



## Preliminary Environmental Justice Analysis

DATE: 02.04.2015

The purpose of this document is to outline the methodology used to establish the preliminary boundary and focus areas for the Brent Spence Bridge Corridor project Environmental Justice (EJ) analysis. The focus areas serve as the starting point for the EJ analysis. Feedback received from planned public involvement activities, such as general public meetings and outreach to community-based organizations and neighborhoods, will be used by the project team to refine the focus areas, if needed.

The following steps were followed to establish the preliminary analysis boundary and focus areas:

1. Census data was used to determine the average demographics in the areas surrounding the Brent Spence Bridge. To accomplish this, the average percentages of low-income<sup>1</sup> and minority<sup>2</sup> populations were calculated at varying distances from the Brent Spence Bridge, beginning at a one-mile radius and stretching to a ten-mile radius (see **Table 1-1, page 2**). The area demographics are fairly consistent up to five miles from the Brent Spence Bridge. However, the concentration of EJ populations declines steadily between five and ten miles from the bridge. Therefore, the areas within five miles of the bridge were determined to represent the average demographic for the project area.

Within a five-mile radius of the bridge, 23.4- to 26.8-percent of the total population is low-income, defined as below the federal poverty level. Minorities make up 27.4- to 32.4-percent of the total population. Census block groups that fell within these ranges were used as a starting point for identifying potential low-income and minority communities as the preliminary analysis boundary was developed in subsequent steps.

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<sup>1</sup> Low-income average = total persons below federal poverty level/total population\*100%

<sup>2</sup> Minority average = total minority persons/total population\*100%



**Table 1-1 Average Low-Income and Minority Populations**

Radius from Brent Spence Bridge <sup>1</sup>	Average <sup>2</sup>	
	Low-Income <sup>3</sup>	Minority <sup>4</sup>
1-Mile	25.2%	28.8%
2-Miles	26.8%	28.5%
3-Miles	25.8%	27.1%
4-Miles	25.1%	32.6%
5-Miles	23.4%	32.2%
6-Miles	21.4%	29.7%
7-Miles	19.7%	27.5%
8-Miles	18.4%	27.5%
9-Miles	17.2%	27.2%
10-Miles	16.5%	26.6%

1. Does not include Boone County, KY or Clermont County, OH
2. Source: 2007-2011 American Community Survey (ACS) 5 year estimates
3. Low-income average = total persons below federal poverty level/total population\*100%
4. Minority average = total minority persons/total population\*100%

2. Once the average demographics of the surrounding areas were identified, the initial geographic extents of the preliminary analysis boundary were delineated. The project limits were utilized as the north and south geographic extents. These included Dixie Highway in Kentucky and the Western Hills Viaduct in Ohio. The northern and southern project termini were selected as the starting point for the preliminary boundary to focus the analysis on the immediate project area. The project team will assess whether potential tolling impacts could extend beyond the project termini as the project moves forward based on public involvement activities and the impact assessment for the EJ focus areas (see Step 8).

The western geographic extents included State Highway 1072 (Kentucky) and State Avenue (Ohio), which represent the first major north-south routes west of the Brent Spence Bridge. The eastern geographic extents were established at I-71 and I-471, which are the parallel interstate corridors and also the closest toll-free interstate river crossings.



3. Preliminary traffic model data was reviewed to determine the extents of projected diversion traffic during the AM, Midday and PM peak travel periods (see **Figures 1-1** through **1-6**). This data indicated that increased traffic due to tolling diversion is expected to be concentrated in areas immediately surrounding the bridge. The primary limits of increased traffic due to diversion were generally found to be W. 12th Street in the south (Kentucky), W. 9th Street in the north (Ohio), I-71/I-75 in the west and I-71/I-471 in the east. The preliminary EJ analysis boundary fully encompasses these areas. **This discussion and associated figures will be revisited after the new traffic is finalized.**
4. Existing land use was reviewed to identify logical analysis boundaries (see **Figure 1-7**). The industrial areas and rail corridors in the western portion of Ohio generally follow State Avenue, the western geographic extent identified in Step 3. However, the rail corridor in the northwestern portion of Kentucky marked a change in land use from sparse residential and undeveloped lands to dense residential. Therefore, the western analysis boundary in Kentucky was adjusted to follow the rail corridor between the Ohio River and State Highway 1072. The land use review did not reveal any additional features that would influence the analysis boundary.
5. The geographic extents were compared with the low-income and minority block groups identified in Step 1. In addition, low-income and minority data were overlain to assure that the analysis boundary incorporated the distinct block groups for each category. As a result, the southern analysis boundary was refined to follow Madison Avenue, because this area encompassed nearly all the block groups from Step 1. A few block groups with low-income populations exceeding the averages identified in Step 1 were located south and east of Madison Avenue. These areas were not included in the preliminary analysis boundary because they are south of the project terminus (see Step 1) and have more direct transportation connections to alternative free river crossings than to the project corridor. Furthermore, traffic modeling did not indicate any projected increases in traffic due to diversion in these areas. Finally, a large portion of the area designated as 31-percent low-income is occupied by a golf course.

The northern analysis boundary was refined to follow W. McMicken Avenue and E. Liberty Street because these routes most closely coincided with the northern project limits (the Western Hills Viaduct). Traffic modeling did not



indicate any projected increases in traffic due to diversion north of these routes. Block groups with low-income and minority populations exceeding the averages identified in Step 1 were located north of W. McMicken Avenue. These areas were not included in the preliminary analysis boundary because they are north of the project terminus (see Step 1). However, these limits will continue to be evaluated as the project moves forward (see Step 2 and Figures 1-9 and 1-10).

The adjustment to the western analysis boundary in Step 4 was confirmed, as the block groups in northwestern Kentucky showed small low-income and minority percentages. In Ohio, there was a notable decline in the minority populations west of State Avenue, although the low-income percentages remained high. When considered in conjunction with projected diversion traffic, land use and the existing transportation network, it was determined that State Avenue remained a logical western analysis boundary in Ohio.

The eastern analysis boundary was refined to follow Licking Pike and E. 12th Street in Kentucky, because there were not any block groups east of these routes with low-income or minority populations exceeding the averages identified in Step 1.

6. The analysis boundary was compared to the Traffic Analysis Zones (TAZs) utilized in the traffic model (see **Figure 1-7**). The purpose of this step was to better facilitate the select-link and travel pattern analyses to be conducted as part of the detailed Environmental Justice studies. While TAZs generally followed existing transportation corridors, the analysis boundary was slightly adjusted to coincide with the closest TAZs. An examination of the TAZs also confirmed the western analysis boundary in Kentucky, as the TAZs that include the areas adjacent to I-71/I-75 also extend to the railroads and State Highway 1072.
7. The analysis boundary was compared to the 2010 Census block groups. As a result, the boundary was adjusted in the vicinity of Highland Pike in Kentucky to avoid splitting a neighborhood. After this final adjustment, the resulting boundary was designated as the Preliminary Environmental Justice Analysis Boundary, which is shown in **Figures 1-8** through **1-10**.
8. Once the preliminary EJ analysis boundary was finalized in Step 7, the block groups within its limits were further evaluated to identify EJ focus areas. To



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accomplish this, the average low-income<sup>1</sup> and minority<sup>2</sup> percentages within the preliminary analysis boundary were calculated.

