

APPENDIX C:
TRAFFIC FORECASTING
TECHNICAL
MEMORANDUM

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File:	I-75 Programming Study Traffic Forecasting Tech Memo	Date:	May 10, 2024

Reference: I-75 Programming Study Traffic Forecasting Technical Memorandum

PROJECT DESCRIPTION

As part of the *I-75 Programming Study*, Stantec developed traffic forecasts to assist in the evaluation of improvement concepts. Historical traffic data, population trends, and results from the Kentucky Statewide Traffic Model (KYSTM) were used to develop the forecasts.

This memorandum presents the methodology and assumptions used in the development of the traffic forecasts for the corridor.

STUDY AREA

The study area includes I-75 in Whitley County, Kentucky from milepoint (MP) 0.0 to MP 20.0, as shown in **Figure 1**. The study area includes two interchanges and the Kentucky Welcome Center:

- MP 1.5 – Welcome Center
- Exit 11 – KY 92 Interchange
- Exit 15 – US 25W Interchange

HISTORICAL TRAFFIC DATA

Historical KYTC traffic count data on study area roadways were analyzed to determine traffic growth patterns over the past 20 years. As shown in **Figure 2**, I-75 carries 31,500 vehicles per day (VPD) between the Tennessee border and Exit 11, 37,500 VPD between Exit 11 and Exit 15, and 38,200 north of Exit 15.

Compound annual growth rates (CAGR) were calculated to determine historical growth trends on I-75 and at Exit 11 (KY 92). Historical trends for I-75 KYTC count stations are presented in **Table 1** and shown graphically in **Figure 3**. Trends for the KY 92 interchange are shown in **Table 2**. Daily traffic on I-75 has increased over the past 15 years, with annual growth rates ranging from 1.66 to 2.13 percent per year. At Exit 11, daily traffic has grown at all four of the ramps with daily traffic on KY 92 growing west of I-75 and declining to the east. The US 25W and South 10th Street count stations also show declines.

Although traffic has declined at the KY 92 interchange over the past 20 years, the recent construction of the Mint Gambling Hall, a 24-hour casino, is expected to increase traffic in the area. KYTC Item No. 11-80264.00 is a project to construct a new connector road between KY 92 and Penny Lane and reconfigure the intersection of KY 92 and Penny Lane. This purpose of this project is to improve safety and traffic operations for the increased traffic in the area.

Reference: I-75 Programming Study Traffic Forecasting Technical Memorandum



Figure 1: Study Area

Reference: I-75 Programming Study Traffic Forecasting Technical Memorandum

Table 1: KYTC Historical Traffic Counts (Mainline I-75)

Year	I-75 (State line to Exit 11)	I-75 (Exit 11 to Exit 15)	I-75 (North of Exit 15)
		118P83	118515
2008	25,000	29,800	28,800
2009	21,500		
2010			
2011	26,300	36,100	36,500
2012		30,992	30,393
2013	27,089	31,594	28,451
2014	28,045	36,856	36,278
2015	29,747		41,634
2016	29,923	38,667	38,519
2017	30,337	43,185	35,775
2018	30,833	34,031	32,521
2019	31,528	35,456	35,091
2020	27,432	32,586	33,772
2021		43,005	42,621
2022		37,542	38,213
% CAGR	2.13%	1.66%	2.04%

Source: Kentucky Transportation Cabinet (KYTC)

