Georgia DOT Research Project 25-04

Final Report

DEVELOPMENT OF SAFETY PERFORMANCE FUNCTIONS FOR URBAN AND SUBURBAN MULTILANE HIGHWAYS IN GEORGIA

Georgia Department of Transportation

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16. Abstract

This report presents the findings of the Georgia Department of Transportation (GDOT) Research Project 25-04 which concludes Research Project 22-27, which aimed to develop Georgia-specific safety performance functions (SPFs) and estimate crash modification factors (CMFs) to evaluate the safety effectiveness of different median treatments on urban and suburban multilane highways. Leveraging six years (2016–2021) of crash, roadway, and traffic data—with a focus on 2018–2021 data—the research developed segment-level and corridor-level SPFs and estimated CMFs to quantify the impacts of three median types on crash frequency and severity: undivided/no median, flush medians (two-way left-turn lanes [TWLTLs]), and raised medians. SPFs were developed separately by median type and crash severity (all crashes [KABCO] and fatal and injury crashes [KAB]), incorporating key variables such as traffic volume (annual average daily traffic [AADT]), truck percentage, access point density, intersection density (corridor-level), land use, and area type (urban versus suburban). Findings indicate that raised medians consistently provide the greatest safety benefits in high-volume and high-conflict settings (e.g., AADT > 25,000, dense intersections), and TWLTLs are effective under moderate traffic conditions (AADT 15,000–25,000) with low truck percentages. Undivided/no-median highways are generally suitable only in low-volume, low-conflict environments (AADT < 20,000). CMF-informed policy recommendations were developed to support GDOT in making context-sensitive, data-driven decisions about median design for urban and suburban multilane highways across Georgia, aligning with the department's design guidelines.

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Final Report

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SI* (MODERN METRIC) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
		AREA		
in^2	square inches	645.2	square millimeters	mm^2
ft^2	square feet	0.093	square meters	m^2
yd^2	square yard	0.836	square meters	m^2
ac	acres	0.405	hectares	ha
mi^2	square miles	2.59	square kilometers	km^2
		VOLUME		
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liters	L
ft^3	cubic feet	0.028	cubic meters	m^3
yd^3	cubic yards	0.765	cubic meters	m^3
		NOTE: volumes greater than 1000 L shall be shown in m^3		
		MASS		
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
		TEMPERATURE (exact degrees)		
^oF	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	^oC
		ILLUMINATION		
fc	foot-candles	10.76	lux	lx
fl	foot-Lamberts	3.426	candela/m^2	cd/m^2
		FORCE and PRESSURE or STRESS		
lbf	poundforce	4.45	newtons	N
lbf/in^2	poundforce per square inch	6.89	kilopascals	kPa

APPROXIMATE CONVERSIONS FROM SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
		LENGTH		
mm	millimeters	0.039	inches	in
m	meters	3.28	feet	ft
m	meters	1.09	yards	yd
km	kilometers	0.621	miles	mi
		AREA		
mm^2	square millimeters	0.0016	square inches	in^2
m^2	square meters	10.764	square feet	ft^2
m^2	square meters	1.195	square yards	yd^2
ha	hectares	2.47	acres	ac
km^2	square kilometers	0.386	square miles	mi^2
		VOLUME		
mL	milliliters	0.034	fluid ounces	fl oz
L	liters	0.264	gallons	gal
m^3	cubic meters	35.314	cubic feet	ft^3
m^3	cubic meters	1.307	cubic yards	yd^3
		MASS		
g	grams	0.035	ounces	oz
kg	kilograms	2.202	pounds	lb
Mg (or "t")	megagrams (or "metric ton")	1.103	short tons (2000 lb)	T
		TEMPERATURE (exact degrees)		
^oC	Celsius	1.8C+32	Fahrenheit	^oF
		ILLUMINATION		
lx	lux	0.0929	foot-candles	fc
cd/m^2	candela/m^2	0.2919	foot-Lamberts	fl
		FORCE and PRESSURE or STRESS		
N	newtons	0.225	poundforce	lbf
kPa	kilopascals	0.145	poundforce per square inch	lbf/in^2

* SI is the symbol for the International System of Units. Appropriate rounding should be made to comply with Section 4 of ASTM E380. (Revised March 2003)

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LIST OF ABBREVIATIONS

A	Suspected Serious Injury Crashes
AADOWT	Annual Average Day of the Week Traffic
AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
AAWEHT	Annual Average Weekend Hourly Traffic
AAWDHT	Annual Average Weekday Hourly Traffic
ADT	Average Daily Traffic
AIC	Akaike's Information Criterion
ANN	Artificial Neural Network
AP	Access Point
ATP	Average Truck Percentage
B	Suspected Minor or Visible Injury Crashes
C	Potential Injury or Complaint Crashes
CMF	Crash Modification Factor
CO	Possible Injury or Complaint Crashes and No Apparent Injury Crashes
COVID-19	Coronavirus Disease 2019
CURE	Cumulative Residual
DOT	Department of Transportation
DT	Decision Tree
GDOT	Georgia Department of Transportation
HIGA	Hybrid Intelligent Genetic Algorithm
HSM	*Highway Safety Manual*
INT	Intersection Density
K	Fatal Injury Crashes
KA	Fatal and Suspected Serious Injury Crashes
KAB	Fatal and Injury Crashes
KABC	Crashes with Apparent Injuries
KABCO	Total Crashes
KNN	K-Nearest Neighbor
NB	Negative Binomial
O	Crashes with No Apparent Injuries
PDO	Property Damage Only
RF	Random Forest
RSA	Road Safety Assessment
RSR	Road Safety Review
SHSP	Strategic Highway Safety Plan
SPF	Safety Performance Function
TWLTL	Two-Way Left-Turn Lane
VDOT	Virginia Department of Transportation
VMT	Vehicle Miles Traveled
vpd	Vehicles Per Day
WSDOT	Washington State Department of Transportation
XGBoost	eXtreme Gradient Boosting

EXECUTIVE SUMMARY

Safety Performance Functions (SPFs) are essential predictive tools for transportation agencies to inform highway design and safety improvements. While the American Association of State Highway and Transportation Officials (AASHTO) *Highway Safety Manual* (HSM) offers SPFs for various facility types, regional differences in roadway geometry and operations necessitate state-specific models. Georgia's urban and suburban multilane highways play a critical role in the state's transportation network, but their safety performance is influenced by factors like median design. This project, Georgia DOT Research Project 22-27, aimed to develop Georgia-specific SPFs and estimate Crash Modification Factors (CMFs) to evaluate the safety effectiveness of different median treatments—no median, flush medians (two-way left-turn lanes, TWLTLs), and raised medians—on these highways.

The project's objectives included investigating crash characteristics on multilane highways with varying cross-sections, comparing safety performance across these cross-sections while accounting for traffic volume, truck percentage, and access/intersection density, developing standard and extended SPFs, identifying key safety-influencing factors, estimating CMFs for median types at both segment and corridor levels, and providing data-driven recommendations for safety improvements. To achieve these goals, the project utilized six years (2018–2023) of data, including traffic crash records (with details on severity, such as KABCO crashes), traffic volume data (AADT and truck percentages), roadway inventory data (lane count, speed limits, median type, access points), and workzone data to account for construction impacts. Data processing involved cleaning, merging short segments, splitting long segments, and linking crash and traffic data to specific roadway segments and corridors, ensuring consistency in analysis units.

Models were developed using Negative Binomial regression to create SPFs, which predict crash frequencies based on variables including AADT, segment length, truck percentage, and access point density. These SPFs were stratified by median type and crash severity. CMFs were then estimated by comparing predicted crash frequencies for different median types relative to a baseline of no median, quantifying their safety impacts under varying conditions. Key findings revealed that raised medians consistently offered the greatest safety benefits in high-volume, high-conflict settings (e.g., AADT > 25,000, dense intersections), reducing crash frequencies across all severities. Flush medians (TWLTLs) were most effective in moderate traffic (AADT 15,000–25,000) with low truck percentages. No-median treatments were only suitable for low-volume, low-conflict environments (AADT < 20,000), as they correlated with higher crash rates in busier areas. These findings inform critical policy insights, with simplified recommendations for median selection in urban and suburban areas (summarized in a table 1), aligned with GDOT's *Design Policy Manual* (Table 6.3 on Median Options for Arterials, GDOT, 2024).

ES Table 1 Median Options for Urban and Suburban Multilane Highways

Suburban Areas		
ADT (vpd)	**Median Option**	**Notes**
≤10,000	Undivided	
10,000 – 15,000	TWLTL	*Undivided median in limited conditions[1]*
15,000 – 20,000	TWLTL	*Undivided median not advised[2]*

>20,000 – 25,000	TWLTL or Raised Median	*Raised median preferred with increasing volume and turning conflicts*[3]
>25,000	Raised Median	*Preferred for higher volume and to provide access control*[4]
<u>Urban Areas</u>		
ADT (vpd)	**Median Option**	**Notes**
≤15,000	Undivided	*Acceptable for low-volume corridors*[5]
15,000 – 30,000	TWLTL or Raised Median	*TWLTL if truck % ≤10%; Raised Median if truck % >10%*[6]
>30,000	Raised Median	*Advised for high volume and truck % >5%*[7]

Notes:

1. Undivided medians for 10,000–15,000 ADT: Acceptable with ≤5% trucks, ≤4 intersections/mile. Otherwise, select TWLTL.
2. Undivided medians for 15,000–20,000 ADT: Not advised unless constrained conditions, with ≤5% trucks, ≤4 intersections/mile, where TWLTL/raised medians are infeasible.
3. TWLTL for 20,000–25,000 ADT: Acceptable with ≤10% trucks, >4 intersections/mile. Raised medians better for control.
4. Raised medians for >25,000 ADT: Advised when >5% trucks; When < 5% trucks and > 4 intersections/mile, advised TWLTL; otherwise, undivided medians may be acceptable only under constrained conditions.
5. Undivided medians for ≤15,000 ADT: Acceptable with ≤5% trucks, ≤6 intersections/mile; Otherwise, should be analytically scrutinized.
6. For 15,000–30,000 ADT:
    - TWLTL: Acceptable with ≤10% trucks, frequent left-turn demands.
    - Raised medians: Advised with >10% trucks.
7. Raised medians for >30,000 ADT: Advised with >5% trucks; When < 5% trucks and > 6 intersections/mile, advised TWLTL; otherwise, undivided medians may be acceptable only under constrained conditions.

These recommendations, based on analysis of all crashes (KABCO) including property-damage-only incidents, provide a comprehensive view of safety impacts, though fatal and injury crashes (KAB) can be prioritized in targeted analyses. Importantly, these guidelines are approximate, based on 2018–2021 data, and should be considered alongside mobility, environmental, and operational factors for context-sensitive decision-making. These recommendations enable GDOT to make data-driven choices that balance safety and operational needs, enhancing the safety of Georgia's urban and suburban multilane highways.

CHAPTER 1. INTRODUCTION

BACKGROUND

Safety performance functions (SPFs) are vital predictive tools used by state agencies to support highway design and safety improvement decision-making. The American Association of State Highway and Transportation Officials (AASHTO) *Highway Safety Manual* (HSM; AASHTO 2010) provides SPFs for various facility types based on data collected across multiple states. However, since geometric and operational conditions differ significantly from state to state, it is recommended that each state calibrate the HSM SPFs or develop specific SPFs using local data to enhance their accuracy and effectiveness. The Georgia Department of Transportation (GDOT) is actively incorporating SPFs into its planning and engineering processes to improve highway safety. This research aims to develop Georgia-specific SPFs, thereby supplementing GDOT's ongoing initiatives to enhance roadway safety.

Urban and suburban multilane highways are crucial to Georgia's economic development, and they provide significant social benefits. These highways, characterized by two or more lanes of traffic in each direction, are often pivotal components of the transportation network. A multilane highway can be either undivided or divided, with the latter having a separation of at least 4 ft (AASHTO 2018). These roads support high traffic volumes and accommodate a wide range of speed limits. The various types of multilane highways include three-lane roads with a two-way left-turn lane (TWLTL), four-lane undivided roadways, four-lane divided roadways, and five-lane roadways with TWLTL. Identifying the most effective roadway configuration for different traffic and geometric conditions is essential for ensuring optimal safety outcomes, especially when balancing safety improvements with costs.

A critical factor in improving the safety of these roadways lies in understanding the characteristics of the corridors themselves. Corridors are defined as specific sections of roadways or streets that connect key points of interest or transportation routes. The design and characteristics of these corridors—such as median types, access point density, intersection density, and roadside environments—directly impact the safety of the roadway. Therefore, this project takes into consideration various types of corridors, focusing on urban and suburban multilane highways where the interactions between different land uses, traffic volumes, and safety factors are most pronounced. By considering corridor-level data, this study aims to provide GDOT with insights into how median types and roadway configurations can influence crash rates and overall safety performance.

PROJECT OBJECTIVES

This project focused on developing Georgia-specific SPFs for urban and suburban multilane roadways, considering both segment-level and corridor-level analyses. The primary objectives of the project were the following:

1. Investigate the characteristics of crashes on urban and suburban multilane roadways with various cross-section types in Georgia, using both segment-level and corridor-level data.
2. Examine and compare the safety performance of different cross-section types of multilane roadways, accounting for factors such as traffic volume, truck percentage, access point density, and intersection density.
3. Develop standard SPFs using traffic volume and segment length as primary variables, as well as extended SPFs incorporating additional factors that influence safety, such as truck percentages, intersection density, and roadway environment.

4. Identify key road and traffic characteristics, such as traffic volume, truck percentage, posted speed limit, lane width, and access point density, that contribute to safety performance differences across various roadway types and settings.
5. Estimate crash modification factors (CMFs) for key roadway characteristics that influence safety improvements, using both segment-level and corridor-level analysis to capture the full impact of design changes on safety.
6. Provide recommendations for improving the safety performance of different cross-section types of multilane roadways in Georgia, based on the findings from both the segment-level and corridor-level analyses.

CHAPTER 2. LITERATURE REVIEW

A detailed review of the literature was conducted to synthesize state practices and scholarly research on SPFs for urban and suburban multilane highway segments. The research team extensively searched for relevant literature and reports on the development and application of SPFs, including state practices and guidelines, as well as scholarly research on advanced crash prediction models.

STATE-LED PRACTICES

Though the HSM provides a list of SPFs for various facility types, it recommends that each state either calibrates the HSM SPFs or develop jurisdiction-specific SPFs using local data to improve their effectiveness, given that geometric and operational conditions can vary significantly from one state to another (AASHTO 2010). According to the literature, most state practices involve the development of jurisdiction-specific SPFs. Typically, three to five years of historical crash data are used to develop SPFs. Regarding modeling methods, most SPFs are developed using negative binomial (NB) models, as recommended by the HSM. In recent years, extended NB models have been applied to better capture heterogeneity in traffic safety data. These include random-parameter NB models (Shankar et al. 2016) and spatially/temporally weighted NB models (Khattak et al. 2022). The most commonly included and nearly always required variables in SPFs are traffic volume (or annual average daily traffic [AADT]) and segment length, which serve as exposure variables. Other frequently included factors are speed limit, number of through lanes, lane width, median type/width, shoulder type/width, and access point density (for non-freeway segments), as these have been found to significantly influence crash frequency (e.g., Alabama DOT 2016, Khattak et al. 2022, Kweon and Lim 2014, Shankar et al. 2016). Additional variables—such as the presence of on-street parking, curbs, and roadway curvature—have also been considered when data availability permits an expanded model specification (Donnell et al. 2019). Although some efforts focus on segment-level SPFs, the influence of intersection-related variables—such as the presence of left or right turn lanes and the type of intersection control (e.g., signs or signals)—on segment safety performance has also been explored (Donnell et al. 2019, Khattak et al. 2022). These insights inform the potential value of collecting additional data to support SPF development for urban and suburban multilane highway segments in Georgia. Besides the state-led efforts to develop jurisdiction-specific SPFs, some have attempted to adopt SPFs provided by the HSM by adjusting the model predictions with calibration factors (Colety et al. 2016, Rodgers et al. 2015). APPENDIX A Summary of Selected State-Led Efforts for Adopting or Developing SPFs summarizes state-led or -supported efforts to develop or adopt SPFs for multilane highway segments. The following is a list of selected state-led efforts aimed at developing or adopting SPFs for highway segments.

Alabama

Alabama DOT has developed a guide for road safety assessments (RSAs) and road safety reviews (RSRs) to establish a standardized procedure for conducting these assessments in Alabama (Alabama DOT 2016). This guide aligns with Alabama's Strategic Highway Safety Plan (SHSP), which has identified RSAs as a key strategy for reducing fatal and severe injury crashes and achieving the vision of zero fatalities from highway crashes. The primary objective of RSAs and RSRs is to identify, assess, and prioritize highway safety concerns and provide actionable countermeasure strategies to responsible highway jurisdictions, enforcement agencies, and other stakeholders. The guide outlines best practices for conducting RSAs/RSRs, describes their application in various project stages, provides resources for practitioners who perform safety assessments, and establishes a process for incorporating RSAs into Alabama DOT's routine activities. Although primarily targeted for Alabama DOT processes, the guide also includes guidance and information applicable to county and local transportation agencies, law enforcement, and others interested in improving transportation safety in Alabama.

Arizona

An Arizona DOT report documents the recommendations for adopting HSM-provided SPFs for Arizona highways (Colety et al. 2016). The primary objective of their study was to establish a process for evaluating the effectiveness of the HSM's SPFs for road segments and intersections on the Arizona State Highway System and to determine whether they required calibration or if Arizona-specific SPFs should be developed. The study concluded that function types 1 and 6, as described in chapter 4 of the HSM, were the most effective options. Calibration factors for specific site features were also provided (see table 1 through table 7), with AADT identified as a significant factor connected to the calibration factor and thus displayed in the tables. The tables illustrate the total number of observed crashes (over a five-year period), total number of anticipated crashes (over a five-year period based on the HSM's prediction methodology), calibration factor, and average AADT.

Table 1. Arizona DOT calibration factors by region.

Region	Observed Crashes	Predicted Crashes (HSM)	Calibration Factor	Average AADT
Flat and Rolling	396	359.0	1.103	2,759.6
Mountainous	357	338.7	1.054	2,194.6
All	753	697.7	1.079	2,463.8

Table 2. Arizona DOT calibration factors by highway functional code.

Highway Functional code	Observed Crashes	Predicted Crashes (HSM)	Calibration Factor	Average AADT
2-Rural Principal Arterial	226	214.3	1.054	4,751.0
6-Rural Minor Arterial	224	231.1	0.969	2,624.2
7-Rural Minor Collector	286	242.6	1.179	1,722.5
8-Rural Major Collector	17	9.7	1.753	529.8
All	753	697.7	1.079	2,463.8

Table 3. Arizona DOT calibration factors by AADT category.

AADT range (veh/day)	Observed Crashes	Predicted Crashes (HSM)	Calibration Factor
0-2,500	292	226.1	1.292
2,501-5,000	262	258.4	1.014
>5,000	199	213.2	0.933
All	753	697.7	1.079

Table 4. Arizona DOT calibration factors by segment length.

Segment Length range (mile)	Observed Crashes	Predicted Crashes (HSM)	Calibration Factor
0-0.4	337	239.4	1.408
0.4-0.8	149	150.5	0.990
0.8 -1.2	267	307.9	0.867
All	753	697.7	1.079

Table 5. Arizona DOT calibration factors by alignment.

Alignment	Observed Crashes	Predicted Crashes (HSM)	Calibration Factor	Average AADT
Curve	215	179.6	1.197	2,166.1
Tangent	538	518.1	1.038	2,571.7
All	753	697.7	1.079	2,463.8

Table 6. Arizona DOT calibration factors by curve radius.

Curve radius (feet)	Observed Crashes	Predicted Crashes (HSM)	Calibration Factor	Average AADT
<=500	15	9.4	1.593	525.4
501-1000	29	22.7	1.279	1.194.4
1001-2000	58	39.4	1.473	1,953.7
2001-3000	29	26.0	1.114	2,431.2
>3000	84	82.1	1.023	3,124.7
All curves	215	179.6	1.197	2,166.1

Table 7. Arizona DOT calibration factors by year.

Year	Observed Crashes	Predicted Crashes (HSM)	Calibration Factor
2008	174	139.7	1.246
2009	146	141.4	1.032
2010	165	137.9	1.196
2011	138	139.9	0.987
2012	130	138.8	0.937
All	753	697.7	1.079

Georgia

Rodgers et al. (2015) conducted surveys and interviews in a study by GDOT to determine how to incorporate the HSM into their practices. They surveyed 42 states to collect information on their plans, experiences, benefits, and reservations with the HSM and its integration into their systems. The states had varying implementations and approaches. Additionally, they presented a case study that demonstrated the use of the predictive method for developing an SPF for low-radius freeway loop ramps in the Atlanta Metro Area, along with a CMF and associated uncertainty for a safety treatment. The study concluded that applying HSM methods in Georgia would be limited by existing data resources, as seen from the multi-state surveys, GDOT personnel interviews, and the case study.

Liu et al. (2020) worked with GDOT to examine the safety performance of existing rural four-lane roadways with undivided, 4-ft flush medians (table 8), TWLTLs, and non-traversable medians and to develop criteria to determine under what conditions these median types yield maximum safety benefits while considering the cost of construction. SPFs were developed for the four median types. The AADT, truck percentage, and access point density were considered as independent variables in the SPFs.

Table 8. SPFs for rural four-lane roadways in Georgia.

SPF Parameters	*a* Constant	*b* Ln (AADT)	*c* Seg. length	*d* Truck Pct.	*e* APD	*f* Interaction	N	AIC
All Crashes (KABCO)								
UR	-10.689***	1.286***	0.886***	0.243	0.009	-0.027	79	202
4FM	-16.338***	1.887***	0.720***	0.105	0.015	-0.013	165	456
TWLTL	-8.527***	1.049***	0.883***	0.064	0.017***	-0.012	558	1,515
NTM	-5.229***	0.706***	0.946***	0.015	0.012***	-0.006***	1,176	3,668
Injury Crashes (KAB)								
UR	-12.479*	1.377*	1.288***	0.255	0.006	-0.029	79	112
4FM	-14.692**	1.557**	0.633***	0024	0.010	-0.002	165	234
TWLTL	-10.820***	1.113***	0.914***	0.211	0.021***	-0.026	558	658
NTM	-5.107***	0.539***	1.004***	-0.04	0.013*	0.001	1,176	1,815
No Injury Crashes (O)								
UR	-11.658	1.256	0.934***	0.150	0.002	-0.014	79	111
4FM	-21.560***	2.397***	0.869***	0.099	0.028*	-0.012	165	317
TWLTL	-8.794***	1.050***	0.916***	-0.005	0.014***	-0.005	558	1,245
NTM	-6.268***	0.784***	0.938***	0.033	0.011**	-0.009	1,176	3,027
Possible Injury or No Injury Crashes (CO)								
UR	-11.227**	1.318***	0.866***	0.294	0.010	-0.034	79	170
4FM	-17.622***	1.994***	0.812***	-0.148	0.024*	0.014	165	343
TWLTL	-8.856***	1.076***	0.922***	-0.031	0.015***	-0.002	558	1332
NTM	-6.227***	0.791***	0.935***	0.022	0.009*	-0.007	1,176	3074
Fatal Injury Crashes (K)								
UR	-7.390	0.400	1.029**	-0.136	0.031	0.021	79	33
4FM	-28.176**	2.829**	1.313***	1.186	-0.042	-0.136	165	38
TWLTL	-4.658	0.111	0.792***	-0.318	0.022**	0.034	558	115
NTM	-3.138	-0.039	0.970***	-0.357**	0.003	0.040**	1,176	301

Notes: "*", "**", and "***" indicate significance at 10%, 5%, and 1% level, respectively, N = number of observations; AIC = Akaike's Information Criterion. "-" indicates not available. SPFs for fatal crashes are estimated, however, it is not recommended to apply these SPFs due to unreliable model estimates with insufficient data.

Louisiana

Louisiana DOT developed calibration factors for various roadway facility types in Louisiana (Robicheaux and Wolshon 2015). For comparative purposes and to demonstrate the effect of including or excluding various data elements and crash records, the factors were computed as a series of iterations. These iterations demonstrated the variability and, arguably, the accuracy of these factors when including data that were easily and quickly accessible in the Louisiana DOT's roadway database and by excluding crashes that occurred within various distances away from intersections. The practical implications of this process and results are thought to be important because there is a clear trade-off between factor-assumed accuracy and data coding effort. The inclusion of driveways into the computational process required hundreds of labor hours to include enough for the minimum sample size. However, the inclusion of these data for the effects of these changed the final results by 20 to 30 percent and, in one case, more than 60 percent. Based on these findings and the practices recommended in the HSM, it is recommended that future users of these findings use the calibration factors of Iteration 4 that were developed by removing crashes that occurred within 150 ft of the center of the intersection. The values for rural multilane undivided and divided highways, 0.62 and 1.92, are not identical, but reasonably similar to values (0.98 and 1.25, respectively) computed by researchers at the University of Louisiana Lafayette in a previous study (Sun et al. 2011). This suggests some level of consistency in crashes on rural multilane highways because their data collection was completed over the four-year span since 2007. These calibration factors also suggest that the road types with the most significant safety issues in Louisiana are rural multilane divided, urban two-lane, and urban four-lane divided, as these experience about 1.92, 1.91, and 2.54 times, respectively, the number of crashes predicted when using the uncalibrated HSM SPFs.

New Jersey

New Jersey DOT sponsored a study to develop their state-specific SPFs for segments and intersections (Ozbay et al. 2019). The primary objective of the research project was to either calibrate the SPFs provided in the HSM using New Jersey data or develop new, New Jersey–specific SPFs. The study considered facility types such as segments and intersections of rural two-lane two-way, rural multilane, and urban and suburban roads. To achieve their objectives, the research team identified the key sources of data required, including roadway characteristics data, traffic volume data, and crash data. They developed a computer code to filter out inconsistent data entries, identify facility types, execute the roadway segmentation process, assign crash statistics for each facility, and generate a complete database for each facility type to be used in calibration and/or development of SPFs. The study also provided recommendations and activities for improving data collection and recording practices, which would facilitate easier data extraction required for the SPF calibration/development process. Additionally, the study proposed a workshop that demonstrates the step-by-step approach for using the SPFs for New Jersey DOT staff and other interested parties. The New Jersey–specific SPFs would provide more accurate results than calibrating the HSM SPFs using New Jersey data, but it requires data from a larger sample of sites and involves the application of generalized linear models. Table 9 shows example SPFs developed in the New Jersey study.

Table 9. New Jersey–specific SPFs for roadway segments.

Segment	Crash Type	SPF
U2U	Total	$N_{TOT\ U2U} = exp[-9.798 + 1.188.ln(AADT) + ln(L)]$
	Multi-Vehicle	$N_{MV\ U2U} = exp[-14.411 + 1.641.ln(AADT) + ln(L)]$
	Single-Vehicle	$N_{SV\ U2U} = exp[-3.977 + 0.435.ln(AADT) + ln(L)]$
U4U	Total	$N_{TOT\ U4U} = exp[-12.01 + 1.432.ln(AADT) + ln(L)]$
	Multi-Vehicle	$N_{MV\ U4U} = exp[-13.794 + 1.59.ln(AADT) + ln(L)]$
	Single-Vehicle	$N_{SV\ U4U} = exp[-6.961 + 0.751.ln(AADT) + ln(L)]$
U4D	Total	$N_{TOT\ U4D} = exp[-3.00 + 0.543.ln(AADT) + ln(L)]$
	Multi-Vehicle	$N_{MV\ U4D} = exp[-3.363 + 0.558.ln(AADT) + ln(L)]$
	Single-Vehicle	$N_{SV\ U4D} = exp[-4.687 + 0.543.ln(AADT) + ln(L)]$

North Carolina

North Carolina DOT sponsored a study to develop guidance for developing jurisdiction-specific SPFs (Srinivasan and Bauer 2013). In their study, no SPFs were developed; rather, they discussed the statistical issues of developing SPFs. These topics include overdispersion, selection of explanatory variables, functional form of the model and the explanatory variables, overfitting of SPFs, correlation among explanatory variables, homogenous segments and aggregation, presence of outliers, endogenous explanatory variables, estimation of SPFs for different crash types and severities, and goodness of fit. Several modeling methods were also discussed for developing SPFs. These methods are related to variance of crash estimates obtained from SPFs, temporal and spatial correlation, generalized additive models, random-parameters models, and Bayesian estimation methods.

Pennsylvania

A study conducted in Pennsylvania developed state-specific SPFs for roadway segments and intersections on urban-suburban collector roads (Donnell et al. 2019). These SPFs were created using HSM methods while accounting for Pennsylvania's unique driving conditions and regional differences in safety performance. The level of regionalization was determined based on available data and observed safety performance and varied for each roadway segment and intersection type. The models developed in the study predicted both total crash frequency and the frequency of fatal and injury crashes. The researchers recommended the use of district-level SPFs with county-specific modifications for two-lane undivided highway portions based on the regionalization process. Table 10 presents the overdispersion parameter for each NB model along with the final recommended regional SPFs for two-lane undivided highway segments for total and fatal plus injury collision frequency.

Table 10. Summary of district-level SPFs for two-lane undivided roadway segments in Pennsylvania.

District 1:

$$N_{T,pr} = Length^{0.994} \times AADT^{0.447} \times e^{-3.204} \times e^{-0.212PSL45P} \quad (12)$$

over-dispersion parameter: 0.598

$$N_{FI,pr} = Length^{0.852} \times AADT^{0.543} \times e^{-4.969} \quad (13)$$

over-dispersion parameter: 0.924

District 2:

$$N_{T,pr} = Length^{0.514} \times AADT^{0.456} \times e^{-3.896} \times e^{0.0015DCPM} \times e^{0.301parking} \times e^{-0.180PSL45P} \quad (14)$$

over-dispersion parameter: 0.218

$$N_{FI,pr} = Length^{0.673} \times AADT^{0.513} \times e^{-5.083} \times e^{0.0031DCPM} \times e^{0.333parking} \times e^{-0.359PSL45P} \quad (15)$$

over-dispersion parameter: 0.518

District 3:

$$N_{T,pr} = Length^{0.498} \times AADT^{0.479} \times e^{-3.996} \quad (16)$$

over-dispersion parameter: 0.582

$$N_{FI,pr} = Length^{0.564} \times AADT^{0.506} \times e^{-4.900} \quad (17)$$

over-dispersion parameter: 0.657

District 4:

$$N_{T,pr} = Length^{0.720} \times AADT^{0.597} \times e^{-4.352} \times e^{0.309curb} \times e^{-0.539PSL45P} \quad (18)$$

over-dispersion parameter: 0.363

$$N_{FI,pr} = Length^{0.554} \times AADT^{0.622} \times e^{-5.520} \times e^{0.371curb} \times e^{-0.346PSL45P} \quad (19)$$

over-dispersion parameter: 0.436

District 5:

$$N_{T,pr} = Length^{0.509} \times AADT^{0.669} \times e^{-4.917} \times e^{0.0028DCPM} \times e^{-0.260PSL45P} \quad (20)$$

over-dispersion parameter: 0.577

$$N_{FI,pr} = Length^{0.562} \times AADT^{0.679} \times e^{-5.740} \times e^{0.0024DCPM} \times e^{-0.240PSL45P} \quad (21)$$

over-dispersion parameter: 0.611

$N_{T,pr}$	= predicted total crash frequency on the segment (crashes/year);
$N_{FI,pr}$	= predicted fatal + injury crash frequency on the segment (crashes/year);
$Length$	= segment length (mi);
$AADT$	= average annual daily traffic volume on the segment (veh/day);
$DCPM$	= total degree of curvature per mile in the segment, the sum of degree of curvature for all curves in the segment divided by segment length in miles (Degrees/100 ft/Mile)
$parking$	= presence of on-street parking (1 if present, 0 otherwise);
$curb$	= presence of a raised curb (1 if present, 0 otherwise);
$PSL45P$	= posted speed limit set to 45 mph or greater (1 if true, 0 otherwise); and,
$short\_seg$	= segment is less than 0.1 mile long (1 if true, 0 otherwise).

Tennessee

Tennessee DOT worked with researchers to develop Tennessee-specific SPFs for various types of rural and urban roadway segments, including rural multilane highways and urban/suburban arterials such as four-lane divided, four-lane undivided, and five-lane with TWLTL segments (Khattak et al. 2022). Their study utilized five years of crash data from 2013 to 2017, as well as road inventory and traffic data. To account for the count nature of crashes, Tennessee-specific SPFs were developed using both fixed-parameter Poisson and NB models, providing a greater degree of localization than calibration factors. Although jurisdiction-specific fixed-parameter SPFs can better represent local conditions than HSM SPFs, traffic crash frequencies and associated factors such as traffic volumes can vary significantly even across similar or identical road geometry and conditions within a single jurisdiction such as Tennessee. This heterogeneity requires further investigation as it may be caused by observed and unobserved factors related to road driver behavior, vehicle types, socioeconomic factors, traffic and pavement characteristics, road geometry, variations in police accident recording thresholds, and other time- and space-related unobserved factors. To address this heterogeneity, the modeled relationships must be corrected for using appropriate methods. The study provides an important methodological advance for developing localized SPFs that better capture the complex relationships between crashes and their contributing factors.

Virginia

To adopt the software Safety Analyst™ as its highway safety management tool, the Virginia DOT sponsored a study to develop SPFs for multilane highway and freeway segments that could replace Safety Analyst's default SPFs (Kweon and Lim 2014). The study utilized five years of data (2004–2008) collected from 20,235 multilane highway segments and 2,905 directional freeway segments in Virginia to develop the SPFs. The research team developed statewide SPFs for 4 subtypes of multilane highway segments and 10 subtypes of freeway segments. In addition, Virginia DOT district-group SPFs were developed for four subtypes of multilane highway segments. However, the default SPFs in Safety Analyst were found to differ from the developed Virginia SPFs in terms of curve shapes, which meant that calibration factors to adjust the default SPFs to Virginia conditions resulted in inaccurate crash predictions at low and high volumes of AADT. Therefore, it is recommended to use Virginia-specific statewide SPFs developed in the study when implementing Safety Analyst in Virginia. Although the shapes of the multilane highway segment SPFs varied across Virginia DOT districts, incorporating variations through the creation of new subtypes was deemed inappropriate for the current version of Safety Analyst. Consequently, district-group SPFs for multilane highway segments cannot be implemented in Safety Analyst. Nevertheless, all SPFs developed in the study, including district-group SPFs, can be implemented without the use of Safety Analyst. Thus, using the statewide SPFs developed in the study is recommended when Safety Analyst can be used, and use of either the statewide or district-group SPFs developed in the study is recommended when implementation of Safety Analyst is not feasible. Parameters of SPFs (for total crash predictions) in different districts are presented in table 11.

Table 11. Virginia DOT District-Group SPFs of multilane highway segments in Virginia (total crashes).

Site Subtype Code	Site Subtype Description	District	Correlation Structure[a]	α	β_1	d	$R_{FT}^{2\,b}$	Total No. of Sites	Total Length of Sites (mi)	Max. AADT
102	Rural multilane undivided highway segments	1 (Bristol)	UN	0.00	0.09	0.64	35.5	56	7	18,821
		2 (Salem)		-7.03	0.83			173	29	28,540
		3 (Lynchburg)		-7.03	0.83			45	5	18,004
		4 (Richmond)		-7.03	0.83			83	19	16,495
		5 (Hampton Roads)		-16.86	1.86			167	46	28,748
		6 (Fredericksburg)		-4.49	0.57			170	34	23,036
		7 (Culpeper)		0.00	0.00			25	2	39,520
		8 (Staunton)		-7.03	0.83			121	22	27,657
		9 (Northern Virginia)		-7.03	0.83			10	2	6,374
103	Rural multilane divided highway segments	1 (Bristol)	AR	-6.14	0.74	0.45	42.7	641	218	23,945
		2 (Salem)		-6.14	0.74			814	192	28,540
		3 (Lynchburg)		-7.82	0.92			560	233	21,991
		4 (Richmond)		-6.14	0.74			548	196	42,505
		5 (Hampton Roads)		-10.08	1.15			450	159	26,640
		6 (Fredericksburg)		-10.08	1.15			571	217	43,748
		7 (Culpeper)		-7.82	0.92			486	154	49,185
		8 (Staunton)		-6.14	0.74			549	141	35,924
		9 (Northern Virginia)		-10.08	1.15			69	22	55,026
152	Urban multilane undivided arterial segments	1 (Bristol)	CS	-23.69	2.54	5.23	5.5	97	11	25,623
		2 (Salem)		0.00	0.10			417	47	27,124
		3 (Lynchburg)		-10.97	1.27			321	33	35,117
		4 (Richmond)		-10.97	1.27			650	74	47,057
		5 (Hampton Roads)		-6.89	0.84			1,022	141	71,444
		6 (Fredericksburg)		-10.97	1.27			132	20	56,982
		7 (Culpeper)		-23.69	2.54			34	5	43,236
		8 (Staunton)		-10.97	1.27			147	22	27,657
		9 (Northern Virginia)		-6.89	0.84			1,461	156	64,334
153	Urban multilane divided arterial segments	1 (Bristol)	IN	-10.70	1.22	3.54	16.4	194	29	32,639
		2 (Salem)		-13.76	1.56			770	115	65,081
		3 (Lynchburg)		-10.70	1.22			410	58	51,439
		4 (Richmond)		-13.76	1.56			2,371	313	100,111
		5 (Hampton Roads)		-5.97	0.70			2,774	422	92,201
		6 (Fredericksburg)		-5.97	0.70			233	35	92,399
		7 (Culpeper)		-10.70	1.22			209	28	59,667
		8 (Staunton)		-13.76	1.56			339	50	37,870
		9 (Northern Virginia)		-7.28	0.89			3,115	400	113,552

Equation 4 should be used for multilane highway segment SPFs. Max. = maximum; AADT = annual average daily traffic (vehicles per day).

[a] Correlation structure specified for each model: AR = autoregressive order 1; CS = compound symmetry (also known as exchangeable); IN = independent; and UN = unstructured

[b] Freeman-Tukey R^2.

Washington State

Washington State DOT supported the development of SPFs for urban-suburban arterial road segments (Shankar et al. 2016). The study utilized three years of crash data from 2010 to 2012, provided by Washington State DOT. Conventional urban-suburban SPFs were developed using random parameter NB models based on cross-sectional classifications, and both total crashes and crashes by severity type were modeled. The study identified 20 statistically significant variables, of which the number of lanes, roadway width, shoulder width, point of vertical tangent grade, vertical curve point of vertical curve grade, horizontal curve maximum super elevation, curve central angle, and horizontal curve radius were found to be random parameters. In addition, derived measures such as the degree of curve, absolute vertical grade difference, and rate of vertical curvature were also found to be random. The majority of statistically significant effects were geometric in nature, and functional class indicators, such as minor arterial indicator, were also found to be random. However, roadside information was not fully evaluated due to inconsistencies in matching roadside inventories for all homogenous segments.

SCHOLARLY RESEARCH

The project team conducted an extensive literature search on scholarly works that focus on developing SPFs for different types of multilane highways. Several studies have documented the development of SPFs for freeways, rural highways, and urban arterials (Garber et al. 2011, Lyon et al. 2005, Wu et al. 2017).

Given the general guidelines established by the HSM for using and calibrating SPFs to predict the safety performance of roads, Srinivasan and Carter (2011) calibrated the HSM equations for Florida's specific conditions. The study found that calibrations of the base models were necessary to account for how crash trends change over time in different regions of Florida. Based on the results, it recommends that the calibration factors developed as part of the study be used in conjunction with the applicable SPFs for project-level safety evaluations in Florida. In another study by Cafiso et al. (2012), the HSM principles were applied to Italian divided multilane highways. The study developed SPFs using local crash data and roadway inventory data, which lead to more accurate estimates of safety performance than following the HCM calibration process.

In comparison to calibrated HSM SPFs (Lu et al. 2014), Garber et al. (2011) discovered that jurisdiction-specific SPFs fit the local data better. This highlights the importance of using SPF models that are specific to the jurisdiction and reflect the unique characteristics of the local roadway network. In this respect, several studies have investigated the effect of HSM SPF calibration on collision prediction for local roadway networks (Cafiso et al. 2012, Matarage and Dissanayake 2019, Mehta and Lou 2013, Xie et al. 2011). These studies generally conclude that calibrated HSM models perform better than uncalibrated HSM models in terms of model fit. However, one common challenge in HSM calibration is the need for a large and comprehensive dataset, which includes roadway characteristics, traffic volumes, and collision data spanning multiple years. Overall, both calibrated HSM SPFs and jurisdiction-specific SPFs have their advantages and limitations, and the choice of SPF models should depend on the specific needs and characteristics of the roadway network being analyzed.

In the majority of underdeveloped nations, where data availability and quality are unclear, this might be very difficult. Sacchi et al. (2012) employed cumulative residual (CURE) plots to assess the accuracy of jurisdiction-specific models developed for Italian roads, but they did not compare the results to HSM SPFs. This suggests that there may be some uncertainty about the transferability of the HSM to Italian roads. Srinivasan et al. (2016) attempted to transfer the HSM's SPF to rural two-lane roads in Arizona but found that a single calibration factor did not provide a good fit to the data. Instead, they proposed a calibration function that used conventional least squares, NB, or Poisson regression models to model observed crash frequency as a function of predicted frequency. This approach may be useful in situations where the data are insufficient to calibrate more sophisticated SPF models.

Cafiso et al. (2018) investigated various segmentation approaches to calibrate SPF models, including using short versus long roadway segments. They also explored additional treatment types that were not covered in the HSM. This suggests that careful consideration of segmentation approaches and treatment types can improve the quality of SPF models. Feng et al. (2020) studied the transferability of SPFs and the identification of hot spots for freeways in China and the United

States. They developed SPFs using Poisson, Poisson-lognormal, and NB regressions for each of the five locales separately and calibrated them using calibration functions before transferring them. It suggests that the use of calibration functions can improve the transferability of SPF models across different locations.

Al-Ahmadi et al. (2021) conducted a study in Saudi Arabia to calibrate the HCM SPFs for multilane rural highway segments in the region. These models are important tools for assessing the safety of roadways and identifying potential safety improvements. The study found that the HSM SPFs were generally reliable and consistent for predicting crash frequencies on multilane rural highways in Saudi Arabia, but some calibrations were needed to account for local factors such as driver behavior and roadway characteristics. By calibrating the SPFs, the researchers were able to develop more accurate predictions of crash frequencies on Saudi Arabian highways, which help transportation planners and engineers prioritize safety improvements and allocate resources more effectively.

Table 12. Base condition for SPFs.

Four-lane Divided Highways		**Four-lane Undivided Highways**	
Variable	*Base Condition*	*Variable*	*Base Condition*
Lane width	12 ft	Lane width	12 ft
Right shoulder width	8 ft	Shoulder width and type	6 ft, paved
Medium width	30 ft	Side-slope	1:7 or flatter
Lighting	None	Lighting	None
Automated speed enforcement	None	Automated speed enforcement	None

Different techniques have been used for highway safety predictive modeling, among which the most popular are logistic, multiple linear, Poisson, and NB regression. In recent years, the use of machine learning techniques in crash predictive modeling has significantly increased as compared to traditional statistical methods. Machine learning models have become increasingly popular due to their dramatically increased accuracy and flexibility to handle high-dimensional features and associated large and complex datasets that become available today. Traditional statistical methods typically require simple pre-specified model structures (e.g., linear-in-parameters) and assumptions on error distributions (e.g., Gaussian, logistic). In contrast, modern machine learning methods are capable of effectively learning features and complex relationships directly from data without relying on pre-specified model forms and error distribution assumptions. A good example is tree ensembles, which are highly flexible and can adapt to a wide range of data types and structures. They are also interpretable due to recent advancement in feature attribution research on ensemble methods.

For the traditional statistical methods, the features are often manually chosen. In contrast, machine learning algorithms can automatically select relevant features from a large set of potential features with proper procedure (e.g., cross validation). More importantly, machine learning models often achieve significantly higher prediction accuracies, especially when dealing with large datasets with high-dimensional features. For reference, the most recent works related to the scope of this study are summarized in table 13.

Table 13. Summary of most recent works.

Authors	Year	Contributing Factors	Method	Scope of Study	Predicted Variable
Wahab and Jiang	2019	Road separation, road shoulder, road surface type	Decision Tree (DT), Random Forest (RF), K-Nearest Neighbor (KNN)	Urban road	Crash rate
Montella et al.	2019	Traffic intensity, land use, employment type, socioeconomic and demographic, traffic network characteristics	NB	—	Crash frequency
Amiri et al.	2020	Road shoulder, number of lanes, light condition, AADT	Artificial Neural Network (ANN), Hybrid Intelligent Genetic Algorithm (HIGA)	Highway	Crash rate
Morris and Yang	2020	Roadway, traffic, weather, environmental features, driver-related factors	Linear Discriminant Analysis, eXtreme Gradient Boosting (XGBoost)	Highway	Crash classification
Yuan et al.	2021	Annual average weekday hourly traffic (AAWDHT), annual average weekend hourly traffic (AAWEHT), annual average weekday peak/off-peak traffic (AAWDPT), annual average day of the week traffic (AADOWT), AADT	NB	Highway	Crash frequency
Intini et al.	2021	AADT	NB	Urban highway	Crash likelihood
Morris and Yang	2021	Traffic, road geometry, weather	CatBoost, XGBoost, RF, Nested Logit	Highway	Crash classification
Mohammadnazar et al.	2022	AADT, driving behaviors, number of lanes	NB, Random Effect NB, Bayesian Hierarchical NB	Intersection; highway	Crash frequency
Fu et al.	2023	Annual average hourly traffic, AAWDHT, AAWDPT	Poisson-lognormal, NB	Freeway	Crash frequency, real-time crash likelihood
Tarek et al.	2022	AAWDHT, AAWDPT	Poisson-lognormal	Highway	Crash frequency

CHAPTER 3. DATA AND METHODS

This chapter details the specifics of all the data used for the study and the statistical methods adopted. The primary data required for this project include roadway inventory data, traffic crash data, and traffic volume data (see table 14). The core methodology centers on applying HSM-recommended SPFs and CMFs for key roadway features of interest to GDOT, such as median type.

Table 14. Data acquisition summary.

Data	Source	Use of the Data
2016–2021 Traffic Crash Data	GDOT	Obtain crash frequencies by type and severity at sites of interest
2021 Traffic Count Data at the Segment Level	GDOT	Obtain traffic exposure information
Road Inventory Data	GDOT	Identify multilane roadway segments in urban areas
2016–2021 Traffic Count Data at the Point Level	GDOT	Obtain traffic exposure information for the entire study period from 2016 to 2021.

TRAFFIC CRASH DATA

The crash data provided by GDOT were already filtered to include only multilane roadways, containing 1,140,502 crashes from 2016 to 2021. The crash data provide details about crashes. The dataset contains over 40 variables related to vehicle occupants, other road users, involved vehicles, and crash-level attributes. Almost all crashes are geographicly referenced with longitudes and latitudes; a smaller portion of crashes are missing the geocodes. The geo-references are critical for this project to link the crashes to roadway focus segments. In addition to the geo-references, crash severity and type are also essential information in the crash data.

Figure 1 shows the spatial distribution of crashes in the GDOT-provided crash data, covering all reported crash records for multilane roadways in Georgia from 2016 to 2021. As expected, most crashes concentrate in populous urban areas, and there are fewer crashes in rural areas.

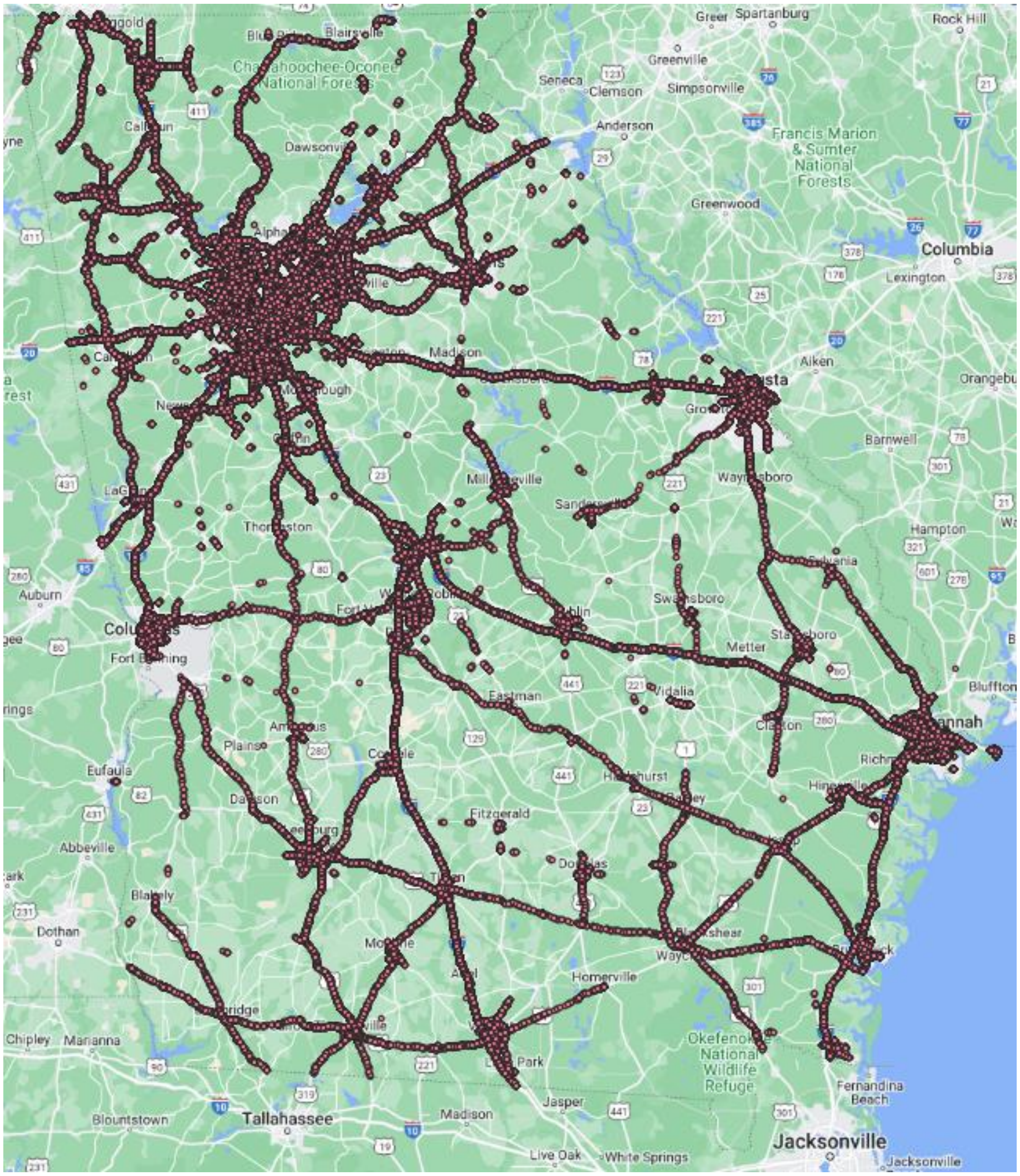

Figure 1. Map. Locations of traffic crashes on multilane roadways in Georgia from 2016 to 2021.