Thirty-percent (30.3%) of the total population within the preliminary analysis boundary was below the federal poverty level. Likewise, 34-percent (34.4%) of the total population was minority. Therefore, 30-percent was identified as the threshold for identifying focus areas for detailed environmental justice analysis. The block groups within the preliminary analysis boundary that met or exceeded the 30-percent threshold were highlighted (see **Figures 1-11** and **1-12**). The highlighted low-income and minority block groups were combined and designated as Focus Areas for the detailed EJ analysis (see **Figure 1-13**).

The focus areas identified in Step 8 serve as the starting points for the EJ analysis. The project will include multiple opportunities for public involvement through general public and community-level meetings. If effects on environmental justice populations beyond the focus areas are identified during public involvement activities, they will be included in any subsequent outreach and analysis.

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<sup>1</sup> Low-income average = total persons below federal poverty level/total population\*100%

<sup>2</sup> Minority average = total minority persons/total population\*100%



- Peak Hour Decrease <-100
- Peak Hour Decrease <-200
- Peak Hour Increase > 100
- Peak Hour Increase > 200

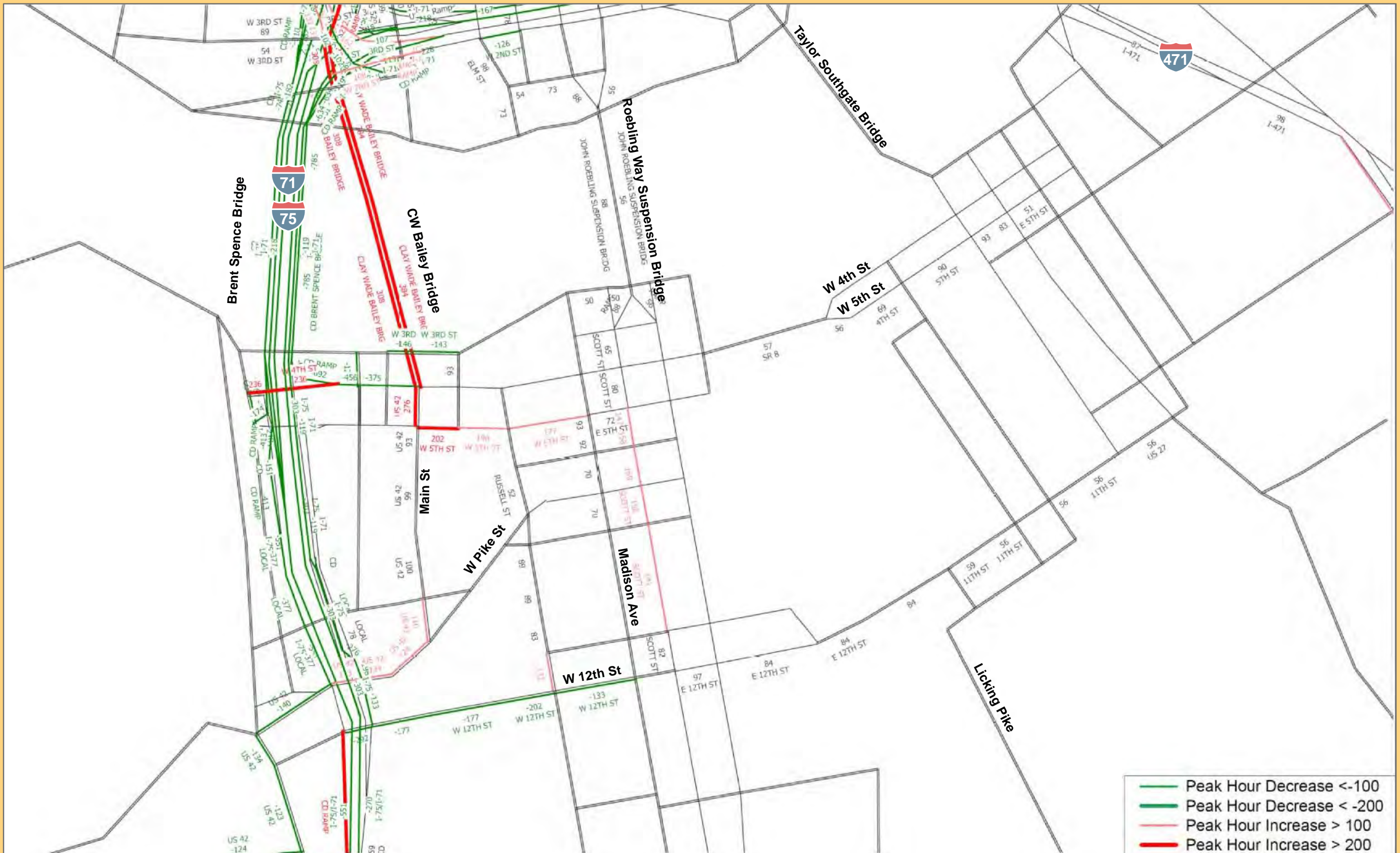
Brent Spence Bridge  
Cincinnati, OH / Covington, KY

Source: CUBE

Note: Diversion traffic volumes are preliminary and from a previous model from February 2014.



Figure 1-1  
AM Peak Hour Volume Changes  
Build Toll-Free to Build Tolloed (\$2)



Brent Spence Bridge  
Cincinnati, OH / Covington, KY

Source: CUBE

Note: Diversion traffic volumes are preliminary and from a previous model from February 2014.