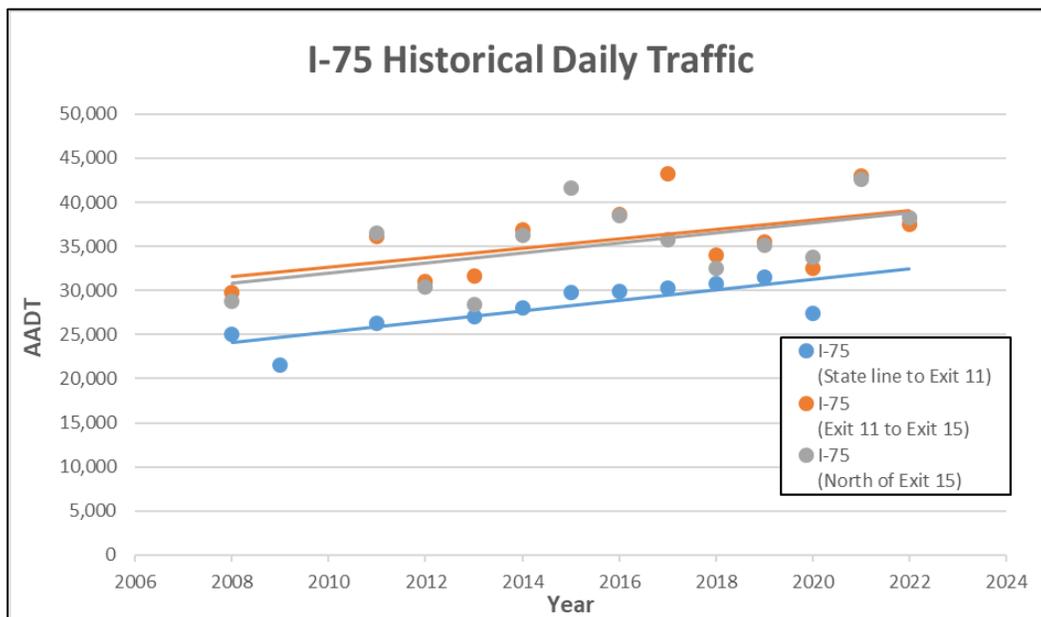


Figure 3: KYTC Historical Daily Traffic Trends (Mainline I-75)

Reference: I-75 Programming Study Traffic Forecasting Technical Memorandum

Table 2: KYTC Historical Traffic Counts (Exit 11)

Year	KY 92 (West of I-75)	KY 92 (East of I-75)	US 25W (South)	US 25W (North)	S. 10th St.	I-75 SB Off Ramp	I-75 SB On Ramp	I-75 NB Off Ramp	I-75 NB On Ramp
	118E04	118E00	118D24	118D26	118D37	118D92	118D84	118D85	118D86
2008	3,830			10,900					
2009	3,720	13,300							
2010			7,060		6,770				
2011				10,100					
2012	3,847	12,519							
2013			6,125		6,398				
2014				10,790		3,612		1,611	3,958
2015									
2016			6,124		5,766				
2017				9,667					
2018	4,427	10,603				4,019	2,097	2,009	4,068
2019	4,710	14,056	5,331		4,534				
2020				9,174					
2021	4,910	10,550				4,228	2,126	2,136	4,591
2022			4,859		4,986				
% CAGR	1.93%	-1.91%	-3.07%	-1.32%	-2.53%	2.28%	0.46%	4.11%	2.14%

POPULATION GROWTH

Population data, including data from the 2020 Census, were obtained from the Kentucky State Data Center (KSDC) at the University of Louisville, Kentucky’s official clearinghouse for Census data. Population projections for the state of Kentucky, Whitley County, and Williamsburg are summarized in **Table 2**. Between 2000 and 2020 the population of Williamsburg increased slightly, at a lower rate than Whitley County and the rest of the state. Whitley County’s population is expected to continue to grow from 2020 through 2050, at a rate of 0.19 percent per year.

Table 2: Population Estimates & Projections

Area	Census Estimates			Annual Growth	2050 Projection	Annual Growth
	2000	2010	2020	2000 - 2020		2020 - 2050
Kentucky	4,041,769	4,339,367	4,505,836	0.54%	4,785,233	0.20%
Whitley County	35,865	35,637	36,712	0.12%	38,854	0.19%
Williamsburg	5,243	5,148	5,296	0.05%	N/A	N/A

Source: KY State Data Center

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REGIONAL TRAVEL DEMAND MODEL

Mainline I-75

Study area growth rates from the Kentucky Statewide Traffic Model (KYSTM) were reviewed. If no capacity upgrades are made to I-75, annual growth is expected to range between 0.7 and 1.1 percent per year from 2019 to 2045, as shown in **Figure 4**.

Annual growth was also analyzed for the Build scenario if I-75 were to be widened to six lanes from MP 0.0 to MP 20.0. Results from the Build analysis are shown in **Figure 5**. Daily traffic on I-75 is expected to grow between 1.1 and 1.5 percent per year under the Build scenario.

KY 92 Interchange

No-Build KYSTM growth rates were reviewed at the I-75 interchange with KY 92. Daily traffic on KY 92 is expected to increase between 0.4 and 0.9 percent per year, while traffic on South 10th Street and US 25W is expected to increase up to 1.9 percent per year. Growth on the I-75 ramps is expected to range between 0.6 and 2.2 percent per year.

ANNUAL GROWTH RATES

Both historical traffic on I-75 and population in Whitley County have grown over the past 20 years, demonstrating an increase in the demand of local and through trips on the route. Results from the KYSTM show this growth is expected to continue to 2045 without capacity improvements. If additional lanes are constructed on I-75, daily traffic is expected to increase to up to 1.5 percent per year.