The research team conducted cleaning and error-checking processes to ensure the data's quality and relevance for the project. The team removed crashes on facilities outside the project scope, such as freeways, one-way roads, intersections, and interchanges/ramps. In addition, because the crash records needed to be spatially linked to roadway segments, crash records lacking geo-reference information (longitude and latitude) were removed. It is assumed that the missing geo-reference information in the crash records is random and does not cause selection biases in sampling.

TRAFFIC COUNT DATA

The team received segment-level traffic count data in shapefile for 2021 from GDOT. The data can provide valuable insights into the spatial extent that a traffic count station represents. Figure 2 shows the segment-level traffic counts. In addition, to account for the potential annual traffic variation in analysis and modeling, the research team downloaded point-level traffic count data for additional years from the GDOT traffic data website.[1] The team obtained the point-level data for all stations from 2016 to 2021 via the "All Station AADT and Truck Percent Statistics." Figure 3 shows an example of the data that populate from the dataset downloaded from the website. The variables in the point-level traffic count data include:

- Station ID.
- Functional class.
- Latitude and longitude.
- AADT for each year from 2016 to 2021.
- Truck% for each year from 2016 to 2021.

Figure 4 shows the 2021 point-level traffic counts on Georgia roadways. The data appear to be reasonable because high-volume roads are observed to be concentrated in or near urban areas,

[1] https://gdottrafficdata.drakewell.com/publicmultinodemap.asp

particularly within the Atlanta metropolitan region. This trend is expected because urban areas typically experience higher traffic volumes due to their higher population densities and higher levels of economic activity.

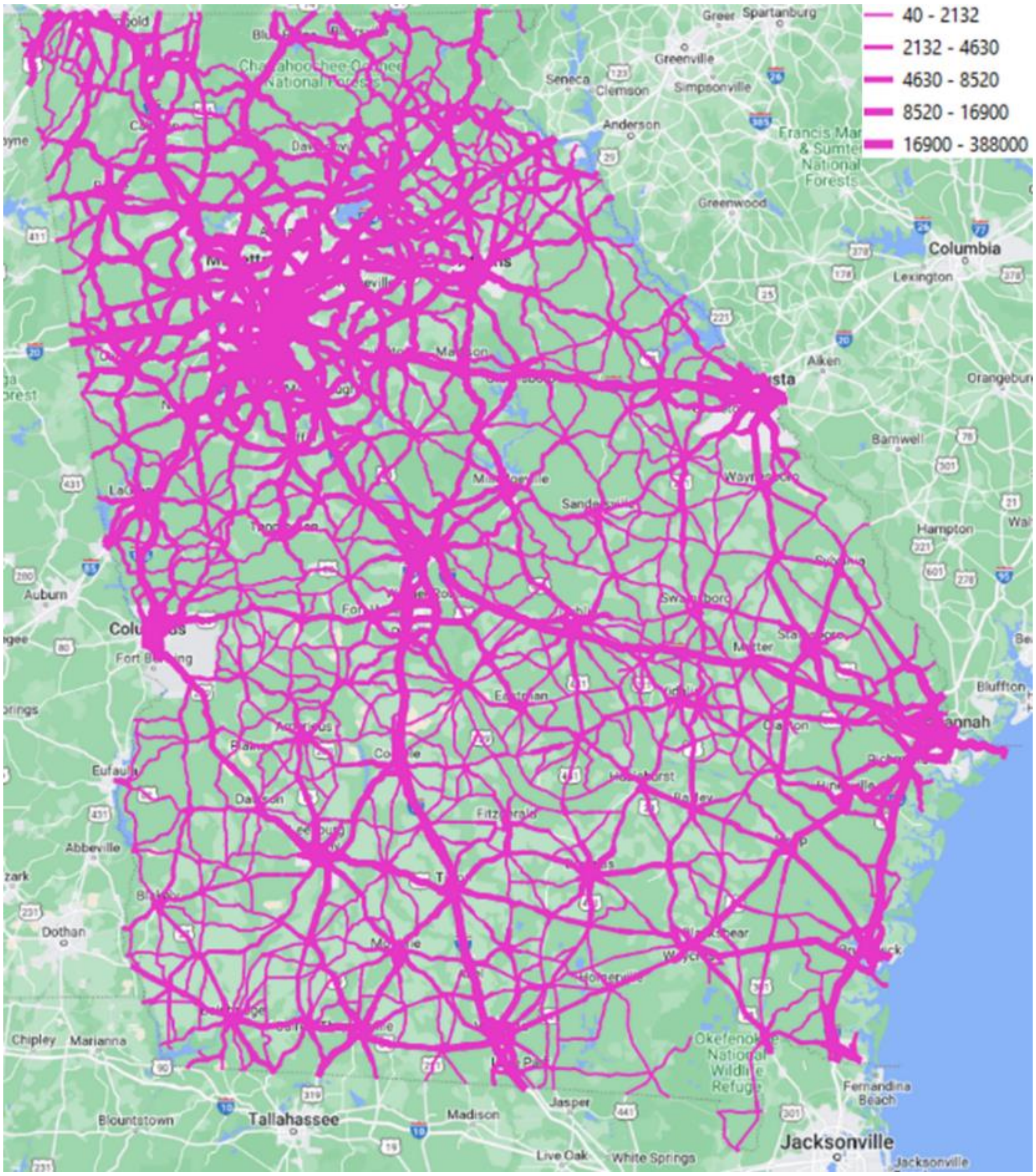

Figure 2. Map. Segment-level traffic data.

Station ID	Functional Class	Lat	Long	AADT_2021	Truck%_2021	AADT_2020	Truck%_2020	AADT_2019	Truck%_2019	AADT_2018	Truck%_2018	AADT_2017	Truck%_2017	AADT_2016	Truck%_2016
001-0101	3U : Urban Principal Arteri	31.71557	-82.3819	4590	16.6	3840	16.2	4080	16.2	4110	16.2	4030	16.2	4090	30.6
001-0105	3U : Urban Principal Arteri	31.76743	-82.3535	12300	16.2	11600	16.2	12300	16.2	12400	16.2	9160		9020	14.2
001-0107	3U : Urban Principal Arteri	31.77385	-82.3503	15700	14.6	13000	16.5	13800	16.5	13900	16.5	13600	16.5	12900	6.5
001-0109	3U : Urban Principal Arteri	31.77942	-82.3483	14700	5.7	13800	5.7	14700	5.7	14800	5.7	12700		12500	10
001-0112	3U : Urban Principal Arteri	31.78626	-82.3502	8220	12.2	7730	12.2	8220	12.2	8270	12.2	8110	12.2	8190	24.8
001-0114	3U : Urban Principal Arteri	31.83696	-82.3505	5460	17	5140	17	7090	8.3	7130	8.4	5770		5680	21.9
001-0118	3R : Rural Principal Arteria	31.90923	-82.3562	5880	17.7	5960	7.9	6290	7.9	6110	7.9	6080	7.9	6150	11.9
001-0121	4R : Rural Minor Arterial	31.54538	-82.2074	2380		2220		2340		2270		2000		1940	17.2
001-0123	4R : Rural Minor Arterial	31.61964	-82.2563	1750	25.7	1820	13.4	1930	13.3	1870	13.3	1860	13.3	2080	23.6
001-0125	4U : Urban Minor Arterial	31.6818	-82.3023	1730	22.9	1630	22.8	2090		2110		2090		2060	20.4
001-0127	4U : Urban Minor Arterial	31.71519	-82.3335	3350	15.6	3420	5	3640	5	3660	5	3590	5	2650	9.5
001-0129	4U : Urban Minor Arterial	31.75423	-82.3517	4960	10	4670	10	6280		6320		6210		6120	30.5
001-0132	4U : Urban Minor Arterial	31.76239	-82.3542	7630	9	10500	4.5	11100	4.5	11200	4.5	11000	4.5	10700	12.8
001-0133	4R : Rural Minor Arterial	31.71264	-82.5201	1450	30.1	1360	29.9	2220	17.5	2160	17.5	1850		1790	28.3
001-0134	4R : Rural Minor Arterial	31.7475	-82.5441	1880	27.5	2160	7.1	2280	7.1	2210	7.1	2200	7.2	1410	9.1
001-0136	3R : Rural Principal Arteria	31.83472	-82.5094	6170	28.5	5760	28.6	6900	26.1	6700	26.1	5470		5310	22
001-0138	3U : Urban Principal Arteri	31.81126	-82.4429	7560	22.6	6410	13.2	6810	13.2	6850	13.3	6720	13.2	5690	15.2
001-0141	3U : Urban Principal Arteri	31.78083	-82.356	14500	12.1	13700	12	13200	16.4	13300	16.4	12300		12100	19.5
001-0143	3U : Urban Principal Arteri	31.77573	-82.3401	10800	11.2	10200	11.2	10800	11.2	10900	11.2	10700	11.2	9340	13.4
001-0145	3U : Urban Principal Arteri	31.74511	-82.253	4550	34.2	4280	34.3	3860	18	3890	17.9	3930		3870	17.6
001-0152	3R : Rural Principal Arteria	31.72326	-82.1868	5330	31.1	4100	16.6	4330	16.6	4200	16.6	4180	16.6	4470	32.1
001-0156	5R : Rural Major Collector	31.59176	-82.272	880	17.8	1010	8.5	1060	8.5	1060	8.5	1070	8.6	860	18.7

Figure 3. Populated dataset. Traffic count data example.

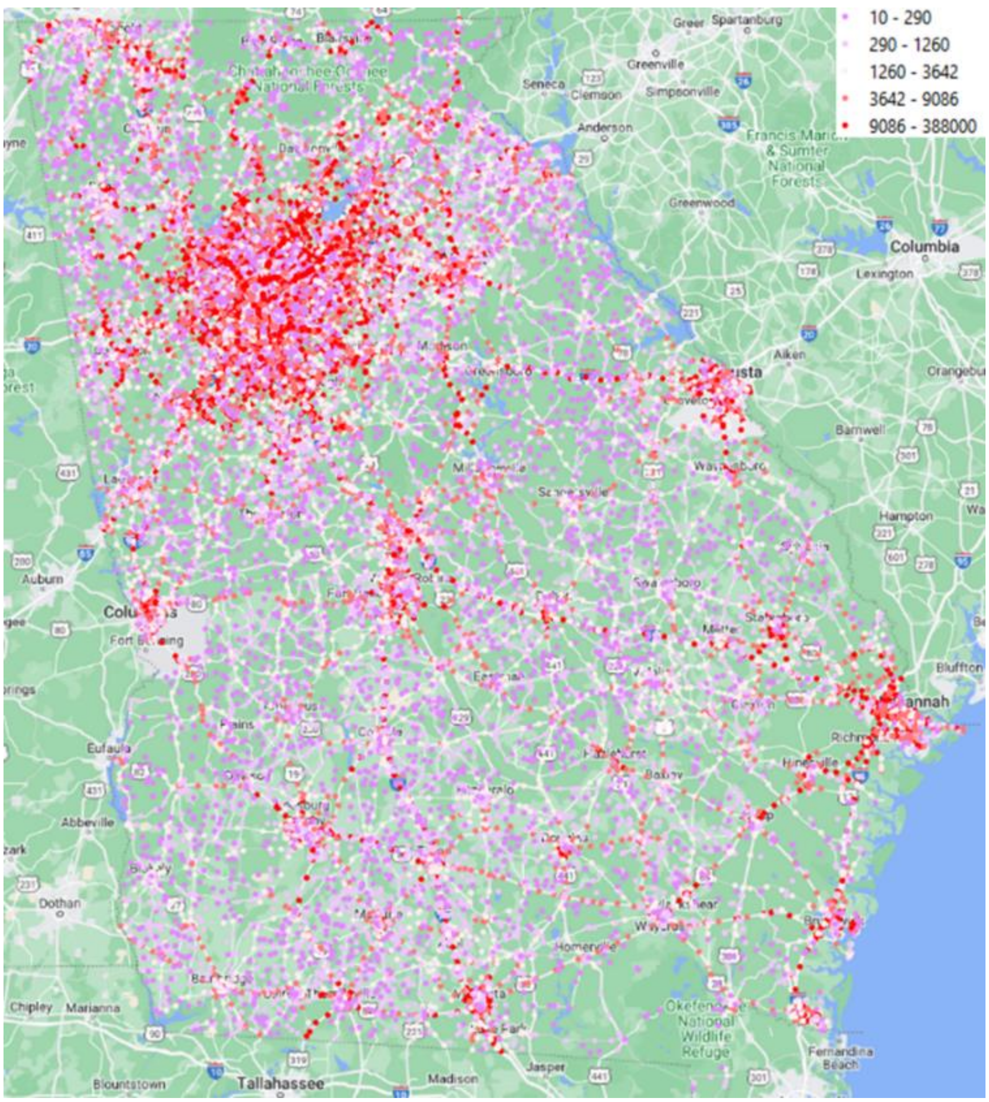

Figure 4. Map. Point-level traffic count data.

The team determined that the point-level traffic count dataset can be merged with the segment-level dataset after verifying that unique Station IDs in both datasets represent the same locations for traffic data tabulating. Importantly, the segment-level traffic count data only cover a portion of the point-level traffic count data (see figure 5), which means some roadways that are likely within the project scope may not have corresponding segment-level traffic count data.

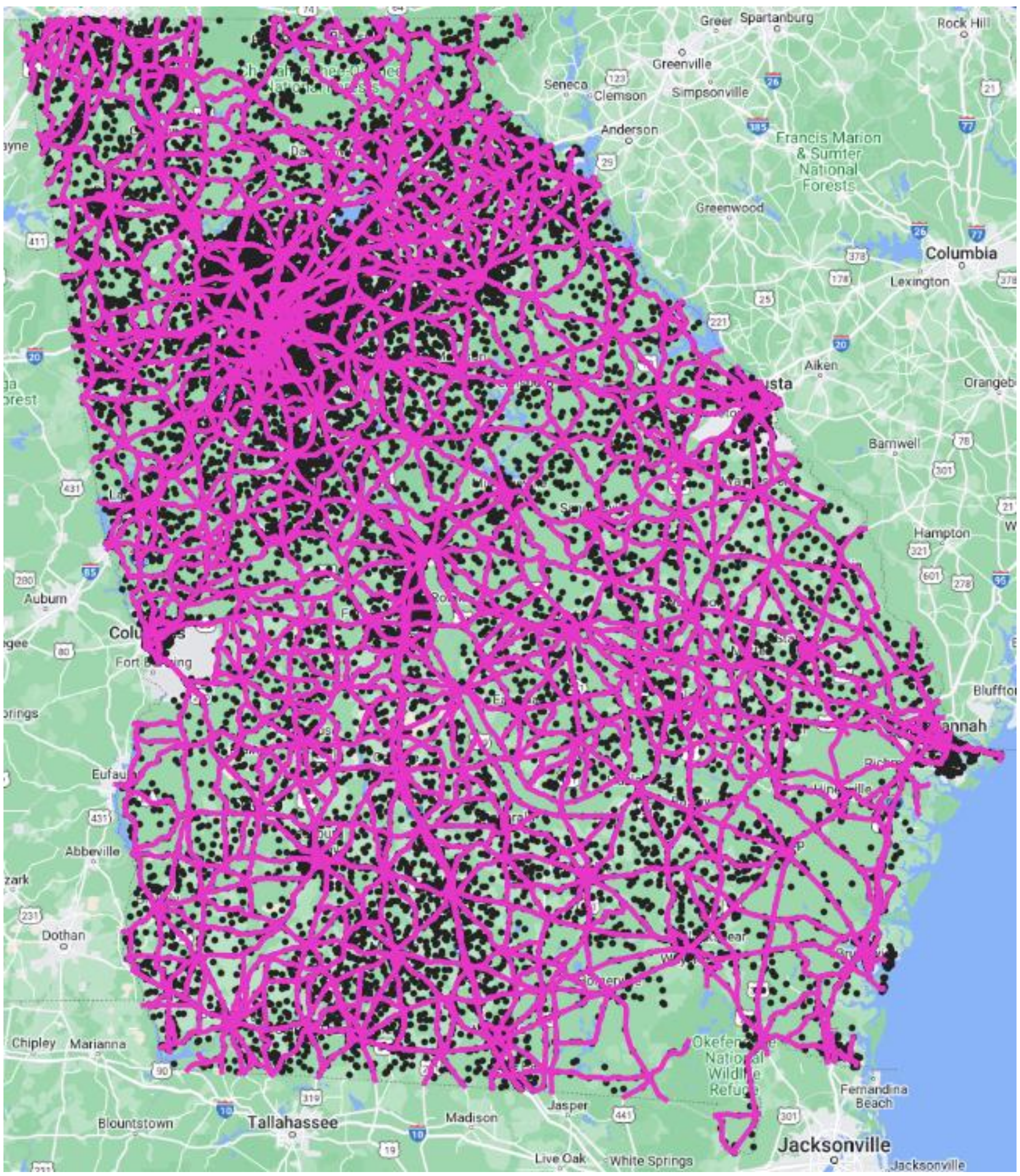

Figure 5. Map. Overlay of segment-level and point-level traffic count data.

ROADWAY DATA

The GDOT team shared road inventory data for 2021, including distinct geo-referenced shapefile layers for essential road characteristics such as functional class, facility type, number of through lanes, median type, median width, shoulder type, shoulder width, urban code, and more. Table 15 provides descriptive statistics on segment lengths across various attribute layers in the GDOT road inventory data, showing the number of segments and the segment length distributions within each attribute layer. Four attribute layers, namely urban area, functional class, facility type, and the number of through lanes, cover the majority of roadways in Georgia and have a similar number of segments. In contrast, the other four attribute layers, which include median type/width and shoulder type/width, have only a limited number of segments with available attribute information. Noticeably, some segments are extremely short, measuring only 0.001 mi, and others are exceptionally long, exceeding 354 mi. To ensure that each segment represents a homogenous road environment, further data processing may involve merging short segments and splitting long ones as necessary. Merging short segments can help to eliminate noisy data points and reduce data sparsity, and splitting long segments can help to identify distinct road features and capture local variations. Table 16 provides descriptive statistics on key roadway attributes in their original form based on untouched segments in the GDOT-provided road inventory data. There are more than 5000 segments with four or more lanes (in two directions), and the total length of these segments is over 6500 mi. It is important to note that the distributions of these attributes may change after merging extremely short segments and splitting extremely long segments, as shown in Table 2. Figure 6 through figure 13 visualize the key road attributes available in the roadway inventory data.

Table 15. Distributions of segment lengths (in mile) in different attribute layers in the GDOT road inventory data.

Road Inventory Layer	Number of Observations (Segments)	Mean	Standard Deviation (SD)	Minimum	Maximum
Urban area layer	206,351	0.614	1.730	0.001	101.138
Functional class layer	207,722	0.616	2.084	0.001	250.459
Facility type layer	205,683	0.622	2.412	0.001	354.560
Number of through lanes layer	269,678	0.470	1.486	0.001	247.995
Median type layer	1,854	1.491	1.443	0.100	13.976
Median width layer	643	1.488	1.273	0.100	9.270
Shoulder type layer	1,854	1.491	1.443	0.100	13.976
Shoulder width layer	1,854	1.491	1.443	0.100	13.976

Table 16. Descriptive statistics of key roadway characteristics for untouched segments.

Roadway Characteristics		Frequency	Percentage
Urban area	00901 Albany	1,794	0.87%
	03763 Athens-Clarke County	2,586	1.25%
	03817 Atlanta	79,665	38.61%
	04222 Augusta-Richmond County	5,455	2.64%
	11026 Brunswick	1,469	0.71%
	14185 Cartersville	1,426	0.69%
	15832 Chattanooga	1,692	0.82%
	19099 Columbus	3,190	1.55%
	22069 Dalton	2,005	0.97%
	32194 Gainesville	3,040	1.47%
	39133 Hinesville	886	0.43%
	52822 Macon	3,373	1.63%
	76204 Rome	1,706	0.83%
	79768 Savannah	5,080	2.46%
	89974 Valdosta	1,615	0.78%
	91783 Warner Robins	3,199	1.55%
	99998 Small Urban Sections	23,684	11.48%
	99999 Rural Area Sections	64,486	31.25%
Functional class	Interstate	2,059	0.99%
	Principal Arterial – Other Freeways and Expressways	495	0.24%
	Principal Arterial – Other	719	0.35%
	Minor Arterial	3,005	1.45%
	Major Collector	5,526	2.66%
	Minor Collector	2,721	1.31%
	Local	193,197	93.01%

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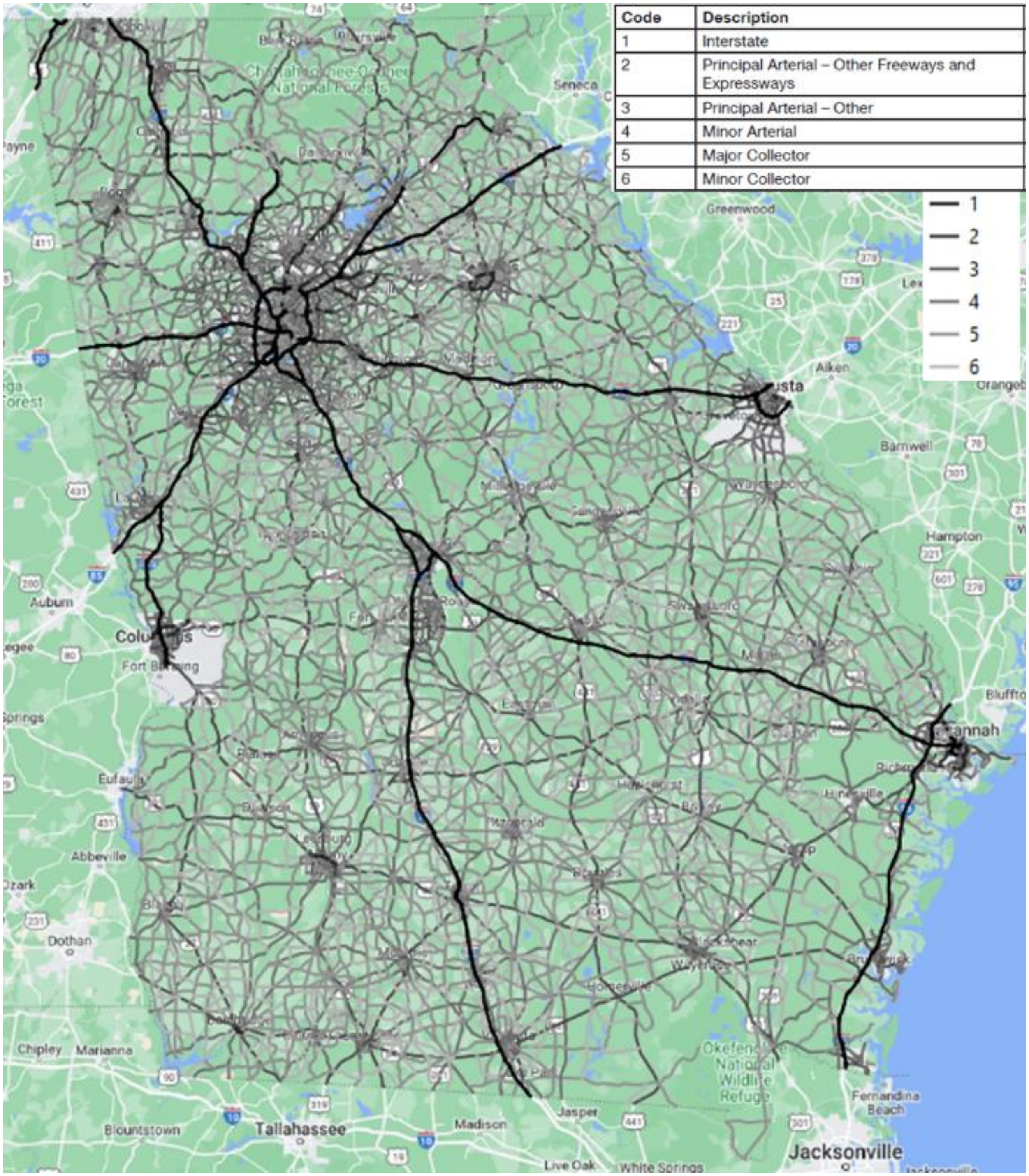
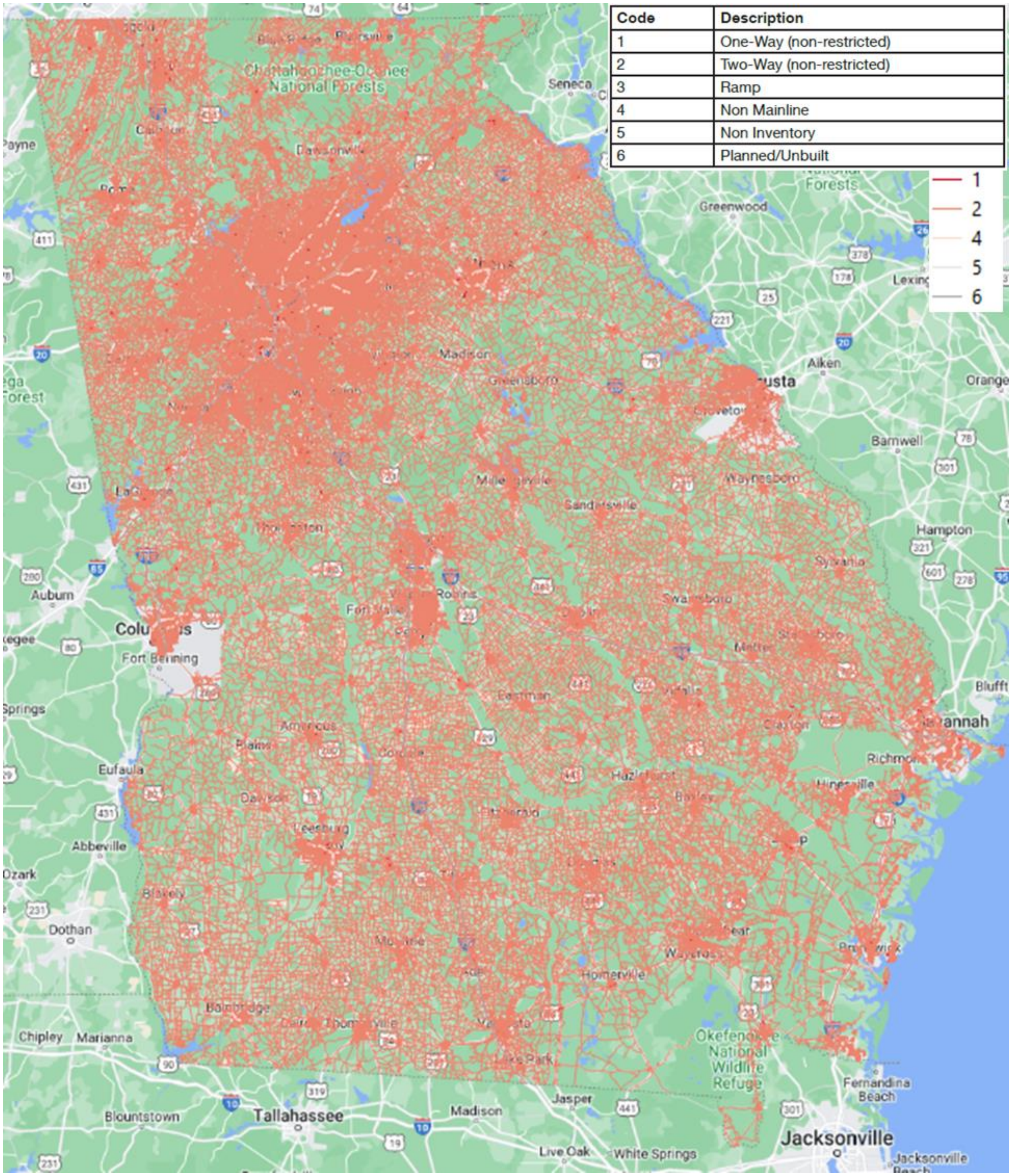
Table 17. Descriptive statistics of key roadway characteristics for untouched segments (Continued).

Roadway Characteristics		Frequency	Percentage
Facility type	One-Way (non-restricted)	1,832	0.89%
	Two-Way (non-restricted)	201,279	97.86%
	Ramp	2,503	1.22%
	Non Mainline	48	0.02%
	Non Inventory	21	0.01%
Number of through lanes	1	3,974	1.47%
	2	257,561	95.51%
	3	2,784	1.03%
	4	4,390	1.63%
	5	385	0.14%
	6	376	0.14%
	7	76	0.03%
	8	67	0.02%
	>8	65	0.02%
Median type	None – No median or unprotected area < 4 ft	1,211	65.32%
	Unprotected – Median width of 4 ft or more	380	20.50%
	Curbed – Barrier or mountable curbs	142	7.66%
	Positive Barrier (unspecified)	17	0.92%
	Positive Barrier (flexible)	56	3.02%
	Other	48	2.59%
Median width	<4 ft	23	3.58%
	4–8 ft	213	33.13%
	9–12 ft	30	4.67%
	13–20 ft	155	24.11%
	>20 ft	222	34.53%
Shoulder type	None	227	12.24%
	Surface Shoulder – AC	732	39.48%
	Surface Shoulder – PCC	62	3.34%
	Stabilized Shoulder	4	0.22%
	Combination Shoulder	31	1.67%
	Earth Shoulder	798	43.04%
Shoulder width	0	226	12.19%
	1–3 ft	598	32.25%
	4–8 ft	720	38.83%
	9–12 ft	284	15.32%
	>12 ft	26	1.40%



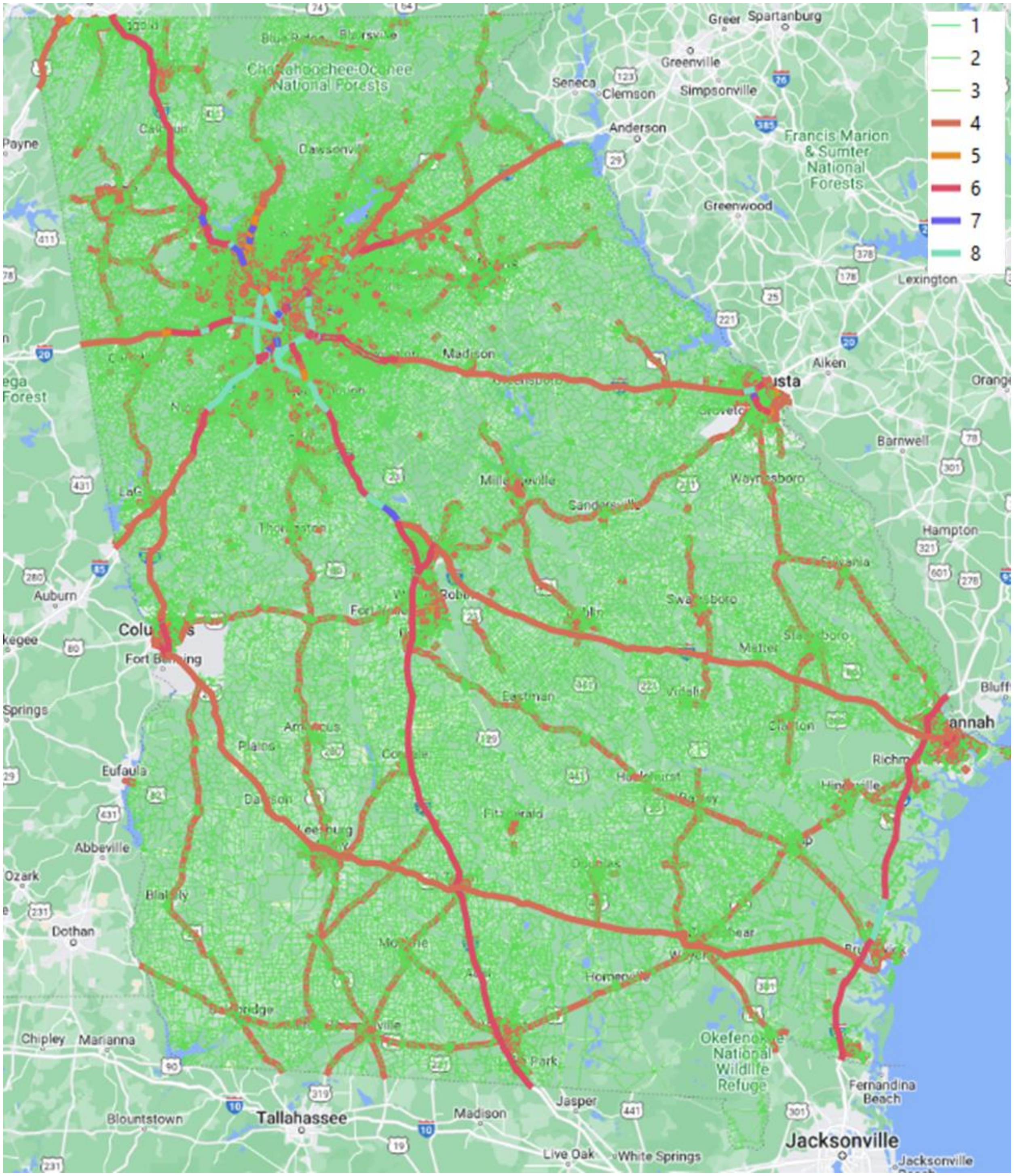
Note: Local roads are not shown in the figure.

Figure 6. Map. Functional classification.



Note: The majority of roads are two-way roads.

Figure 7. Map. Road facility type.



Note: Roads with more than eight lanes are not shown in the figure.

Figure 8. Map. Number of through lanes.

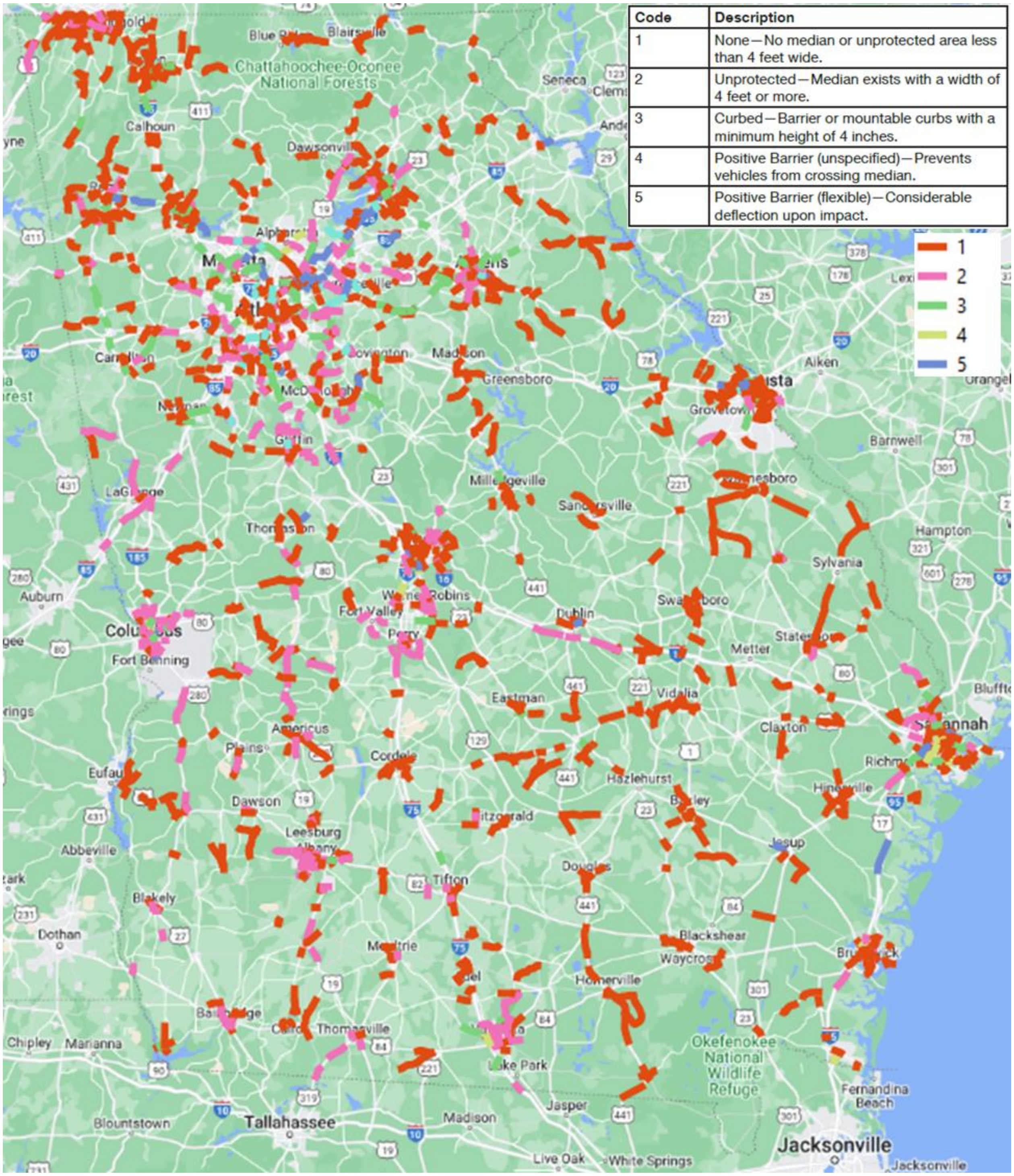
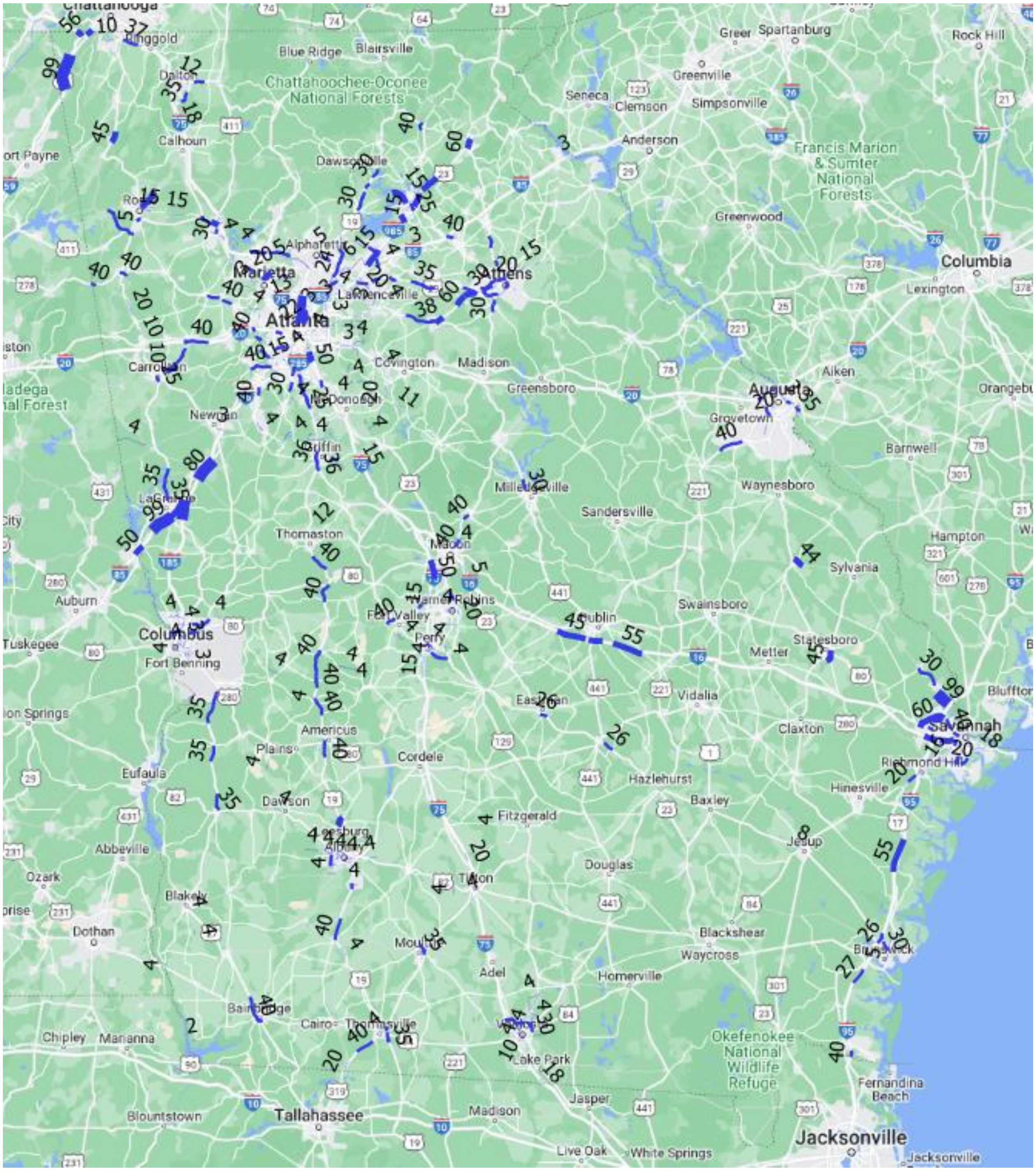


Figure 9. Map. Segments with available median type information.



Note: Median width is noted in the figure.

Figure 10. Map. Segments with median width information.

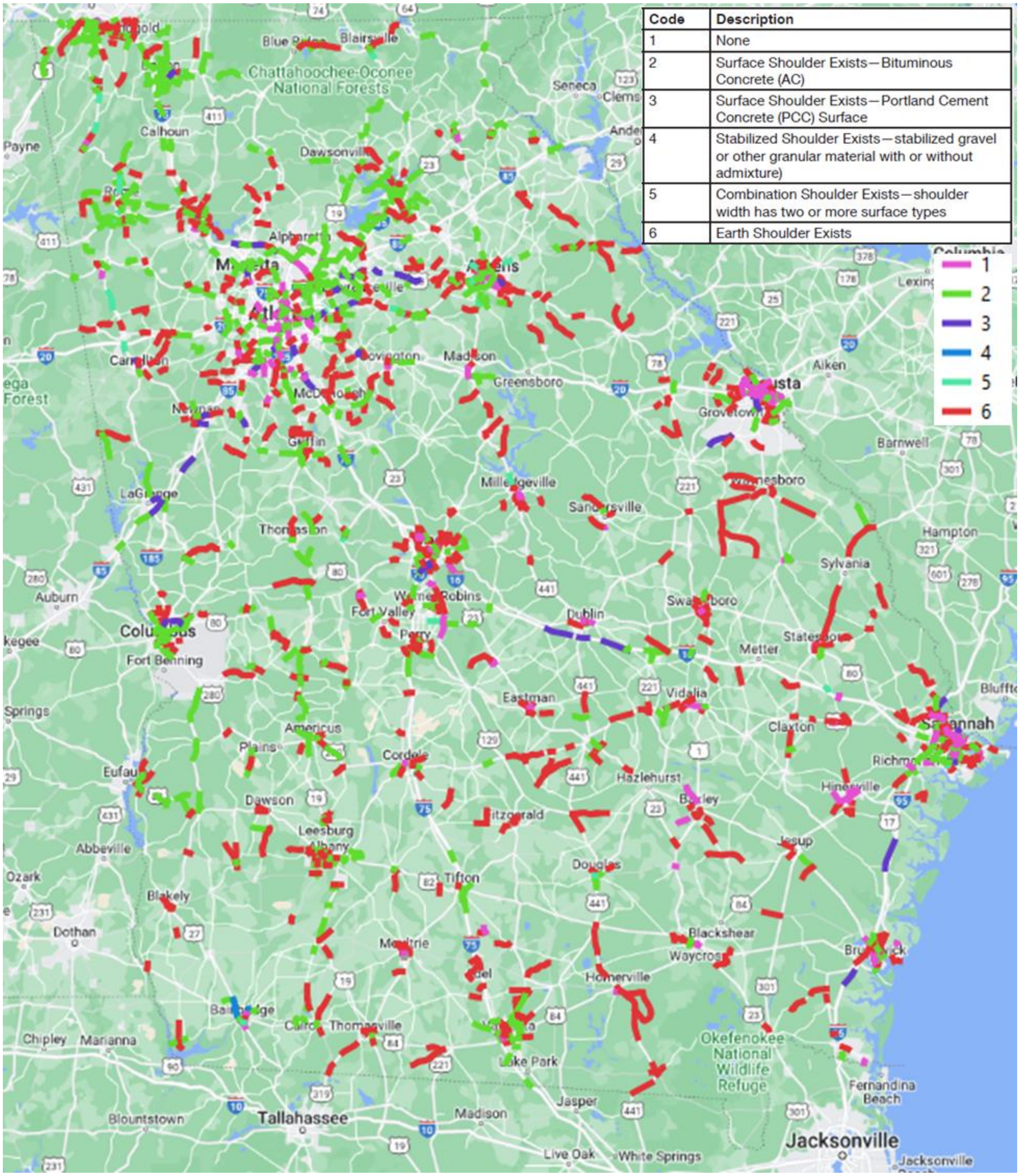
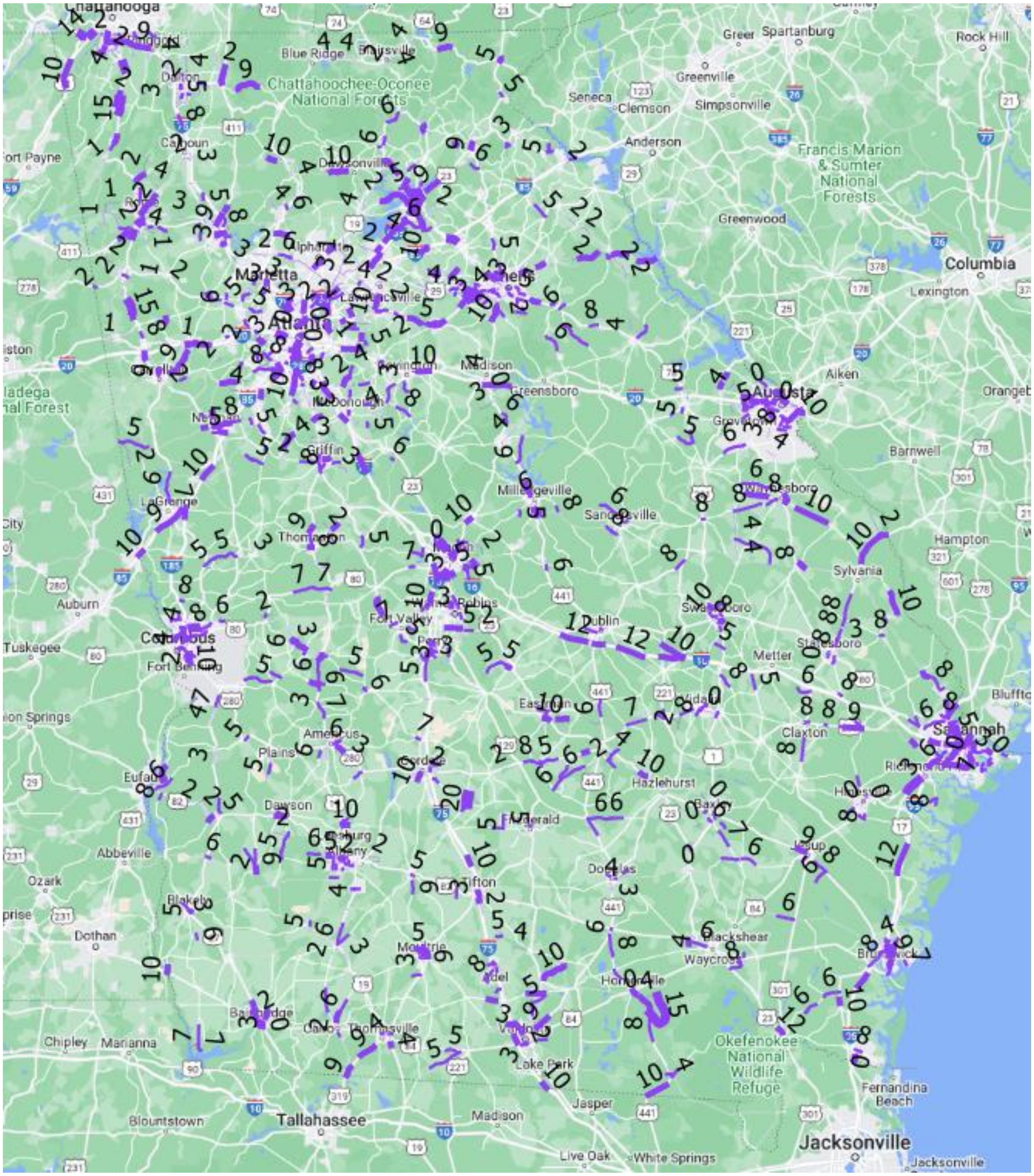


Figure 11. Map. Segments with available shoulder type information.



Note: Shoulder width is noted in the figure.

Figure 12. Map. Segments with right shoulder width information.

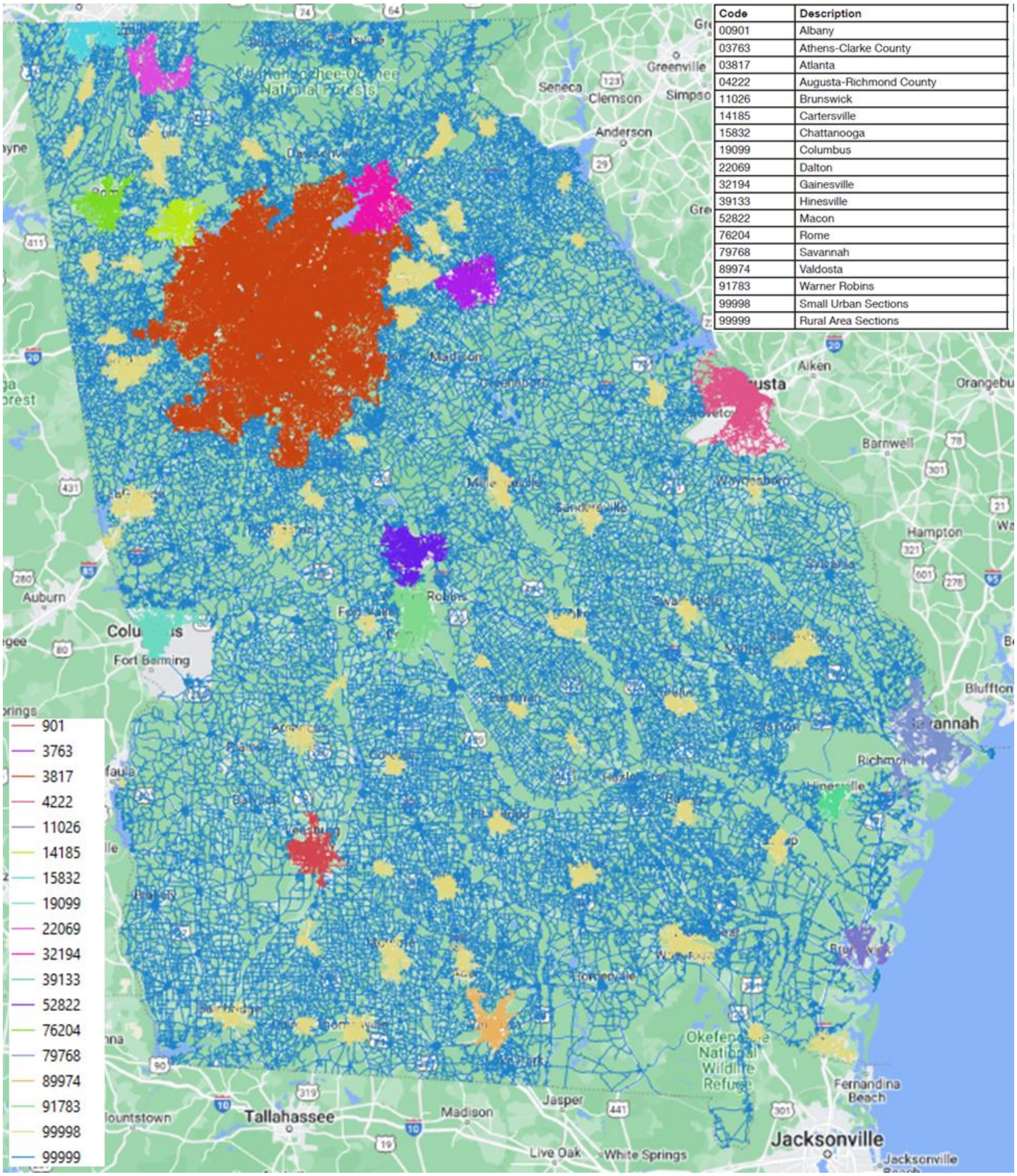


Figure 13. Map. Segments labeled with urban area codes.

