APPENDIX F – PROCESS OF UPDATING COUNTIES OUTSIDE KENTUCKY

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Reference: Process of Updating KYSTM Socioeconomic Data for Zones Outside of KY

Household Rate Adjustments

Nineteen counties outside of Kentucky were found to be within a 180-minute travel band from Jackson, the designated center of District 10. These counties include:

- Clermont County, OH;
- Brown County, OH;
- Adams County, OH;
- Scioto County, OH;
- Lawrence County, OH;
- Wayne County, WV;
- Logan County, WV;

- Mingo County, WV;
- McDowell County, WV;
- Buchanan County, VA;
- Dickenson County, VA;
- Wise County, VA;
- Norton City, VA;
- Lee County, VA;

- Claiborne County, TN;
- Campbell County, TN;
- Scott County, TN;
- Fentress County, TN;
- Pickett County, TN.

KYTC provided updated population and employment data for Brown, Adams, and Scioto Counties, in Ohio as part of the updated data from the District 9 model in Kentucky. Therefore, these three counties were not further revised.

The 2010 population, household, and employment data in the KYSTM for Wise County and Norton City, which is within Wise County, conflated the population between the two zones and incorrectly included the inmates of a federal prison in employment totals. Therefore, the values for these jurisdictions were updated to reflect accurate base year totals, and then updated again in the same process as the other counties, as described below.

Figure 1 presents the location of external counties included in this update process.

Population

2040 population projections were taken for each of the fifteen counties outside Kentucky (not including the counties in the D9 Model) from the following sources:

- Ohio – https://development.ohio.gov/files/research/P6090.pdf
- West Virginia – http://busecon.wvu.edu/bber/pdfs/BBER-2014-04.pdf
    - 2030 projections were extrapolated to 2040.
- Virginia – https://demographics.coopercenter.org/virginia-population-projections
- Tennessee – http://tndata.utk.edu/sdcpopulationprojections.htm

These 2040 county-level population values were disaggregated to the TAZ level according to the county-level proportions previously included in the KYSTM field "F_POP," replacing those values.

Reference: District 10 KYSTM Review and Proposed Updates

An annualized growth rate was calculated for each county based on the 2016 Census county population and the 2040 projected population using the following formula:

$$GR = \frac{2040\ Projected\ Population}{2016\ Census\ Population}^{\frac{1}{(2040-2016)}} - 1$$

This growth rate was applied to the 2016 Census population to estimate new 2010 population using the following formula:

$$2010\ Population = \frac{2016\ Census\ Population}{(1 + GR)^{(2016-2010)}}$$

These values replaced the KYSTM field "B_POP."

The 2010 population values for Wise County and Norton City were updated to reflect 2010 Census data, then updated with this process.

Households

The 2016 Census population and the 2016 Census number of households were used to find the number of persons per household:

$$PPH = \frac{2016\ Census\ Population}{2016\ Census\ Households}$$

This PPH value was then applied to the revised 2010 and 2040 populations to calculate 2010 and 2040 households:

$$2010\ Households = PPH * B\_POP$$

$$2040\ Households = PPH * F\_POP$$

These values replaced the fields "B_HH and" "F_HH."

The 2010 number of households for Wise County and Norton City were updated to reflect the Census, then updated according to the same process.
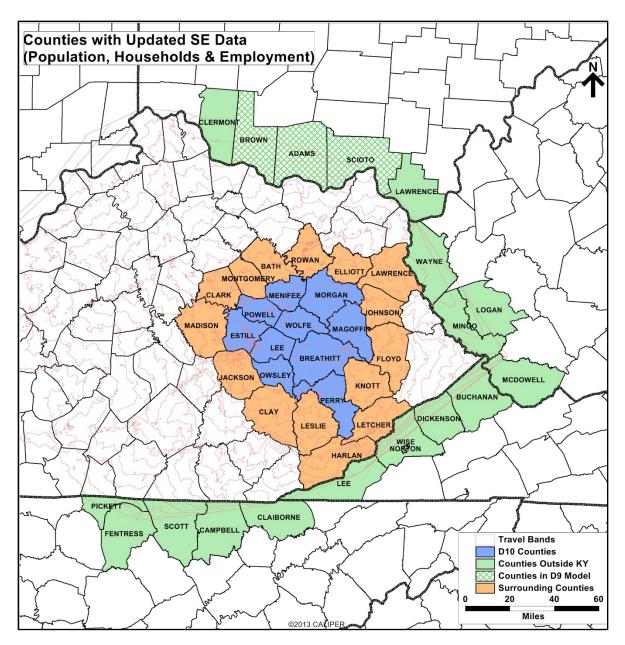
Reference: District 10 KYSTM Review and Proposed Updates

Figure 1: Counties with Updated SE Data

Reference: District 10 KYSTM Review and Proposed Updates

Employment

2010 and 2040 employment were revised to more accurately reflect and be compatible with conservative estimates and forecasts currently being incorporated in other regions of the KYSTM model. The factor used was the ratio of county-level 2015 employment from the more conservative, payroll based Bureau of Labor Statistics (BLS) database to the county-level 2015 employment from the more comprehensive survey based Bureau of Economic Analysis (BEA):

$$Economic\ Ratio = \frac{2015\ BLS\ Employment}{2015\ BEA\ Employment}$$

Table 1 presents the BLS/BEA ratios for each external county.

