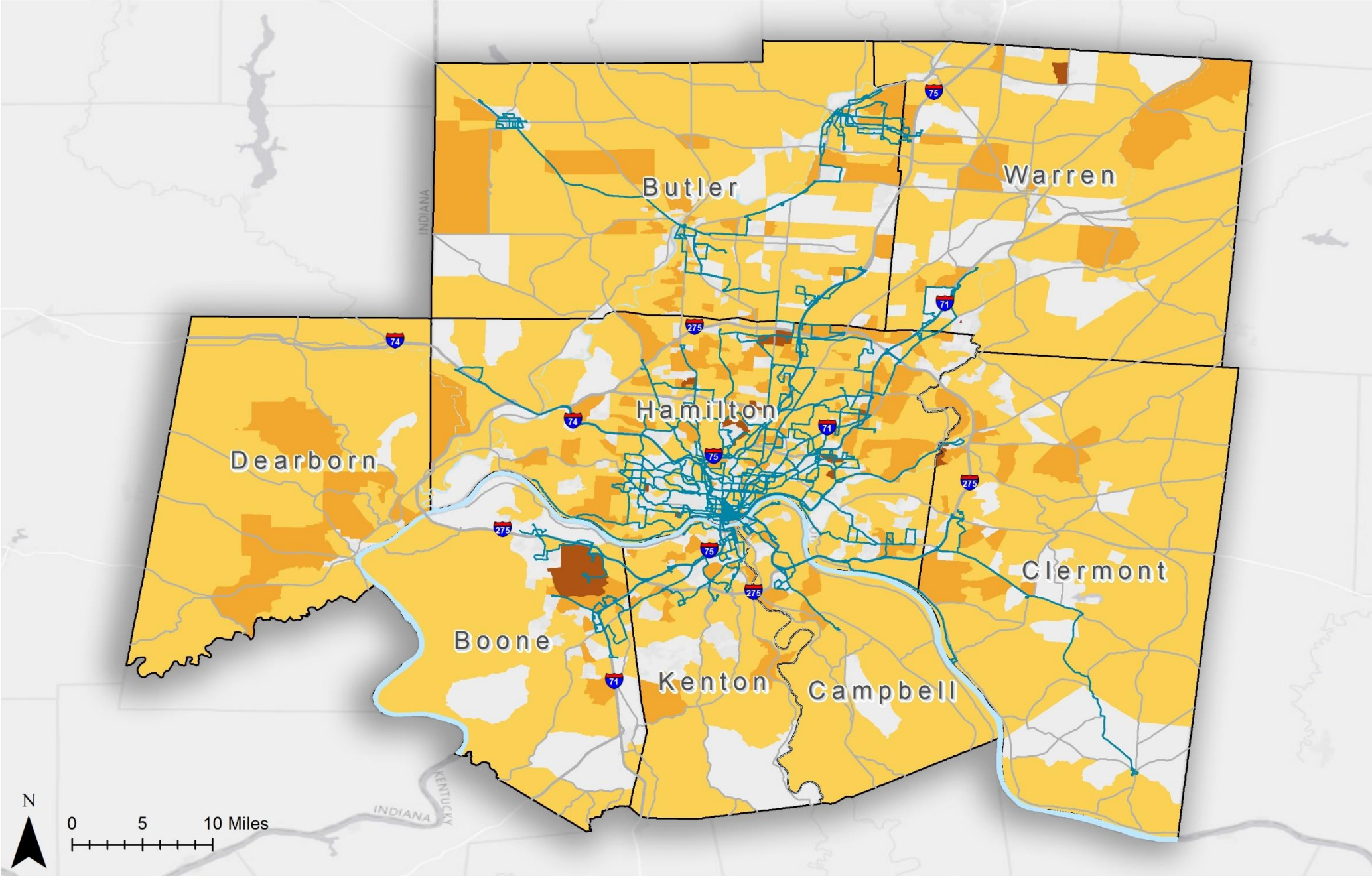


Percent of Younger Adults (15-24) by Block Group

Map 2-2: Young Adult (15-24) Populations

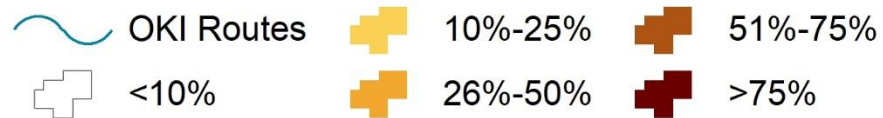


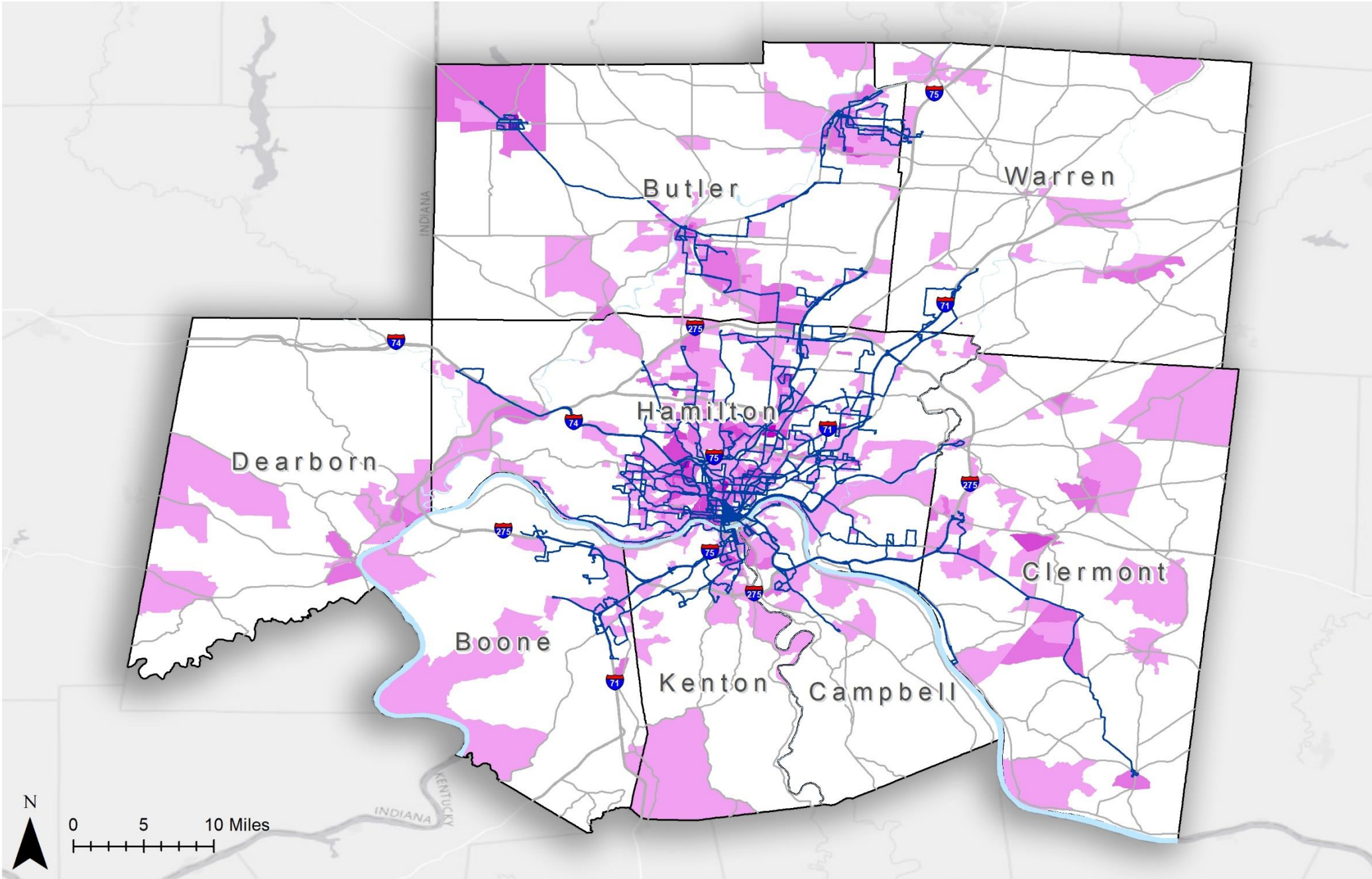




Percent of Older Adults by Block Group

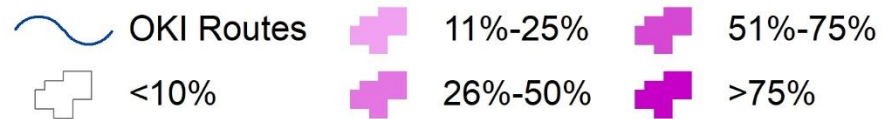
Map 2-3: Percent of Older Adults



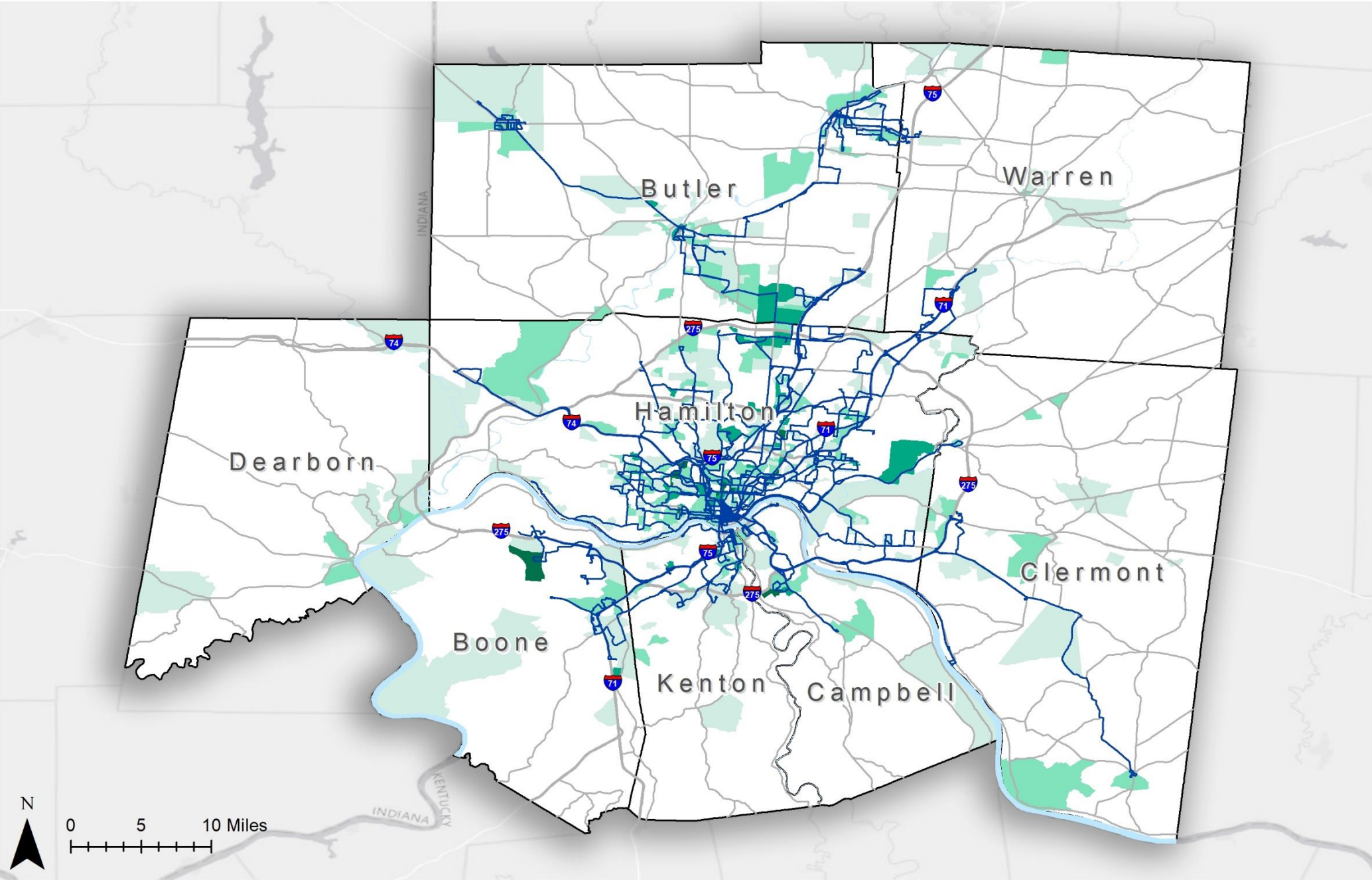


Map 2-4: Households in Poverty

Percent of Households in Poverty by Block Group

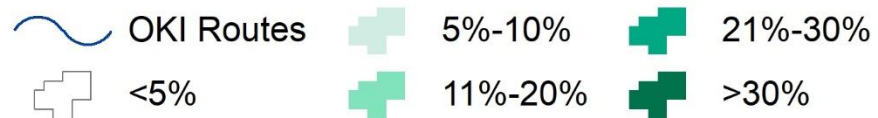


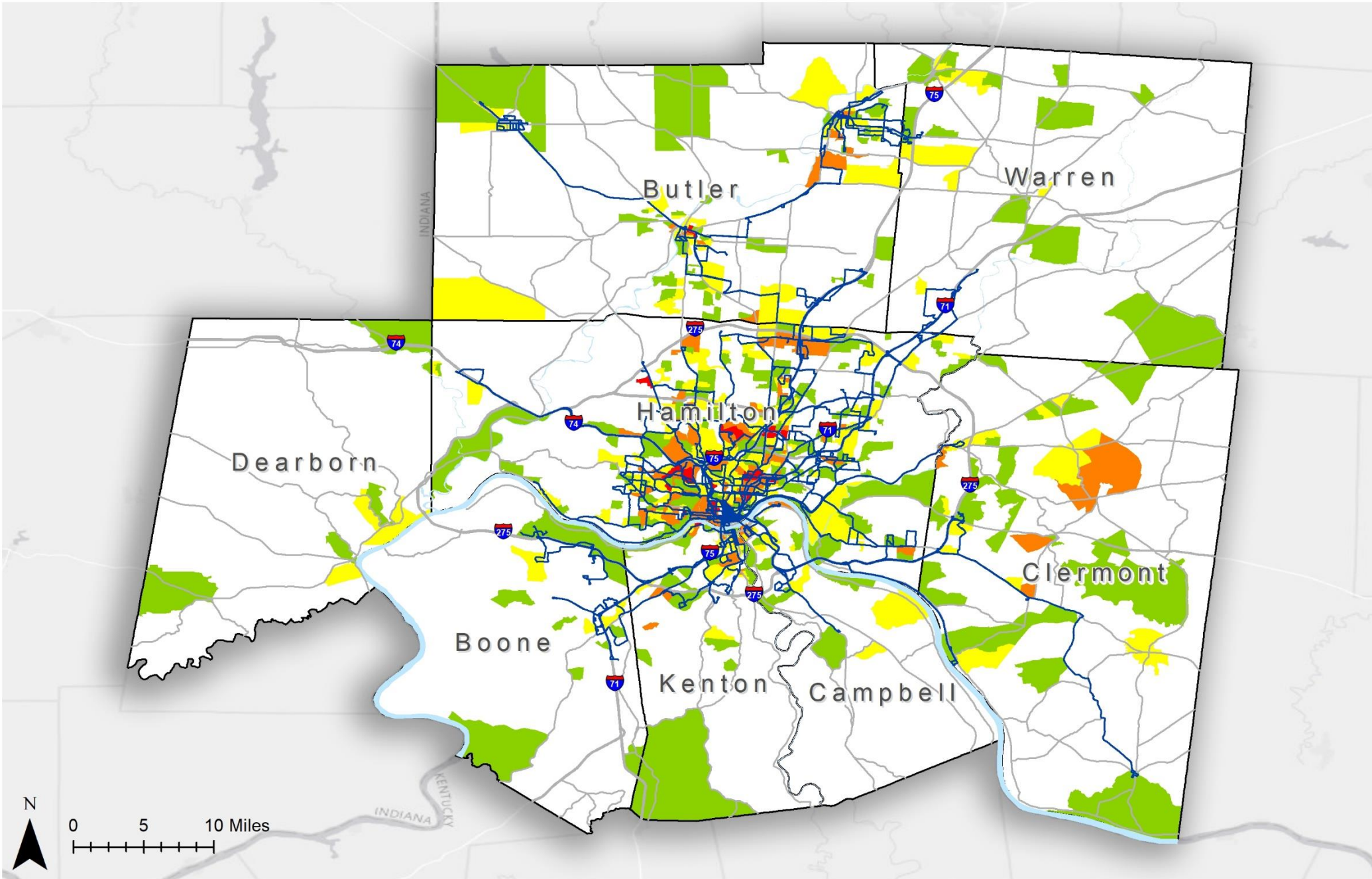




Percent of Employed Persons (20-64) in Poverty by Block Group

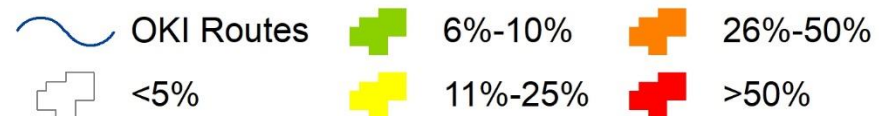
Map 2-5: Employed Persons (20-64) in Poverty



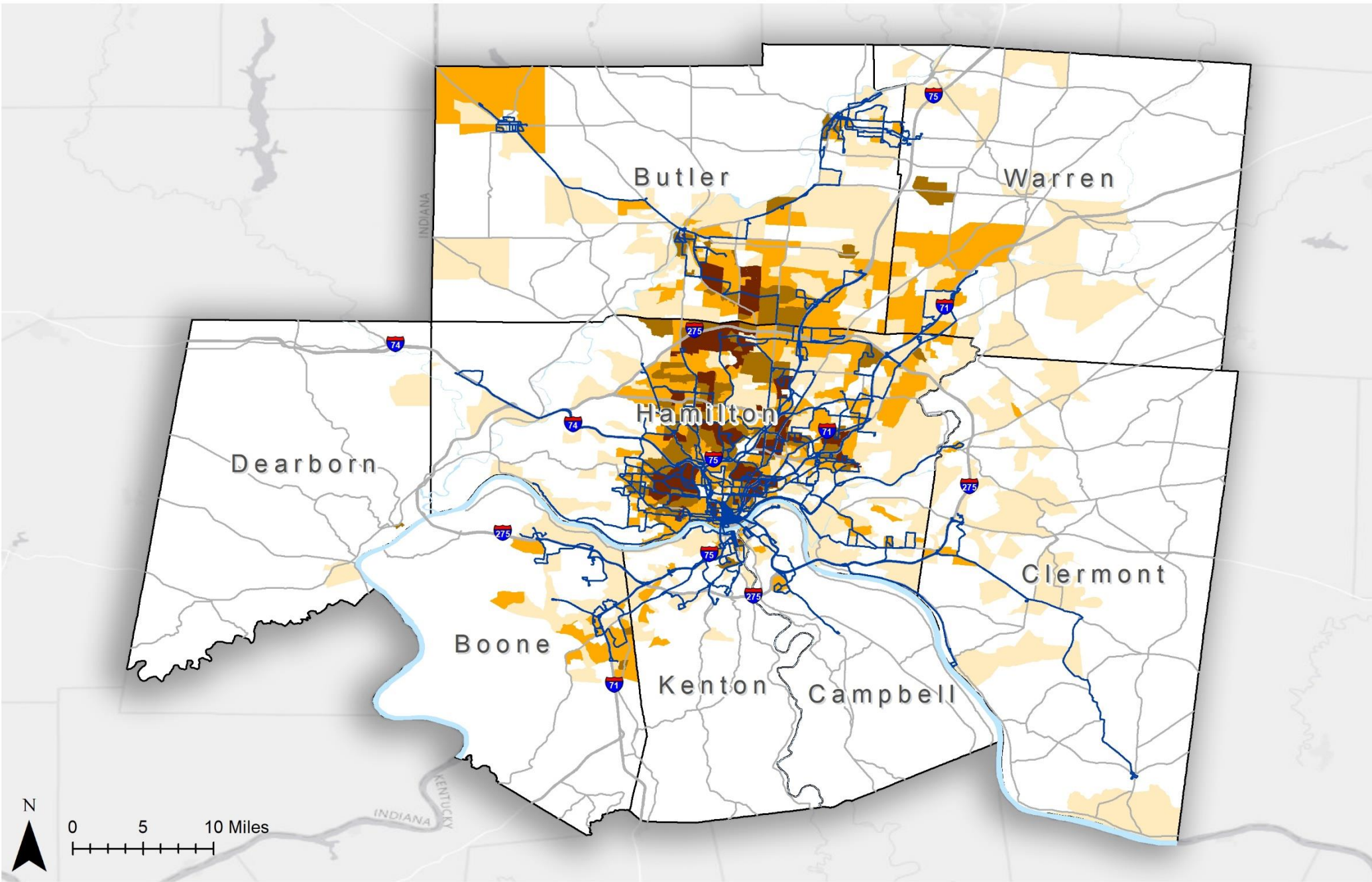


Map 2-6: Zero Vehicle Households

Percent of Zero Vehicle Households by Block Group

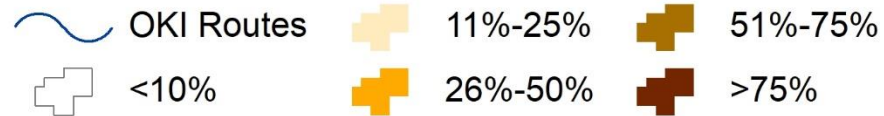


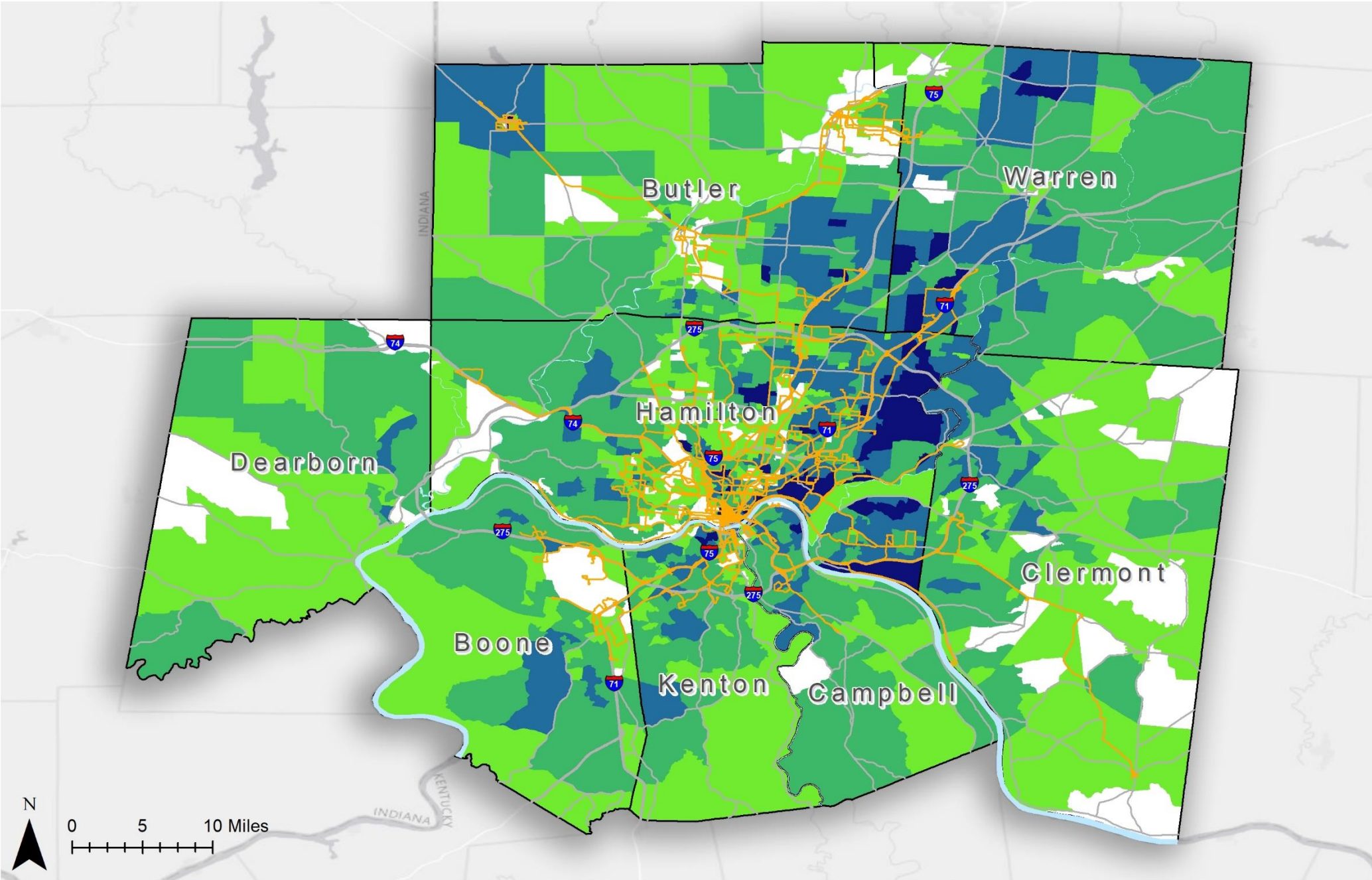




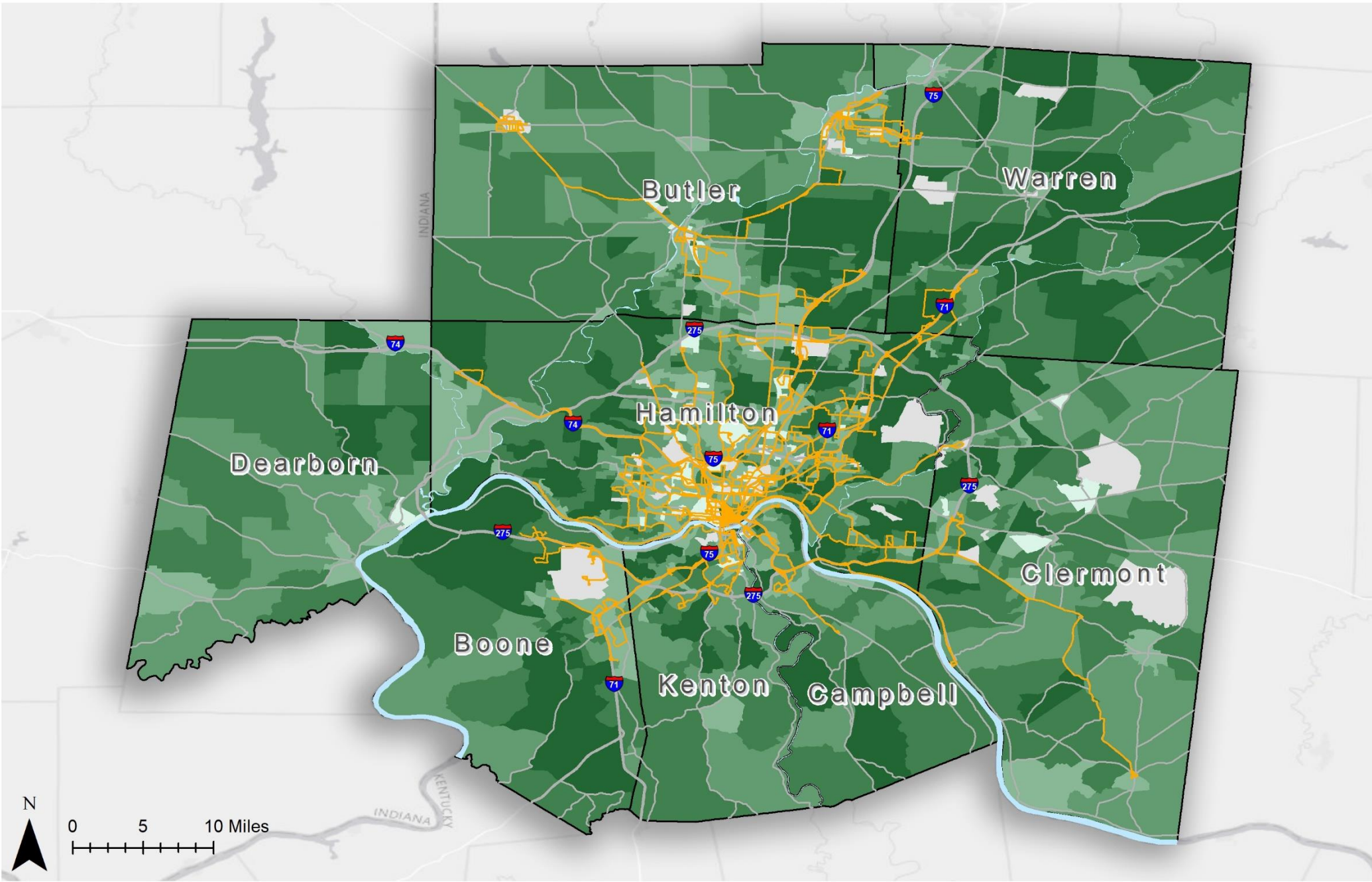
Map 2-7: Minority Populations

Percent of Minorities by Block Group



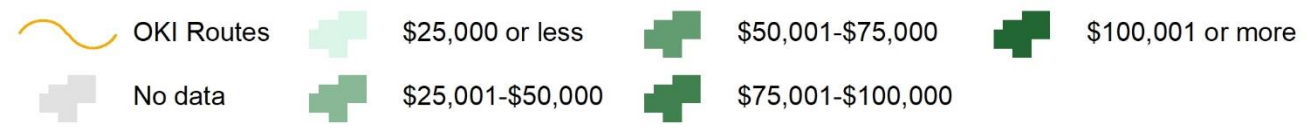


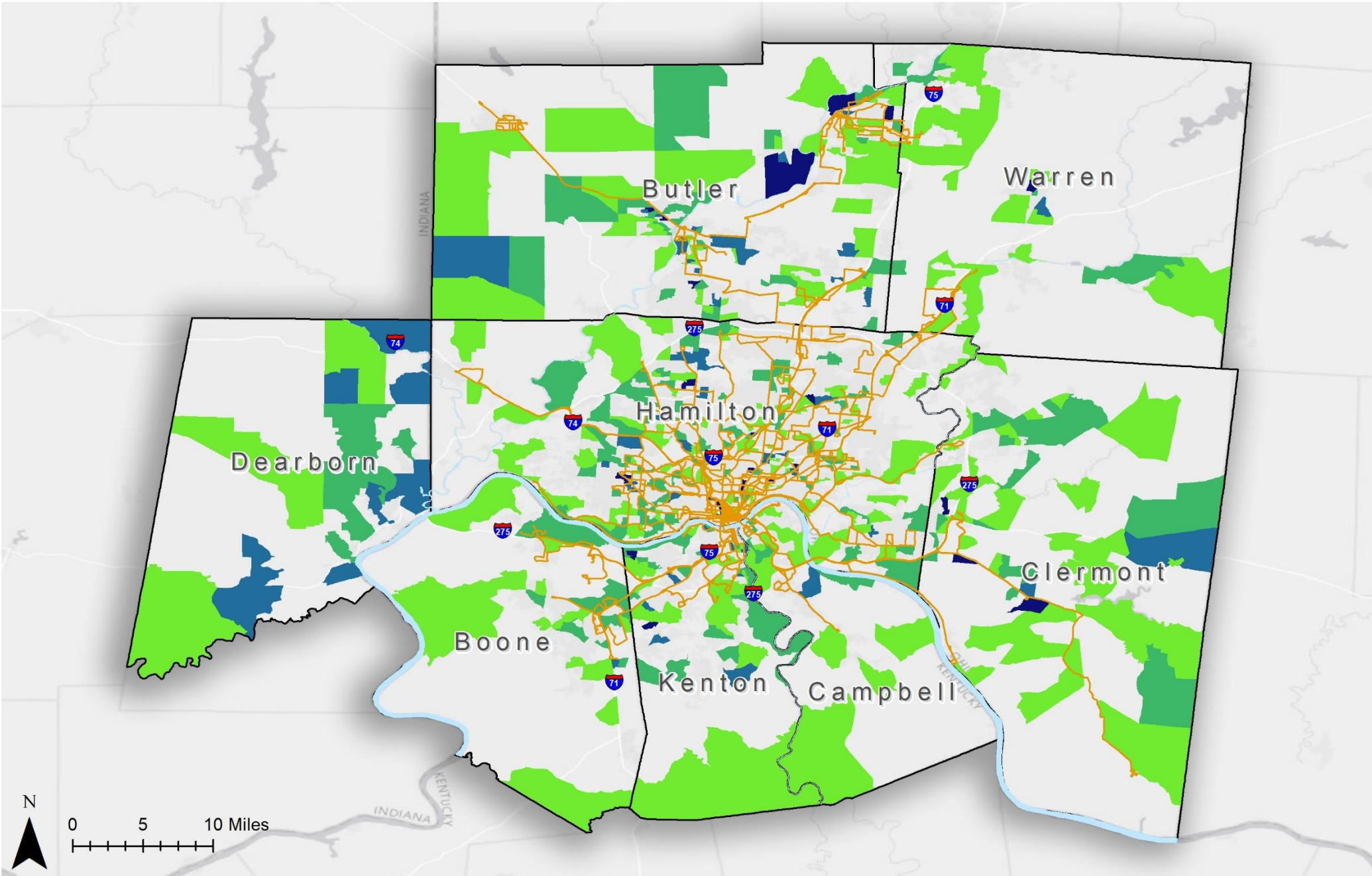




Median Income by Block Group

Map 2-9: Median Income



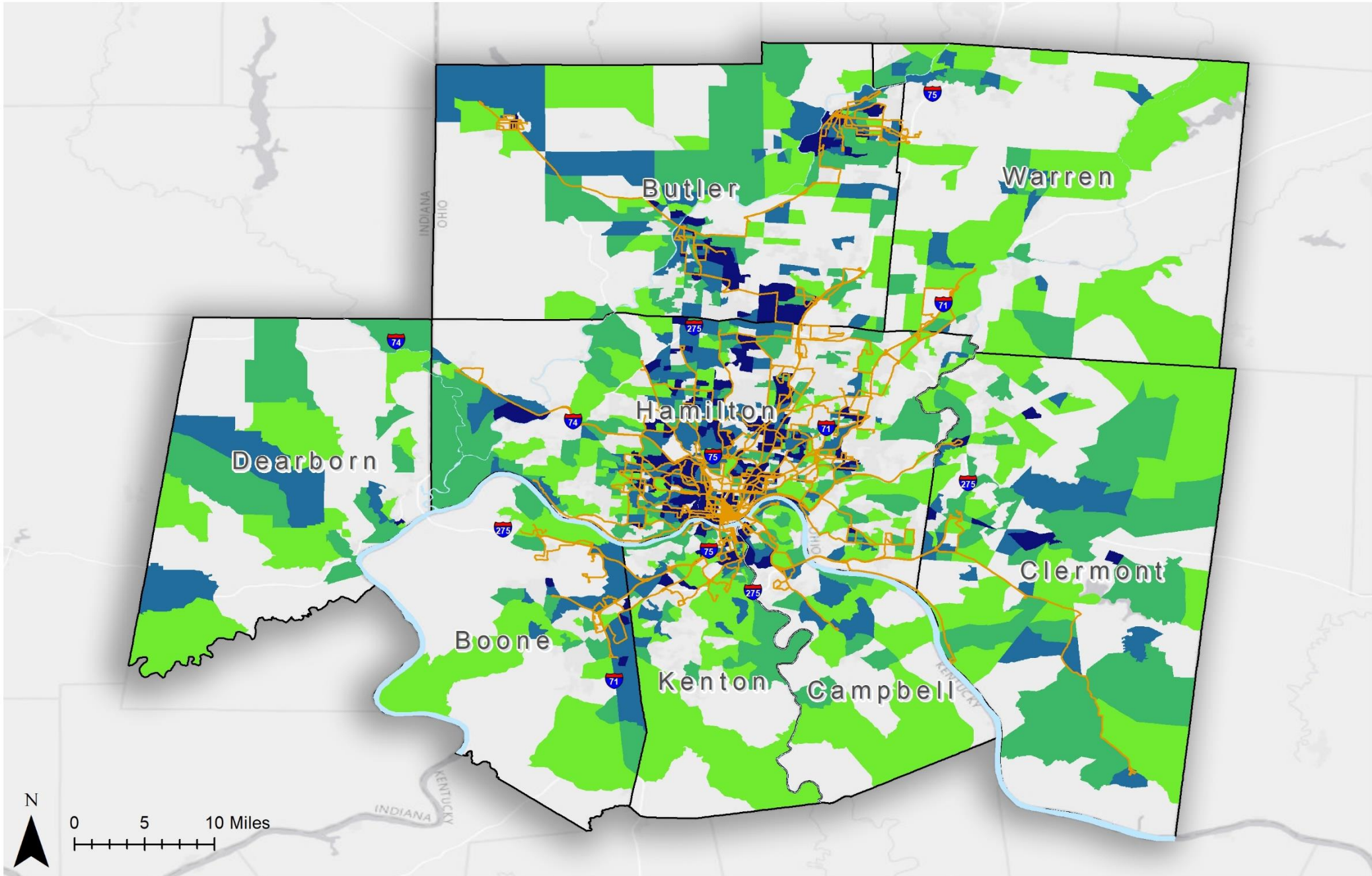


Single Family Male Head of Households with Children

Map 2-10: Single Family Male Head of Households with Children







Single Family Female Head of Households with Children

Map 2-11: Single Family Female Head of Households with Children



## Mobility Market Analysis

This section presents an examination of the demographic profile of the OKI regional area, including graphical representations of common indicators for transit dependency such as dwelling unit density, younger adult and older adult populations, low-income, and zero-vehicle households.

Two GIS-based analysis tools were utilized to expand the use of population and employment data, as summarized previously. One tool measures the levels of transit dependency within a particular geographical area to help assess existing transit coverage in comparison to areas with population that have a propensity for potential transit use. The other tool supplements these findings by illustrating the relationship between the discretionary market (i.e., persons living in higher-density areas of the region who can drive and have access to an available vehicle but may be a potential transit rider because of some willingness to use alternative modes for travel) and the use of transit as a commuting alternative.

The tools include a Density Threshold Assessment (DTA) to analyze the discretionary rider market and a Transit Orientation Index (TOI) to analyze traditional rider markets, all of which have a higher propensity for potential transit use. The transit markets and the corresponding market assessment tool used to measure each are described below.

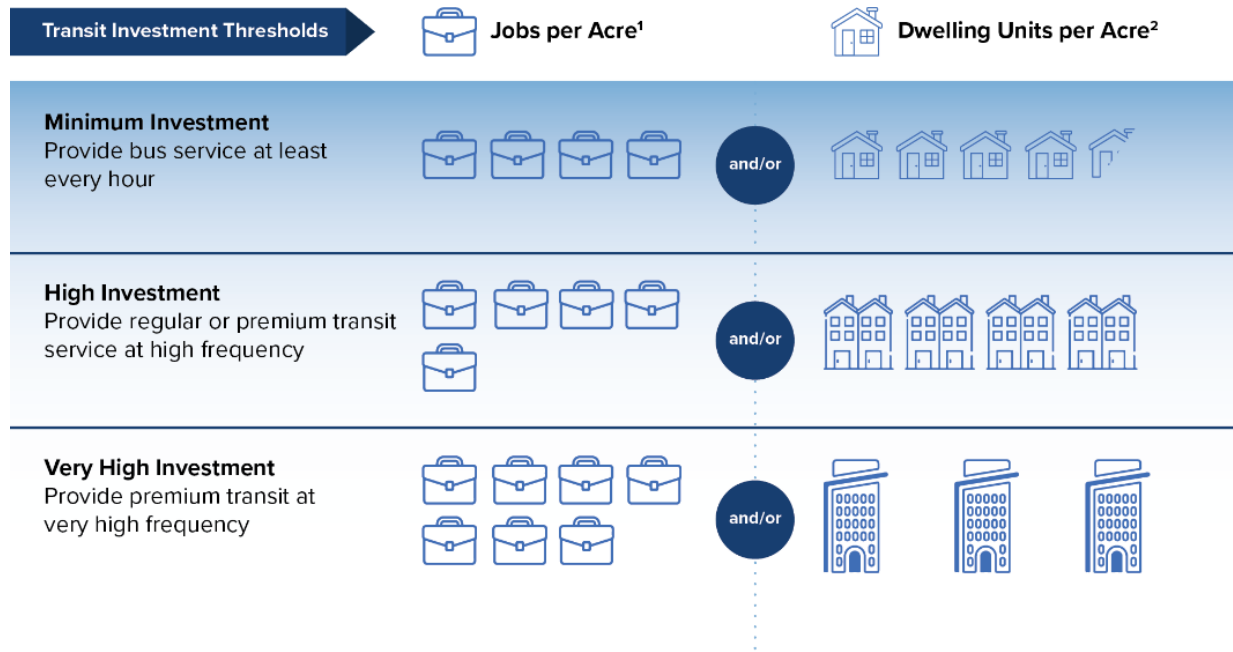
### Choice Rider Markets

The discretionary market consists of potential riders residing in higher-density areas of the OKI region that may choose to use transit as a commuting or transportation alternative. An analysis was conducted using industry-standard density thresholds from the DTA methodology as discussed below, to identify areas in OKI region that exhibit transit-supportive residential and employee density levels today as well as in the future. The aforementioned TAZ data, including dwelling unit and employment data based on information developed for the OKI Council of Governments, were used to develop the DTA.

Based on industry standards and research, three density thresholds were used to determine if an area contains sufficient density to sustain some level of fixed route transit operations. The levels of investment are shown in Figure 2-1.



**Figure 2-1: Levels of Investment**



<sup>1</sup>Based on review of research on relationship between transit technology and employment densities.

<sup>2</sup>TRB, National Research Council, TCRP Report 16, Volume 1 (1996), "Transit and Land Use Form," November 2002, MTC Resolution 3434 TOD Policy for Regional Transit Expansion Projects.