**Figure 1-2**  
AM Peak Hour Volume Changes  
Build Toll-Free to Build Tolloed (\$2)



Brent Spence Bridge  
Cincinnati, OH / Covington, KY

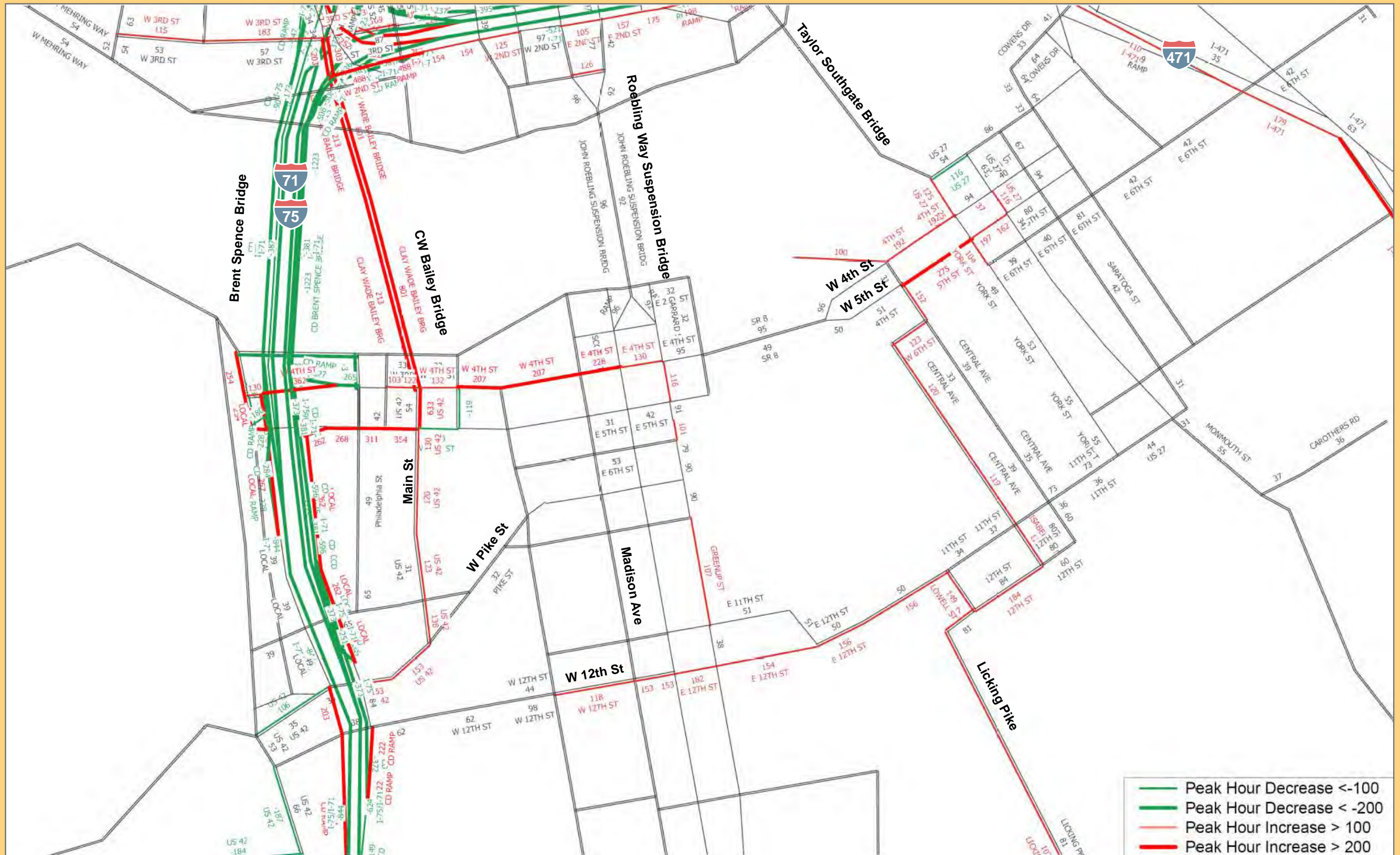
Source: CUBE

Note: Diversion traffic volumes are preliminary and from a previous model from February 2014.



**Figure 1-3**  
MD Peak Hour Volume Changes  
Build Toll-Free to Build Tolled (\$2)





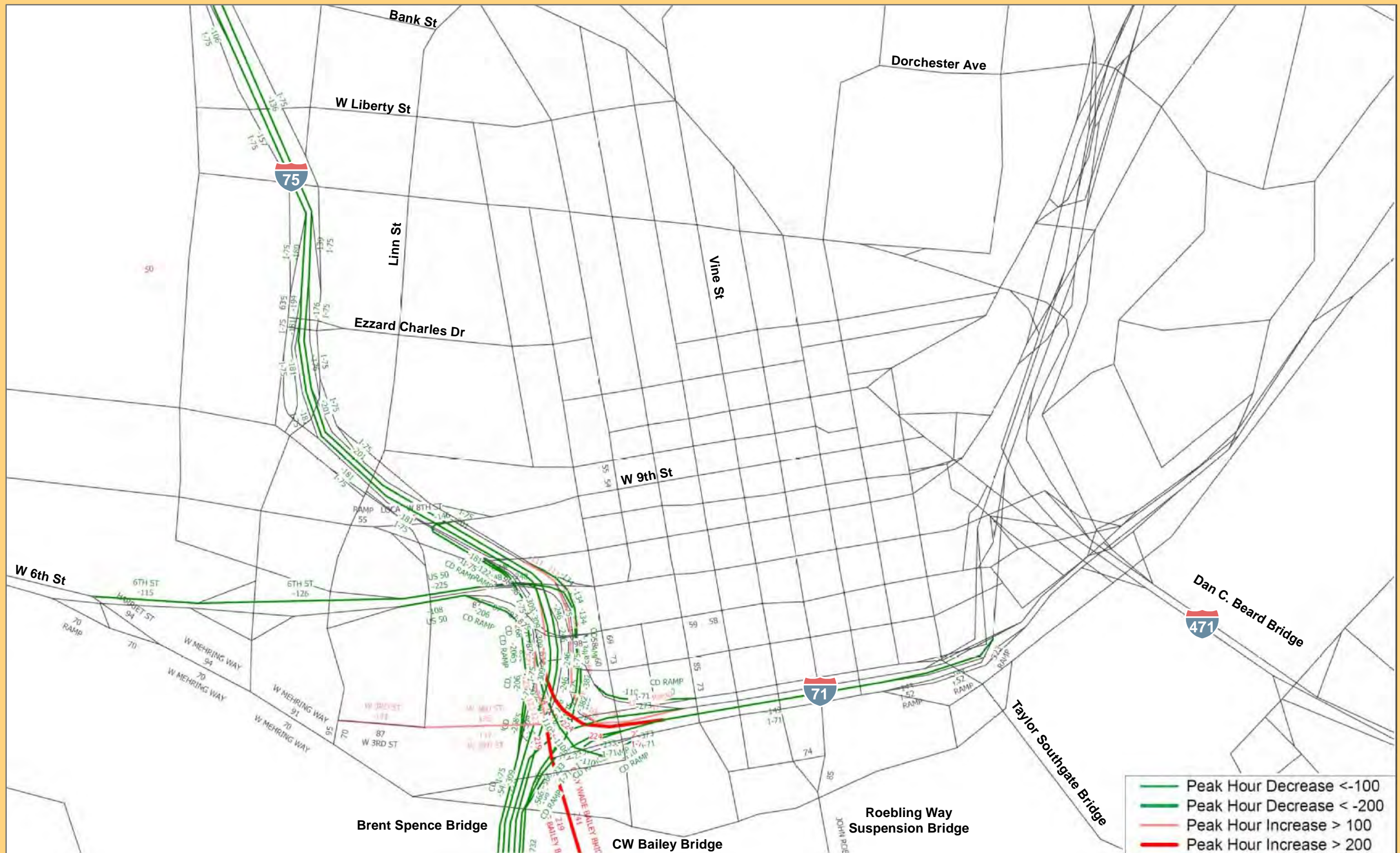
Brent Spence Bridge  
Cincinnati, OH / Covington, KY

Source: CUBE

Note: Diversion traffic volumes are preliminary and from a previous model from February 2014.