Daily traffic at the KY 92 interchange has grown over the past 20 years on the ramps and to the west. East of the interchange, daily traffic has declined. However, based on the growing population in Williamsburg, increased traffic on I-75, and the recent completion of the Mint Gambling Hall, traffic is expected to increase, as reflected in the KYSTM growth rates.

The following growth rates were used for the I-75 Programming Study:

Mainline I-75

- **No Build GR = 1.0%**
- **Build GR = 1.5%**

KY 92 Interchange & Other Routes

- **No-Build & Build GR = 1.0%**

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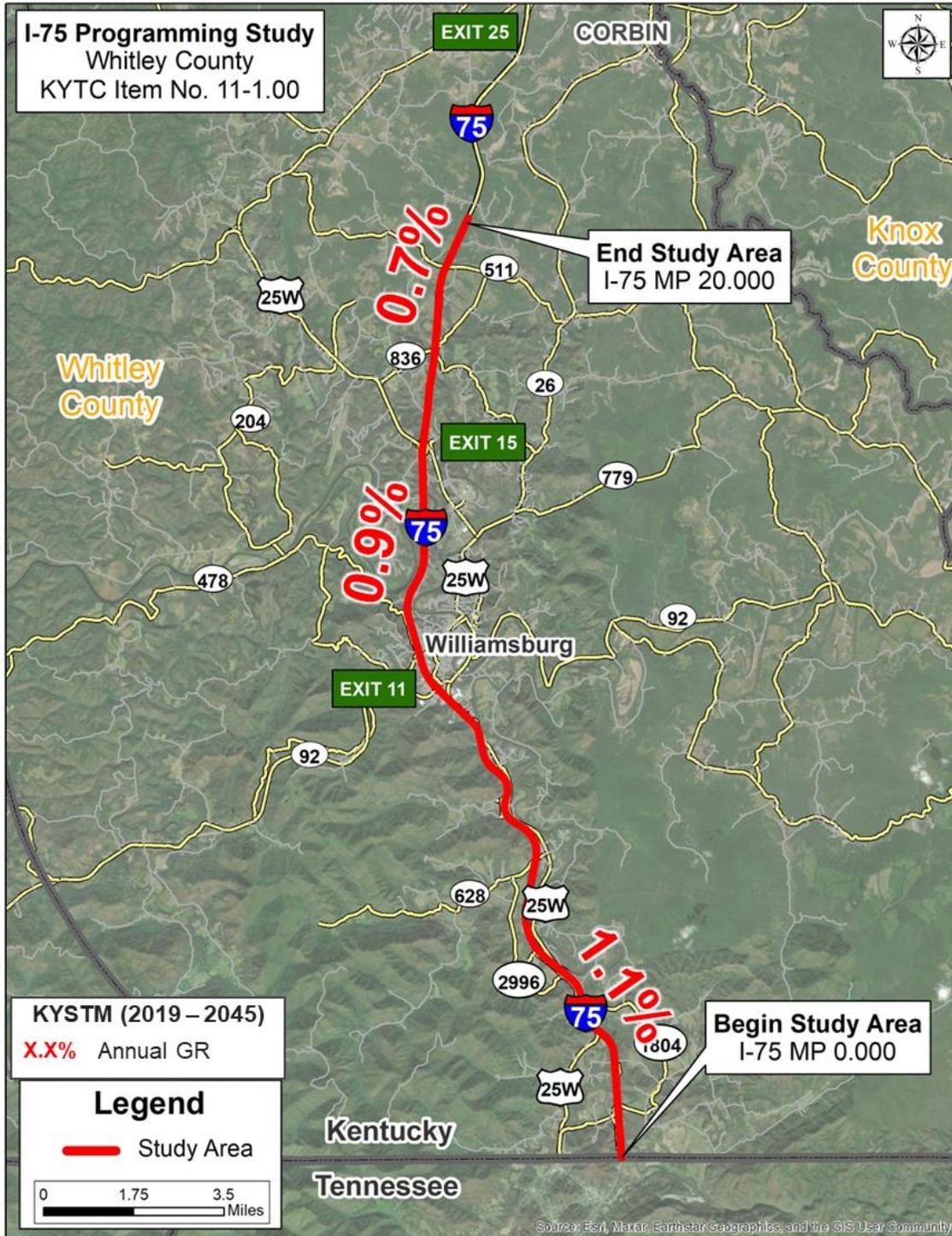


Figure 4: KYSTM No-Build Growth Rates (2019 – 2045)

Reference: I-75 Programming Study Traffic Forecasting Technical Memorandum



Figure 5: KYSTM Build Growth Rates (2019 – 2045)

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DAILY TRAFFIC FORECASTS

Daily traffic forecasts were developed by applying the growth rates to the most recent daily traffic counts. **Figure 6** presents the 2045 No-Build daily traffic forecasts. **Figure 7** presents the 2045 Build daily traffic forecasts, which assume I-75 will be widened to six lanes from MP 0.0 to MP 20.0.