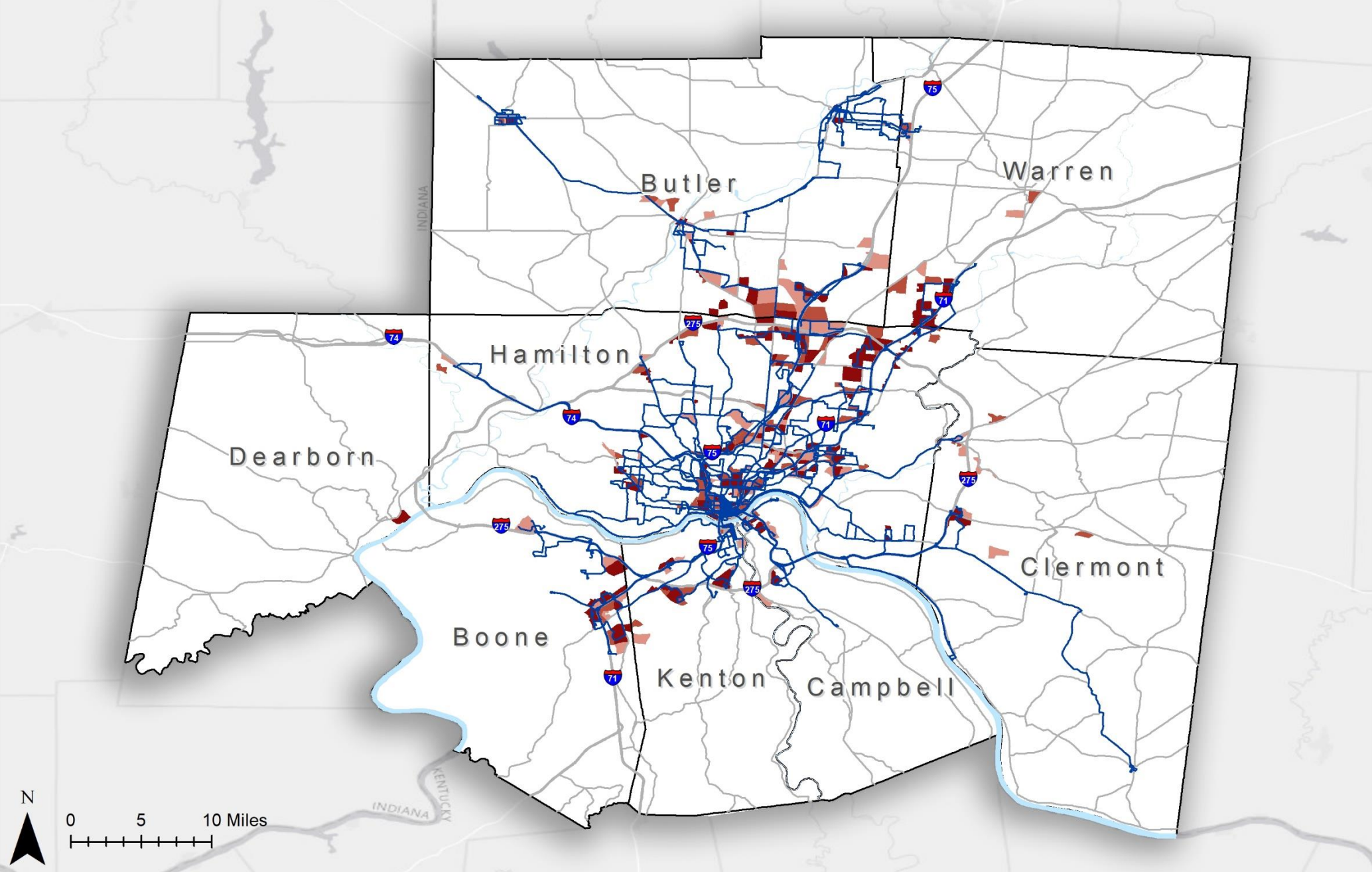
The following summaries present the employment and household density thresholds associated with each level of transit investment described above.

### Employment Density

Employment density is also considered an indicator of transit use as transit can serve dense employment clusters better than lower density of employment. Map 2-12 illustrates the highest concentration of employment density that meet the minimum investment threshold is located along major interstates such as I-71, I-75, and I-275, as well as areas north of Downtown Cincinnati. Another concentration of employment density is located around the Cincinnati/Northern Kentucky International Airport (CVG) Boone County and along I-71 north into Covington. Many of the radial corridors that do have high employment density are served by regional fixed route service; however, as employment density moves further from a corridor, access to fixed route service becomes more difficult, creating an opportunity to connect these areas through refining the OKI regional service improvements.

### Household Density

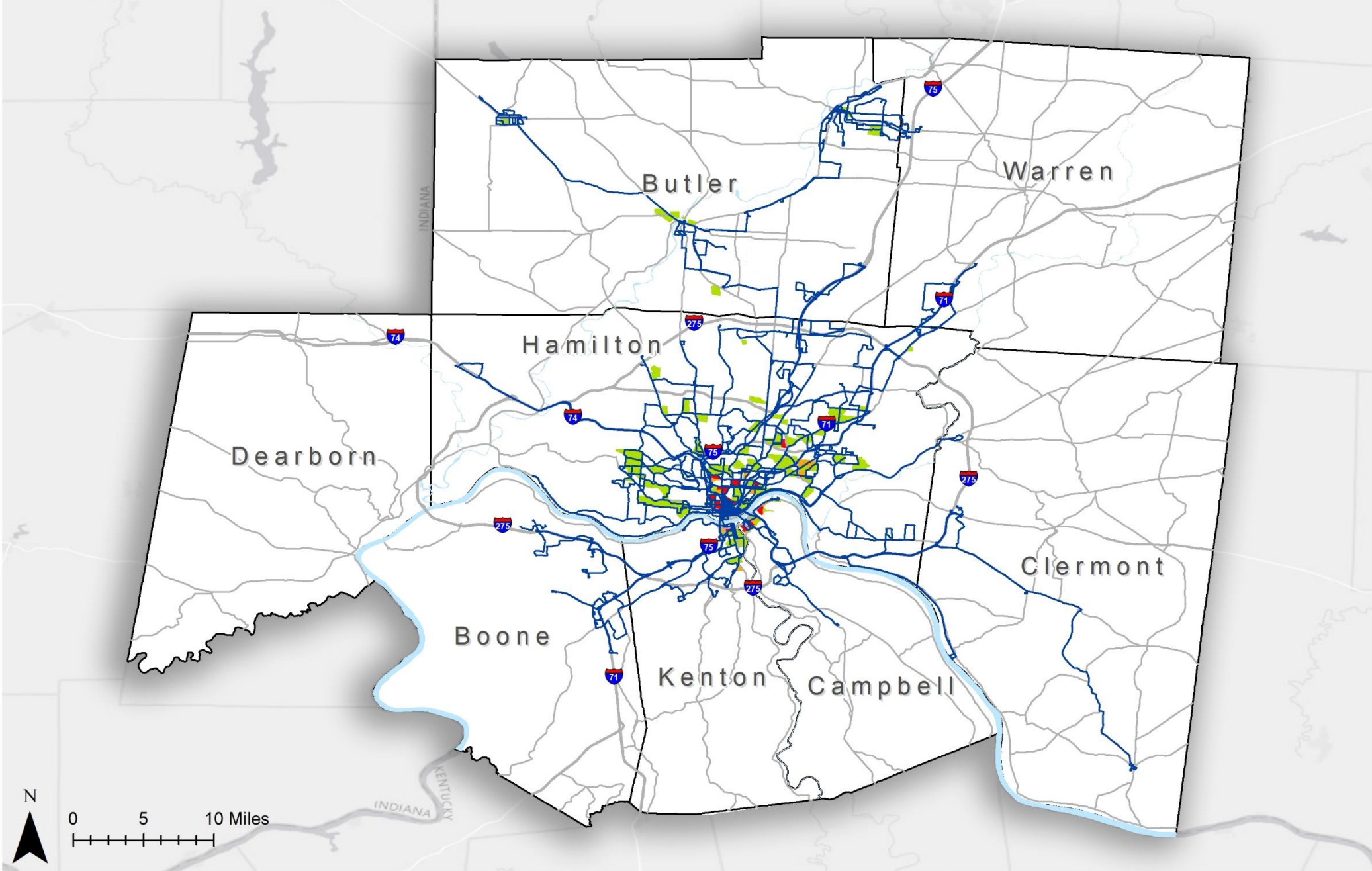
Household Density within the OKI region illustrates a similar pattern of density as identified for population density. Map 2-13 illustrates the housing density by investment thresholds for the OKI region. The majority of TAZs that meet the high and very high investment thresholds are observed adjacent to the Ohio River and downtown Cincinnati. Areas that meet the minimum investment threshold also are concentrated along the major highway corridors along I-75 and I-71, along I-275 east and west, and adjacent to I-74 out of Cincinnati. The majority of areas that meet the minimum investment threshold have access to an existing route.



**Jobs per Acre - Investment Level**

**Map 2-12: DTA Employment Density**





Households per Acre - Investment Level

Map 2-13: DTA Household Density





## Traditional Rider Markets

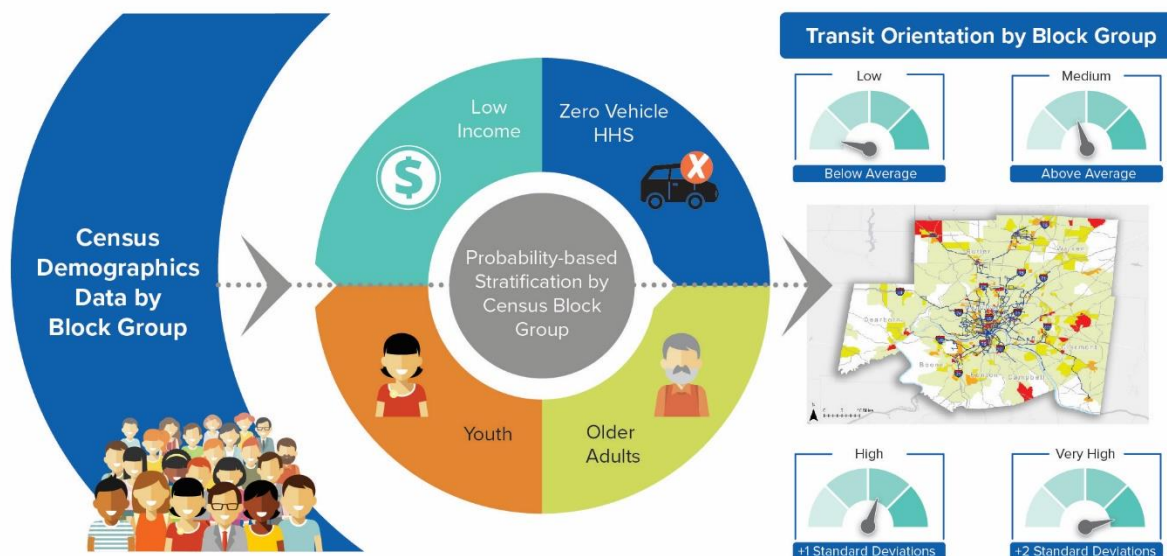
A traditional rider market refers to population segments that historically have had a higher propensity to use transit or are dependent on public transit for most of their transportation needs. Traditional transit users include the following:

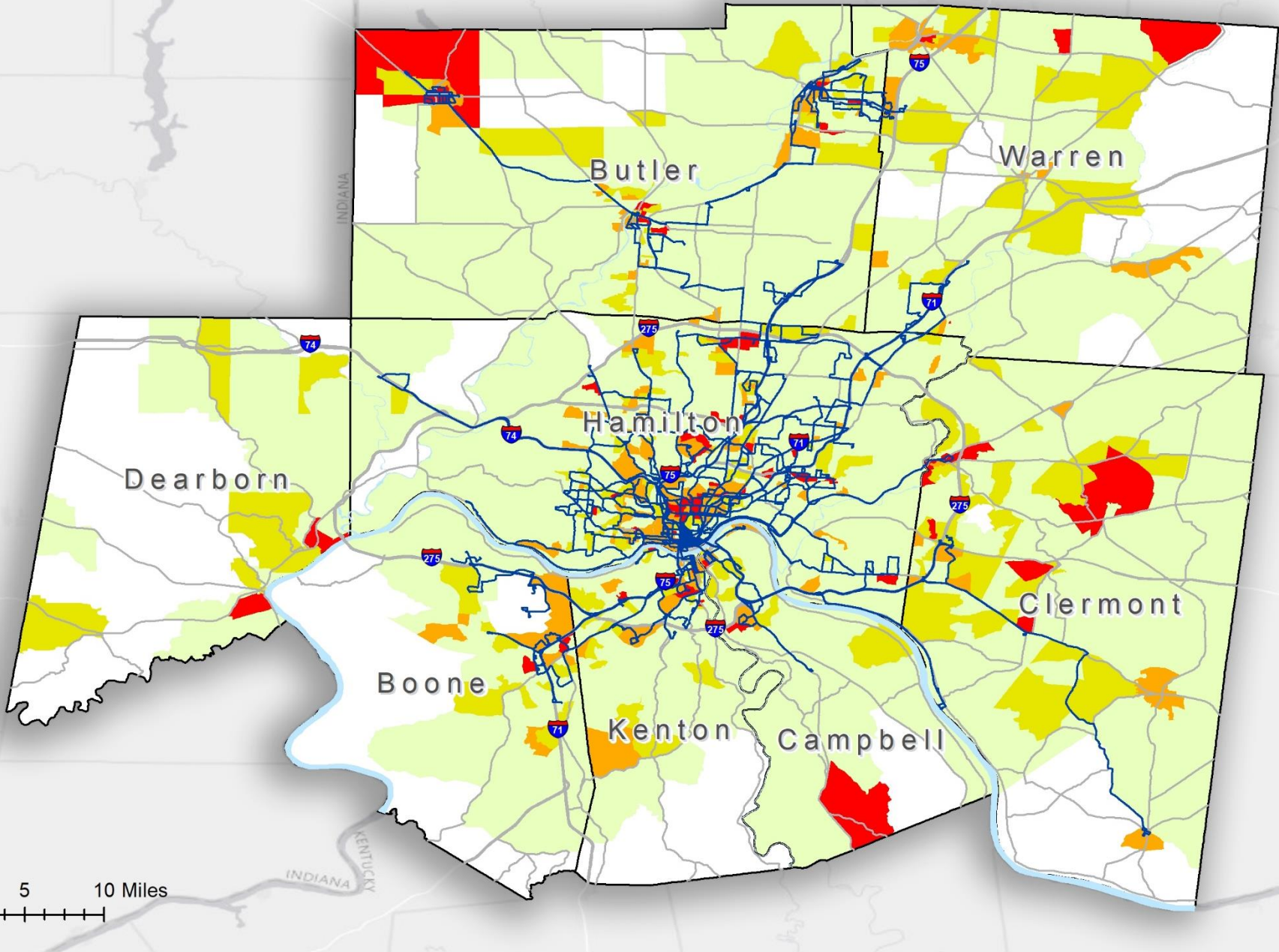
- Low-income households
- Young adult, including people aged 15-24 years old
- Older adults, including people that are 65 and older
- Zero vehicle households

For some individuals, the ability to drive is greatly diminished with age, so they must rely on others for their transportation needs, such as MOD or paratransit. Likewise, younger adults may rely on more on public transportation until they reach driving age to get to/from employment or recreational activities. For lower-income households, such as those with no private vehicle, transportation costs are particularly burdensome. These households tend to spend a greater portion of income on transportation-related expenses than higher-income households do; therefore, they typically have an increasing reliance on public transportation for their mobility needs.

The TOI was developed to assist in identifying areas of the region where these traditional rider markets exist. These markets will be used to find gaps throughout the region that are currently underserved and or not served within the existing regional transit network. To create the TOI for this analysis, demographic data from the 2020 ACS with 5-Year Estimates (2016-2020) were analyzed at the block group level for all 8 counties to gain insight into these key demographic and economic variables utilized in the TOI analysis. Using data for these characteristics and developing a composite ranking for each census block group, each area was ranked as “Very High,” “High,” “Medium,” or “Low” in their respective levels of transit orientation. The methodology and benchmarks for the TOI process are outlined in Figure 2-2.

**Figure 2-2: Transit Service Density Thresholds**





Transit Orientation Index

- ~ OKI Routes
- + Very Low\*
- + Low
- + Medium
- + High
- + Very High

\*Less than 100 persons per square mile

Map 2-14: Transit Orientation Index

### *Transit Orientation Index Regional Findings*

Illustrated above in Map 2-14 are the TOI analysis results, “very high” orientation towards transit is witnessed throughout the OKI region, specifically, in south central Hamilton County (Downtown Cincinnati), east of I-275 in Clermont County, and northwest Butler County in the areas surrounding Miami University. Areas with a “high” orientation towards transit are also observed throughout the OKI region; specifically, concentrated in the areas north of Downtown Cincinnati, areas surrounding the CVG Airport, and in areas of Butler County such as Hamilton and north along I-75 into Dayton. Areas with “medium” orientation towards transit are typically found adjacent to an area of “high” to “very high” transit orientation.



### 3.0 Existing Regional Transit Service

The OKI regional transit network is comprised of five transit providers throughout the GCA region. Southeast Regional Transit Authority (SORTA) primarily serves Hamilton County while Transit Authority of Northern Kentucky (TANK) serves Boone, Kenton, and Campbell Counties. Butler County Regional Transit Authority (BCRTA) and Clermont Transportation Connection (CTC) serve their respective counties, Butler and Clermont in Ohio. Catch a Ride serves Dearborn County in Indiana.

Four of the aforementioned agencies operate fixed route services composed of both local and express fixed route services. For the purposes of the regional gap analysis, the local and express routes for the five transit providers have been deemed “regional” or “local” to better refine the focus of the gap analysis efforts undertaken in this project. The regional classification for the purposes of this study is defined as any route crossing a jurisdictional county boundary, river, and or state line. Map 3-1 highlights these regional routes while also illustrating the transit provider who operates the routes based on the colors of the associated regional fixed routes.

SORTA currently operates 19 “regional” routes, one of which is a seasonal route running along I 71 (Route 72x), with operation granting regional transit access from Downtown Cincinnati in Hamilton County into both Warren County, Butler County, and Clermont County. TANK operates 18 “regional” routes, the whole TANK network is defined as a regional in nature due to the natural coverage of TANK’s service area spanning across Boone County, Kenton County, and Campbell County. TANK’s service area also extends into Cincinnati Ohio, furthering their regional transit services. BCRTA operates four “regional” fixed routes, offering connection from Butler County into Hamilton County. Lastly, CTC offers two “regional” fixed routes from Clermont County, Ohio, into Kentucky, and back into Ohio to connect to Downtown Cincinnati.

With the identification and classification of the “regional” transit network for the OKI region completed, mobility gaps throughout the region, specifically regarding regional mobility can now be explored further. This process fosters the ability to identify potential solutions and actions that can potentially improve connectedness and regional mobility throughout the OKI region.

This, by definition, determines where access to transit is available and where it is not relative to populations with higher mobility need. In addition, by examining the route structure, operating days, service spans, travel times, wait and transfer requirements and service frequencies, this identifies where there are service gaps within the regional network. Another aspect of the market analysis is the examination of person-trip travel patterns better known as “desire lines” provided by the OKI regional models as well as other proprietary data sets.

**Table 3-1: Regional Routes**

Agency	Route	Peak and Off-Peak	WKDY Frequency (Minutes)	WKDY Span
<b>BCRTA</b>	RL Red Line - Pattern A	Yes	60	6:30 AM - 6:24 PM
<b>BCRTA</b>	R1 Hamilton / Middletown Shuttle	Yes	60	7:30 AM - 9:24 PM
<b>BCRTA</b>	R3 Hamilton / Oxford Connector	Yes	60	6:04 AM - 11:02 PM
<b>BCRTA</b>	R6 Job Connector	Yes	120	4:49 AM - 11:22 AM
<b>CTC</b>	2X New Richmond Express	No	30	6:35 AM - 7:15 AM, 4:45 PM - 5:15 PM
<b>CTC</b>	4X Amelia Express	No	30	5:30 AM - 8:10 AM, 3:15 PM - 4:45 PM
<b>SORTA</b>	2 Madeira - Kenwood - Commuter	No	40	6:39 AM -8:35 AM, 4:03 PM - 6:24 PM
<b>SORTA</b>	3X Montgomery Express - Job Connection	No	30	6:07 AM -8:45 AM, 3:36 PM - 6:44 PM
<b>SORTA</b>	12 Madisonville - Commuter	No	60	6:53 AM - 8:30 AM, 4:45 PM - 6:18 PM
<b>SORTA</b>	15 Mt Healthy - Daly - Commuter	No	30	6:08 AM - 8:40 AM, 3:01 PM - 6:44 PM
<b>SORTA</b>	23X Tri - County - Forest Park Express	No	30	5:58 AM -8:40 AM, 3:46 PM -6:38 PM
<b>SORTA</b>	25 Mt Lookout - Hyde Park - Commuter	No	60	6:56 AM - 8:33 AM, 4:24 PM - 6:15 PM
<b>SORTA</b>	29X Milford Express	No	30	6:03 AM - 9:15 AM, 3:13 PM - 6:22 PM
<b>SORTA</b>	30 Beechmont - 8 Mile - Commuter	No	30	6:00 AM - 8:50 AM, 3:54 PM - 6:40 PM
<b>SORTA</b>	40 Montana Avenue - Commuter	No	30	6:12 AM - 8:20 AM, 3:45 PM -5:25 PM
<b>SORTA</b>	42X West Chester Express	No	30	3:45 PM - 6:06 PM
<b>SORTA</b>	52X Harrison Express	No	40	6:09 AM -8:00 AM, 3:55 PM - 5:51 PM
<b>SORTA</b>	71X Warren County Express Kings Island	No	60	5:56 AM - 8:40 AM, 3:43 PM - 6:27 PM
<b>SORTA</b>	72X Kings Island Direct	No	50	8:04 AM - 10:25 AM, 1:50 PM - 11:41 PM
<b>SORTA</b>	74X Colerain Express	No	30	5:57 AM - 8:53 AM, 3:21 PM - 6:25 PM
<b>SORTA</b>	75X Anderson Express	No	60	6:24 AM - 8:45 AM, 4:10 PM - 6:14 PM
<b>SORTA</b>	77 Delhi - Glenway Crossing - Commuter	No	40	5:59 AM - 8:33 AM, 3:32 PM - 6:05 PM
<b>SORTA</b>	81 Mt. Washington - Commuter	No	60	6:38 AM - 8:10 AM, 4:10 PM - 5:49 PM
<b>SORTA</b>	82X Eastgate Express	No	30	6:07 AM - 8:17 AM, 3:57 PM - 6:00 PM
<b>SORTA</b>	M+ MetroPlus - Kenwood	Yes	15	5:11 AM - 10:33 PM

**Table 3-1: Regional Routes (cont.)**

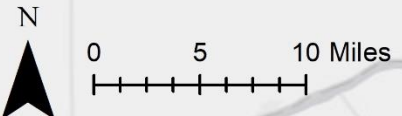
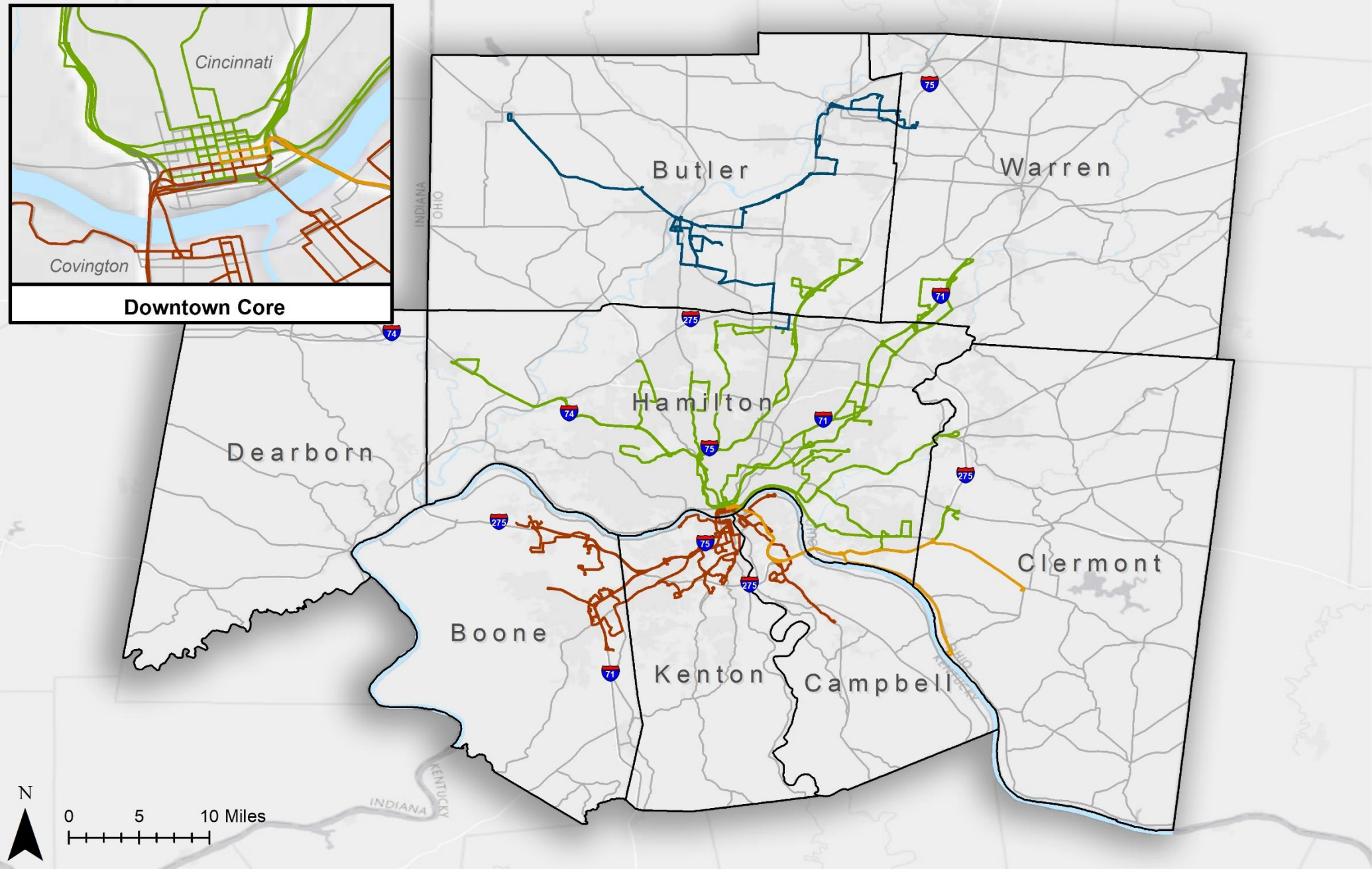
Agency	Route	Peak and Off-Peak	WKDY Frequency (Minutes)	WKDY Span
TANK	1 Dixie Hwy / Florence	Yes	30	4:15 AM -12:53 AM
TANK	2X Airporter	Yes	30	4:08 AM -1:15 AM
TANK	3 Ludlow / Bromley	Yes	60	5:25 AM -9:50 PM
TANK	5 Holman Ave / Fort Wright	Yes	60	4:50 AM -11:39 PM
TANK	7 Madison Ave / Latonia	Yes	60	4:35 AM -12:53 AM
TANK	8 Eastern Ave / Crestview Hills	Yes	60	4:39 AM -11:46 PM
TANK	12 Bellevue / Dayton	Yes	60	4:49 AM -11:39 PM
TANK	16 West Newport / Fort Thomas	Yes	60	5:28 AM -10:25 PM
TANK	17X Buttermilk Pike Express	No	30	6:24 AM -7:24 AM, 4:15 PM -5:15 PM
TANK	22X Mt. Zion Rd Express	No	30	6:15 AM -7:15 AM, 4:15 PM -5:15 PM
TANK	25 NKU / Alexandria	Yes	30	3:59 AM -12:45 AM
TANK	25X Alexandria Express	No	30	6:13 AM -7:13 AM, 4:15 PM -5:15 PM
TANK	30X Fort Wright / Lake Park Dr Express	No	30	6:25 AM -7-25 AM, 4:15 PM -6:42 PM
TANK	32X Burlington Express	Yes	30	5:20 AM -7:14 AM, 4:15 PM -5:15 PM
TANK	39X Petersburg Rd / South Hebron Express	No	30	5:06 AM -6:51 AM, 1:51 PM -6:23 PM
TANK	40X Worldwide Blvd / North Hebron Express	No	30	4:51 AM -7:15 AM, 1:51 PM -6:15 PM
TANK	42X Florence Hub / Industrial Rd Express	Yes	60	4:30 AM -12:14 AM
TANK	Southbank Shuttle Southbank Shuttle	Yes	15	6 AM -11 PM

Note: As of December 4<sup>th</sup>, 2022, Route 15 was eliminated, and service is covered by other routes.





**Downtown Core**



-  CTC Regional Routes
-  BCRTA Regional Routes
-  TANK Regional Routes
-  SORTA Regional Routes

**Map 3-1: Regional Transit Network**

## Regional Mobility Gap Analysis

With the existing “local” and “regional” fixed route transit networks established within the previous sections of the report, efforts are now focused on the identification of gaps in regional mobility throughout the OKI region. The gap analysis is an evaluation process that compares existing transit service coverage to potential mobility need using the Transit Orientation Index (TOI) analysis results for the greater OKI service area. TOI analysis is used to identify areas in which a traditional transit market exists, along with utilizing the TOI to identify key areas throughout the OKI region, employment density, and single-family households (single parent) with children were also utilized to identify regional mobility gaps. The characteristics are compared to the general population characteristics to identify concentrations transit need.

The use of gap analysis has become a standard practice for assessing mobility need and determining the performance of public transit in meeting the mobility needs of the transit-disadvantaged populations within a service area. The gap analysis aims to identify geographical gaps in public transit where travel needs are medium to high, but services are non-existent (unserved) or insufficient (underserved). This is a twofold process that uses socioeconomic data and ArcGIS.

The second step uses geographic analyses to determine the extent of each route’s service reach by using ArcGIS buffers. Ultimately, the two outputs are overlaid with one another to identify general gaps throughout the OKI transit service area, and more specifically, high priority TOI areas that are served, unserved, or underserved. Note that areas beyond the route catchment area (the buffered area along the route) are considered to be unserved.

Both “local” and “regional” fixed routes within the OKI system were considered in the gap analysis, with the main focus being on identifying gaps in regional mobility. The local routes were utilized in part with the mobility gap analysis to ensure the connectivity of the local networks to facilitate the movement transit users who have traveled regionally into a given area.

### TOI Gap Analysis Summary

Utilizing the previously identified areas from the initial TOI analysis, along with the addition of a quarter mile walkshed buffer overlaying both regional and local routes, additional areas that range from having a “high” to “very high” orientation towards transit that have limited regional mobility options, if any, have been identified within this section (see Map 3-2).

Within Hamilton County, the combination of local and regional routes offers regional connectivity for the majority of the areas of “high” and “very high” orientation towards transit, though some small-scale mobility gaps arise sporadically throughout the county. Such as areas in Colerain Township, the Briarly Creek area, Mt Healthy, and areas of Montgomery. There are various areas in Warren County that have a “high” to “very high” orientation towards transit that are currently underserved by regional transit services, such as those witnessed in areas surrounding Mason, Lebanon, the Salem Township, and Franklin. Regional mobility gaps are observed throughout Butler County, specifically, around the Oxford Township, areas surrounding Hamilton, and the Lemon Township.

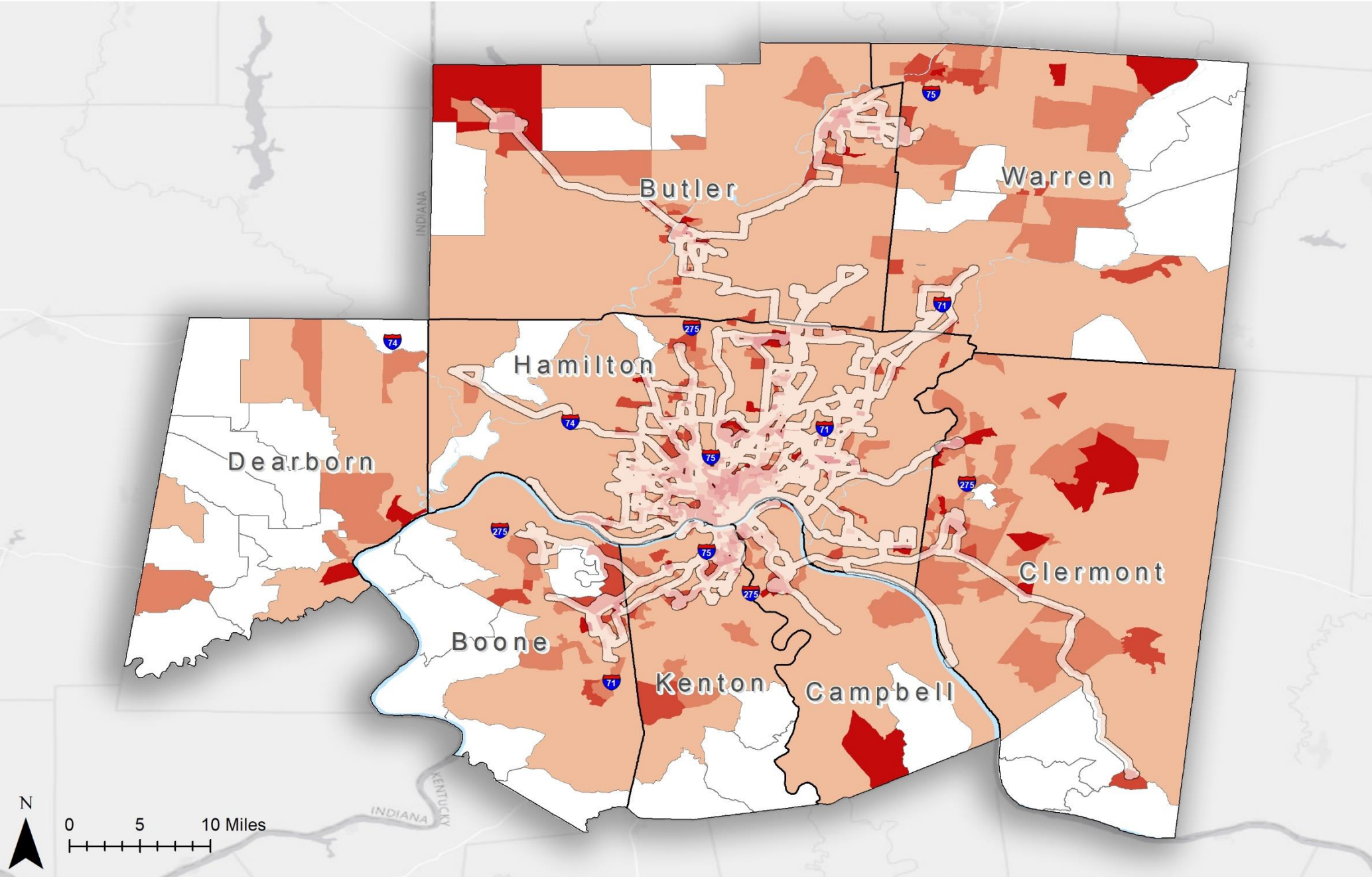
There is a large gap in regional mobility observed along the Ohio River at the Kentucky and Indiana border, specifically, in the town of Lawrenceburg and Aurora. This area has no current regional mobility options to connect to the existing TANK services within Kentucky, or to SORTA services within

Ohio. With regard to areas in Kentucky, some mobility gaps arise west of the CVG Airport, along with areas southbound along the I-75 corridor. In Clermont County, areas surrounding the Union Township have limited regional mobility access, along with the Batavia Township, Tate Township, and Owensville.

#### [Employed Persons in Poverty Gap Analysis Summary](#)

In order to create a more comprehensive insight into regional mobility, through the identification of employed persons in poverty, one can begin to qualify if mobility gaps are a potential reason as to why certain areas are employed and in poverty, potentially being attributed to the lack of regional connectedness to other jobs in the OKI region. Gaps with respect to this demographic group have been identified in the following areas throughout the OKI region (see Map 3-3).



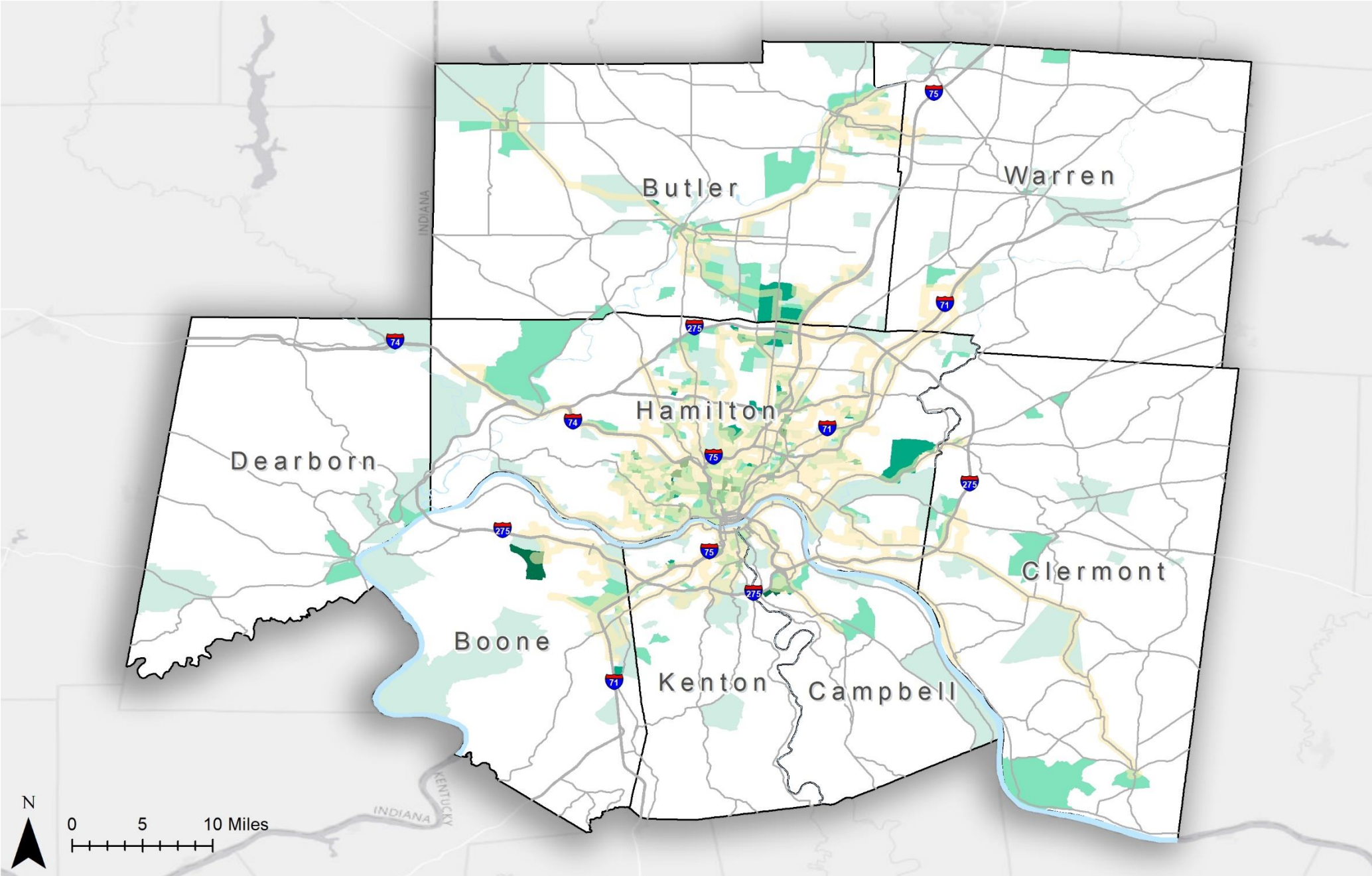


**Transit Orientation Index**

**Map 3-2: Quarter Mile Gap Analysis TOI**

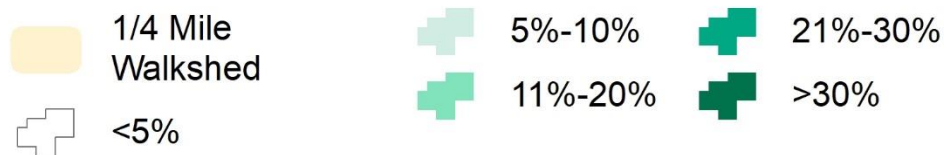
- 1/4 Mile Walkshed
- ⊕ Very Low\*
- ⊕ Low
- ⊕ Medium
- ⊕ High
- ⊕ Very High

\*Less than 100 persons per square mile



Percent of Employed Persons (20-64) in Poverty by Block Group

Map 3-3: Quarter Mile Gap Analysis  
Employed Persons in Poverty



### Service Span Gap Analysis

Furthering the regional gap analysis, another key aspect of regional mobility was also analyzed. This key area of mobility being the identification of “gaps” in the service span throughout the OKI network, service span gaps can create mobility gaps for those not traveling regionally during peak times.

To start, only the regional OKI network was analyzed for service span gaps. For the purposes of this analysis, a gap in service span was defined as only having service during peak hours, as opposed to all day service and peak hour service. Service gaps in the regional network arose in various areas across the OKI region, such as Harrison Township into Cincinnati, Colerain Township into Cincinnati, North College Hill, and Cheviot within Hamilton County. Outside of Hamilton County service span gaps are observed throughout the surrounding counties, such as in Butler County, in the Westchester Township, additionally, notable gaps arise in Clermont County in the Union Township, New Richmond, and in Amelia. In Kentucky, regional gaps in service span arise in areas throughout Boone County such as in Union, and Burlington. These gaps can be observed in Map 3-4, regional routes with service gaps are illustrated in red, while regional routes with all day service are shown in green.

The majority of the previously identified gaps are still observed when the local route service span layer is overlaid with the regional service span layer. Some previously identified gaps are mitigated by access and or service via local fixed route solutions, though this is limited in occurrence across the region. Dearborn County currently has no regional access to the GCA, similar to Warren County having very limited regional accessibility. The overall coverage of the OKI region with regard to service span can be observed in Map 3-5 below.