**Figure 1-4**  
MD Peak Hour Volume Changes  
Build Toll-Free to Build Tolloed (\$2)



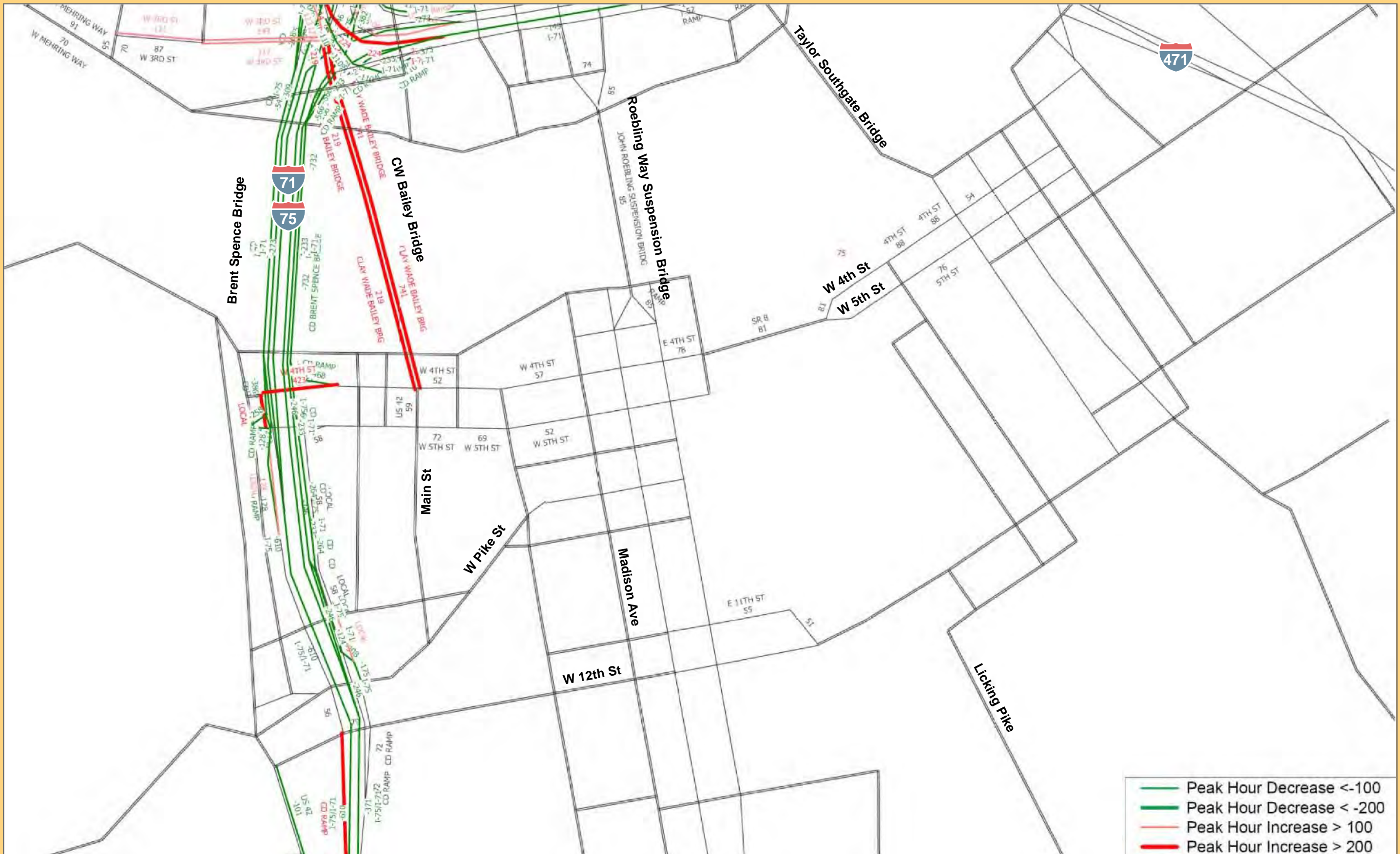
Brent Spence Bridge  
Cincinnati, OH / Covington, KY

Source: CUBE

Note: Diversion traffic volumes are preliminary and from a previous model from February 2014.



**Figure 1-5**  
PM Peak Hour Volume Changes  
Build Toll-Free to Build Tolloed (\$2)



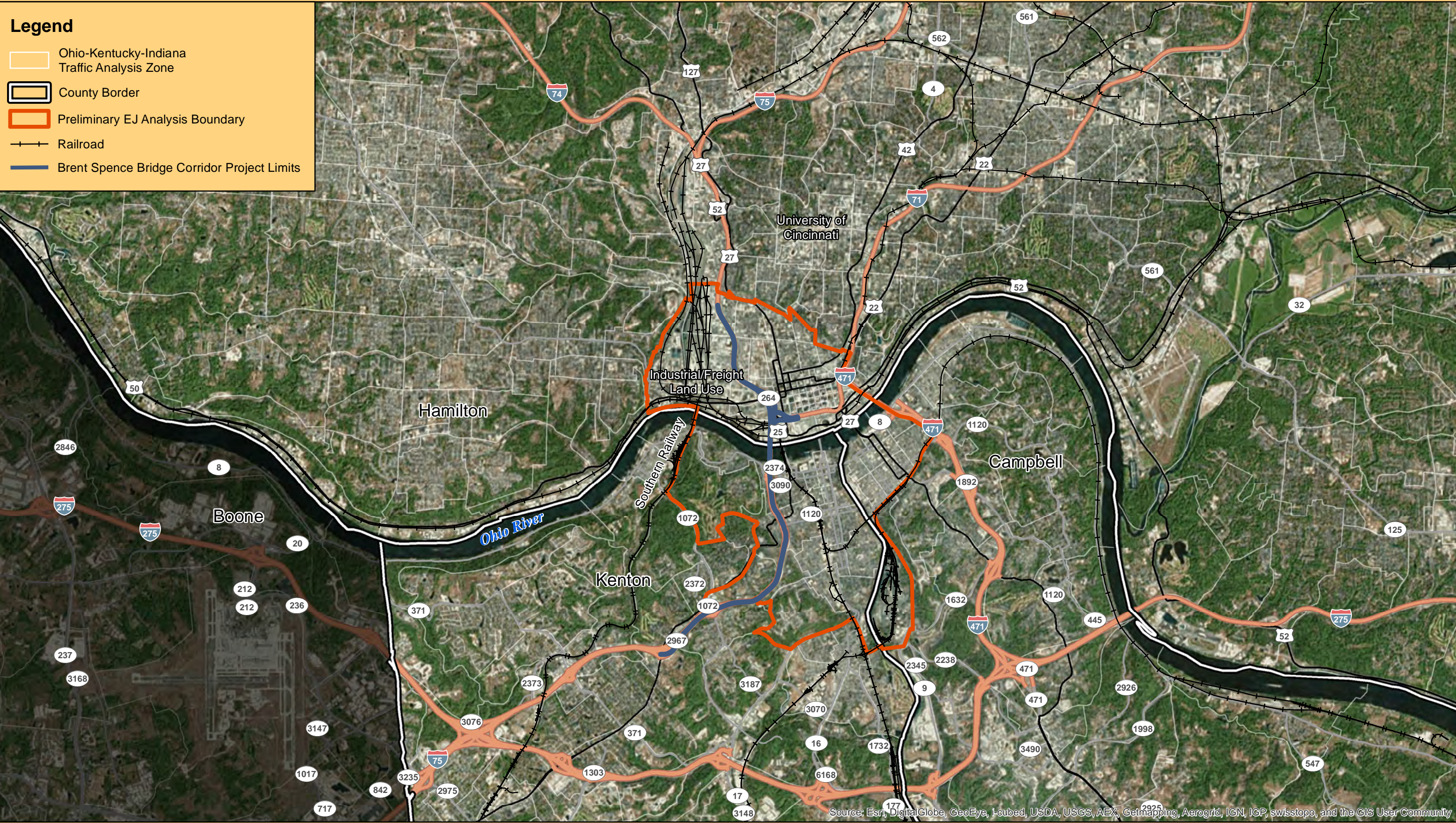
Brent Spence Bridge  
Cincinnati, OH / Covington, KY