Based on the GDOT-provided road inventory data, the research team identified the potential segments with four to eight lanes in urbanized areas, as shown in figure 14. By programming, the team split segments at every intersection between roads that are not generally classified as part of the public road network (see figure 15). In total, there are over 19,000 segments, but some are too short to provide meaningful data on crash frequencies. These short segments were merged, as appropriate, to form longer segments for analysis.

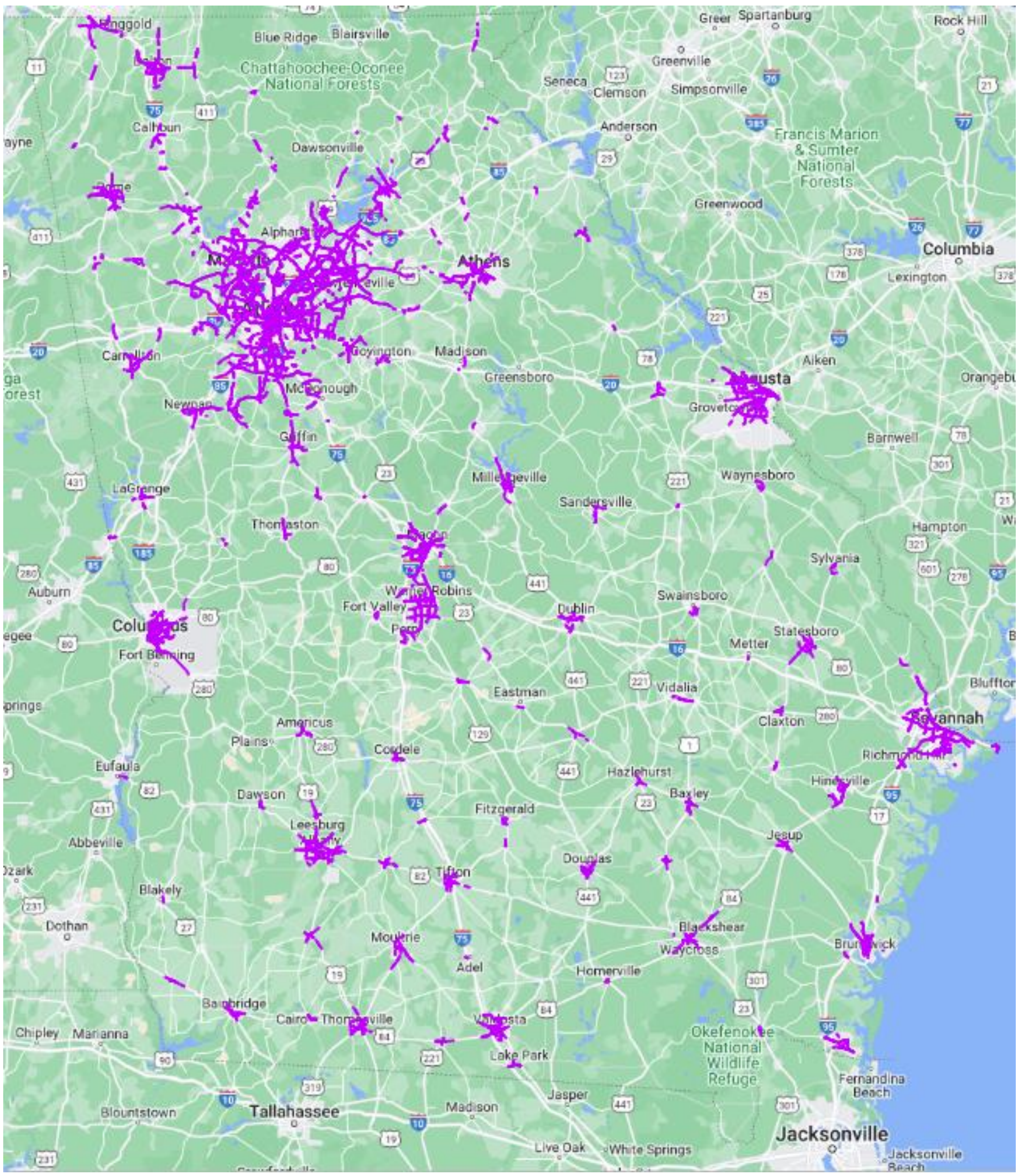


Figure 14. Map. Locations of multilane highways (four–eight lanes) in urbanized areas in Georgia.

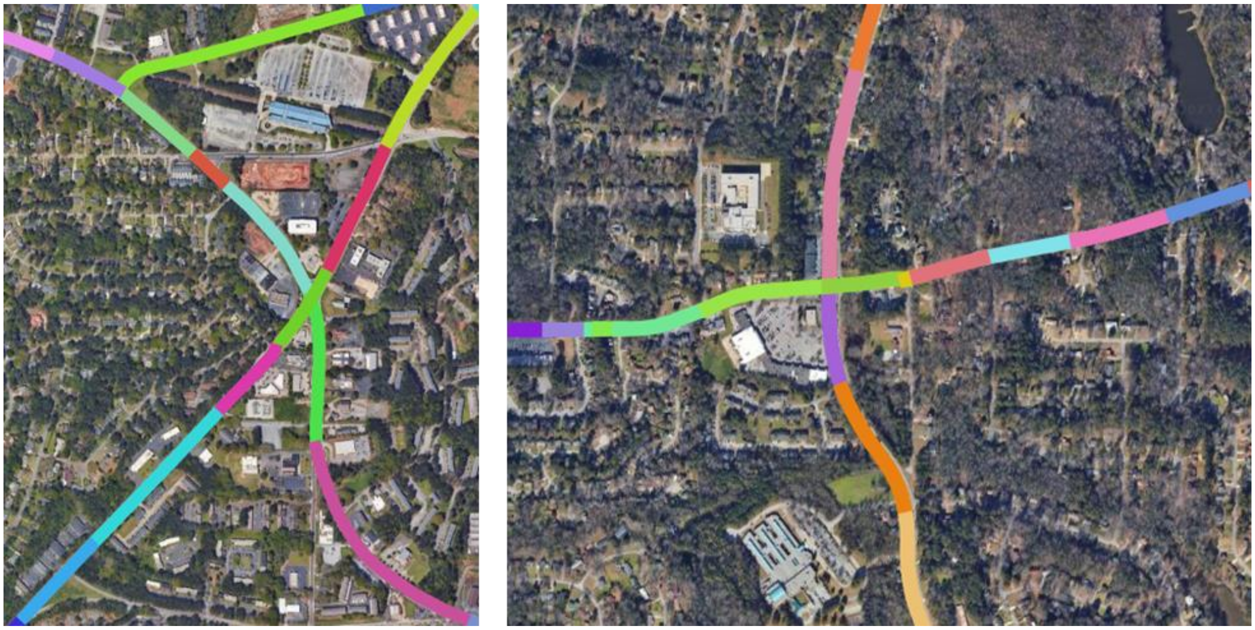


Figure 15. Maps. Segments divided at intersections.

WORK ZONE DATA

The GDOT data team provided work zone data of highway construction and maintenance records for Georgia's roadways over the last seven years. The presence of work zones and construction activities can significantly impact roadway safety performance, particularly when lane or shoulder closures are involved. Key information available in the work zone data includes the work zone's location, start date, open to traffic date, and primary work type. Table 17 shows the descriptive statistics of key work zone attributes. In total, the data contains information for 6797 work zones. Figure 16 shows the locations of work zones that were open to traffic during this project's study period from 2016 to 2021. In this project, the team utilized the data on construction activities in two ways. First, the team used the data to identify roadway segments with no recorded construction or maintenance activities during the study period. However, this approach may significantly reduce qualified observations for SPF development and CMF estimation. Second, the team created new variables at the segment level to capture the impacts of work zones on safety, including the presence of a work zone, the duration of work zones, and the primary work type. These new variables can be incorporated into the SPF/CMF models and other relevant factors such as traffic volume, median type/width, shoulder type/width, truck percentage, and access point density. This approach is expected to provide a more comprehensive understanding of roadway safety performance by considering the impacts of work zones alongside other relevant factors.

Table 17. Descriptive statistics of key work zone attributes (Total N = 6797).

Terms		Frequency	Percentage
Work start date	2016 and before	1,615	23.76%
	2017	822	12.09%
	2018	600	8.83%
	2019	573	8.43%
	2020	565	8.31%
	2021	551	8.11%
	2022	508	7.47%
	2023	66	0.97%
Open to traffic date	2016 and before	1,079	15.87%
	2017	707	10.40%
	2018	647	9.52%
	2019	586	8.62%
	2020	641	9.43%
	2021	601	8.84%
	2022	470	6.91%
	2023	33	0.49%

Continued on next page.

Table 18. Descriptive statistics of key work zone attributes (Total N = 6797) (Continued).

Terms		Frequency	Percentage
Primary work type	Resurface & Maintenance	1,938	28.51%
	Bridges	1,239	18.23%
	Signing	764	11.24%
	TE-Bike/Ped Facility	326	4.80%
	Signals	323	4.75%
	RRX Warning Device	295	4.34%
	Widening	231	3.40%
	Pavement Markings	183	2.69%
	Operational Improvement	154	2.27%
	Intersection Improvement	95	1.40%
	Sidewalks	94	1.38%
	Bicycle/Ped. Facility	89	1.31%
	Interchange	86	1.27%
	Roadway Project	84	1.24%
	RRX Signing & Marking	76	1.12%
	Roundabout	75	1.10%
	Rumble Strips	74	1.09%
	ITS	66	0.97%
	Guardrail	60	0.88%
	Pedestrian Crossings	49	0.72%
	RRX Consolidation	32	0.47%
	Realignment	30	0.44%
	Minor Widen & Resurf	29	0.43%
	Barriers	28	0.41%
	Miscellaneous Improvements	28	0.41%

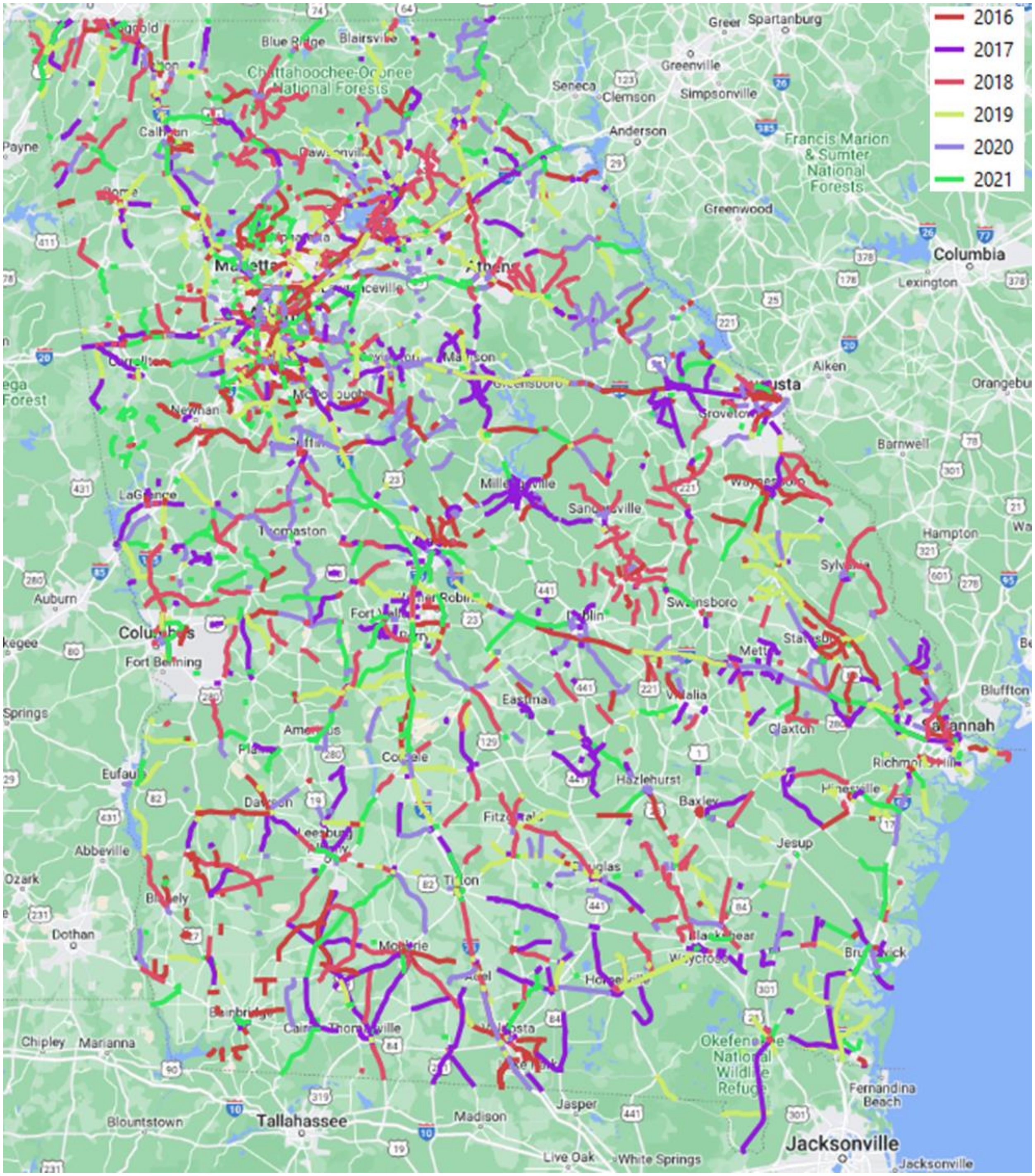


Figure 16. Map. Locations of work zones opened to traffic from 2016 to 2021.

SEGMENT-LEVEL DATA PREPARATION

The team undertook tremendous efforts to gather roadway data. Drawing from the road inventory data supplied by GDOT, they utilized Google Maps and global information system (GIS) tools to validate the road features present in the inventory data manually. These features include the number of through lanes, speed limits, shoulders, and medians. Also using Google Maps and GIS tools, the team collected additional attributes concerning the roadways, including curbs, median and roadside barriers, rumble strips, lanes for turning, bike lanes, on-street parking, alignment, and access points (e.g., driveways and minor intersections). To enhance the statistical integrity of the analysis, the team adopted the practice of merging extremely short road segments (e.g., those less than 0.01 mi) if they were not isolated. Additionally, lengthy segments (e.g., longer than 2 mi) were divided into smaller sections.

Table 18 provides an overview of the characteristics of the sampled roadway segments. A total of 4031 segments were sampled, all possessing validated roadway attributes. The cumulative length of these segments is 637.17 mi. The average length of these segments is roughly 0.16 mi. On average, there are about 24.92 driveways for every mile of road and approximately 1.78 minor intersections per mile. There is an average of about 27.68 access points per mile. Note, when calculating driveway and minor intersection densities for extremely short segments (<0.5 mi), using driveway/intersection density solely for the segment's length can lead to an artificially inflated value. This is because driveway/intersection density is calculated based on length. To address this, when determining the driveway/intersection density for homogenous segments, the researchers used the driveway density on the entire facility length rather than just the segment's length.

Table 18. Roadway characteristics of sampled segments (N = 4031).

Roadway Attributes		***Mean***	***Standard Deviation***
Segment length (mile)		0.16	0.17
Driveway density (per mile)		24.92	99.11
Minor intersection density (per mile)		1.78	6.00
Access point density (per mile)		27.68	105.67
		No. of Segments	***Percentage***
Number of through lanes	4-lane	3,375	83.7%
	6-lane	293	7.3%
	Other	363	9.0%
Speed limit	25 mph	82	2.0%
	30 mph	128	3.2%
	35 mph	920	22.8%
	40 mph	431	10.7%
	45 mph	2,470	61.3%
Median type	None	1,354	33.6%
	Unprotected/flush median	1,463	36.3%
	Raised median	1,214	30.1%
Shoulder type	None	362	9.0%
	Concrete shoulder	1,016	25.2%
	Earth shoulder	217	5.4%
	Other	2,436	60.4%
Bike lane	None	3,251	80.6%
	Shared use	706	17.5%
	Other	74	1.8%
Horizontal alignment	Straight	2,254	55.9%
	Slight curve	1,034	25.7%
	Clear curve	743	18.4%
Vertical alignment	Level	3,067	76.1%
	Slight slope	858	21.3%
	Clear slope	106	2.6%
Other features	Presence of curb	2,886	71.6%
	Presence of barrier (median)	361	9.0%
	Presence of barrier (roadside)	389	9.7%
	Presence of rumble strips (median)	111	2.8%
	Presence of rumble strips (roadside)	75	1.9%
	Presence of left-turn lanes	2,523	62.6%
	Presence of right-turn lanes	1,852	45.9%
	Presence of on-street parking	29	0.7%
	Presence of work zone	762	18.9%

The sampled road segments exhibit various characteristics, as revealed in table 18. When considering the number of through lanes, a significant portion consists of four-lane segments

(83.7 percent), followed by six-lane segments (7.3 percent), and other variations (9.0 percent). Speed limits vary, with the highest percentage set at 45 mph (61.3 percent), followed by 35 mph (22.8 percent). Median types differ, with 36.3 percent having an unprotected or flush median such as TWLTLs, 30.1 percent featuring a raised median with a curb or barrier, and 33.6 percent having no median (i.e., standard double yellow lines). Shoulder types also vary, with the majority (60.4 percent) categorized as “Other,” whereas 25.2 percent possess a concrete shoulder. Regarding bike lanes, the majority (80.6 percent) lack them, and 17.5 percent feature shared-use lanes. When examining alignment, a considerable proportion (55.9 percent) boasts a straight horizontal alignment, and a notable portion (76.1 percent) displays a level vertical alignment. Additionally, various other features are present, such as curbs (71.6 percent), left-turn lanes (62.6 percent), and the presence of a work zone (18.9 percent).

Notably, some of these segments are very short (<0.05 mi). This is often the case in urban areas where intersections are dense. It might be necessary to exclude some of these short segments from the final dataset for SPF development. The HSM recommends a minimum segment length of 0.1 mi. Additionally, when developing an SPF for a particular subgroup of segments, there is a possibility that the current sampled data might not contain adequate observations to satisfy the criteria. Therefore, as required, there is a possibility of gathering additional segments, especially for the specific subgroup of segments identified by GDOT.

Figure 17 through figure 22 visually represent the sampled road segments’ locations and attributes. Notably, most of these segments are derived from the Atlanta Metro Area, a significant urban zone in the state. This area is given specific emphasis when presenting certain roadway attributes. Figure 17 illustrates the distribution of segments statewide and within the Atlanta Metro Area. Figure 18 shows the count of through lanes, distinguishing between four-lane and six-lane roads, with an evident prevalence of four-lane roads featuring two lanes per direction. Figure 19 emphasizes the prevalence of 45-mph speed limit segments, followed by 40-mph, 35-mph, and 30-mph segments within Atlanta. Median types, depicted in figure 20, display a balanced presence across various types within the area. Figure 21 provides insight into the various shoulder types, including concrete shoulders like asphalt concrete/Portland cement concrete (AC/PCC), other shoulders, and no shoulder. As shown in figure 22, the presence of curbs is investigated, juxtaposing segments with curbs against those without in the Atlanta Metro Area. Notably, only a small portion of segments lack either a shoulder or curb, highlighting the prevalence of these features in the studied area.

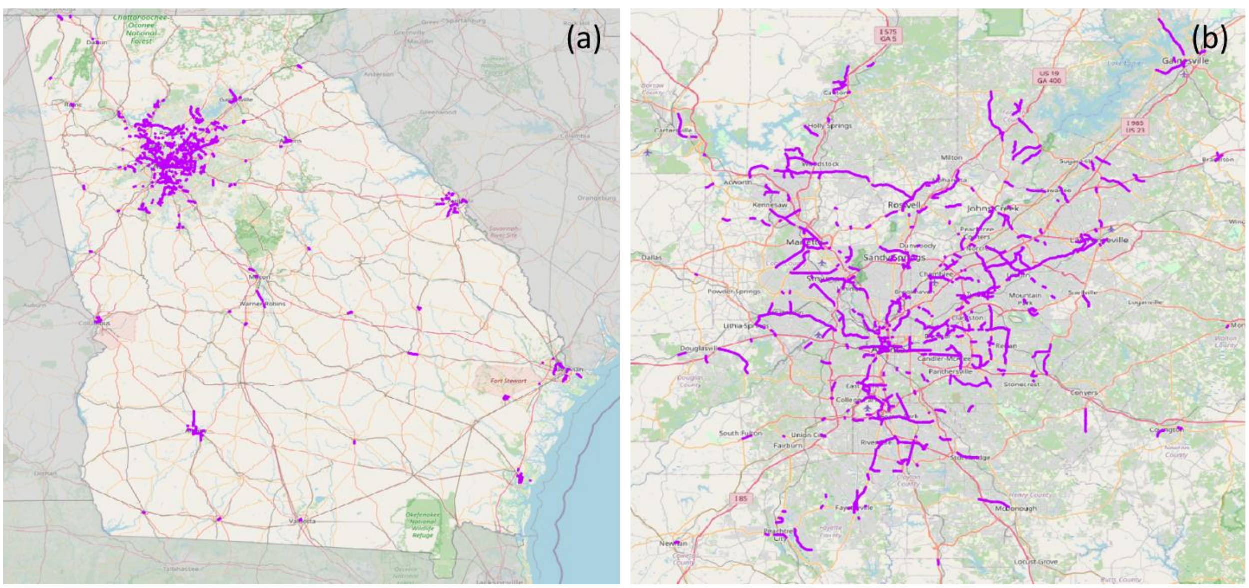


Figure 17. Maps. Locations of sampled road segments: (a) statewide; (b) Atlanta Metro Area.

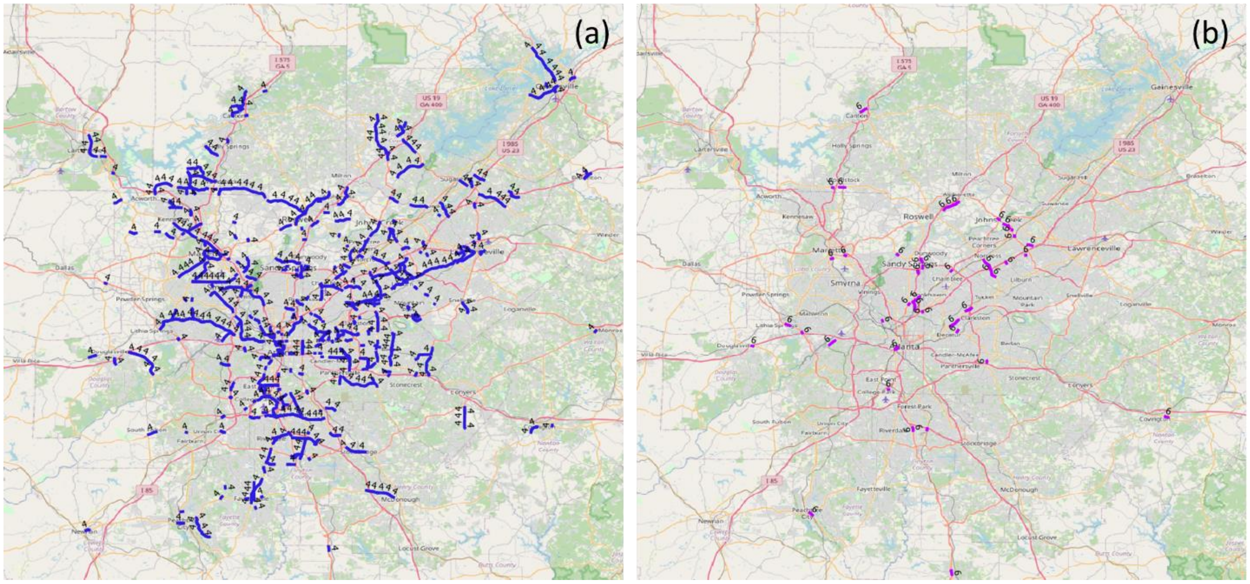


Figure 18. Maps. Number of through lanes for sampled road segments within the Atlanta Metro Area: (a) four-lane roads; (b) six-lane roads.

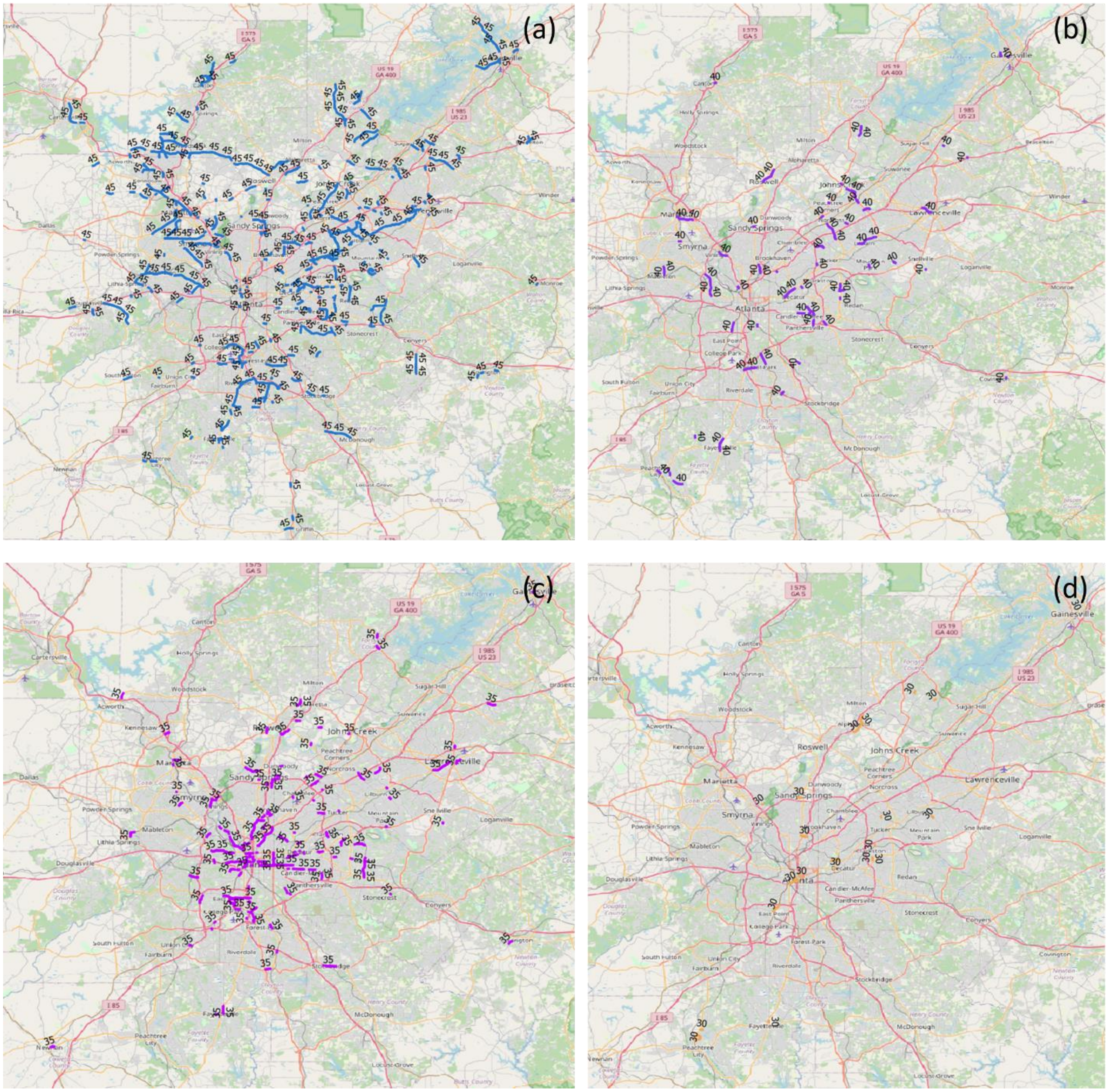


Figure 19. Maps. Speed limits of sampled road segments within the Atlanta Metro Area: (a) 45 mph; (b) 40 mph; (c) 35 mph; (d) 30 mph.

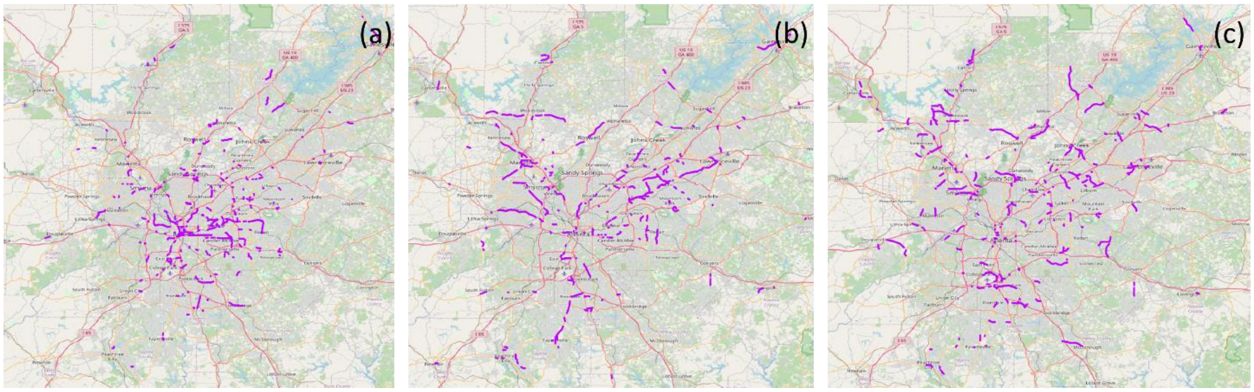


Figure 20. Maps. Median types of sampled road segments within the Atlanta Metro Area: (a) no median – double yellow lines; (b) unprotected medians – flush medians/TWLTLs; (c) raised medians with curbs or barriers.

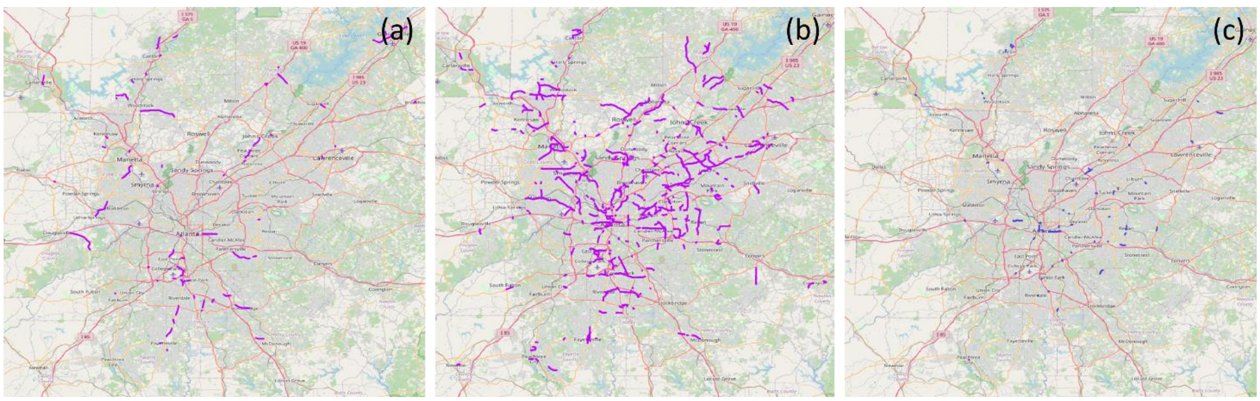


Figure 21. Maps. Shoulder types of sampled road segments within the Atlanta Metro Area: (a) concrete shoulder – AC/PCC; (b) other shoulder; (c) no shoulder.

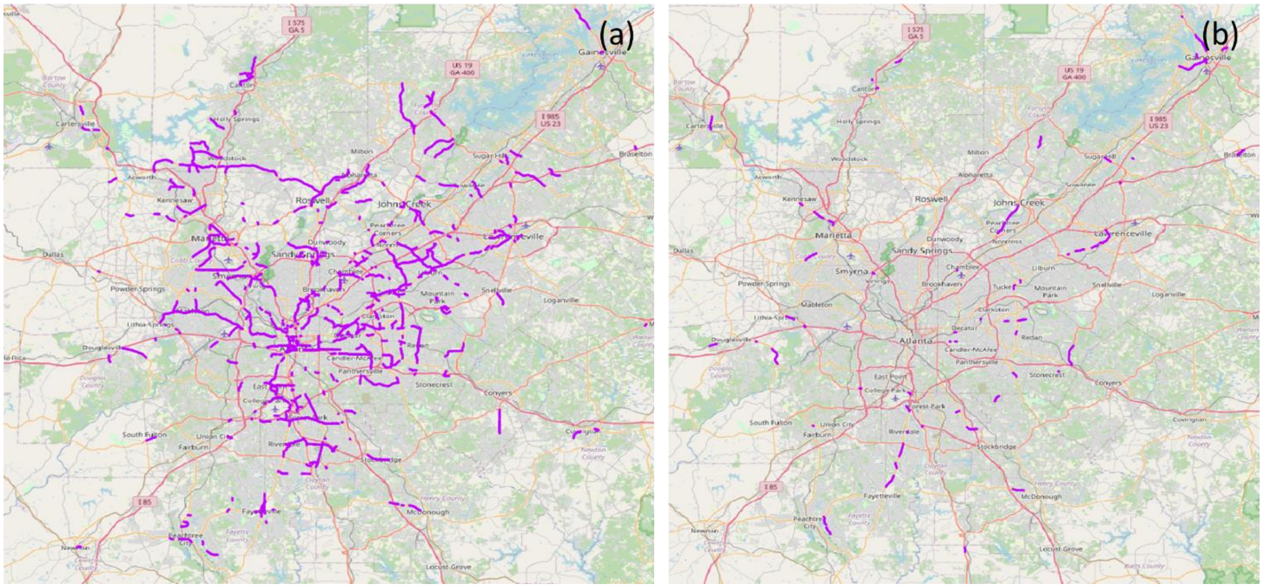


Figure 22. Maps. Presence of curbs along sampled road segments within the Atlanta Metro Area: (a) with curbs; (b) without curbs.

With the roadway data, the research team linked two significant datasets—crash data and traffic data—to the respective road segments based on their geographic locations. Figure 23 offers an overlay displaying the alignment of crashes and road segments to represent this connection visually. Notably, crashes that do not have geographic coordinates were unable to be linked to any segments. Fortunately, since January 1, 2018, it has been a requirement to report the geographic coordinates of all traffic crashes, according to the latest Georgia *Uniform Motor Vehicle Accident Report – Training Manual*.[2]

[2] https://www.dot.ga.gov/DriveSmart/CrashReporting/GeorgiaUniformVehicleAccidentReport.pdf

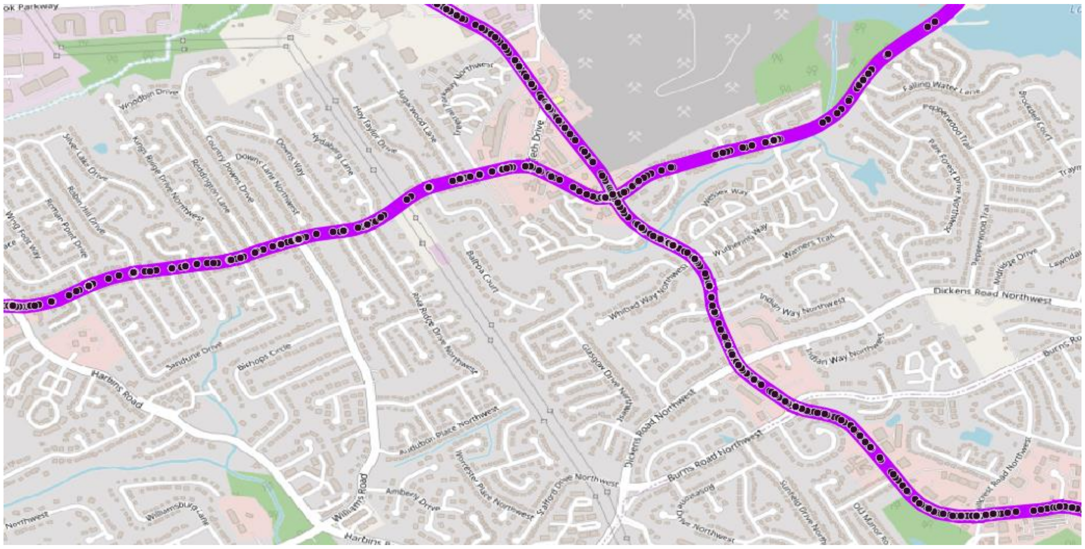


Figure 23. Map. Overlay of crashes and road segments.

Specifically, the team linked individual crash records from 2016 to 2021 with the sampled roadway segments. A total of 52,612 crashes were successfully linked to sample segments. Through the aggregation of these crash records, the team derived crash counts across various categories, encompassing total crashes (KABCO), fatal injury crashes (K), suspected serious injury crashes (A), suspected minor or visible injury crashes (B), potential injury or complaint crashes (C), and crashes with no apparent injuries (O). Furthermore, they obtained crash counts based on distinct crash types (single and multiple vehicles) and collision manners, such as rear-end, angle, and sideswipe incidents. Crashes associated with intersections are not included in the counts.

Table 19 to table 24 present an overview of the crash characteristics observed on the sampled road segments from 2016 to 2021. A noticeable trend is the variation in crash counts before and since 2018. The crash numbers nearly doubled in 2018 compared to 2017. This change is likely attributed to GDOT's updated policy, which mandates the inclusion of geographic coordinate data in traffic crash records as of January 1, 2018. GPS coordinates became a requirement for all roadway crashes starting from that date, according to the latest *Georgia Uniform Motor Vehicle Accident Report – Training Manual*. As a result, a significant number of crashes before 2018 lacked geographic coordinates, rendering them ineligible for inclusion in the crash counts for the respective road segments.

In 2020, the coronavirus disease 2019 (COVID-19) pandemic significantly impacted travel behaviors. As expected, there was a decline in the total number of crashes from 2019 to 2020. However, there was a noticeable increase in fatal crashes from 2019 to 2020, which continued into 2021. This finding is consistent with national findings regarding traffic safety trends before and after the pandemic.[3]

Table 19. Characteristics of crashes on sampled road segments during 2016.

Year = 2016	***Average Crash Count***	***Standard Deviation***	***Total Crashes***
All crashes			
Total crashes (KABCO)	1.648	3.760	4,986
Fatal injury crashes (K)	0.007	0.089	22
Suspected serious injury crashes (A)	0.015	0.121	45
Suspected minor or visible injury crashes (B)	0.073	0.299	221
Possible injury or complaint crashes (C)	0.267	0.708	807
No apparent injury crashes (O)	1.286	3.251	3,891
Rear-end crashes	0.572	1.511	1,731
Angle crashes	0.493	1.769	1,492
Sideswipe (same direction) crashes	0.213	0.697	644
Single-vehicle crashes			
Total crashes (KABCO)	0.253	0.639	766
Fatal injury crashes (K)	0.003	0.054	9
Suspected serious injury crashes (A)	0.008	0.087	23
Suspected minor or visible injury crashes (B)	0.026	0.170	80
Possible injury or complaint crashes (C)	0.027	0.169	83
No apparent injury crashes (O)	0.189	0.529	571

Continued on next page.

[3] https://www.nhtsa.gov/press-releases/traffic-crash-death-estimates-2022

Table 20. Characteristics of crashes on sampled road segments during 2016 (Continued).

Year = 2016	***Average Crash Count***	***Standard Deviation***	***Total Crashes***
Multiple-vehicle crashes			
Total crashes (KABCO)	1.394	3.524	4,217
Fatal injury crashes (K)	0.004	0.065	13
Suspected serious injury crashes (A)	0.007	0.085	22
Suspected minor or visible injury crashes (B)	0.046	0.233	140
Possible injury or complaint crashes (C)	0.239	0.672	723
No apparent injury crashes (O)	1.097	3.063	3,319

Table 20. Characteristics of crashes on sampled road segments during 2017.

Year = 2017	***Average Crash Count***	***Standard Deviation***	***Total Crashes***
All crashes			
Total crashes (KABCO)	1.711	3.628	5,177
Fatal injury crashes (K)	0.006	0.079	19
Suspected serious injury crashes (A)	0.017	0.135	52
Suspected minor or visible injury crashes (B)	0.081	0.339	245
Possible injury or complaint crashes (C)	0.279	0.780	844
No apparent injury crashes (O)	1.328	3.028	4,017
Rear-end crashes	0.596	1.606	1,803
Angle crashes	0.503	1.609	1,523
Sideswipe (same direction) crashes	0.242	0.816	733
Single-vehicle crashes			
Total crashes (KABCO)	0.266	0.639	806
Fatal injury crashes (K)	0.005	0.070	15
Suspected serious injury crashes (A)	0.009	0.099	28
Suspected minor or visible injury crashes (B)	0.025	0.161	76
Possible injury or complaint crashes (C)	0.032	0.190	98
No apparent injury crashes (O)	0.195	0.523	589
Multiple-vehicle crashes			
Total crashes (KABCO)	1.445	3.412	4,370
Fatal injury crashes (K)	0.001	0.036	4
Suspected serious injury crashes (A)	0.008	0.089	24
Suspected minor or visible injury crashes (B)	0.056	0.281	169
Possible injury or complaint crashes (C)	0.247	0.737	746
No apparent injury crashes (O)	1.133	2.876	3,427

Table 21. Characteristics of crashes on sampled road segments during 2018.

Year = 2018	*Average Crash Count*	*Standard Deviation*	*Total Crashes*
All crashes			
Total crashes (KABCO)	4.182	6.806	12,650
Fatal injury crashes (K)	0.012	0.113	35
Suspected serious injury crashes (A)	0.030	0.178	91
Suspected minor or visible injury crashes (B)	0.162	0.461	490
Possible injury or complaint crashes (C)	0.817	1.675	2,470
No apparent injury crashes (O)	3.162	5.236	9,564
Rear-end crashes	1.866	3.562	5,644
Angle crashes	1.112	2.408	3,365
Sideswipe (same direction) crashes	0.705	1.446	2,134
Single-vehicle crashes			
Total crashes (KABCO)	0.334	0.758	1,010
Fatal injury crashes (K)	0.007	0.081	20
Suspected serious injury crashes (A)	0.009	0.096	28
Suspected minor or visible injury crashes (B)	0.039	0.217	119
Possible injury or complaint crashes (C)	0.045	0.220	136
No apparent injury crashes (O)	0.234	0.595	707
Multiple-vehicle crashes			
Total crashes (KABCO)	3.848	6.520	11,640
Fatal injury crashes (K)	0.005	0.075	15
Suspected serious injury crashes (A)	0.021	0.150	63
Suspected minor or visible injury crashes (B)	0.123	0.398	371
Possible injury or complaint crashes (C)	0.772	1.627	2,334
No apparent injury crashes (O)	2.928	5.044	8,857

Table 22. Characteristics of crashes on sampled road segments during 2019.

Year = 2019	***Average Crash Count***	***Standard Deviation***	***Total Crashes***
All crashes			
Total crashes (KABCO)	3.778	5.981	11,428
Fatal injury crashes (K)	0.008	0.094	23
Suspected serious injury crashes (A)	0.034	0.196	104
Suspected minor or visible injury crashes (B)	0.164	0.458	497
Possible injury or complaint crashes (C)	0.731	1.448	2,212
No apparent injury crashes (O)	2.840	4.651	8,592
Rear-end crashes	1.719	3.172	5,200
Angle crashes	0.957	2.123	2,896
Sideswipe (same direction) crashes	0.664	1.344	2,009
Single-vehicle crashes			
Total crashes (KABCO)	0.316	0.712	956
Fatal injury crashes (K)	0.004	0.065	11
Suspected serious injury crashes (A)	0.015	0.128	46
Suspected minor or visible injury crashes (B)	0.039	0.204	119
Possible injury or complaint crashes (C)	0.039	0.204	119
No apparent injury crashes (O)	0.219	0.585	661
Multiple-vehicle crashes			
Total crashes (KABCO)	3.461	5.723	10,471
Fatal injury crashes (K)	0.004	0.068	12
Suspected serious injury crashes (A)	0.019	0.144	58
Suspected minor or visible injury crashes (B)	0.125	0.389	378
Possible injury or complaint crashes (C)	0.692	1.412	2,093
No apparent injury crashes (O)	2.621	4.465	7,930

Table 23. Characteristics of crashes on sampled road segments during 2020.

Year = 2020	*Average Crash Count*	*Standard Deviation*	*Total Crashes*
All crashes			
Total crashes (KABCO)	2.800	4.865	8,470
Fatal injury crashes (K)	0.009	0.092	26
Suspected serious injury crashes (A)	0.041	0.213	125
Suspected minor or visible injury crashes (B)	0.143	0.447	432
Possible injury or complaint crashes (C)	0.529	1.139	1,600
No apparent injury crashes (O)	2.078	3.900	6,287
Rear-end crashes	1.171	2.490	3,543
Angle crashes	0.685	1.582	2,072
Sideswipe (same direction) crashes	0.528	1.266	1,598
Single-vehicle crashes			
Total crashes (KABCO)	0.307	0.802	929
Fatal injury crashes (K)	0.004	0.060	11
Suspected serious injury crashes (A)	0.014	0.121	43
Suspected minor or visible injury crashes (B)	0.032	0.180	97
Possible injury or complaint crashes (C)	0.028	0.185	84
No apparent injury crashes (O)	0.229	0.663	694
Multiple-vehicle crashes			
Total crashes (KABCO)	2.493	4.533	7,541
Fatal injury crashes (K)	0.005	0.070	15
Suspected serious injury crashes (A)	0.027	0.170	82
Suspected minor or visible injury crashes (B)	0.111	0.391	335
Possible injury or complaint crashes (C)	0.501	1.111	1,516
No apparent injury crashes (O)	1.849	3.634	5,593

Table 24. Characteristics of crashes on sampled road segments during 2021.

Year = 2021	*Average Crash Count*	*Standard Deviation*	*Total Crashes*
All crashes			
Total crashes (KABCO)	3.273	5.337	9,901
Fatal injury crashes (K)	0.012	0.107	35
Suspected serious injury crashes (A)	0.046	0.227	138
Suspected minor or visible injury crashes (B)	0.184	0.520	556
Possible injury or complaint crashes (C)	0.620	1.309	1,874
No apparent injury crashes (O)	2.413	4.131	7,298
Rear-end crashes	1.308	2.544	3,958
Angle crashes	0.857	1.943	2,592
Sideswipe (same direction) crashes	0.643	1.423	1,945
Single-vehicle crashes			
Total crashes (KABCO)	0.329	0.738	996
Fatal injury crashes (K)	0.006	0.075	17
Suspected serious injury crashes (A)	0.018	0.136	55
Suspected minor or visible injury crashes (B)	0.044	0.218	133
Possible injury or complaint crashes (C)	0.037	0.202	112
No apparent injury crashes (O)	0.224	0.584	679
Multiple-vehicle crashes			
Total crashes (KABCO)	2.944	5.046	8,905
Fatal injury crashes (K)	0.006	0.077	18
Suspected serious injury crashes (A)	0.027	0.177	83
Suspected minor or visible injury crashes (B)	0.140	0.451	423
Possible injury or complaint crashes (C)	0.582	1.263	1,762
No apparent injury crashes (O)	2.188	3.928	6,619

Furthermore, the research team established connections between the traffic count stations and the selected roadway segments. This linkage enables them to retrieve traffic counts (AADT) and truck percentages within these segments from 2016 to 2021. Notably, segments without identified traffic count stations are not included in the dataset intended for SPF development. Additionally, a solution was implemented for segments with identified traffic count stations where certain stations lack AADT and/or truck percentage information for some years. These missing values were imputed by utilizing available values from the nearest year for the corresponding traffic count station. As shown in table 25, the team could observe a reduction in traffic volumes (AADT) in 2020 during the COVID-19 pandemic.

Table 25. Traffic characteristics of sampled road segments from 2016 to 2021.

Traffic Attributes – Year	*Mean*	*Standard Deviation*	*Min*	*Max*
AADT – 2016	23,170.67	14,330.34	2,330	22,4000
AADT – 2017	24,034.49	14,765.22	2,110	21,7000
AADT – 2018	23,846.19	14,737.27	2,140	21,7000
AADT – 2019	24,000.31	14,960.40	2,110	22,9000
AADT – 2020	21,950.63	13,394.51	1,960	20,1000
AADT – 2021	22,985.68	14,219.13	2,050	21,3000
Truck Percentage – 2016	4.53%	3.76%	0.20%	64.90%
Truck Percentage – 2017	4.47%	3.51%	0.90%	64.90%
Truck Percentage – 2018	4.38%	3.39%	0.90%	55.90%
Truck Percentage – 2019	4.53%	3.40%	0.90%	47.60%
Truck Percentage – 2020	4.67%	3.58%	0.90%	47.30%
Truck Percentage – 2021	4.76%	3.46%	1.00%	47.40%

SEGMENT-LEVEL MODELING

According to the HSM, the standard or most common form of SPF for roadway segments is described in equation 1 (AASHTO 2010):

$$N_{SPF} = L \times \mathrm{e}^{a+b\times\ln(AADT)} \text{ or } N_{SPF} = \mathrm{e}^{a+b\times\ln(AADT)+\ln(L)} \quad (1)$$

where, N_{SPF} is the predicted number of crashes on a segment, L is the length of the segment, $AADT$ is the AADT volume, and a and b are regression coefficients to be estimated using historical crash data. In equation 1, the segment length L is included as a multiplier, which assumes that the crash frequency on a segment is simply proportional to the segment length. However, this assumption may be inappropriate in some cases. Driving on a relatively longer road segment with unchanging circumstances may differ from driving on a relatively shorter road segment with frequent variations of circumstances. Therefore, another common form of SPFs is also suggested by transportation professionals, as follows:

$$N_{SPF} = \mathrm{e}^{a+b\times\ln(AADT)+c\times\ln(L)} \quad (2)$$

where, c is a parameter indicating the relationship between crash frequency and segment length. If the estimate of c is close to 1, equation 2 is identical to equation 1. If c is significantly different from 1, then the road segment length is not simply proportional to crash frequencies.