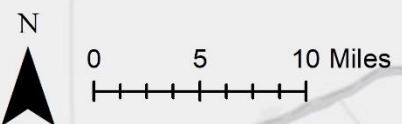
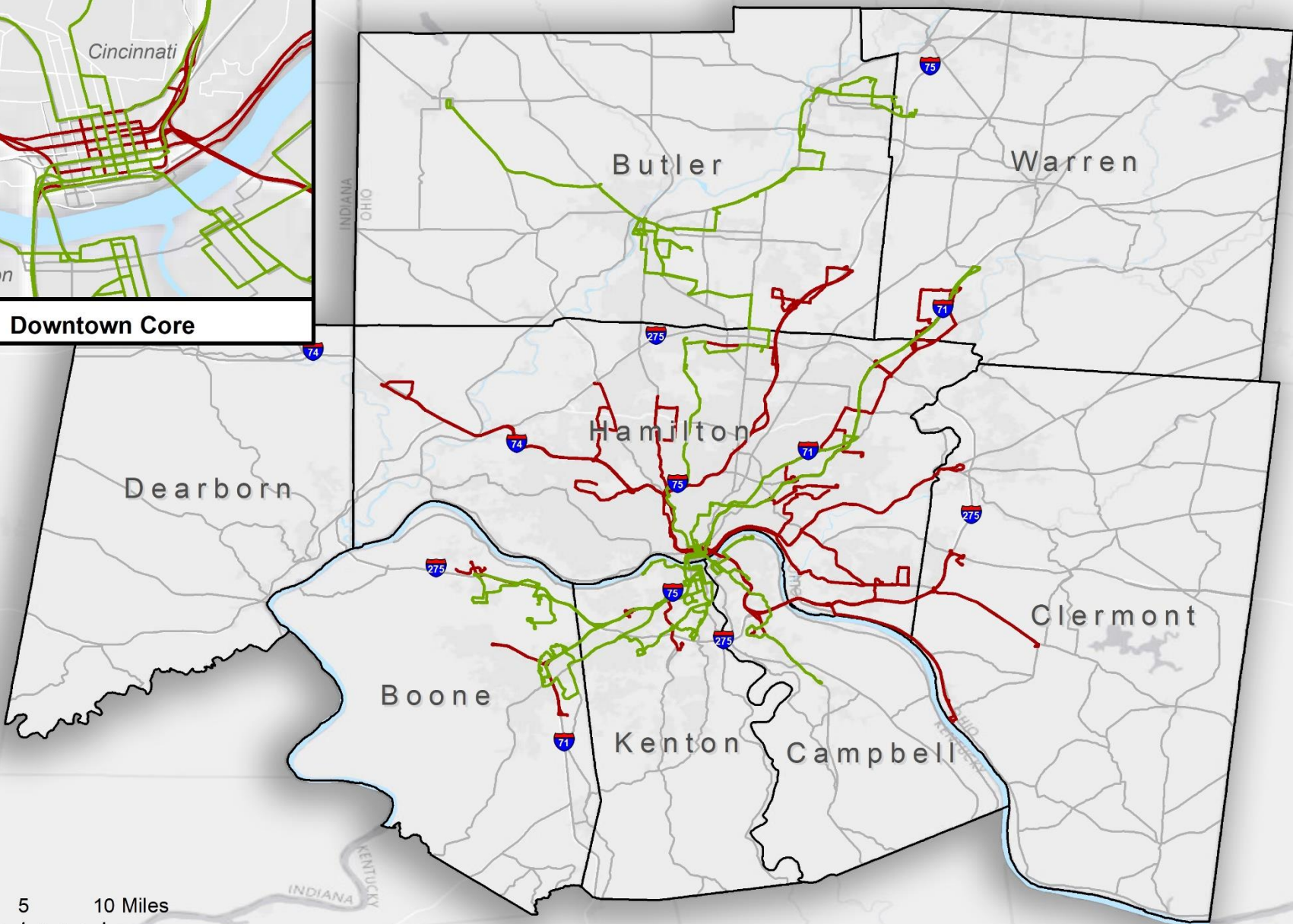
### Frequency Gap Analysis

Another aspect of conducting a gap analysis for the OKI region is to analyze the frequency of the OKI transit network as a whole. For the purposes of this section, major gaps within service frequency were identified as those with frequencies greater than 60 minutes. The frequency in which local and regional transit routes operate is key to furthering the gap analysis being undertaken in this study. Some major gaps in frequency were identified along the corridor connecting Clermont County to Hamilton County from the Franklin Township to the Union Township, along with the service in Middletown in Butler County connecting residents to and from Warren County. One of the major regional gaps identified as part of this analysis is the regional connection between the town of Hamilton in Butler County, to the town of Springdale in Hamilton County. This corridor is the only regional connection granting the residents of northwest Butler County to the rest of the GCA. These gaps are illustrated within Map 3-6, the gaps described throughout this section are depicted in red. There were minor local east west connections within Hamilton County that were identified that did not facilitate an impact on regional travel flow shown in red as well.





**Downtown Core**



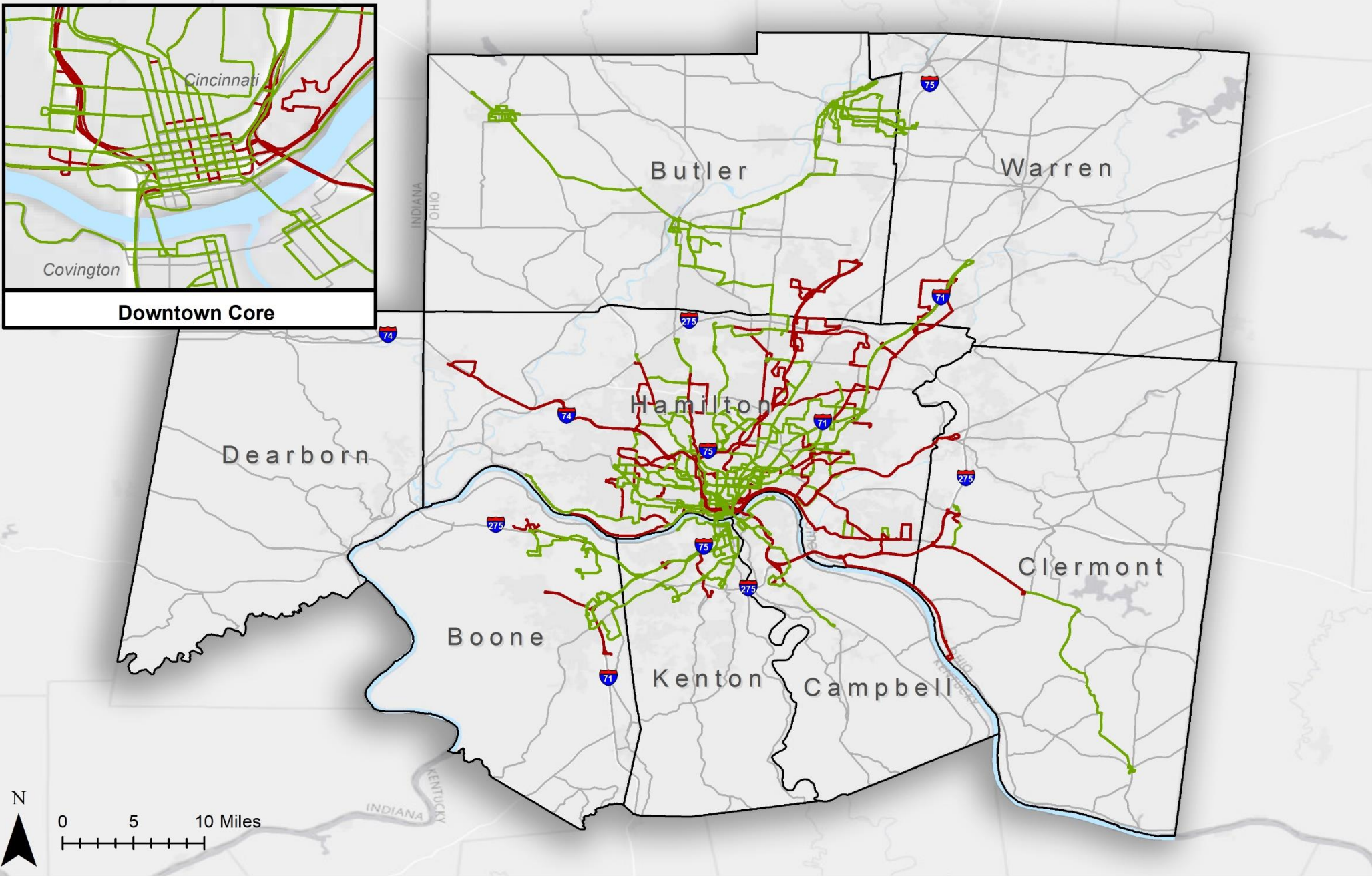
**Service Span**

- Peak Service
- All Day Service



**Map 3-4: Regional Routes Service Span**



**Downtown Core**



**Service Span**

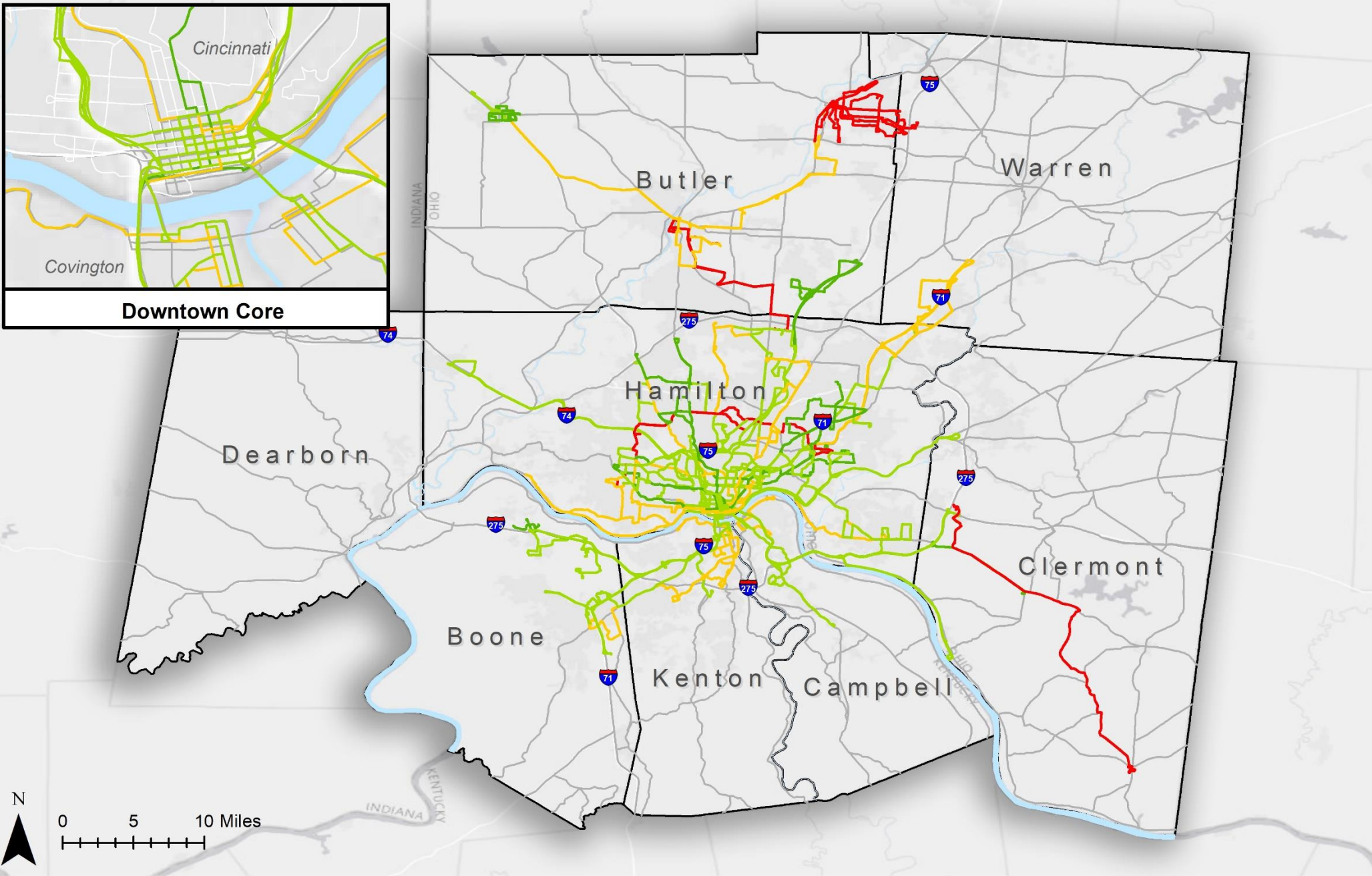
-  Peak Service
-  All Day Service

**Map 3-5: Regional and Local Routes  
Service Span**





**Downtown Core**



**OKI Route Frequency**

**Map 3-6: OKI Network Frequency**



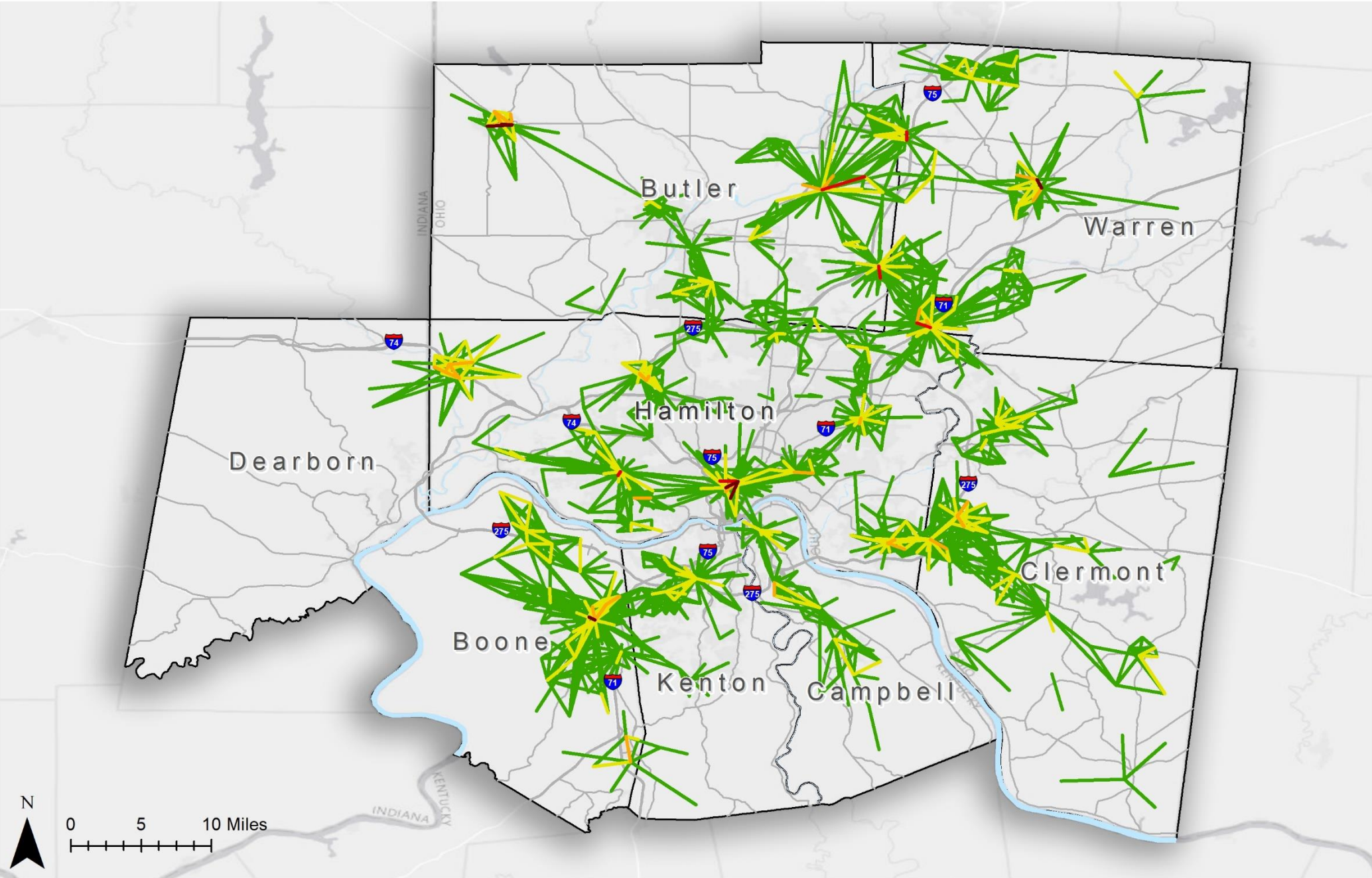


## Inter-County Trip Analysis/Regional Travel Flows

The examination of the volume of origins and destinations allows for the identification of travel patterns that are, or are not supported, by the existing regional transit network. Results stemming from the market analysis are compiled with the findings obtained from the outreach efforts for existing and non-riders.

Utilizing the TAZ data for the OKI region, the following “desire” trend lines were created for trips contained within both single county trips, and county to county “regional” trips. Utilizing GIS tools, the “desire” lines were derived, which serve as the links between origin and destination TAZ data points for the trips throughout the OKI region. Using this key analysis regional travel patterns were identified, which aids in the refinement of areas that have gaps in regional service options. This begins the process of identifying potential solutions to these regional mobility gaps observed throughout the OKI region.

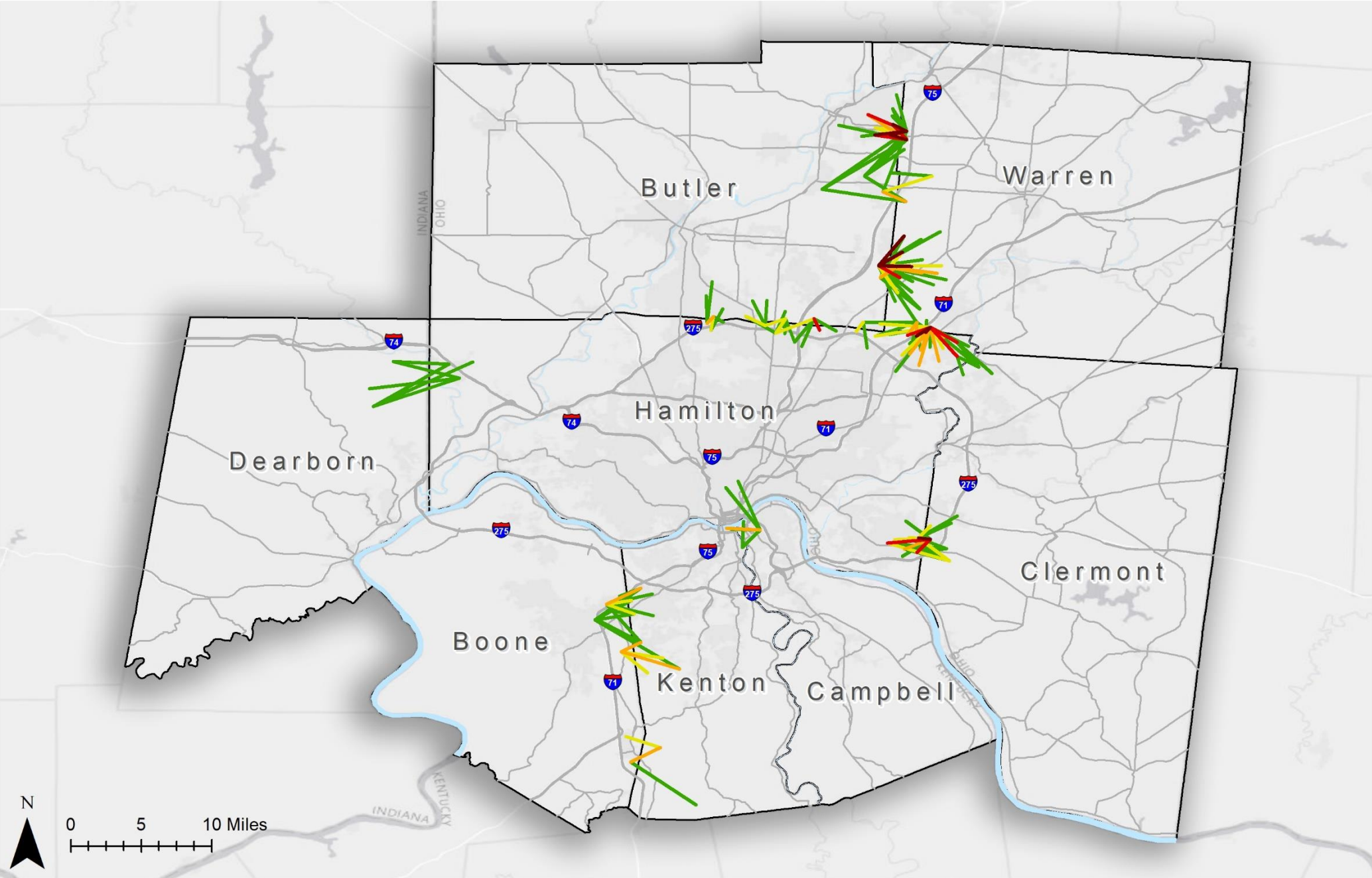
Map 3-7 gives us a broad overview of these desire lines, for trips having an average of over 100 daily trips. Map 3-8 illustrates the “regional” cross county trips refined from the TAZ data utilized in this section. The largest share of cross-county travel is between Warren and Butler counties, with approximately 20,000 regional trips in 2020. Other notable areas of regional travel are observed between Warren County and Hamilton County, totaling nearly 10,000 regional trips. Clermont County and Hamilton County also share an exchange of trips across county lines amounting to around 7,000 shared trips. Butler County also follows the trend of sharing trips between Hamilton County totaling around 5,000 trips. Between Boone and Kenton County there were more than 6,000 shared trips estimated. Dearborn County shows some regional trips to and from Hamilton County at approximately 765 trips. Maps that show trips by individual counties can be found in Appendix B.



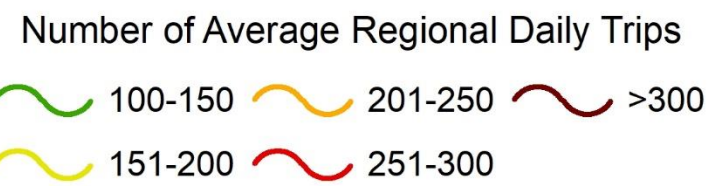
Number of Average Daily Trips



Map 3-7: OKI TAZ Desire Lines



Map 3-8: OKI Regional TAZ Desire Lines





## 4.0 Job Hubs

The locations of job hubs were identified by OKI. OKI defines job hubs as areas that have concentrated economic activity which exhibit high concentration of traded-sector jobs, multiple traded-sector employers, alignment with local development patterns, and alignment with economic development opportunities.

The OKI job hubs are composed of the following major employment sectors:

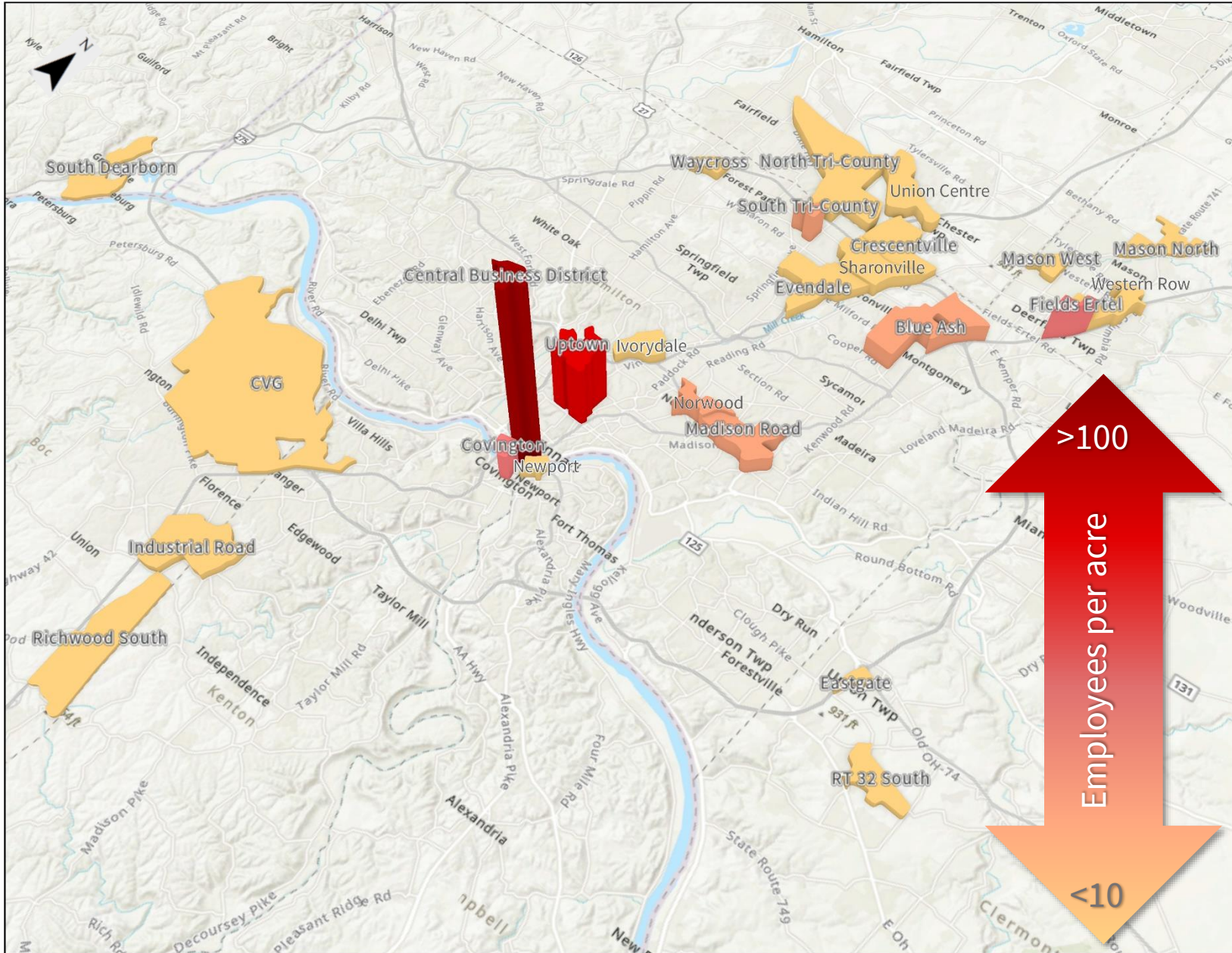
- Information
- Finance and Insurance
- Manufacturing
- Management of Companies and Enterprises
- Professional, Scientific, and Technical Services
- Transportation and Warehousing
- Utilities
- Wholesale Trade

Map 4-1 shows the job hubs with the aforementioned major employment sectors by employees per acre. In total, these job hubs represent 364,232 jobs from 8,328 employers in 2020. The majority of the job hubs with higher density of employees are along major highways and in downtown Cincinnati.

Map 4-2 shows the number of people commuting to the job hub in 2019. In total, there are over 337,000 people commuting to the 25 hubs. The Blue Ash, CVG, Central Business District, North Tri-County, and Uptown hubs have over 20,000 daily commuters traveling to their respective job hubs.

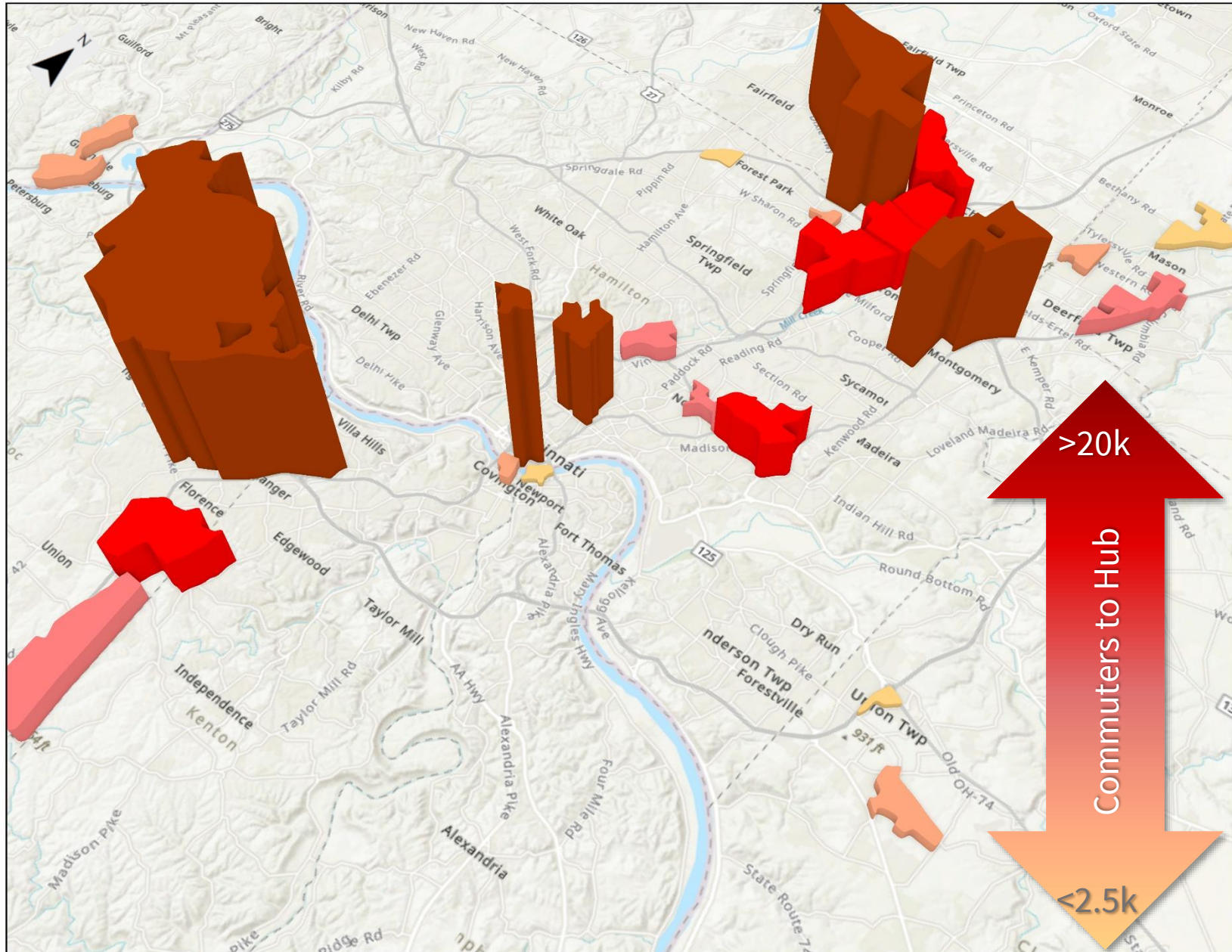
Map 4-3 shows all OKI routes with the total number of persons in labor force (PLF) by transit time within 60 minutes of the job hub. The Central Business District Hub has the most people in labor force within 60 minutes by transit, with over 350,000 people. The Mason North, Mason West, Richwood, Route 32 Corridor, and Waycross hubs do not have transit access in 2022.

Map 4-1: Job Hubs- Employee per Acre, 2020



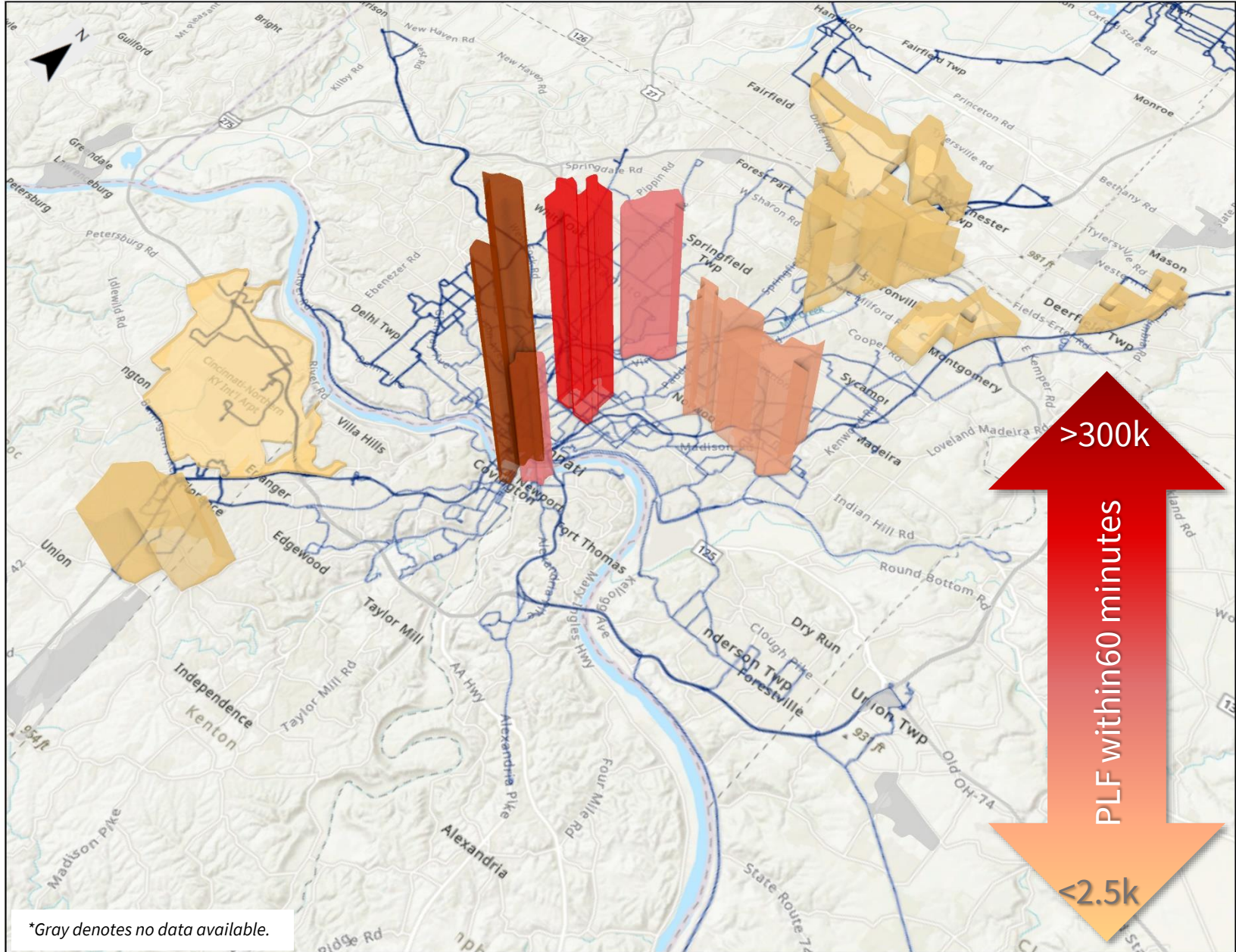


Map 4-2: Commuters to Job Hubs, 2019





Map 4-3: Persons in Labor Force by Transit Time- within 60 minutes of Job Hubs, 2022



## 5.0 Regional Travel Gaps Summary

As identified earlier in the report, the specific areas of various key demographic and socioeconomic groups have been identified throughout the OKI region. In conjunction with the regional travel data, a quarter mile watershed buffer was applied to the socioeconomic data discussed in this report to better understand the regional mobility gaps arising throughout the OKI region. Using these findings, the key parts of the OKI region with gaps in regional connectivity/mobility options were derived.

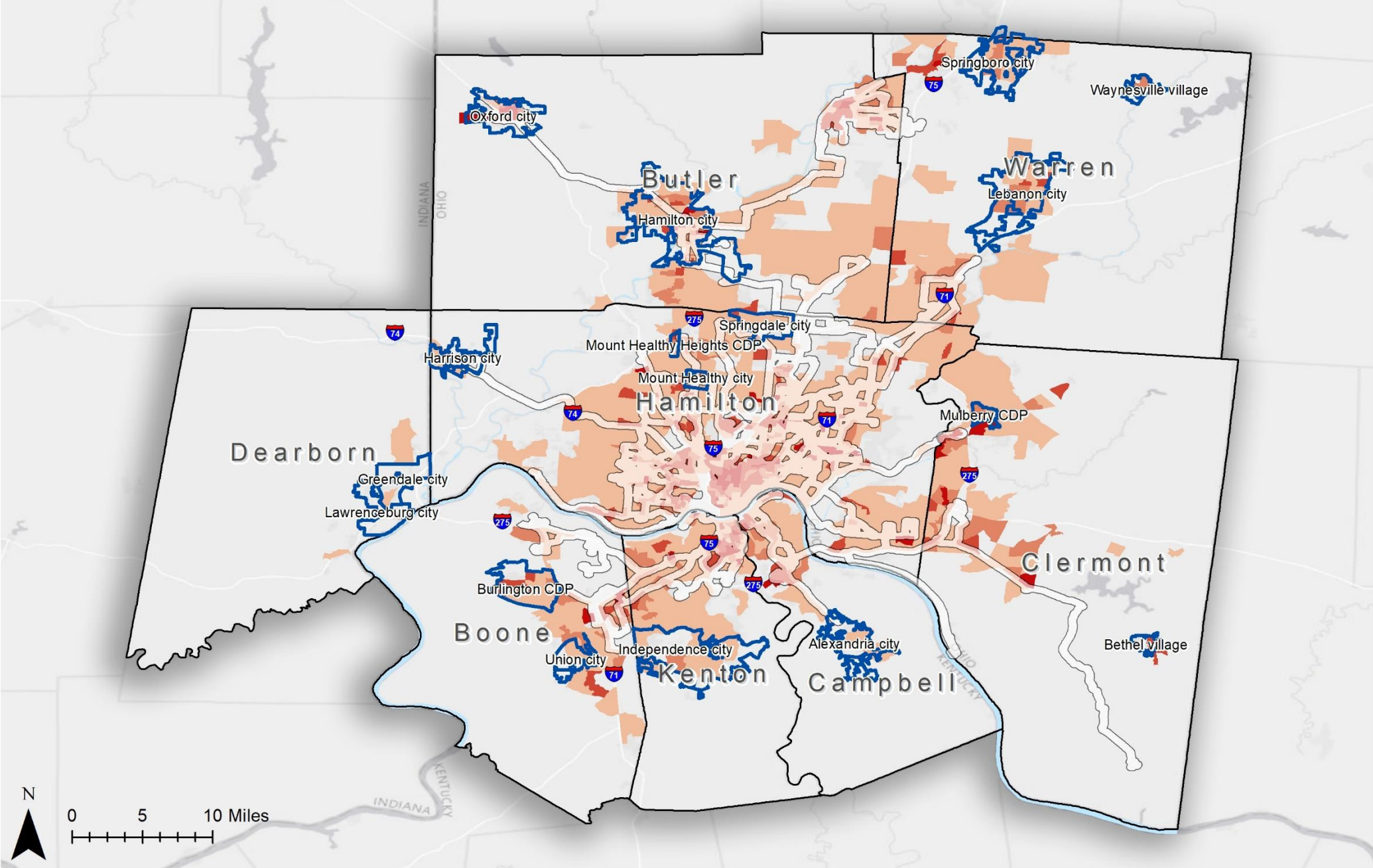
The following areas have been identified as mobility insufficient with regard to regional connectivity:

**Table 5-1: Preliminary Focus Areas**

- Greendale, Indiana
- Lawrenceburg, Indiana
- Harrison Township, Indiana
- Hamilton, Ohio
- Oxford, Ohio
- Springdale, Ohio
- Mt. Healthy, Ohio
- Union Township, Ohio
- Tate Township, Ohio
- Springboro, Ohio
- Waynesville, Ohio
- Burlington, Kentucky
- Union, Kentucky
- Independence, Kentucky
- Alexandria, Kentucky
- Miami Township, Ohio








Map 5-1 illustrates the preliminary focus area regarding regional mobility needs, the areas are overlaid on the TOI. The TOI was filtered to areas that are above the threshold for rural areas as defined by the US Census Bureau, 1,000 persons per square mile. This value was used to combine aspects of the transit needs across the region, but also cross reference the population density throughout the region. By doing this, the focus areas were narrowed to generalized areas that have an orientation towards transit, and an appropriate population density to serve fixed route service.





**Transit Orientation Index**

**Map 5-1: Study Area Service Gaps**

- |   |   |   |  |
|---|---|---|--|
|  Preliminary Focus Areas |  1/4 Mile Walkshed |  Low       |  High |
|  Very Low*               |  Medium            |  Very High |  |

\*Less than 100 persons per square mile



## 6.0 Homebase Work Trip Analysis

Home-based work trips, provided by OKI, estimate home-to-work travel patterns for 2020 based on existing known trips between TAZs within the OKI region. The information in the home-based work trips help identify the volume of commuters traveling between TAZs, this is an essential component to gain insight into the regional travel flow of non-transit users. Analyzing the home-based work person trips gives insight into key origin-destination pairs that lack regional transit access. Using the findings from the home-based work trip analysis, public outreach results were then incorporated to identify the regional priority destinations to support the gap mitigation strategies presented in Section 8.

The following are other criteria that was considered when analyzing gaps:

- Trips that originated from TAZs outside of the buffer
- Trips that ended in the OKI job hubs
- Trips longer than the average trip length provided by OKI (6.3 miles)

This resulted in over 78,000 TAZ “desire” lines that originate from TAZs that end in the job hubs. Appendix C shows maps with the derived desire lines for daily work trips that are longer than the average commuter trip length (6.3 miles) for TAZs outside the quarter-mile buffer within the OKI region organized by OKI job hub.

Additionally, home based work trips originating from areas that have a “high” or “very high” orientation towards transit were analyzed. Map 6-1 shows the trips that originate from high need areas to any destination TAZ. Map 6-2 shows the trips that originate from high need areas to the OKI job hubs.

Table 6-1 shows all trips that end in job hubs, trips that end in the job hub that are outside the transit buffer, and total trips that are from outside of the buffer that originate from high need areas. The job hub receiving the most trips is the Central Business District, 24,345 trips. The job hub with the highest number of trips outside the quarter-mile transit buffer is CVG Hub (16,755 trips). Although the CVG job hub has the most trips that originate from outside of the quarter-mile transit buffer and from high need areas (1,654 trips), the South Dearborn job hub has the largest share of trips deriving from high need areas (8.7%). The average percentage of trips that originate from high need areas and outside of the buffer is 4.4 percent. Job hubs that have a higher-than-average percentage of trips that meet the threshold include CVG, Eastgate, Industrial Road, Oxford, Richwood, Route 32 Corridor, South Dearborn, and Waycross.