Source: CUBE

Note: Diversion traffic volumes are preliminary and from a previous model from February 2014.

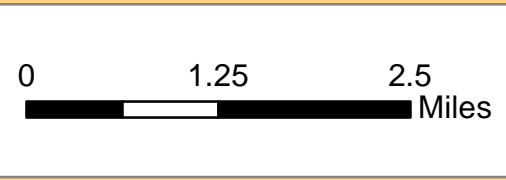
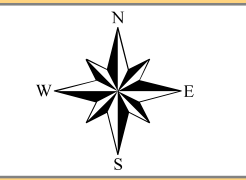


**Figure 1-6**  
PM Peak Hour Volume Changes  
Build Toll-Free to Build Tolloed (\$2)



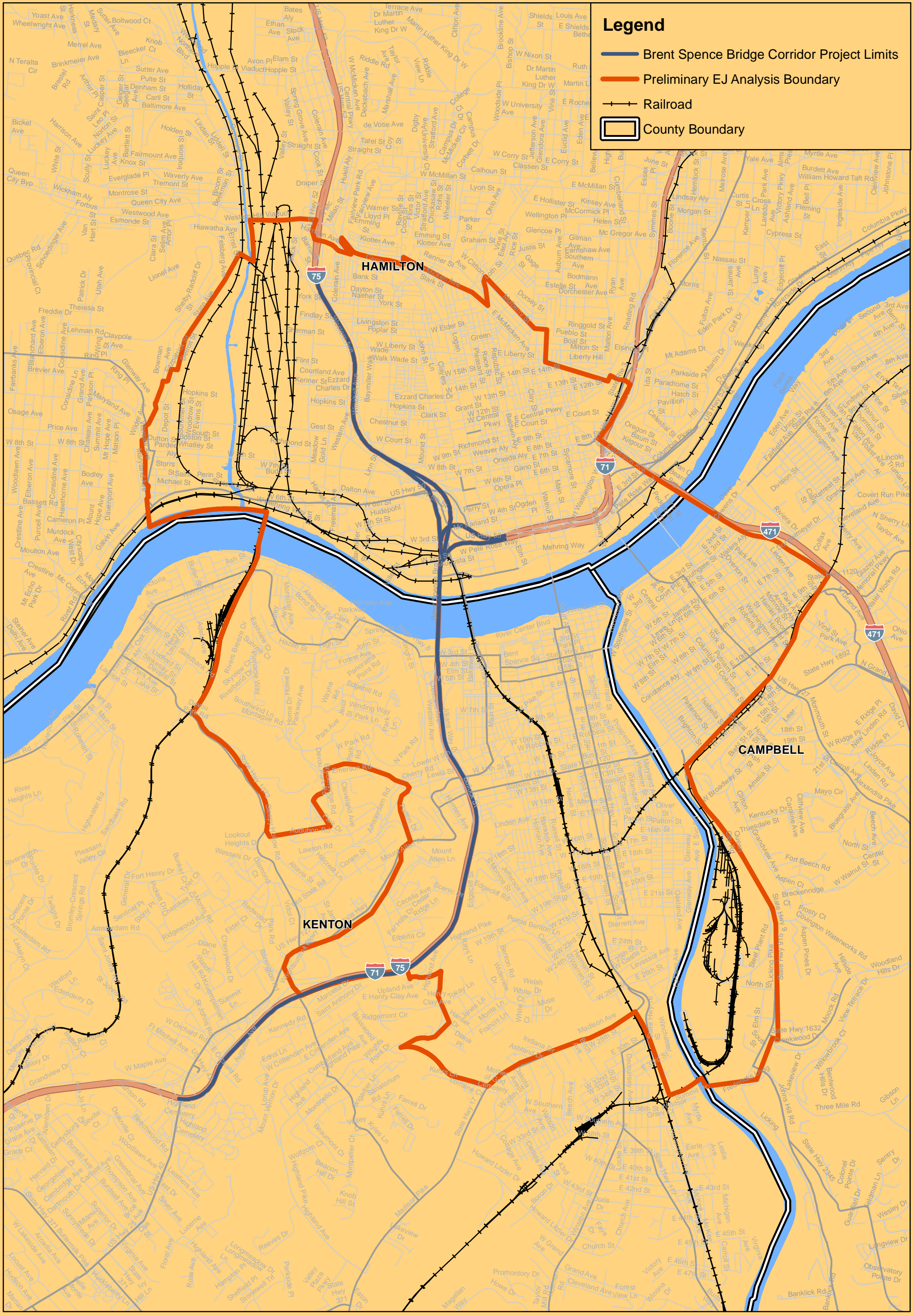
Brent Spence Bridge  
Cincinnati, OH / Covington, KY

Source: Environmental Assessment,  
HAM-71/75-0.00/0.22, March 2012,  
2010 US Census and 2007-2011 ACS,  
OKI Traffic Demand Model



Date: 1/9/2015  
Prepared by: TVF

**Figure 1-7**  
Aerial View of Cincinnati, OH  
and Covington, KY



**Legend**

- Brent Spence Bridge Corridor Project Limits
- Preliminary EJ Analysis Boundary
- +— Railroad
- County Boundary

Figure 1-8  
 Environmental Justice  
 Preliminary Analysis Boundary  
 Brent Spence Bridge  
 Cincinnati, OH / Covington, KY