Multiple regression models are estimated, providing parameters (a, b, and c) of the SPFs. In the HSM, it is assumed that crash frequencies follow an NB distribution (AASHTO 2010). The NB distribution is an extension (capturing overdispersion) of the Poisson model:

$$Y_i \sim NB\ (N_{SPF\ i}, \alpha) \tag{3}$$

where, Y_i is the observed crash frequency on a segment, $N_{SPF\ i}$ is the expected crash frequency, and α is the NB overdispersion parameter. A larger value of α implies greater overdispersion in data. If $\alpha = 0$, then the data follow a Poisson distribution (where mean = variance). In such a situation, the Poisson and NB models provide identical estimates of parameters (a, b, and c). If α is significantly greater than 0, an NB model is preferred. Formally, $N_{SPF\ i}$ can be viewed as a log link function of a set of independent variables (Liu et al. 2017):

$$Ln\ (N_{SPF\ i}) = a + b \times \ln(AADT_i) + c \times \ln(L_i) \tag{4}$$

In addition to the variables of AADT and segment length in the standard SPF, other factors can also be included in the form. An expanded SPF form, including the truck percentage and access point density, can be expressed as:

$$Ln\ (N_{SPF\ i}) = a + b \times \ln(AADT_i) + c \times \ln(L_i) + d \times TP_i + e \times APD_i \tag{5}$$

where, *TP* is the truck percentage, and *APD* is the access point density along a segment. Parameters d and e are the coefficients for truck percentage and access point density, indicating the relationship between crash frequency and truck percentage and access point density.

Further, to consider the potential interaction between traffic volume and truck percentage, an intersection term can be added to the SPF:

$$Ln\ (N_{SPF\ i}) = a + b \times \ln(AADT_i) + c \times \ln(L_i) + d \times TP_i + e \times APD_i + f \times [\ln(AADT_i) * TP_i] \tag{6}$$

Figure 24 shows the overall framework of the SPF development in this project. SPFs were developed for different segment groups. To account for the possible changes in crash reporting procedures from 2017 to 2018, the team developed separate SPFs using crash data collected during two periods: 2016–2021 or 2018–2021. In theory, there should be 480 SPFs, considering 30 segment groups, 4 crash severity groups, 2 sets of SPF factors, and 2 time periods. However, due to data limitations, partially because of the scarcity of segment samples in the real world (e.g., 6-lane roads with a 25-mph speed limit), this project has only been able to develop SPFs for a subset of segment groups. In addition, although some segment groups have a sufficient number of samples/observations for modeling (i.e., SPF parameter estimation), the model coefficients (i.e., SPF parameters) lack statistical significance. One of the primary reasons for this is the absence of variation in modeling data, particularly for SPFs related to fatal and serious injury crashes. In other words, certain segment groups rarely observe fatal and severe injury crashes, resulting in limited variability in the dependent variables (i.e., crash frequency). The HSM recommends a minimum sample size of 30–50 sites with more than 100 crashes per year for robust analysis. Therefore, this report presents over 150 SPFs for 19 segment groups that exceed the HSM-recommended data requirements and are deemed more reliable and statistically robust for practical application and decision-making. For segment groups with insufficient data, especially those with rare occurrences of fatal and serious injury crashes, it is advisable to consider targeted data collection efforts to improve the quality and reliability of future SPF development.

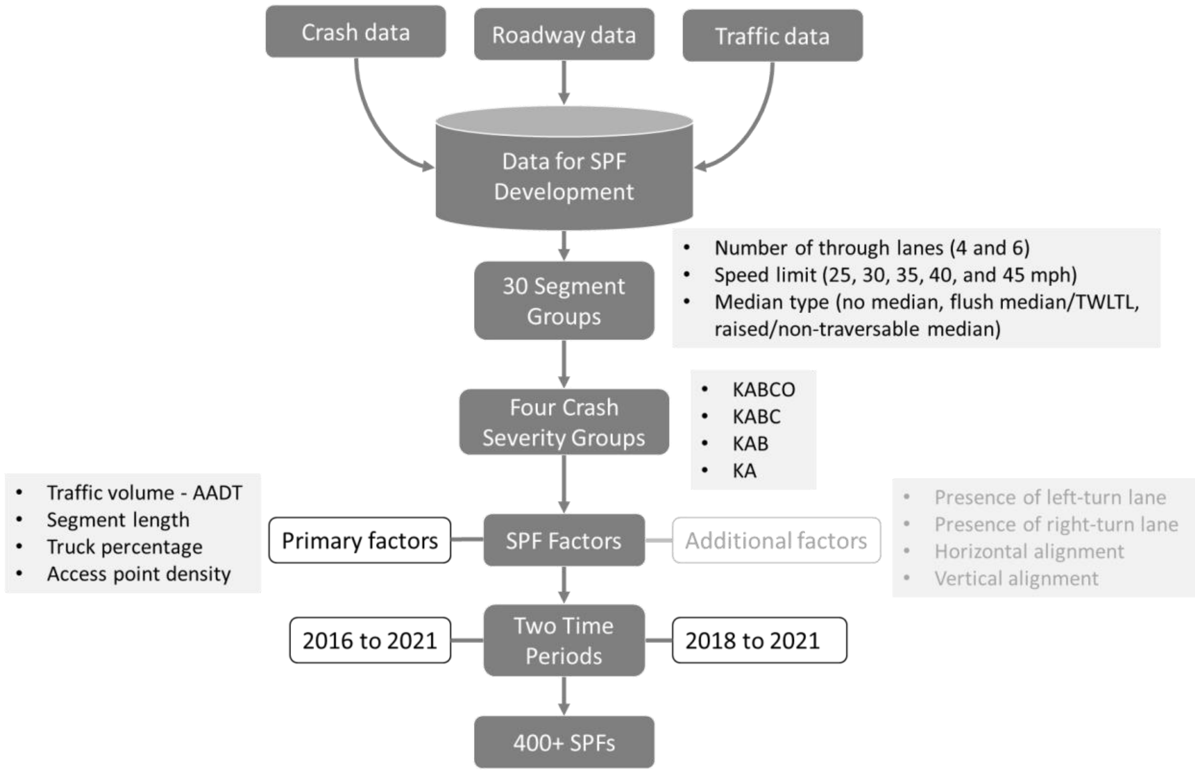


Figure 24. Flow chart. Segment-level SPF development framework.

SEGMENT-LEVEL CMF ESTIMATION

A CMF is a factor used to quantify the expected average crash frequency change due to geometric or operational modifications to a site that differs from set base conditions. CMFs represent the relative crash frequency change due to a change in one specific condition when all other conditions and site characteristics remain constant. CMFs are the ratio of the crash frequency of a site under two different conditions.

In this project, roadway medians are of interest for estimating their safety effectiveness. Therefore, separate SPFs are developed for predicting the expected average crash frequencies for roadways with different median types: no median, flush median (TWLTL), and raised/non-traversable median. CMFs for different median types can be estimated by using the SPFs to predict average expected crash frequencies and calculating the ratios of these predictions across different facilities, as follows:

$$CMF = \frac{N_{SPF}\ for\ Facility\ “B”}{N_{SPF}\ for\ Facility\ “A”} \tag{7}$$

where, N_{SPF} is the expected average crash frequency based on SPF; “A” represents one base median type, which is “no median” or undivided roadway; and “B” represents flush medians/TWLTLs and non-traversable median. The CMF values estimated using equation 7 imply the safety impacts of converting an undivided road to a road with TWLTLs or raised medians. In addition, the safety effectiveness of a treatment on roadways is likely to vary across different situations. The research team show the variations of estimated CMFs for different median types across different values of AADT, truck percent, and access point density. These variations illustrate the local safety impacts of a particular type of median under various circumstances. They provide valuable insights for decision-making regarding roadway medians under different traffic and roadway conditions.

CORRIDOR-LEVEL DATA PREPARATION

Because roadway design decisions concerning medians are often made at the corridor level, where medians can significantly influence intersection safety dynamics—particularly raised medians that restrict turns exclusively to intersections—it is crucial to consider safety at this broader scale. The team collected corridor-level roadway information and aggregated traffic and crash data at this level. This process involved utilizing Google Maps to verify roadway segments that are continuously connected and share similar characteristics. Specifically, the team concentrated on segments featuring the same number of through lanes (4 lanes) and consistent median types (no median, flush median/TWLTLs, or raised/non-traversable medians), as well as consistent speed limits (40 and 45 mph). Furthermore, the team ensured these segments were situated within comparable area types (urban or suburban) and roadside environments (residential or mixed land use). They gathered data for 130 corridors from Atlanta areas and 99 corridors from non-Atlanta areas.

Regarding traffic information, different segments within a corridor may have different traffic volumes and truck percentages. The team calculated segment-length weighted average values for corridor-level traffic information based on the traffic records at individual stations or segments within each corridor. The calculated values represent the average traffic volumes and truck percentages over the corridor. Regarding corridor-level safety outcomes, the team aggregated crashes that are geographically located within each corridor, encompassing both crashes at intersections and non-intersections (i.e., segments). Crash counts include totals for both total crashes (KABCO) and fatal and injury crashes (KAB).

After removing corridors with missing traffic data (i.e., AADT and truck percentage) and excluding corridors less than 1 mi in length based on previous studies on corridor-level traffic safety (Alarifi **Error! Reference source not found.**; McCombs, Al-Deek, and Sandt et al. 2024; McCombs, Al-Deek, and Sandt 2024), the researchers retained a final set of 85 corridors for analysis using four years of crash and traffic data from 2018 to 2021. Chapter 4. DESCRIPTIVE ANALYSIS presents the descriptive statistics of the attributes of the corridors sampled for analysis to examine the corridor-level impact on the frequency and severity of crashes of different median types.

Figure 25 shows the distribution of corridors in urban and suburban areas, as defined in the National Cooperative Highway Research Program (NCHRP) Project 15-72 Report (Stamatiadis et al. 2022). Urban corridors are primarily located near the central core, such as the heart of the Atlanta area, whereas suburban corridors are situated in the outer regions. Figure 26 provides examples of urban versus suburban corridors.

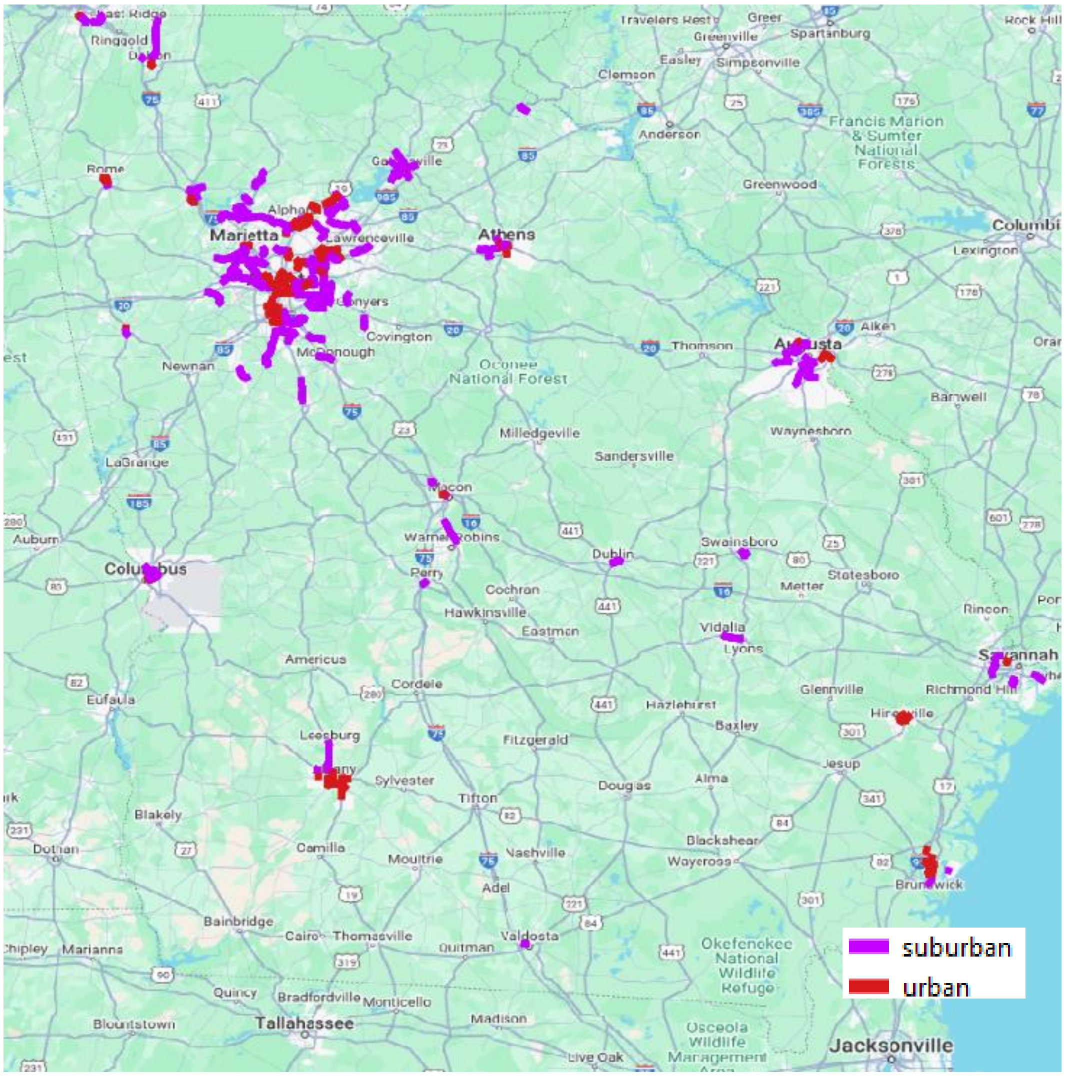


Figure 25. Map. Locations of sampled corridors (urban vs. suburban).

Figure 26. Photographs. Urban versus suburban corridors.

Figure 27 shows the corridors with different roadside contexts. Mixed-use refers to a type of development or area where multiple land uses are integrated within the same space. Typically, mixed-use environments combine residential, commercial (e.g., retail or shopping centers), office, and sometimes industrial spaces. In contrast, residential areas are primarily designated for housing and are intended solely for residential purposes, with limited or no commercial or industrial activities. Figure 28 provides examples of mixed-use versus residential corridors.

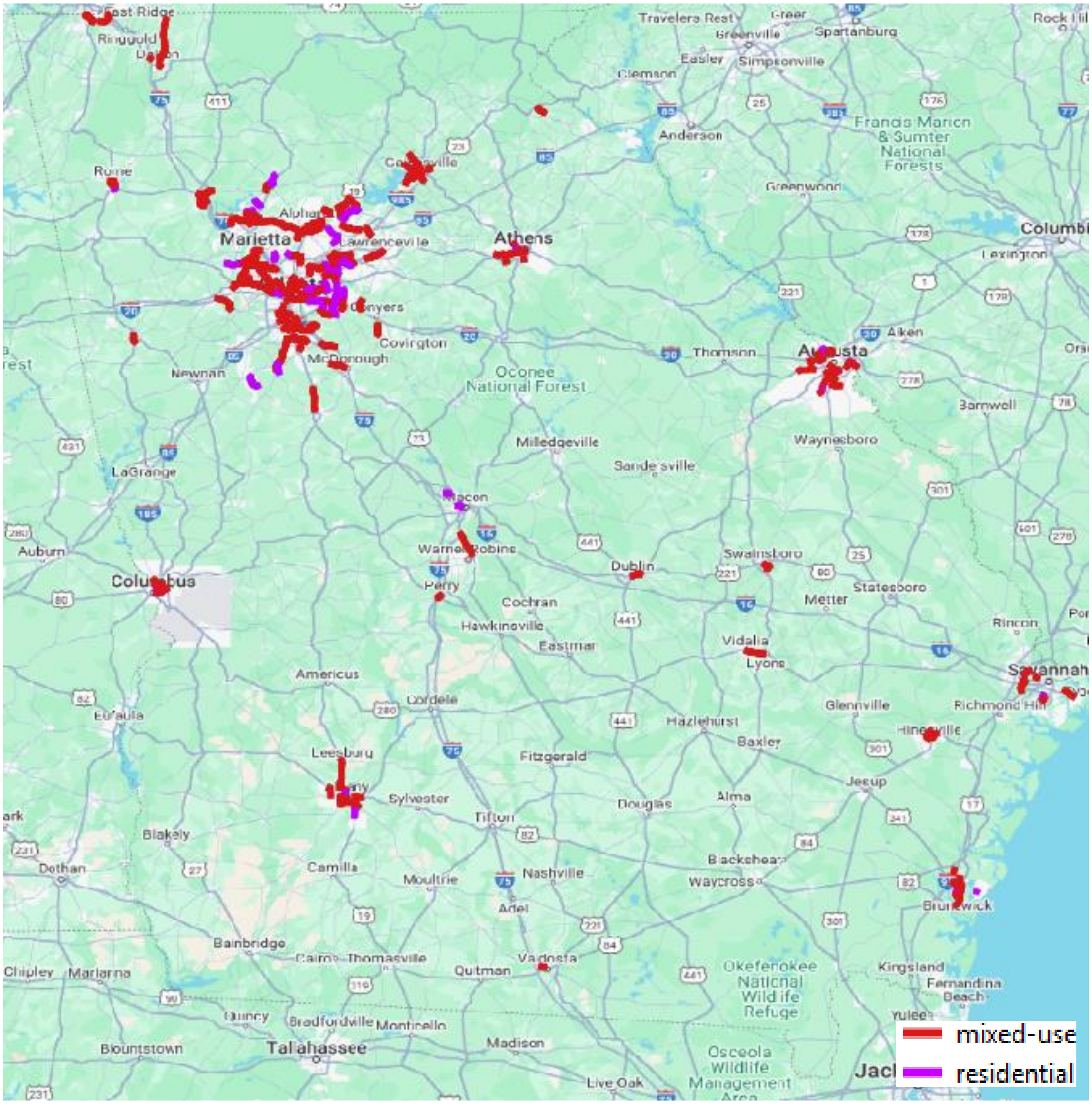


Figure 27. Map. Locations of sampled corridors (mixed-use vs. residential).

Figure 28. Photographs. Mixed-use versus residential corridors.

CORRIDOR-LEVEL MODELING

The researchers utilized the NB regression method to model corridor-level safety performance. This approach aligns with the recommended modeling technique for segment-level SPF development, as the HSM outlines. The NB regression method is particularly useful for capturing multiple factors that may contribute to or be associated with corridor-level safety performance. To compare the safety performance of corridors with different median types, separate NB models were developed, incorporating factors such as corridor-level traffic volumes, truck percentages, access point density (driveway density), intersection density (number of intersections per mile), and roadside contexts. Ideally, separate models would be estimated for corridors with the same speed limit or different traffic volume ranges. However, due to the limited sample size (number of corridors) with identical corridor attributes, the team grouped segments with speed limits of 40 and 45 mph together and discarded corridors with the fewest samples at the 35-mph speed limit. The general NB model form can be written as follows:

$$Ln\ (N_{crash\ i}) = a + b \times \ln(ATV_i) + c \times \ln(L_i) + d \times ATP_i + e \times APD_i + f \times INT_i + g \times AT_i + h \times RS_i + m \times [\ln(ATV_i) * ATP_i] \quad (8)$$

where, $N_{crash\,i}$ is the expected average crash frequency for corridor i; ATV_i is the adjusted average daily traffic volume for corridor i; L_i is the length of corridor i; ATP_i is the adjusted percentage of trucks in traffic of corridor i; APD_i is the access point density (driveway density) along corridor i; INT_i is the intersection density for corridor i; AT_i is the area type and RS_i is the roadside contexts (e.g., residential and mixed-use) of corridor i; and a, b, c, d, e, f, g, h as well as m are parameters to be estimated.

Although the analysis incorporates crashes from both segments and intersections, it is important to recognize that some factors influencing intersection safety are not captured due to data constraints. These factors include traffic controls at intersections, traffic conditions on side roads, vulnerable road users such as pedestrians and cyclists, and other environmental factors. Unfortunately, due to data limitations, the analysis does not account for these factors, which could potentially impact intersection safety dynamics. From a modeling perspective, it could be reasonable to assume that the values of these unobserved factors are randomly distributed across observations, which may not significantly affect the model estimation. However, it is essential to exercise caution when interpreting the modeling results to inform decision-making regarding median selection for corridors. Despite this assumption, the presence of unobserved factors could still introduce uncertainty and potential bias in the results. Therefore, although the modeling results provide valuable insights, it is essential to consider these limitations and uncertainties when making decisions about median selection for corridors.

CORRIDOR-LEVEL CMF ESTIMATION

To assess the impact on the frequency and severity of crashes of specific countermeasures or factors on roadways, CMFs are estimated to quantify the expected average change in crash frequency resulting from geometric or operational modifications to a site that differ from set base conditions. In this project, roadway medians are of interest for estimating their safety effectiveness. Therefore, the research team developed separate NB models to predict the expected average crash frequencies for corridors with different median types: no median, flush median/TWLTLs, and raised/non-traversable median. CMFs for different median types can be estimated by using the NB models to predict average expected crash frequencies and then calculating the ratios of these predictions across different corridors, as follows:

$$CMF = \frac{N_{NB}\ for\ Facility\ “B”}{N_{NB}\ for\ Facility\ “A”} \tag{9}$$

where, N_{SPF} is the expected average crash frequency based on an NB model; “A” represents one base median type, which is “no median” or undivided corridors; and “B” represents flush medians/TWLTLs and non-traversable medians. The CMF values estimated using equation 9 imply the impact on the frequency and severity of crashes of converting an undivided corridor to a corridor with TWLTLs or raised medians. In addition, the safety effectiveness of a treatment on roadways is likely to vary across different situations. In this report, the researchers present the variations of estimated CMFs for different median types across various traffic volume values, truck percentage, access point density, intersection density, and roadside environment.

CHAPTER 4. DESCRIPTIVE ANALYSIS

This chapter presents the results of the descriptive statistical analysis conducted on the sampled roadway segments and corridors. Based on the compiled and processed data, key traffic, geometric, and safety attributes were summarized to provide an overview of segment and corridor characteristics.

SEGMENT-LEVEL ANALYSIS

The research team employed two approaches to analyze the collected data: (1) Calculated crash rates per 100 million vehicle miles traveled (VMT) for different groups of segments categorized by the number of through lanes, speed limit, median type, shoulder type, etc. and (2) conducted linear regression to examine potential relationships between crash frequency and associated contributing factors, including AADT, truck percentage, access point density, median type, shoulder type, roadway alignment, presence of bike lanes, presence of curbs, presence of barriers, presence of on-street parking, and presence of left- or right-turn lanes.

The crash rate per 100 million VMT is calculated for each sampled segment using the following equation:

$$\text{RMVM} = \frac{Crash\ Count \times 100{,}000{,}000}{365 \times AADT \times Segment\ Length} \tag{10}$$

Regarding the crash rate calculation, first, the team examined the overall crash rates for each year from 2016 to 2021. In this case, the crash count is the total number of crashes successfully linked to sampled roadway segments and the VMT is the summary of 365 × AADT × Segment Lengths of all sampled segments for each year. Then, they calculated the segment-level crash rates across various segment types. The crash count is the crash frequency observed for individual segments, and the VMT is 365 × AADT × Segment Length of individual segments. All crash rates are categorized by different severity groups, including:

- KABCO: All crashes.
- K: Fatal crashes.
- KA: Fatal and suspected serious injury crashes.
- KAB: Fatal, suspected serious injury, and suspected minor or visible injury crashes.
- CO: Possible injury or complaint crashes and no apparent injury crashes.

Table 26 presents the overall crash rates spanning from 2016 to 2021. Once again, there was a noteworthy surge in crash rates by more than 100 percent from 2017 to 2018, which can likely be attributed to GDOT's updated policy mandating the inclusion of geographic coordinate data in traffic crash records as of January 1, 2018. In the period following 2018, the trends in crash rates appear reasonable, particularly concerning rates for fatal and suspected serious injury crashes. Crashes are random events, with fatal crashes exhibiting even greater randomness, particularly in smaller geographic areas or on specific roads. Multiple factors, including incident response time, post-crash medical care, and physical conditions of the victims can influence the outcome of fatalities in a crash. To mitigate the inherent randomness of crash rates and to attain a more coherent depiction of trends in crash rates by injury severity, the team calculated crash rates for combined fatal and suspected serious injury crashes (KA). The trajectory of the KA crash rate trend appears to align more reasonably with national trends, as observed on the Insurance Institute for Highway Safety website.[4]

[4] https://www.iihs.org/topics/fatality-statistics/detail/urban-rural-comparison

Table 26. Overall crash rate per 100 million VMT by severity groups from 2016 to 2021.

	2016	***2017***	***2018***	***2019***	***2020***	***2021***
All crash (KABCO)	145.78	150.44	366.90	334.24	266.38	302.82
K	0.43	0.46	0.95	0.84	0.80	1.12
KA	1.93	2.15	3.71	3.97	5.27	5.09
KAB	8.31	9.30	17.59	18.20	18.81	22.67
CO	137.48	141.14	349.31	316.04	247.57	280.15

Table 27 to table 31 summarize the distributions (i.e., means and standard deviations) of segment-level crash rates across various segment types. A notable revelation comes to light in the analysis of crash rates within different segment groups: segments with a speed limit of 25 mph display the highest rates for KABCO crashes, K crashes, KA crashes, and CO crashes. This unexpected pattern may be attributed to many crashes involving nonmotorists such as pedestrians and cyclists, particularly on these low-speed road segments. Upon a closer inspection of the built environment, it becomes evident that numerous such segments are situated within campus areas or bustling commercial districts. Remarkably, these 25-mph speed limit segments constitute a mere 2 percent of the sampled road segments, accounting for less than 100 instances. Further exploration of crash dynamics within these segments could provide valuable insights. Notably, the crash data available to the research team lack information on whether a given crash involved a pedestrian.

Regarding median types, segments without medians exhibit a relatively high total crash rate of 510.79 crashes per 100 million VMT. In contrast, segments featuring an unprotected or flush median experience a comparatively lower rate of 284.76 crashes per 100 million VMT. Interestingly, segments with a raised median fall between these two extremes, with a rate of 414.35 crashes. The presence of right-turn lanes appears to be correlated with elevated crash rates for all types of crashes, suggesting a potential safety concern associated with this road feature. Conversely, left-turn lanes are linked to lower crash rates, indicating a positive influence on road safety. Interestingly, on-street parking is significantly associated with higher crash rates.

Although certain attributes correlate with heightened crash rates, it is vital to discern that mere correlation does not inherently establish a causal relationship where these attributes contribute to an increase in crash incidents. For instance, consider the presence of roadside barriers, which are observed to align with higher crash rates. It is crucial to recognize that the primary purpose of these barriers is to enhance road safety by mitigating potential hazards and safeguarding road users.

Moreover, many of these roadway attributes exhibit intercorrelations, such as the speed limit, number of through lanes, shoulder, and median types. Systematically unraveling their intricate relationships with safety performance, as measured by crash frequency or crash rates, necessitates a modeling approach. Such modeling endeavors are imperative to comprehensively comprehend the interplay between these attributes and their cumulative impact on road safety outcomes.

Table 27. Crash rate per 100 million VMT for all crashes (KABCO).

Crash Rates – All Crashes (KABCO)		***Average Rate***	***Standard Deviation***
All sampled segments		395.22	1,243.21
Number of through lanes	4-lane	392.90	1,272.77
	6-lane	405.37	1,015.82
Speed limit	25 mph	735.59	2,198.77
	30 mph	648.85	1,296.26
	35 mph	441.62	1,024.07
	40 mph	324.41	475.09
	45 mph	370.86	1,357.72
Median type	None	510.79	1,636.82
	Unprotected/flush median	284.76	751.41
	Raised median	414.35	1,236.90
Shoulder type	None	438.47	1,130.18
	Concrete shoulder	329.16	961.90
	Earth shoulder	200.84	357.61
	Other	452.86	1,480.51
Bike lane	None	410.36	1,311.81
	Shared use	345.10	984.16
	Other	365.13	649.18
Horizontal alignment	Straight	491.65	1,604.52
	Slight curve	307.69	543.57
	Clear curve	247.09	512.36
Vertical alignment	Level	387.67	1,283.35
	Slight slope	431.80	1,139.25
	Clear slope	349.43	616.52
Presence of curb	No	263.26	499.44
	Yes	474.70	1,519.72
Presence of barrier (median)	No	405.95	1,305.81
	Yes	316.54	606.72
Presence of barrier (roadside)	No	381.88	1,205.84
	Yes	515.74	1,535.74
Presence of rumble strips (median)	No	399.17	1,262.01
	Yes	281.33	419.34
Presence of rumble strips (roadside)	No	400.44	1,255.90
	Yes	158.16	215.28
Presence of left-turn lanes	No	375.27	1,033.37
	Yes	397.14	1,321.45
Presence of right-turn lanes	No	367.73	952.97
	Yes	414.10	1,474.57
Presence of on-street parking	No	391.43	1,241.16
	Yes	1,188.36	1,420.27

Table 28. Crash rate per 100 million VMT for fatal crashes (K).

Crash Rates – K Crashes		***Average Rate***	***Standard Deviation***
All sampled segments		1.20	25.13
Number of through lanes	4-lane	1.23	25.92
	6-lane	1.15	18.51
Speed limit	25 mph	6.37	89.38
	30 mph	0.00	0.00
	35 mph	1.20	15.63
	40 mph	0.74	14.29
	45 mph	1.16	25.11
Median type	None	1.78	38.47
	Unprotected/flush median	0.83	13.00
	Raised median	0.99	14.45
Shoulder type	None	1.45	36.74
	Concrete shoulder	0.74	11.98
	Earth shoulder	0.96	17.68
	Other	1.45	28.15
Bike lane	None	1.31	27.65
	Shared use	0.84	13.95
	Other	0.00	0.00
Horizontal alignment	Straight	1.39	31.08
	Slight curve	1.12	17.34
	Clear curve	0.77	12.08
Vertical alignment	Level	1.36	27.89
	Slight slope	0.59	10.38
	Clear slope	0.88	14.44
Presence of curb	No	0.76	13.06
	Yes	1.46	30.15
Presence of barrier (median)	No	1.10	25.29
	Yes	1.95	23.98
Presence of barrier (roadside)	No	1.14	25.57
	Yes	1.69	20.79
Presence of rumble strips (median)	No	1.18	25.12
	Yes	1.86	25.57
Presence of rumble strips (roadside)	No	1.17	25.01
	Yes	2.32	30.28
Presence of left-turn lanes	No	0.85	13.32
	Yes	1.25	26.27
Presence of right-turn lanes	No	1.10	15.34
	Yes	1.05	27.94
Presence of on-street parking	No	1.20	25.19
	Yes	0.00	0.00

Table 29. Crash rate per 100 million VMT for fatal and suspected serious injury crashes (KA).

Crash Rates – KA Crashes		***Average Rate***	***Standard Deviation***
All sampled segments		5.17	42.16
Number of through lanes	4-lane	5.04	41.32
	6-lane	7.13	53.52
Speed limit	25 mph	13.47	111.80
	30 mph	5.09	36.99
	35 mph	5.84	42.50
	40 mph	4.95	30.54
	45 mph	4.72	39.88
Median type	None	6.78	56.47
	Unprotected/flush median	4.78	36.29
	Raised median	3.61	23.85
Shoulder type	None	5.98	52.86
	Concrete shoulder	4.41	39.75
	Earth shoulder	4.37	30.74
	Other	5.55	41.90
Bike lane	None	5.60	46.06
	Shared use	3.80	25.38
	Other	0.00	0.00
Horizontal alignment	Straight	5.58	45.54
	Slight curve	3.99	33.91
	Clear curve	5.51	41.80
Vertical alignment	Level	5.38	43.03
	Slight slope	4.88	41.09
	Clear slope	1.25	15.35
Presence of curb	No	4.23	37.34
	Yes	5.74	44.81
Presence of barrier (median)	No	4.82	41.17
	Yes	7.77	48.75
Presence of barrier (roadside)	No	5.14	42.87
	Yes	5.44	35.13
Presence of rumble strips (median)	No	5.00	41.88
	Yes	10.15	49.35
Presence of rumble strips (roadside)	No	5.18	42.33
	Yes	4.71	33.75
Presence of left-turn lanes	No	5.29	38.47
	Yes	4.76	39.70
Presence of right-turn lanes	No	5.48	36.55
	Yes	4.33	42.37
Presence of on-street parking	No	5.15	42.07
	Yes	9.44	58.95

Table 30. Crash rate per 100 million VMT for fatal, suspected serious injury, and suspected minor or visible injury crashes (KAB).

Crash Rates – KAB Crashes		***Average Rate***	***Standard Deviation***
All sampled segments		21.19	86.88
Number of through lanes	4-lane	21.45	89.26
	6-lane	18.60	64.85
Speed limit	25 mph	23.20	123.19
	30 mph	21.57	71.54
	35 mph	26.12	107.64
	40 mph	20.40	70.37
	45 mph	19.54	80.48
Median type	None	26.48	100.45
	Unprotected/flush median	17.58	71.90
	Raised median	19.71	88.49
Shoulder type	None	23.37	102.64
	Concrete shoulder	18.09	80.97
	Earth shoulder	15.05	68.11
	Other	23.42	88.26
Bike lane	None	22.07	93.47
	Shared use	18.27	60.26
	Other	18.74	44.57
Horizontal alignment	Straight	24.02	94.15
	Slight curve	16.16	62.60
	Clear curve	19.61	90.96
Vertical alignment	Level	21.01	84.64
	Slight slope	22.97	98.71
	Clear slope	13.29	50.49
Presence of curb	No	15.91	75.70
	Yes	24.36	92.83
Presence of barrier (median)	No	21.21	86.92
	Yes	21.01	86.57
Presence of barrier (roadside)	No	21.05	87.47
	Yes	22.44	81.33
Presence of rumble strips (median)	No	21.17	87.47
	Yes	21.63	67.56
Presence of rumble strips (roadside)	No	21.44	87.63
	Yes	9.81	38.42
Presence of left-turn lanes	No	22.15	93.38
	Yes	20.15	79.28
Presence of right-turn lanes	No	21.94	86.77
	Yes	19.78	83.97
Presence of on-street parking	No	21.12	86.79
	Yes	36.27	102.74

Table 31. Crash rate per 100 million VMT for possible injury or complaint crashes and no apparent injury crashes (CO).

Crash Rates – CO Crashes		***Average Rate***	***Standard Deviation***
All sampled segments		374.03	1,218.09
Number of through lanes	4-lane	371.45	1,245.73
	6-lane	386.76	1,012.49
Speed limit	25 mph	712.39	2,135.73
	30 mph	627.29	1,277.48
	35 mph	415.49	988.17
	40 mph	304.01	455.47
	45 mph	351.31	1,335.55
Median type	None	484.31	1,603.08
	Unprotected/flush median	267.18	739.95
	Raised median	394.64	1,210.01
Shoulder type	None	415.10	1,091.23
	Concrete shoulder	311.08	940.59
	Earth shoulder	185.79	342.12
	Other	429.44	1,454.95
Bike lane	None	388.29	1,283.21
	Shared use	326.83	973.72
	Other	346.39	621.93
Horizontal alignment	Straight	467.63	1,573.99
	Slight curve	291.54	531.84
	Clear curve	227.48	488.08
Vertical alignment	Level	366.66	1,258.85
	Slight slope	408.83	1,109.30
	Clear slope	336.15	612.61
Presence of curb	No	247.35	488.99
	Yes	450.33	1,489.31
Presence of barrier (median)	No	384.73	1,279.32
	Yes	295.53	596.01
Presence of barrier (roadside)	No	360.83	1,179.22
	Yes	493.30	1,520.54
Presence of rumble strips (median)	No	378.00	1,236.57
	Yes	259.70	404.90
Presence of rumble strips (roadside)	No	379.00	1,230.57
	Yes	148.36	206.74
Presence of left-turn lanes	No	353.12	1,013.46
	Yes	376.99	1,295.33
Presence of right-turn lanes	No	345.79	933.43
	Yes	394.32	1,446.34
Presence of on-street parking	No	370.32	1,216.20
	Yes	1152.09	1,370.08

CORRIDOR-LEVEL ANALYSIS

Table 32 provides descriptive statistics of corridor-level traffic and safety characteristics across three types of medians: undivided (no median), flush median or TWLTL, and raised or non-traversable median. The data span multiple years from 2018 to 2021. Across all three median types, most corridors are located in suburban areas, though raised medians are more commonly found in urban environments compared to the other types. The roadside environment is primarily mixed-use across the board, though residential corridors appear slightly more frequently in the undivided and raised median categories.

Corridor length increases with median type, with undivided corridors being the shortest (mean = 2.28 mi), followed by TWLTL corridors (2.82 mi), and raised medians (3.56 mi). A similar pattern is observed in average daily traffic (ADT), which rises from 17,924 vehicles per day (vpd) on undivided roads to 20,263 on TWLTL corridors, and 24,415 on raised median corridors. The average truck percentage is highest on undivided roads (4.10 percent) and slightly lower on flush (3.36 percent) and raised median (3.67 percent) corridors.

Access point density is highest on undivided corridors (15.28 per mi), indicating more frequent entry and exit points, which may increase conflict potential. TWLTL and raised median corridors have similar, but slightly lower, access densities (around 13 per mile). Major intersection density is comparable between undivided and TWLTL corridors (around 3 intersections per mile) but lower on raised medians (2.57 per mile), which may reflect different corridor management strategies for higher-volume roads.

In terms of safety, the number of total crashes (KABCO) and injury crashes (KAB) increases with the level of median control. Undivided corridors average about 50 total crashes and 3.81 injury crashes per year. TWLTL corridors show higher crash frequencies (76 total; 6.14 injury), whereas raised median corridors have the highest crash averages (114 total; 9.10 injury). These differences are likely influenced by corridor length and traffic exposure rather than solely the median type.

Table 32. Descriptive statistics of corridor-level traffic and safety attributes.

Median Type	Attribute		Mean	Frequency	Min	Max
Undivided (no median)	Corridor length (mile)		2.281	-	1.044	4.813
	ADT (vpd)		17,924	-	4,420	38,914
	Average truck percentage (%)		4.101	-	1.402	7.5
	Area type	Urban	-	19	-	-
		Suburban	-	51	-	-
	Roadside environment	Mixed-use	-	54	-	-
		Residential	-	16	-	-
	Access point density (per mile)		15.278	-	0	42.139
	Major intersection density (per mile)		3.068	-	1.223	6.272
	Total (KABCO) crashes (in a year)		50.014	-	3	141
	Injury (KAB) crashes (in a year)		3.814	-	0	16
Flush median or TWLTL	Corridor length (mile)		2.821	-	1.009	7.084
	ADT (vpd)		20,263	-	5,378	37,228
	Average truck percentage (%)		3.363	-	0.9	7.3
	Area type	Urban	-	22	-	-
		Suburban	-	85	-	-
	Roadside environment	Mixed-use	-	95	-	-
		Residential	-	12	-	-
	Access point density (per mile)		13.215	-	1.545	54.217
	Major intersection density (per mile)		3.047	-	1.804	9.785
	Total (KABCO) crashes (in a year)		75.962	-	7	244
	Injury (KAB) crashes (in a year)		6.140	-	0	34
Raised or non-traversable median	Corridor length (mile)		3.556	-	1.078	8.873
	ADT (vpd)		24,415	-	1902	39,892
	Average truck percentage (%)		3.674	-	0.63	7.687
	Area type	Urban	-	34	-	-
		Suburban	-	107	-	-
	Roadside environment	Mixed-use	-	121	-	-
		Residential	-	20	-	-
	Access point density (per mile)		13.674	-	0	72.441
	Major intersection density (per mile)		2.570	-	0.473	6.084
	Total (KABCO) crashes (in a year)		113.723	-	10	485
	Injury (KAB) crashes (in a year)		9.099	-	0	43

Note: Data used for the analysis span multiple years from 2018 to 2021.

CHAPTER 5. SAFETY PERFORMANCE FUNCTIONS

This chapter presents the refinement and development of SPFs for urban and suburban multilane highways in Georgia. Based on crash, roadway, and traffic data, a total of 28 SPFs were estimated for different combinations of speed limits (35, 40, and 45 mph), median types (no median, flush/TWLTL, and raised), and crash severity levels (KABCO, KABC, KAB, and KA). These SPFs incorporate key variables such as AADT, truck percentage, and access point density. Additionally, a corridor-level safety analysis was conducted to complement the segment-level models by integrating both intersection and non-intersection crashes. Statistical testing (t-tests) and NB regression were used to evaluate corridor-level crash trends across different median types and speed conditions. The findings provide foundational insights into how roadway design elements, especially medians, influence safety outcomes.

SEGMENT-LEVEL SPFS

After data error-checking and cleaning, the researchers estimated a total of 28 SPFs for urban and suburban multilane highways based on the available data. These SPFs cover roadways with three different posted speed limits (35, 40, and 45 mph), three median types (no median, flush median/TWLTL, and raised/non-traversable median), and four crash severity groups (total/KABCO, KABC, KAB, and KA crashes). Due to limited sample sizes, SPFs for roadways with raised/non-traversable medians are only estimated for segments with a posted speed limit of 45 mph. In addition, when comparing crash numbers across years from 2016 to 2021, the team observed a significant increase in crash counts from 2017 to 2018. This rise could be attributed to GDOT's updated policy, which mandated the inclusion of geographic coordinate data in traffic crash records as of January 1, 2018. Consequently, they decided to include only crash data from

2018 to 2021 to develop final SPFs. Table 33 provides descriptive statistics for data used for developing 28 SPFs. Table 34 to table 40 present the results of refined SPFs.

Table 33. Descriptive statistics of segment-level SPF variables.

Segment Group	SPF Factor	Mean	Min	Max
Number of through lanes = 4 Speed limit = 35 mph Median type = None Sample size = 398	AADT	19,272.51	3,700	34,500
	Segment Length	0.142	0.051	0.691
	Truck Percent (%)	3.812	1	21.7
	APD (access points/mile)	32.200	0	132.353
	Total Crashes	2.163	0	19
	KABC	0.643	0	6
	KAB	0.216	0	3
	KA	0.043	0	2
Number of through lanes = 4 Speed limit = 35 mph Median type = Flush median/TWLTL Sample size = 342	AADT	19,430.67	3,200	50,700
	Segment Length	0.175	0.05	0.852
	Truck Percent (%)	4.170	1.8	11
	APD (access points/mile)	21.299	0	100
	Total Crashes	1.155	0	7
	KABC	0.307	0	4
	KAB	0.091	0	3
	KA	0.026	0	2
Number of through lanes = 4 Speed limit = 40 mph Median type = None Sample size = 184	AADT	19,017.23	1,960	49,000
	Segment Length	0.140	0.05	0.408
	Truck Percent (%)	5.123	1	27.8
	APD (access points/mile)	23.090	0	67.416
	Total Crashes	1.598	0	16
	KABC	0.380	0	5
	KAB	0.092	0	2
	KA	0.038	0	1
Number of through lanes = 4 Speed limit = 40 mph Median type = Flush median/TWLTL Sample size = 253	AADT	23,295.890	7,110	49,000
	Segment Length	0.142	0.05	0.343
	Truck Percent (%)	3.538	1.7	12.3
	APD (access points/mile)	20.728	0	54.217
	Total Crashes	2.672	0	16
	KABC	0.747	0	7
	KAB	0.194	0	4
	KA	0.028	0	2

Continued on next page.

Table 34. Descriptive statistics of segment-level SPF variables (Continued).

Segment Group	SPF Factor	Mean	Min	Max
Number of through lanes = 4 Speed limit = 45 mph Median type = None Sample size = 682	AADT	20,059.900	4,310	59,300
	Segment Length	0.174	0.05	1.464
	Truck Percent (%)	5.819	1	41.7
	APD (access points/mile)	20.754	0	116.46
	Total Crashes	1.630	0	15
	KABC	0.450	0	7
	KAB	0.145	0	3
	KA	0.041	0	2
Number of through lanes = 4 Speed limit = 45 mph Median type = Flush median/TWLTL Sample size = 1,052	AADT	26,064.620	5,170	52,700
	Segment Length	0.205	0.05	1.156
	Truck Percent (%)	4.604	0.9	22
	APD (access points/mile)	19.585	0	135.287
	Total Crashes	2.411	0	26
	KABC	0.669	0	9
	KAB	0.192	0	4
	KA	0.048	0	3
Number of through lanes = 4 Speed limit = 45 mph Median type = Raised/non-traversable Sample size = 540	AADT	22,593.480	7,750	52,700
	Segment Length	0.229	0.051	1.777
	Truck Percent (%)	4.706	1	55.9
	APD (access points/mile)	14.638	0	135.287
	Total Crashes	1.443	0	18
	KABC	0.370	0	7
	KAB	0.100	0	3
	KA	0.022	0	1

Table 34. SPFs for segments with 4 lanes, 35-mph speed limit, and no median.

	KABCO		KABC		KAB		KA	
	Coef.	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**
Constant	−9.985	<0.001	−6.548	0.058	−0.964	0.855	0.572	0.960
Ln(AADT)	1.358	<0.001	0.893	0.015	0.158	0.779	−0.265	0.827
Ln(Segment length)	1.230	<0.001	1.394	<0.001	1.299	<0.001	0.864	0.045
Truck percentage	0.777	0.072	−0.420	0.640	−1.446	0.292	−1.576	0.556
Access point density	0.000	0.867	<0.001	0.897	0.002	0.730	−0.010	0.439
Truck pct × ln(AADT)	−0.083	0.068	0.044	0.640	0.157	0.277	0.182	0.520
N	398		398		398		398	
Akaike's information criterion (AIC)	1,373.778		762.222		411.337		144.557	

Table 35. SPFs for segments with 4 lanes, 35-mph speed limit, and flush medians/TWLTLs.

	KABCO		KABC		KAB		KA	
	Coef.	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**
Constant	−10.033	0.072	17.612	0.057	3.370	0.848	−1.616	0.966
Ln(AADT)	1.210	0.033	−1.759	0.064	−0.502	0.780	−0.095	0.980
Ln(Segment length)	0.992	<0.001	0.874	<0.001	0.823	0.002	1.325	0.017
Truck percentage	−0.536	0.650	−6.769	0.004	−2.847	0.470	−2.319	0.744
Access point density	0.006	0.130	−0.012	0.165	−0.002	0.877	−0.021	0.568
Truck pct × ln(AADT)	0.052	0.667	0.693	0.004	0.305	0.450	0.266	0.714
N	342		342		342		342	
AIC	888.691		430.264		209.992		85.303	

Table 36. SPFs for segments with 4 lanes, 40-mph speed limit, and no median.

	KABCO		KABC		KAB		KA	
	Coef.	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**
Constant	−5.803	0.026	−9.547	0.147	−7.451	0.532	−3.606	0.808
Ln(AADT)	0.947	<0.001	1.206	0.067	0.559	0.624	0.137	0.927
Ln(Segment length)	1.384	<0.001	1.536	<0.001	2.662	<0.001	1.795	0.018
Truck percentage	−0.947	0.136	−1.657	0.291	−3.419	0.154	−2.182	0.438
Access point density	−0.008	0.206	−0.016	0.213	0.069	0.061	0.029	0.527
Truck pct × ln(AADT)	0.093	0.155	0.169	0.291	0.411	0.106	0.264	0.378
N	184		184		184		184	
AIC	487.75		233.047		97.565		64.989	

Table 37. SPFs for segments with 4 lanes, 40-mph speed limit, and flush medians/TWLTLs.

	KABCO		KABC		KAB		KA	
	Coef.	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**
Constant	−1.344	0.75	−20.42	0.01	−21.96	0.06	−62.69	0.12
Ln(AADT)	0.444	0.29	2.22	0.00	2.21	0.06	6.38	0.12
Ln(Segment length)	1.244	<0.001	1.38	<0.001	1.52	<0.001	2.87	0.02
Truck percentage	−3.607	0.00	2.12	0.34	4.93	0.16	14.53	0.27
Access point density	0.002	0.71	0.01	0.37	0.02	0.15	0.03	0.50
Truck pct × ln(AADT)	0.364	0.00	−0.21	0.36	−0.48	0.18	−1.47	0.27
N	253		253		253		253	
AIC	896.874		533.001		247.47		67.333	

Table 38. SPFs for segments with 4 lanes, 45-mph speed limit, and no median.

	KABCO		KABC		KAB		KA	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Constant	−14.202	<0.001	−13.242	<0.001	−11.377	0.027	0.309	0.977
Ln(AADT)	1.687	<0.001	1.460	<0.001	1.146	0.030	−0.131	0.904
Ln(Segment length)	1.163	<0.001	1.159	<0.001	1.129	<0.001	0.957	0.001
Truck percentage	−0.023	0.939	−0.894	0.144	−0.761	0.420	−3.524	0.114
Access point density	0.004	0.036	0.002	0.606	0.005	0.361	−0.036	0.060
Truck pct × ln(AADT)	0.002	0.940	0.091	0.147	0.079	0.420	0.362	0.114
N	682		682		682		682	
AIC	2,029.368		1,065.116		550.380		229.534	

Table 39. SPFs for segments with 4 lanes, 45-mph speed limit, and flush medians/TWLTLs.

	KABCO		KABC		KAB		KA	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Constant	−7.402	<0.001	−8.374	<0.001	−2.542	0.460	−2.936	0.617
Ln(AADT)	0.971	<0.001	0.907	<0.001	0.220	0.523	0.096	0.873
Ln(Segment length)	1.103	<0.001	0.966	<0.001	0.902	<0.001	0.660	0.004
Truck percentage	−0.523	0.083	−0.059	0.877	−0.241	0.688	0.998	0.313
Access point density	0.002	0.245	0.008	0.002	−0.004	0.500	−0.006	0.616
Truck pct × ln(AADT)	0.054	0.076	0.009	0.808	0.028	0.653	−0.098	0.354
N	1052		1052		1052		1052	
AIC	3,696.190		2,114.653		1,048.666		401.569	

Table 40. SPFs for segments with 4 lanes, 45-mph speed limit, and raised/non-traversable medians.