**Table 6-1: Home-Based Work Trips Relationship to Job Hubs**

Job Hub	Total Trips Ending at the Job Hub	Total Trips from Outside of the Buffer	Total Trips from Outside of the Buffer in High Need Areas	% of Trips from High Need Areas
<b>Boone County</b>				
CVG - Airport	21,224	16,755	1,654	7.8%
Industrial Road	8,358	7,135	580	6.9%
Richwood South	2,285	1,995	128	5.6%
<b>Butler County</b>				
North Tri-County	16,167	13,506	598	3.7%
Union Centre	5,805	4,879	148	2.5%
<b>Campbell County</b>				
Newport	1,197	637	36	3.0%
<b>Clermont County</b>				
Eastgate	890	791	61	6.9%
Rt 32 South Corridor	1,977	1,783	137	6.9%
<b>Dearborn County</b>				
South Dearborn	2,782	2,481	242	8.7%
<b>Hamilton County</b>				
Blue Ash	14,025	10,934	433	3.1%
Central Business District	24,345	14,015	724	3.0%
Crescentville	5,664	4,620	190	3.4%
Evendale	6,509	4,850	242	3.7%
Ivorydale	1,943	1,149	48	2.5%
Madison Road	5,488	3,103	162	3.0%
Norwood	2,670	1,361	69	2.6%
Oxford	4,411	2,774	363	8.2%
Sharonville	4,857	3,793	160	3.3%
South Tri-County	2,061	1,606	83	4.0%
Uptown	22,865	12,072	609	2.7%
Waycross	1,418	1,189	77	5.4%
<b>Kenton County</b>				
Covington	4,240	2,736	163	3.8%
<b>Warren County</b>				
Fields Ertel	3,446	2,957	93	2.7%
Mason North	1,112	867	32	2.9%
Mason West	1,521	1,316	60	3.9%
Western Row	2,887	2,503	86	3.0%
<b>Total</b>	<b>170,147</b>	<b>121,807</b>	<b>7,178</b>	<b>-</b>

The following suggestions were developed based on the results from the home-based work trip data. These suggestions were reexamined later in the study alongside the public outreach results to make final mitigation strategies to the Regional Priority Locations. The following suggestions include key takeaways, fixed route recommendations, mobility recommendations, and add connections to the job hubs. The suggestions identified below are based on the geographic distribution of regional travel trips origins and the home-based work trips relative to origination from high need areas and respective trip volumes.

## **Boone County**

### ***CVG Airport***

- Noticeable regional service connecting Kenton County near Madison Pike
- Additional local service connecting south Boone from high need areas
- Potential to extend Route 2X to Florence Hub
- Potential to examine a cross-county connector service to connect Kenton and Campbell Counties

### ***Industrial Road***

- Potential MOD serving areas around I-71

### ***Richwood South***

- Service connecting Burlington to Richwood South job hub from Cincinnati
- Potential MOD in Richwood connecting to the Mt Zion Express

## **Butler County**

### ***North Tri-County***

- Potential to increase frequency on BCRTA Route R3
- Potential park-and-ride in Fairfield west of Dixie Highway – BCRTA Route R3 could connect residents of Fairfield to fixed route services.
- Potential MOD service near Fairfield to connect residents to existing services.
- Direct connection from Fairfield to North Tri-County job hub

### ***Union Centre***

- Potential to increase frequency on BCRTA Routes R3 and R6 in Butler County
- Potential to increase frequency on SORTA Route 42X from Hamilton County

## **Campbell County**

### ***Newport***

- Potential to increase frequency on TANK Route 25
- Fixed route service connecting Silver Grove to Newport with stops at existing park-and-rides



## Clermont County

### *Eastgate*

- Potential park-and-ride in Bethel
- New local service connecting Bethel to Eastgate job hub
- Potential park-and-ride in Hamlet
- Add stop at Eastgate Job Hub on CTC Route 1

### *Route 32 South Corridor*

- Potential park-and-ride in Bethel
- New local service connecting Bethel to Union Township
- Potential park-and-ride in Hamlet
- Add stop at Route 32 South job hub on CTC Route 1
- Potential to expand fixed route connections to Hamlet via CTC Route 1

## Dearborn County

### *South Dearborn*

- Potential MOD service connecting Aurora to South Dearborn Job Hub
- Connect to SORTA Route 32 to downtown Cincinnati
- Connect to TANK Routes 39X and 40X at CVG
- Potential fixed route connecting Bullittsville to South Dearborn
- Potential park-and-ride in Bullittsville

## Hamilton County

### *Blue Ash*

- Noticeable regional fixed route service connecting from Warren County, east of I-71
- Noticeable regional fixed route service connecting high needs area in Clermont County adjacent to the Hamilton/Clermont County line

### *Central Business District*

- Potential to increase frequency (SORTA Routes 32 and 50) from the Mount St. Joseph University area to the Central Business District job hub
- Potential to add MOD service adjacent to existing fixed route service in the Mount St. Joseph area

### *Crescentville*

- Potential to increase frequency in Butler County on SORTA Route 42X-West Chester Express
- Potential park-and-ride in West Chester
- Potential MOD service in the City of Hamilton to connect to existing routes
- New direct fixed route from areas adjacent to I-75 near the Butler/Warren county line

### ***Evendale***

- Potential to increase service on SORTA Route 23X from Butler County
- Potential park-and-ride in Owensville
- Regional service from Owensville
- Potential park-and-ride near/adjacent to I-71 near the Hamilton/Warren County line.
- Regional service from Kings Island Park-and Ride in Warren County

### ***Ivorydale***

- Connect to SORTA Route 20 via MOD or new express route from Winton Woods
- Potential to increase frequency on SORTA Route 46
- Potential to add more direct fixed route service from Delshire

### ***Madison Road***

- Potential to increase frequency on SORTA Route 37
- Connect Anderson Township to Madison Road Job Hub and Oakley Transit Center
- Potential MOD connecting high need areas in Clermont County and Anderson Township

### ***Norwood***

- Potential to adjust span and frequency on SORTA Route 71X and provide access to Norwood/Oakley area
- Potential park-and-ride in Oakley/Norwood area to grant access to Norwood job hub
- Regional service connecting Union Township to Norwood

### ***Oxford***

- Potential to increase frequency on BCRTA Route R3
- Potential MOD service connecting to the Meijer Park-and-Ride in City of Hamilton
- Potential park-and-ride near Harrison in Hamilton County
- Regional service connecting Harrison to Oxford via US 27

### ***Sharonville***

- Regional route connecting City of Hamilton to Sharonville
- Potential MOD service near Fairfield to connect to existing services
- Potential park-and-ride in Fairfield

### ***South Tri-County***

- Potential to increase frequency on BCRTA Routes R1 and R6 in Butler County
- Extension of R6 to the South Tri-County job hub
- Potential park-and-ride in City of Hamilton

### ***Uptown***

- Potential MOD service connecting to existing fixed route service near Mount St. Joseph
- Add direct connection from Hamlet/Clermont County
- Potential to increase frequency on SORTA Routes 19, 24, 31, 37, 38, 43, 46, 51, 78, and 90

### **Waycross**

- Expanded service connections in western Butler County
- Extend SORTA Route 17 to Waycross job hub
- Add more direct service from City of Hamilton to Waycross job hub

## **Kenton County**

### **Covington**

- Potential to increase frequency in Boone County on TANK Route 42X if ridership warrants.
- Suggest a new fixed route service or MOD connecting areas adjacent to Madison Pike in south Kenton County to the Covington job hub

## **Warren County**

### **Fields Ertel**

- Fixed route service along I-75 near the Butler/Warren county line
- Potential park-and-ride in Lebanon
- Fixed route service connecting from Lebanon

### **Mason North**

- Potential park-and-ride in Lebanon
- Fixed route service connecting from Lebanon
- Potential park-and-ride adjacent to I-75 and I-275 in Hamilton County
- Fixed route service from Sharonville to Kings Island Park-and Ride
- Potential MOD service connecting Kings Island Park-and Ride to Mason North job hub

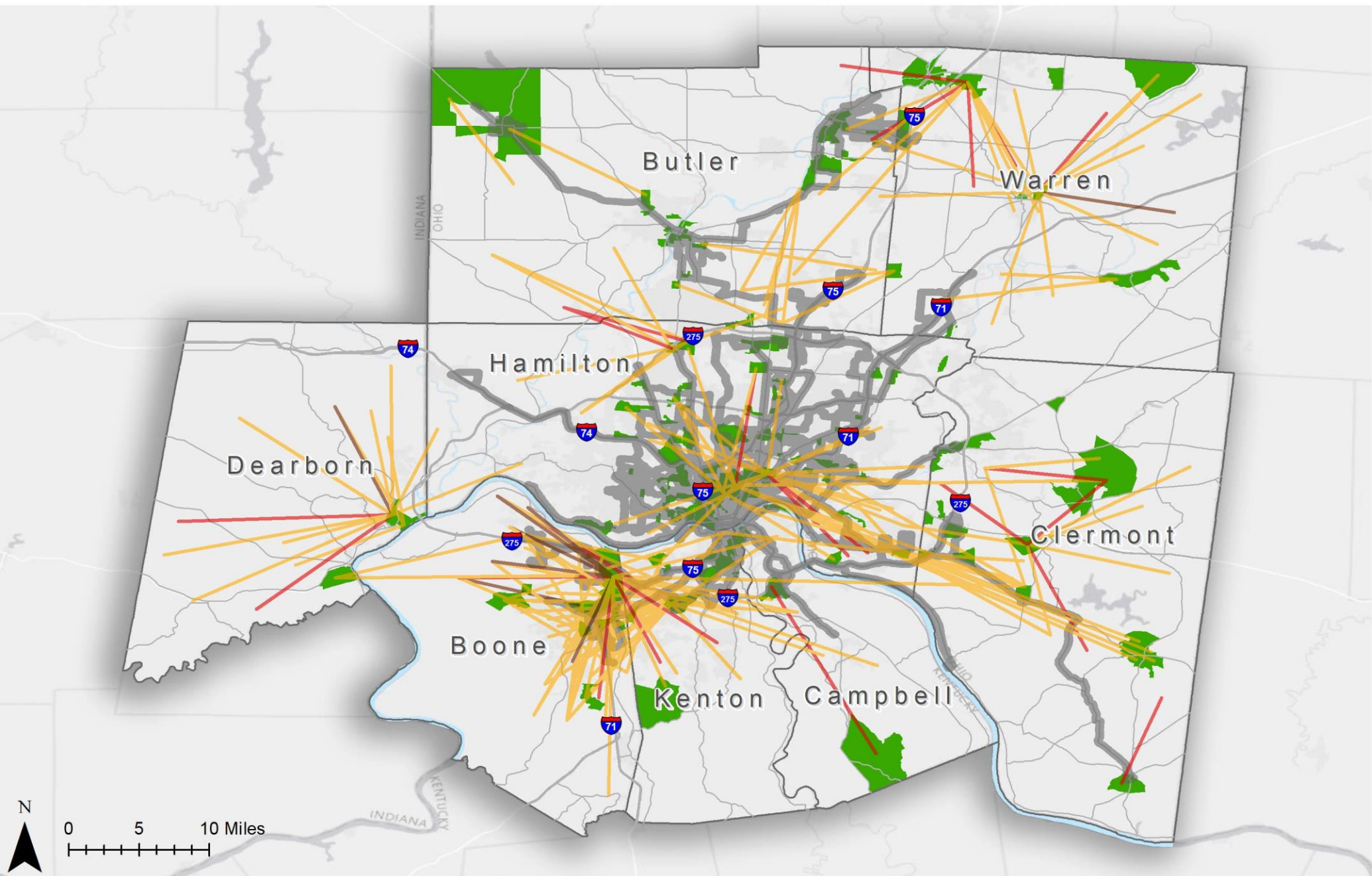
### **Mason West**

- Potential park-and-ride in Owensville
- Regional service from Owensville with stops in Springvale

### **Western Row**

- Potential park-and-ride in east Warren County, near Morrow
- Potential MOD service in Morrow
- Examine a fixed route service connecting Morrow to Western Row job hub

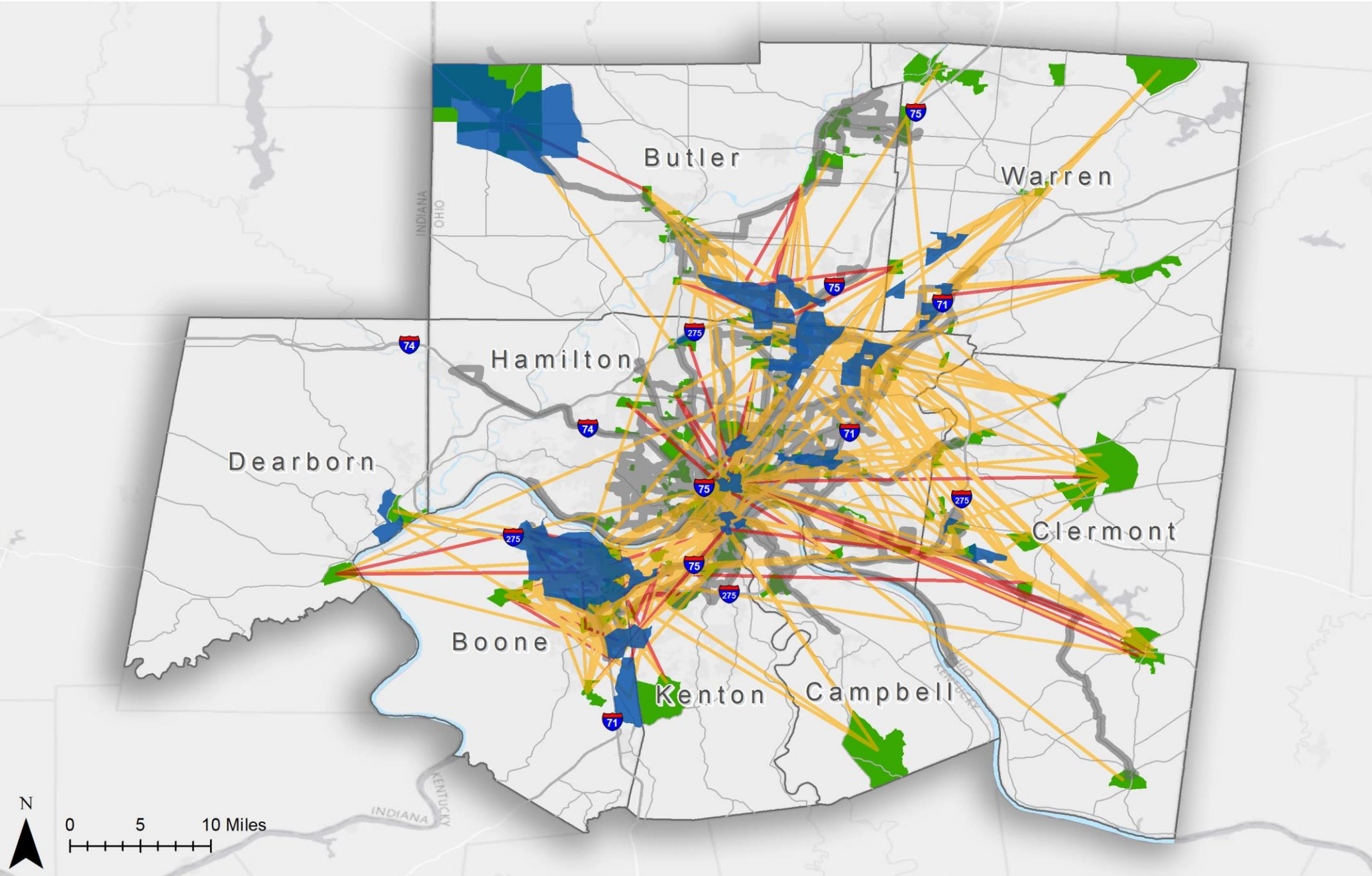




Trips that Originate from High Need Areas Outside of Transit Buffer- Longer than 6.3 Miles

Map 6-1: High Need Trips Outside of the Transit Buffer





Trips that Originate from High Need Areas Outside of Transit Buffer to Job Hubs- Longer than 6.3 Miles **Map 6-2: High Need Trips Outside of the Transit Buffer to Job Hubs**





## 7.0 Outreach Summary

Public outreach is an ongoing and adaptable process that provides a host of opportunities to engage all stakeholders in the community. Public outreach activities conducted for this study were oriented specifically to the study area with an understanding of the regional and local character and further developed to maximize participation within the constraints of the project budget. Comments and feedback received were used to provide recommendations to better understand frequent travel origins and destinations, travel volumes, travel gaps, and identify priorities for improving the regional transportation network for travel purposes. This section highlights key takeaways gathered during the public involvement activities and surveying efforts undertaken for the Regional Gap Analysis.

### Outreach Events

Various outreach methods were used such as stakeholder interviews, rider surveys, non-rider surveys (mail and on-line), and social media posts to leverage responses from the general public between November 9<sup>th</sup>, 2022, and February 22<sup>nd</sup>, 2023. Due to the start date of the project and timing of the outreach efforts relating to inclement weather and holidays, SORTA staff requested additional outreach to boost the response rate for the study. To do so, the project team conducted an intercept survey at the Government Square from February 6<sup>th</sup>-8<sup>th</sup>, 2023 during “Ohio Loves Transit Week”, as well as a series of additional outreach events at key trip generators from February 17<sup>th</sup>-22<sup>nd</sup>, 2023. A total of 3,042 surveys were completed (rider, non-rider, and online).

Notices of meetings were posted on stakeholder websites to generate participation and comments from the public. Table 7-1 shows the number of surveys/participants per event. A more detailed summary of stakeholder comments is provided in Appendix A.

**Table 7-1: Outreach Activity, Results, and Dates**

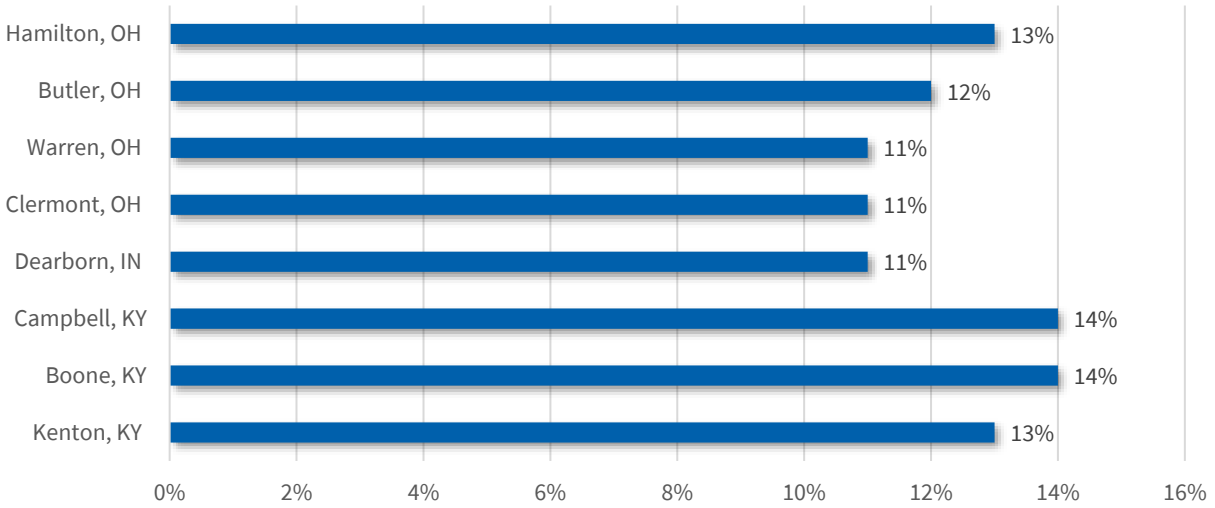
Activity	Results/Participants	Dates
<b>Stakeholder Interviews</b>	42	
<b>Rider Survey</b>	941	November 9-22, 2022
<b>Non-Rider Survey (mail)</b>	1,111	November 9-31, 2022
<b>Non-Rider Survey (Pop-up and Online)</b>	559	November 9, 2022 - February 22 <sup>nd</sup> , 2023
<b>Rider Intercept Survey</b>	389	February 6-8, 2023

### Non-Rider Survey (mail)

The non-riders survey effort obtained 1,111 survey responses, which were mailed to households and returned by the respondent. The distribution of respondents was equally spread across the regional counties as seen below in Figure 7-1. Most of the respondents are from Campbell County and Boone County, Kentucky, followed by Kenton County, Kentucky and Hamilton County, Ohio.



**Figure 7-1: Responses to Which County Do You Live In?**



A major aspect of the non-rider survey is to gather information for how the regional transit partners could improve their services to better compel non-transit users to utilize transit for regional travel. Based on the results from the non-rider survey, 90% of respondents never use transit. However, respondents suggested improving direct routes with competitive travel time (e.g., 20 minutes by car, 30 minutes by transit) (54%), making fares more affordable (39%), and improving headways on transit (bus operates every 30 minutes or better) (35%).

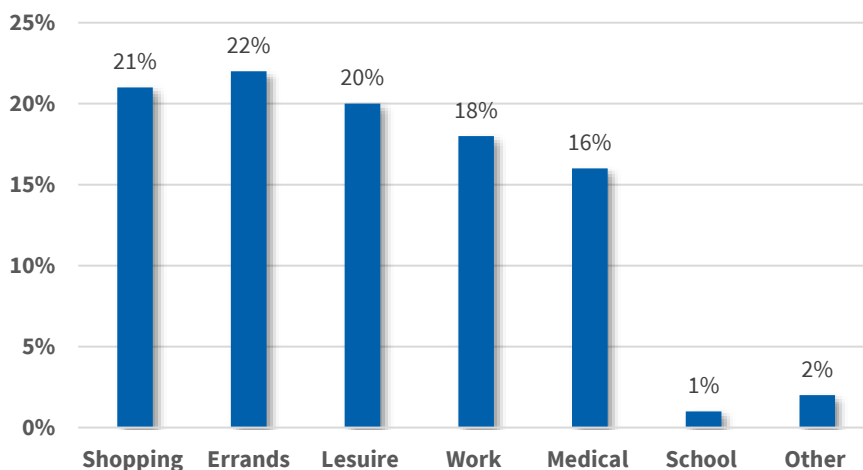
Respondents were also asked to provide their most common destinations in which they travel to by region. Table 7-2 provides an overview of the top three destinations within each county of the study area.

**Table 7-2: Regional Trip Generators**

Kenton, KY	Covington (46%)
	Erlanger (29%)
	Crescent Springs (23%)
Boone, KY	CVG Airport area (54%)
	Florence (53%)
	Burlington (26%)
Campbell, KY	Newport (46%)
	Fort Thomas (23%)
	Bellevue/Dayton (22%)
Dearborn, IN	Lawrenceburg (34%)
	Aurora (18%)
	Greendale (15%)
Clermont, OH	Milford (25%)
	Loveland (23%)
	Batavia (19%)
Warren, OH	Mason (37%)
	Lebanon (26%)
	Maineville (15%)
Butler, OH	Fairfield (29%)
	Hamilton (22%)
	Middletown/S Middletown (12%)
Hamilton, OH	Downtown Cincinnati (49%)
	Kenwood (31%)
	Uptown/UC/Are (21%)

The non-rider mail survey also aimed at exploring regional trip purpose to build recommendations and priorities to better improve regional travel via transit. Figure 7-2 highlights the responses to this question, the top response was errands (22%), followed by shopping (21%), and Leisure (20%). For the 5% that chose other, the top two responses were church (20%) and family (11%).

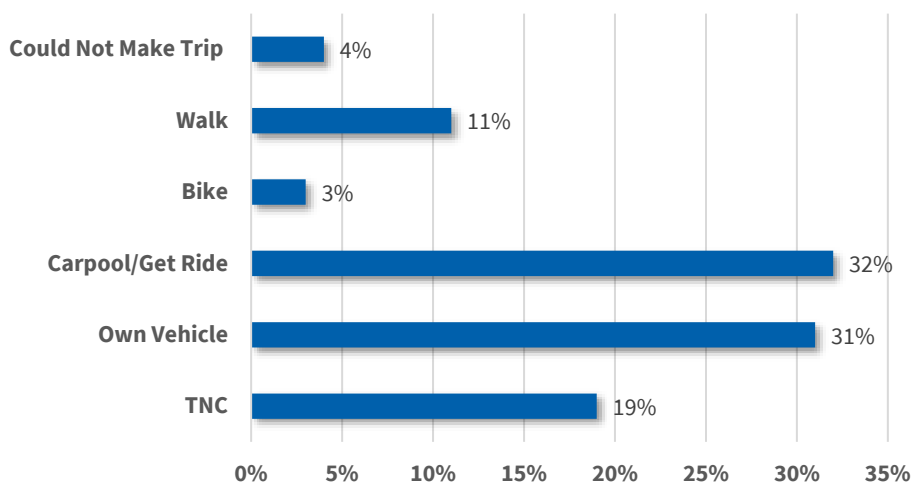
**Figure 7-2: Regional Trip Purpose**



### Onboard Rider Survey

The Rider Survey, which was conducted on all regional routes identified in Table 3-1, focused on identifying travel patterns, travel gaps, and recommendations. A total of 941 surveys were completed during the rider survey effort. This section offers a high-level summary of the findings from the on-board survey conducted in Fall 2022. During the on-board survey, respondents were asked how they would complete a regional trip if not by transit. Most of the respondents said they would ride with someone or carpool (32%), drive my own vehicle (31%), or use transportation network company's (TNC's) (19%), as shown in Figure 7-3. Four percent of respondents stated that they would be unable to make the trip if not for transit.

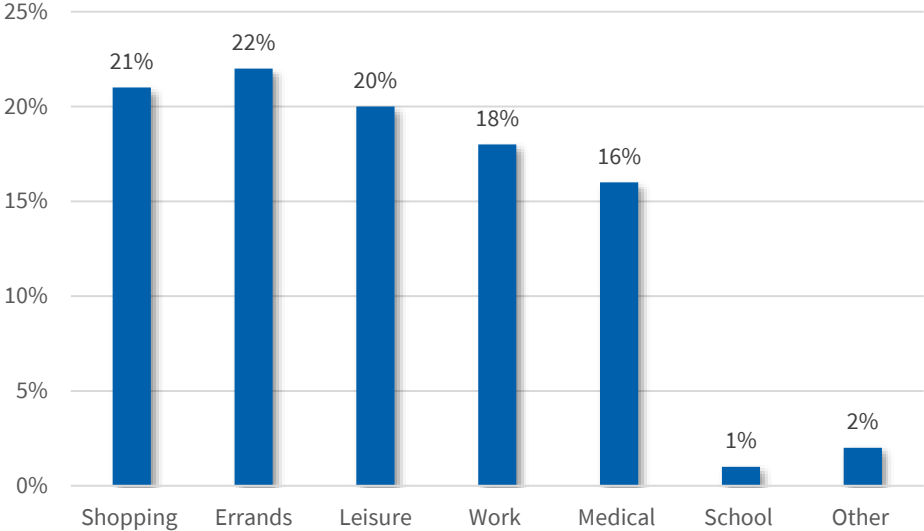
**Figure 7-3: When Not Using Transit, How Would You Travel?**





Respondents were asked to provide the purpose of their trip while riding the bus. Figure 7-4 illustrates the results associated with the trip overview question line. Most respondents (81%) stated they use transit to get to work, followed by errands (44%), and medical (23%). In addition, 85% of the respondents stated they would be making a return trip in the opposite direction on the same day.

**Figure 7-4: Which of the following purposes do you use transit?**



Similarly, to the non-rider survey, respondents were asked to select the most common destinations they travel to by region. Table 7-2 presents the top three destinations within each county.

**Table 7-3: Regional Trip Generators**

Kenton, KY	Covington (27%) Fort Wright (12%) Latonia (7%)
Boone, KY	Florence (19%) CVG Airport area (12%) Burlington (6%)
Campbell, KY	Newport (17%) Bellevue/Dayton (9%) Highland Heights (5%)
Dearborn, IN	Lawrenceburg (1%) Aurora (1%) West Harrison/Harrison (1%)
Clermont, OH	Milford (7%) Batavia (5.6%) Withamsville (3%)
Warren, OH	Mason (3%) Lebanon (2%) Maineville (1%)
Butler, OH	Hamilton (9%) Fairfield (6%) Middletown/S Middletown (5%)
Hamilton, OH	Downtown Cincinnati (76%) Norwood (22%) Uptown/UC/Are (21%)

## Outreach Summary

In summary, the public outreach efforts help to identify additional gaps in regional travel patterns, which will help develop and prioritize recommendations for the transit agencies in the OKI region to better connect residents and visitors to major job hubs and trip. This was done by collecting responses to frequent travel origins/destinations, the purpose for travel, and demographics.

Results from the non-rider survey found that the main purpose for regional trips was for errands, shopping, or leisure, with most non-riders using their own vehicle. The most popular responses to desired network improvements included competitive travel time on direct routes, affordable fares, and more frequent service. This information can provide insight into where non-riders are going and why they chose to travel in a private vehicle. Recommendations can be made using this data to select target route locations or make preferred network improvements in attempts to gain new riders and increase overall ridership.

The rider survey results show that approximately 80% of the riders use transit for work and approximately 88% use transit every week. The most popular travel days and times for the survey-respondents are Tuesday and Wednesday from 6:00 AM – 6:00 PM. It is valuable to know how often people use public transit and when they use it in order to know what route schedules will be most efficient to the users. The previously summarized table (Table 7-2) shows the most common regional destinations per county can be utilized to identify priority areas for new or modified routes that would be most beneficial. The most common challenges found to the current network were unreliable service, infrequent service, and long travel times.

Please reference the expanded summary of outreach efforts and public comments in Appendix A.



## 8.0 Regional Gap Analysis Findings and Strategies

The regional finding and strategies presented in this section of the report is a cumulation of the analyses conducted throughout the life of the project, which included examining quantitative data, conducting extensive outreach efforts, and coordinating with regional stakeholders. The purpose of this section is to identify the areas across the region that lack access to regional transit connectivity. The findings were identified by incorporating the regional desire line data derived from the onboard survey, non-rider survey, and intercept surveys; coupled with the home-based work trip data, transit orientation index findings, regional and local route span (peak or all-day service), and regional and local route headways.

As previously mentioned, a transit focus area was established to identify gaps arising outside of the typical transit walkshed of a quarter mile, but within an established distance (2 miles) from existing fixed route services. This two-mile buffer allows the respective transit agencies and stakeholders to address service planning/operational deficiencies within a reasonable distance to better connect residents and visitors to regional job hubs and trip generators.

The analysis identified locations throughout the region that have the largest quantities of trips originating from their respective zip codes within the focus area, which include 10 priority trip origin zip codes. The following section outlines the regional gap analysis findings and strategies for mitigating gaps in the network for each of the priority zip codes.

### Top Origin-Destination Pairs – Priority Origin Zip Codes

This section identifies regional priorities and strategies for the top 10 trip origin zip codes identified throughout this study which includes the collected survey trips ending outside the county of origin. Priorities and strategies may include recommending park-and-rides, MOD, and modifications to existing fixed route network. MOD zones in the OKI region will mitigate gaps in hard-to-reach areas where transit may not be feasible. In addition, park-and-ride locations can be connected to MOD to provide residents who live outside of a typical walk access to transit. MOD zones will also connect riders to destinations within the zone (i.e., employment, shopping, health care, transit hubs, park-and-rides) or provide connections to the transit networks to mitigate regional mobility gaps by connecting riders to the regional transit network.

Some factors contributing to the gaps in the OKI region include varying span of service, long headways, and route alignments. Many regional routes examined throughout the study operate at peak-periods (AM and PM), which strand riders for long periods of time who would rely on transit throughout the day. In addition, some transit headways are 60 minutes or greater, which creates gaps for riders who plan to use the service to connect to other counties in the OKI region. Improving operational deficiencies between the regional transit routes will mitigate several gaps in the OKI region. The operational changes will also allow neighboring transit agencies to operate more efficiently and provide more coverage to areas with high latent demand.

The top 10 priority origin zip codes are discussed below along with the top three regional destinations for trips originating from each of the top 10 zip codes. Factors that contribute to gaps in regional travel are identified for each destination.

Table 8-1 presents the top three regional destinations from the top ten regional priority trip origin zip codes discussed above. Table 8-1 also identifies the number of trips between the priority zip codes to the top three regional destinations based on the public outreach results. The information presented in the Transit Trip Planning column identifies the current transit services (routes) that residents in the priority zip code could utilize to access regional destinations.

This information is intended to direct transit agency staff to routes to focus on for consideration of service improvements to mitigate transit gaps (access and connectivity). This information is not intended to be proscriptive as the scope of this study is intended to identify regional gaps in service and provide suggestions for strategies to mitigate the gaps through future service improvement and capital improvement programming. The priority gaps, those in the top ten origin trip zip codes, are the locations that would yield the most significant benefit to increasing access to regional transit. Table 8-2 and Table 8-3 provide additional detail on regional and local gap mitigation.

#### **Butler County – (45011)**

The top three destinations originating from zip code 45011, located in Butler County east of Hamilton and north of I-275, include downtown Cincinnati, CVG Airport, and the City of Mason.

#### **Kenton County – Cold Springs/Highlands Heights (41076)**

The top three destinations originating from zip code 41076, located in Kenton County south of Fort Thomas and north of Alexandria, include Florence, downtown Cincinnati, and CVG Airport.

#### **Boone County – Hebron Kentucky (41048)**

The top three destinations originating from zip code 41048, located in Boone County east of Fort Mitchell and north of Florence along the Ohio River, include downtown Cincinnati, Erlanger, and Lawrenceburg.

#### **Hamilton County – Bevis/Northgate Area (45251)**

The top three destinations originating from zip code 45251, located in Hamilton County north of Monfort Heights, include downtown Covington, CVG Airport, and Mason.

#### **Butler County – Western Hamilton (45013)**

The top three destinations originating from zip code 45013, located in Butler County west of Hamilton and south of Oxford, include downtown Springdale, City of Mason, and Northgate.

#### **Butler County – Westchester Township (45069)**

The top three destinations originating from zip code 45069, located in Butler County east of Fairfield and west of City of Mason, include City of Mason, CVG Airport and Kenwood.

#### **Butler County – Fairfield (45014)**

The top three destinations originating from zip code 45014, located in Butler County south of Hamilton, include Springdale, City of Mason and Lebanon.

#### **Warren County – Mason (45040)**

The top three destinations originating from zip code 45040, located in Warren County north of Blue Ash and southwest of Lebanon, include Blue Ash, Kenwood and Loveland.

### **Hamilton County – Harrison (45030)**

The top three destinations originating from zip code 45030, located in Hamilton County west of Miamitown, include CVG Airport, Loveland, and Fairfield.

### **Clermont County – Amelia Ohio (45102)**

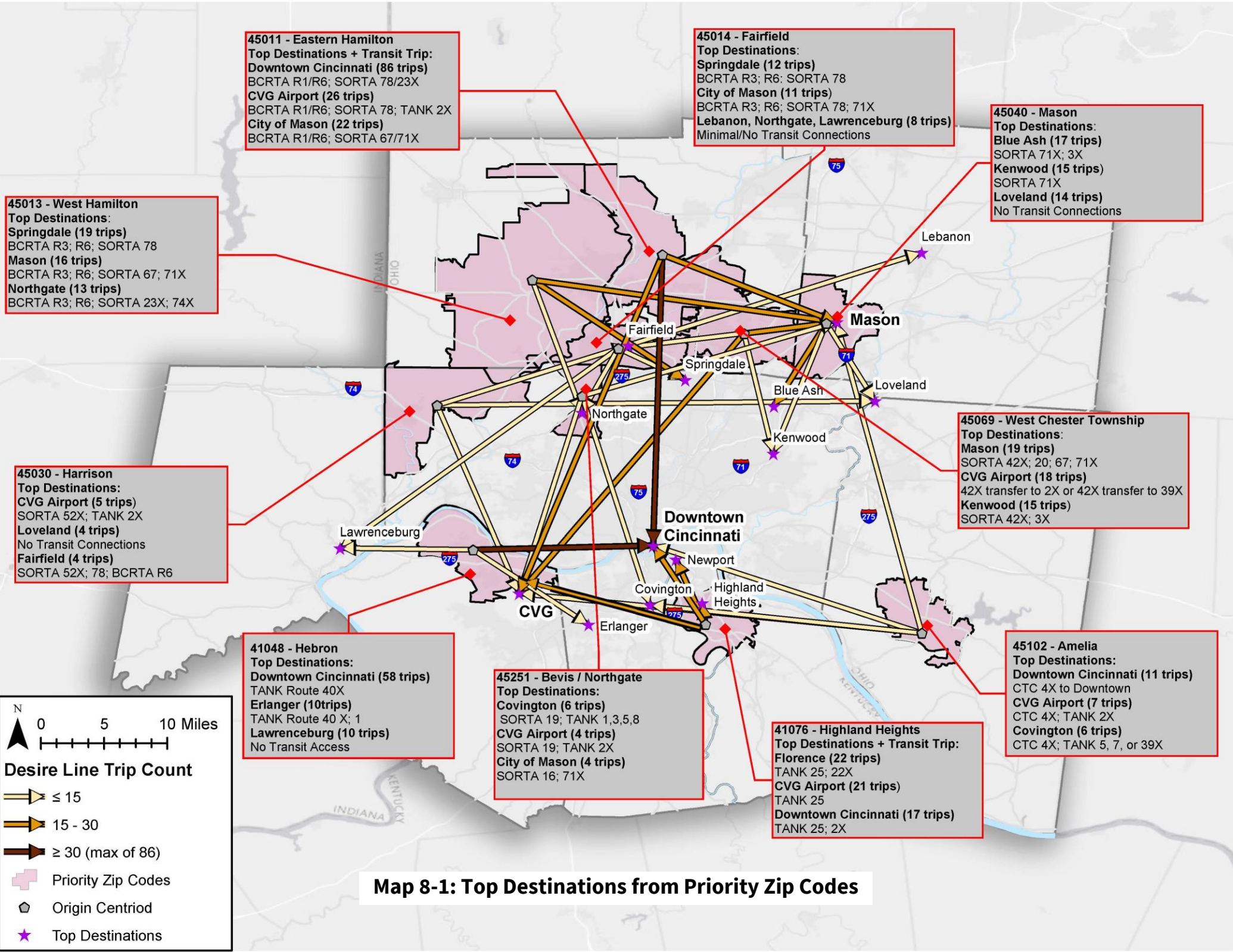
The top three destinations originating from zip code 45102, located in Clermont County west of Bethel and south of Batavia include Downtown Cincinnati, CVG Airport and Covington.

The analysis findings identified the top ten (10) trip origin zip codes in the region in terms of desired travel to job hubs and top regional destinations. The findings from this study help inform agencies by setting regional priorities in terms of programming projects to improve operational deficiencies. The information presented in Map 8-1 allows for regional transit providers to identify the top regional travel flows and explore ways to best accommodate residents across the OKI region.



**Table 8-1: Regional Priority Trips**

Zip	Destination	Transit Trip Planning
45011 Butler County – Eastern Hamilton	Downtown Cincinnati (86 trips)	BCRTA R1/R6; SORTA 78/23X
	CVG Airport (26 trips)	BCRTA R1/R6; SORTA 78; TANK 2X
	City of Mason (22 trips)	BCRTA R1/R6; SORTA 67/71X
41076 Kenton County – Cold Springs/Highlands Heights	Florence (22 trips)	TANK 25; 22X
	Downtown Cincinnati (17 trips)	TANK 25
	CVG Airport (21 trips)	TANK 25; 2X
41048 Boone County – Hebron Kentucky	Downtown Cincinnati (58 trips)	TANK Route 40X
	Erlanger (10 trips)	TANK Route 40 X; 1
	Lawrenceburg (10 trips)	No Transit Access
45251 Hamilton County – Bevis/Northgate	Covington (6 trips)	SORTA 19; TANK 1,3,5,8
	CVG Airport (4 trips)	SORTA 19; TANK 2X
	Mason (4 trips)	SORTA 16; 71X
45013 Butler County – Western Hamilton	Springdale (19 trips)	BCRTA R3; R6; SORTA 78
	Mason (16 trips)	BCRTA R3; R6; SORTA 67; 71X
	Northgate (13 trips)	BCRTA R3; R6; SORTA 23X; 74X
45069 Butler County – West Chester Township	Mason (19 trips)	SORTA 42X; 20; 67; 71X
	CVG Airport (18 trips)	42X transfer to 2X or 42X transfer to 39X
	Kenwood (15 trips)	SORTA 42X; 3X
45014 Butler County – Fairfield	Springdale (12 trips)	BCRTA R3; R6; SORTA 78
	Mason (11 trips)	BCRTA R3; R6; SORTA 78; 71X
	Lebanon (8 trips), Lawrenceburg (8 trips), Northgate (8 trips)	No Transit Connections
45040 Warren County – Mason	Blue Ash (17 trips)	SORTA 71X; 3X
	Kenwood (15 trips)	SORTA 71X
	Loveland (14 trips)	No Transit Connections
45030 Hamilton County – Harrison	CVG Airport (5 trips)	SORTA 52X; TANK 2X
	Loveland (4 trips)	No Transit Connections
	Fairfield (4 trips)	SORTA 52X; 78; BCRTA R6
45102 Clermont County – Amelia	Downtown Cincinnati (11 trips)	CTC 4X to Downtown
	CVG Airport (7 trips and Mason (7 trips)	CTC 4X; TANK 2X
	Covington (6 trips)	CTC 4X; TANK 5, 7, or 39X



## Regional Priority Origin Location Gap Mitigation Strategies

Table 8-2 includes strategies to mitigate the gaps from the top 10 priority zip codes. Mitigation strategies include integrating park-and-rides, providing mobility-on-demand (MOD) services, and making changes to headways and span of service. The strategies identified for each zip code in the table are intended for the transit agencies to consider in the OKI region to mitigate gaps in services and improve access to mobility.

Areas that received a “x” for categories such as park-n-ride and MOD Access were deemed suitable for implementation of services to provide connections to the existing local and regional fixed transit routes. MOD Access would grant localized mobility in the lower density suburban areas and provide convenient connections for residents in these priority zip codes to access local and regional transit. Table 8-2 also identifies opportunities to improve transit access through improvements to headway, span, and routing adjustments for the routes listed. Use of the GIS Map Tool Link provided in the Table of Contents will support staff to examine opportunities to examine travel patterns and develop plans for regional transit service improvements. Map 8-2 highlights the outlined gap mitigation strategies for the OKI region in a more visual manner, this allows responsible agencies to see regional trends and identify service needs for their respective jurisdictions to foster a more connected regional transit network. This information and analysis should help agencies identify service and capital needs to better connect communities as fiscal capacity allows.