Date: 1/14/2015  
 Prepared by: TVF

N  
 W  E  
 S

0 0.25 0.5 1 Miles

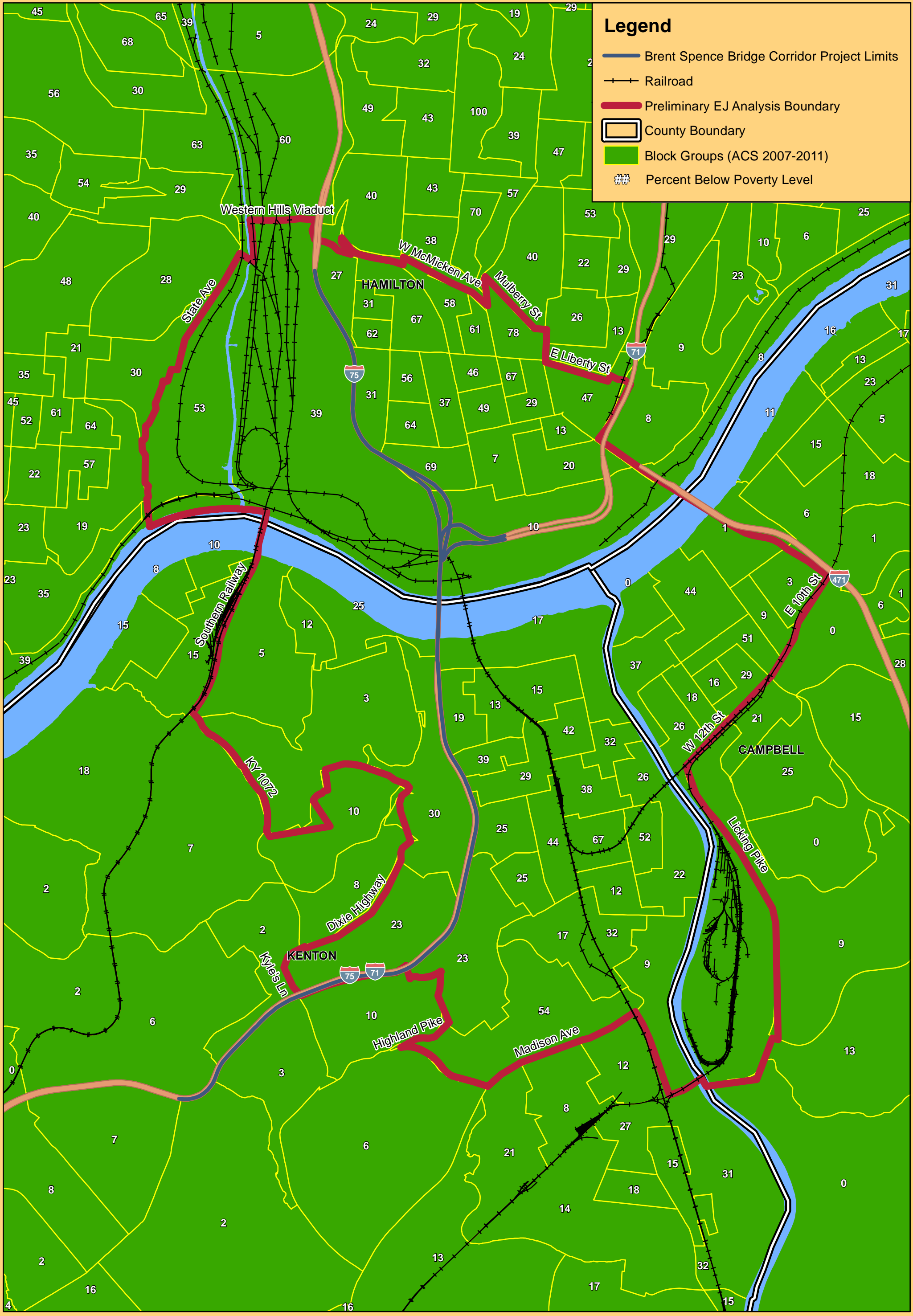


Figure 1-9  
 Percent Below Poverty Level  
 Block Group Data  
 Brent Spence Bridge  
 Cincinnati, OH / Covington, KY

Date: 1/15/2015  
 Prepared by: TVF  
 Block group data from the  
 American Community Survey  
 (ACS) 2007-2011

Scale: 0 0.25 0.5 1 Miles

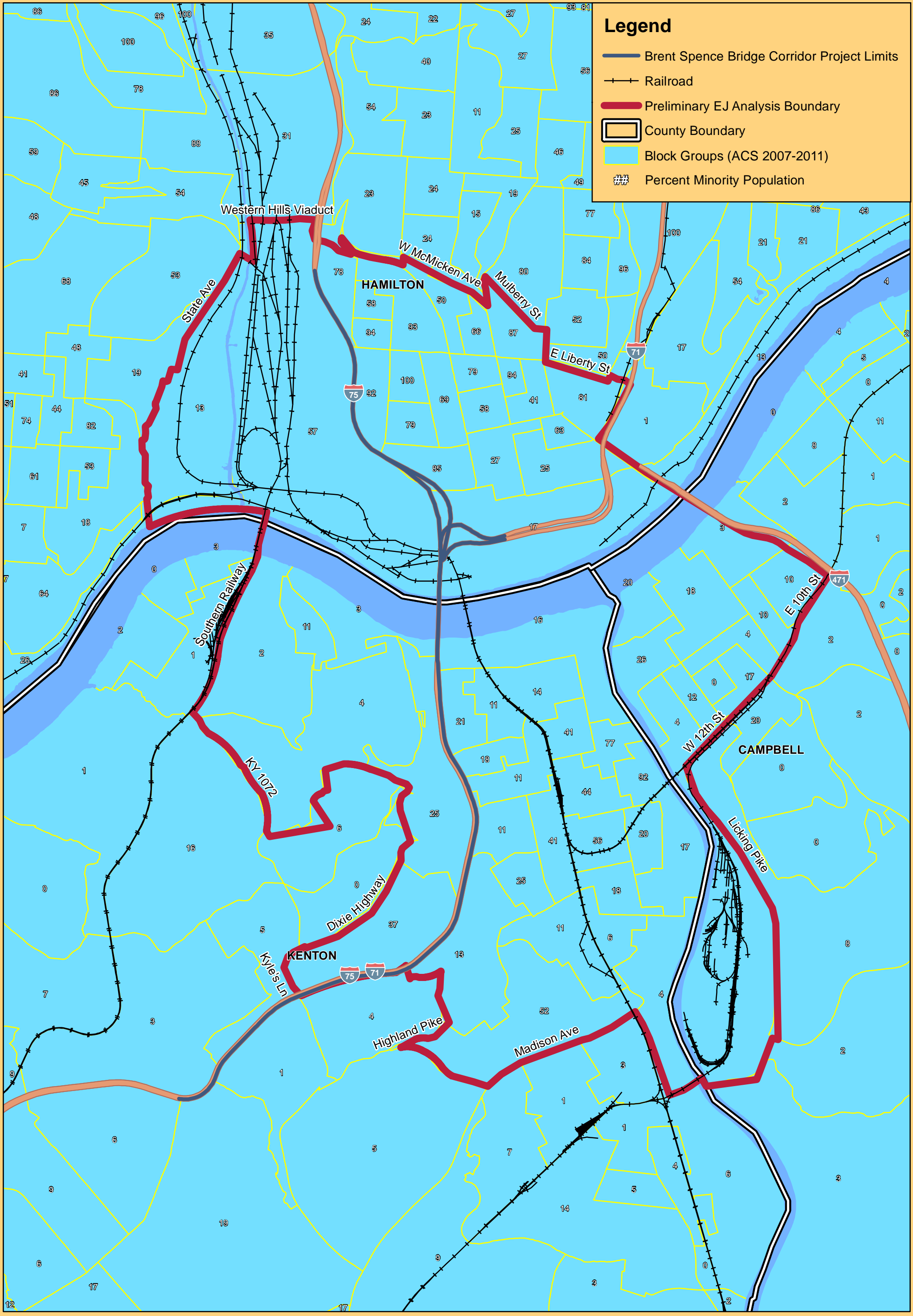


Figure 1-10  
 Percent Minority  
 Block Group Data  
 Brent Spence Bridge  
 Cincinnati, OH / Covington, KY