	KABCO		KABC		KAB		KA	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Constant	−12.126	<0.001	−9.900	0.003	−9.005	0.137	−3.823	0.751
Ln(AADT)	1.413	<0.001	1.065	0.001	0.849	0.161	0.133	0.912
Ln(Segment length)	1.282	<0.001	1.369	<0.001	1.654	<0.001	1.385	0.003
Truck percentage	−0.091	0.738	−0.577	0.264	−0.774	0.386	−1.632	0.295
Access point density	0.001	0.692	−0.004	0.593	0.011	0.371	−0.001	0.973
Truck pct × ln(AADT)	0.010	0.713	0.061	0.255	0.082	0.373	0.175	0.279
N	540		540		540		540	
AIC	1,385.551		709.019		309.867		113.155	

The coefficients in these tables represent parameter values for contributing factors within an SPF, and the associated p-values indicate the level of confidence in the estimation's significance. A p-value less than 0.05 is considered statistically significant at the 95 percent confidence level. The SPFs can be used to predict the expected traffic crashes for given roadway attributes and traffic information. For example, suppose the expected total traffic crashes are to be predicted for segments with 4 lanes, a 40-mph speed limit, and no median (see table 36) by plugging in corresponding coefficients. In that case, the prediction equation can be written as:

$$N_{SPF} = -5.803 + 0.947 \times \ln(AADT) + 1.384 \times \ln(L) - 0.947 \times TP - 0.008 \times APD + 0.093 \times \ln(AADT) \times TP \quad (11)$$

Most of the signs of coefficients align with the team's expectations. For instance, positive signs are observed for traffic volume (AADT) and segment length, which are considered exposure factors. Crash frequencies are expected to have a positive relationship with these factors. However, there are instances of seemingly counterintuitive estimates. Notably, negative coefficients for traffic volume or segment length are observed, especially among the SPFs for crashes associated with higher levels of injuries (KAB and KA). One possible explanation for these counterintuitive findings is that the higher traffic volumes in these segments might lead to reduced traffic flow speeds. This speed reduction, in turn, could contribute to a lower frequency of severe crashes because speed is a significant factor influencing crash severity. Further, comparing the SPFs for different severity groups, the team found that the SPFs for all crashes (KABCO) exhibit more significant coefficients. In contrast, the SPFs for crashes resulting in only high levels of injuries (KAB or KA) feature less significant coefficients. This outcome aligns with expectations, as there is inherently less variation in crashes with higher injury levels across different segments when compared to crashes of all types.

CORRIDOR-LEVEL MODELS

To systematically examine the factors contributing to or associated with corridor-level safety performance, the team employed NB regression modeling techniques to estimate models for the sampled corridors. In total, six NB models were developed for corridors, covering three different median types and two groups of crashes (KABCO and KAB). Table 41 summarizes the models for all crashes (KABCO), and table 42 shows the models for KAB crashes. Model estimates seem reasonable, as average traffic volume and corridor length were positively related to crash frequency.

Table 41. NB models for all crashes (KABCO).

	No Median		Flush/TWLTL		Raised/ Non-traversable	
	Coef.	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**
Intercept	−3.036	0.269	−2.732	0.242	−6.864	0.000
Ln(Average traffic volume [ATV])	0.614	0.037	0.700	0.004	1.052	0.000
Ln(Corridor length)	1.060	0.000	0.523	0.000	0.888	0.000
Average truck percentage (ATP)	−1.097	0.067	0.354	0.641	0.311	0.535
Access point density	-0.013	0.099	−0.001	0.916	0.002	0.575
Intersection density	0.147	0.029	−0.179	0.000	0.044	0.239
Urban (compared to Suburban)	−0.358	0.080	0.343	0.003	−0.134	0.146
Residential (compared to Mixed-use)	0.216	0.125	0.058	0.710	0.099	0.398
ATP × ln(ATV)	0.109	0.087	−0.034	0.666	−0.037	0.460
Sample size (N)	70		107		141	
AIC	589.11		1,019.50		1,431.50	

Table 42. NB models for KAB crashes.

	No Median		Flush/TWLTL		Raised/ Non-traversable	
	Coef.	***p*-value**	**Coef.**	***p*-value**	**Coef.**	***p*-value**
Intercept	−7.012	0.180	−0.031	0.992	−17.476	0.000
Ln(ATV)	0.781	0.158	0.047	0.888	1.812	0.000
Ln(Corridor length)	0.786	0.001	0.870	0.000	1.051	0.000
ATP	−0.446	0.689	−0.575	0.570	2.868	0.004
Access point density	−0.006	0.631	0.001	0.847	0.006	0.124
Intersection density	0.185	0.084	−0.081	0.220	0.003	0.949
Urban (compared to Suburban)	−0.965	0.005	0.268	0.073	−0.215	0.107
Residential (compared to Mixed-use)	−0.117	0.594	0.364	0.084	0.261	0.116
ATP × ln(ATV)	0.041	0.727	0.076	0.466	−0.284	0.004
Sample size (N)	70		107		141	
AIC	299.96		536.57		795.62	

CHAPTER 6. CRASH MODIFICATION FACTORS

This chapter presents the estimation of CMFs for different median types based on the refined SPFs developed in chapter 5. The research team derived segment-level CMFs to evaluate the safety effects of flush and raised medians under varying roadway conditions, including AADT, truck percentage, and access point density. In addition, a corridor-level safety analysis was conducted by integrating segment and intersection crash data.

SEGMENT-LEVEL CMFS

This section presents the results of CMFs, focusing on the potential advantages or disadvantages of implementing specific medians compared to the base conditions defined as segments without a median, featuring standard double yellow lines that separate traffic in two directions. A CMF value greater than 1.00 indicates expected crash frequency increases, implying the disadvantages of implementing specific medians. Conversely, CMF values less than 1.00 imply expected reductions in crash frequencies, reflecting positive safety benefits associated with implementing particular medians.

Table 43 presents the CMFs for total crashes (KABCO) associated with TWLTLs on 4-lane roadways with a 35-mph speed limit. Furthermore, table 44 showcases the CMFs for KAB crashes (fatal and injury crashes, excluding possible injury crashes) linked with TWLTLs on the same facilities. Notably, for 4-lane roadways with a 35-mph speed limit, TWLTLs consistently exhibit reduced crash frequencies for total crashes, with even lower CMF values observed for KAB crashes. This indicates that TWLTLs generally offer positive safety benefits across all conditions specified by AADT, truck percentages, and access point density. However, the magnitude of these benefits may decrease with increasing truck percentages and access point density.

Table 43. CMFs for all crashes (KABCO) for 4-lane roadways with a 35-mph speed limit.

Access point density		10 per mile		20 per mile		30 per mile		40 per mile	
Truck percentage		5%	10%	5%	10%	5%	10%	5%	10%
	No median (base)								
AADT	5,000	1	1	1	1	1	1	1	1
	10,000	1	1	1	1	1	1	1	1
	15,000	1	1	1	1	1	1	1	1
	20,000	1	1	1	1	1	1	1	1
	25,000	1	1	1	1	1	1	1	1
	30,000	1	1	1	1	1	1	1	1
	35,000	1	1	1	1	1	1	1	1
	40,000	1	1	1	1	1	1	1	1
	Flush median/TWLTL								
AADT	5,000	0.127	0.056	0.135	0.060	0.143	0.063	0.152	0.067
	10,000	0.183	0.129	0.194	0.137	0.206	0.146	0.219	0.155
	15,000	0.226	0.210	0.240	0.223	0.255	0.237	0.271	0.252
	20,000	0.263	0.297	0.280	0.315	0.297	0.335	0.315	0.356
	25,000	0.296	0.388	0.315	0.412	0.334	0.438	0.355	0.465
	30,000	0.326	0.484	0.346	0.513	0.368	0.545	0.391	0.579
	35,000	0.354	0.582	0.376	0.618	0.399	0.656	0.424	0.697
	40,000	0.380	0.683	0.403	0.726	0.428	0.770	0.454	0.818

Table 44. CMFs for KAB crashes for 4-lane roadways with a 35-mph speed limit.

Access point density		10 per mile		20 per mile		30 per mile		40 per mile	
Truck percentage		5%	10%	5%	10%	5%	10%	5%	10%
	No median (base)								
AADT	5,000	1	1	1	1	1	1	1	1
	10,000	1	1	1	1	1	1	1	1
	15,000	1	1	1	1	1	1	1	1
	20,000	1	1	1	1	1	1	1	1
	25,000	1	1	1	1	1	1	1	1
	30,000	1	1	1	1	1	1	1	1
	35,000	1	1	1	1	1	1	1	1
	40,000	1	1	1	1	1	1	1	1
	Flush median/TWLTL								
AADT	5,000	0.131	0.065	0.126	0.063	0.121	0.060	0.117	0.058
	10,000	0.139	0.115	0.133	0.110	0.128	0.106	0.123	0.102
	15,000	0.143	0.160	0.138	0.154	0.132	0.148	0.127	0.142
	20,000	0.147	0.203	0.141	0.195	0.136	0.187	0.130	0.180
	25,000	0.149	0.244	0.144	0.234	0.138	0.225	0.133	0.216
	30,000	0.152	0.283	0.146	0.272	0.140	0.261	0.134	0.251
	35,000	0.154	0.321	0.147	0.308	0.142	0.296	0.136	0.285
	40,000	0.155	0.358	0.149	0.344	0.143	0.331	0.138	0.318

Table 45 presents the CMFs for total crashes (KABCO) associated with TWLTLs on 4-lane roadways with a 40-mph speed limit, and table 46 showcases the CMFs for KAB crashes linked with TWLTLs on the same facilities. For 4-lane roadways with a 40-mph speed limit, the safety impacts of TWLTLs differ from segments with a 35-mph speed limit. TWLTLs are associated with reduced total crash frequencies when AADT values are lower than 20,000. However, when AADT reaches 20,000, particularly over 25,000, TWLTLs are associated with higher frequencies of total crashes. When considering KAB crashes, CMF values can exceed 1 when traffic volumes are around or lower than 10,000, but they quickly drop as AADT increases, approaching zero for high-volume conditions. This indicates that, for low-volume conditions, TWLTLs may provide a conducive driving environment with relatively higher driving speeds compared to roads without medians. However, higher speeds may be linked to greater crash severity in the event of a crash. For high-volume conditions, TWLTLs are associated with more conflicts due to allowing left turns anywhere along the TWLTLs. Nevertheless, TWLTLs mitigate the severity of conflicts when traffic volumes are high, which explains why total crashes increase with high volumes but not for KAB crashes. Therefore, considering different crash severities could lead to different conclusions for decision-making regarding the use of TWLTLs for 40-mph roadways. It may be necessary to incorporate weights for different severities of crashes to make an effective decision on whether to use TWLTLs for 40-mph roadways. Such an approach would ensure a comprehensive assessment of safety impacts and help inform the decision-making process more effectively.

Table 45. CMFs for all crashes (KABCO) for 4-lane roadways with a 40-mph speed limit.

Access point density		**10 per mile**		**20 per mile**		**30 per mile**		**40 per mile**	
Truck percentage		**5%**	**10%**	**5%**	**10%**	**5%**	**10%**	**5%**	**10%**
	No median (base)								
AADT	5,000	1	1	1	1	1	1	1	1
	10,000	1	1	1	1	1	1	1	1
	15,000	1	1	1	1	1	1	1	1
	20,000	1	1	1	1	1	1	1	1
	25,000	1	1	1	1	1	1	1	1
	30,000	1	1	1	1	1	1	1	1
	35,000	1	1	1	1	1	1	1	1
	40,000	1	1	1	1	1	1	1	1
	Flush median/TWLTL								
AADT	5,000	-	-	-	-	-	-	-	-
	10,000	0.409	0.180	0.452	0.199	0.500	0.220	0.552	0.243
	15,000	0.578	0.441	0.639	0.487	0.706	0.539	0.780	0.595
	20,000	0.738	0.832	0.816	0.919	0.902	1.016	0.997	1.123
	25,000	0.893	1.361	0.987	1.505	1.091	1.663	1.205	1.838
	30,000	1.043	2.036	1.153	2.250	1.274	2.486	1.408	2.748
	35,000	1.190	2.861	1.315	3.162	1.453	3.494	1.606	3.862
	40,000	1.333	3.841	1.473	4.245	1.628	4.692	1.799	5.185

Note: The minimum AADT value in the data for 40-mph roadways with TWLTLs is 7110. Consequently, CMF values for AADT values of 5000 are not calculated.

Table 46. CMFs for KAB crashes for 4-lane roadways with a 40-mph speed limit.

Access point density	**10 per mile**	**20 per mile**	**30 per mile**	**40 per mile**

Truck percentage		5%	10%	5%	10%	5%	10%	5%	10%
	No median (base)								
AADT	5,000	1	1	1	1	1	1	1	1
	10,000	1	1	1	1	1	1	1	1
	15,000	1	1	1	1	1	1	1	1
	20,000	1	1	1	1	1	1	1	1
	25,000	1	1	1	1	1	1	1	1
	30,000	1	1	1	1	1	1	1	1
	35,000	1	1	1	1	1	1	1	1
	40,000	1	1	1	1	1	1	1	1
	Flush median/TWLTL								
AADT	5,000	-	-	-	-	-	-	-	-
	10,000	2.700	5.980	1.638	3.627	0.993	2.200	0.602	1.334
	15,000	0.870	0.318	0.528	0.193	0.320	0.117	0.194	0.071
	20,000	0.389	0.040	0.236	0.024	0.143	0.015	0.087	0.009
	25,000	0.209	0.008	0.127	0.005	0.077	0.003	0.047	0.002
	30,000	0.125	0.002	0.076	0.001	0.046	0.001	0.028	0.000
	35,000	0.082	0.001	0.049	0.000	0.030	0.000	0.018	0.000
	40,000	0.056	0.000	0.034	0.000	0.021	0.000	0.013	0.000

Note: The minimum AADT value in the data for 40-mph roadways with TWLTLs is 7110. Consequently, CMF values for AADT values of 5000 are not calculated.

Table 47 presents the CMFs for total crashes (KABCO) associated with TWLTLs and raised/non-traversable medians on 4-lane roadways with a 45-mph speed limit, and table 48 shows the CMFs for KAB crashes on the same facilities. A speed limit of 45 mph may be considered relatively high speed for urban and suburban roadway segments, thereby creating a different driving environment compared to roadways with lower speed limits. When considering all crashes, the CMF values for TWLTLs decrease with the increase of AADT values. Additionally, raised/non-traversable medians are associated with even lower CMF values, indicating greater safety benefits for 45-mph roadways. When considering KAB crashes, similar outcomes are revealed, but the safety benefits associated with TWLTLs appear to be greater than those associated with raised/non-traversable medians.

The results can be attributed to two primary reasons:

1. TWLTLs are associated with more conflicts along roadways than raised/non-traversable medians because they permit left turns. Consequently, if considering all crashes, the CMF values for TWLTLs are greater than those for raised/non-traversable medians.
2. Roadways with raised/non-traversable medians reduce conflicts along roadways, allowing for higher traffic flow speeds. However, this higher traffic flow speed may increase the likelihood of severe crashes if a crash occurs. This explains why, when considering KAB crashes, the CMF values for raised/non-traversable medians are higher than those for TWLTLs.

In addition to concerns about higher traffic flow speeds, raised/non-traversable medians introduce another potential issue. Such medians prohibit turns along roadways, necessitating that turns occur only at intersections. Consequently, converting undivided roadways or roadways with flush medians into raised/non-traversable medians may help reduce crash frequency along roadways. Still, it could increase turning volume conflicts at intersections, potentially leading to an increase in crashes at those locations. Therefore, a corridor-level analysis is required to comprehensively uncover the potential safety impacts of raised/non-traversable medians. Such an analysis aligns with the decision-making process regarding medians, which often encompasses an entire corridor rather than a short roadway segment.

Table 47. CMFs for all crashes (KABCO) for 4-lane roadways with a 45-mph speed limit.

Access point density		10 per mile		20 per mile		30 per mile		40 per mile	
Truck percentage		5%	10%	5%	10%	5%	10%	5%	10%
	No median (base)								
AADT	5,000	1	1	1	1	1	1	1	1
	10,000	1	1	1	1	1	1	1	1
	15,000	1	1	1	1	1	1	1	1
	20,000	1	1	1	1	1	1	1	1
	25,000	1	1	1	1	1	1	1	1
	30,000	1	1	1	1	1	1	1	1
	35,000	1	1	1	1	1	1	1	1
	40,000	1	1	1	1	1	1	1	1
	Flush median/TWLTL								
AADT	5,000	-	-	-	-	-	-	-	-
	10,000	1.083	0.975	1.062	0.956	1.041	0.937	1.020	0.918
	15,000	0.900	0.901	0.883	0.883	0.865	0.865	0.848	0.848
	20,000	0.790	0.851	0.774	0.834	0.759	0.818	0.744	0.802
	25,000	0.713	0.815	0.699	0.799	0.685	0.783	0.672	0.767
	30,000	0.656	0.786	0.643	0.771	0.631	0.755	0.618	0.740
	35,000	0.612	0.763	0.600	0.748	0.588	0.733	0.576	0.718
	40,000	0.576	0.743	0.564	0.728	0.553	0.714	0.542	0.700
	Raised/Non-traversable								
AADT	5,000	-	-	-	-	-	-	-	-
	10,000	0.638	0.657	0.619	0.637	0.601	0.618	0.583	0.600
	15,000	0.580	0.607	0.563	0.589	0.547	0.572	0.530	0.555
	20,000	0.543	0.574	0.527	0.557	0.511	0.540	0.496	0.525
	25,000	0.515	0.550	0.500	0.533	0.485	0.518	0.471	0.502
	30,000	0.493	0.530	0.479	0.515	0.465	0.500	0.451	0.485
	35,000	0.476	0.515	0.462	0.500	0.448	0.485	0.435	0.471
	40,000	0.461	0.502	0.448	0.487	0.434	0.472	0.422	0.459

Note: The minimum AADT value in the data for 45-mph roadways with raised medians is 7750. Consequently, CMF values for AADT values of 5000 are not calculated.

Table 48. CMFs for KAB crashes for 4-lane roadways with a 45-mph speed limit.

Access point density		10 per mile		20 per mile		30 per mile		40 per mile	
Truck percentage		5%	10%	5%	10%	5%	10%	5%	10%
	No median (base)								
AADT	5,000	1	1	1	1	1	1	1	1
	10,000	1	1	1	1	1	1	1	1
	15,000	1	1	1	1	1	1	1	1
	20,000	1	1	1	1	1	1	1	1
	25,000	1	1	1	1	1	1	1	1
	30,000	1	1	1	1	1	1	1	1
	35,000	1	1	1	1	1	1	1	1
	40,000	1	1	1	1	1	1	1	1
	Flush median/TWLTL								
AADT	5,000	-	-	-	-	-	-	-	-
	10,000	1.596	2.052	1.459	1.876	1.333	1.714	1.218	1.567
	15,000	0.989	1.146	0.904	1.048	0.826	0.958	0.755	0.875
	20,000	0.704	0.759	0.643	0.693	0.588	0.634	0.537	0.579
	25,000	0.541	0.551	0.494	0.503	0.452	0.460	0.413	0.420
	30,000	0.436	0.424	0.399	0.387	0.364	0.354	0.333	0.323
	35,000	0.364	0.340	0.332	0.310	0.304	0.284	0.278	0.259
	40,000	0.310	0.280	0.284	0.256	0.259	0.234	0.237	0.214
	Raised/Non-traversable								
AADT	5,000	-	-	-	-	-	-	-	-
	10,000	0.794	0.855	0.843	0.907	0.896	0.964	0.951	1.023
	15,000	0.708	0.767	0.752	0.814	0.799	0.865	0.848	0.918
	20,000	0.653	0.710	0.694	0.754	0.737	0.801	0.782	0.850
	25,000	0.613	0.669	0.651	0.710	0.692	0.754	0.734	0.801
	30,000	0.583	0.637	0.619	0.677	0.657	0.719	0.698	0.763
	35,000	0.558	0.612	0.592	0.649	0.629	0.690	0.668	0.732
	40,000	0.537	0.590	0.570	0.627	0.606	0.665	0.643	0.707

Note: The minimum AADT value in the data for 45-mph roadways with raised medians is 7750. Consequently, CMF values for AADT values of 5000 are not calculated.

CORRIDOR-LEVEL CMFS

CMFs are estimated to show the impact on the frequency and severity of crashes of medians at the corridor level using NB models (refer to table 41 and table 42), based on equation 9. The base condition is a corridor without medians (undivided). CMFs greater than 1 indicate an expected increase in average crash frequency for the target condition (e.g., corridors with flush medians/TWLTLs or raised/non-traversable medians). CMFs are estimated under various conditions, including traffic volumes, truck percentages, access point density, intersection density, and roadside environments. The variation in CMFs highlights the different impact on the frequency and severity of crashes of the same median type under varying traffic and road conditions, indicating that the effectiveness of these median treatments may differ based on local circumstances.

To enhance the applicability of the estimated corridor-level CMFs, the results are presented based on defined AADT ranges rather than specific AADT values. The same approach was applied to other factors, such as truck percentage, intersection density (INT), and access point (AP) density. Reporting CMFs for discrete values may limit their generalizability; therefore, using ranges (e.g., 20,000–25,000 vpd) ensures broader applicability. For each range, approximately 5000 simulated values were generated to represent a realistic spectrum of traffic conditions. The CMFs were calculated using SPFs developed for two conditions: (1) a baseline condition with undivided corridors and (2) an alternative condition with TWLTLs or raised medians. The CMF was then computed as the ratio of the predicted crash frequency for the alternative median types compared to the baseline. This methodology ensures that the CMFs are stable, robust, and better represent the expected impact on both the frequency and severity of crashes across varying traffic conditions.

Table 49 to table 52 show the estimated CMFs at the corridor level for suburban and mixed-use corridors based on KABCO crashes. Additional CMFs for other corridor types are available in the attached spreadsheet.

Table 49. Suburban mixed-use multilane corridors (considering all crashes, AP ≤10).

		TWLTL: ≤10 AP				Raised: ≤10 AP			
AADT	**Truck%**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT >6**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT >6**
0–5,000	≤ 5	7.25	3.96	1.90	0.99	1.38	1.12	0.91	0.74
	>5 to ≤10								7.54
	>10 to ≤15								
	>15 to ≤20								
	>20								
5,000–10,000	≤5	3.71	1.93	1.00	0.52	1.37	1.11	0.91	0.74
	>5 to ≤10	9.18	4.79	2.49	1.30	2.30	1.87	1.52	1.24
	>10 to ≤15			6.31	3.27	3.95	3.22	2.62	2.12
	>15 to ≤20				8.50	6.98	5.66	4.60	3.72
	>20							8.39	6.68
10,000–15,000	≤5	3.12	1.63	0.85	0.45	1.40	1.14	0.93	0.76
	>5 to ≤10	5.30	2.75	1.44	0.75	1.60	1.30	1.06	0.86
	>10 to ≤15	8.95	4.69	2.45	1.27	1.83	1.49	1.22	0.99
	>15 to ≤20		8.01	4.19	2.18	2.12	1.73	1.41	1.14
	>20			7.18	3.75	2.48	2.02	1.63	1.33
15,000–20,000	≤5	2.83	1.48	0.77	0.40	1.44	1.17	0.95	0.78
	>5 to ≤10	3.73	1.95	1.01	0.53	1.27	1.04	0.84	0.69
	>10 to ≤15	4.96	2.58	1.35	0.70	1.14	0.92	0.75	0.61
	>15 to ≤20	6.60	3.43	1.78	0.93	1.01	0.83	0.67	0.55
	>20	8.75	4.59	2.38	1.24	0.90	0.74	0.60	0.49
20,000–25,000	≤5	2.64	1.38	0.72	0.37	1.47	1.20	0.97	0.79
	>5 to ≤10	2.91	1.51	0.79	0.41	1.08	0.88	0.72	0.58
	>10 to ≤15	3.20	1.66	0.87	0.46	0.80	0.65	0.53	0.43
	>15 to ≤20	3.54	1.84	0.96	0.50	0.59	0.48	0.39	0.32
	>20	3.91	2.04	1.06	0.55	0.44	0.36	0.29	0.24
25,000–30,000	≤5	2.49	1.30	0.68	0.35	1.50	1.22	0.99	0.81
	>5 to ≤10	2.38	1.24	0.64	0.34	0.95	0.77	0.63	0.51
	>10 to ≤15	2.27	1.18	0.62	0.32	0.61	0.49	0.40	0.33
	>15 to ≤20	2.17	1.12	0.59	0.31	0.38	0.31	0.25	0.21
	>20	2.08	1.08	0.56	0.29	0.25	0.20	0.16	0.13
30,000–35,000	≤5	2.39	1.24	0.65	0.34	1.52	1.24	1.01	0.82
	>5 to ≤10	2.02	1.05	0.55	0.28	0.85	0.69	0.57	0.46
	>10 to ≤15	1.70	0.89	0.47	0.24	0.48	0.39	0.32	0.26
	>15 to ≤20	1.44	0.75	0.39	0.20	0.27	0.22	0.18	0.15
	>20	1.22	0.64	0.33	0.17	0.15	0.12	0.10	0.08

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Table 50. Suburban mixed-use multilane corridors (considering all crashes, AP ≤10) (Continued).

		TWLTL: ≤10 AP				Raised: ≤10 AP			
AADT	**Truck%**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT >6**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT >6**
35,000–40,000	≤5	2.30	1.20	0.62	0.33	1.55	1.26	1.02	0.83
	>5 to ≤10	1.75	0.91	0.48	0.25	0.78	0.64	0.52	0.42
	>10 to ≤15	1.33	0.70	0.36	0.19	0.39	0.32	0.26	0.21
	>15 to ≤20	1.02	0.53	0.28	0.14	0.20	0.16	0.13	0.11
	>20	0.78	0.41	0.21	0.11	0.10	0.08	0.07	0.05
>40,000	≤5	2.24	1.16	0.61	0.32	1.57	1.28	1.04	0.85
	>5 to ≤10	1.55	0.81	0.42	0.22	0.72	0.59	0.48	0.39
	>10 to ≤15	1.08	0.56	0.29	0.15	0.33	0.27	0.22	0.18
	>15 to ≤20	0.75	0.39	0.20	0.11	0.15	0.13	0.10	0.08
	>20	0.53	0.27	0.14	0.07	0.07	0.06	0.05	0.04

Note: Empty cells represent CMFs exceeding 10.

Table 50. Suburban mixed-use multilane corridors (considering all crashes, AP within 10–20).

		TWLTL: >10 to 20 AP				Raised: >10 to 20 AP			
AADT	**Truck%**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT >6**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT >6**
0–5,000	≤5	8.00	3.95	2.15	1.13	1.59	1.29	1.05	0.86
	>5 to ≤10								9.46
	>10 to ≤15								
	>15 to ≤20								
	>20								
5,000–10,000	≤5	4.16	2.17	1.14	0.59	1.57	1.28	1.05	0.85
	>5 to ≤10		5.39	2.84	1.46	2.64	2.15	1.76	1.43
	>10 to ≤15			7.10	3.75	4.57	3.69	3.01	2.48
	>15 to ≤20				9.67	8.08	6.51	5.32	4.33
	>20							9.60	7.71
10,000–15,000	≤5	3.53	1.84	0.96	0.50	1.62	1.32	1.07	0.87
	>5 to ≤10	5.98	3.12	1.62	0.85	1.84	1.50	1.22	0.99
	>10 to ≤15		5.28	2.75	1.43	2.11	1.72	1.40	1.14
	>15 to ≤20		8.99	4.72	2.47	2.44	1.98	1.62	1.32
	>20			8.14	4.25	2.83	2.33	1.89	1.54
15,000–20,000	≤5	3.19	1.67	0.87	0.45	1.66	1.35	1.10	0.89
	>5 to ≤10	4.20	2.21	1.15	0.60	1.47	1.20	0.97	0.79
	>10 to ≤15	5.57	2.91	1.51	0.79	1.31	1.06	0.87	0.71
	>15 to ≤20	7.41	3.87	2.01	1.05	1.16	0.95	0.77	0.63
	>20	9.91	5.17	2.68	1.41	1.05	0.85	0.69	0.57

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Table 51. Suburban mixed-use multilane corridors (considering all crashes, AP within 10–20) (Continued).

		TWLTL: >10 to 20 AP				Raised: >10 to 20 AP			
AADT	**Truck%**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT > 6**	**INT ≤2**	**INT 2–4**	**INT 4–6**	**INT > 6**
20,000–25,000	≤5	2.98	1.55	0.81	0.42	1.69	1.38	1.12	0.91
	>5 to ≤10	3.28	1.71	0.89	0.46	1.25	1.01	0.83	0.67
	>10 to ≤15	3.62	1.88	0.98	0.51	0.92	0.75	0.61	0.50
	>15 to ≤20	3.99	2.08	1.09	0.57	0.68	0.56	0.45	0.37
	>20	4.42	2.30	1.20	0.63	0.50	0.41	0.33	0.27
25,000–30,000	≤5	2.82	1.47	0.77	0.40	1.72	1.40	1.15	0.93
	>5 to ≤10	2.68	1.40	0.73	0.38	1.10	0.89	0.73	0.59
	>10 to ≤15	2.57	1.33	0.70	0.36	0.70	0.57	0.46	0.37
	>15 to ≤20	2.44	1.28	0.66	0.35	0.44	0.36	0.29	0.24
	>20	2.32	1.22	0.64	0.33	0.28	0.23	0.19	0.15
30,000–35,000	≤5	2.71	1.41	0.73	0.38	1.76	1.43	1.16	0.95
	>5 to ≤10	2.28	1.18	0.62	0.32	0.98	0.80	0.65	0.53
	>10 to ≤15	1.93	1.00	0.52	0.27	0.56	0.45	0.37	0.30
	>15 to ≤20	1.63	0.85	0.44	0.23	0.31	0.25	0.21	0.17
	>20	1.38	0.72	0.37	0.19	0.18	0.14	0.12	0.09
35,000–40,000	≤5	2.60	1.36	0.71	0.37	1.78	1.45	1.18	0.96
	>5 to ≤10	1.98	1.03	0.54	0.28	0.90	0.74	0.60	0.49
	>10 to ≤15	1.51	0.79	0.41	0.21	0.46	0.37	0.30	0.25
	>15 to ≤20	1.15	0.60	0.31	0.16	0.23	0.19	0.15	0.12
	>20	0.88	0.46	0.24	0.12	0.12	0.09	0.08	0.06
>40,000	≤5	2.53	1.31	0.68	0.36	1.82	1.47	1.19	0.98
	>5 to ≤10	1.76	0.91	0.48	0.25	0.84	0.68	0.55	0.45
	>10 to ≤15	1.22	0.64	0.33	0.17	0.38	0.31	0.26	0.21
	>15 to ≤20	0.85	0.44	0.23	0.12	0.18	0.14	0.12	0.10
	>20	0.60	0.31	0.16	0.08	0.08	0.07	0.05	0.04

Note: Empty cells represent CMFs exceeding 10.

Table 51. Suburban mixed-use multilane corridors (considering all crashes, AP within 20–30).

		TWLTL: >20 to 30 AP				Raised: >20 to 30 AP			
AADT	Truck%	INT ≤2	INT 2–4	INT 4–6	INT >6	INT ≤2	INT 2–4	INT 4–6	INT >6
0–5,000	≤5	z	4.65	2.40	1.22	1.83	1.49	1.21	0.98
	>5 to ≤10								
	>10 to ≤15								
	>15 to ≤20								
	>20								
5,000–10,000	≤5	4.74	2.46	1.28	0.67	1.82	1.48	1.20	0.98
	>5 to ≤10		6.12	3.20	1.66	3.05	2.49	2.03	1.65
	>10 to ≤15			8.10	4.23	5.27	4.27	3.49	2.84
	>15 to ≤20					9.22	7.51	6.10	4.97
	>20								8.92
10,000–15,000	≤5	3.99	2.08	1.09	0.56	1.86	1.52	1.24	1.01
	>5 to ≤10	6.74	3.52	1.84	0.96	2.12	1.73	1.41	1.15
	>10 to ≤15		5.99	3.13	1.62	2.44	1.98	1.62	1.31
	>15 to ≤20			5.33	2.78	2.80	2.29	1.87	1.52
	>20			9.18	4.82	3.28	2.67	2.18	1.78
15,000–20,000	≤5	3.63	1.88	0.98	0.51	1.91	1.55	1.27	1.03
	>5 to ≤10	4.78	2.49	1.29	0.68	1.69	1.38	1.12	0.91
	>10 to ≤15	6.29	3.29	1.71	0.89	1.50	1.23	1.00	0.81
	>15 to ≤20	8.40	4.37	2.28	1.19	1.35	1.09	0.89	0.72
	>20		5.83	3.05	1.58	1.21	0.98	0.80	0.65
20,000–25,000	≤5	3.37	1.75	0.91	0.48	1.95	1.59	1.30	1.05
	>5 to ≤10	3.72	1.93	1.00	0.53	1.44	1.17	0.95	0.77
	>10 to ≤15	4.10	2.13	1.11	0.58	1.06	0.86	0.70	0.57
	>15 to ≤20	4.53	2.33	1.22	0.64	0.78	0.64	0.52	0.42
	>20	4.99	2.60	1.35	0.70	0.58	0.47	0.38	0.31
25,000–30,000	≤5	3.19	1.66	0.86	0.45	1.99	1.62	1.32	1.07
	>5 to ≤10	3.04	1.58	0.83	0.43	1.26	1.03	0.84	0.68
	>10 to ≤15	2.89	1.51	0.78	0.41	0.80	0.65	0.53	0.43
	>15 to ≤20	2.77	1.44	0.75	0.39	0.51	0.42	0.34	0.28
	>20	2.64	1.38	0.72	0.37	0.33	0.27	0.22	0.18
30,000–35,000	≤5	3.05	1.59	0.83	0.43	2.03	1.65	1.34	1.10
	>5 to ≤10	2.57	1.34	0.70	0.36	1.13	0.92	0.75	0.61
	>10 to ≤15	2.19	1.13	0.59	0.31	0.64	0.52	0.42	0.34
	>15 to ≤20	1.84	0.96	0.50	0.26	0.36	0.29	0.24	0.19
	>20	1.56	0.81	0.42	0.22	0.20	0.16	0.13	0.11

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Table 52. Suburban mixed-use multilane corridors (considering all crashes, AP within 20–30) (Continued).

		TWLTL: >20 to 30 AP				Raised: >20 to 30 AP			
AADT	Truck%	INT ≤2	INT 2–4	INT 4–6	INT >6	INT ≤2	INT 2–4	INT 4–6	INT >6
35,000–40,000	≤5	2.94	1.53	0.80	0.42	2.06	1.67	1.36	1.11
	>5 to ≤10	2.23	1.17	0.61	0.32	1.03	0.85	0.69	0.56
	>10 to ≤15	1.70	0.89	0.46	0.24	0.52	0.43	0.35	0.28
	>15 to ≤20	1.31	0.68	0.35	0.18	0.27	0.22	0.18	0.14
	>20	0.99	0.52	0.27	0.14	0.13	0.11	0.09	0.07
>40,000	≤5	2.85	1.48	0.77	0.40	2.09	1.69	1.38	1.13
	>5 to ≤10	1.98	1.03	0.54	0.28	0.96	0.78	0.64	0.52
	>10 to ≤15	1.38	0.72	0.38	0.20	0.44	0.36	0.29	0.24
	>15 to ≤20	0.96	0.50	0.26	0.14	0.20	0.17	0.14	0.11
	>20	0.67	0.35	0.18	0.09	0.09	0.08	0.06	0.05

Note: Empty cells represent CMFs exceeding 10.

Table 52. Suburban mixed-use multilane corridors (considering all crashes, AP > 30).

		TWLTL: >30 AP				Raised: >30 AP			
AADT	Truck%	INT ≤2	INT 2–4	INT 4–6	INT >6	INT ≤2	INT 2–4	INT 4–6	INT >6
0–5,000	≤5	9.85	5.09	2.76	1.40	2.09	1.71	1.40	1.13
	>5 to ≤10								
	>10 to ≤15								
	>15 to ≤20								
	>20								
5,000–10,000	≤5	5.32	2.78	1.44	0.75	2.09	1.71	1.38	1.13
	>5 to ≤10		6.92	3.60	1.87	3.51	2.87	2.34	1.90
	>10 to ≤15			9.08	4.78	6.08	4.92	4.01	3.28
	>15 to ≤20						8.65	7.05	5.71
	>20								
10,000–15,000	≤5	4.52	2.36	1.23	0.64	2.15	1.75	1.43	1.16
	>5 to ≤10	7.61	3.99	2.07	1.08	2.45	2.00	1.62	1.32
	>10 to ≤15		6.76	3.51	1.83	2.81	2.29	1.86	1.52
	>15 to ≤20			6.04	3.15	3.24	2.65	2.15	1.75
	>20				5.40	3.78	3.10	2.50	2.04
15,000–20,000	≤5	4.09	2.13	1.11	0.58	2.20	1.79	1.46	1.19
	>5 to ≤10	5.40	2.80	1.46	0.76	1.95	1.59	1.29	1.05
	>10 to ≤15	7.14	3.70	1.94	1.01	1.74	1.41	1.15	0.94
	>15 to ≤20	9.49	4.93	2.58	1.34	1.55	1.26	1.03	0.84
	>20		6.63	3.43	1.79	1.39	1.13	0.92	0.75

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Table 53. Suburban mixed-use multilane corridors (considering all crashes, AP > 30) (Continued).

		TWLTL: >30 AP				Raised: >30 AP			
AADT	Truck%	INT ≤2	INT 2–4	INT 4–6	INT >6	INT ≤2	INT 2–4	INT 4–6	INT >6
20,000–25,000	≤5	3.79	1.98	1.03	0.54	2.25	1.83	1.49	1.22
	>5 to ≤10	4.19	2.18	1.14	0.59	1.65	1.35	1.10	0.89
	>10 to ≤15	4.63	2.40	1.26	0.65	1.22	0.99	0.81	0.66
	>15 to ≤20	5.11	2.65	1.39	0.72	0.90	0.74	0.60	0.49
	>20	5.65	2.94	1.52	0.79	0.67	0.55	0.44	0.36
25,000–30,000	≤5	3.61	1.87	0.98	0.51	2.29	1.86	1.52	1.24
	>5 to ≤10	3.43	1.78	0.93	0.48	1.46	1.18	0.96	0.79
	>10 to ≤15	3.26	1.70	0.89	0.46	0.92	0.75	0.61	0.50
	>15 to ≤20	3.11	1.62	0.85	0.44	0.59	0.48	0.39	0.32
	>20	2.99	1.56	0.81	0.42	0.38	0.31	0.25	0.20
30,000–35,000	≤5	3.44	1.79	0.94	0.49	2.33	1.90	1.54	1.26
	>5 to ≤10	2.91	1.51	0.79	0.41	1.31	1.06	0.87	0.71
	>10 to ≤15	2.45	1.28	0.67	0.35	0.73	0.60	0.49	0.40
	>15 to ≤20	2.07	1.08	0.57	0.29	0.41	0.34	0.27	0.22
	>20	1.76	0.92	0.48	0.25	0.23	0.19	0.15	0.13
35,000–40,000	≤5	3.33	1.73	0.90	0.47	2.37	1.93	1.57	1.28
	>5 to ≤10	2.52	1.32	0.69	0.36	1.20	0.97	0.79	0.64
	>10 to ≤15	1.92	1.00	0.52	0.27	0.60	0.49	0.40	0.33
	>15 to ≤20	1.47	0.77	0.40	0.21	0.31	0.25	0.20	0.16
	>20	1.12	0.59	0.30	0.16	0.15	0.13	0.10	0.08
>40,000	≤5	3.22	1.67	0.87	0.45	2.41	1.96	1.59	1.29
	>5 to ≤10	2.24	1.17	0.61	0.32	1.11	0.90	0.73	0.60
	>10 to ≤15	1.56	0.81	0.42	0.22	0.51	0.41	0.34	0.27
	>15 to ≤20	1.09	0.57	0.30	0.15	0.24	0.19	0.16	0.13
	>20	0.76	0.40	0.21	0.11	0.11	0.09	0.07	0.06

Note: Empty cells represent CMFs exceeding 10.

CHAPTER 7. POLICY IMPLICATIONS

Policy decisions regarding roadway design, particularly the selection of medians, are typically made at the corridor level rather than the segment level. This is because the overall safety performance of a corridor is influenced by both the segment-level and intersection-level dynamics. Understanding the safety implications of various median treatments at the corridor level is crucial for effective decision-making and the development of roadway safety policies.

Table 53 to table 60 provide CMF-informed recommendations for median selection under varying traffic and roadway conditions for different multilane corridors, including suburban mixed-use corridors, suburban residential corridors, urban mixed-use corridors, and urban residential corridors. Separate recommendations are given for CMFs estimated based on all crashes (KABCO; table 53 to table 56) and fatal and injury crashes (KAB; table 57 to table 60). These tables are grounded in CMFs derived from corridor-level safety performance considering all crash types (KABCO) or injury crashes only (KAB), and they categorize the safety performance of three median treatments—no median (baseline), flush medians/TWLTLs, and raised/non-traversable medians—based on a combination of traffic volume, truck percentage, access point density, and intersection density. Each cell in these tables presents a designation (A, B, C, B/C, or C/B) corresponding to the relative safety effectiveness of different median types based on CMFs.

- Cells marked as “A” indicate no safety benefit or even a potential increase in crash frequency compared to no-median corridors (baseline), with CMFs greater than 1. Under these conditions, adding a median may not improve safety or improve crash outcomes.
- Cells marked as “B” suggest that flush medians or TWLTLs offer the most favorable safety performance, with CMFs less than 1 indicating reduced crash frequency. These

treatments are particularly effective in corridors with moderate volumes and frequent turning movements, where maintaining access is essential.

- Cells marked as “C” imply that raised or non-traversable medians provide the most substantial crash reductions under similar CMF thresholds. These treatments are typically recommended in higher-volume, high-conflict environments.
- Intermediate designations such as “B/C” and “C/B” reflect conditions where both median types (TWLTLs or raised medians) offer safety benefits compared to the baseline (no median), but one is modestly more effective than the other. B/C indicates that flush medians perform better than raised medians, whereas C/B suggests that raised medians provide greater safety advantages. These mixed-designation scenarios acknowledge the context-specific nature of corridor design and allow for some flexibility based on operational priorities or implementation constraints.
- Cells marked with an asterisk (e.g., A* or similar) denote cases where extreme or highly variable CMF values—for example, values exceeding 10—were observed. These designations warrant further interpretation. Due to the presence of extreme CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized. Practitioners are advised to apply engineering judgment before implementing a median treatment under these conditions.

IMPLICATIONS FOR ALL CRASHES

Table 53 and table 54 provide CMF-informed recommendations for median selection on suburban multilane corridors, with table 53 focusing on mixed-use and table 54 on residential land–use contexts. These recommendations account for all (KABCO) crashes.

- In both suburban land use contexts—mixed-use and residential—no median (baseline) treatment (denoted as A) is generally recommended for low-volume, low-truck corridors with limited intersections. Specifically, corridors with AADT less than or equal to 10,000, truck percentages below 10 percent, and intersection densities below 4 per mile often show no measurable safety benefit from installing a median, either TWLTLs or raised medians.
- TWLTLs exhibit the most favorable safety performance—reflected by B or B/C ratings—under moderate AADT levels (10,000–30,000) and truck percentages below 15 percent, particularly when intersection densities are high (greater than 4 per mile). TWLTLs are especially prominent in mixed-use corridors (denoted as B), where moderate turning activity and access demand are common. Under such conditions, flush medians help reduce conflict points while preserving accessibility. Comparatively, TWLTLs remain effective in residential corridors, but raised medians may also be considered, especially when denoted as B/C, suggesting that both treatments reduce crashes but raised medians may also offer acceptable benefits in certain residential settings.
- Raised (non-traversable) medians, denoted by C or C/B, are consistently recommended in high-volume corridors (AADT >25,000), with higher truck percentages (>10 or 15 percent), and in environments characterized by frequent access points and intersections. Raised medians provide greater control of left turns and better channelization of traffic, which is critical for safety in high-conflict environments. Their benefits are more dominant (denoted as C) in residential corridors, where they are the preferred treatment for high traffic volume and high truck percentage scenarios. In

mixed-use corridors, raised medians are still effective but compete with flush medians, which may also offer acceptable safety benefits (denoted as C/B).

Table 53. CMF-informed recommendations for median selection under varying traffic and roadway conditions for suburban mixed-use multilane corridors (considering all crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A	A	C	C/B	A	A	A	C	A	A	A	C	A	A	A	A
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	A	A	C	B/C	A	A	A	B/C	A	A	A	B/C	A	A	A	B
	> 5 to <= 10	A	A	A	A	A*	A	A	A	A*	A	A	A	A*	A	A	A
	> 10 to <= 15	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 15 to <= 20	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	A	A	B/C	B/C	A	A	B	B/C	A	A	A	B	A	A	A	B
	> 5 to <= 10	A	A	A	B/C	A	A	A	B/C	A	A	A	B	A	A	A	A
	> 10 to <= 15	A	A	A	C	A*	A	A	A	A*	A	A	A	A*	A	A	A
	> 15 to <= 20	A*	A	A	A	A*	A	A	A	A*	A*	A	A	A*	A*	A	A
	> 20	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A*	A
15000 to 20000	<= 5	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B	A	A	A	B
	> 5 to <= 10	A	A	C	B/C	A	A	C	B/C	A	A	A	B/C	A	A	A	B
	> 10 to <= 15	A	C	C	C/B	A	A	C	C/B	A	A	C	C/B	A	A	A	C
	> 15 to <= 20	A	C	C	C/B	A	C	C	C	A	A	C	C	A	A	A	C
	> 20	C	C	C	C	A	C	C	C	A*	C	C	C	A*	A	C	C
20000 to 25000	<= 5	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B	A	A	A	B
	> 5 to <= 10	A	C	C/B	B/C	A	A	C/B	B/C	A	A	C	B/C	A	A	A	B/C
	> 10 to <= 15	C	C	C/B	C/B	C	C	C/B	C/B	A	C	C	C/B	A	C	C	B/C
	> 15 to <= 20	C	C	C/B	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
	> 20	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
25000 to 30000	<= 5	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B	A	A	B	B
	> 5 to <= 10	C	C	C/B	B/C	A	C	C/B	B/C	A	A	B/C	B/C	A	A	B/C	B/C
	> 10 to <= 15	C	C	C/B	B/C	C	C	C/B	B/C	C	C	C/B	B/C	C	C	C/B	B/C
	> 15 to <= 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
30000 to 35000	<= 5	A	A	B	B/C	A	A	B	B/C	A	A	B	B	A	A	B	B
	> 5 to <= 10	C	C	B/C	B/C	C	C	B/C	B/C	A	C	B/C	B/C	A	A	B/C	B/C
	> 10 to <= 15	C	C/B	C/B	B/C	C	C	C/B	B/C	C	C	C/B	B/C	C	C	C/B	B/C
	> 15 to <= 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C	C/B	C/B
	> 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B
35000 to 40000	<= 5	A	A	B	B/C	A	A	B	B/C	A	A	B	B	A	A	B	B
	> 5 to <= 10	C	C/B	B/C	B/C	C	C	B/C	B/C	A	C	B/C	B/C	A	C	B/C	B/C
	> 10 to <= 15	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C	C/B	B/C
	> 15 to <= 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B
	> 20	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C	C/B	C/B	C/B
>40000	<= 5	A	A	B	B/C	A	A	B	B/C	A	A	B	B	A	A	B	B
	> 5 to <= 10	C	C/B	B/C	B/C	C	C/B	B/C	B/C	C	C	B/C	B/C	A	C	B/C	B/C
	> 10 to <= 15	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C
	> 15 to <= 20	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C	C/B	C/B	C/B
	> 20	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- B/C: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but flush medians/TWLTLs are more effective.
- C/B: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but raised medians provide greater safety benefits.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

Table 54. CMF-informed recommendations for median selection under varying traffic and roadway conditions for suburban residential multilane corridors (considering all crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A	A	C	C/B	A	A	C	C/B	A	A	A	C	A	A	A	A
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	A	C	C/B	B/C	A	A	C/B	B/C	A	A	A	B/C	A	A	A	B
	> 5 to <= 10	A	A	A	A	A	A	A	A	A*	A	A	A	A*	A	A	A
	> 10 to <= 15	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 15 to <= 20	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	A	A	B/C	B/C	A	A	B/C	B/C	A	A	B	B/C	A	A	A	B
	> 5 to <= 10	A	A	C	B/C	A	A	A	B/C	A	A	A	B	A	A	A	B
	> 10 to <= 15	A	A	A	C	A	A	A	A	A	A	A	A	A*	A	A	A
	> 15 to <= 20	A*	A	A	A	A*	A	A	A	A*	A	A	A	A*	A	A	A
	> 20	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
15000 to 20000	<= 5	A	A	B/C	B/C	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B
	> 5 to <= 10	A	C	C/B	B/C	A	A	C/B	B/C	A	A	C	B/C	A	A	A	B/C
	> 10 to <= 15	A	C	C	C/B	A	C	C	C/B	A	A	C	C/B	A	A	A	C/B
	> 15 to <= 20	C	C	C	C/B	A	C	C	C/B	A	C	C	C	A	A	C	C
	> 20	C	C	C	C	C	C	C	C	A	C	C	C	A*	A	C	C
20000 to 25000	<= 5	A	A	B/C	B/C	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B
	> 5 to <= 10	C	C	C/B	B/C	A	C	C/B	B/C	A	A	C/B	B/C	A	A	B/C	B/C
	> 10 to <= 15	C	C	C/B	C/B	C	C	C/B	B/C	C	C	C/B	B/C	A	C	C	B/C
	> 15 to <= 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C	C/B	C	C	C	C/B
	> 20	C	C	C/B	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
25000 to 30000	<= 5	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B/C	A	A	B	B
	> 5 to <= 10	C	C	B/C	B/C	C	C	B/C	B/C	A	C	B/C	B/C	A	A	B/C	B/C
	> 10 to <= 15	C	C	C/B	B/C	C	C	C/B	B/C	C	C	C/B	B/C	C	C	C/B	B/C
	> 15 to <= 20	C	C/B	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 20	C	C/B	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
30000 to 35000	<= 5	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B/C	A	A	B	B
	> 5 to <= 10	C	C/B	B/C	B/C	C	C	B/C	B/C	A	C	B/C	B/C	A	C	B/C	B/C
	> 10 to <= 15	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C	C/B	B/C
	> 15 to <= 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B
	> 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B
35000 to 40000	<= 5	A	A	B/C	B/C	A	A	B	B/C	A	A	B	B/C	A	A	B	B
	> 5 to <= 10	C	C/B	B/C	B/C	C	C/B	B/C	B/C	C	C/B	B/C	B/C	A	C	B/C	B/C
	> 10 to <= 15	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C
	> 15 to <= 20	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B
	> 20	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B
>40000	<= 5	A	B	B/C	B/C	A	A	B	B/C	A	A	B	B	A	A	B	B
	> 5 to <= 10	C	C/B	B/C	B/C	C	C/B	B/C	B/C	C	C/B	B/C	B/C	C	C/B	B/C	B/C
	> 10 to <= 15	C/B	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C	C	C/B	C/B	B/C
	> 15 to <= 20	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B
	> 20	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B	C/B

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- B/C: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but flush medians/TWLTLs are more effective.
- C/B: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but raised medians provide greater safety benefits.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

Table 55 and table 56 provide CMF-informed recommendations for median selection on urban multilane corridors, with table 55 focusing on mixed-use and table 56 on residential land–use contexts. These recommendations account for all (KABCO) crashes too.