NEXT STEPS

The next step is to use the daily traffic forecasts to inform project team discussions on potential improvements.

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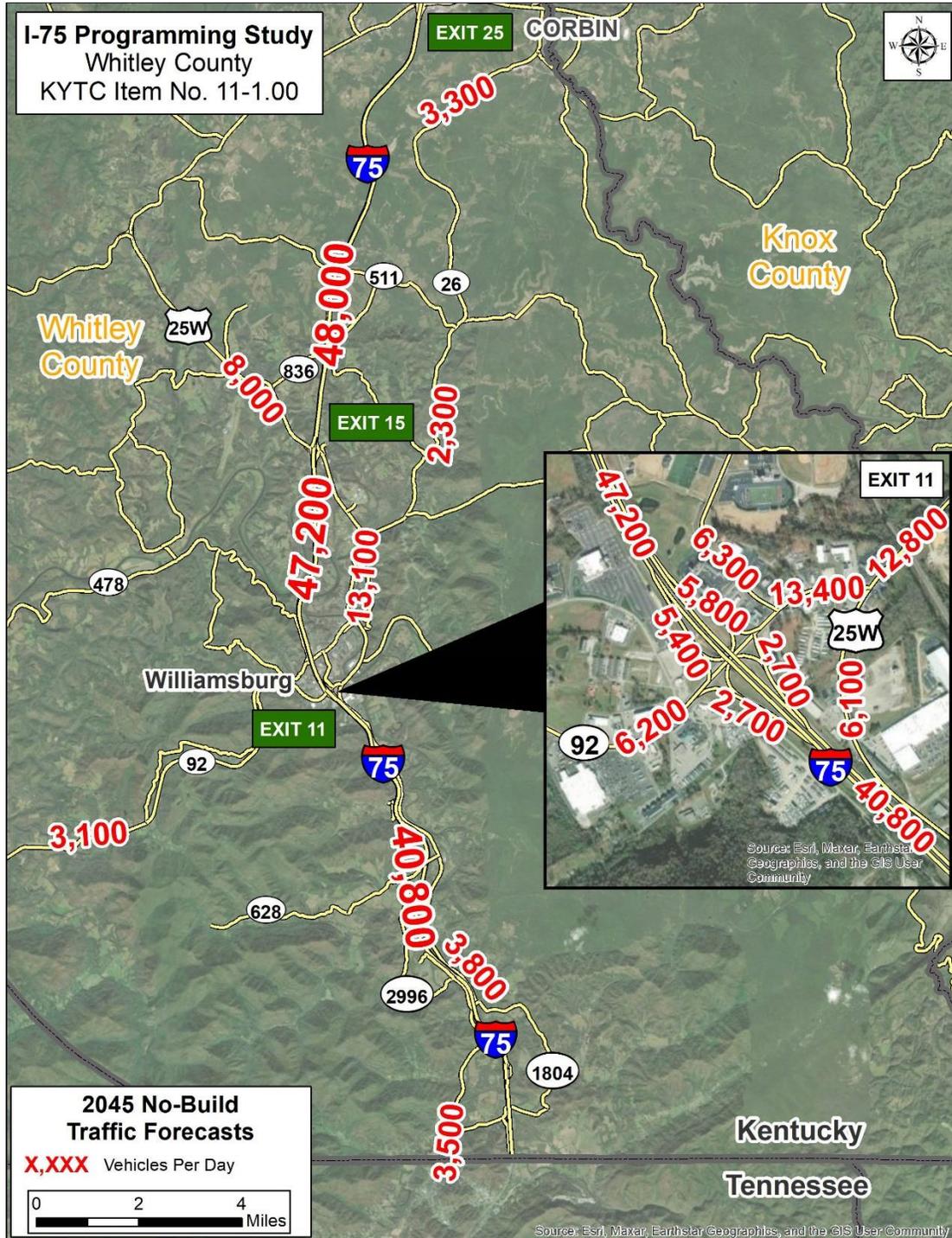


Figure 7: 2045 No-Build Daily Traffic Forecasts