Date: 1/14/2015  
 Prepared by: TVF  
 Block group data from the  
 American Community Survey  
 (ACS) 2007-2011

Scale: 0 0.25 0.5 1 Miles

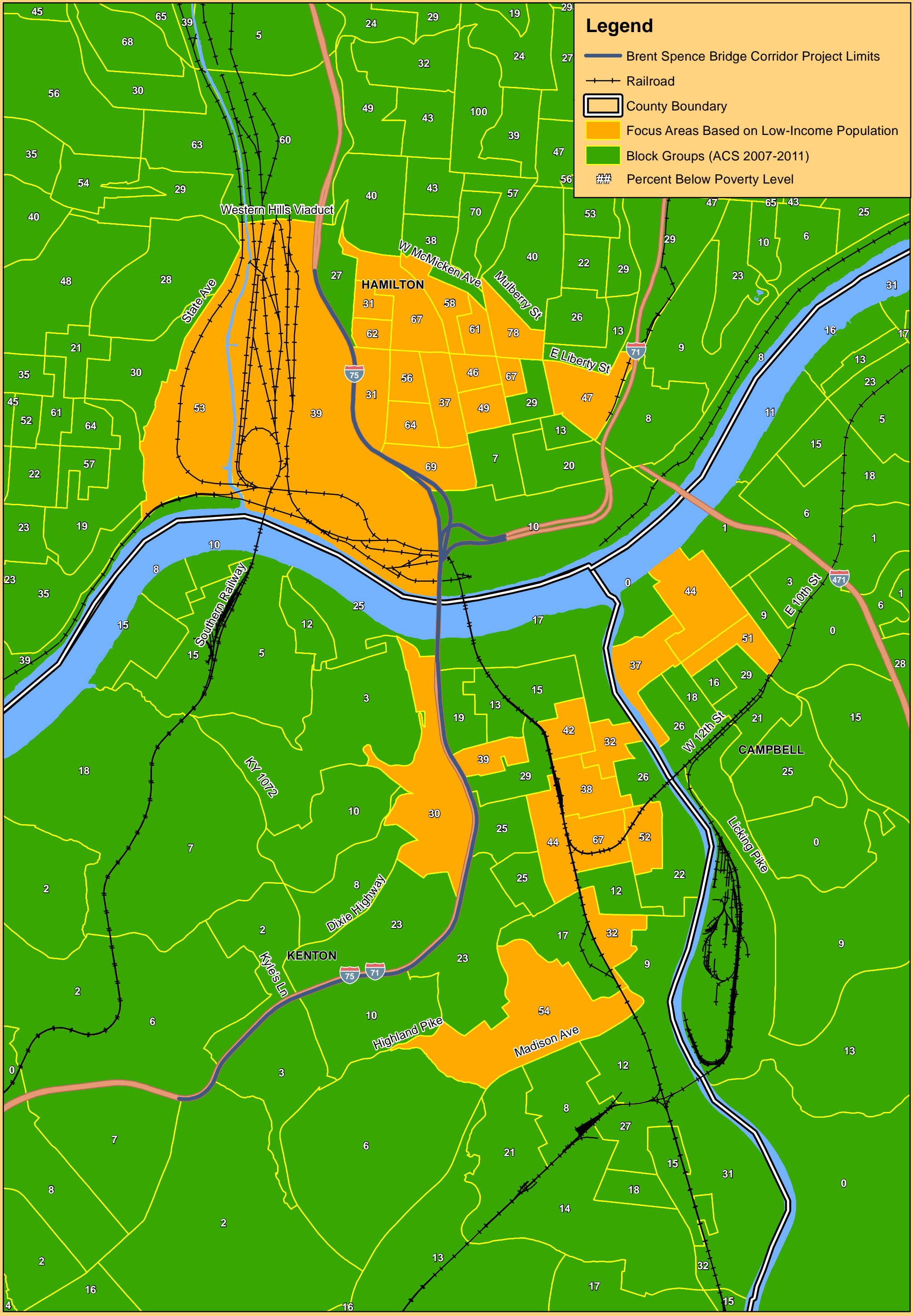


Figure 1-11  
 Focus Areas Based on  
 Low-Income Population  
 Brent Spence Bridge  
 Cincinnati, OH / Covington, KY

Date: 1/15/2015  
 Prepared by: TVF  
 Block group data from the  
 American Community Survey  
 (ACS) 2007-2011

North arrow and scale bar (0 to 1 Miles).