**Table 8-2: Regional Priority Origin Location Gap Mitigation**

Origin Zip Code	Regional Priority - Origin	Origin Gap Mitigation Strategy				
		Park-N-Ride	Increase Headway	Adjust Span of Service	MOD Access	Routing Changes
45011	Butler County – Eastern Hamilton	x	BCRTA R1	--	x	BCRTA R1
41076	Kenton County – Cold Springs/Highlands Heights	--	--	--	x	--
41048	Boone County – Hebron Kentucky	--	--	TANK Rt 40X	x	TANK Rt 40X
45251	Hamilton County – Bevis/Northgate Area	--	SORTA Rt 17	SORTA Rt 74X	x	SORTA Rt 17
45013	Butler County – Western Hamilton	x	BCRTA R3	--	x	BCRTA R3
45069	Butler County – West Chester Township	x	--	SORTA Rt 42X	x	SORTA Rt 42X
45014	Butler County – Fairfield	--	BCRTA R3, R1, & R6	--	x	BCRTA R3, R1, & R6
45040	Warren County – Mason	x	SORTA Rt 71X	SORTA Rt 71X	x	SORTA Rt 71X
45030	Hamilton County – Harrison	x	--	SORTA Rt 52X	x	SORTA Rt 52X
45102	Clermont County – Amelia	x	CTC Rt 1, Rt 4X	CTC Rt 1, Rt 4X	x	--



**45013 - West Hamilton**  
 Responsible Agencies:  
 BCRTA  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 N/A  
 Route Changes:  
 R3  
 Increase Headway:  
 R3

**45011 - Eastern Hamilton**  
 Responsible Agencies:  
 BCRTA  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 N/A  
 Route Changes:  
 BCRTA R1  
 Increase Headway:  
 BCRTA R1

**45014 - Fairfield**  
 Responsible Agencies:  
 BCRTA  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 N/A  
 Route Changes:  
 R1, R3, and R6  
 Increase Headway:  
 R1, R3, and R6

**45040 - Mason**  
 Responsible Agencies:  
 Warren County & SORTA  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 Rt 71X  
 Route Changes:  
 Rt 71X  
 Increase Headway:  
 Rt 71X

**45030 - Harrison**  
 Responsible Agencies:  
 SORTA  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 Rt 52X  
 Route Changes:  
 Rt 52X  
 Increase Headway:  
 N/A

**45069 - West Chester Township**  
 Responsible Agencies:  
 SORTA & BCRTA  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 Rt 42X  
 Route Changes:  
 Rt 42X  
 Increase Headway:  
 N/A

**41048 - Hebron**  
 Responsible Agencies:  
 TANK  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 Rt 40X  
 Route Changes:  
 Rt 40X  
 Increase Headway:  
 N/A

**45251 - Bevis / Northgate**  
 Responsible Agencies:  
 SORTA  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 Rt 74X  
 Route Changes:  
 Rt 17  
 Increase Headway:  
 Rt 17

**41076 - Highland Heights**  
 Responsible Agencies:  
 TANK  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 N/A  
 Route Changes:  
 N/A  
 Increase Headway:  
 N/A

**45102 - Amelia**  
 Responsible Agencies:  
 CTC  
**Potential Mitigation Strategies:**  
 Span Adjustment:  
 Rt 1 and Rt 4X  
 Route Changes:  
 N/A  
 Increase Headway:  
 Rt1 and Rt 4X

N

0 5 10 Miles

Increase Headway

Adjust Span

Routing Changes

Priority Zip Codes

MOD Zones

Park-N-Ride

**Map 8-2: Mobility Gap Mitigation Strategies**

While Dearborn County was not included in the top regional trip origin zip codes, it is noted that the development of park-and-ride lots along the I-275 corridor and associated car/vanpool programs and public awareness campaigns would significantly help residents to access jobs and services near CVG, Covington, and downtown Cincinnati. A similar strategy would be appropriate to serve demand for travel to Oxford and nearby destinations in Butler County.

### **Top Local (Intracounty) Destinations from Priority Origin Zips**

Table 8-3 includes the top (10) priority trip origin zip codes and the top three local destinations by county for local trips associated with each priority zip code. While the focus is on regional gaps within the eight-county study area, local travel desire line data derived from survey data and Home-Based-Work trip data for each of the priority origin trip zip codes was also included. The intent of this information is to help the local transit agencies understand local travel demand not currently served by existing transit network (latent demand). Transit agencies can use this information to develop strategies to mitigate gaps in local service. Use of the GIS Map Tool Link provided in the Table of Contents will support staff to examine opportunities to make local service improvements.

For purposes of this study, the regional classification of fixed routes (defined as any route crossing a jurisdictional county boundary, river, and or state line) within the study area were the focus of much of the effort conducted. However, localized mobility can benefit from the movement of people to/from regionally connected services. In Downtown Cincinnati, the Cincinnati Connector streetcar is a major component of localized mobility in and around the central business district and Uptown. Transit agencies connecting to central business district should coordinate with the streetcar service to provide seamless first-mile, last-mile connections to improve regional transit trip connectedness.

The information presented in Table 8-3, portrays the total number of trips originating from the origin priority zip code based on public outreach results. The table shows total trips, regional trips, and local trips, respectively showing total trip count from the priority zip code (both local and regional), regional trip count (trips with destinations outside of the origin zips county), and local trips (trips with destinations within the same county as the origin zip). Transit providers can use this information to calculate the percentage of trips to the top three local destinations based on dividing the local trip count by the destination trip count. This information will help provide an idea of what local destinations are currently served by fixed route transit.

**Table 8-3: Top Local Destinations for Top 10 “Gap” Zip Codes**

Origin Zip	Total Trips	Regional Trips	Local Trips	Top Local Destination 1	Top Local Destination 2	Top Local Destination 3
45011	510	323	187	Hamilton (57)	Middletown (45)	Fairfield (35)
41076	427	320	107	Newport (26)	Highland Heights (23)	Fort Thomas (18)
41048	301	222	79	Florence (21)	Burlington (18)	Union (16)
45251	266	52	214	Downtown Cincinnati (96)	St. Bernard (15)	Norwood (13)
45013	254	177	77	Fairfield (24)	Hamilton (24)	Oxford (15)
45069	254	202	52	Fairfield (16)	Hamilton (16)	Port Union (7)
45014	201	150	51	Fairfield (17)	Hamilton (16)	Oxford (7)
45040	200	154	46	Mason (20)	Lebanon (16)	Maineville (10)
45030	170	52	118	Downtown Cincinnati (50)	Harrison (26)	Pleasant Run (14)
45102	151	97	54	Batavia (14)	Withamsville (12)	Milford (9)



## Appendix A. Public Outreach Comments Summary

# Greater Cincinnati Regional Mobility Gap Analysis Outreach Summary

## Outreach Approach

A strategic multi-pronged public outreach effort was implemented to reach and obtain travel desire line and attitudinal information from transit riders, non-riders underserved and underrepresented communities across the tri-state area.

Public input was obtained through interviews with regional stakeholders, community engagement at known activity centers to collect non-rider surveys, and survey collection on board selected bus routes. Our approach was designed to ensure cross-jurisdiction and cross-agency stakeholder input to facilitate the development of collaborative solutions.

## Non-rider Surveys

A public survey with close-ended and branching questions was deployed in both an electronic and hardcopy format to gain information from the general-public, persons who currently, formerly or have never used public transportation. The survey instrument captured travel behavior information – home, work, school, other destinations, travel mode, travel purpose, frequency of travel, travel times and transit routes (if applicable). The survey also included a few demographic questions to identify characteristics such as age, income, employment status, gender, and race/ethnicity.

The survey was shared with key stakeholders, transit agency partners, and Ohio-Kentucky-Indiana Regional Council of Governments (OKI) to distribute via social media and their distribution lists. A large poster with a survey monkey link and QR code connecting to the survey was featured at twelve (12) regional outreach events to encourage people to complete the survey via their mobile phones. Project team members staffed the events with printed versions of the survey and assisted members of the public, when necessary, to complete the survey.

Event participation during November 2022 and February 2023 included:

- Regional Paratransit Meeting presentation at OKI with 23 regional stakeholders - November 16
- TriHealth Good Samaritan Hospital Cafeteria - November 17 and February 17
- Findlay Market - November 18 & 20 and February 19
- Books by the Banks, a regional book fair - November 19
- UC Professional and Technical Career Fair at the University of Cincinnati Campus - February 7
- Art on Vine at Rhinegeist Brewery - February 12



Survey Promotion Board

- Mittenfest at Washington Park - February 18
- University of Cincinnati Medical Center - February 20
- The Christ Hospital - February 21

### Stakeholder Interviews

To enhance and broaden our understanding of local conditions and regional travel needs and priorities, we gathered perceptions and ideas regarding regional transportation needs from key selected stakeholders within the region. The stakeholders were representatives from each of the participating transit agencies, regional social services, and governmental agencies.

Each interview was guided by a set of structured questions developed to gather feedback about regional travel needs. Obtaining a deeper understanding of key locations, travel patterns and unmet needs from stakeholders allows prioritization of needed improvements to the regional transportation network, facilitation of improved regional mobility, and the elimination of key gaps in the regional network.

Virtual interviews were conducted between December 2022 and January 2023 and included:

- Butler County Regional Transit Authority - Matt Dutkevicz
- Center for Independent Living Options (CILO) – Rob Festenstein
- Council on Aging of Southwest Ohio and Northern Kentucky – Judy Eschmann
- Hamilton County Department of Job and Family Services – Michael Patton
- Lifetime Resources (Catch-a-Ride) – Erin Thomas
- Northern Kentucky Area Development District and Workforce Investment Board – Correy Eimer
- Southwest Ohio Regional Transit Authority (METRO) – Steve Anderson
- Transit Authority of Northern Kentucky (TANK) – Frank Busofsky
- Warren County – Rachelle Lasco
- Easter Seals – Jill Cates and 18 EasterSeals Job Developers



Interview with Matt Dutkevicz



## Detailed excerpts of the interview responses

### What are the regional connections most important to you and your Constituents?

1. Miami University is an important regional connection for the county. The students, including regional campuses of Oxford & Middletown - want to be connected to the entertainment district, Findlay Market area, connections to SORTA services and the manufacturing area in the south Butler County/northern Hamilton County area.
2. Local connections within the city of Hamilton to the hotel rooms and sports complexes. This area needs workers and is facing congestion problems. Southern Hamilton County and Northern Butler County have a strong manufacturing base, there are likely actions needed there between Butler & Metro.
3. People [with disabilities] need reliable resources to travel to work, grocery stores, health services, etc. to be self-sufficient. For example, the Amazon facility is offering hiring incentives, but if people cannot get there those incentives and good jobs are not able to be realized. Bus stop accessibility is another concern. There is a river that divides the two states, several county and city boundaries, which creates many obstacles for disadvantaged citizens.
4. Most of our clients [older adults] can take transit if they can get to a bus stop. There are some that are unable to take transit and are dependent on paratransit like Access. We also have some that need door through door service. That is where home52 Transportation comes in. Regional connections must accommodate people through all phases of their life and transportation needs.
5. Now that COVID is waning, our clients [older adults] want to get out and socialize more. Regional connections should not just be for medical trips, but for social, shopping, and even getting their hair done.
6. Warren County residents go to Cincinnati and/or Dayton, which is one of the regional connections needed. Warren has direct routes to Dayton, which is convenient, but not to Cincinnati. Clinton County is rural, and those individuals typically travel to Dayton for services.
7. People in our communities [Indiana] want to go to jobs at the airport and Amazon in Kentucky. They also need to go to the medical centers in Cincinnati.
8. Mobility to and from work is an ongoing area of concern.
9. From a workforce perspective, access and efficiency are most important. TANK has improved its service to CVG which is home to 70 employers. However, more employers are spread out throughout the region including areas where TANK is not currently serving.
10. There are needs in Walton KY, Richwood KY exit – significant number of employers migrating to this area, but bus routes do not service the area.

## TriHealth Good Samaritan Hospital



11. From focus groups held related to travels to barriers – one with a group in Dayton, Kentucky – respondents said they had access to TANK service, but due to transfers, it took nearly 2 hours one-way to commute to work. They also needed to connect to Cincinnati services.
12. Mount Washington into Clermont County – current route stops halfway – it is a heavy industrial area with a need for service.
13. Service is needed to connect northern Hamilton County with Fairfield in Butler County. There are a significant number of jobs in that area and the service frequency is not suitable.
14. Uptown to Northern Kentucky as a 1-trip [no transfer] is important.
15. A route that stops in Uptown that connects out to Butler County would be helpful.
16. Downtown Cincinnati is the most important regional connection for TANK and TANK's riders.
17. All TANK routes are regional routes. Some of our most important stops are at 4<sup>th</sup> & Walnut and 4<sup>th</sup> and Sycamore. 4<sup>th</sup> & Sycamore is the first timepoint for express routes - easy transfer options.
18. Most of the [Warren County] regional trips are to the medical centers in Dayton, Ohio and to West Chester Township in Butler County.

*What regional travel patterns do you think are the most important to improve?*

1. Need to improve the sharing of regional information including travel training and regional transit opportunities.
2. Connections between Butler County and the airport.
3. A communication barrier exists on how to connect from Butler County to other providers.
4. Additional marketing, awareness, and travel training are needed, as well as consistency between providers, to make it look/feel seamless to riders.
5. There are lots of barriers in the region for people with disabilities. Crossing state borders is nearly impossible.
6. Cost can be an inhibitor; the more you need the more it costs.
7. Many people in Warren County go to Dayton, Ohio for medical services while others go to Cincinnati. There are people in Cincinnati that go to Northern Kentucky to Saint Elizabeth Hospital.
8. There is no transit service to Richwood, Walton, and south Covington where there are lots of manufacturing jobs. Access needs to be improved between the current system and these areas. System efficiency also needs to improve.

Findlay Market



9. Uptown is the new downtown. More Uptown connections are needed.
10. We could be more of a tourist city with proper transportation.
11. We need to have better connections from the area west of Cincinnati and Hebron. There is good connection between Boone and Kenton County. However, many people who work in Hebron/CVG don't live in this area. They live in Cincinnati's westside. A bridge between Hebron and the Westside of Cincinnati would be nice. Realistically, a better connection between SORTA's westside routes and the route 2X would be helpful for riders.
12. Look at wayfinding and putting Metro and TANK schedulers together to explore ways to improve frequency would be beneficial.

Mittenfest in Washington Park



13. Transit options should be increased within the I-275 loop.
14. A Lawrenceburg, Indiana connection with TANK makes sense. The quickest way from Indiana to Cincinnati is through Kentucky.
15. Medical trips between Mason and Springboro are difficult because the drivers have to stay with the passenger until the appointment is over because it takes so long to get there and back.
16. The demand throughout [Warren] County is exploding. We have an ongoing list of people who want to become clients. However, we need more drivers to be able to serve more people.

*What regional transit connections do you think are the most important to improve?*

1. We need to improve [BCRTA] connections with Metro and MetroNow!.
2. Need to look at better connections between Middleton and the City of Hamilton.
3. Need to also improve [connections] to Springdale and other important destinations.
4. Bus stops must be accessible. Many of our [disabled] consumers can ride the bus. You need to continue to improve regional connections for people with disabilities.
5. We need to improve travel from home to the transit line. If people can't get to the bus, they can't ride the bus.
6. We need to create a regional hub in Lawrenceburg. Catch-A-Ride can easily take people from 6 counties to Lawrenceburg. From there, it would make sense for a TANK bus to connect people along the I-275 corridor to jobs in Kentucky and the medical centers in Cincinnati.



7. There is a homeless shelter in Aurora that has a van pool program that could connect in Lawrenceburg.
8. People living in the urban core [of Kentucky] need to access jobs in Florence, Walton, and Hebron every day.
9. We need to improve the Downtown Cincinnati connections (particularly between the Southbank Shuttle and the Streetcar), schedule coordination, wayfinding, etc. for a cohesive and on time system. Cohesive branding would be nice too.
10. New technology is helping us better inform our passengers that they can stay on the bus in Downtown Cincinnati because it may be interlined with another route.

Art on Vine



11. We should also explore an eastside connection between SORTA & TANK to help people get to the Northern Kentucky University.
12. An on-demand type service south into the suburban and rural areas and the expanding job hubs along I-71 into Florence would be well received.
13. We should develop a connection at the Butler County border to transfer passengers.
14. Partnering with other counties to meet at the county lines – transfer points.
15. We [Warren County] are partnering with another agency and with UTS/Medicaid to coordinate trips and to be able to serve more people.

*What ideas do you have to improve regional travel in the Greater Cincinnati Region?*

1. Would like to see a regional brand or image. Something like Kansas City and Atlanta, something that is a visual cue that we are part of a larger regional system. It is not necessarily important to local riders, but as they need or want to travel to another county or system, it becomes more important.
2. Better collaboration among agencies when it comes to fares, collateral, etc. On the back end, eliminate some of the barriers for riders.
3. EZ Connect & One Call Center – concerns over its deployment despite the momentum behind it.
4. Access to Access. More buses, more (operators) staff and another eligibility center.
5. The region needs Mobility Management. Wouldn't it be nice to have a liaison or some agency that could talk to all the transportation providers/companies to help people determine what transportation is available, most appropriate, identify barriers and help remove them, etc. A liaison that can talk with all transit agencies and provide person centered advice. This liaison will

facilitate continuous discussions between agencies and stakeholders for continual client centered process improvement.

6. Ensuring all bus stops are accessible.
7. We need to be able to help the most people get to transportation, then provide additional help to those people who need more client centered support. This could include door-to-door service when they leave the hospital, transition to Access and then to the bus when they are ready. They need a case or mobility manager to help them with each transition.
8. How to get the providers together to assess streamlining the service options? Improve synergy between the transportation professionals. There are one-off discussions taking place, but not an ongoing, intentional process. Focus on client-centered transportation. The group would ideally be mindful of the continuum of transportation in their decision-making - fully mobile, limited mobility, restricted mobility, temporary immobility, full assistance needed, etc.
9. Fewer stops, more direct routes from the neighborhoods that need it most to get them to the employers who will hire them.
10. The Lawrenceburg regional hub was included in a strategic plan a while ago. We have talked about it for many years. Hopefully, now it will be implemented.
11. High speed rail would be optimal.
12. The pockets of work being done are fragmented. Concerted efforts would be beneficial. Perhaps selecting a small project that is scalable and concentrating on it.
13. Northern Kentucky Area Development District (NKADD) is working with the City of Covington to implement a *Commute with Enterprise* program. A grant from the City is being used to cover 75% of the cost of the van pool program (\$1,300 to \$1,400 per month per van). It is an 18-month grant. Goal – help employers realize a benefit of employee attraction and retention. Project is scalable. The workforce board is especially interested in the program’s impact on employee attraction. Approximately 3 to 5 employers will be sought to cover 25% of the cost to provide the service to their employees. They anticipate that the pilot program will run for 18 months and then the employers will continue to sustain the service.
14. Better connections are needed across the river. TANK runs a shuttle but would like the streetcar to connect to northern Kentucky.
15. More bike opportunities – bike riders are typically transit-minded which would be beneficial.
16. More creative --- out of the box thinking.

Books by the Banks event



17. We need to make better use of the Riverfront Transfer Center and Government Square. Prior to COVID, there was a major traffic issue downtown as security would hold up buses to let the parking garages empty out. It has not yet become an issue again but may, as people come back to the offices.

18. The Streetcar should go up to the University and the Zoo and perhaps to Northern Kentucky as well.

19. Commuter rail and light rail should continue to be a future vision.

20. We should also continue to place emphasis on transit technology and fare equity/technology. \$110 for a regional monthly pass is a lot of money at one time for most of our riders. If we can make regional transit a lot more seamless, we may be able to serve more people.

Findlay Market

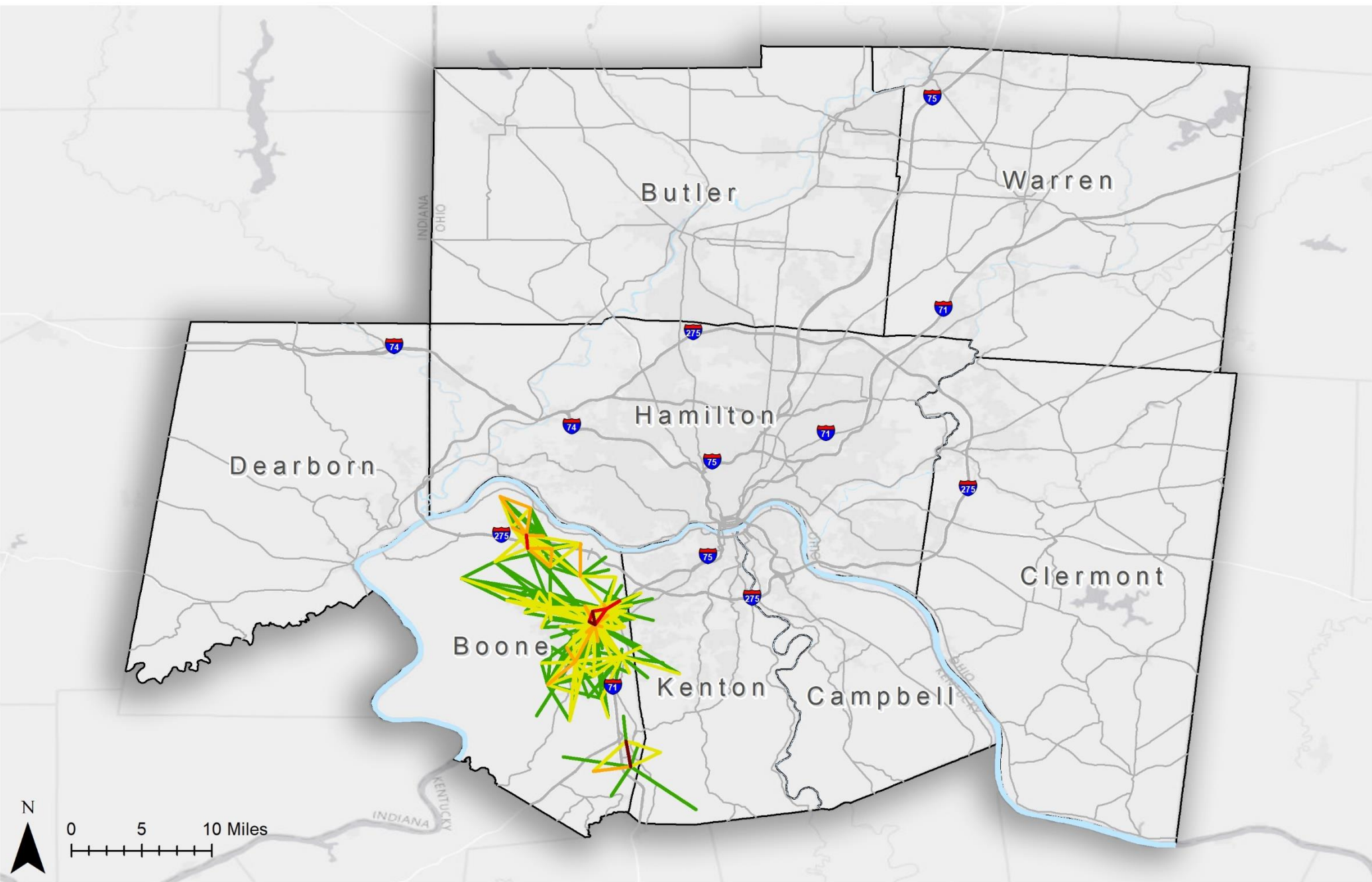


Regional Paratransit meeting presented by Steve Anderson





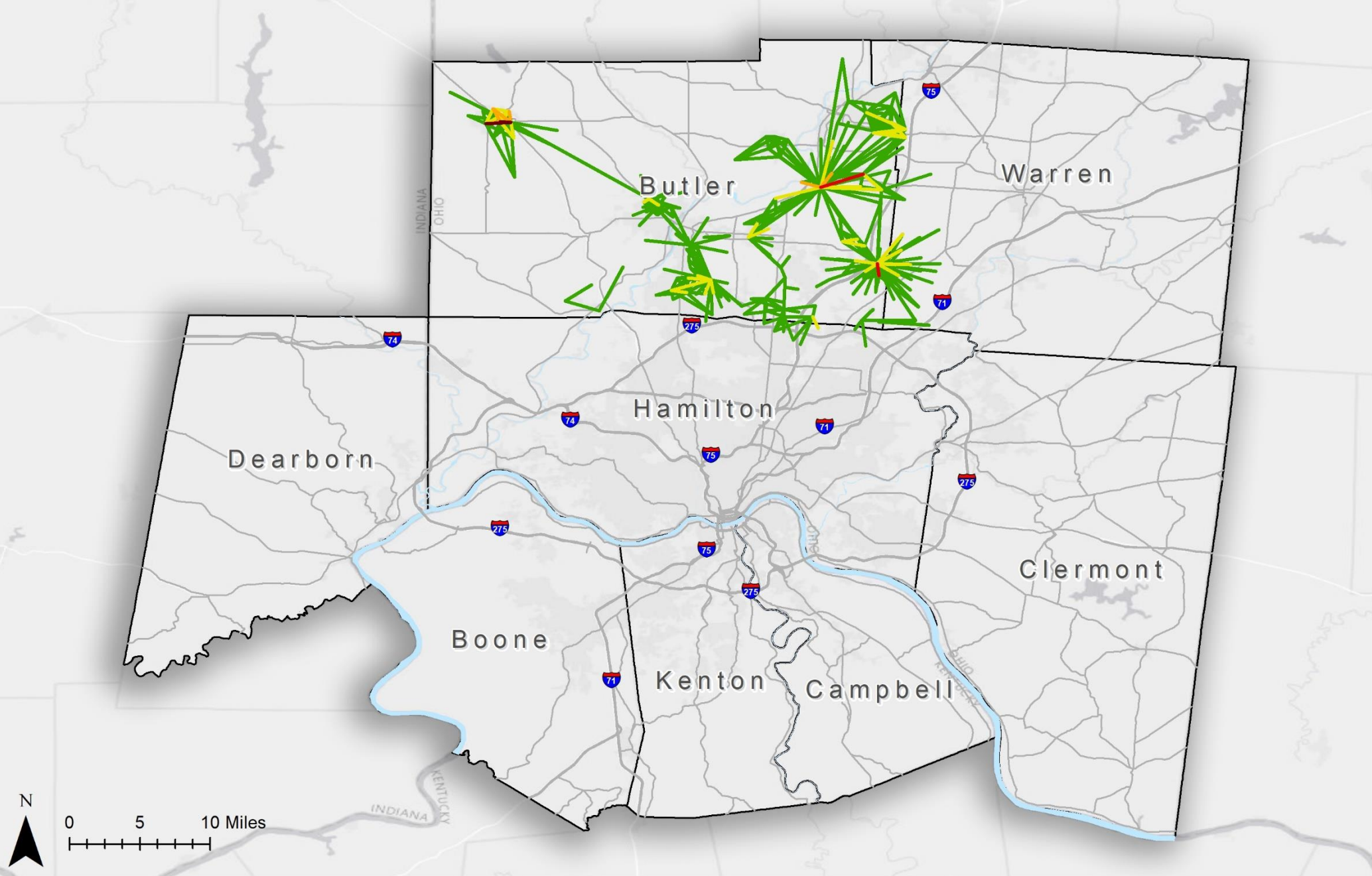
## Appendix B. Average Daily Person-trips by County