- In both urban mixed-use and urban residential corridors, no median (designated as A) is generally recommended under low-volume, low-truck traffic conditions, particularly when access point and intersection densities are low. Specifically, corridors with AADT less than or equal to 15,000, truck percentages under 5 percent, and intersection density below 4 per mile generally show no significant safety benefit from adding a median. Even in corridors with higher AADT, a very low truck percentage (≤5 percent) supports the viability of a no-median option, reflecting the reduced crash potential in lower-conflict environments.
- TWLTLs—designated as B or B/C—are typically recommended in corridors with moderate AADT (approximately 15,000–30,000) and truck percentages below 10 percent, especially when intersection density is high (greater than 6 per mile). In corridors with high traffic volumes and truck percentages between 5 and 10 percent, TWLTLs are still effective and often appear with a B/C designation. This finding suggests that raised medians may also be considered under these conditions, as both treatments offer safety benefits, though flush medians may offer slightly better performance or operational flexibility.
- Raised medians (designated as C or C/B) are consistently recommended under high-volume conditions (AADT > 25,000), particularly when truck traffic exceeds 10 percent and access point and intersection densities are high. These conditions are typically associated with high crash potential due to the increased frequency of turning movements

and complex modal interactions. In C/B scenarios, where both median types improve safety, raised medians are preferred, especially in residential environments. Although flush medians may still be effective, raised medians provide greater crash reduction benefits and stronger access control in high-conflict settings.

Table 55. CMF-informed recommendations for median selection under varying traffic and roadway conditions for urban mixed-use multilane corridors (considering all crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A*	A	A	C	A*	A	A	A	A*	A	A	A	A*	A*	A	A
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	A	A	A	C	A	A	A	A	A	A	A	A	A*	A	A	A
	> 5 to <= 10	A*	A	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 10 to <= 15	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	A	A	A	B/C	A	A	A	A	A	A	A	A	A	A	A	A
	> 5 to <= 10	A*	A	A	A	A*	A	A	A	A*	A	A	A	A*	A	A	A
	> 10 to <= 15	A*	A	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 15 to <= 20	A*	A*	A	A	A*	A*	A	A	A*	A*	A*	A	A*	A*	A*	A
	> 20	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A*
15000 to 20000	<= 5	A	A	A	B/C	A	A	A	B	A	A	A	A	A	A	A	A
	> 5 to <= 10	A	A	A	C	A	A	A	C	A	A	A	A	A*	A	A	A
	> 10 to <= 15	A	A	C	C	A*	A	A	C	A*	A	A	A	A*	A	A	A
	> 15 to <= 20	A*	A	C	C	A*	A	C	C	A*	A	A	C	A*	A	A	A
	> 20	A*	C	C	C	A*	A*	C	C	A*	A*	C	C	A*	A*	A	C
20000 to 25000	<= 5	A	A	A	B/C	A	A	A	B	A	A	A	B	A	A	A	A
	> 5 to <= 10	A	A	C	C/B	A	A	A	C/B	A	A	A	C	A	A	A	A
	> 10 to <= 15	C	C	C	C/B	A	C	C	C	A	A	C	C	A	A	A	C
	> 15 to <= 20	C	C	C	C	C	C	C	C	C	C	C	C	A*	C	C	C
	> 20	C	C	C	C	C	C	C	C	C*	C	C	C	C*	C	C	C
25000 to 30000	<= 5	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	A
	> 5 to <= 10	A	C	C	C/B	A	A	C	C/B	A	A	A	C/B	A	A	A	B/C
	> 10 to <= 15	C	C	C	C/B	C	C	C	C/B	A	C	C	C/B	A	C	C	C/B
	> 15 to <= 20	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
	> 20	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
30000 to 35000	<= 5	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	A	C	C	B/C	A	A	C	B/C	A	A	C	B/C	A	A	A	B/C
	> 10 to <= 15	C	C	C/B	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
	> 15 to <= 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C	C/B	C	C	C	C/B
	> 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
35000 to 40000	<= 5	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	C	C	C/B	B/C	A	C	C	B/C	A	A	C	B/C	A	A	C	B/C
	> 10 to <= 15	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C	C/B
	> 15 to <= 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
>40000	<= 5	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	C	C	C/B	B/C	A	C	C/B	B/C	A	C	C	B/C	A	A	C	B/C
	> 10 to <= 15	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 15 to <= 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- B/C: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but flush medians/TWLTLs are more effective.
- C/B: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but raised medians provide greater safety benefits.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

Table 56. CMF-informed recommendations for median selection under varying traffic and roadway conditions for urban residential multilane corridors (considering all crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A*	A	A	C	A*	A	A	C	A*	A	A	A	A*	A	A	A
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	A	A	A	C/B	A	A	A	C	A	A	A	A	A	A	A	A
	> 5 to <= 10	A*	A	A	A	A*	A	A	A	A*	A*	A	A	A*	A*	A	A
	> 10 to <= 15	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	A	A	A	B/C	A	A	A	B/C	A	A	A	B	A	A	A	A
	> 5 to <= 10	A	A	A	C	A*	A	A	A	A*	A	A	A	A*	A	A	A
	> 10 to <= 15	A*	A	A	A	A*	A	A	A	A*	A*	A	A	A*	A*	A	A
	> 15 to <= 20	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A*	A
	> 20	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A
15000 to 20000	<= 5	A	A	A	B/C	A	A	A	B/C	A	A	A	B	A	A	A	B
	> 5 to <= 10	A	A	C	C/B	A	A	A	C	A	A	A	A	A	A	A	A
	> 10 to <= 15	A	A	C	C	A	A	C	C	A*	A	A	C	A*	A	A	A
	> 15 to <= 20	A*	C	C	C	A*	A	C	C	A*	A	C	C	A*	A	A	C
	> 20	A*	C	C	C	A*	C	C	C	A*	A*	C	C	A*	A*	A	C
20000 to 25000	<= 5	A	A	A	B/C	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	A	C	C	C/B	A	A	C	C/B	A	A	A	C/B	A	A	A	C
	> 10 to <= 15	C	C	C	C/B	A	C	C	C/B	A	C	C	C/B	A	A	C	C
	> 15 to <= 20	C	C	C	C/B	C	C	C	C/B	C	C	C	C	A	C	C	C
	> 20	C	C	C	C/B	C	C	C	C	C	C	C	C	C	C	C	C
25000 to 30000	<= 5	A	A	A	B/C	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	A	C	C	C/B	A	C	C	B/C	A	A	C	B/C	A	A	A	B/C
	> 10 to <= 15	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B	A	C	C	C/B
	> 15 to <= 20	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
	> 20	C	C	C/B	C/B	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B
30000 to 35000	<= 5	A	A	A	B/C	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	C	C	C/B	B/C	A	C	C	B/C	A	A	C	B/C	A	A	C	B/C
	> 10 to <= 15	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C	C/B	C	C	C	C/B
	> 15 to <= 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 20	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
35000 to 40000	<= 5	A	A	A	B/C	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	C	C	C/B	B/C	A	C	C/B	B/C	A	C	C	B/C	A	A	C	B/C
	> 10 to <= 15	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 15 to <= 20	C	C/B	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C	C/B	C/B
>40000	<= 5	A	A	A	B/C	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	C	C	C/B	B/C	C	C	C/B	B/C	A	C	C/B	B/C	A	A	C	B/C
	> 10 to <= 15	C	C/B	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 15 to <= 20	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B
	> 20	C/B	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B	C	C/B	C/B	C/B

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- B/C: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but flush medians/TWLTLs are more effective.
- C/B: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but raised medians provide greater safety benefits.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

IMPLICATIONS FOR FATAL AND INJURY CRASHES

Table 57 and table 58 provide CMF-informed recommendations for selecting median treatments on suburban multilane corridors, with table 57 focusing on mixed-use land use and table 58 on residential land use. These recommendations are based specifically on fatal and injury (KAB) crashes, offering insights into where safety benefits are realized through different types of medians under varying roadway and traffic conditions.

- In both suburban mixed-use and residential contexts, no median (designated as A) is typically recommended in low-volume corridors (AADT ≤15,000) with truck percentages ≤5 percent, and where intersection density is ≤4 per mile. Under these conditions, adding a median does not significantly reduce fatal and injury crashes and may not offer a notable safety advantage.
- TWLTLs, denoted as B or B/C, are widely recommended in corridors with AADT >20,000 and truck percentages ≤5 percent, particularly when intersection density exceeds 2 per mile. These medians appear frequently in mixed-use settings (table 57) where turning activity is common and access flexibility is essential. In contexts with higher intersection densities, the B/C designation indicates that both TWLTLs and raised medians are effective, though flush medians may provide a slight advantage by balancing safety performance with operational access.
- Raised medians (designated as C or C/B) are consistently recommended in high-volume corridors (AADT >25,000) and when truck percentages exceed 5 percent. Interestingly, raised medians are also recommended in select lower-volume conditions when truck percentages are low (≤5 percent). The C/B designations reflect scenarios where both

median types improve KAB safety but raised medians tend to provide greater reductions in fatal and injury crash potential, particularly in more complex traffic conditions.

Table 57. CMF-informed recommendations for median selection under varying traffic and roadway conditions for suburban mixed-use multilane corridors (considering KAB crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A	C	C	C	A	C	C	C	A	A	C	C	A	A	C	C
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	C	C	C/B	C/B	C	C	C/B	C/B	A	C	C/B	C/B	A	C	C/B	C/B
	> 5 to <= 10	A	A	A	A	A	A	A	A	A	A	A	A	A*	A	A	A
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	C	C/B	C/B	C/B	C	C/B	C/B	C/B	A	C/B	C/B	B/C	A	C	C/B	B/C
	> 5 to <= 10	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	A
	> 10 to <= 15	A*	A	A	A	A*	A	A	A	A*	A	A	A	A*	A*	A	A
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
15000 to 20000	<= 5	C	C/B	B/C	B/C	C	C/B	B/C	B/C	A	C/B	B/C	B/C	A	C/B	B/C	B/C
	> 5 to <= 10	A	A	C	C/B	A	A	C	C/B	A	A	A	C/B	A	A	A	C/B
	> 10 to <= 15	A	A	A	A	A*	A	A	A	A*	A	A	A	A*	A	A	A
	> 15 to <= 20	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
20000 to 25000	<= 5	C	B/C	B/C	B/C	A	B/C	B/C	B/C	A	B/C	B/C	B/C	A	B/C	B/C	B/C
	> 5 to <= 10	A	C	C	C/B	A	C	C	C/B	A	A	C	C/B	A	A	C	C/B
	> 10 to <= 15	A	A	C	C	A	A	C	C	A*	A	C	C	A*	A	A	C
	> 15 to <= 20	A*	A*	A	C	A*	A*	A*	C	A*	A*	A*	C	A*	A*	A*	A
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
25000 to 30000	<= 5	B/C	B/C	B/C	B/C	B	B/C	B/C	B/C	A	B/C	B/C	B/C	A	B/C	B/C	B/C
	> 5 to <= 10	C	C	C/B	C/B	A	C	C	C/B	A	C	C	C/B	A	C	C	C/B
	> 10 to <= 15	C	C	C	C	C	C	C	C	A*	C	C	C	A*	C	C	C
	> 15 to <= 20	C*	C*	C	C	C*	C*	C*	C	A*	C*	C*	C	A*	C*	C*	C
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	A*	C*	C*	C*	A*	C*	C*	C*
30000 to 35000	<= 5	B/C	B/C	B/C	B/C	B	B/C	B/C	B/C	B	B/C	B/C	B/C	A	B/C	B/C	B/C
	> 5 to <= 10	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C	C/B	A	C	C	C/B
	> 10 to <= 15	C	C	C	C	C	C	C	C	C	C	C	C	C*	C	C	C
	> 15 to <= 20	C*	C*	C	C	C*	C*	C*	C	C*	C*	C*	C	C*	C*	C*	C
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
35000 to 40000	<= 5	B	B/C	B/C	B/C	B	B/C	B/C	B/C	B	B/C	B/C	B/C	B	B	B/C	B/C
	> 5 to <= 10	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C	C/B
	> 10 to <= 15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	> 15 to <= 20	C*	C*	C	C	C*	C*	C	C	C*	C*	C*	C	C*	C*	C*	C
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
>40000	<= 5	B	B/C	B/C	B/C	B	B/C	B/C	B/C	B	B/C	B/C	B/C	B	B	B/C	B/C
	> 5 to <= 10	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B	C	C	C/B	C/B
	> 10 to <= 15	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
	> 15 to <= 20	C*	C*	C	C	C*	C*	C	C	C*	C*	C*	C	C*	C*	C*	C
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- B/C: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but flush medians/TWLTLs are more effective.
- C/B: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but raised medians provide greater safety benefits.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

Table 58. CMF-informed recommendations for median selection under varying traffic and roadway conditions for suburban residential multilane corridors (considering KAB crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A*	A	C	C	A*	A	C	C	A*	A	A	C	A*	A	A	C
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	A	C	C	C/B	A	C	C	C/B	A	A	C	C/B	A	A	C	C/B
	> 5 to <= 10	A*	A	A	A	A*	A	A	A	A*	A	A	A	A*	A*	A	A
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	A	C	C/B	C/B	A	C	C/B	C/B	A	A	C/B	C/B	A	A	C	C/B
	> 5 to <= 10	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
	> 10 to <= 15	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A*	A
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
15000 to 20000	<= 5	A	C	C/B	B/C	A	C	C/B	B/C	A	A	B/C	B/C	A	A	B/C	B/C
	> 5 to <= 10	A	A	A	C	A	A	A	C	A	A	A	A	A	A	A	A
	> 10 to <= 15	A*	A	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 15 to <= 20	A*	A*	A*	A	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
20000 to 25000	<= 5	A	C/B	B/C	B/C	A	A	B/C	B/C	A	A	B/C	B/C	A	A	B/C	B/C
	> 5 to <= 10	A	A	C	C	A	A	C	C	A	A	A	C	A	A	A	C
	> 10 to <= 15	A*	A	A	C	A*	A	A	C	A*	A*	A	A	A*	A*	A	A
	> 15 to <= 20	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
25000 to 30000	<= 5	A	B/C	B/C	B/C	A	B	B/C	B/C	A	B	B/C	B/C	A	A	B/C	B/C
	> 5 to <= 10	A	C	C	C/B	A	A	C	C/B	A	A	C	C	A	A	C	C
	> 10 to <= 15	A*	C	C	C	A*	A	C	C	A*	A	C	C	A*	A*	C	C
	> 15 to <= 20	A*	C*	C*	C	A*	C*	C*	C	A*	A*	C*	C*	A*	A*	C*	C*
	> 20	A*	C*	C*	C*	A*	C*	C*	C*	A*	A*	C*	C*	A*	A*	C*	C*
30000 to 35000	<= 5	A	B/C	B/C	B/C	A	B	B/C	B/C	A	B	B/C	B/C	A	B	B/C	B/C
	> 5 to <= 10	A	C	C	C/B	A	C	C	C/B	A	C	C	C/B	A	A	C	C
	> 10 to <= 15	C*	C	C	C	C*	C	C	C	C*	C	C	C	A*	C	C	C
	> 15 to <= 20	C*	C*	C*	C	C*	C*	C*	C	C*	C*	C*	C*	C*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
35000 to 40000	<= 5	A	B	B/C	B/C	A	B	B/C	B/C	A	B	B/C	B/C	A	B	B	B/C
	> 5 to <= 10	C	C	C	C/B	C	C	C	C/B	A	C	C	C/B	A	C	C	C/B
	> 10 to <= 15	C*	C	C	C	C*	C	C	C	C*	C	C	C	C*	C	C	C
	> 15 to <= 20	C*	C*	C*	C	C*	C*	C*	C	C*	C*	C*	C*	C*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
>40000	<= 5	A	B	B/C	B/C	A	B	B/C	B/C	A	B	B/C	B/C	A	B	B	B/C
	> 5 to <= 10	C	C	C	C/B	C	C	C	C/B	C	C	C	C/B	A	C	C	C/B
	> 10 to <= 15	C*	C	C	C	C*	C	C	C	C*	C	C	C	C*	C	C	C
	> 15 to <= 20	C*	C*	C*	C	C*	C*	C*	C	C*	C*	C*	C	C*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- B/C: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but flush medians/TWLTLs are more effective.
- C/B: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but raised medians provide greater safety benefits.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

Table 59 and table 60 provide CMF-informed recommendations for median selection on urban multilane corridors, focusing on mixed-use (table 59) and residential (table 60) land use contexts. These recommendations specifically target fatal and injury (KAB) crashes.

- In both urban mixed-use and residential corridor contexts, no median (denoted as A) is generally recommended for low-volume roadways (AADT ≤25,000) with low intersection densities (≤4 per mile). Under these traffic and geometric conditions, the analysis indicates that installing a median does not provide substantial safety benefits in reducing fatal and injury (KAB) crashes. As such, the baseline condition without a median is considered sufficient from a safety standpoint.
- Flush medians or TWLTLs, indicated as B or B/C, are occasionally recommended in higher-volume settings (AADT >25,000) where intersection density is elevated, reflecting environments with frequent turning movements. These medians offer a compromise between access flexibility and moderate safety improvement. However, their presence is notably more limited in urban residential contexts (table 60), suggesting that TWLTLs may be more appropriate in urban mixed-use corridors, where a balance between access and operational efficiency is often required.
- In contrast, raised medians (denoted as C) are consistently recommended across both land use contexts for high-volume corridors (AADT >30,000) or under conditions with higher truck percentages and dense access/intersection activity. Raised medians provide physical separation between traffic streams, restrict turning conflicts, and are associated with a significant reduction in crash severity—particularly for fatal and injury crashes. Their repeated recommendation in these environments underscores their effectiveness in enhancing safety in complex urban settings.

Table 59. CMF-informed recommendations for median selection under varying traffic and roadway conditions for urban mixed-use multilane corridors (considering KAB crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A*	A*	A	C	A*	A*	A	C	A*	A*	A	A	A*	A*	A*	A
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	A	A	C	C	A	A	C	C	A	A	A	C	A	A	A	C
	> 5 to <= 10	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A*	A
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	A	A	C	C	A	A	C	C	A	A	A	C	A	A	A	C
	> 5 to <= 10	A*	A	A	A	A*	A	A	A	A*	A	A	A	A*	A*	A*	A
	> 10 to <= 15	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
15000 to 20000	<= 5	A	A	C	C/B	A	A	C	C/B	A	A	A	C/B	A	A	A	C
	> 5 to <= 10	A*	A	A	A	A*	A	A	A	A*	A	A	A	A*	A	A	A
	> 10 to <= 15	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
20000 to 25000	<= 5	A	A	C	C/B	A	A	A	C/B	A	A	A	B/C	A	A	A	B/C
	> 5 to <= 10	A*	A	A	C	A*	A	A	C	A*	A	A	A	A*	A	A	A
	> 10 to <= 15	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
25000 to 30000	<= 5	A	A	C	B/C	A	A	A	B/C	A	A	A	B/C	A	A	A	B/C
	> 5 to <= 10	A	A	C	C	A*	A	A	C	A*	A	A	C	A*	A	A	C
	> 10 to <= 15	A*	A*	C*	C	A*	A*	A*	C	A*	A*	A*	C	A*	A*	A*	C
	> 15 to <= 20	A*	A*	C*	C*	A*	A*	C*	C*	A*	A*	A*	C*	A*	A*	A*	C*
	> 20	A*	A*	C*	C*	A*	A*	C*	C*	A*	A*	A*	C*	A*	A*	A*	C*
30000 to 35000	<= 5	A	A	B/C	B/C	A	A	A	B/C	A	A	A	B/C	A	A	A	B/C
	> 5 to <= 10	A	A	C	C	A	A	C	C	A*	A	C	C	A*	A	A	C
	> 10 to <= 15	A*	C*	C	C	A*	C*	C*	C	A*	C*	C*	C	A*	A*	C*	C
	> 15 to <= 20	C*	C*	C*	C*	C*	C*	C*	C*	A*	C*	C*	C*	A*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
35000 to 40000	<= 5	A	A	B	B/C	A	A	B	B/C	A	A	A	B/C	A	A	A	B
	> 5 to <= 10	A	C	C	C	A	C	C	C	A	A	C	C	A*	A	C	C
	> 10 to <= 15	C*	C*	C	C	C*	C*	C*	C	C*	C*	C*	C	A*	C*	C*	C
	> 15 to <= 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
>40000	<= 5	A	A	B	B/C	A	A	B	B/C	A	A	B	B/C	A	A	B	B
	> 5 to <= 10	A	C	C	C	A	C	C	C	A	C	C	C	A	A	C	C
	> 10 to <= 15	C*	C*	C	C	C*	C*	C	C	C*	C*	C*	C	C*	C*	C*	C
	> 15 to <= 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs less than 1, indicating reduced crash frequency.
- B/C: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but flush medians/TWLTLs are more effective.
- C/B: Both flush medians/TWLTLs and raised medians improve safety (CMF <1), but raised medians provide greater safety benefits.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

Table 60. CMF-informed recommendations for median selection under varying traffic and roadway conditions for urban residential multilane corridors (considering KAB crashes).

		AP <=10				AP >10 to 20				AP >20 to 30				AP >30			
Daily Traffic	Truck Pct	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6	INT <= 2	INT >2 to <=4	INT >4 to <=6	INT >6
0 to 5000	<= 5	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A*
	> 5 to <= 10	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
5000 to 10000	<= 5	A*	A	A	C	A*	A	A	C	A*	A	A	A	A*	A	A	A
	> 5 to <= 10	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A	A*	A*	A*	A*
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
10000 to 15000	<= 5	A	A	A	C	A	A	A	C	A	A	A	A	A*	A	A	A
	> 5 to <= 10	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
15000 to 20000	<= 5	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A
	> 5 to <= 10	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
20000 to 25000	<= 5	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A
	> 5 to <= 10	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A	A*	A*	A	A
	> 10 to <= 15	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
25000 to 30000	<= 5	A	A	A	C	A	A	A	A	A	A	A	A	A	A	A	A
	> 5 to <= 10	A*	A	A	C	A*	A	A	A	A*	A*	A	A	A*	A*	A	A
	> 10 to <= 15	A*	A*	A*	C	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 15 to <= 20	A*	A*	A*	C*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*	A*
	> 20	A*	A*	A*	C*	A*	A*	A*	C*	A*	A*	A*	A*	A*	A*	A*	A*
30000 to 35000	<= 5	A	A	A	B	A	A	A	B	A	A	A	A	A	A	A	A
	> 5 to <= 10	A*	A	A	C	A*	A	A	C	A*	A	A	C	A*	A*	A	A
	> 10 to <= 15	A*	A*	C*	C	A*	A*	C*	C*	A*	A*	A*	C*	A*	A*	A*	C*
	> 15 to <= 20	A*	C*	C*	C*	A*	C*	C*	C*	A*	A*	C*	C*	A*	A*	C*	C*
	> 20	C*	C*	C*	C*	A*	C*	C*	C*	A*	C*	C*	C*	A*	C*	C*	C*
35000 to 40000	<= 5	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	A
	> 5 to <= 10	A*	A	C	C	A*	A	C	C	A*	A	A	C	A*	A	A	C
	> 10 to <= 15	A*	C*	C*	C	A*	C*	C*	C	A*	C*	C*	C*	A*	A*	C*	C*
	> 15 to <= 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
>40000	<= 5	A	A	A	B	A	A	A	B	A	A	A	B	A	A	A	B
	> 5 to <= 10	A*	A	C	C	A*	A	C	C	A*	A	C	C	A*	A	A	C
	> 10 to <= 15	C*	C*	C*	C	C*	C*	C*	C	C*	C*	C*	C*	A*	C*	C*	C*
	> 15 to <= 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*
	> 20	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*	C*

Notes:

- AP = number of access points per mile; INT = number of intersections per mile.
- A: No safety benefit or increased crash frequency compared to no-median corridors (CMF >1).
- B: Flush medians/TWLTLs show the best safety performance with CMFs <1, indicating reduced crash frequency.
- C: Raised/non-traversable medians show the best safety performance with CMFs <1, indicating reduced crash frequency.
- *: Due to the presence of CMFs exceeding 10, the reliability of the recommendations may be compromised and should be analytically scrutinized.

In summary, when considering all crashes (KABCO), the researchers found the following:

- Raised medians consistently show the strongest safety benefits in high-volume conditions. Specifically, they are recommended when traffic volumes exceed 25,000 vehicles per day and truck percentages are greater than 10 percent. These medians provide physical separation and turning control, which help mitigate crash frequency in complex traffic environments.
- TWLTLs, by contrast, are more effective under moderate traffic volumes and where intersection density exceeds 4 per mile. Their safety performance is especially strong when truck percentages are low (less than 10 percent). These treatments are more frequently recommended in suburban corridors, where moderate access demand and turning movements are common and preserving driveway access is important. In urban environments, however, TWLTLs are much less frequently recommended; they are typically considered in areas with very high intersection densities (exceeding 6 per mile) and low truck percentages, typically under 5 percent.
- No-median treatments (the baseline condition) are typically appropriate under lower-volume conditions, with AADT below 20,000, truck percentages below 10 percent, and intersection densities of 4 or fewer per mile. Interestingly, there are also a few high-volume cases (AADT >25,000) in which no median is still considered acceptable, particularly when truck percentages are very low (under 5 percent) and intersection density remains limited.

When focusing only on fatal and injury crashes (KAB), the researchers found the following:

- Raised medians are generally recommended for corridors with high volumes (AADT >25,000) and truck percentages greater than 5 percent. In addition, raised medians are also advised in lower-volume corridors (AADT ≤25,000) when truck percentages are low (≤5 percent) and intersection density is high (greater than 4 per mile). These treatments dominate the recommendations under high-volume and high-truck scenarios, underscoring their effectiveness in controlling conflict points and mitigating the severity of crashes in complex environments.

- TWLTLs remain appropriate in some higher-volume corridors (AADT >20,000) when truck percentages are low (≤5 percent) and intersection density is elevated. However, their application is more limited in urban corridors, where raised medians are favored due to their greater ability to manage access and improve safety in denser traffic conditions.
- No-median treatments appear suitable for low-volume, low-conflict corridors, typically when AADT is below 25,000, truck percentages are under 5 percent, and intersection density is low (≤4 per mile). In urban contexts, the applicability of no-median designs may extend to somewhat higher traffic volumes (up to 30,000 AADT) but only under very low truck percentages and limited intersection activity, where the added control offered by medians may not yield substantial safety benefits.

Access point density does not appear to be a primary factor influencing the median treatment recommendations. It is likely that roadside context—such as land use type (mixed-use versus residential) and setting (urban versus suburban)—already captures much of the variation associated with access point density. In other words, the effects of access density may be implicitly reflected through these broader contextual classifications.

POLICY INSIGHTS

Based on the findings from the corridor-level CMF analysis for all crashes, the following simplified recommendations can assist GDOT in making effective and data-driven decisions regarding median options for urban and suburban multilane highways, as shown in table 61. These recommendations focus on traffic volume, truck percentages, intersection density, and roadway context, and they are designed to align with GDOT's *Design Policy Manual*, Table 6.3, on Median Options for Arterials (GDOT 2024).

Table 61. Recommendations of median options for urban and suburban multilane highways.

Suburban Areas		
ADT (vpd)	**Median Option**	**Notes**
≤10,000	Undivided	
10,000–15,000	TWLTL	*Undivided median in limited conditions*[1]
15,000–20,000	TWLTL	*Undivided median not advised*[2]
>20,000–25,000	TWLTL or Raised Median	*Raised median preferred with increasing volume and turning conflicts*[3]
>25,000	Raised Median	*Preferred for higher volume and to provide access control*[4]
Urban Areas		
ADT (vpd)	**Median Option**	**Notes**
≤15,000	Undivided	*Acceptable for low-volume corridors*[5]
15,000–30,000	TWLTL or Raised Median	*TWLTL if truck % ≤10%; Raised Median if truck % >10%*[6]
>30,000	Raised Median	*Advised for high volume and truck % >5%*[7]

Notes:

1. Undivided medians for 10,000–15,000 ADT: Acceptable with ≤5% trucks, ≤4 intersections/mi. Otherwise, select TWLTL.
2. Undivided medians for 15,000–20,000 ADT: Not advised unless constrained conditions, with ≤5% trucks, ≤ 4 intersections/mi, where TWLTL/raised medians are infeasible.
3. TWLTL for 20,000–25,000 ADT: Acceptable with ≤10% trucks, >4 intersections/mi. Raised medians are better for control.
4. Raised medians for >25,000 ADT: Advised when >5% trucks; When < 5% trucks and > 4 intersections/mile, advised TWLTL; otherwise, undivided medians may be acceptable only under constrained conditions.
5. Undivided medians for ≤15,000 ADT: Acceptable with ≤5% trucks, ≤6 intersections/mile; Otherwise, should be analytically scrutinized.
6. For 15,000–30,000 ADT:
   - TWLTL: Acceptable with ≤10% trucks, frequent left-turn demands.
   - Raised medians: Advised with >10% trucks.
7. Raised medians for >30,000 ADT: Advised with >5% trucks; When < 5% trucks and > 6 intersections/mile, advised TWLTL; otherwise, undivided medians may be acceptable only under constrained conditions.

The simplified recommendations in table 61 are based on an analysis that focuses on all crashes (KABCO), providing a comprehensive view of the safety impacts of median treatments on urban and suburban multilane highways. This approach includes not only fatal and injury crashes but also property damage only (PDO) incidents, which are common in these environments. Focusing on all crashes allows for a broader understanding of the overall safety performance of different median treatments, especially in high-traffic, high-conflict environments like urban and suburban roads. While this report emphasizes the consideration of all crashes to inform decision-making, it is possible to focus solely on fatal and injury crashes (KAB) in other projects, depending on the specific goals and context of the analysis. This approach would narrow the focus to more severe crashes, potentially providing more targeted insights into the most critical safety concerns. For further details and more specific results related to KAB crashes, as well as the full scope of analysis for all crash types, more detailed results can be found earlier in this report. These findings provide additional context to guide decision-makers in tailoring interventions based on the severity of crashes and the overall safety objectives for different types of corridors.

It is important to note that the implications in table 61 provide approximate cross-section recommendations based on the estimated crash reductions (by comparing the safety performance of a target cross-section with the base cross-section, which is undivided roadways). The crash reduction estimation is based on crash data collected from 2018 to 2021 and sampled roadway corridors. The results may change when different years of data or different roadways are selected for the analysis. Other factors, such as mobility, environmental impacts, and operational efficiency should also be considered in the decision-making process when selecting appropriate median treatments for specific corridors.

CHAPTER 8. SUMMARY AND CONCLUSIONS

This project, conducted in collaboration with GDOT, aimed to develop segment- and corridor-level SPFs and estimate CMFs to understand the safety impacts of median treatments on multilane roadways in Georgia. The work followed a comprehensive and structured process, beginning with data acquisition, followed by data processing, segment identification and refinement, SPF development, CMF estimation, and policy interpretation.

The team collected and reviewed key datasets provided by GDOT, including 2016–2021 traffic crash records, traffic count data, road inventory data, and work zone data. The project focused on multilane highway segments with four or more through lanes in two directions, excluding freeways, expressways, and one-way roads. Segments were further refined to ensure consistency in roadway attributes, and shapefiles were developed for verified roadway geometries. Where needed, manual verifications and augmentations were performed to ensure the accuracy of median, shoulder, and lane information. The team also prepared datasets accounting for work zone impacts and created variables for corridor-level analysis. SPFs were developed using filtered and verified segments, with crash frequencies modeled as a function of roadway geometry and traffic exposure. Different models were estimated by crash severity (e.g., KABCO, KAB) and segment groups (e.g., statewide versus urban, by median type). The team used both cross-sectional/segment-level and corridor-level methods to estimate CMFs for various median types—undivided/no median, flush (TWLTL) medians, and raised medians. CMFs were calculated by comparing median types while controlling for key confounders such as AADT, truck percentage, access point density, and intersection density (for corridor-level).

Key findings include strong evidence that both flush medians and raised medians reduce crash frequency relative to undivided roads. Raised medians showed consistent benefits in higher-volume and higher-conflict environments. Flush medians performed best in corridors with moderate traffic volumes, low truck percentages, and frequent left-turn movements. These findings were consistent across both segment-level and corridor-level analyses, though results varied by crash severity and context (e.g., urban versus suburban, mixed-use versus residential). The findings from the CMF analysis have direct implications for corridor-level median selection in urban and suburban multilane highway environments. Policy decisions related to median treatments should be made at the corridor level because crash risks are shaped by both segment-level geometry and intersection-level dynamics. The CMF-informed recommendations provided in this study account for crash outcomes under various traffic volumes, truck percentages, intersection densities, and land use types. These recommendations support data-driven median selection policies that align with GDOT’s roadway design guidance, as follows:

- Raised medians consistently demonstrated the strongest crash reduction benefits, especially in high-volume corridors (AADT >25,000) with high truck percentages and frequent access and intersection points. These medians offer effective control of turning movements and conflict points, making them especially effective in urban residential and complex suburban settings.
- Flush medians (TWLTLs) performed best under moderate-volume conditions (AADT 15,000–25,000) and low truck percentages, particularly when intersection density is high. These treatments are especially beneficial in suburban mixed-use corridors, where preserving access flexibility is a key operational priority.
- No-median (undivided) treatments are generally suitable in low-volume, low-conflict conditions—typically AADT <20,000, truck percentages below 10 percent, and

intersection density of 4 or fewer per mile. In both urban and suburban settings, these treatments are only advised under constrained or very low-risk circumstances.

Although access point density was included in the CMF estimation process, it did not appear to be a primary determinant of median selection recommendations. Instead, the effects of access density are likely captured implicitly through land use and setting classifications (e.g., mixed-use versus residential, urban versus suburban).

The simplified guidance table developed from this study (table 61) offers a practical framework for GDOT to determine appropriate median designs based on typical traffic and geometric conditions. These recommendations provide a bridge between statistical crash findings and real-world design application and serve as a useful supplement to GDOT's *Design Policy Manual*. It is important to note that all implications are based on crash data from 2018 to 2021 and specific sampled corridors. Results may vary with different data ranges or locations. Practitioners should also consider operational efficiency, mobility, and environmental factors when selecting a final design. The project's implications extend beyond median selection. The results highlight the importance of context-specific safety evaluations and the need to align corridor-level decision-making with roadway operations, access management, and traffic conditions. This corridor-level perspective is essential because median treatments influence both segment and intersection safety, particularly in urban and suburban arterial environments. Finally, while this project presents a robust methodology and comprehensive dataset, limitations remain. The findings are based on sampled roadway corridors and crash data from 2018 to 2021. Recommendations may vary when applying this framework to different years or corridors not included in the dataset. Although CMFs provide valuable safety insights, other factors such as operational efficiency, mobility, and environmental concerns must be considered in final design decisions. Engineering judgment remains essential, especially when encountering extreme or context-specific CMFs.

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APPENDIX A SUMMARY OF SELECTED STATE-LED EFFORTS FOR ADOPTING OR DEVELOPING SPFS

Overview									Key factors													Other factors
Title	First author & Year	State	Years of crash data	Modeling method	Number of segment	Land use type	Traffic volume range (AADT)	Segment length range in mile	AADT	Segment length	Number of through lanes	Through lane width	Speed limit	Truck or heavy-duty vehicle traffic volume or percentage	Shoulder width	Shoulder type	Median width	Median type	Access point count/density	Presence of turn lanes	Presence of curb	Other factors
Urban and Suburban Arterial Safety Performance Functions: Final Report	Shankar (2016)	Washington	3 (2010-2012)	Random-parameter negative binomial	107,695	Urban and suburban	<153,600	>0.009	SPF	SPF	SPF	SPF	--	--	SPF	--	SPF	--	--	--	SPF	Point of vertical tangent grade; Vertical curve point; Horizontal curve maximum superelevation; Curve central angle; Horizontal curve radius
Development of Safety Performance Functions for Multilane Highway and Freeway Segments Maintained by the Virginia Department of Transportation	Kweon (2014)	Virginia	5 (2004-2008)	Negative binomial	20,235	Rural and urban	<113,552	0.01 ~ 8.59	SPF	SPF	CASE	--	--	--	--	--	--	CASE	--	--	--	--
Regionalized Urban-suburban Collector Road Safety Performance Functions	Donnell (2019)	Pennsylvania	5 (2013-2017)	Negative Binomial	7,805	Urban and suburban	<28,200	<0.82	SPF	SPF	CASE	--	SPF	--	--	--	--	CASE	SPF	--	SPF	Total degree of curvature per mile in the segment; Presence of on-street parking
Calibration/Development of Safety Performance Functions for New Jersey	Ozbay (2019)	New Jersey	5 (2011-2015)	Calibration/Negative binomial	2,182	Urban, suburban, and rural	Average < 13,720	>0.1	SPF	SPF	CASE	CMF	--	SPF	CMF	CMF	CMF	CASE	CMF	--	--	Curve radius; Curve length; On-street parking; Roadside fixed objects; Lighting; Auto speed enforcement
Safety Performance Functions for Rural Road Segments and Rural Intersections in Michigan	Gates (2018)	Michigan	5 (2011-2015)	Negative binomial	18,437	Rural	<32,000	>0.1	SPF	SPF	CASE	--	--	--	CMF	CMF	--	CASE	CMF	--	--	Driveway density; Horizontal curve; Rolling terrain; Passing restriction;
Development of Safety Performance Functions for North Carolina	Srinivasan (2011)	North Carolina	5 (2004-2008)	Negative binomial	--	Rural	<20,000	0.01-18.98	SPF	SPF	CASE	SPF	SPF	--	SPF/CMF	SPF	--	CASE	SPF/CMF	--	SPF	Type of terrain; Number of driveways by land-use type; Presence of automated speed enforcement; Presence of lighting; On-street parking presence; and type Roadside fixed object density
Safety Performance of Rural Four-Lane Undivided Roadways and Rural Four-Lane Roadways with a Two-Way Left-Turn Lane	Liu (2020)	Georgia	5 (2013-2018)	Negative binomial & random-parameter NB	1,978	Rural	<75,200	0.09-6.14	SPF	SPF	--	--	--	SPF	--	--	--	CASE/CMF	SPF	--	--	Number of driveways; Horizontal/vertical alignment; Lighting
Calibration of HSM Predictive Methods on State and Local Rural Highways	Qin (2022)	South Dakota	5 (2008-2012)	Negative binomial	19,657	Rural	--	--	SPF	SPF	CASE	CMF	--	--	CMF	--	CMF	CASE	--	--	--	Calibration of HSM Predictive Methods on State and Local Rural Highways
Performance Assessment Measure that Indicates Geometry Sufficiency of State Highways: Volume I—Network Screening and Project Evaluation	Tarko (2015)	Indiana	3 years, 2009-2011	negative binomial model	9,881	Rural and urban	< 72700	0.095-15.54	SPF	SPF	CASE	SPF	--	--	SPF	SPF	SPF	--	--	SPF	SPF	lane width missing indicator; border zone minimum 20 feet; Minor Arterial indicator; Major Collector indicator; Border zone minimum 50 feet;
Calibration and Development of Safety Performance Functions for Rural Highway Facilities in Idaho	Abdel-Rahim (2015)	Idaho	10 years, 2003-2012	negative binomial model	447	Rural	250-25,000	0.04-7.769	SPF	SPF	--	--	--	--	--	--	--	--	--	--	--	--

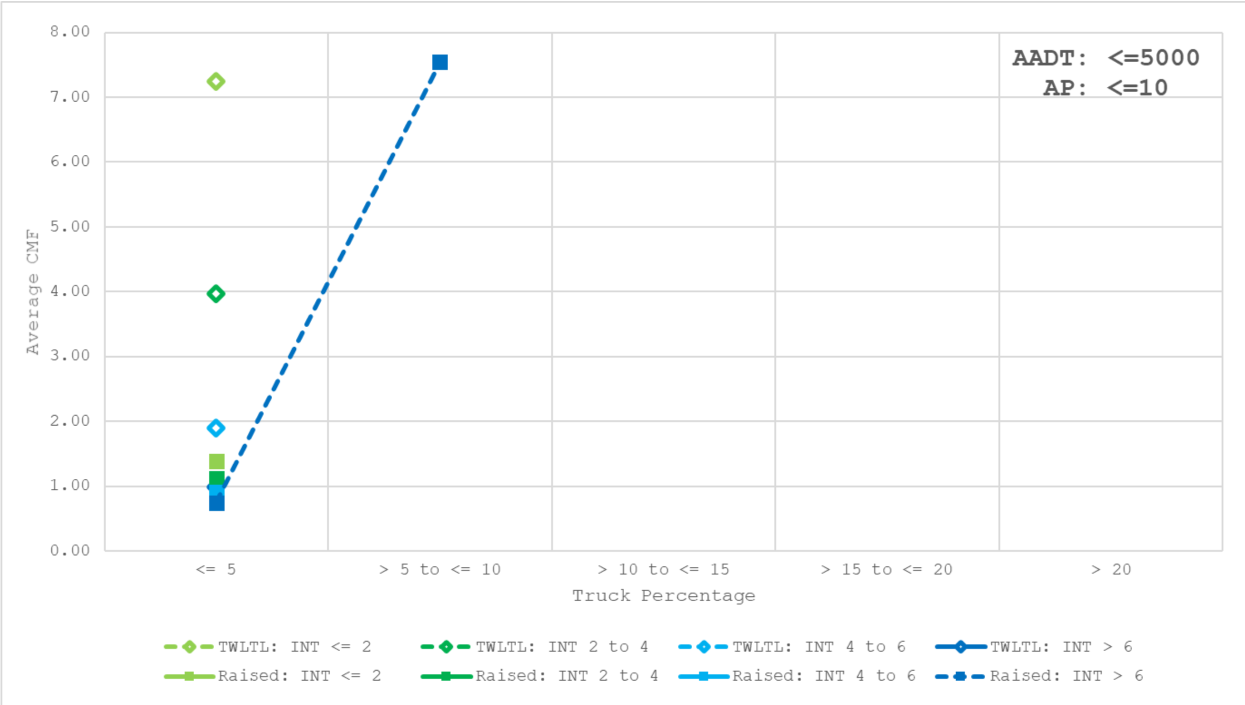
Notes:
SPF = This factor was included in the Safety Performance Functions (SPFs).
CMF = This factor was considered for estimating Crash Modification Factors (CMFs).
CASE = This factor was used to separate facility types for developing separate SPFs or CMFs.

APPENDIX B CORRIDOR-LEVEL CMFS AND GRAPHS

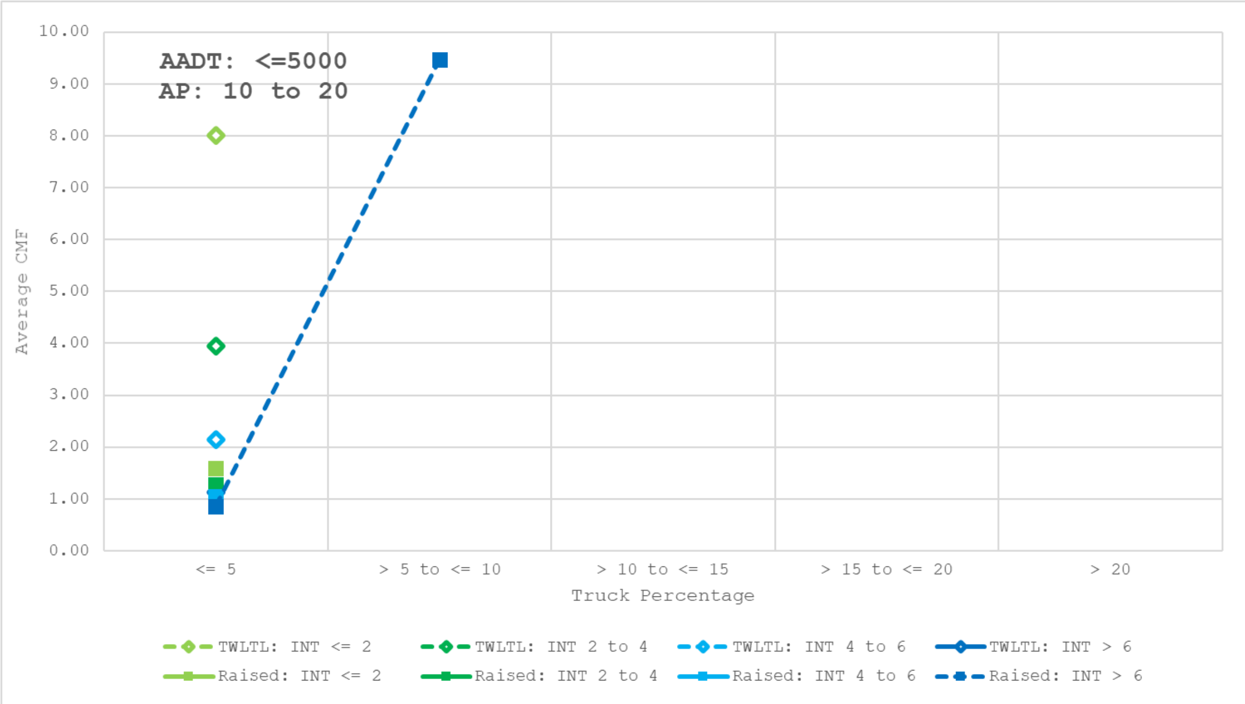
B-1-1 Suburban Mixed Use KABCO CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Raised : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL : INT <= 2	TWLTL : INT 2 to 4	TWLTL : INT 4 to 6	TWLTL : INT > 6	Raised : INT <= 2	Raised : INT 2 to 4	Raised : INT 4 to 6	Raised : INT > 6	TWLTL : INT <= 2	TWLTL : INT 2 to 4	TWLTL : INT 4 to 6	TWLTL : INT > 6	Raised : INT <= 2	Raised : INT 2 to 4	Raised : INT 4 to 6	Raised : INT > 6	TWLTL : INT <= 2	TWLTL : INT 2 to 4	TWLTL : INT 4 to 6	TWLTL : INT > 6	Raised : INT <= 2	Raised : INT 2 to 4	Raised : INT 4 to 6	Raised : INT > 6	TWLTL : INT <= 2	TWLTL : INT 2 to 4	TWLTL : INT 4 to 6	TWLTL : INT > 6	Raised : INT <= 2	Raised : INT 2 to 4	Raised : INT 4 to 6	Raised : INT > 6
0 to 5000	<= 5	7.25	3.96	1.90	0.99	1.38	1.12	0.91	0.74	8.00	3.95	2.15	1.13	1.59	1.29	1.05	0.86	8.83	4.65	2.40	1.22	1.83	1.49	1.21	0.98	9.85	5.09	2.76	1.40	2.09	1.71	1.40	1.13
	> 5 to <= 10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.54	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.46	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	3.71	1.93	1.00	0.52	1.37	1.11	0.91	0.74	4.16	2.17	1.14	0.59	1.57	1.28	1.05	0.85	4.74	2.46	1.28	0.67	1.82	1.48	1.20	0.98	5.32	2.78	1.44	0.75	2.09	1.71	1.38	1.13
	> 5 to <= 10	9.18	4.79	2.49	1.30	2.30	1.87	1.52	1.24	#N/A	5.39	2.84	1.46	2.64	2.15	1.76	1.43	#N/A	6.12	3.20	1.66	3.05	2.49	2.03	1.65	#N/A	6.92	3.60	1.87	3.51	2.87	2.34	1.90
	> 10 to <= 15	#N/A	#N/A	6.31	3.27	3.95	3.22	2.62	2.12	#N/A	#N/A	7.10	3.75	4.57	3.69	3.01	2.48	#N/A	#N/A	8.10	4.23	5.27	4.27	3.49	2.84	#N/A	#N/A	9.08	4.78	6.08	4.92	4.01	3.28
	> 15 to <= 20	#N/A	#N/A	#N/A	8.50	6.98	5.66	4.60	3.72	#N/A	#N/A	#N/A	9.67	8.08	6.51	5.32	4.33	#N/A	#N/A	#N/A	#N/A	9.22	7.51	6.10	4.97	#N/A	#N/A	#N/A	#N/A	#N/A	8.65	7.05	5.71
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.39	6.68	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.60	7.71	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.92	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
10000 to 15000	<= 5	3.12	1.63	0.85	0.45	1.40	1.14	0.93	0.76	3.53	1.84	0.96	0.50	1.62	1.32	1.07	0.87	3.99	2.08	1.09	0.56	1.86	1.52	1.24	1.01	4.52	2.36	1.23	0.64	2.15	1.75	1.43	1.16
	> 5 to <= 10	5.30	2.75	1.44	0.75	1.60	1.30	1.06	0.86	5.98	3.12	1.62	0.85	1.84	1.50	1.22	0.99	6.74	3.52	1.84	0.96	2.12	1.73	1.41	1.15	7.61	3.99	2.07	1.08	2.45	2.00	1.62	1.32
	> 10 to <= 15	8.95	4.69	2.45	1.27	1.83	1.49	1.22	0.99	#N/A	5.28	2.75	1.43	2.11	1.72	1.40	1.14	#N/A	5.99	3.13	1.62	2.44	1.98	1.62	1.31	#N/A	6.76	3.51	1.83	2.81	2.29	1.86	1.52
	> 15 to <= 20	#N/A	8.01	4.19	2.18	2.12	1.73	1.41	1.14	#N/A	8.99	4.72	2.47	2.44	1.98	1.62	1.32	#N/A	#N/A	5.33	2.78	2.80	2.29	1.87	1.52	#N/A	#N/A	6.04	3.15	3.24	2.65	2.15	1.75
	> 20	#N/A	#N/A	7.18	3.75	2.48	2.02	1.63	1.33	#N/A	#N/A	8.14	4.25	2.83	2.33	1.89	1.54	#N/A	#N/A	9.18	4.82	3.28	2.67	2.18	1.78	#N/A	#N/A	#N/A	5.40	3.78	3.10	2.50	2.04
15000 to 20000	<= 5	2.83	1.48	0.77	0.40	1.44	1.17	0.95	0.78	3.19	1.67	0.87	0.45	1.66	1.35	1.10	0.89	3.63	1.88	0.98	0.51	1.91	1.55	1.27	1.03	4.09	2.13	1.11	0.58	2.20	1.79	1.46	1.19
	> 5 to <= 10	3.73	1.95	1.01	0.53	1.27	1.04	0.84	0.69	4.20	2.21	1.15	0.60	1.47	1.20	0.97	0.79	4.78	2.49	1.29	0.68	1.69	1.38	1.12	0.91	5.40	2.80	1.46	0.76	1.95	1.59	1.29	1.05
	> 10 to <= 15	4.96	2.58	1.35	0.70	1.14	0.92	0.75	0.61	5.57	2.91	1.51	0.79	1.31	1.06	0.87	0.71	6.29	3.29	1.71	0.89	1.50	1.23	1.00	0.81	7.14	3.70	1.94	1.01	1.74	1.41	1.15	0.94
	> 15 to <= 20	6.60	3.43	1.78	0.93	1.01	0.83	0.67	0.55	7.41	3.87	2.01	1.05	1.16	0.95	0.77	0.63	8.40	4.37	2.28	1.19	1.35	1.09	0.89	0.72	9.49	4.93	2.58	1.34	1.55	1.26	1.03	0.84
	> 20	8.75	4.59	2.38	1.24	0.90	0.74	0.60	0.49	9.91	5.17	2.68	1.41	1.05	0.85	0.69	0.57	#N/A	5.83	3.05	1.58	1.21	0.98	0.80	0.65	#N/A	6.63	3.43	1.79	1.39	1.13	0.92	0.75
20000 to 25000	<= 5	2.64	1.38	0.72	0.37	1.47	1.20	0.97	0.79	2.98	1.55	0.81	0.42	1.69	1.38	1.12	0.91	3.37	1.75	0.91	0.48	1.95	1.59	1.30	1.05	3.79	1.98	1.03	0.54	2.25	1.83	1.49	1.22
	> 5 to <= 10	2.91	1.51	0.79	0.41	1.08	0.88	0.72	0.58	3.28	1.71	0.89	0.46	1.25	1.01	0.83	0.67	3.72	1.93	1.00	0.53	1.44	1.17	0.95	0.77	4.19	2.18	1.14	0.59	1.65	1.35	1.10	0.89
	> 10 to <= 15	3.20	1.66	0.87	0.46	0.80	0.65	0.53	0.43	3.62	1.88	0.98	0.51	0.92	0.75	0.61	0.50	4.10	2.13	1.11	0.58	1.06	0.86	0.70	0.57	4.63	2.40	1.26	0.65	1.22	0.99	0.81	0.66
	> 15 to <= 20	3.54	1.84	0.96	0.50	0.59	0.48	0.39	0.32	3.99	2.08	1.09	0.57	0.68	0.56	0.45	0.37	4.53	2.33	1.22	0.64	0.78	0.64	0.52	0.42	5.11	2.65	1.39	0.72	0.90	0.74	0.60	0.49
	> 20	3.91	2.04	1.06	0.55	0.44	0.36	0.29	0.24	4.42	2.30	1.20	0.63	0.50	0.41	0.33	0.27	4.99	2.60	1.35	0.70	0.58	0.47	0.38	0.31	5.65	2.94	1.52	0.79	0.67	0.55	0.44	0.36
25000 to 30000	<= 5	2.49	1.30	0.68	0.35	1.50	1.22	0.99	0.81	2.82	1.47	0.77	0.40	1.72	1.40	1.15	0.93	3.19	1.66	0.86	0.45	1.99	1.62	1.32	1.07	3.61	1.87	0.98	0.51	2.29	1.86	1.52	1.24
	> 5 to <= 10	2.38	1.24	0.64	0.34	0.95	0.77	0.63	0.51	2.68	1.40	0.73	0.38	1.10	0.89	0.73	0.59	3.04	1.58	0.83	0.43	1.26	1.03	0.84	0.68	3.43	1.78	0.93	0.48	1.46	1.18	0.96	0.79
	> 10 to <= 15	2.27	1.18	0.62	0.32	0.61	0.49	0.40	0.33	2.57	1.33	0.70	0.36	0.70	0.57	0.46	0.37	2.89	1.51	0.78	0.41	0.80	0.65	0.53	0.43	3.26	1.70	0.89	0.46	0.92	0.75	0.61	0.50
	> 15 to <= 20	2.17	1.12	0.59	0.31	0.38	0.31	0.25	0.21	2.44	1.28	0.66	0.35	0.44	0.36	0.29	0.24	2.77	1.44	0.75	0.39	0.51	0.42	0.34	0.28	3.11	1.62	0.85	0.44	0.59	0.48	0.39	0.32
	> 20	2.08	1.08	0.56	0.29	0.25	0.20	0.16	0.13	2.32	1.22	0.64	0.33	0.28	0.23	0.19	0.15	2.64	1.38	0.72	0.37	0.33	0.27	0.22	0.18	2.99	1.56	0.81	0.42	0.38	0.31	0.25	0.20
30000 to 35000	<= 5	2.39	1.24	0.65	0.34	1.52	1.24	1.01	0.82	2.71	1.41	0.73	0.38	1.76	1.43	1.16	0.95	3.05	1.59	0.83	0.43	2.03	1.65	1.34	1.10	3.44	1.79	0.94	0.49	2.33	1.90	1.54	1.26
	> 5 to <= 10	2.02	1.05	0.55	0.28	0.85	0.69	0.57	0.46	2.28	1.18	0.62	0.32	0.98	0.80	0.65	0.53	2.57	1.34	0.70	0.36	1.13	0.92	0.75	0.61	2.91	1.51	0.79	0.41	1.31	1.06	0.87	0.71
	> 10 to <= 15	1.70	0.89	0.47	0.24	0.48	0.39	0.32	0.26	1.93	1.00	0.52	0.27	0.56	0.45	0.37	0.30	2.19	1.13	0.59	0.31	0.64	0.52	0.42	0.34	2.45	1.28	0.67	0.35	0.73	0.60	0.49	0.40
	> 15 to <= 20	1.44	0.75	0.39	0.20	0.27	0.22	0.18	0.15	1.63	0.85	0.44	0.23	0.31	0.25	0.21	0.17	1.84	0.96	0.50	0.26	0.36	0.29	0.24	0.19	2.07	1.08	0.57	0.29	0.41	0.34	0.27	0.22
	> 20	1.22	0.64	0.33	0.17	0.15	0.12	0.10	0.08	1.38	0.72	0.37	0.19	0.18	0.14	0.12	0.09	1.56	0.81	0.42	0.22	0.20	0.16	0.13	0.11	1.76	0.92	0.48	0.25	0.23	0.19	0.15	0.13
35000 to 40000	<= 5	2.30	1.20	0.62	0.33	1.55	1.26	1.02	0.83	2.60	1.36	0.71	0.37	1.78	1.45	1.18	0.96	2.94	1.53	0.80	0.42	2.06	1.67	1.36	1.11	3.33	1.73	0.90	0.47	2.37	1.93	1.57	1.28
	> 5 to <= 10	1.75	0.91	0.48	0.25	0.78	0.64	0.52	0.42	1.98	1.03	0.54	0.28	0.90	0.74	0.60	0.49	2.23	1.17	0.61	0.32	1.03	0.85	0.69	0.56	2.52	1.32	0.69	0.36	1.20	0.97	0.79	0.64
	> 10 to <= 15	1.33	0.70	0.36	0.19	0.39	0.32	0.26	0.21	1.51	0.79	0.41	0.21	0.46	0.37	0.30	0.25	1.70	0.89	0.46	0.24	0.52	0.43	0.35	0.28	1.92	1.00	0.52	0.27	0.60	0.49	0.40	0.33
	> 15 to <= 20	1.02	0.53	0.28	0.14	0.20	0.16	0.13	0.11	1.15	0.60	0.31	0.16	0.23	0.19	0.15	0.12	1.31	0.68	0.35	0.18	0.27	0.22	0.18	0.14	1.47	0.77	0.40	0.21	0.31	0.25	0.20	0.16
	> 20	0.78	0.41	0.21	0.11	0.10	0.08	0.07	0.05	0.88	0.46	0.24	0.12	0.12	0.09	0.08	0.06	0.99	0.52	0.27	0.14	0.13	0.11	0.09	0.07	1.12	0.59	0.30	0.16	0.15	0.13	0.10	0.08
>40000	<= 5	2.24	1.16	0.61	0.32	1.57	1.28	1.04	0.85	2.53	1.31	0.68	0.36	1.82	1.47	1.19	0.98	2.85	1.48	0.77	0.40	2.09	1.69	1.38	1.13	3.22	1.67	0.87	0.45	2.41	1.96	1.59	1.29
	> 5 to <= 10	1.55	0.81	0.42	0.22	0.72	0.59	0.48	0.39	1.76	0.91	0.48	0.25	0.84	0.68	0.55	0.45	1.98	1.03	0.54	0.28	0.96	0.78	0.64	0.52	2.24	1.17	0.61	0.32	1.11	0.90	0.73	0.60
	> 10 to <= 15	1.08	0.56	0.29	0.15	0.33	0.27	0.22	0.18	1.22	0.64	0.33	0.17	0.38	0.31	0.26	0.21	1.38	0.72	0.38	0.20	0.44	0.36	0.29	0.24	1.56	0.81	0.42	0.22	0.51	0.41	0.34	0.27
	> 15 to <= 20	0.75	0.39	0.20	0.11	0.15	0.13	0.10	0.08	0.85	0.44	0.23	0.12	0.18	0.14	0.12	0.10	0.96	0.50	0.26	0.14	0.20	0.17	0.14	0.11	1.09	0.57	0.30	0.15	0.24	0.19	0.16	0.13
	> 20	0.53	0.27	0.14	0.07	0.07	0.06	0.05	0.04	0.60	0.31	0.16	0.08	0.08	0.07	0.05	0.04	0.67	0.35	0.18	0.09	0.09	0.08	0.06	0.05	0.76	0.40	0.21	0.11	0.11	0.09	0.07	0.06