Table 1: BLS/BEA Ratio for External Counties

County	2015 BLS Employment	2015 BEA Employment	BLS/BEA
Clermont	58,431	85,289	0.685
Lawrence	12,656	18,636	0.679
Wayne	8,487	12,085	0.702
Logan	10,031	12,497	0.803
Mingo	5,320	7,558	0.704
McDowell	4,797	5,948	0.806
Buchanan	6,705	8,644	0.776
Dickenson	3,545	4,749	0.746
Wise	15,325	19,553	0.784
Norton (city)	362	462	0.784
Lee	4,568	7,414	0.616
Claiborne	8,940	13,545	0.660
Campbell	8,883	13,594	0.653
Scott	5,387	8,064	0.668
Fentress	4,818	7,757	0.621
Pickett	1,091	2,043	0.534

This ratio was multiplied by 2010 and 2040 Service, Retail, NonRetail, and Total Employment fields to calculate revised "B_Service," "B_NonRetail," "B_Retail," "B_TotalEmp," "F_Service," "F_NonRetail," "F_Retail," and "F_TotalEmp."

At the direction of KYTC, this same BLS/BEA revision ratio was used to lower overall employment for District 10 and the surrounding 15 counties.

Reference: District 10 KYSTM Review and Proposed Updates

The 2010 employment values for Wise County and Norton City were updated to reflect the 2010 BEA values. The BEA data showed a combined 2010 employment for Wise and Norton, so this value was proportionally assigned to each affected zone.

To update the 2040 employment values for Wise County and Norton City, a growth rate was calculated between the 1990 and 2015 BEA employment estimates. This growth rate was extended to estimate 2040 employment. The Wise County and City of Norton values were then combined and 2040 employment assigned proportionally to the affected zones.

Table 2 presents the county level totals for each updated data field in the KYSTM for each external county.

Table 2: External County Revised County Totals by KYSTM Field

County	State	B_Pop	Updated B_Pop	F_Pop	Updated F_Pop	B_HH	Updated B_HH	F_HH	Updated F_HH	B_TotalEmp	Updated B_TotalEmp	F_TotalEmp	Updated F_TotalEmp
Clermont	OH	200,575	199,857	328,603	216,190	77,316	74,063	130,488	80,116	84,797	58,094	147,595	101,116
Lawrence	OH	62,889	60,428	68,566	62,680	25,759	23,074	29,074	23,933	19,392	13,169	23,952	16,266
Wayne	WV	41,143	41,635	42,704	36,401	17,052	16,895	18,280	14,771	11,358	7,976	14,250	10,007
Logan	WV	35,376	35,932	32,449	26,075	14,336	14,902	12,524	10,814	12,904	10,358	15,107	12,126
Mingo	WV	26,350	26,166	25,905	19,404	10,897	11,522	11,091	8,544	9,313	6,555	9,367	6,593
Mcdowell	WV	22,383	20,856	22,370	13,579	9,426	8,677	9,559	5,649	6,751	5,445	7,056	5,691
Buchanan	VA	22,754	23,999	20,023	16,176	9,001	9,873	7,655	6,655	10,381	8,052	11,537	8,949
Dickenson	VA	16,107	15,494	17,047	13,037	6,833	6,268	7,426	5,274	5,563	4,153	7,166	5,349
Wise	VA	41,452	39,736	86,814	37,260	15,968	15,422	35,995	14,461	23,330	18,285	19,052	14,932
Norton	VA	3,958	3,861	6,353	3,875	1,750	1,857	5,866	1,863	551	432	450	353
Lee	VA	25,236	23,706	27,843	26,167	10,716	9,100	11,807	10,045	9,480	5,841	12,317	7,589
Claiborne	TN	31,422	32,022	37,682	30,717	12,791	12,890	15,728	12,364	13,475	8,894	18,077	11,931
Campbell	TN	41,517	40,093	58,872	38,234	17,320	16,054	24,963	15,309	14,265	9,321	21,837	14,269
Scott	TN	21,948	22,057	25,079	21,513	8,785	8,410	10,284	8,203	8,031	5,365	10,361	6,921
Fentress	TN	17,815	18,015	22,342	18,106	7,538	7,383	9,806	7,420	8,409	5,223	11,689	7,260
Pickett	TN	4,794	5,248	5,222	4,738	2,135	2,172	2,401	1,961	1,716	916	2,048	1,094

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