Number of Average Daily Trips

- ~ 100-150
- ~ 301-450
- ~ >600
- ~ 151-300
- ~ 451-600

**Map B-1: Average Daily Trips from Boone County**

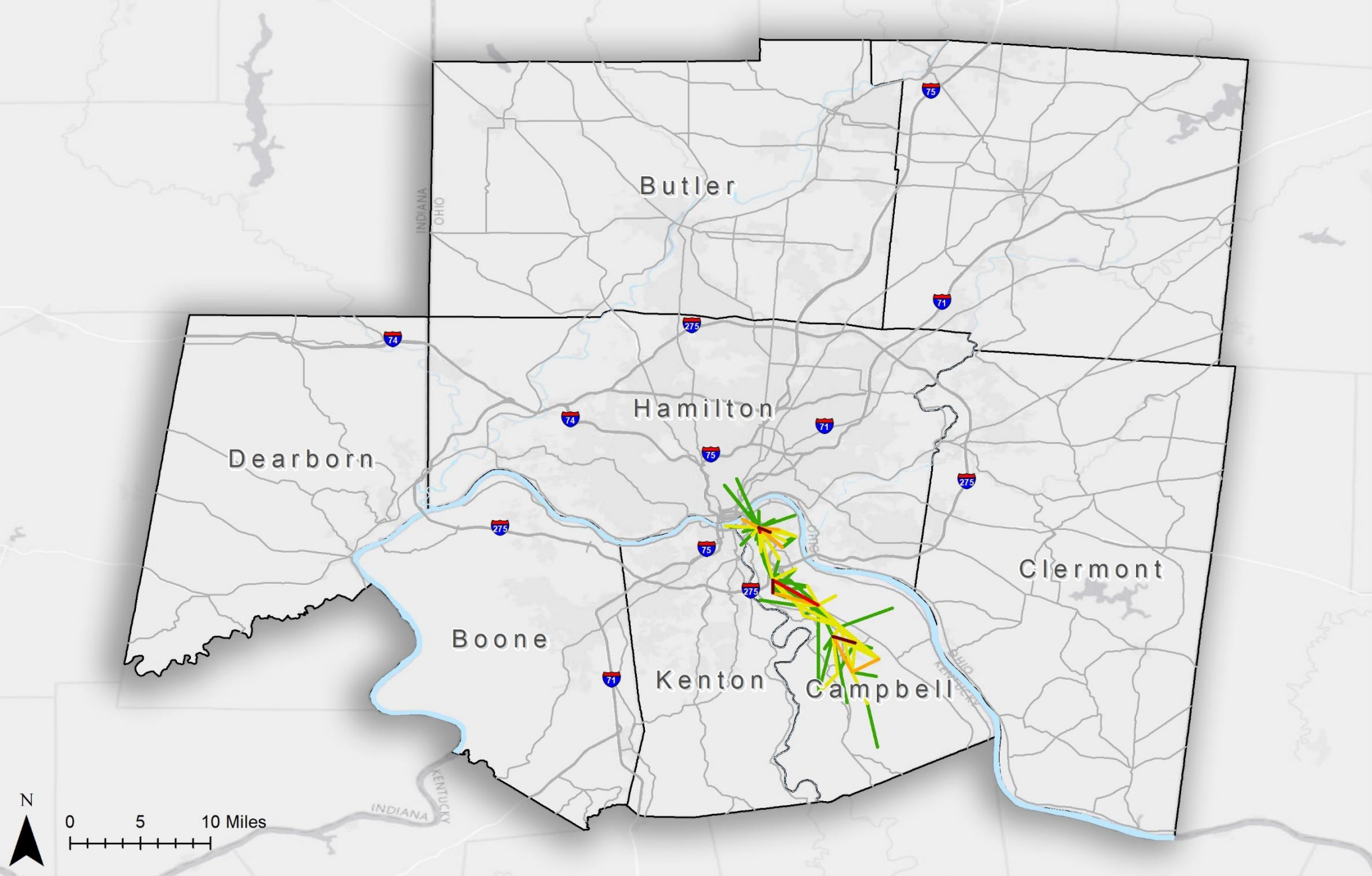


Number of Average Daily Trips

- ~ 100-250
- ~ 501-750
- ~ >1,000
- ~ 251-500
- ~ 751-1,000

Map B-2: Average Daily Trips from Butler County

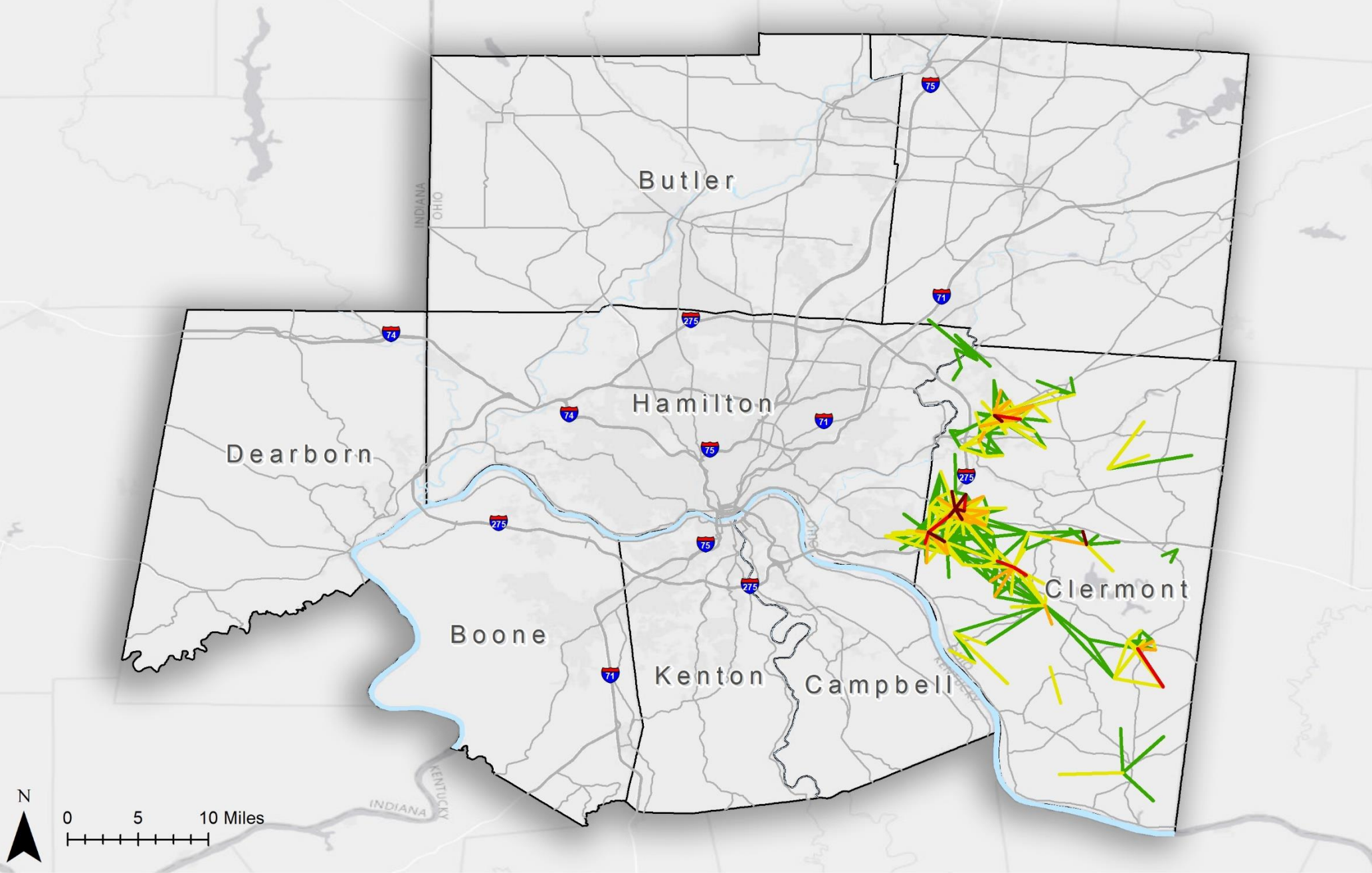




Number of Average Daily Trips

- ~ 100-150
- ~ 251-350
- ~ >400
- ~ 151-250
- ~ 351-400

**Map B-3: Average Daily Trips from Campbell County**

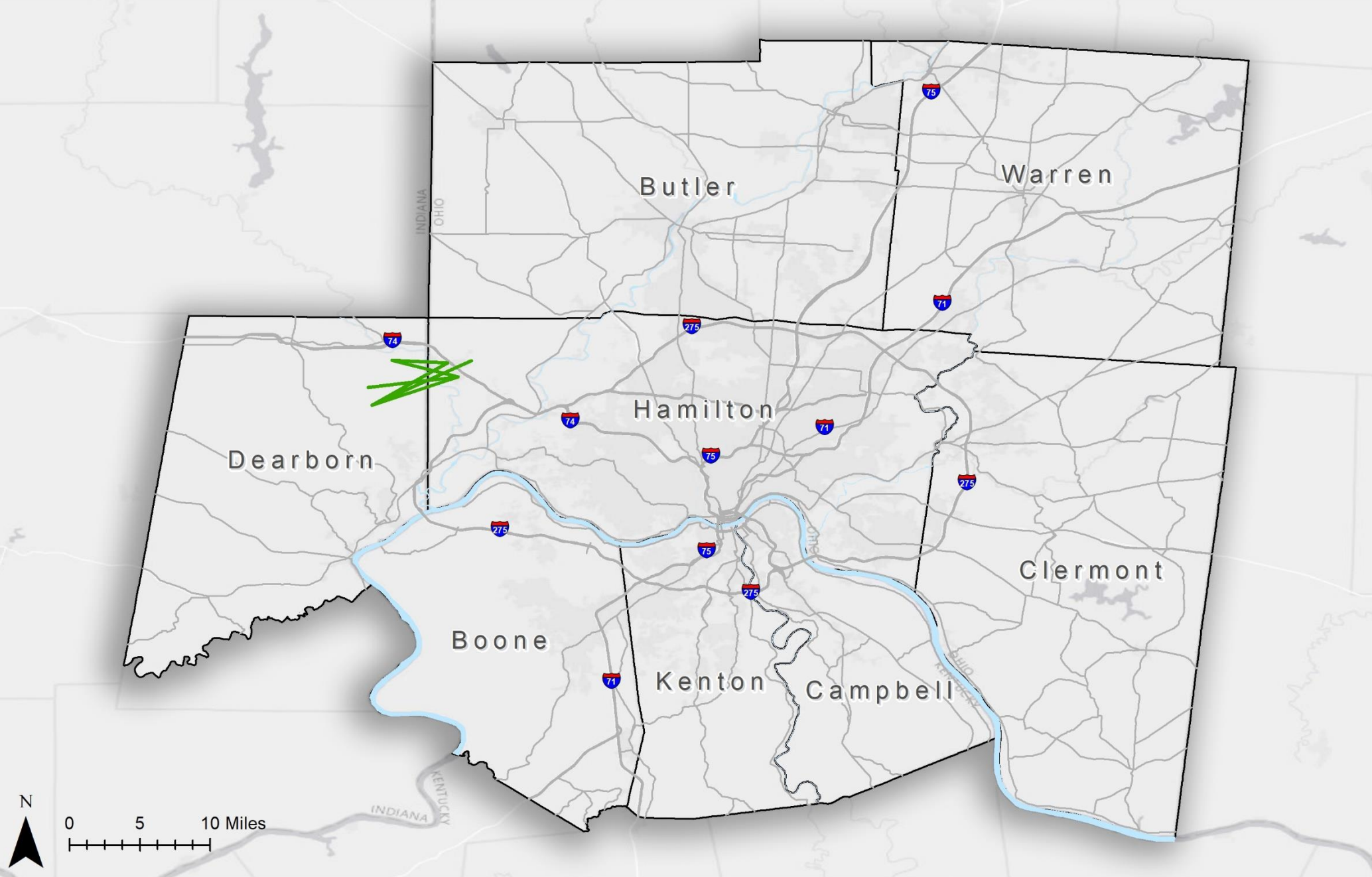


**Map B-4: Average Daily Trips from Clermont County**

**Number of Average Daily Trips**

- ~ 100-150
- ~ 251-350
- ~ >400
- ~ 151-250
- ~ 351-400



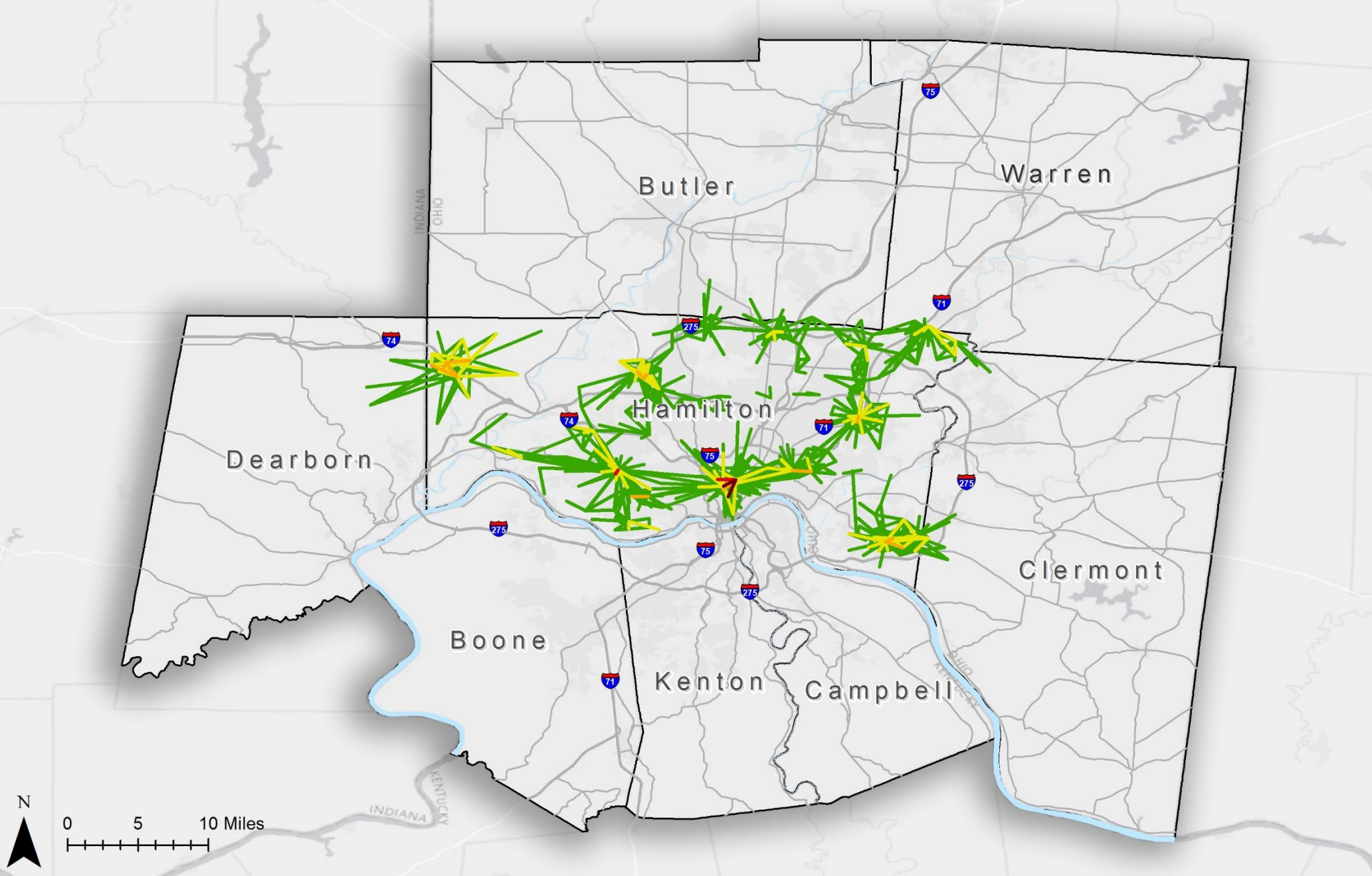


Number of Average Daily Trips



**Map B-5: Average Daily Trips  
from Dearborn County**

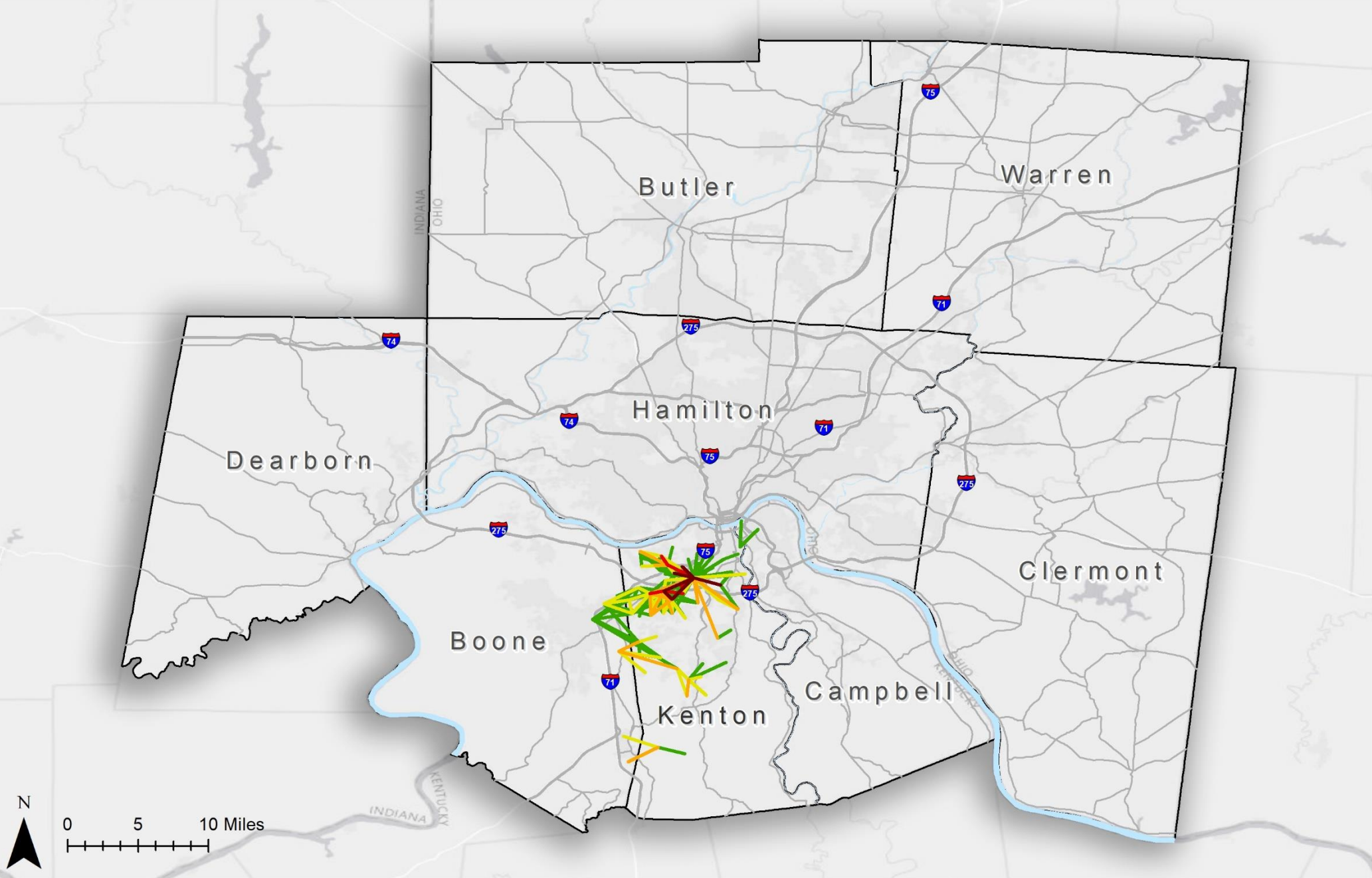




Number of Average Daily Trips

- ~ 100-250
- ~ 501-750
- ~ >1,000
- ~ 251-500
- ~ 751-1,000

**Map B-6: Average Daily Trips from Hamilton County**

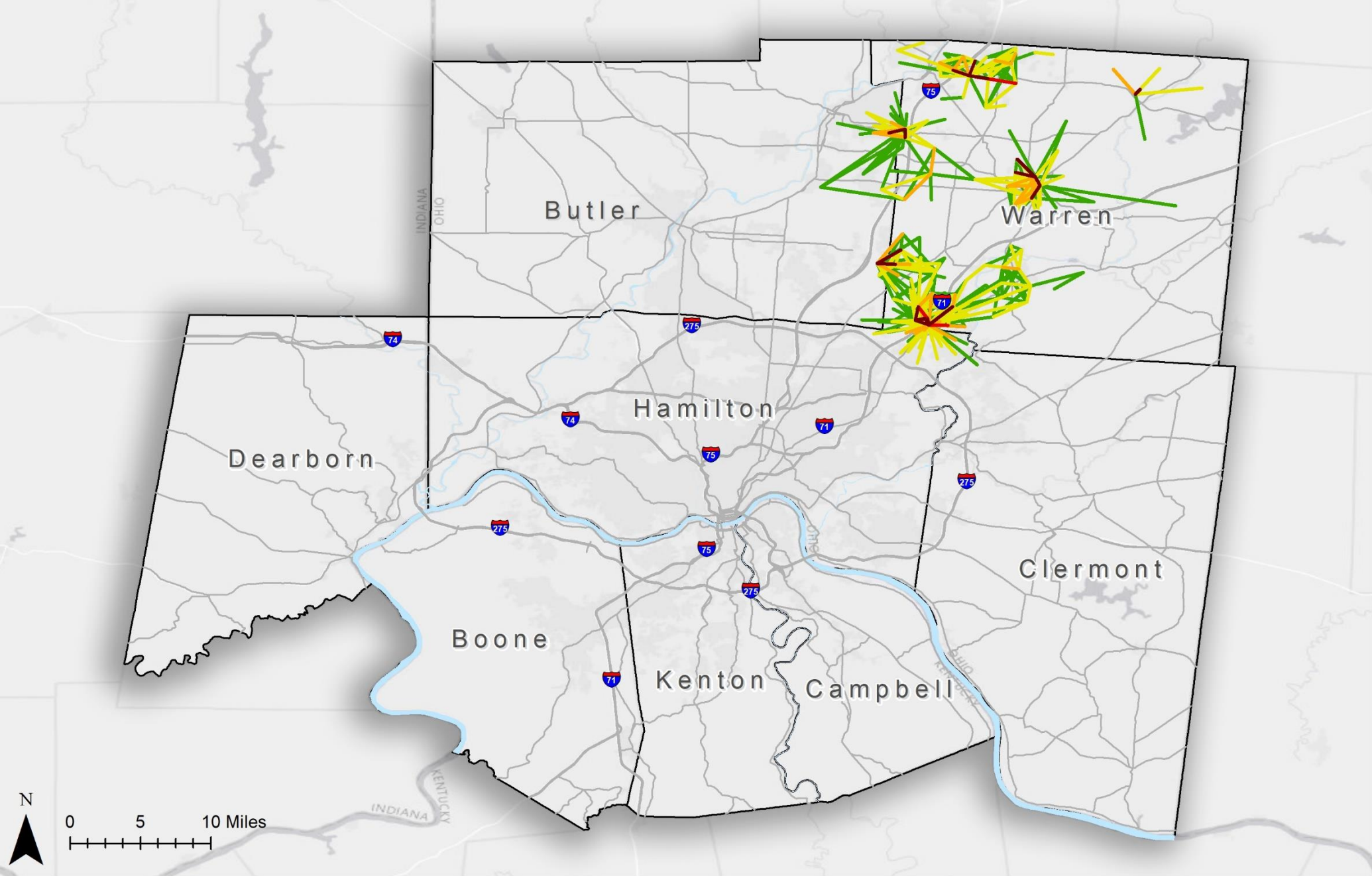


Number of Average Daily Trips

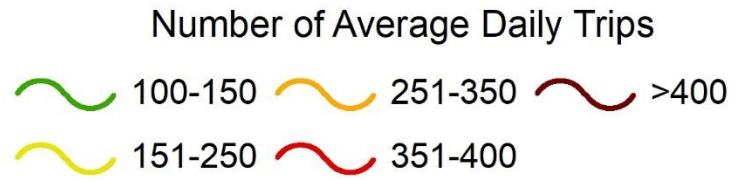
- ~ 100-150
- ~ 201-250
- ~ >300
- ~ 151-200
- ~ 251-300

**Map B-7: Average Daily Trips from Kenton County**





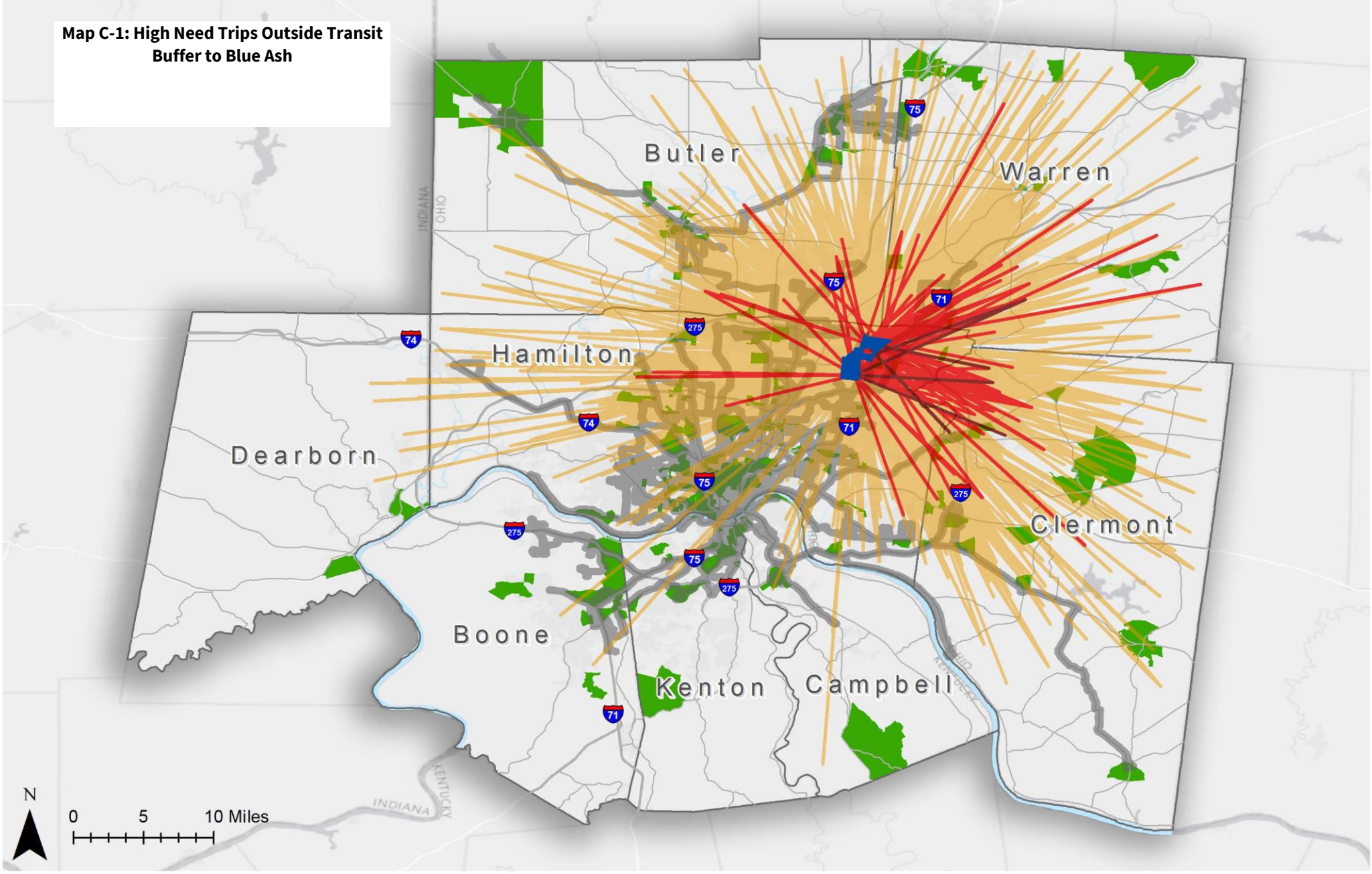
**Map B-8: Average Daily Trips from Warren County**





## Appendix C. Home-Based Work Trips by County

**Map C-1: High Need Trips Outside Transit Buffer to Blue Ash**

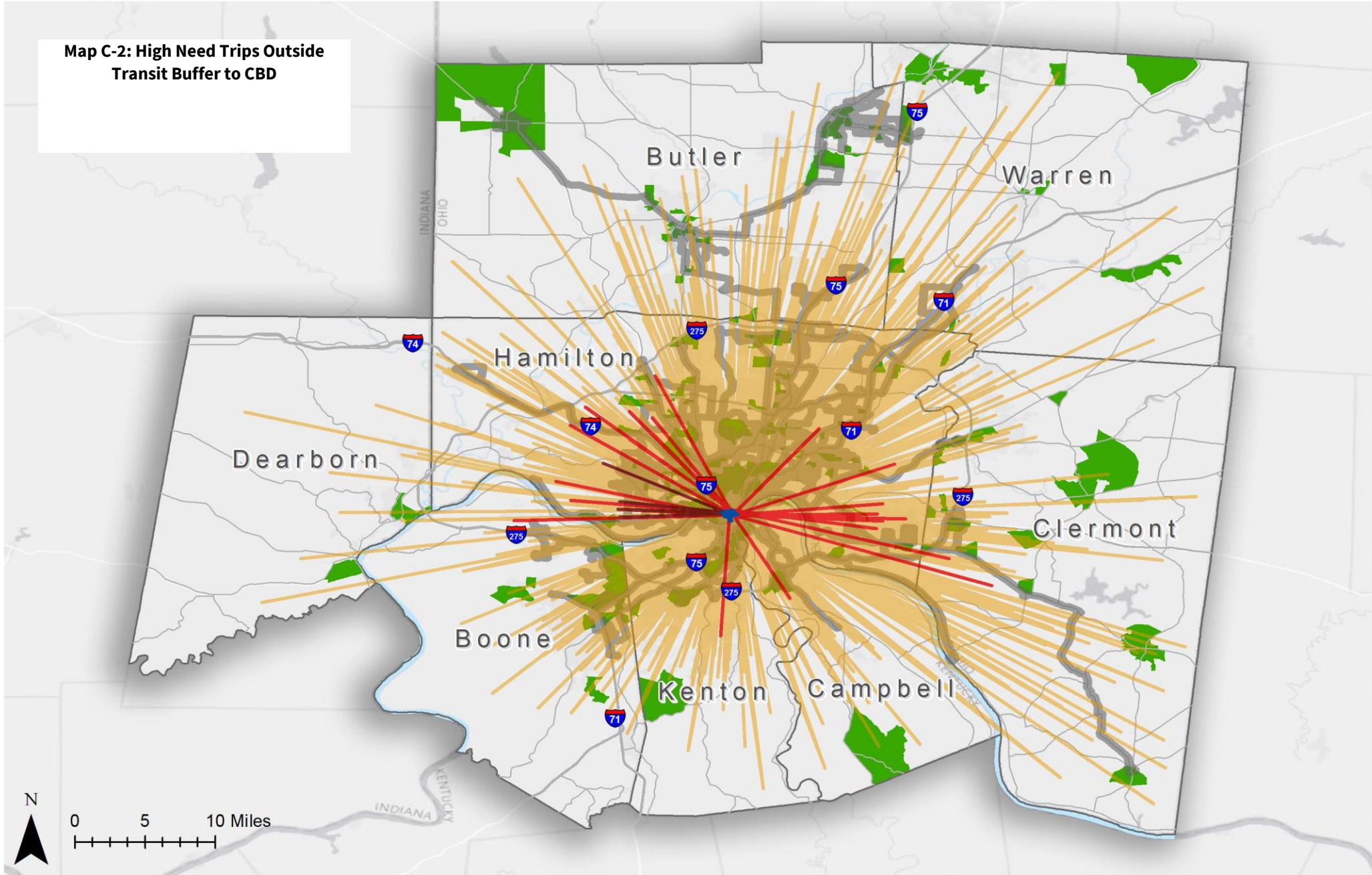


**Trips that Originate from Outside of Transit Buffer to Blue Ash Job Hub- Longer than 6.3 Miles**

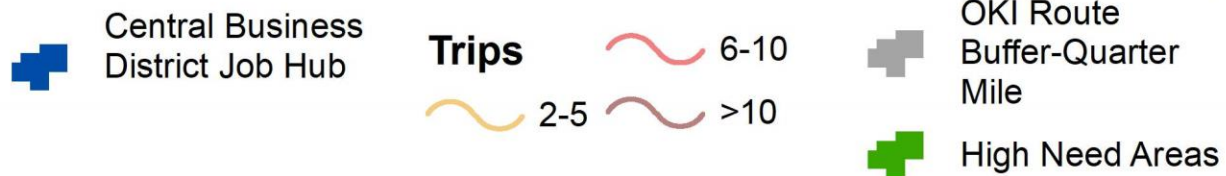




Map C-2: High Need Trips Outside Transit Buffer to CBD

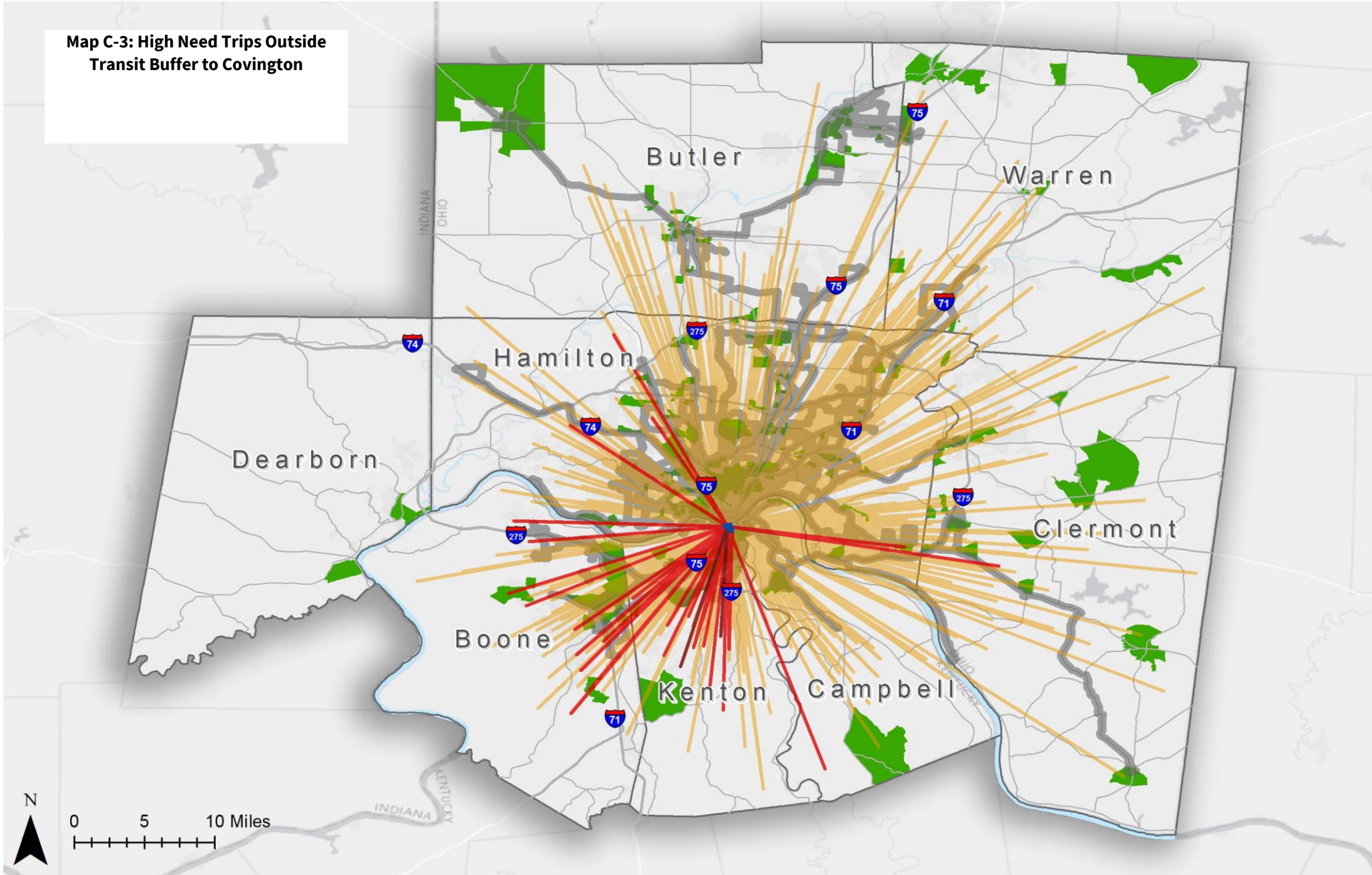


Trips that Originate from Outside of Transit Buffer to Central Business District Job Hub- Longer than 6.3 Miles

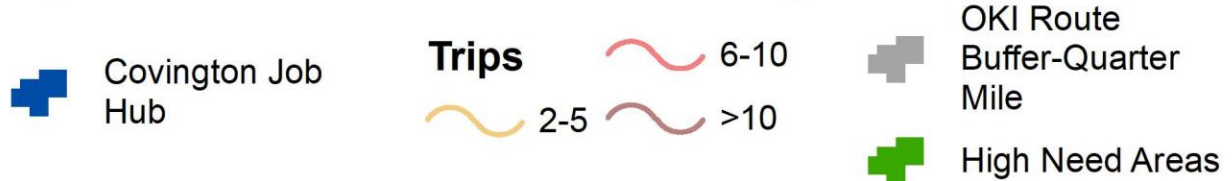




**Map C-3: High Need Trips Outside Transit Buffer to Covington**

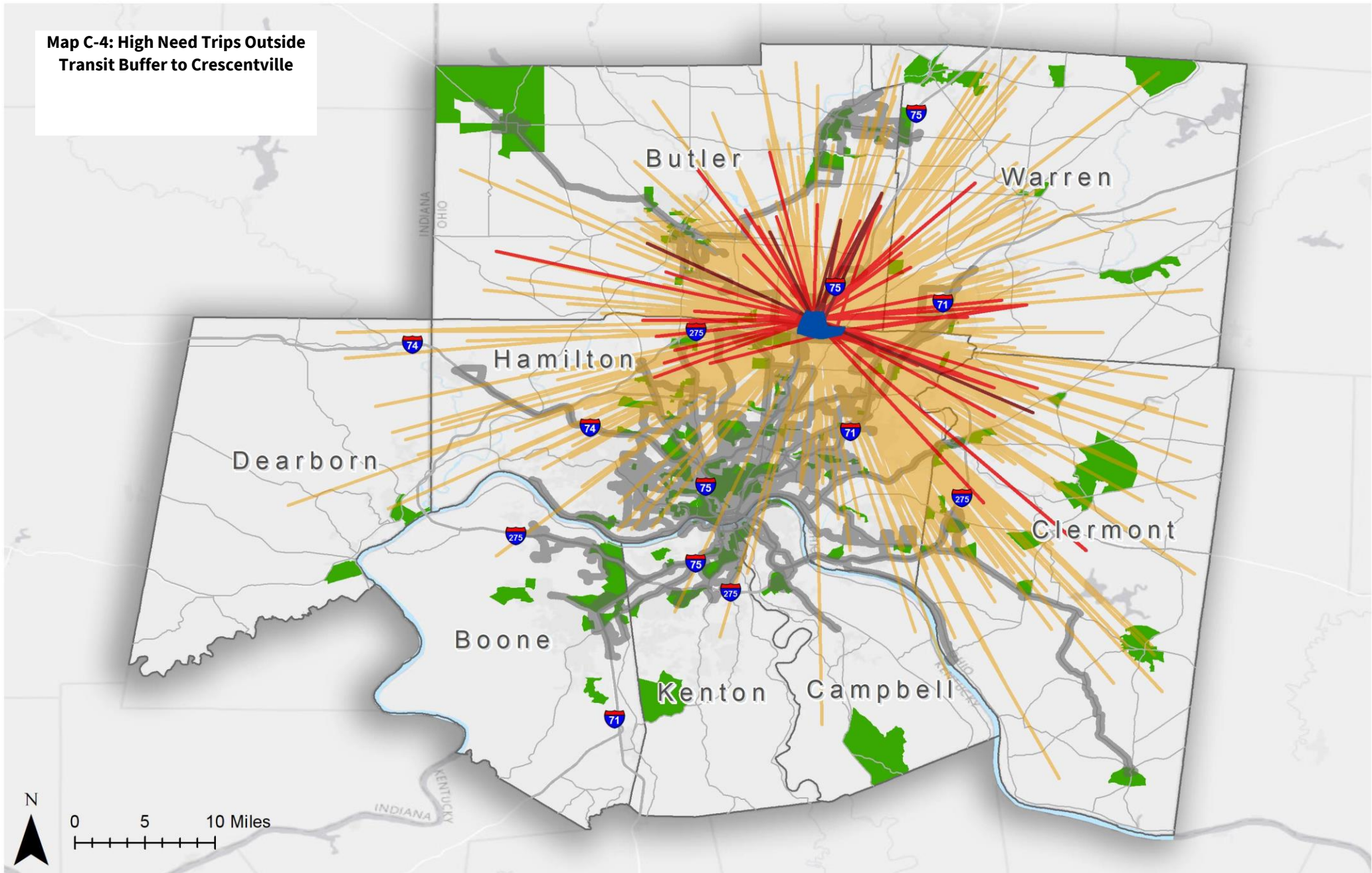


**Trips that Originate from Outside of Transit Buffer to Covington Job Hub- Longer than 6.3 Miles**





**Map C-4: High Need Trips Outside Transit Buffer to Crescentville**

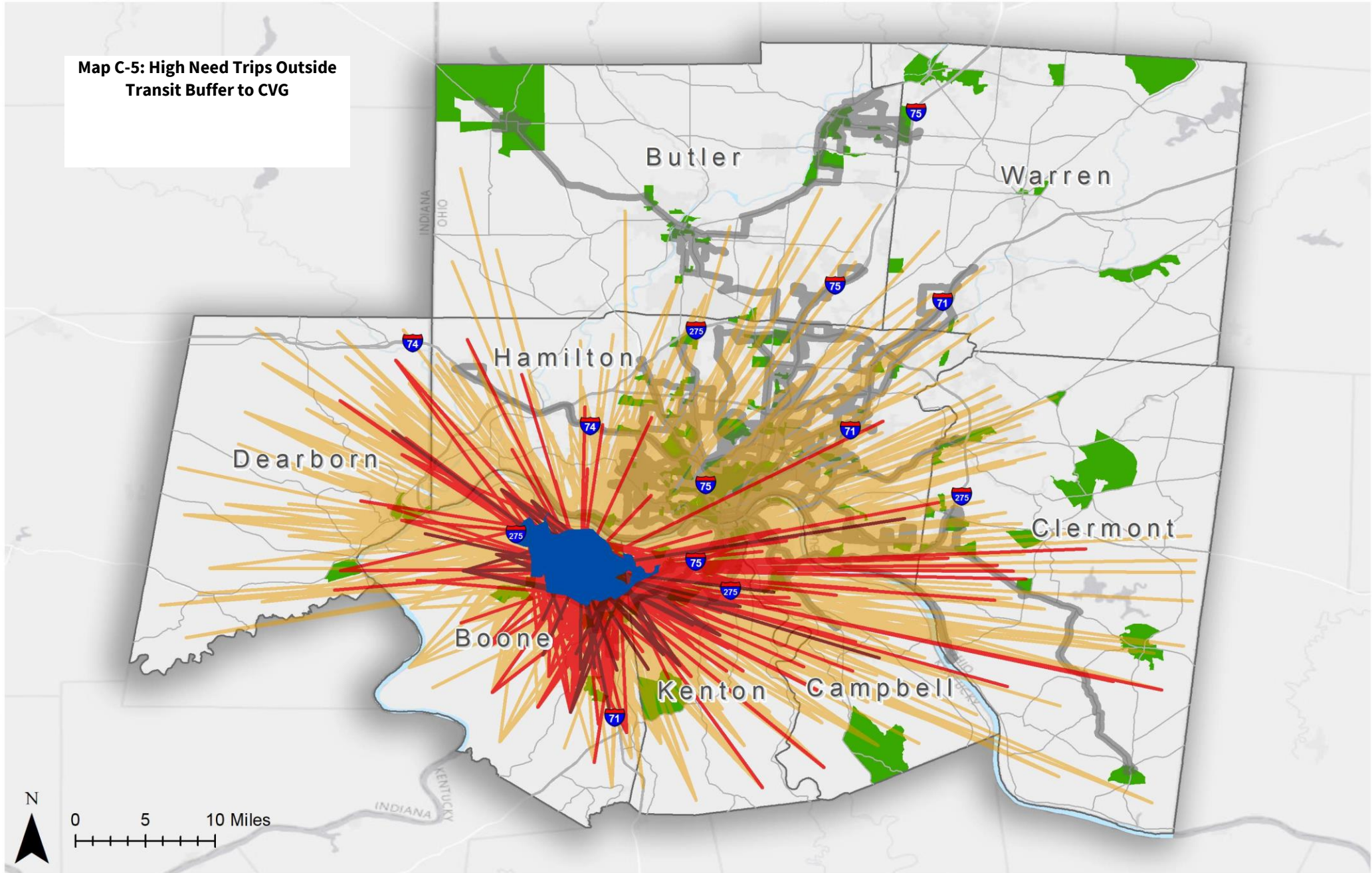


**Trips that Originate from Outside of Transit Buffer to Crescentville Job Hub- Longer than 6.3 Miles**

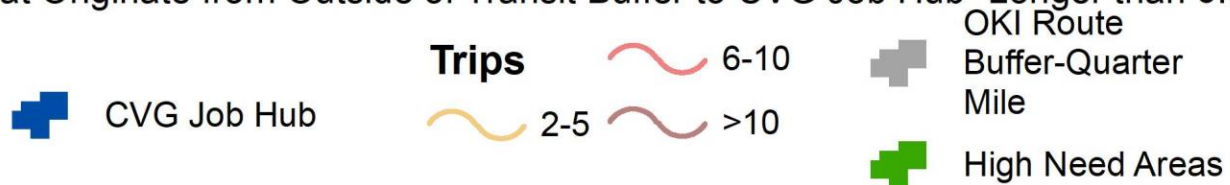




Map C-5: High Need Trips Outside Transit Buffer to CVG

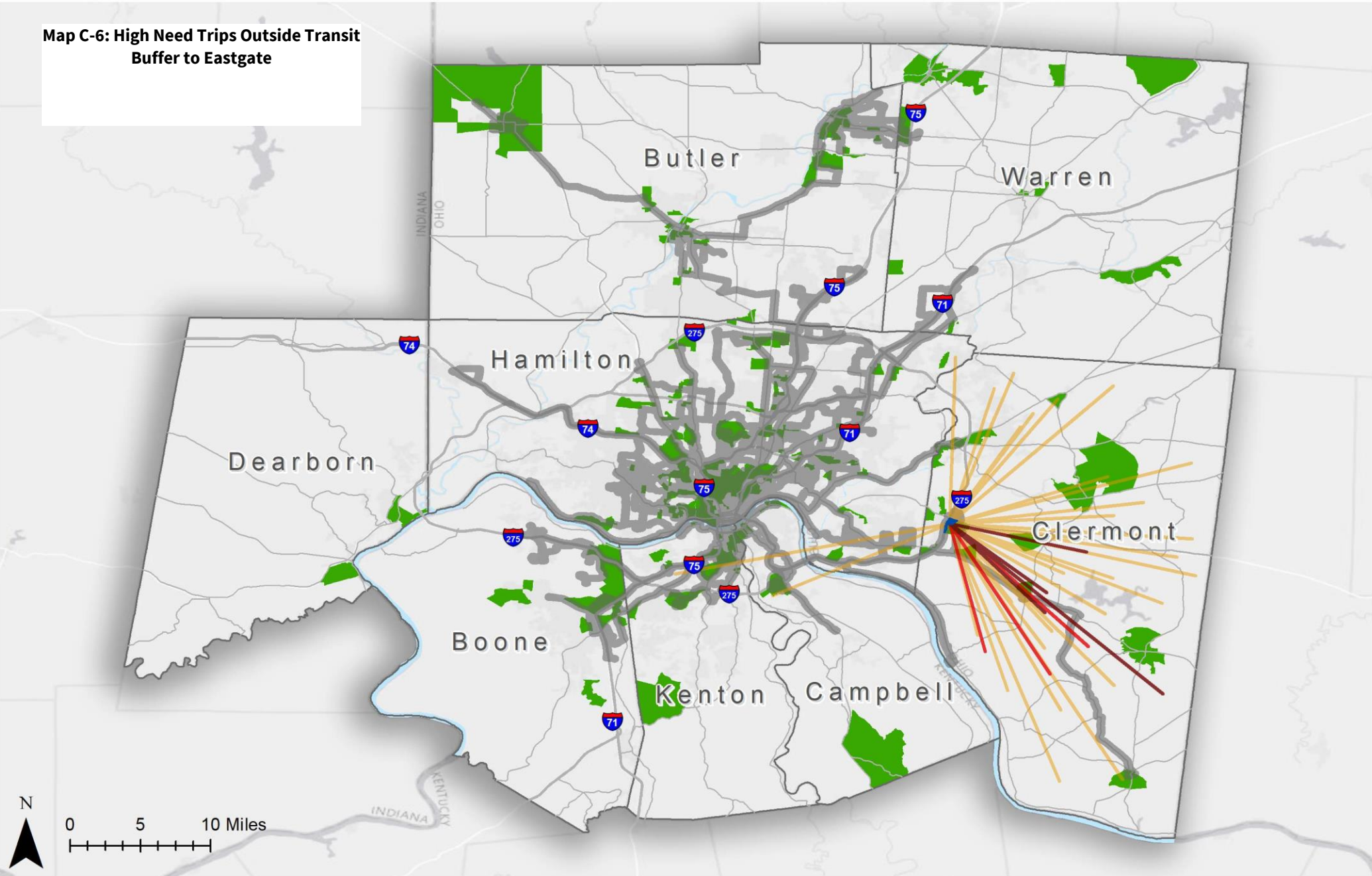


Trips that Originate from Outside of Transit Buffer to CVG Job Hub- Longer than 6.3 Miles

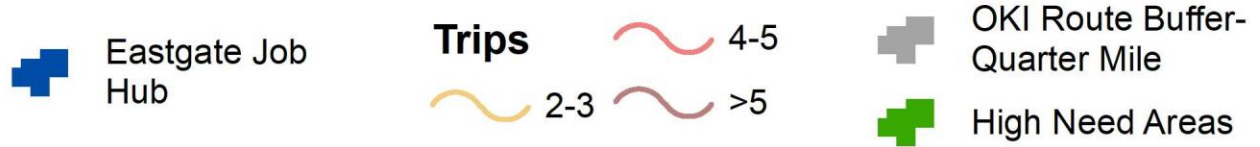




Map C-6: High Need Trips Outside Transit Buffer to Eastgate

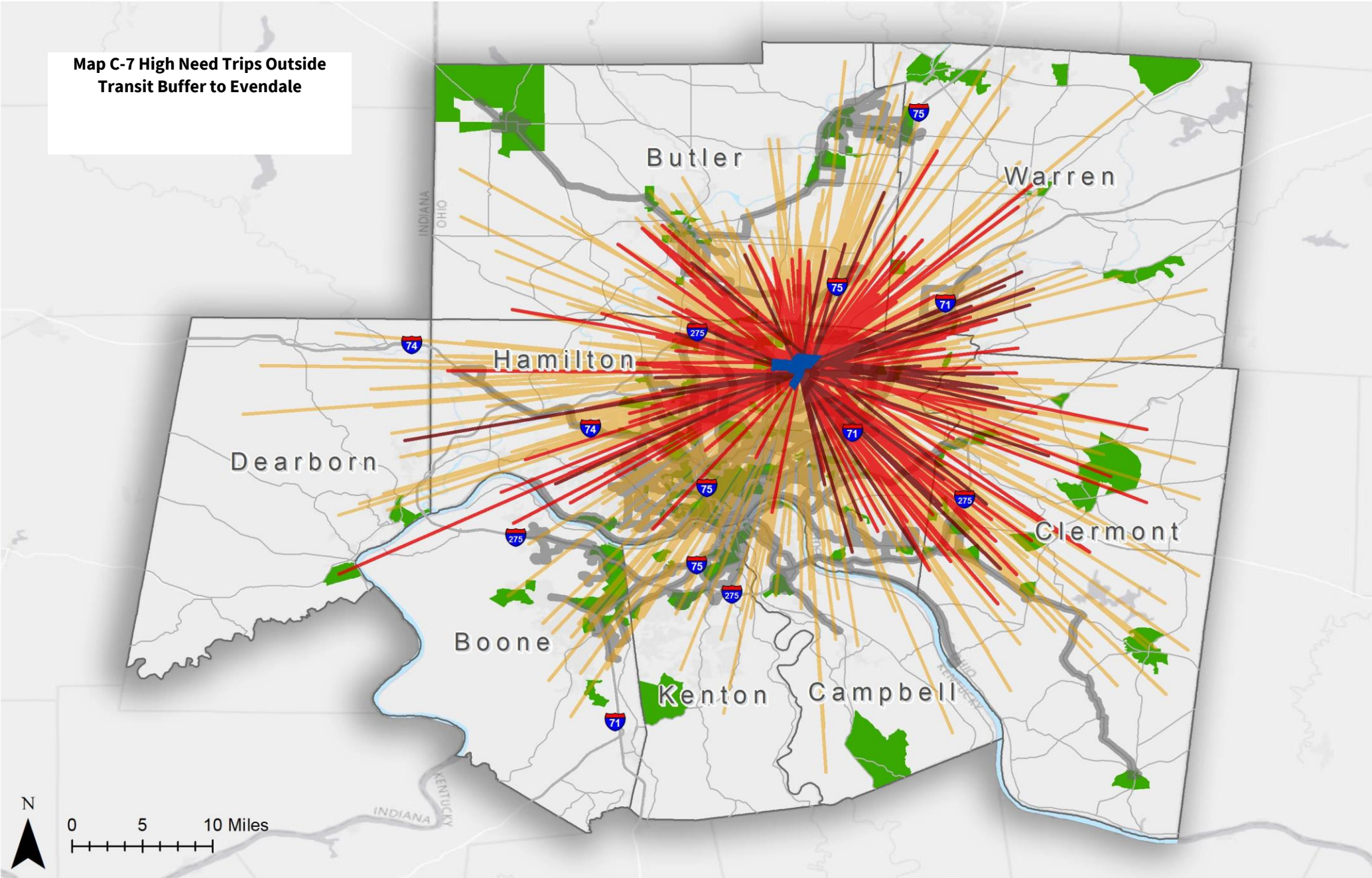


Trips that Originate from Outside of Transit Buffer to Eastgate Job Hub- Longer than 6.3 Miles

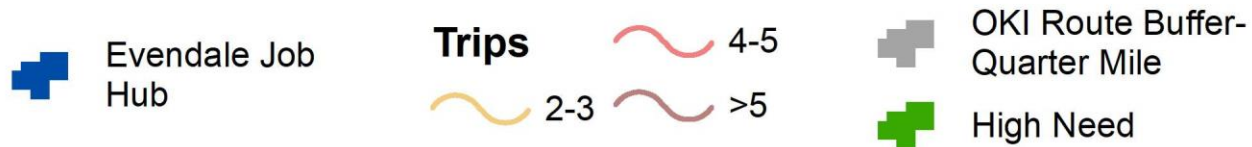




Map C-7 High Need Trips Outside Transit Buffer to Evendale

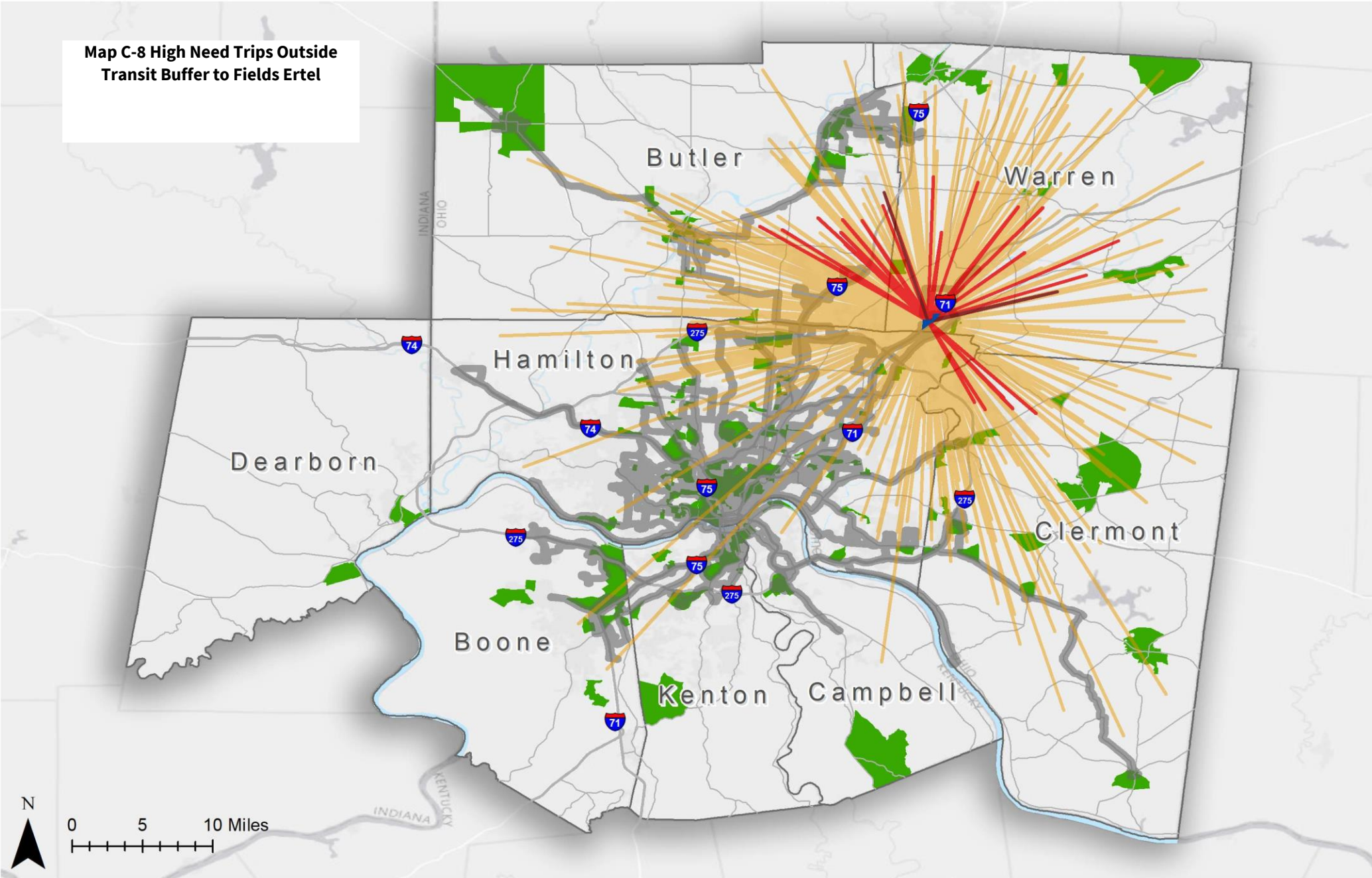


Trips that Originate from Outside of Transit Buffer to Evendale Job Hub- Longer than 6.3 Miles