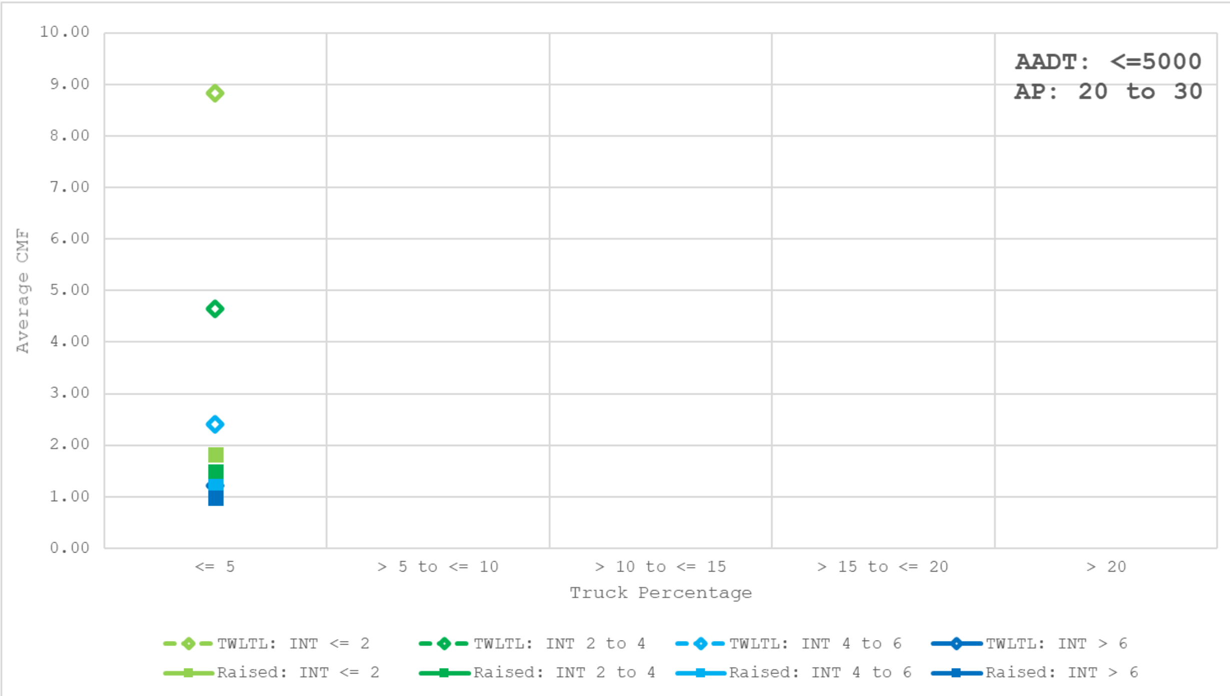
B-1-2 Suburban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: <= 10)



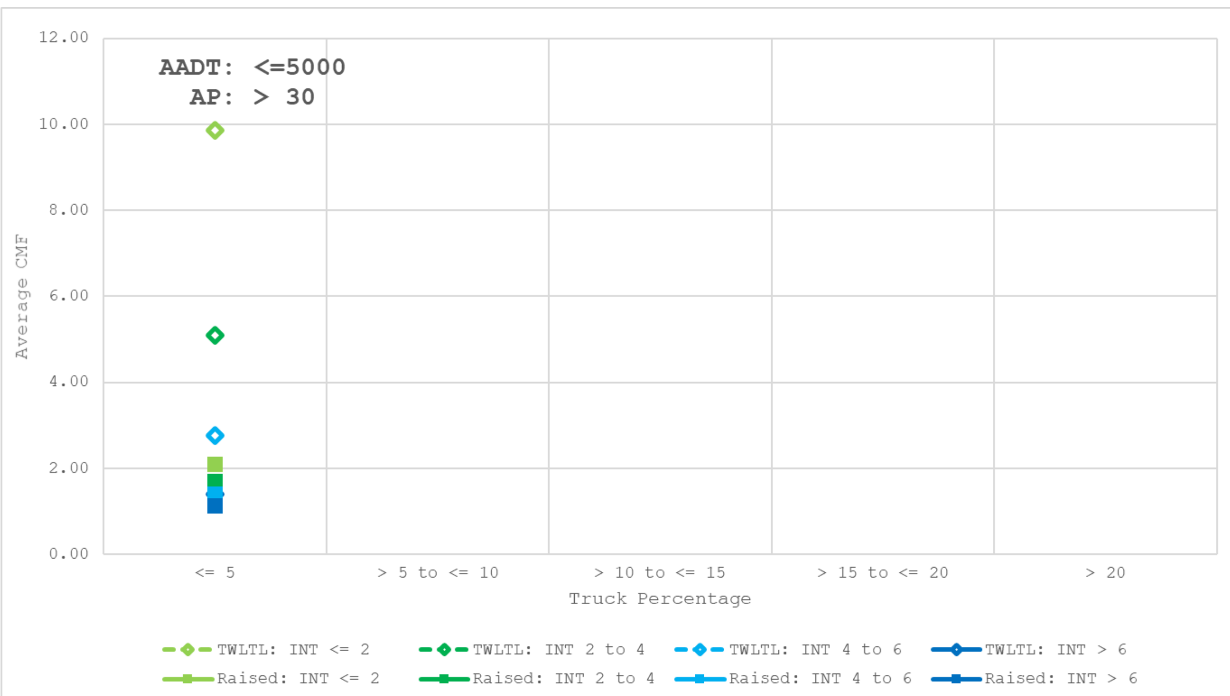
B-1-3 Suburban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: 10-20)



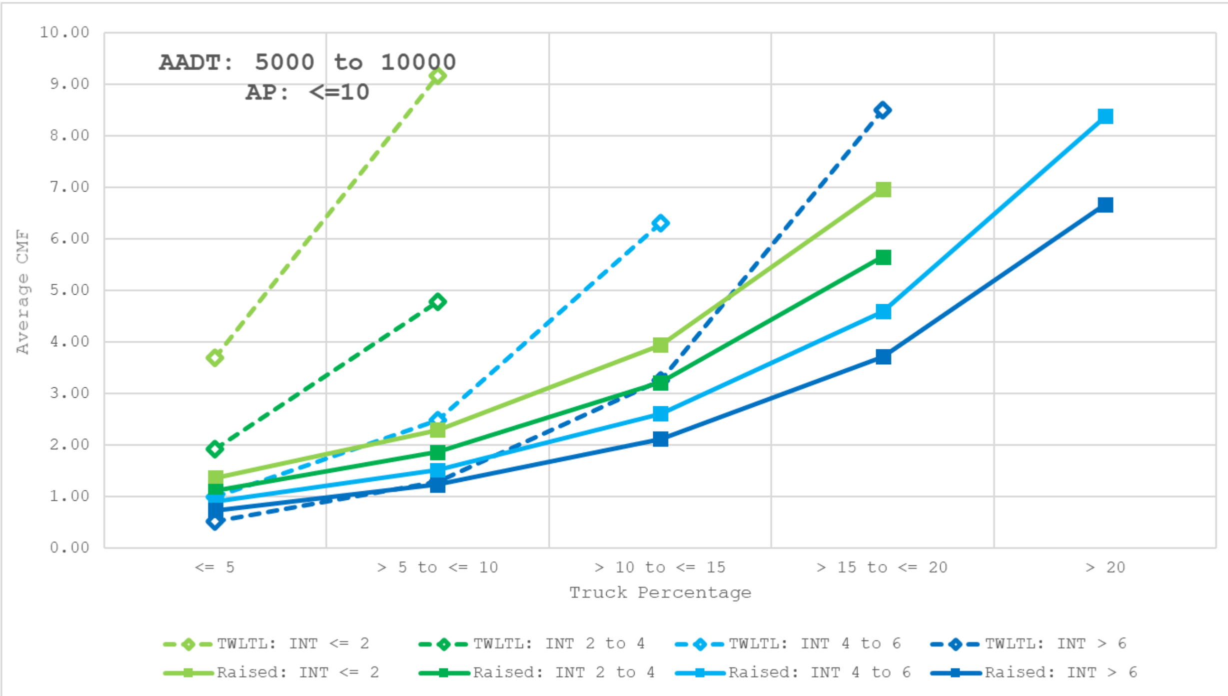
B-1-4 Suburban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: 20-30)



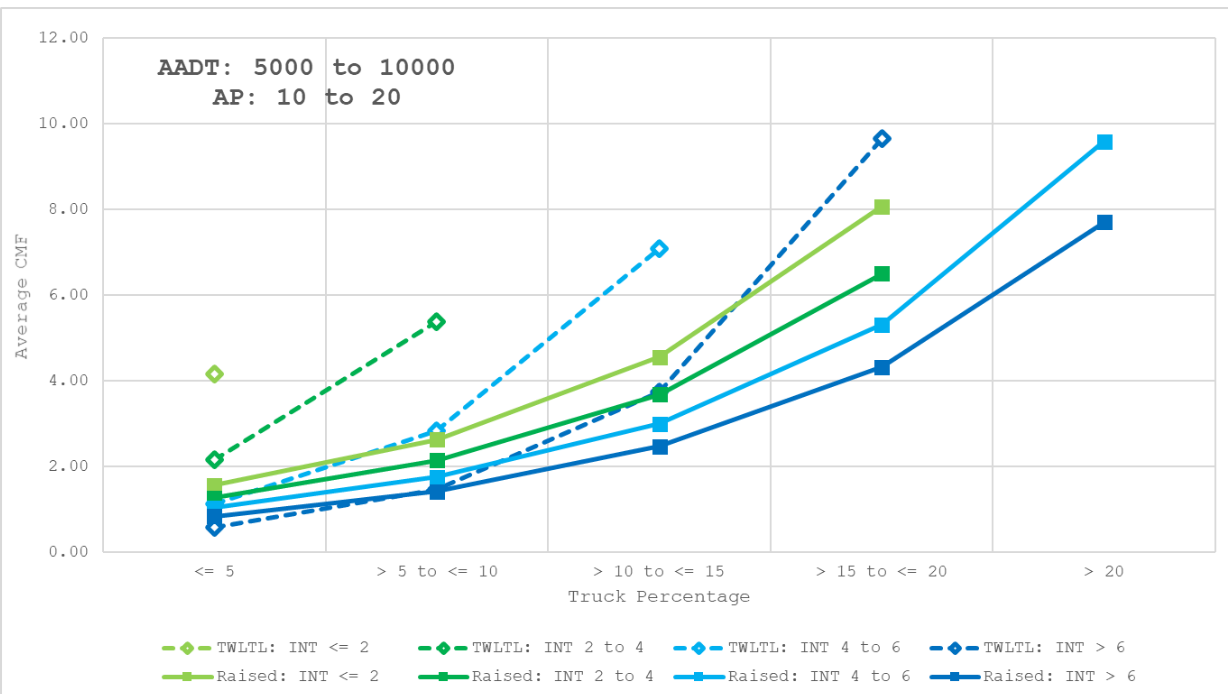
B-1-5 Suburban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: > 30)



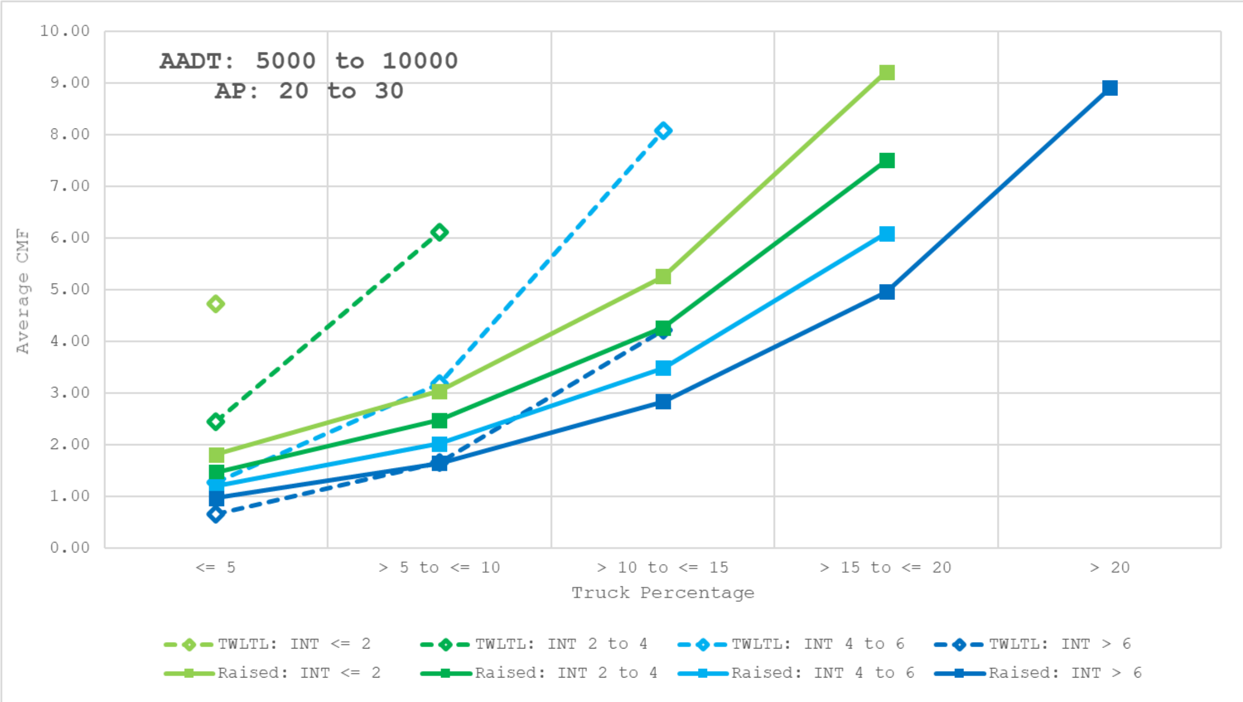
B-1-6 Suburban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



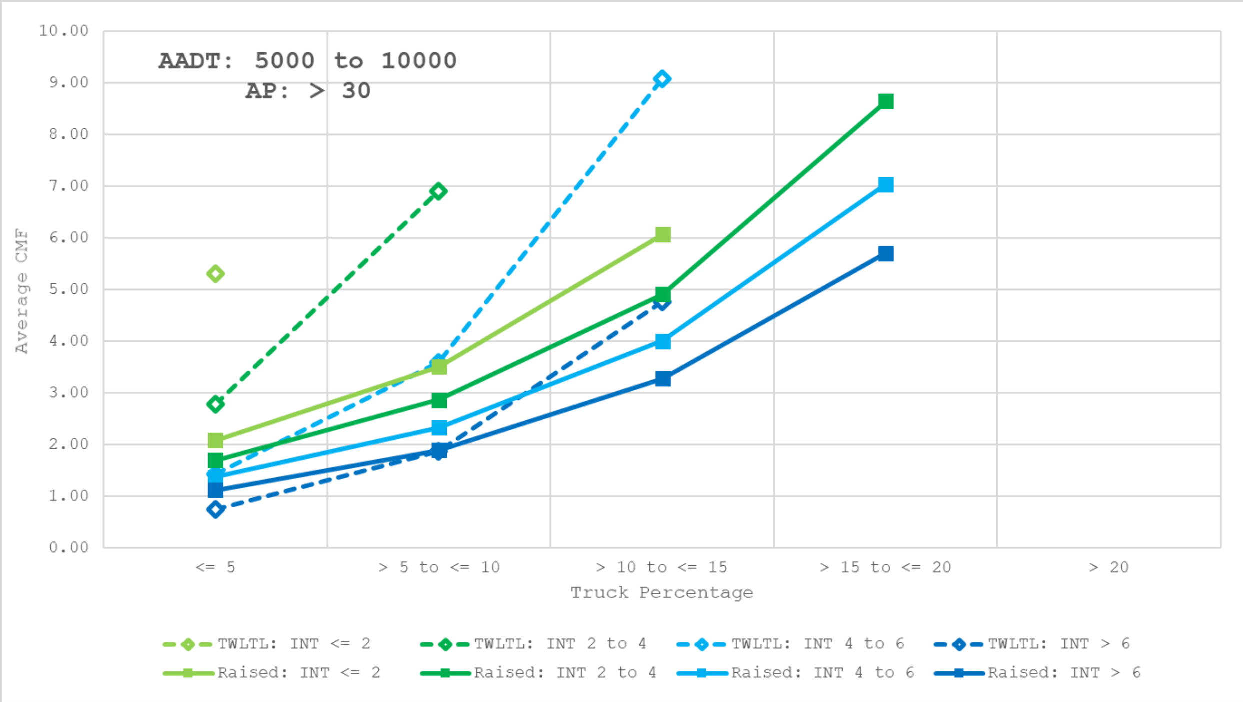
B-1-7 Suburban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



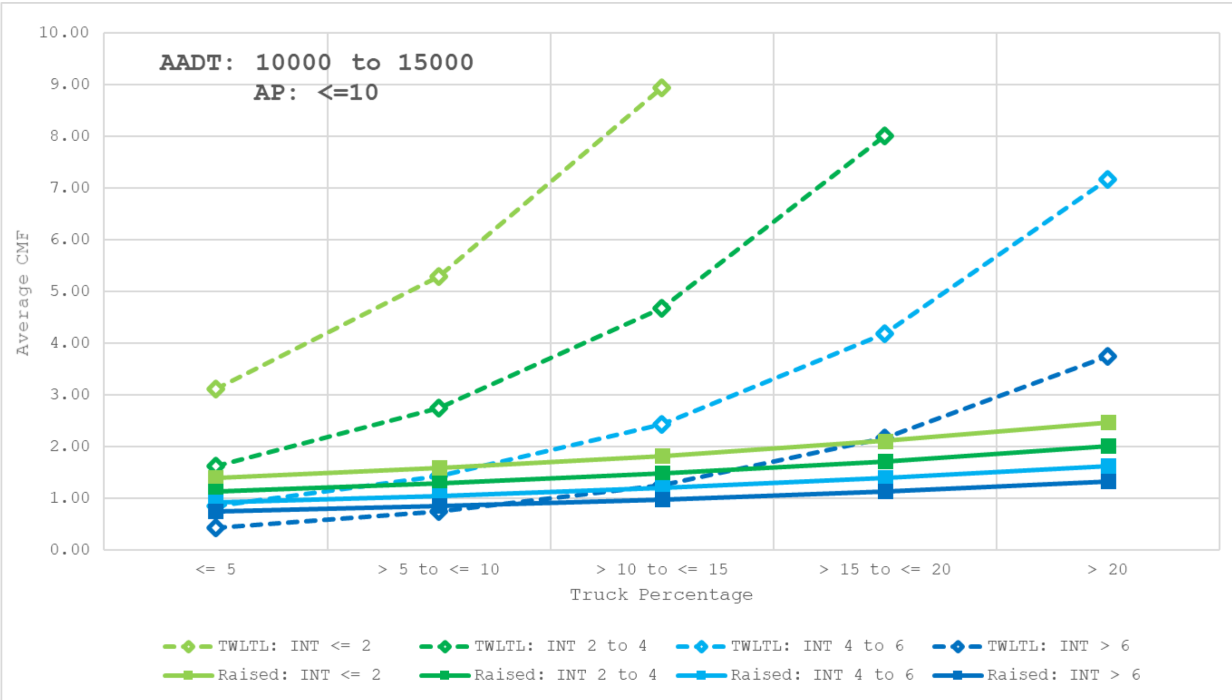
B-1-8 Suburban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



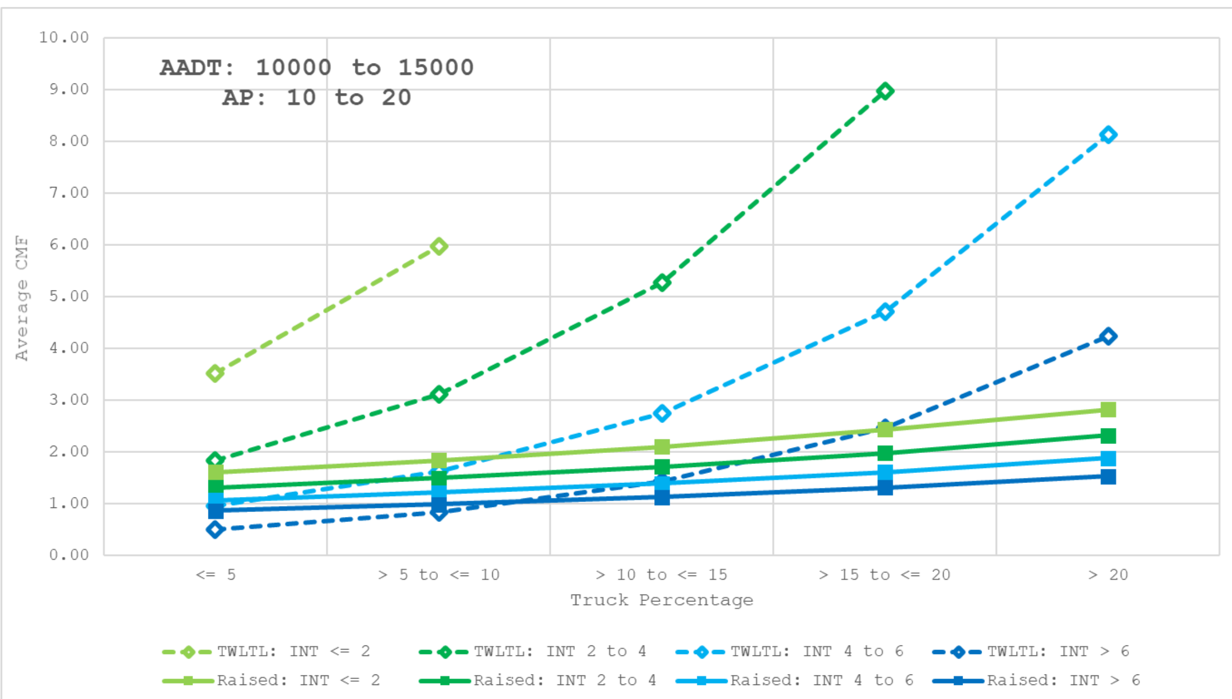
B-1-9 Suburban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



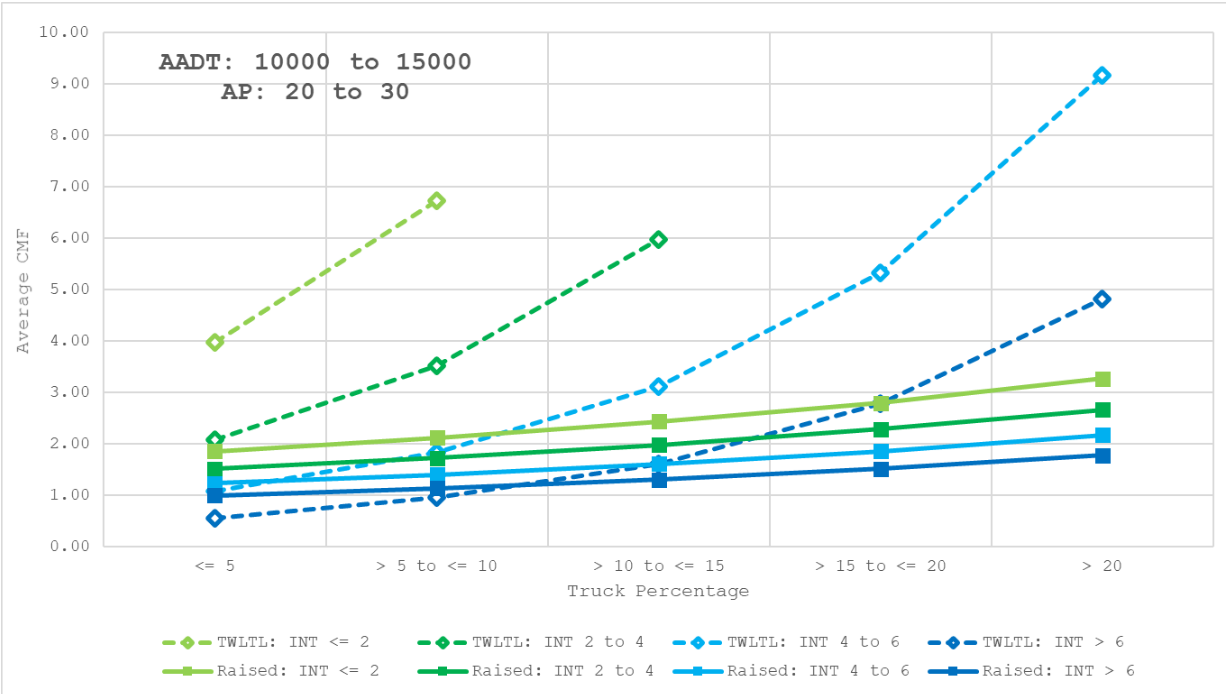
B-1-10 Suburban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



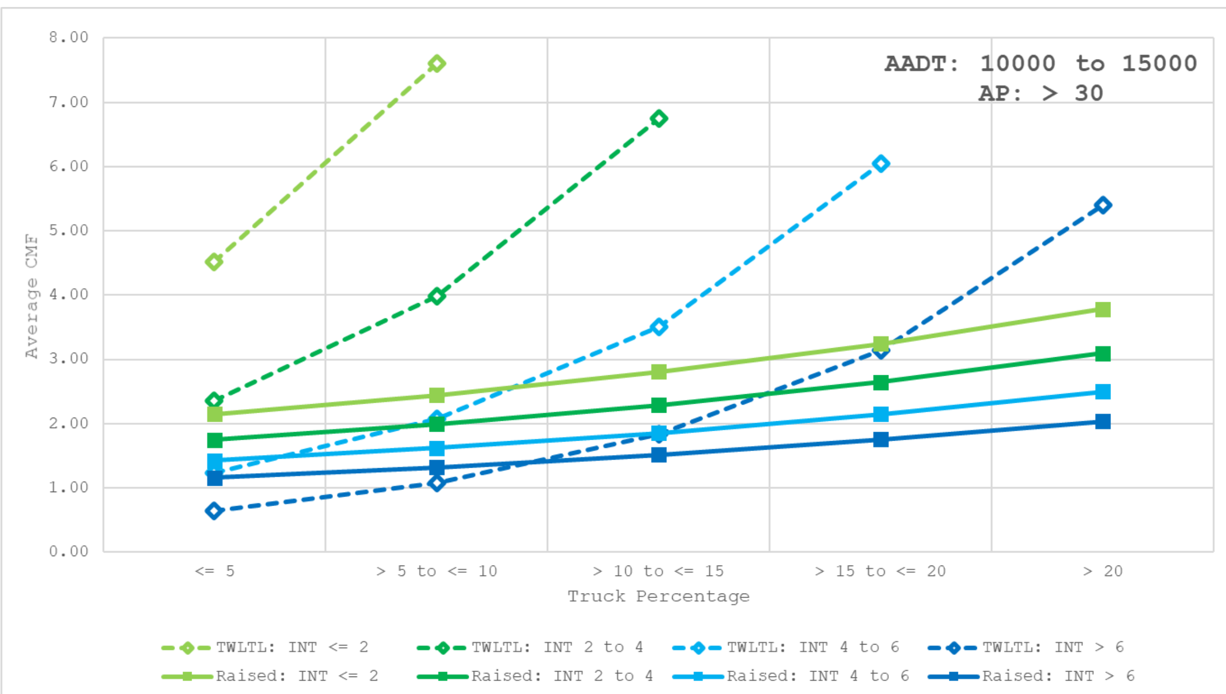
B-1-11 Suburban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



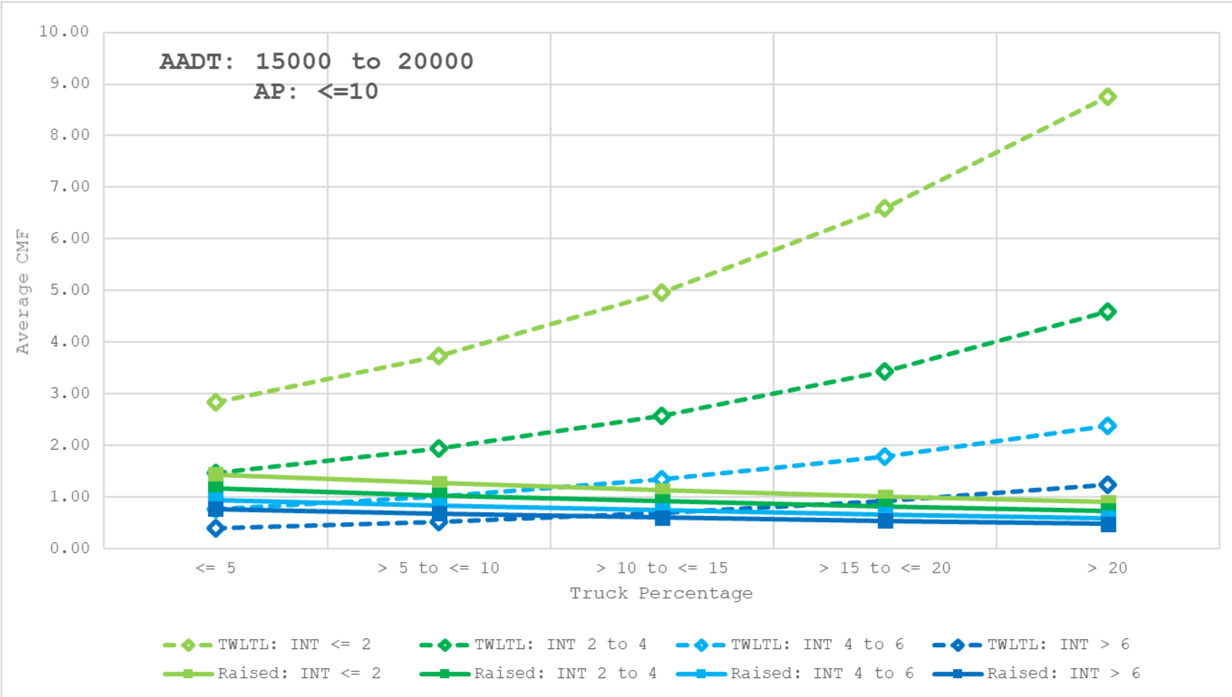
B-1-12 Suburban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



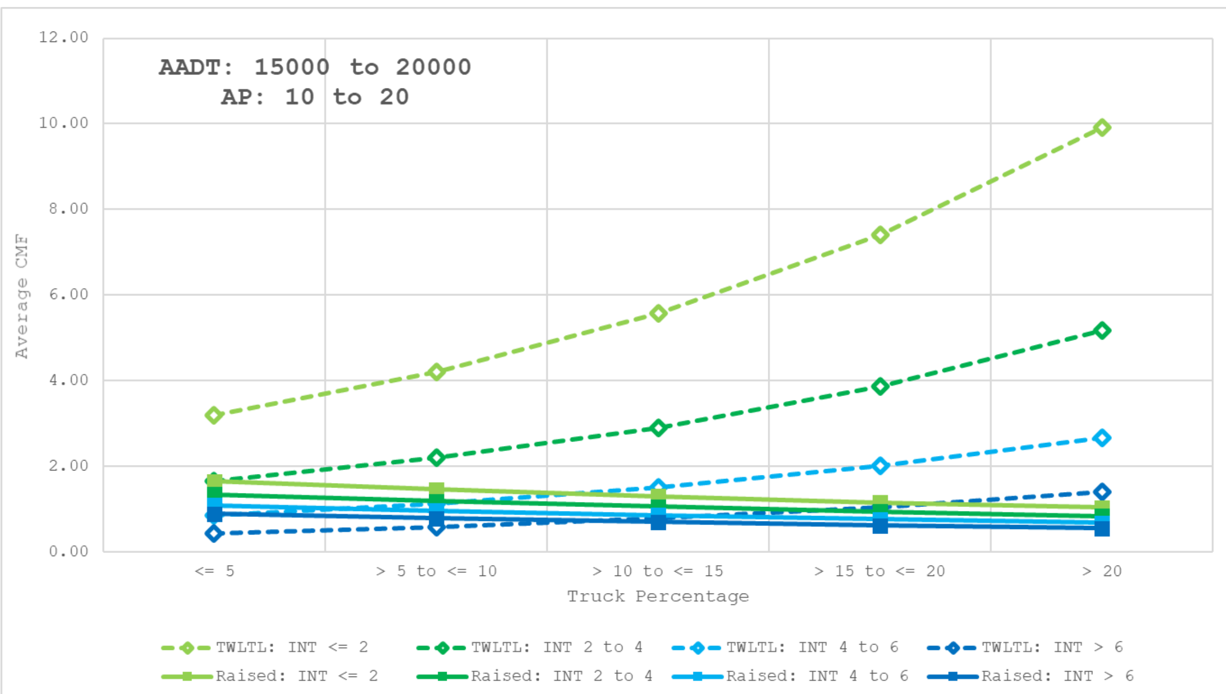
B-1-13 Suburban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



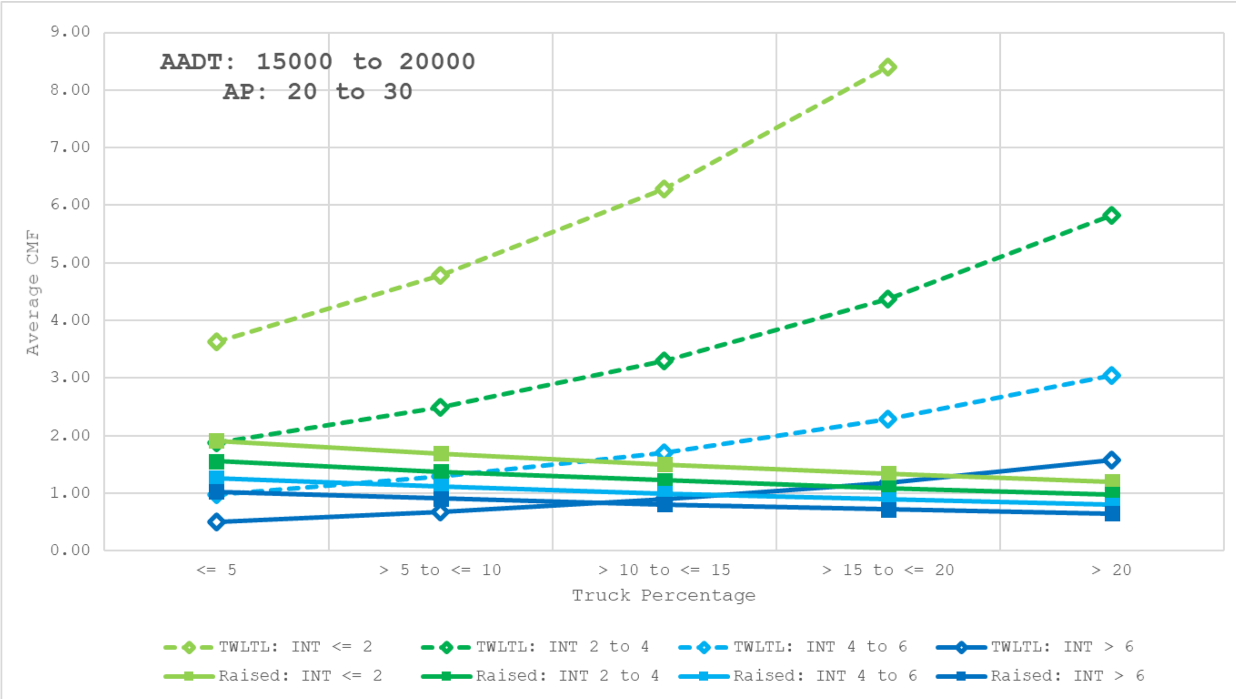
B-1-14 Suburban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



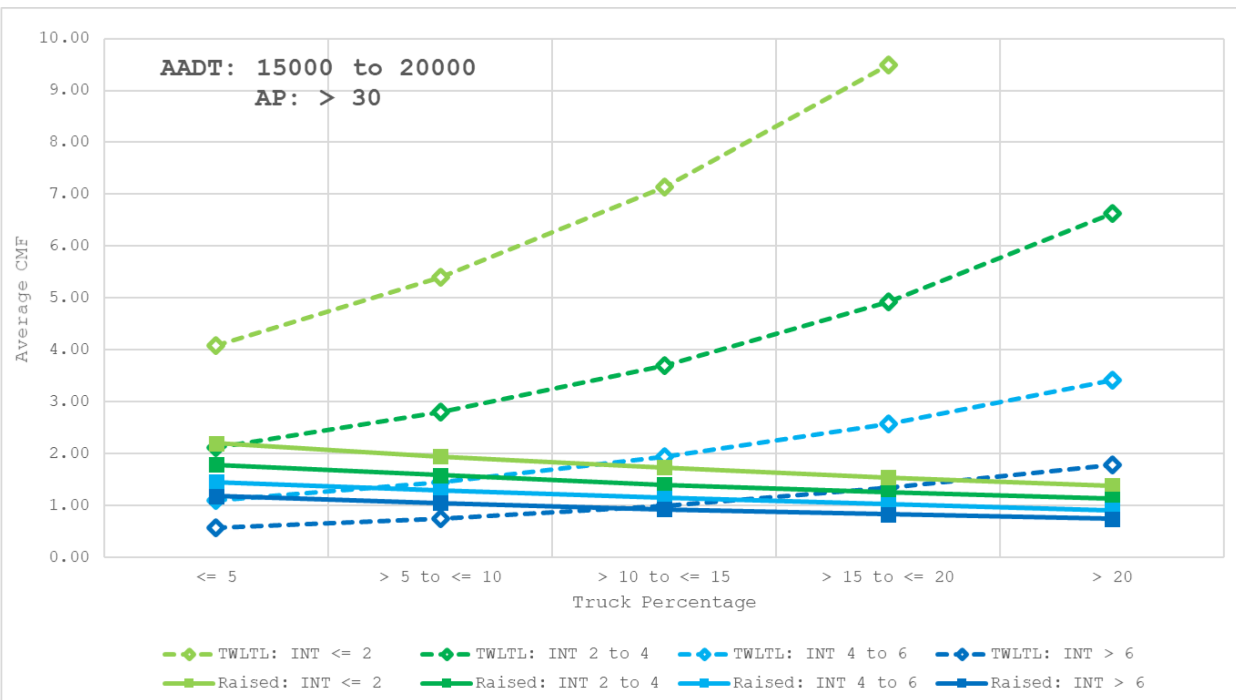
B-1-15 Suburban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



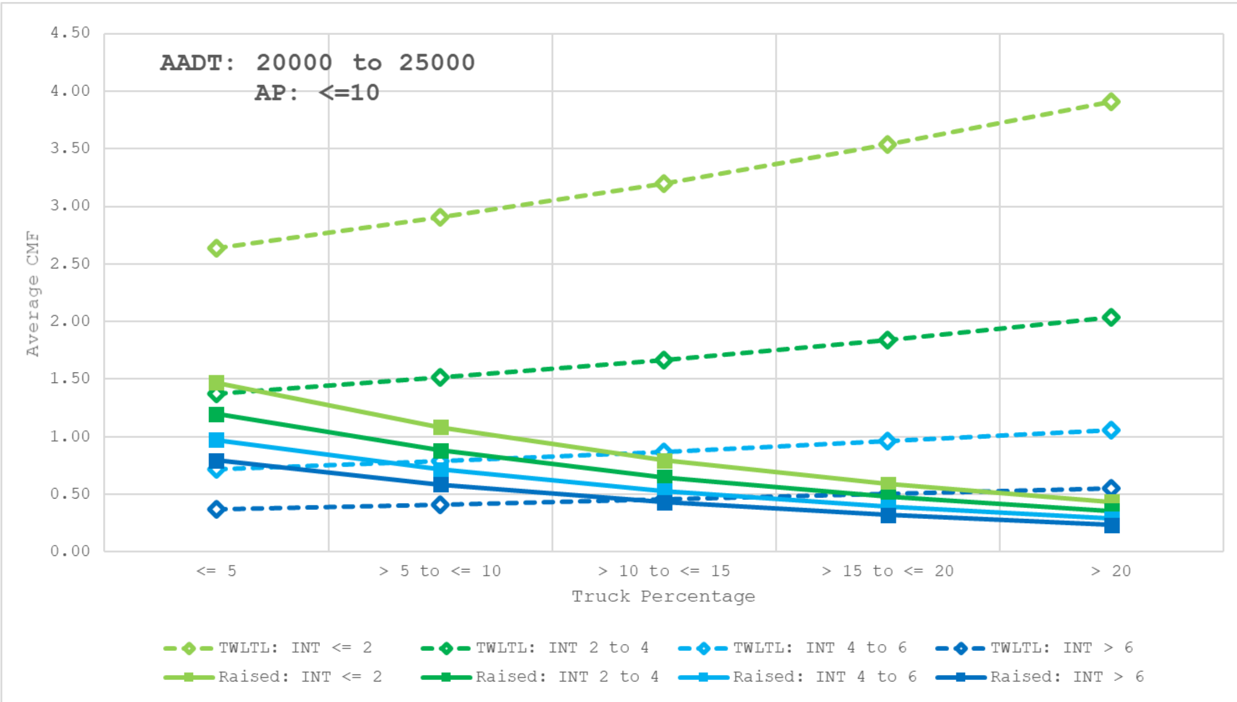
B-1-16 Suburban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



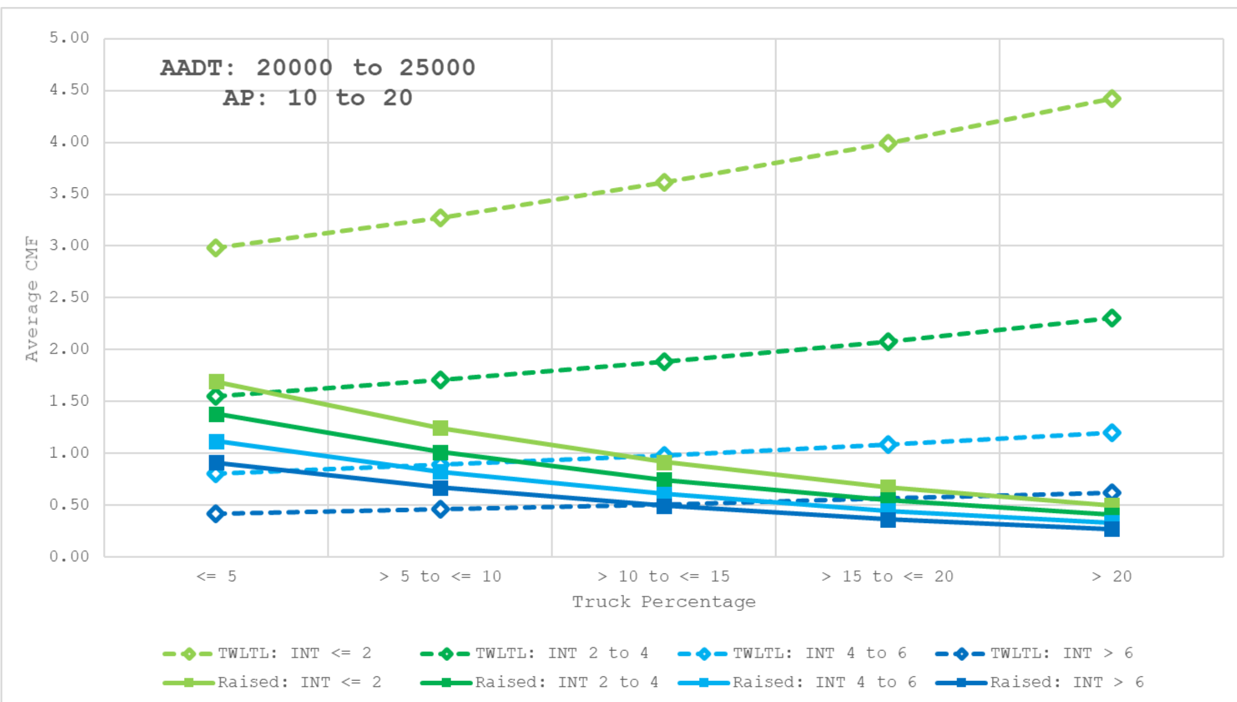
B-1-17 Suburban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