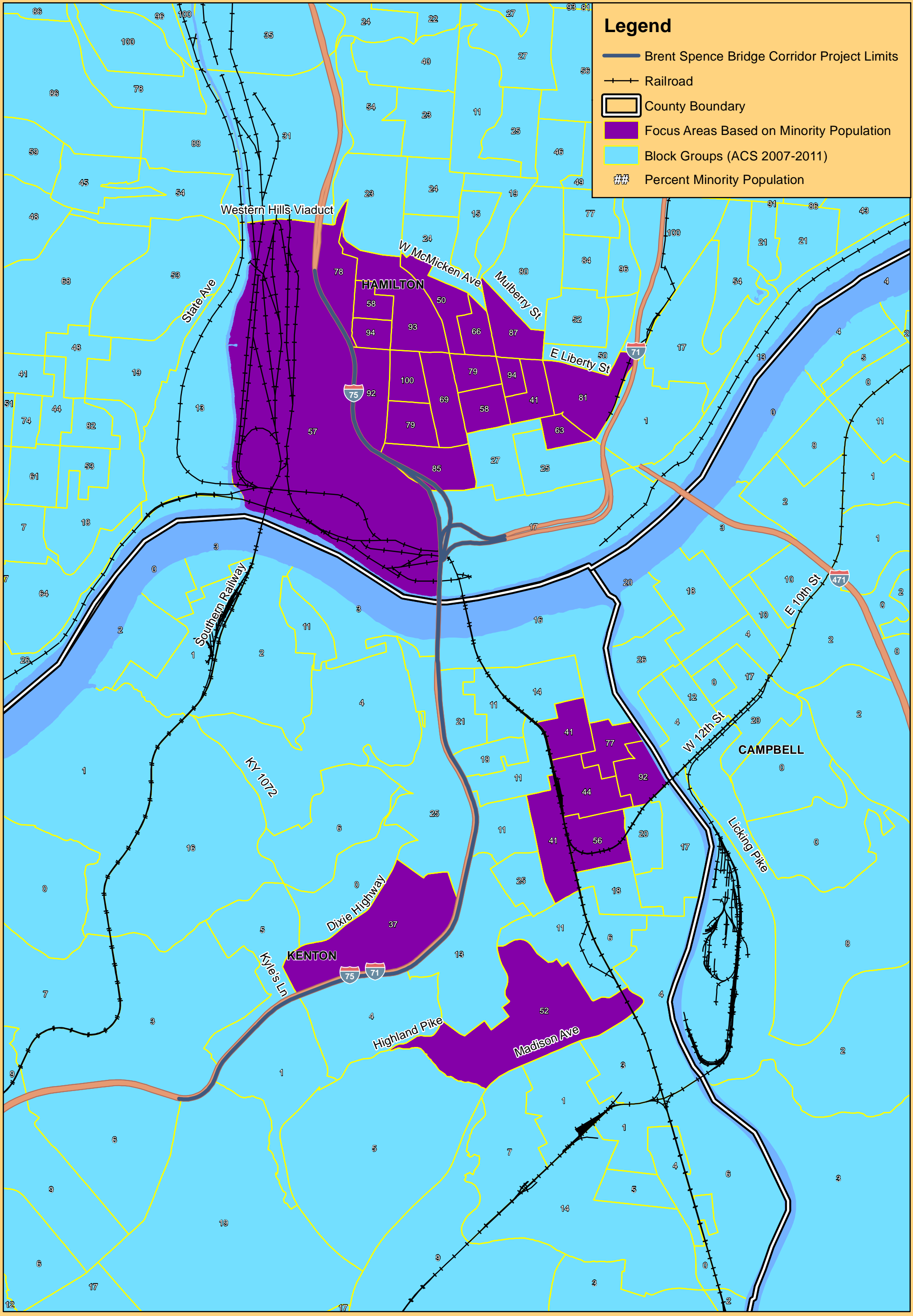
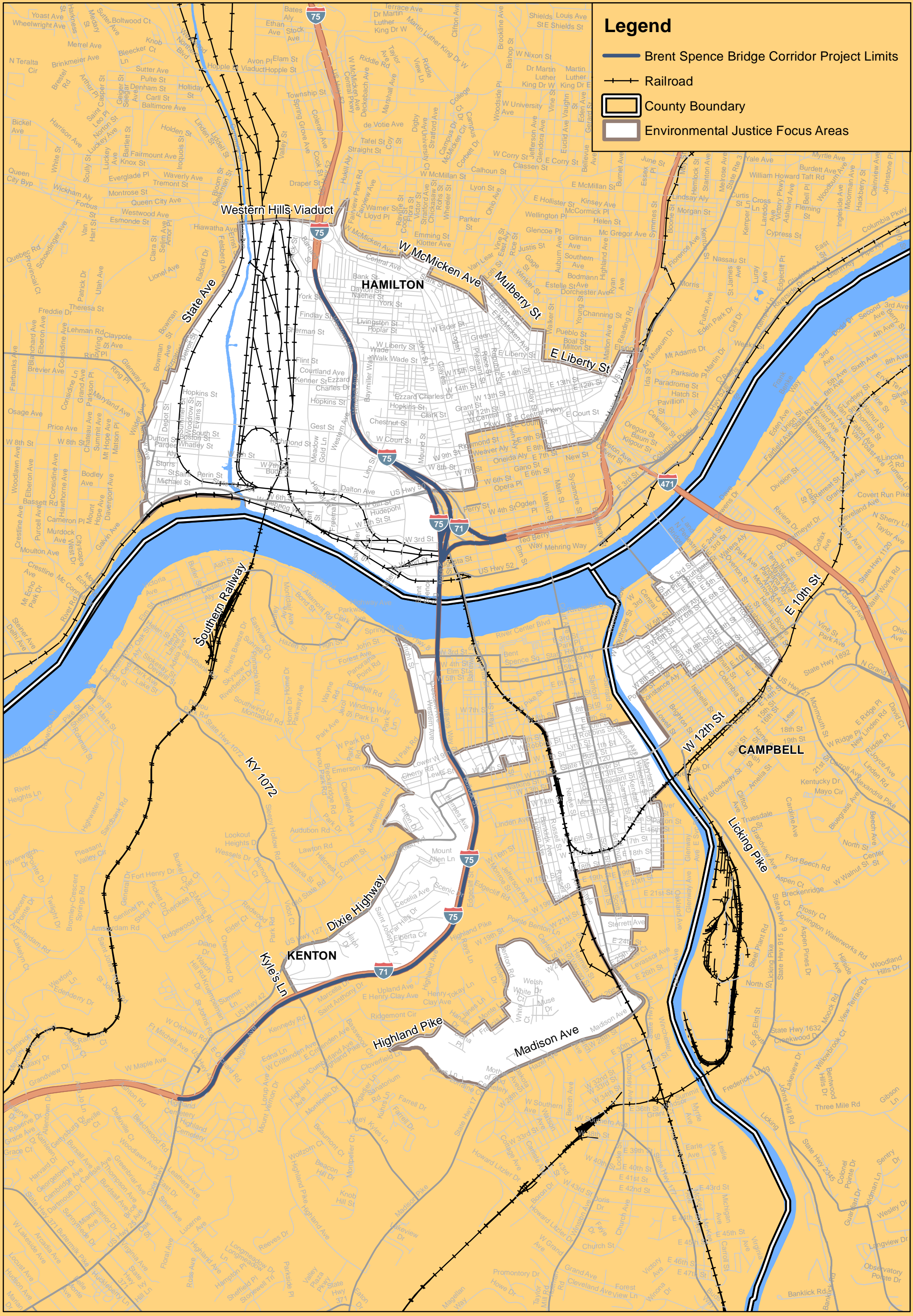


Figure 1-12  
 Focus Areas Based  
 on Minority Population  
 Brent Spence Bridge  
 Cincinnati, OH / Covington, KY

Date: 1/15/2015  
 Prepared by: TVF  
 Block group data from the  
 American Community Survey  
 (ACS) 2007-2011

A north arrow pointing upwards and a scale bar showing 0, 0.25, 0.5, and 1 mile increments.



**Legend**

- Brent Spence Bridge Corridor Project Limits
- Railroad
- County Boundary
- Environmental Justice Focus Areas

Figure 1-13  
 Combined Environmental  
 Justice Focus Areas  
 Brent Spence Bridge  
 Cincinnati, OH / Covington, KY

Date: 1/15/2015  
 Prepared by: TVF  
 Block group data from the  
 American Community Survey  
 (ACS) 2007-2011