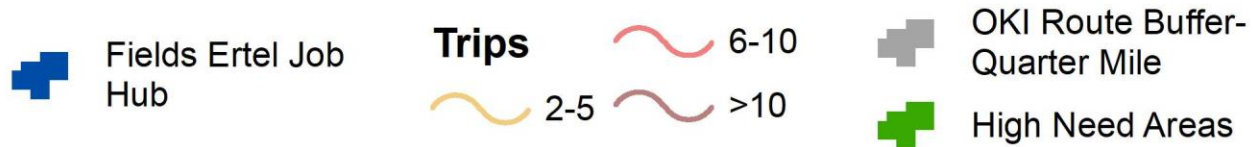




**Map C-8 High Need Trips Outside Transit Buffer to Fields Ertel**

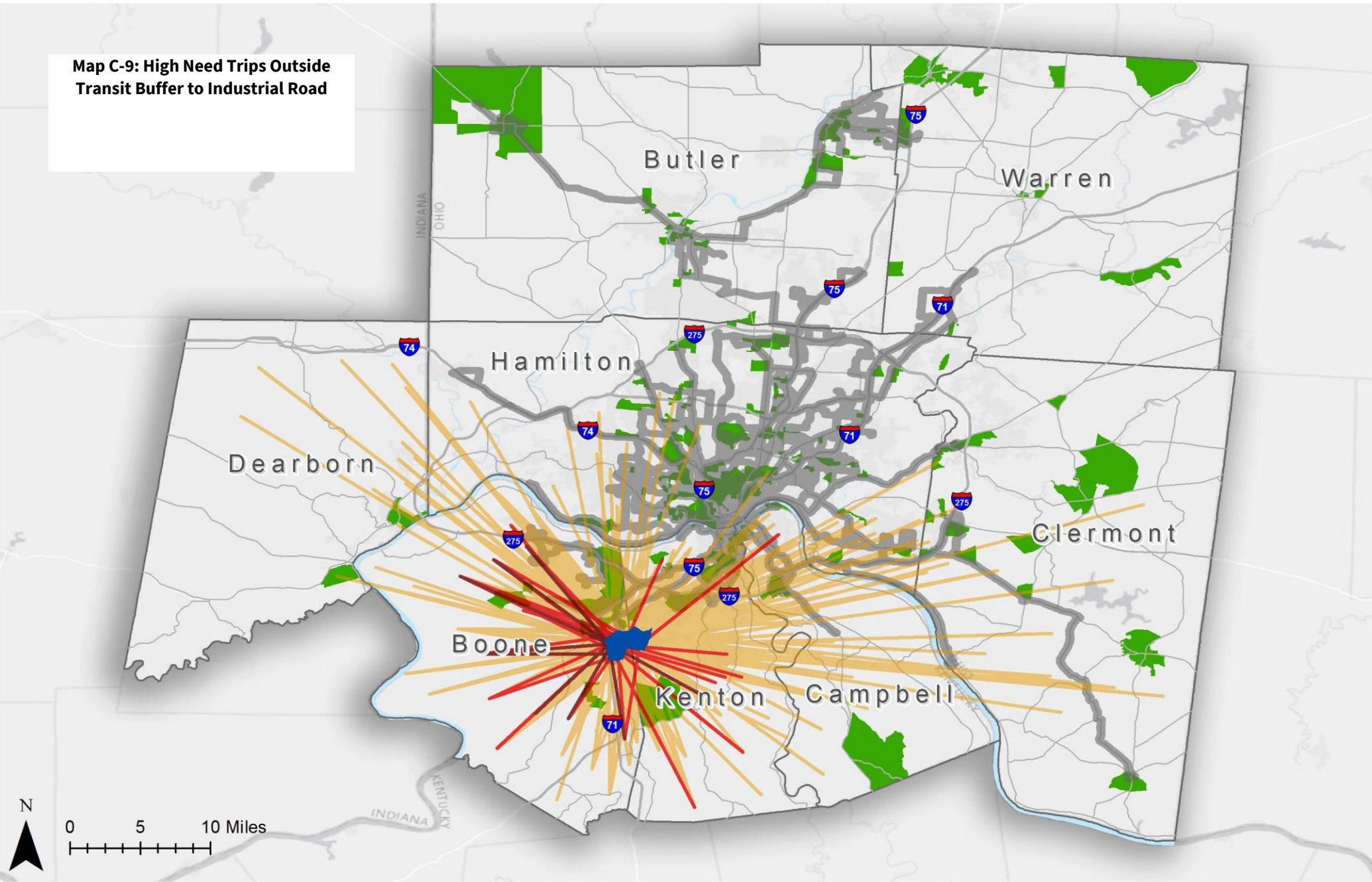


**Trips that Originate from Outside of Transit Buffer to Fields Ertel Job Hub- Longer than 6.3 Miles**

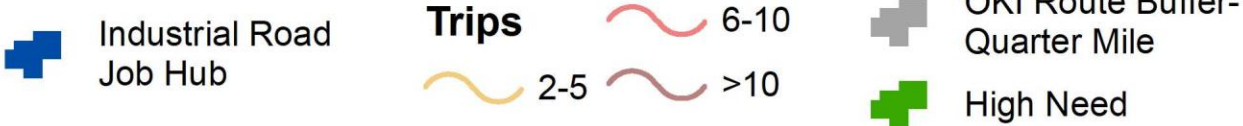




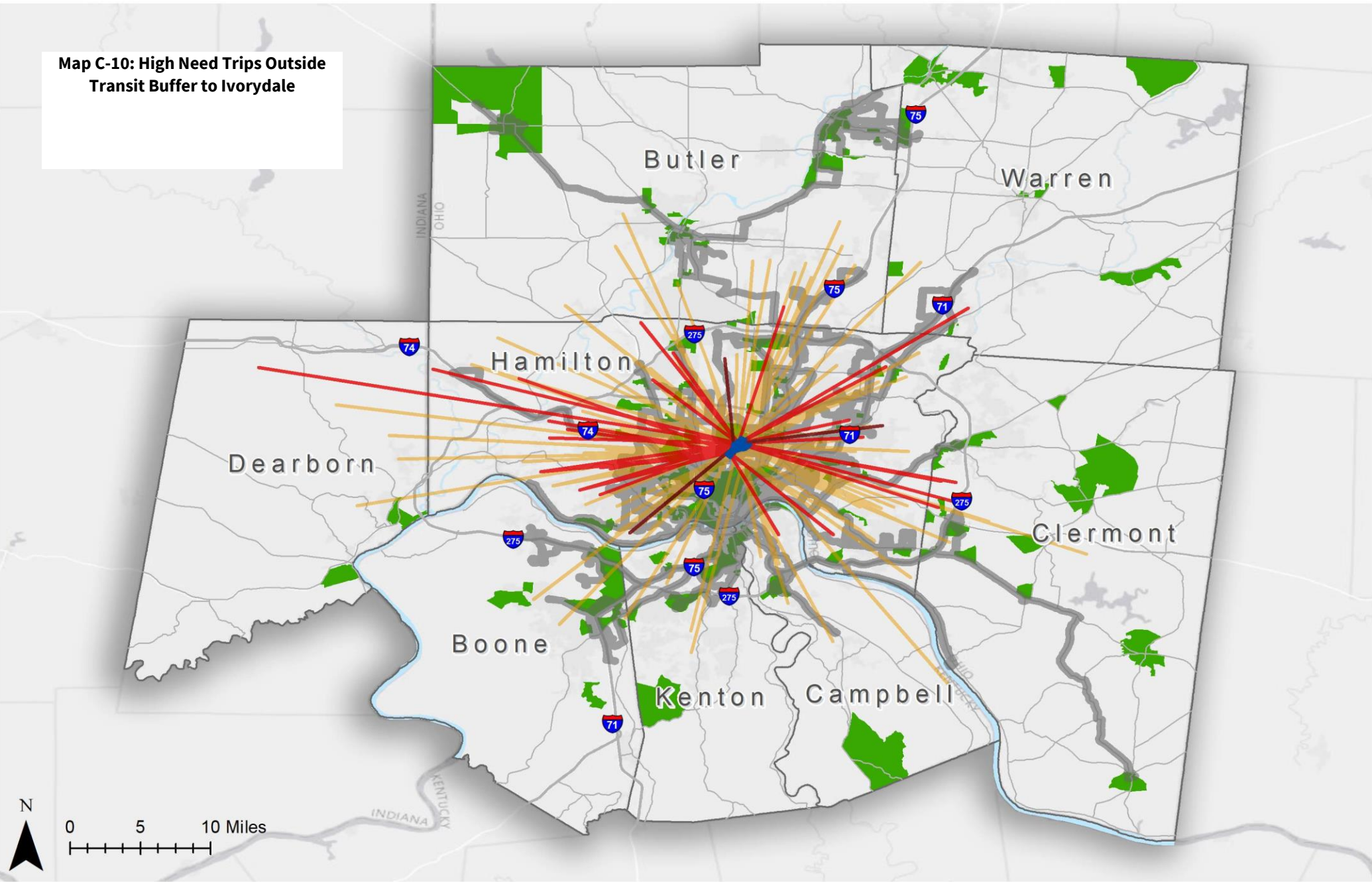
Map C-9: High Need Trips Outside Transit Buffer to Industrial Road



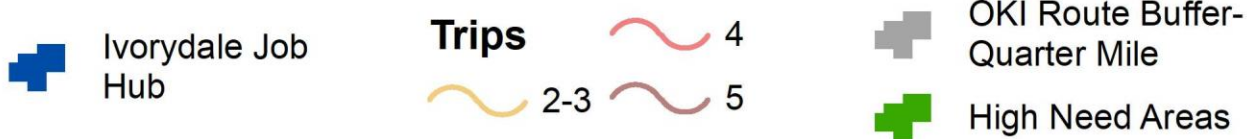
Trips that Originate from Outside of Transit Buffer to Industrial Road Job Hub- Longer than 6.3 Miles



**Map C-10: High Need Trips Outside Transit Buffer to Ivorydale**

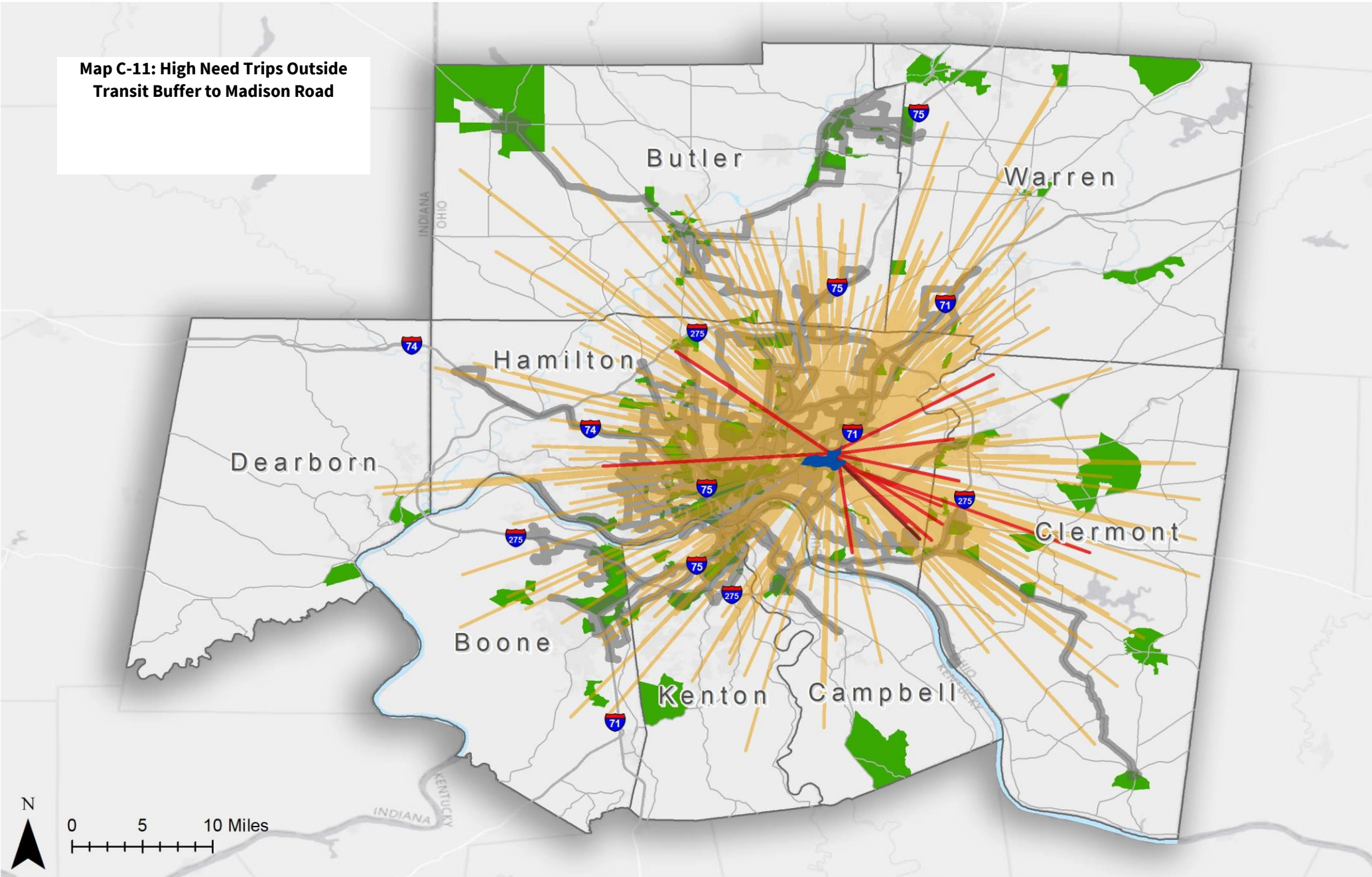


**Trips that Originate from Outside of Transit Buffer to Ivorydale Job Hub- Longer than 6.3 Miles**

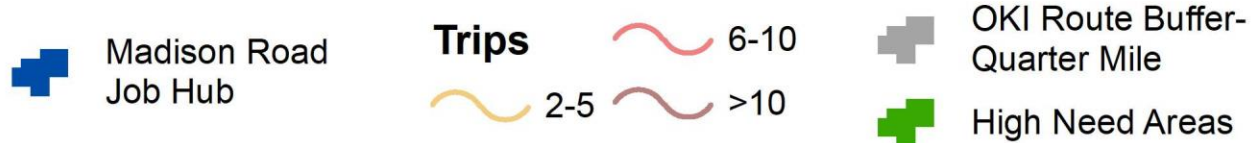




Map C-11: High Need Trips Outside Transit Buffer to Madison Road

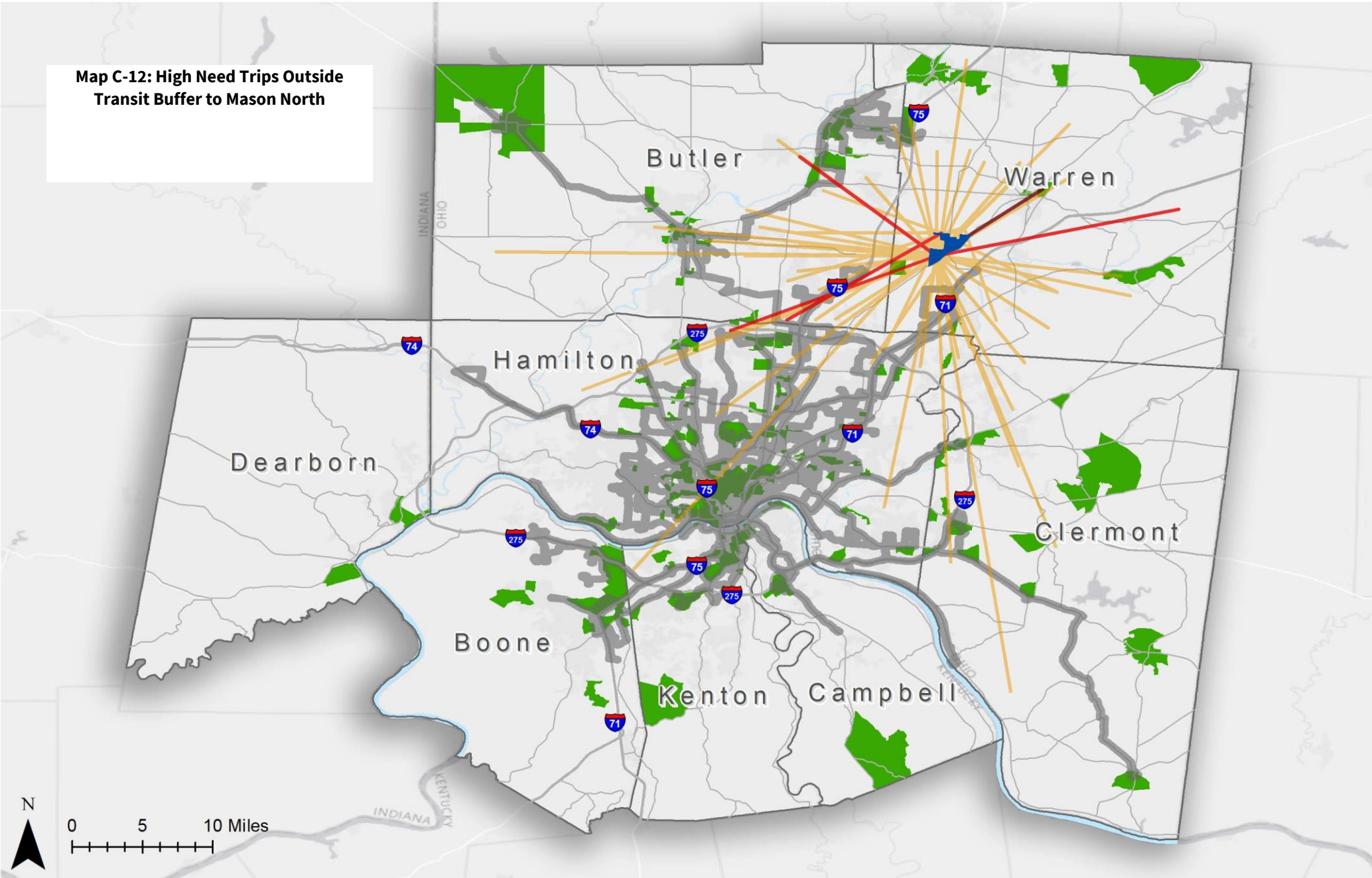


Trips that Originate from Outside of Transit Buffer to Madison Road Job Hub- Longer than 6.3 Miles

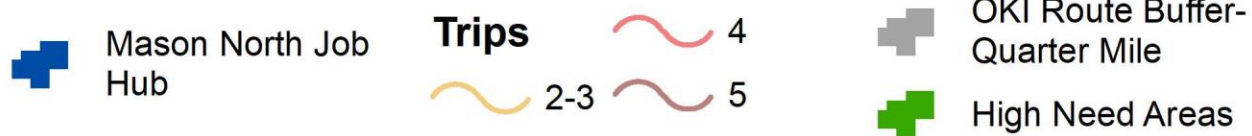




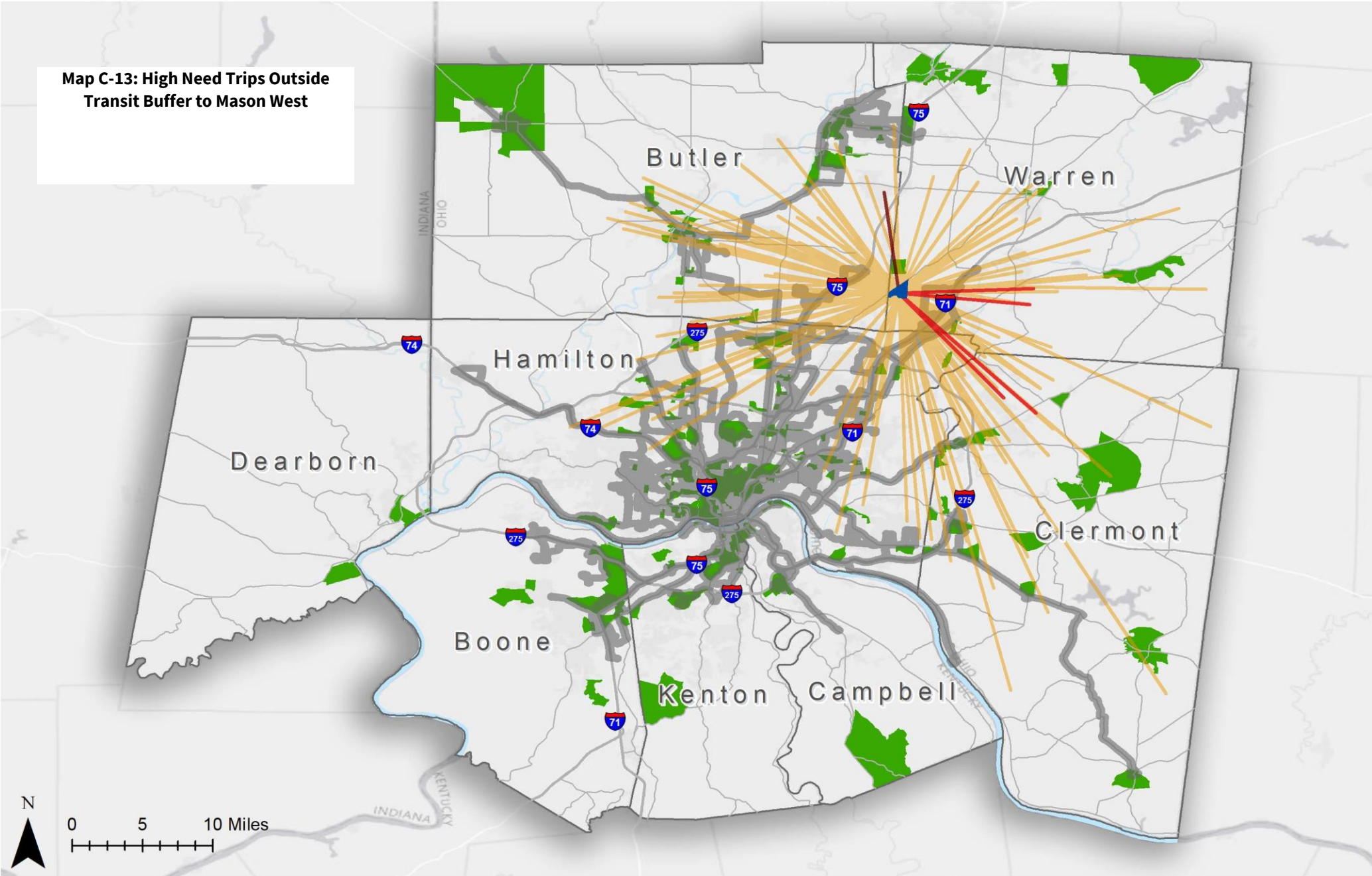
Map C-12: High Need Trips Outside Transit Buffer to Mason North



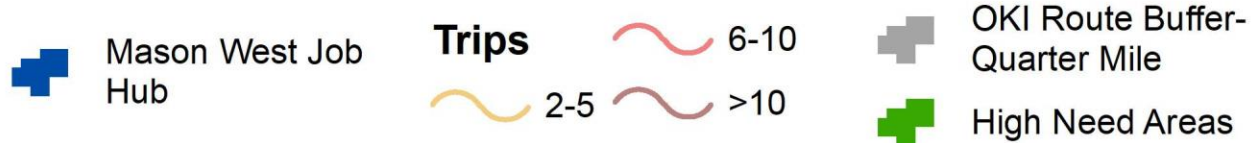
Trips that Originate from Outside of Transit Buffer to Mason North Job Hub- Longer than 6.3 Miles



**Map C-13: High Need Trips Outside Transit Buffer to Mason West**

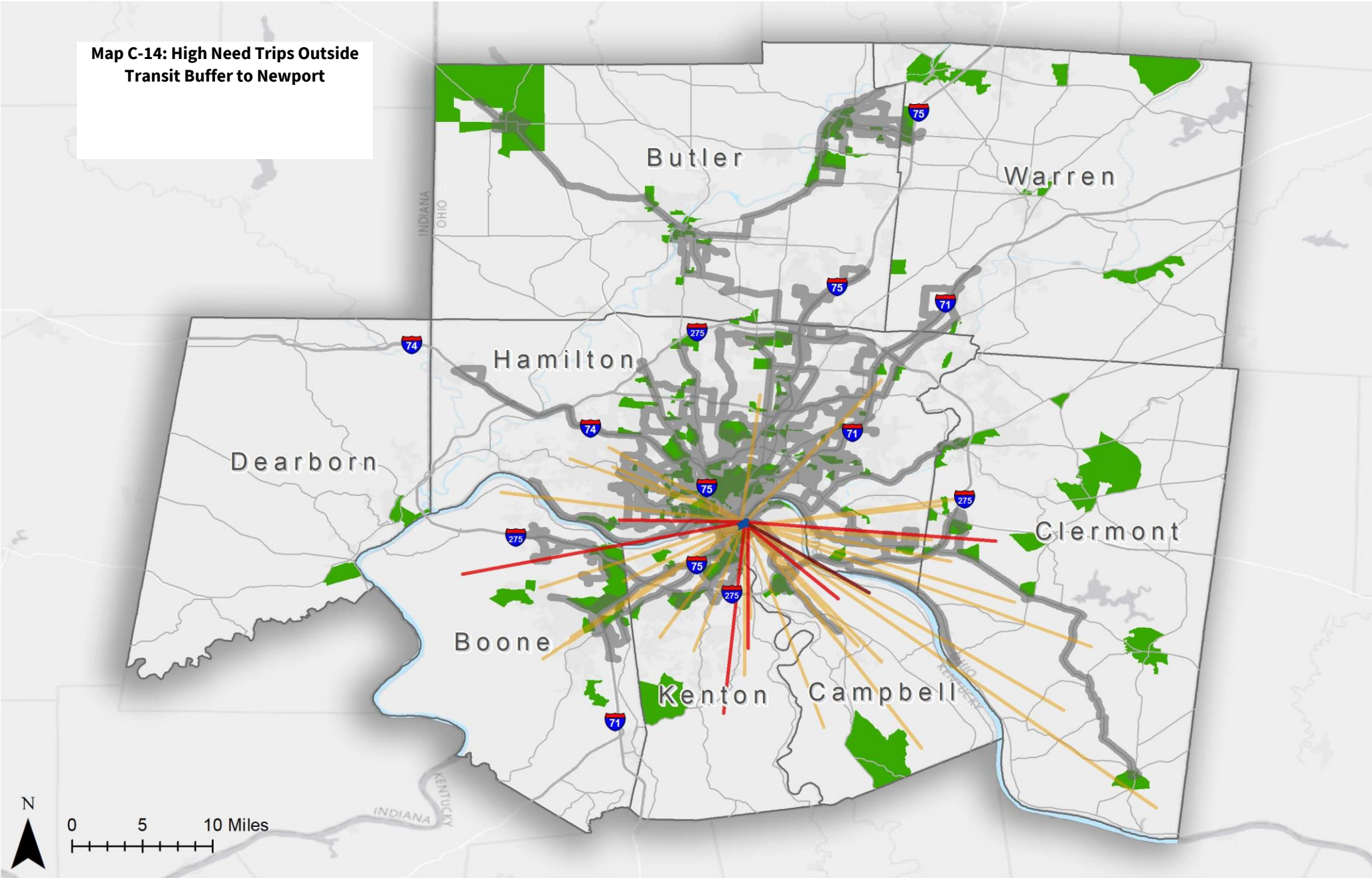


**Trips that Originate from Outside of Transit Buffer to Mason West Job Hub- Longer than 6.3 Miles**

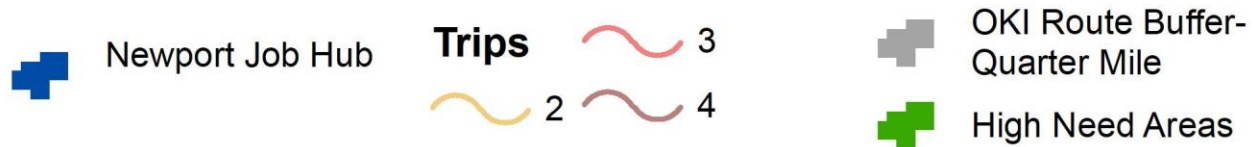




Map C-14: High Need Trips Outside Transit Buffer to Newport

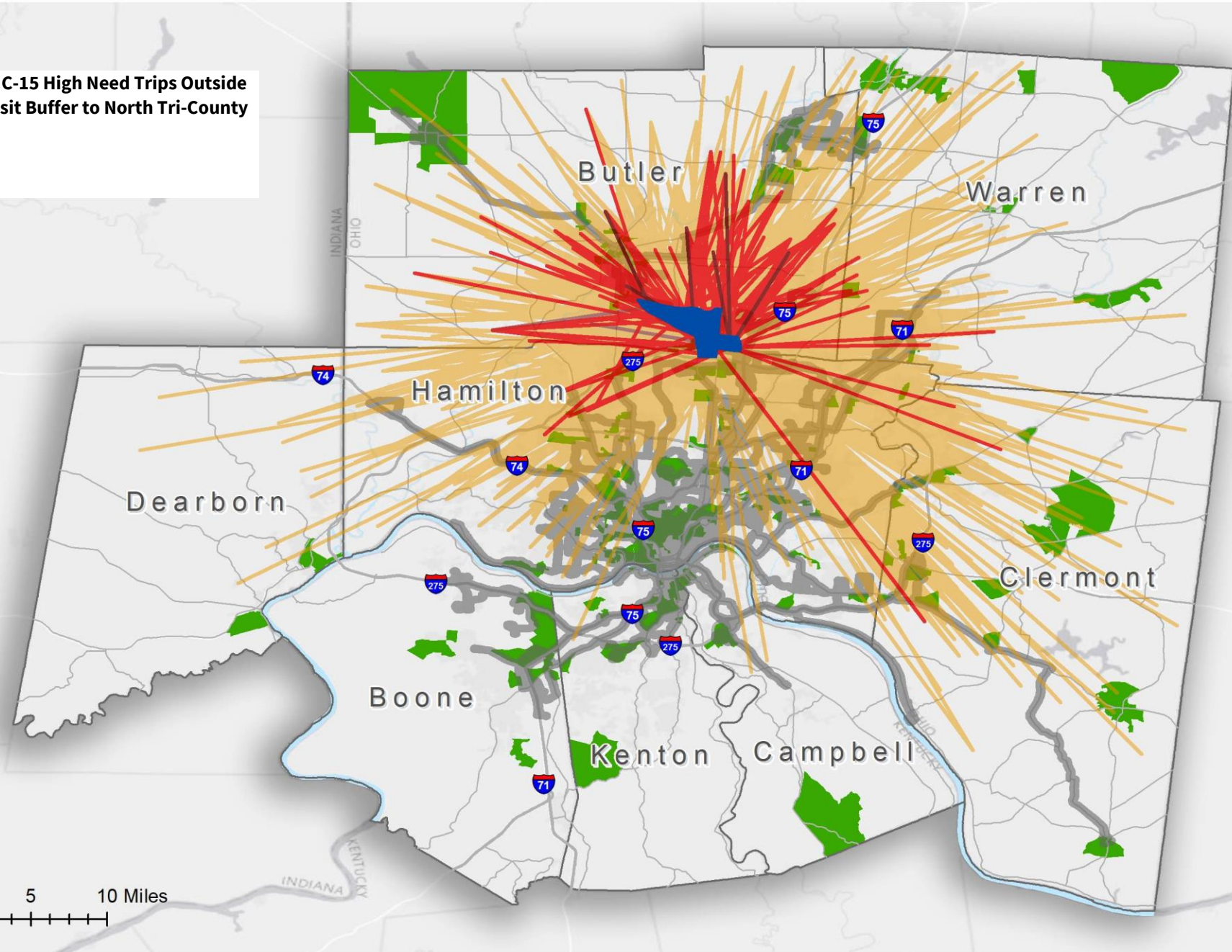


Trips that Originate from Outside of Transit Buffer to Newport Job Hub- Longer than 6.3 Miles

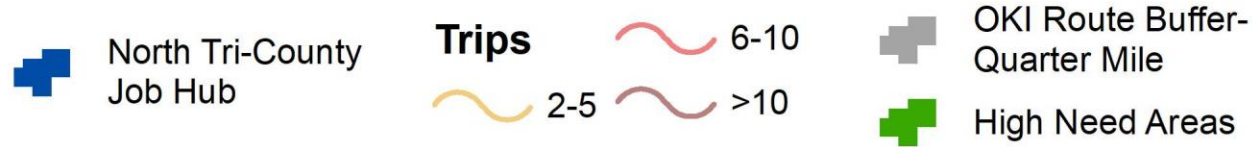




Map C-15 High Need Trips Outside Transit Buffer to North Tri-County

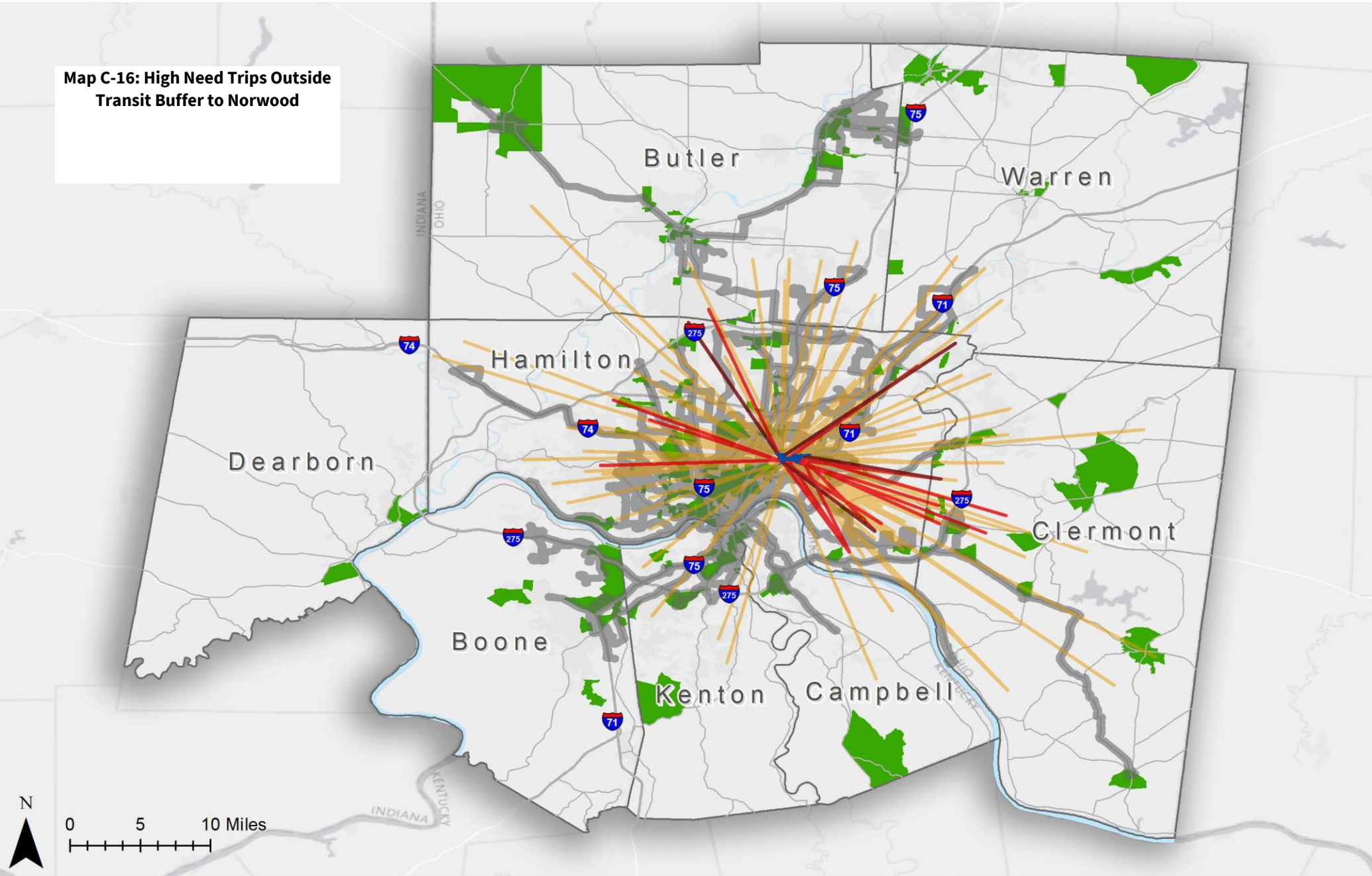


Trips that Originate from Outside of Transit Buffer to North Tri-County Job Hub- Longer than 6.3 Miles

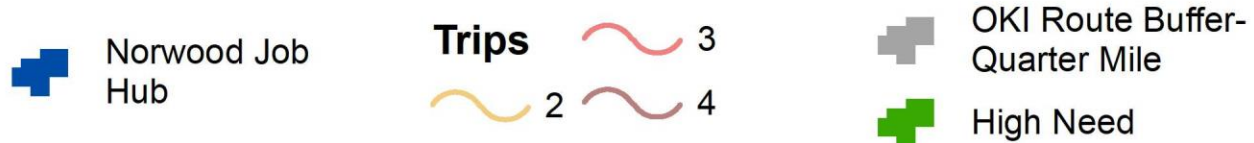




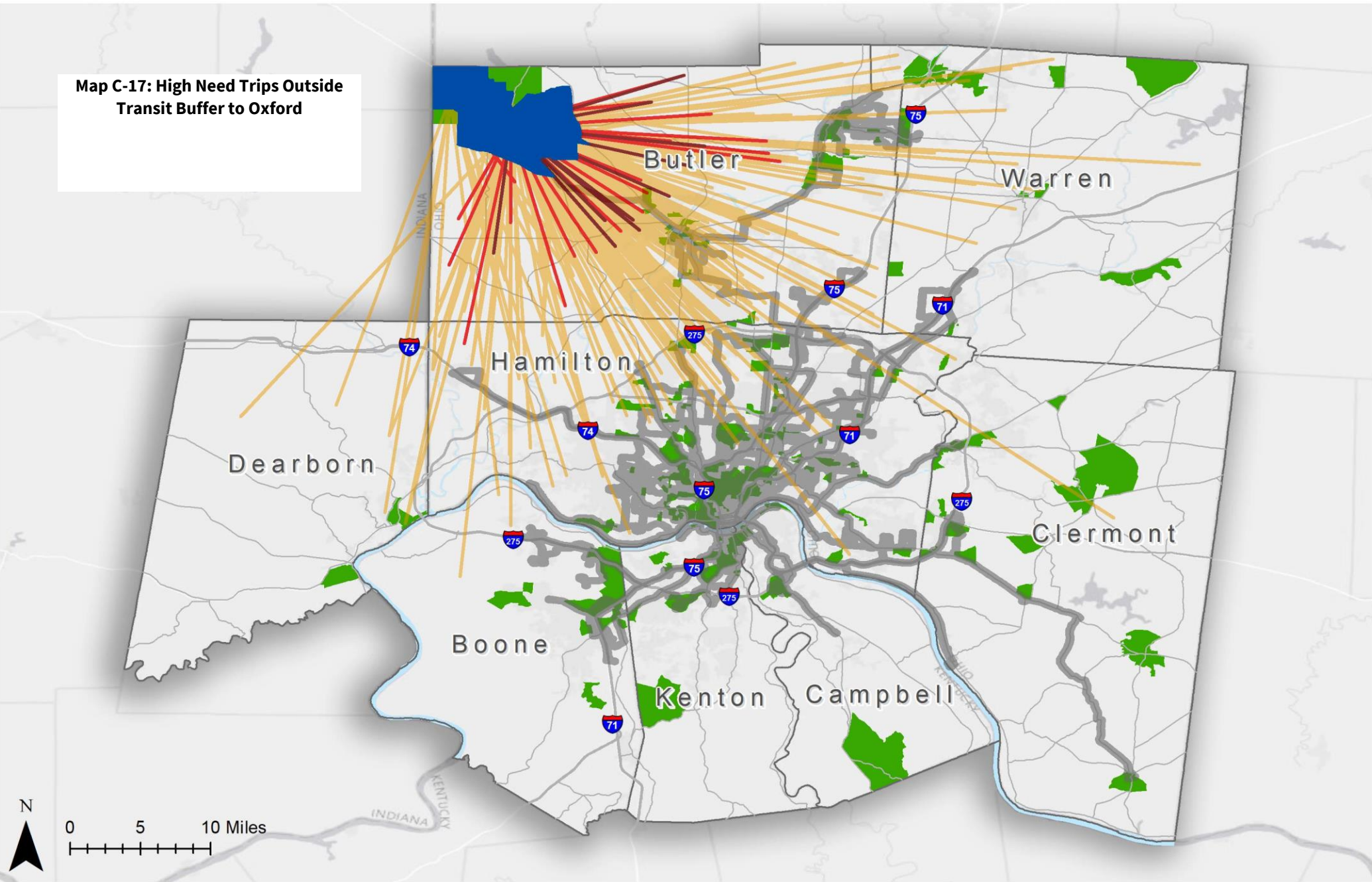
Map C-16: High Need Trips Outside Transit Buffer to Norwood



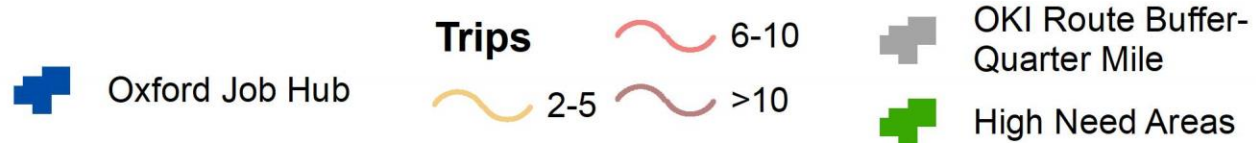
Trips that Originate from Outside of Transit Buffer to Norwood Job Hub- Longer than 6.3 Miles



**Map C-17: High Need Trips Outside Transit Buffer to Oxford**

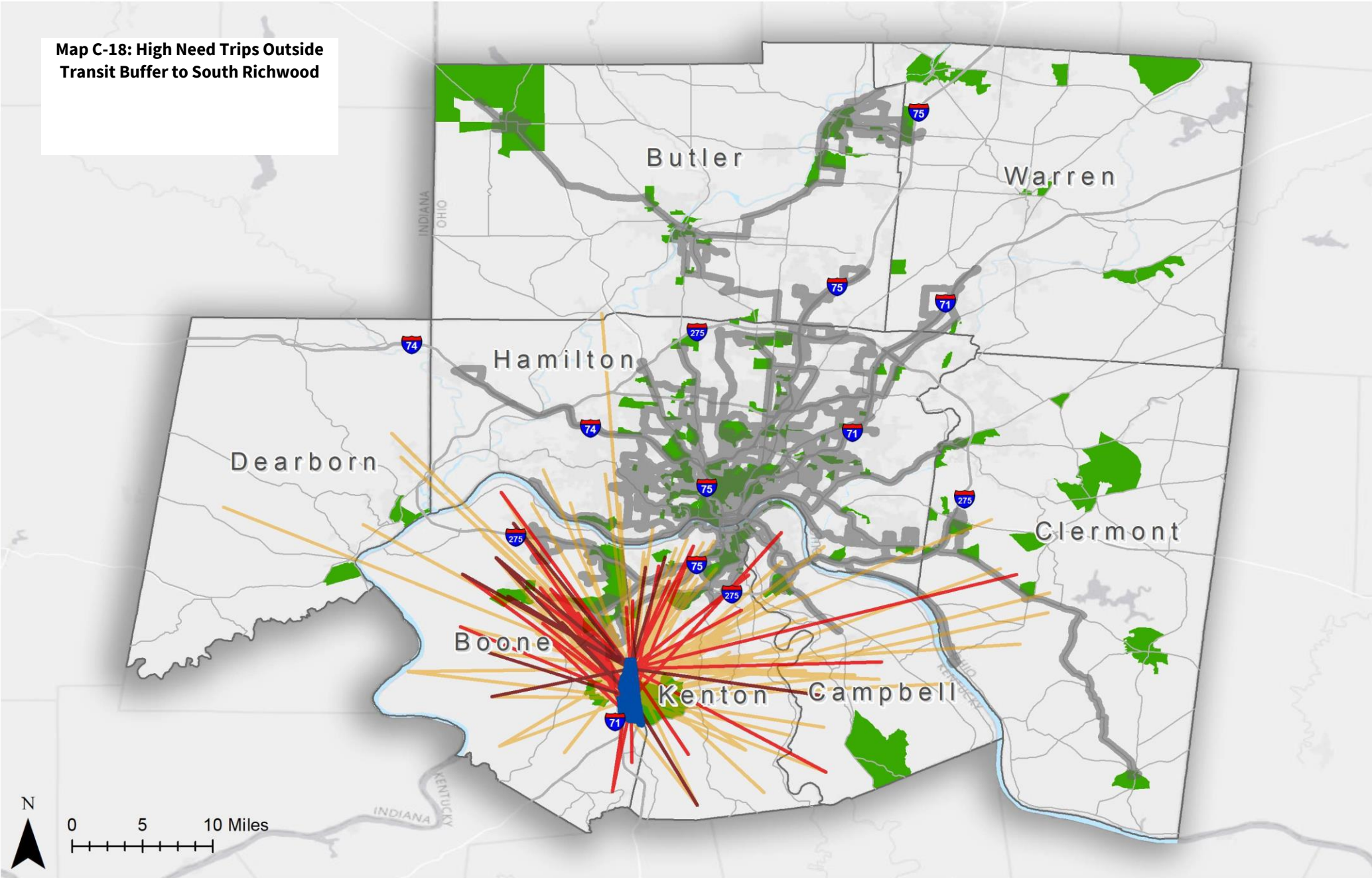


**Trips that Originate from Outside of Transit Buffer to Oxford Job Hub- Longer than 6.3 Miles**

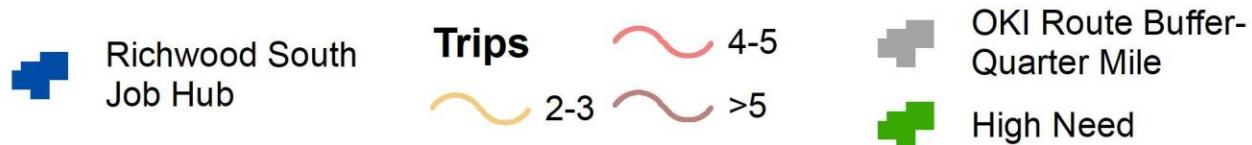




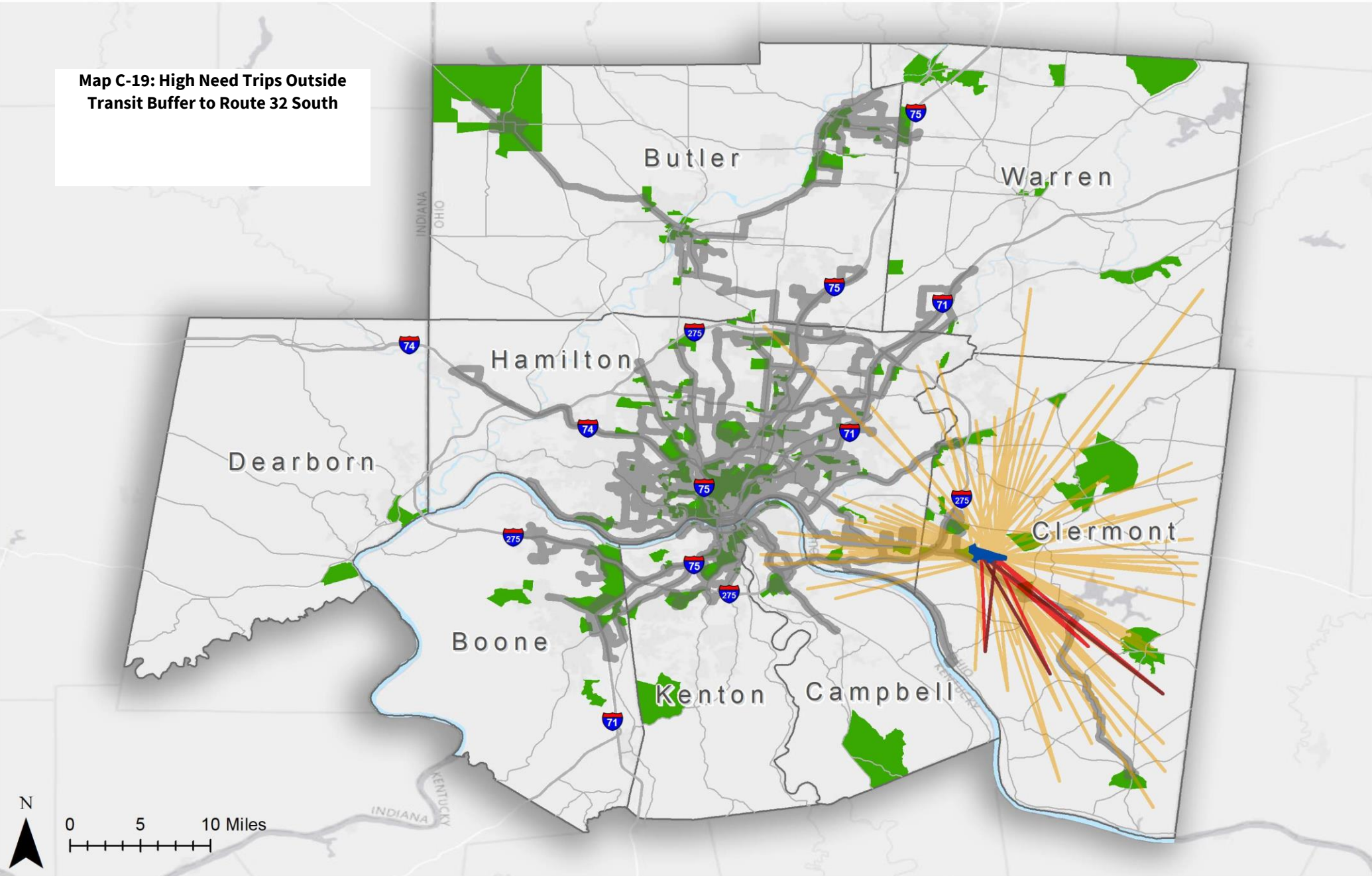
Map C-18: High Need Trips Outside Transit Buffer to South Richwood



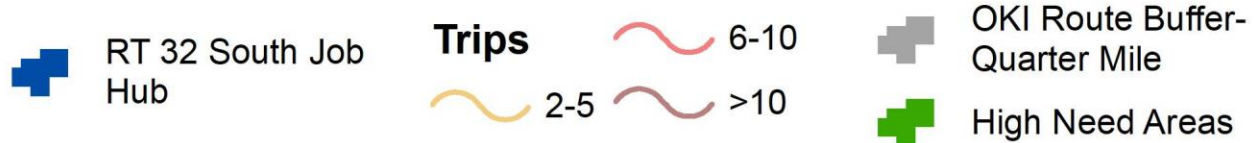
Trips that Originate from Outside of Transit Buffer to Richwood South Job Hub- Longer than 6.3 Miles



Map C-19: High Need Trips Outside Transit Buffer to Route 32 South

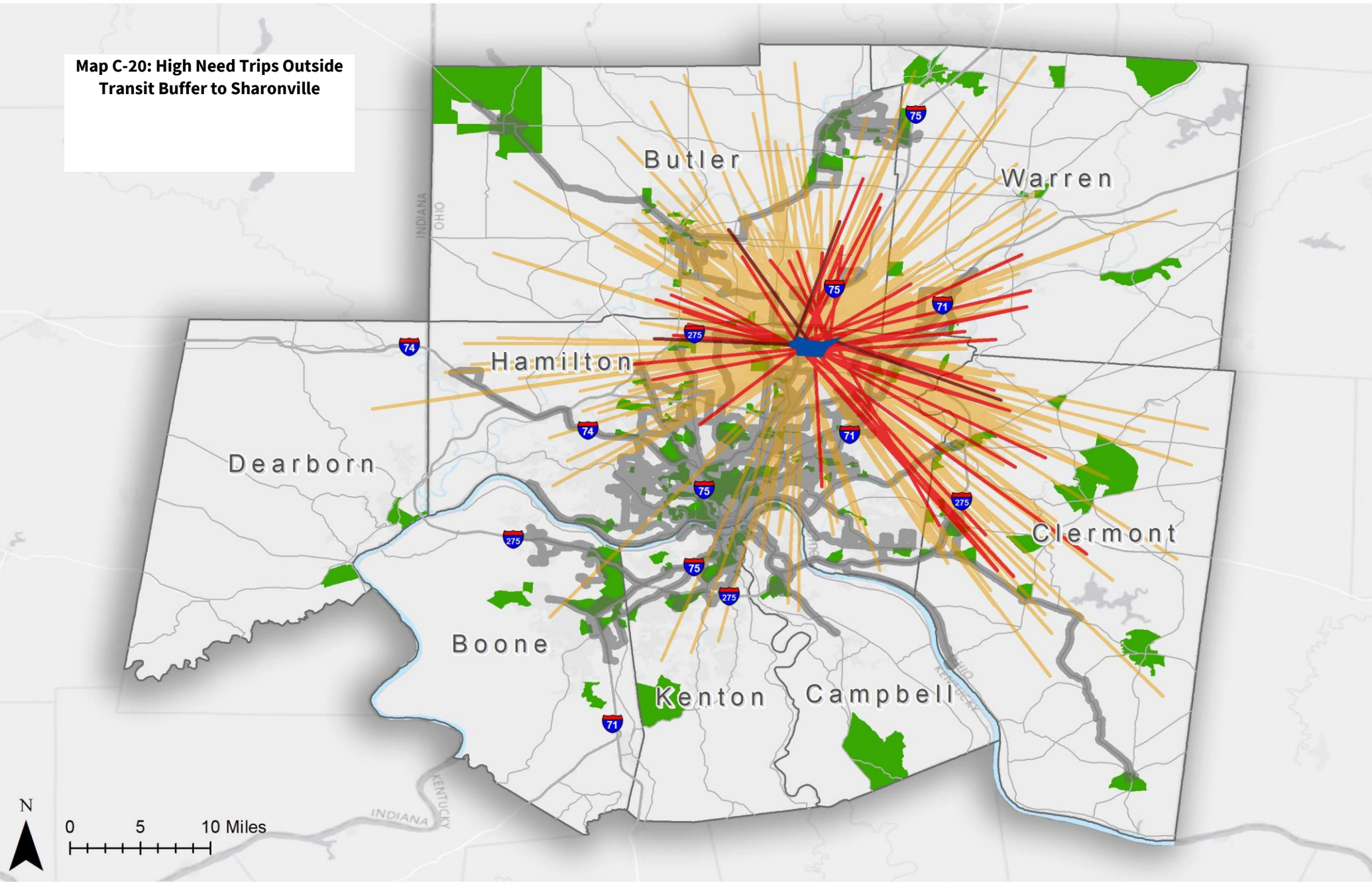


Trips that Originate from Outside of Transit Buffer to RT 32 South Job Hub- Longer than 6.3 Miles

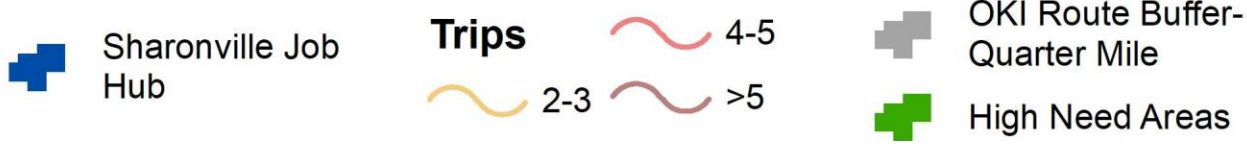




Map C-20: High Need Trips Outside Transit Buffer to Sharonville

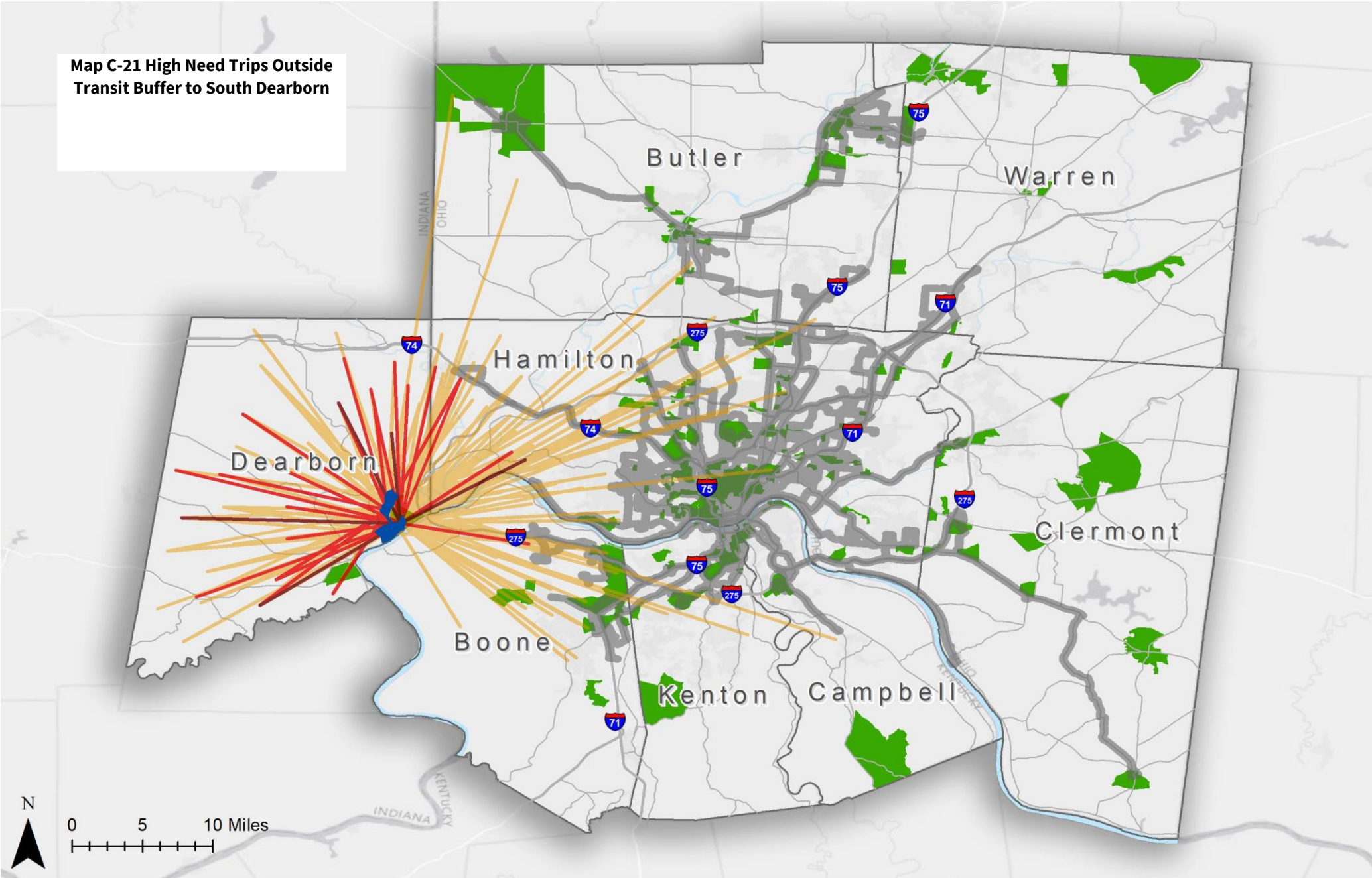


Trips that Originate from Outside of Transit Buffer to Sharonville Job Hub- Longer than 6.3 Miles

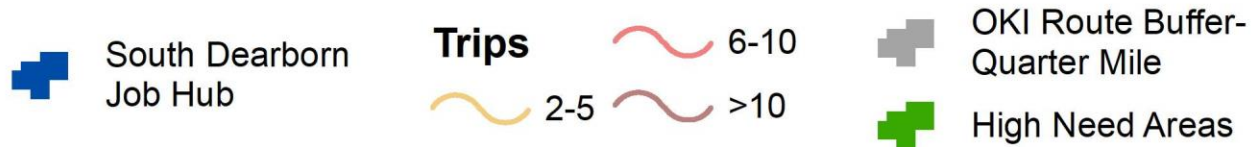




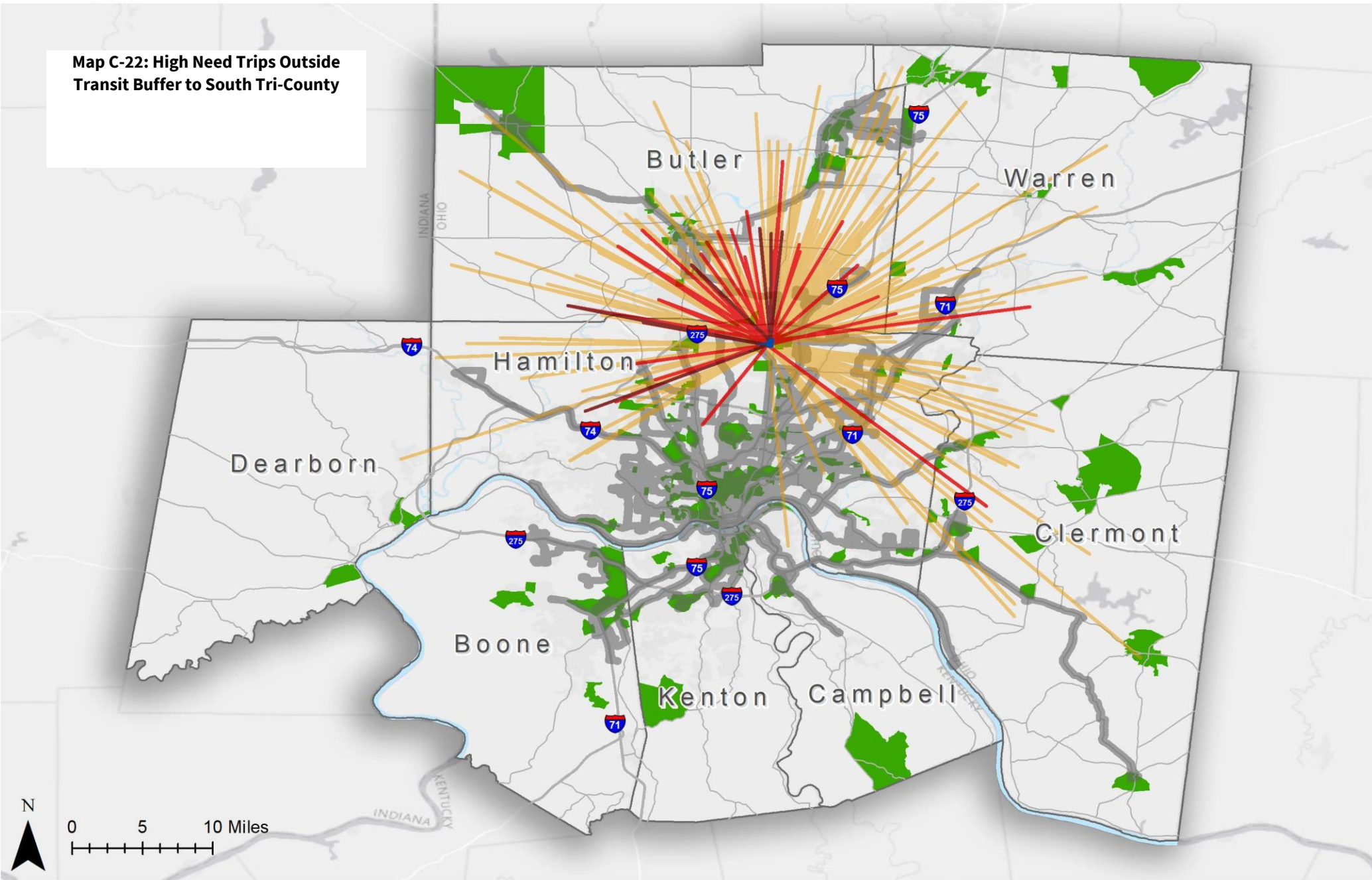
Map C-21 High Need Trips Outside Transit Buffer to South Dearborn



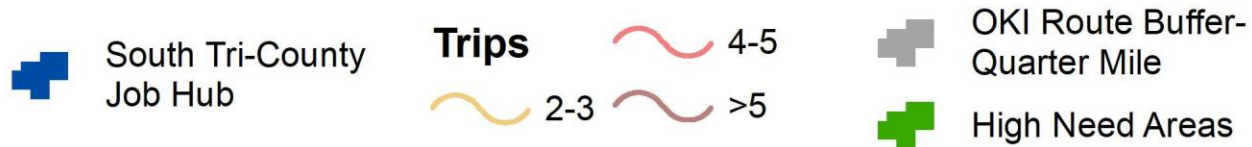
Trips that Originate from Outside of Transit Buffer to South Dearborn Job Hub- Longer than 6.3 Miles



Map C-22: High Need Trips Outside Transit Buffer to South Tri-County

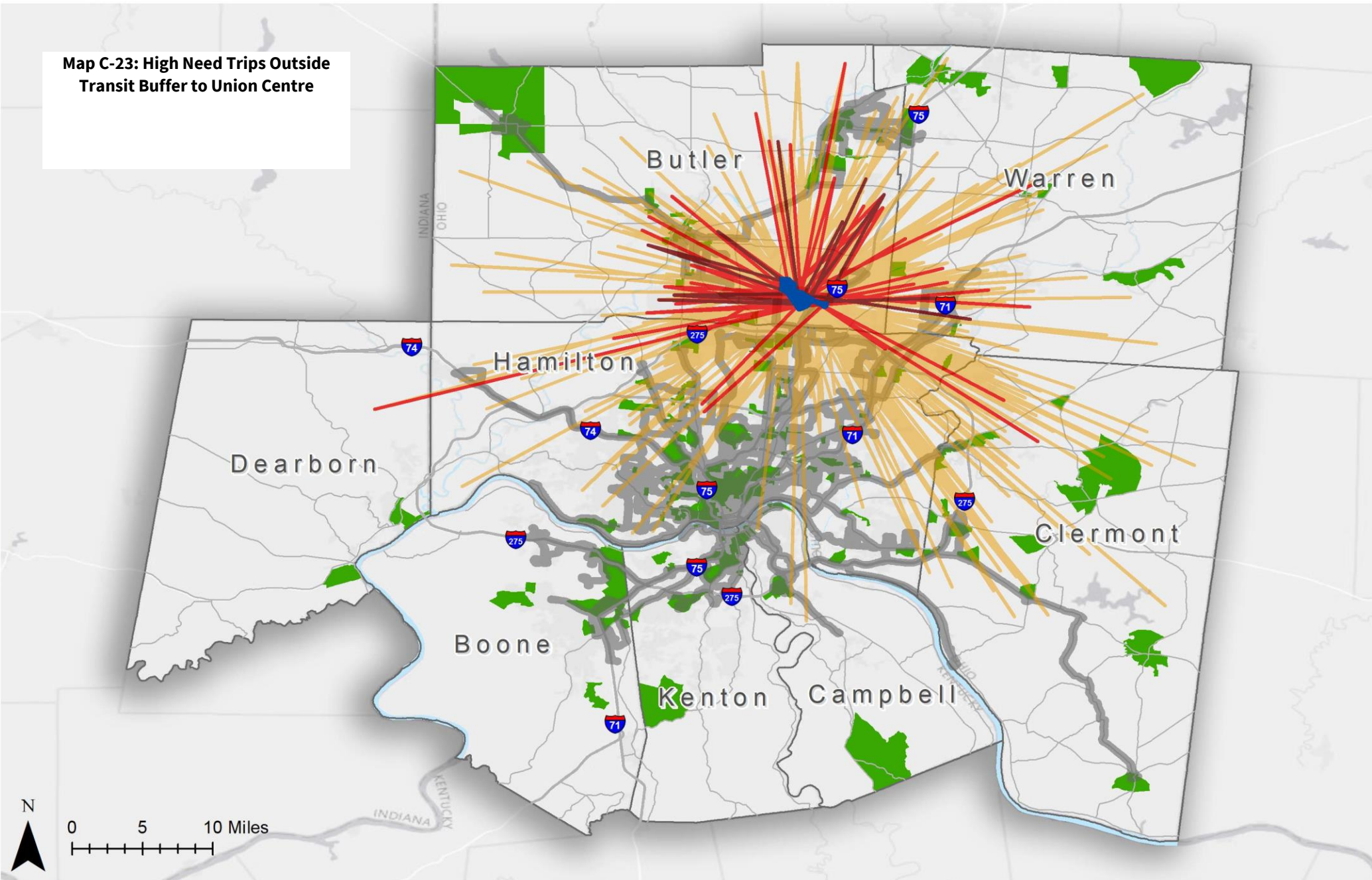


Trips that Originate from Outside of Transit Buffer to South Tri-County Job Hub- Longer than 6.3 Miles

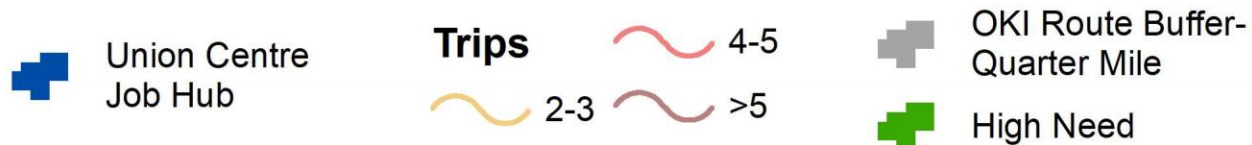




Map C-23: High Need Trips Outside Transit Buffer to Union Centre

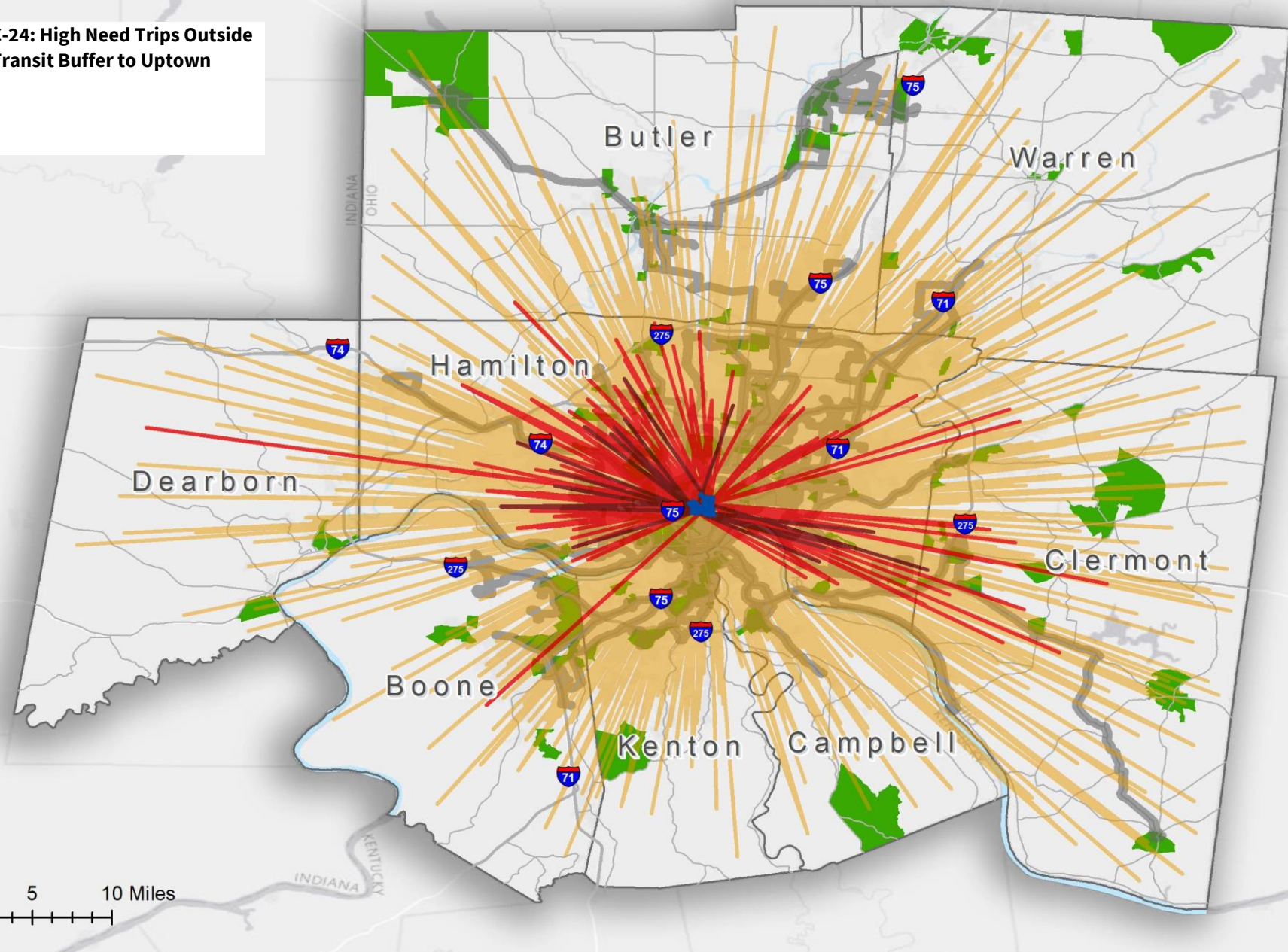


Trips that Originate from Outside of Transit Buffer to Union Centre Job Hub- Longer than 6.3 Miles

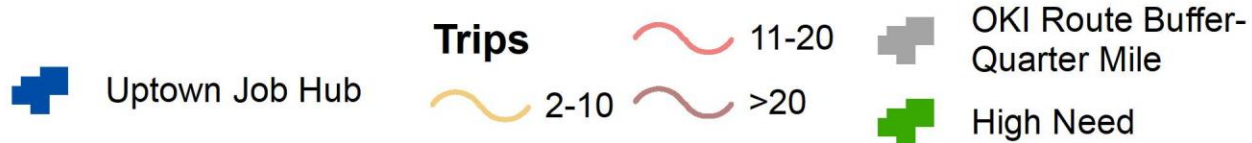




Map C-24: High Need Trips Outside Transit Buffer to Uptown

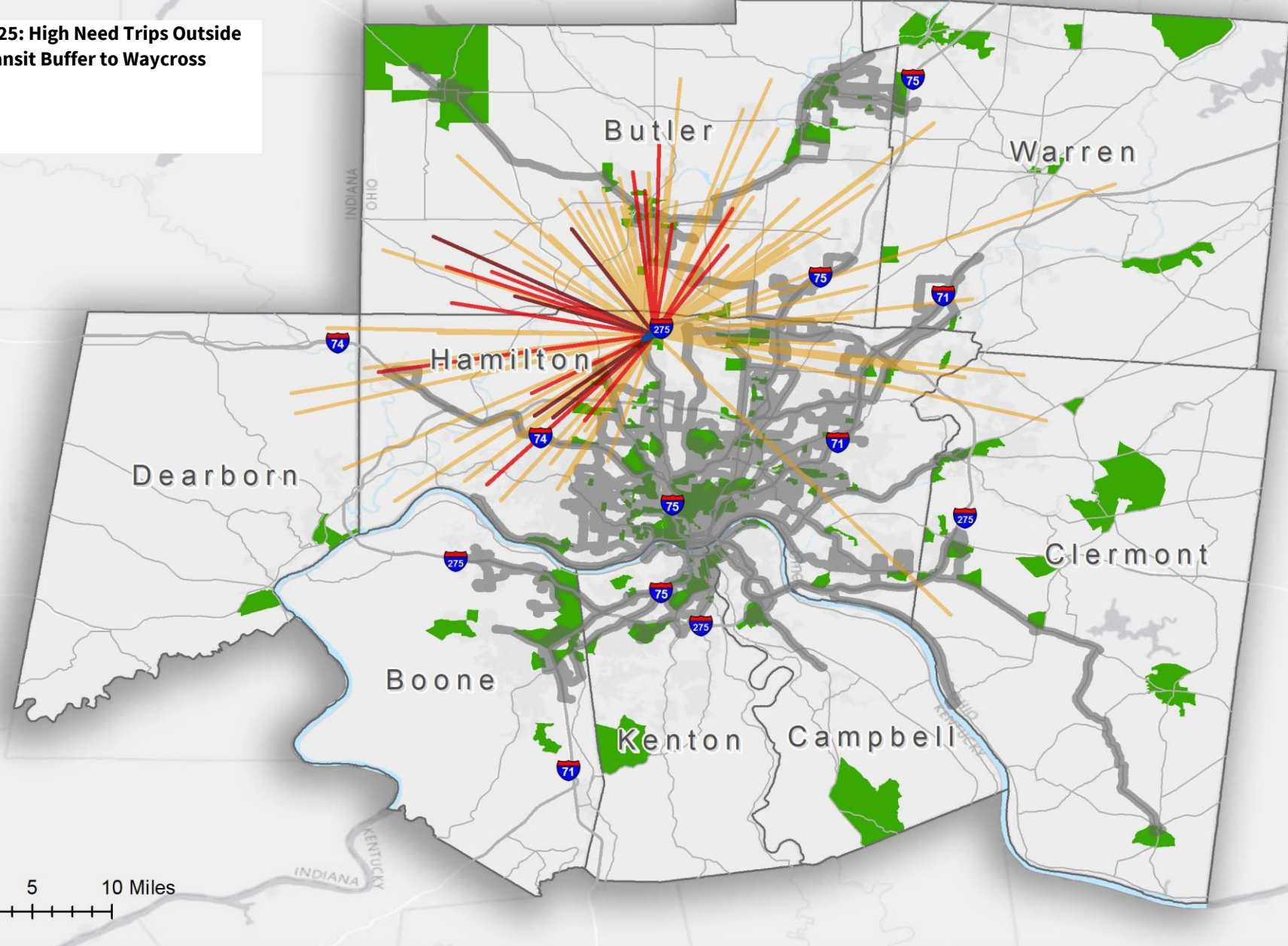


Trips that Originate from Outside of Transit Buffer to Uptown Job Hub- Longer than 6.3 Miles

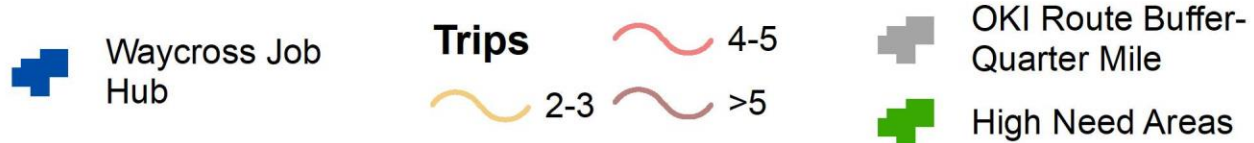




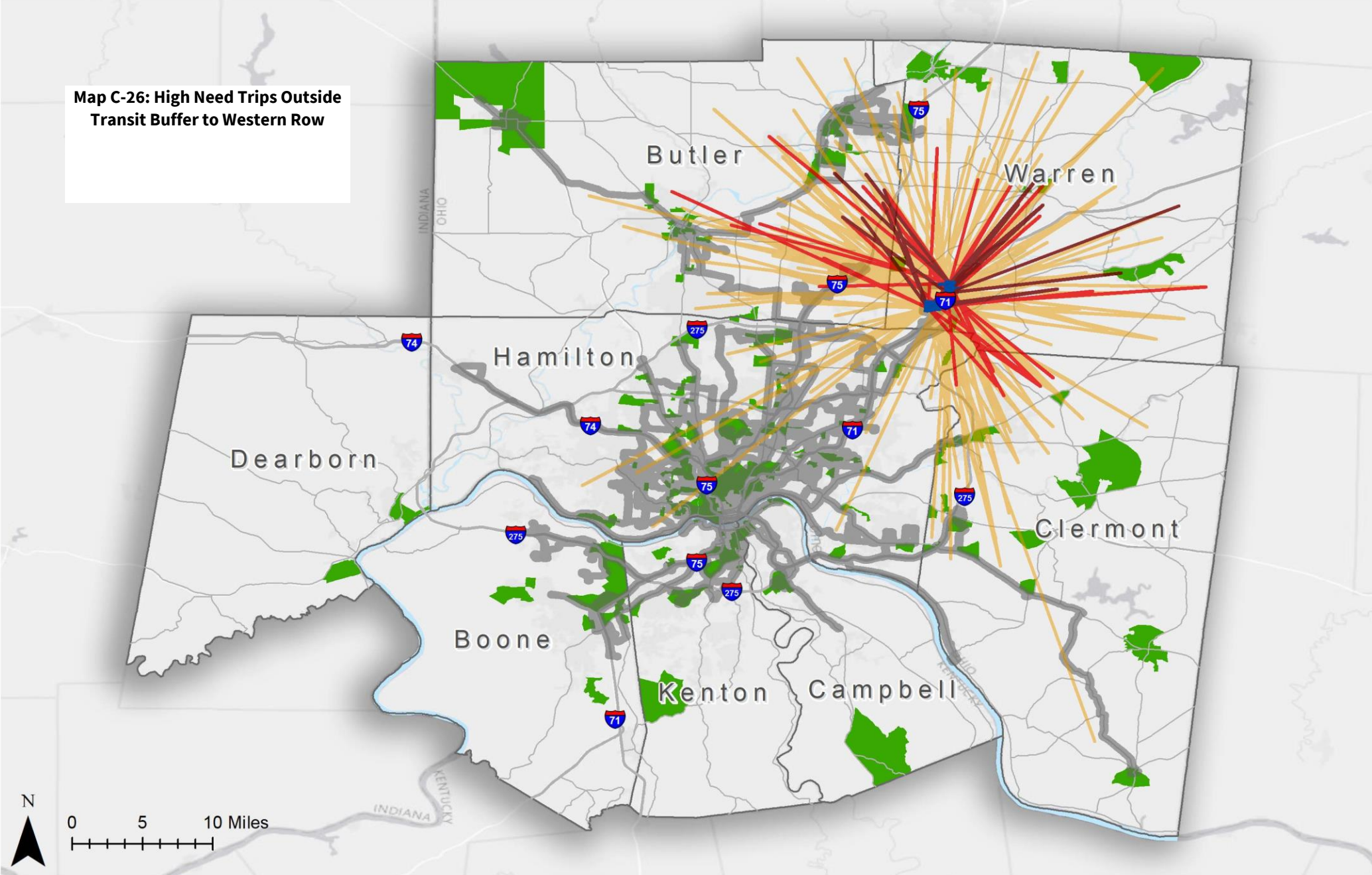
**Map C-25: High Need Trips Outside Transit Buffer to Waycross**



**Trips that Originate from Outside of Transit Buffer to Waycross Job Hub- Longer than 6.3 Miles**



Map C-26: High Need Trips Outside Transit Buffer to Western Row



Trips that Originate from Outside of Transit Buffer to Western Row Job Hub- Longer than 6.3 Miles