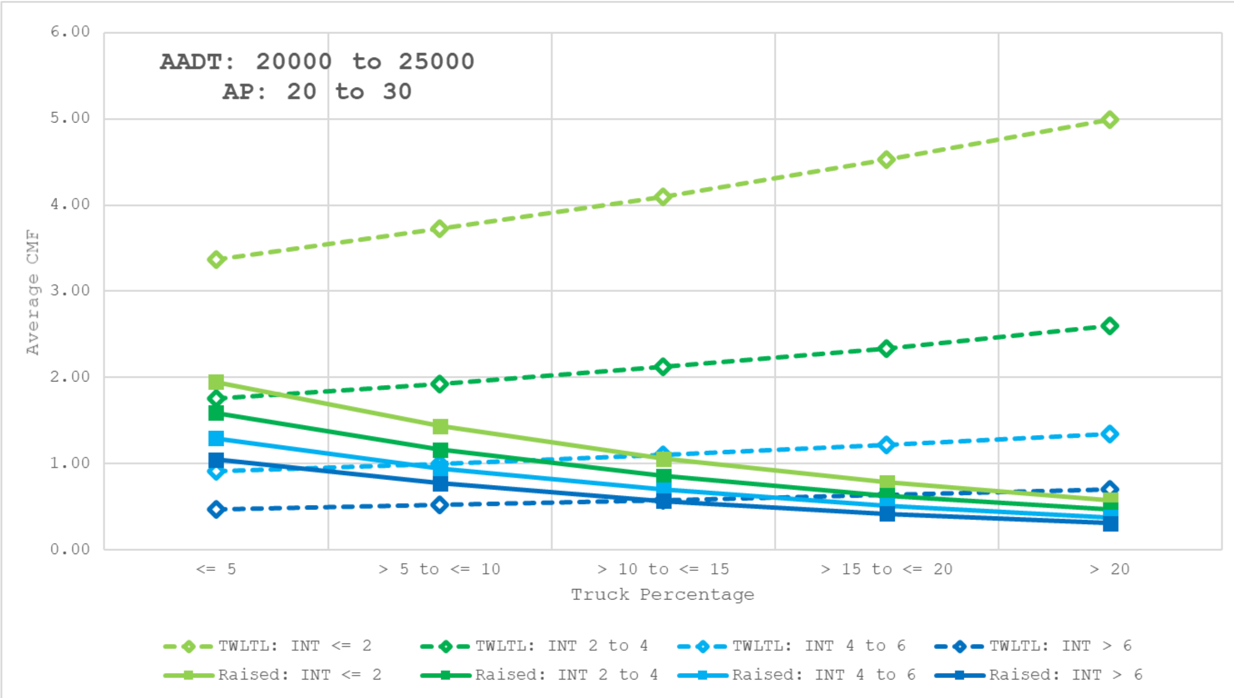
B-1-18 Suburban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



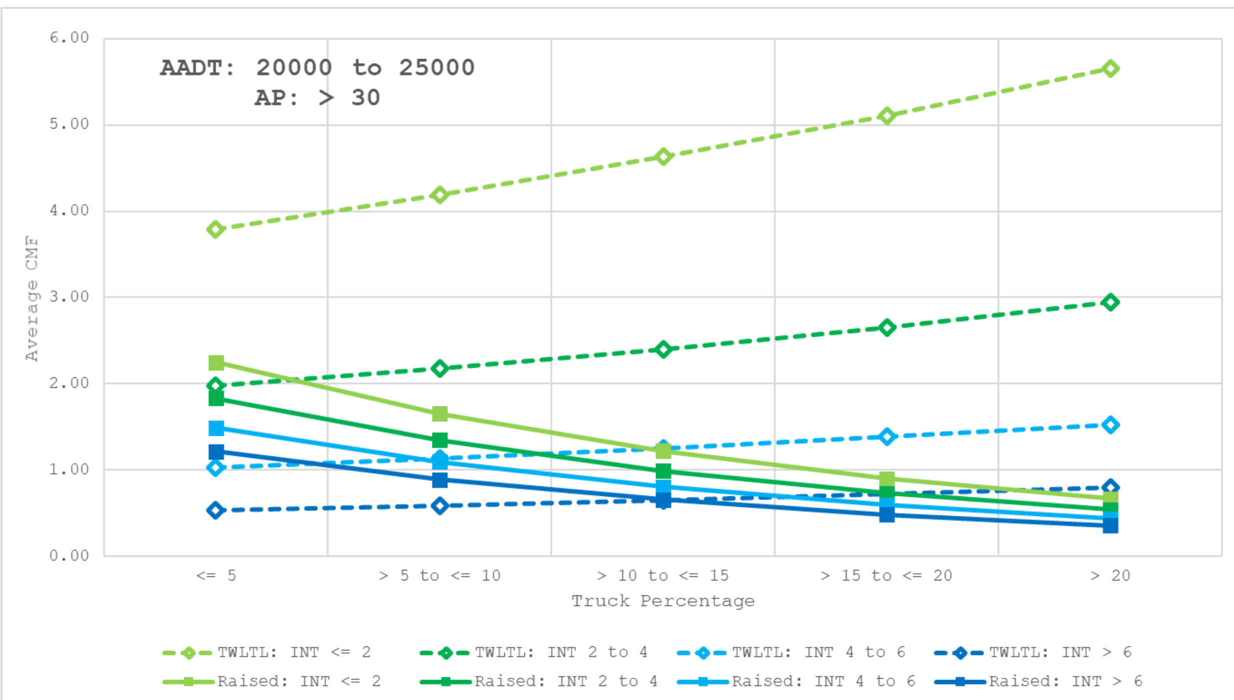
B-1-19 Suburban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



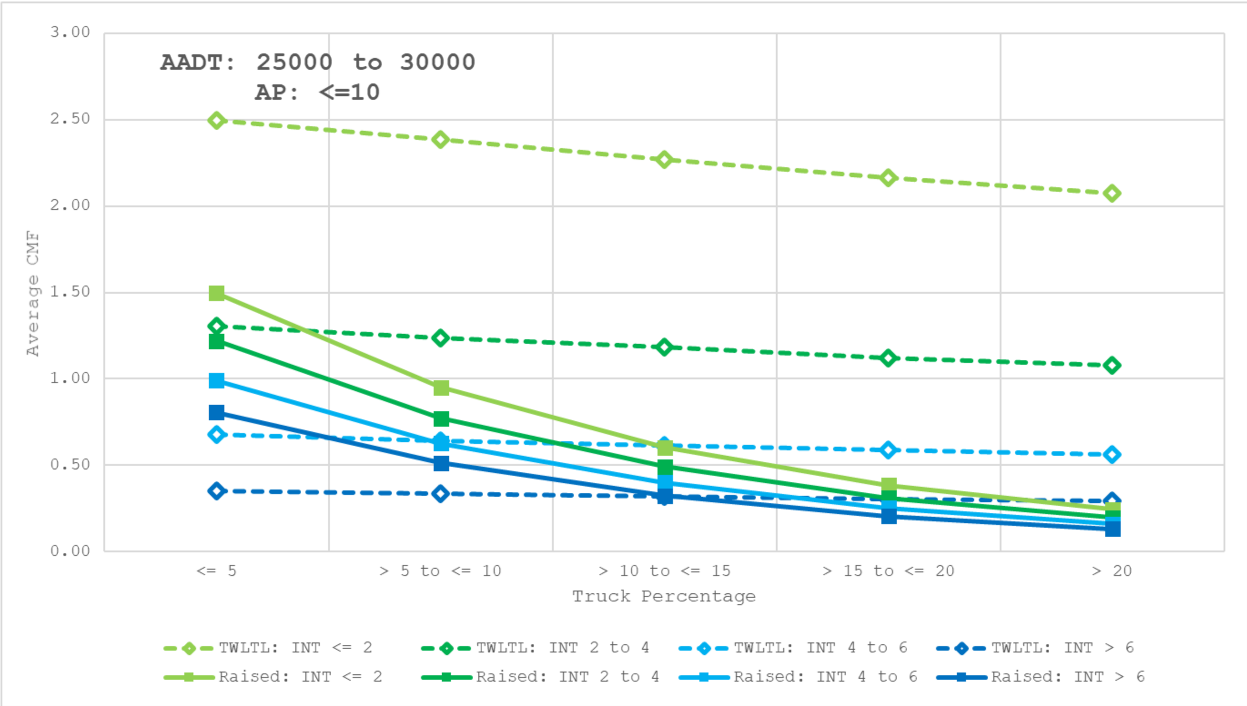
B-1-20 Suburban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



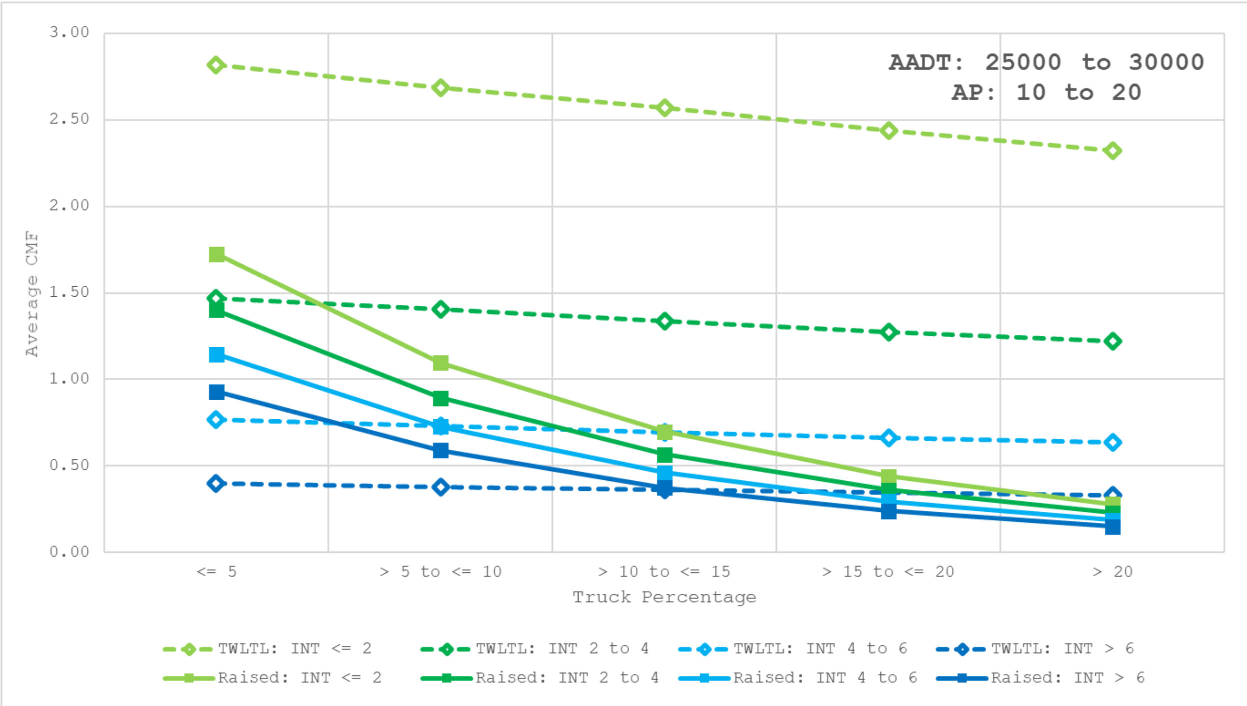
B-1-21 Suburban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



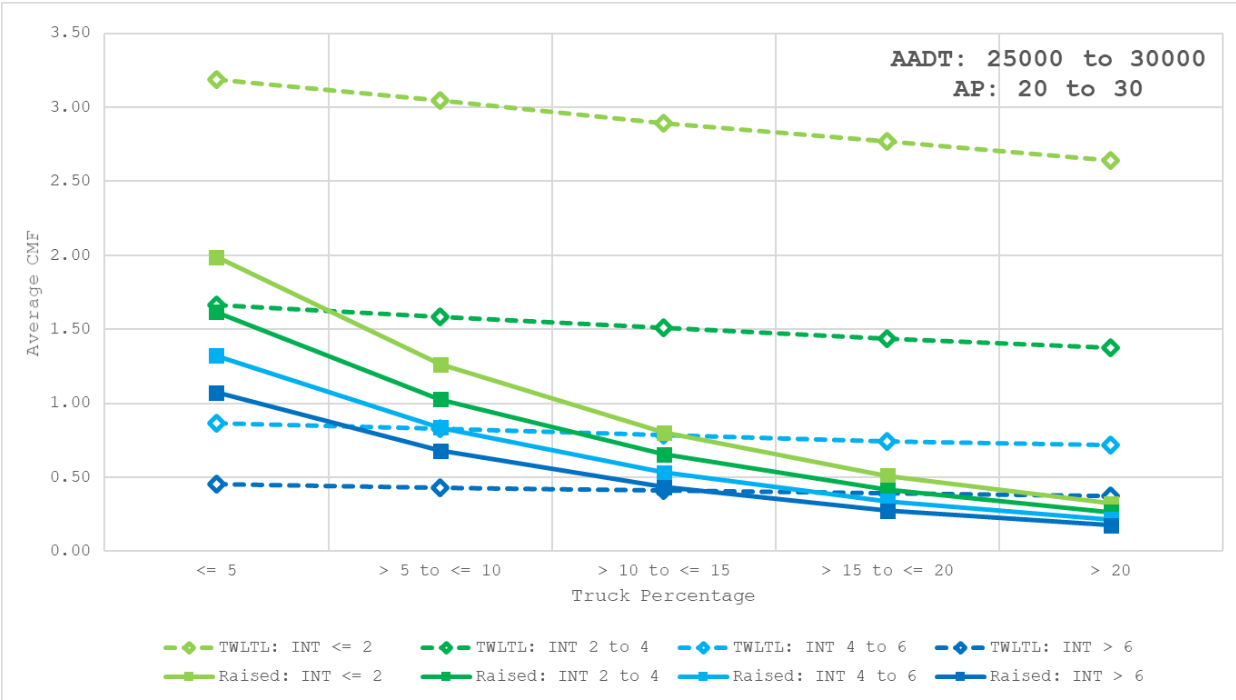
B-1-22 Suburban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



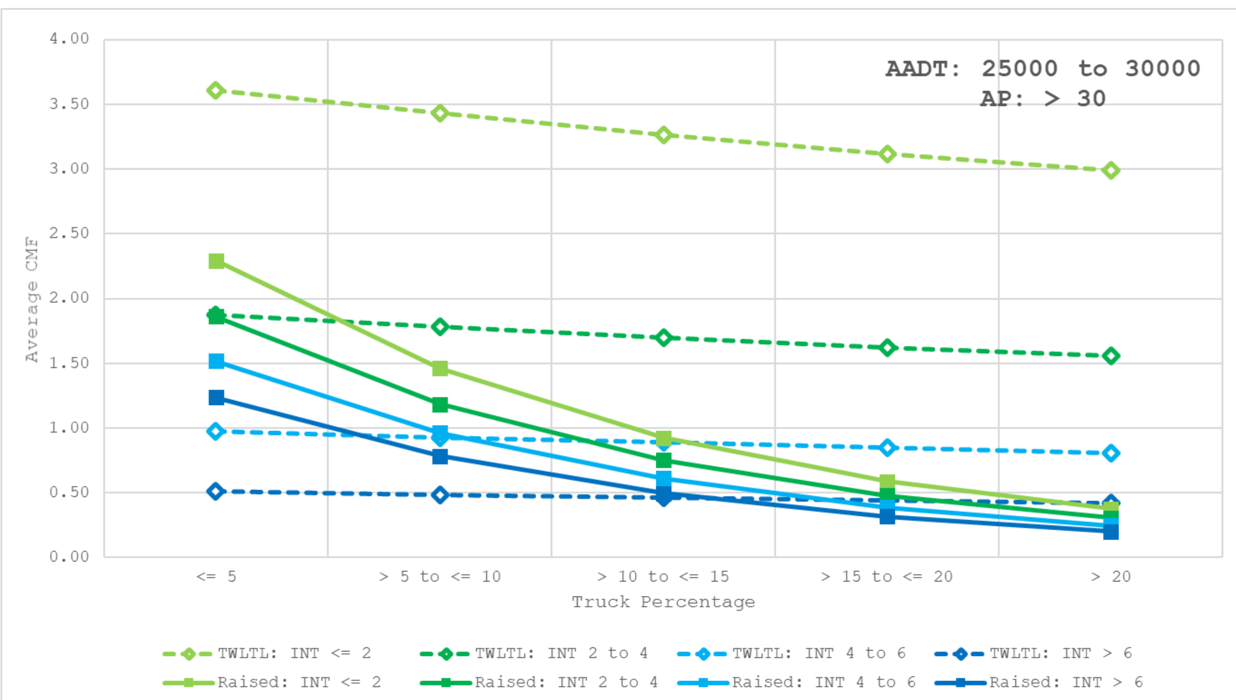
B-1-23 Suburban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



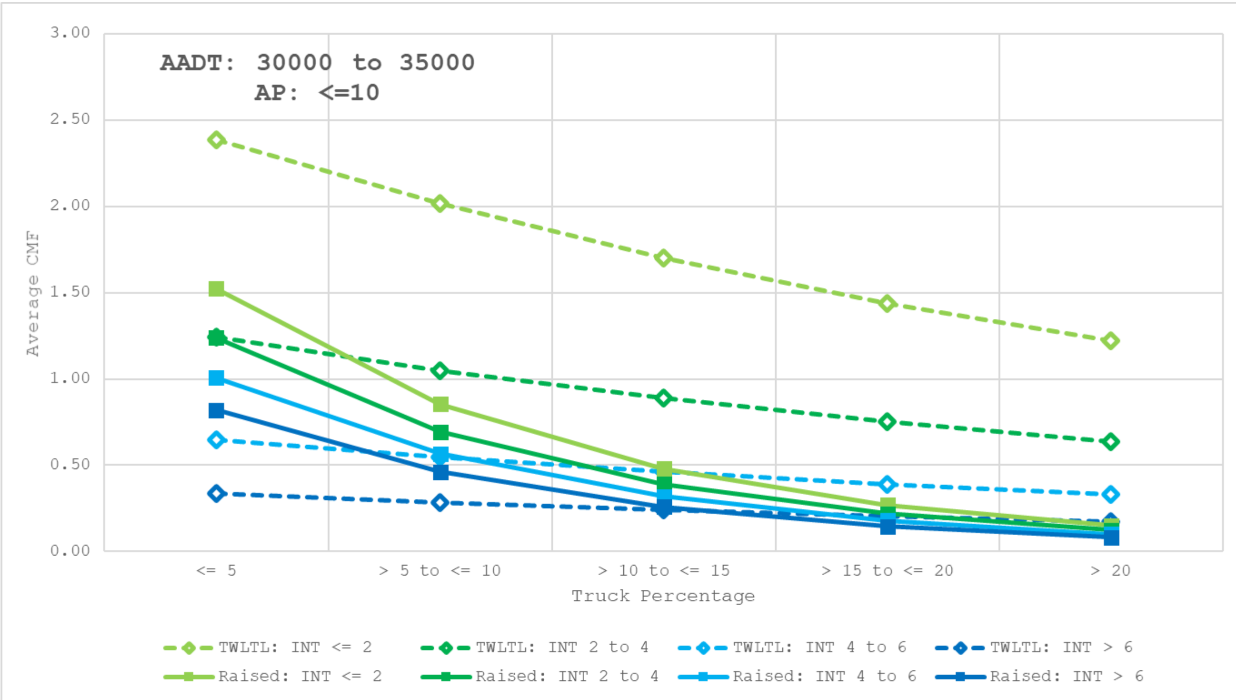
B-1-24 Suburban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



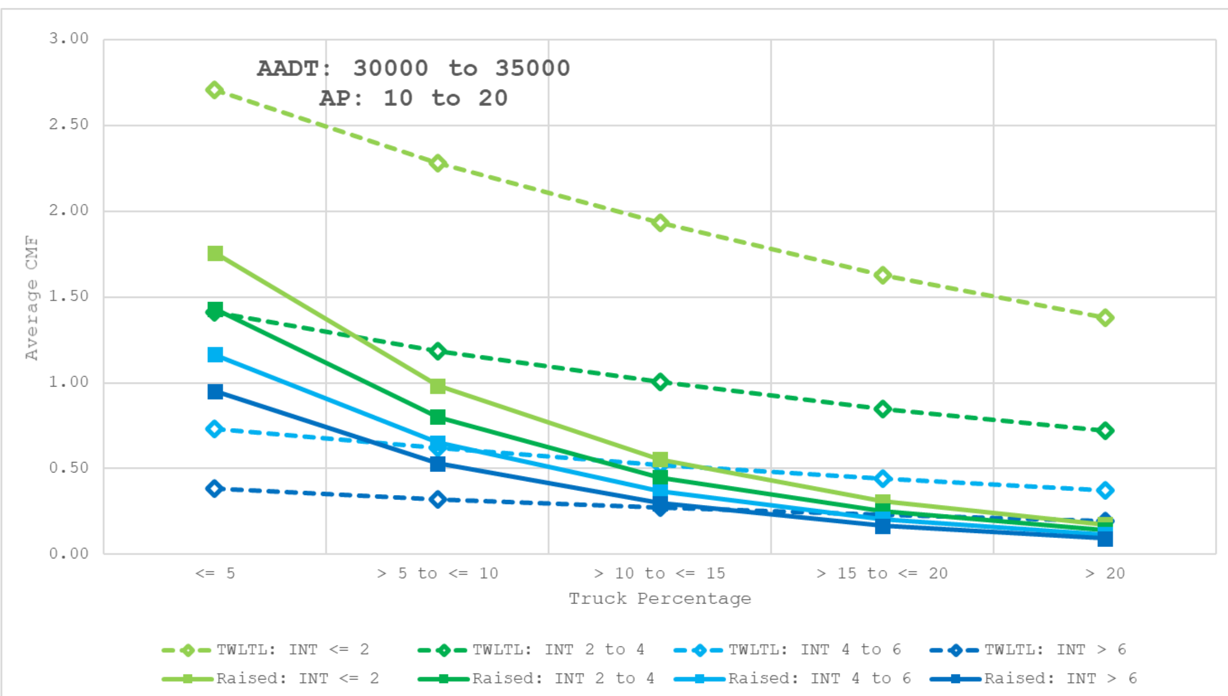
B-1-25 Suburban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



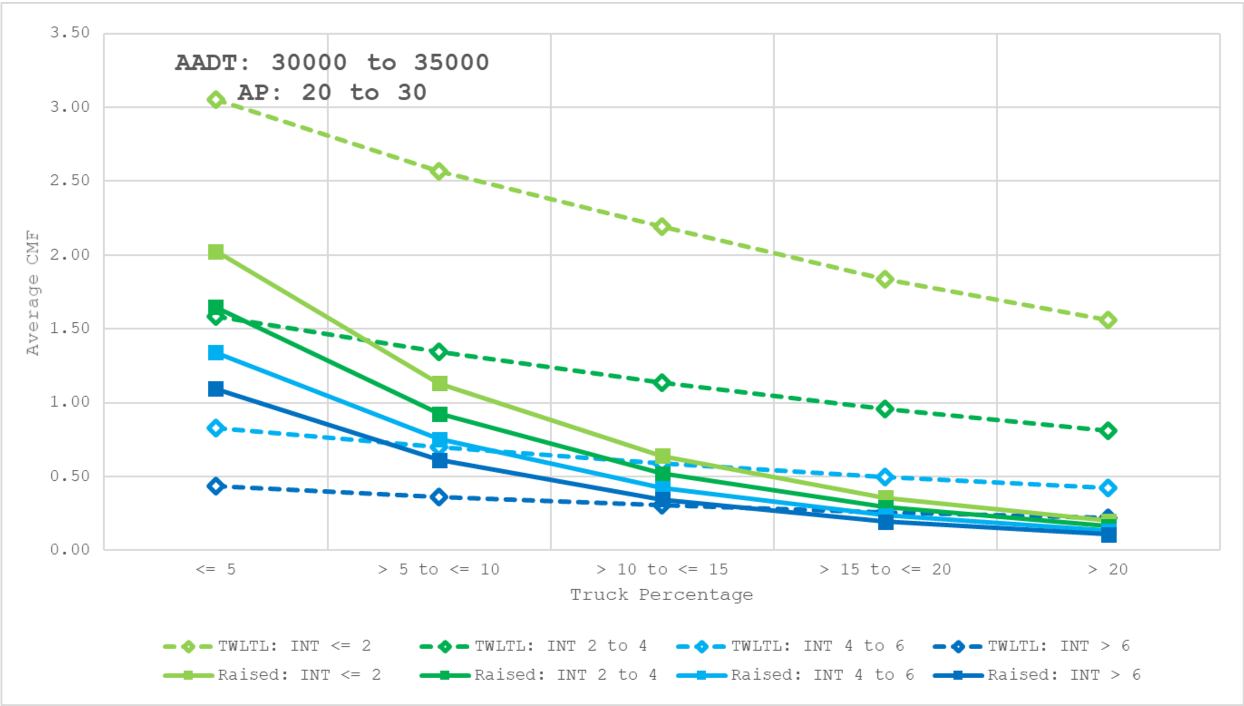
B-1-26 Suburban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



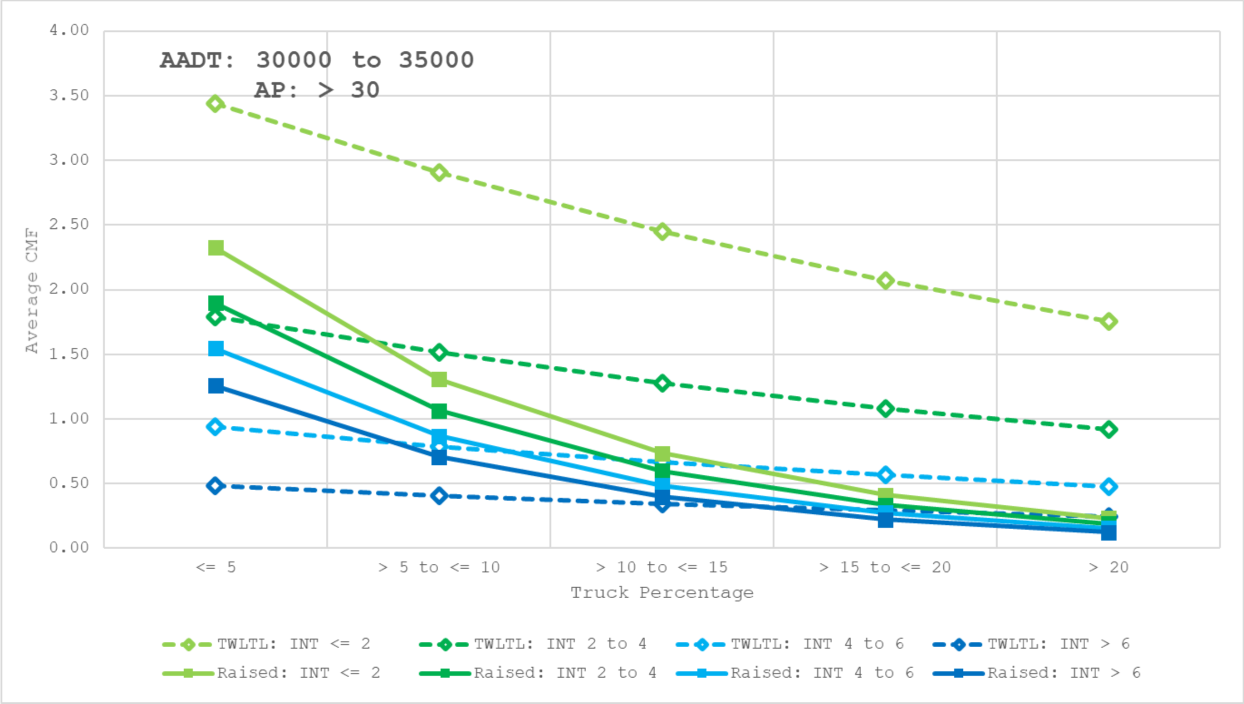
B-1-27 Suburban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



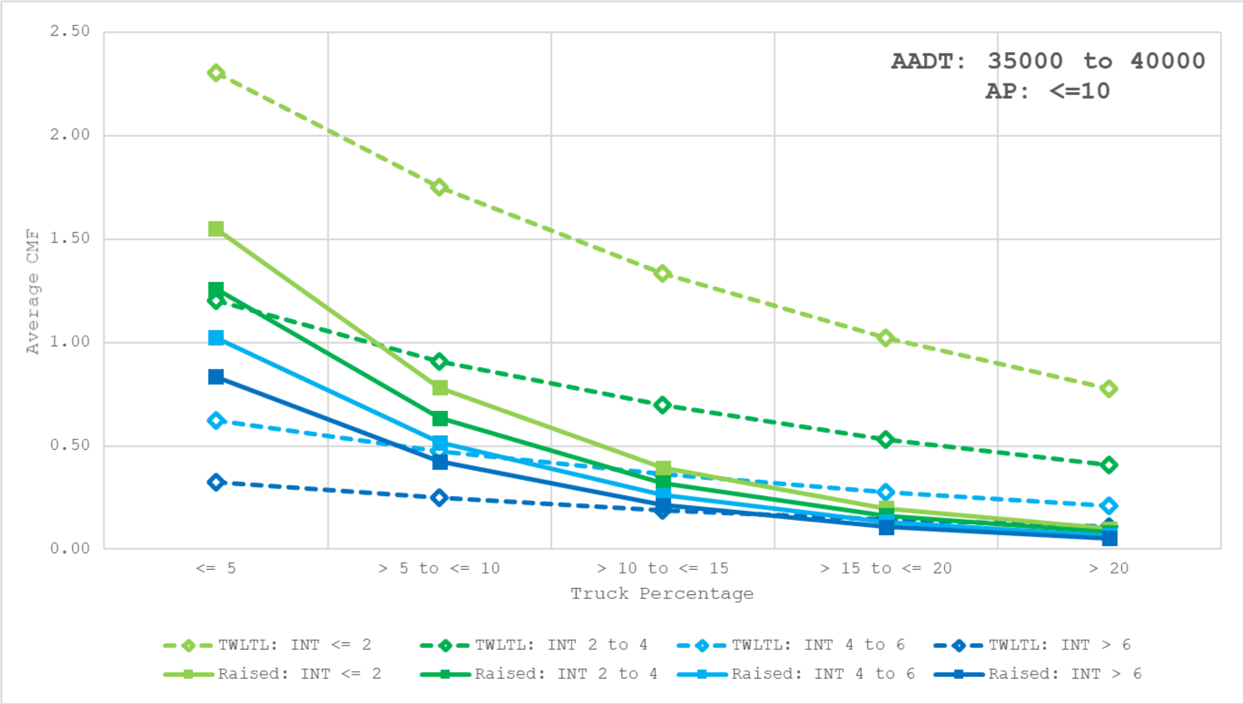
B-1-28 Suburban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



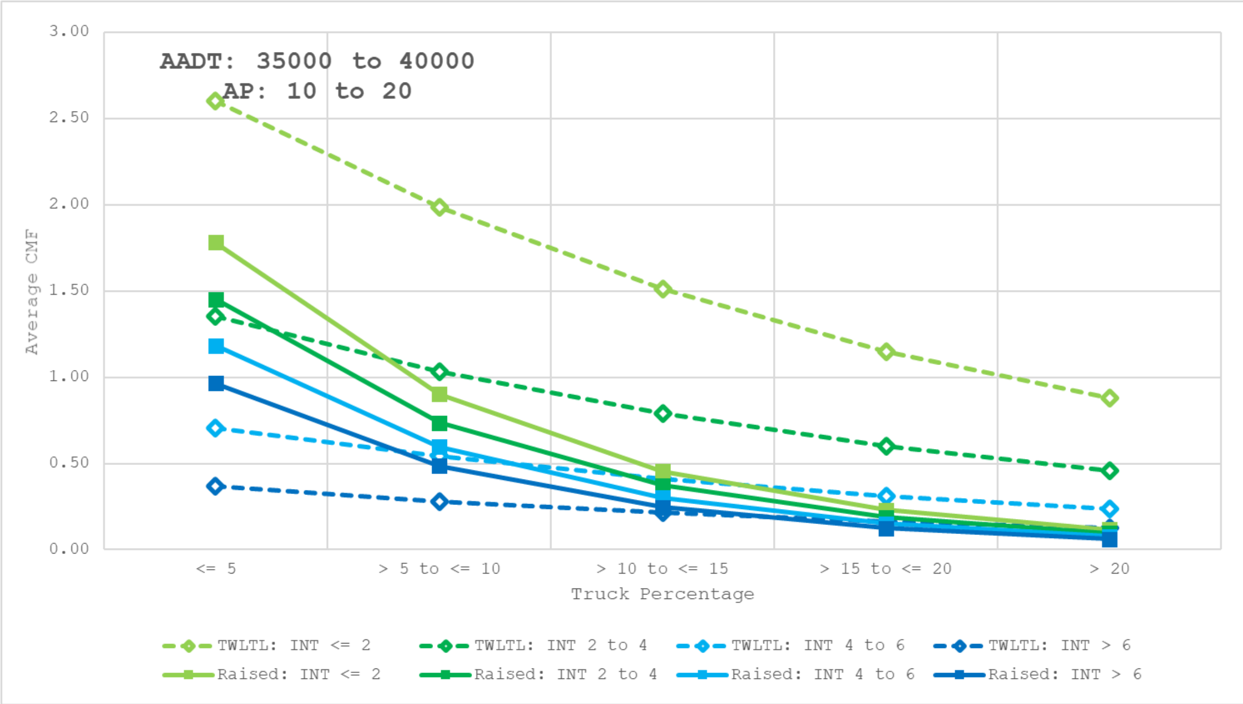
B-1-29 Suburban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



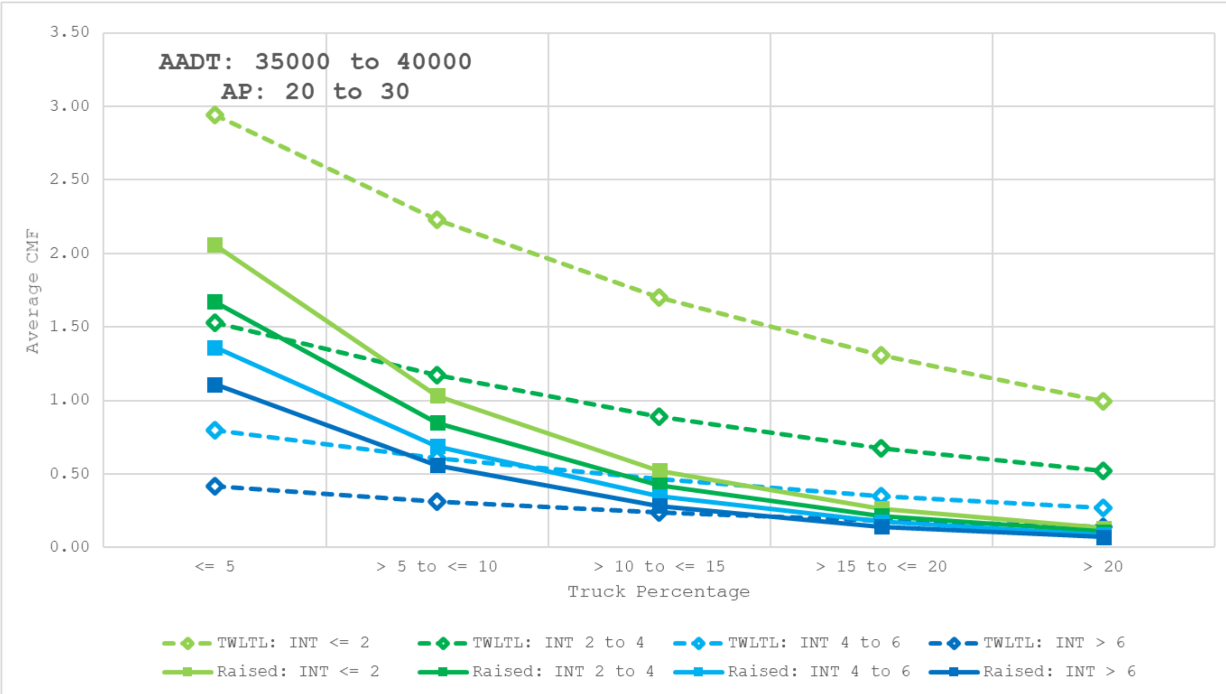
B-1-30 Suburban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



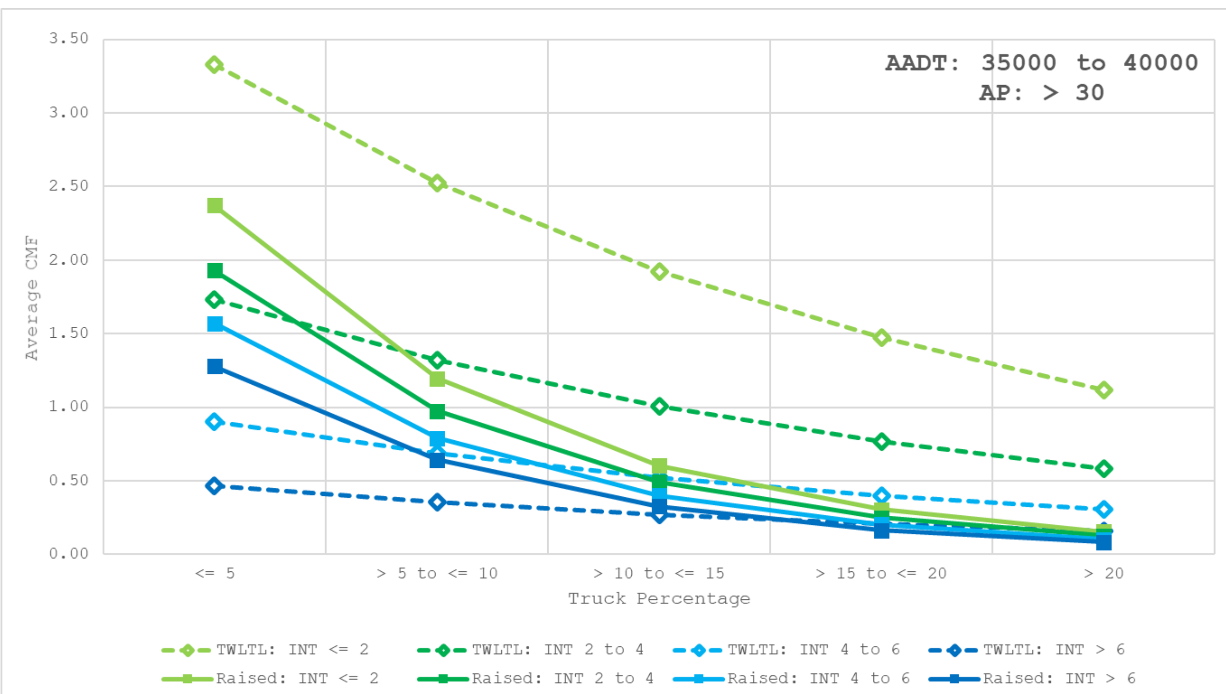
B-1-31 Suburban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



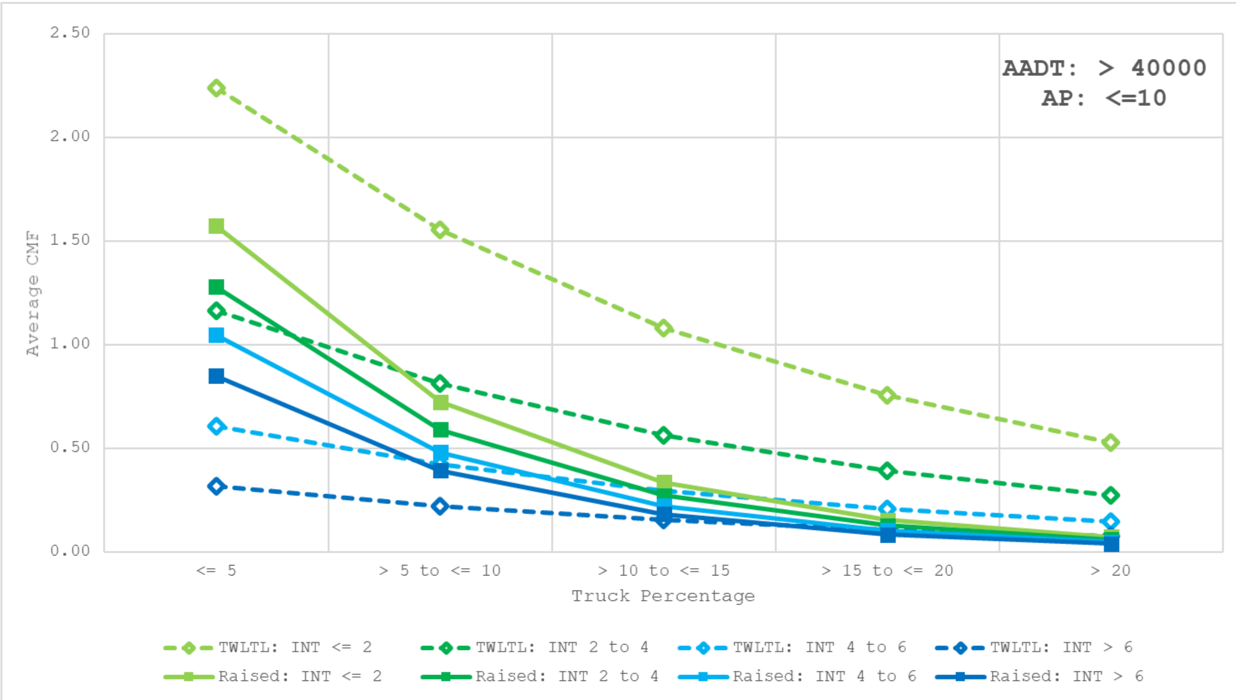
B-1-32 Suburban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



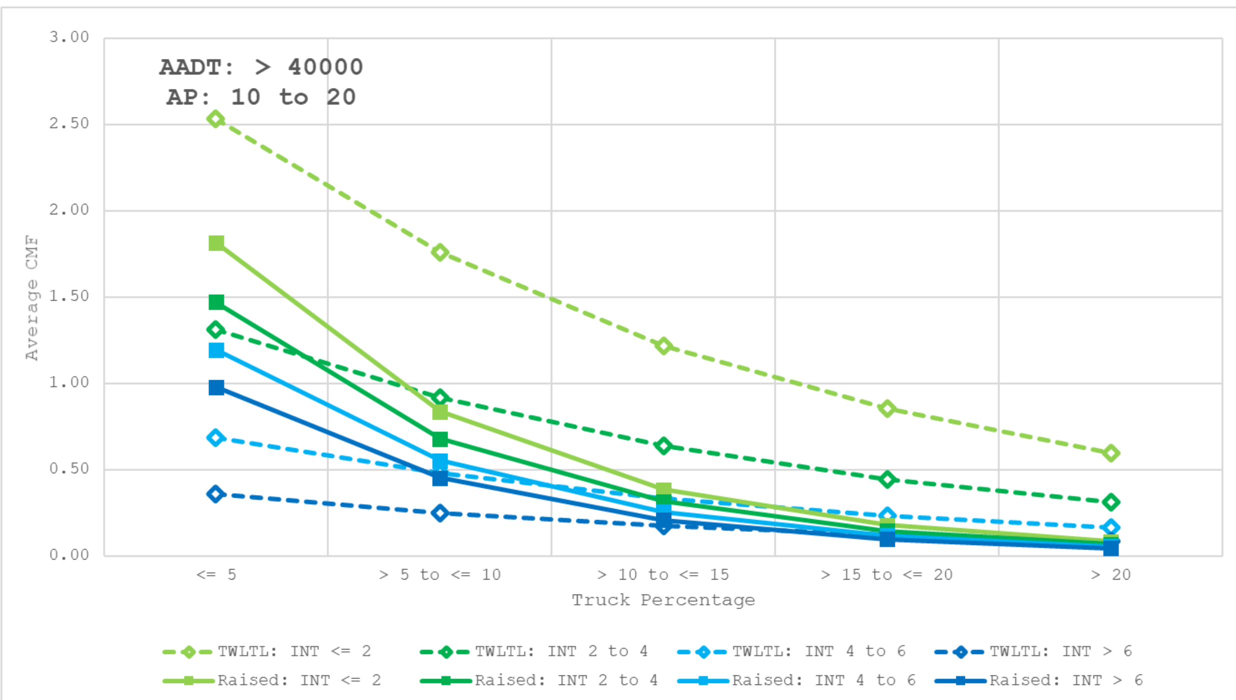
B-1-33 Suburban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



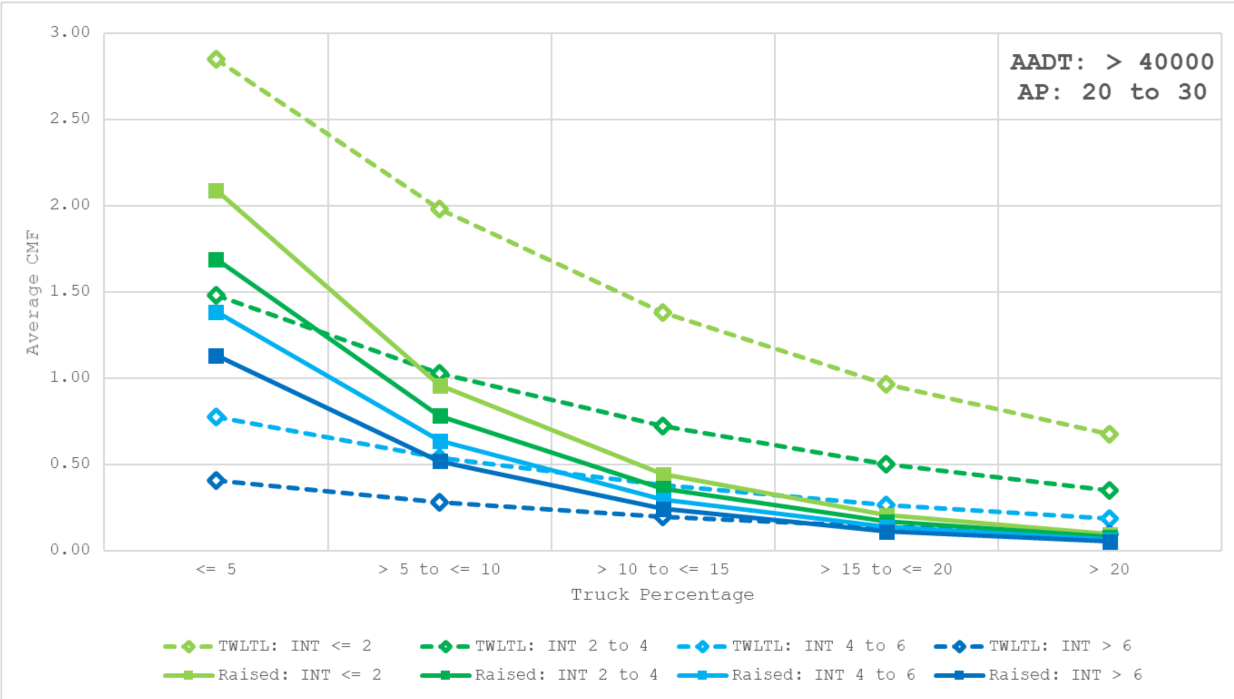
B-1-34 Suburban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: <= 10)



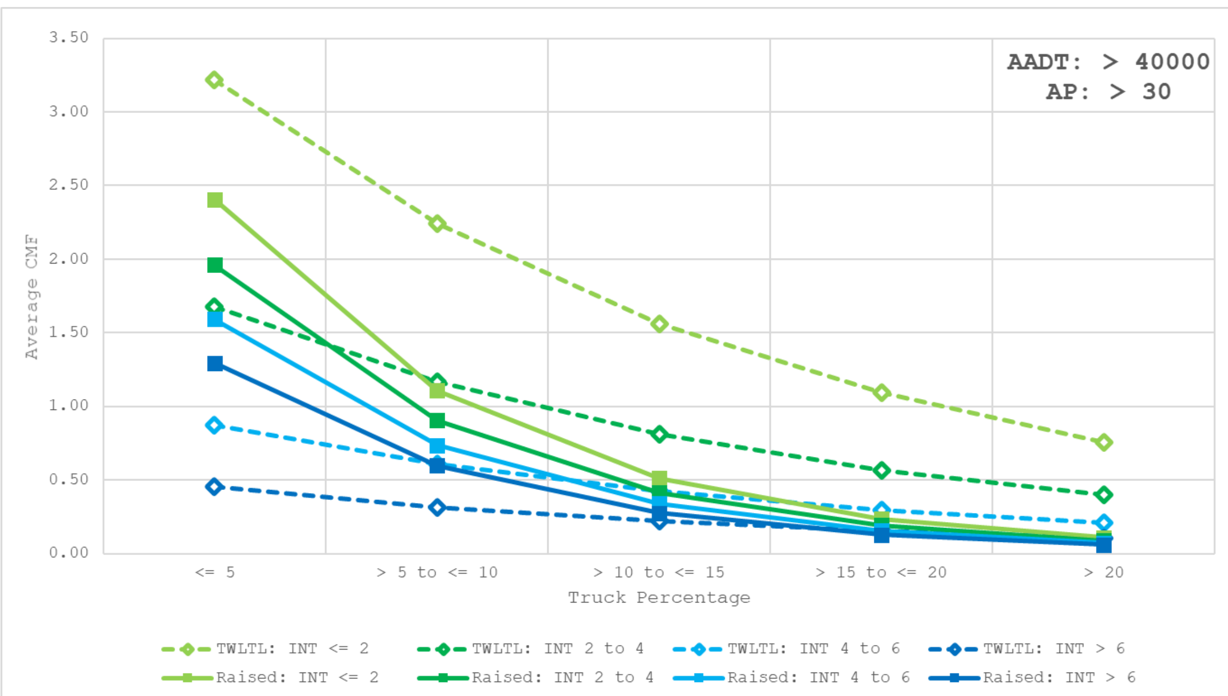
B-1-35 Suburban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: 10-20)



B-1-36 Suburban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: 20-30)



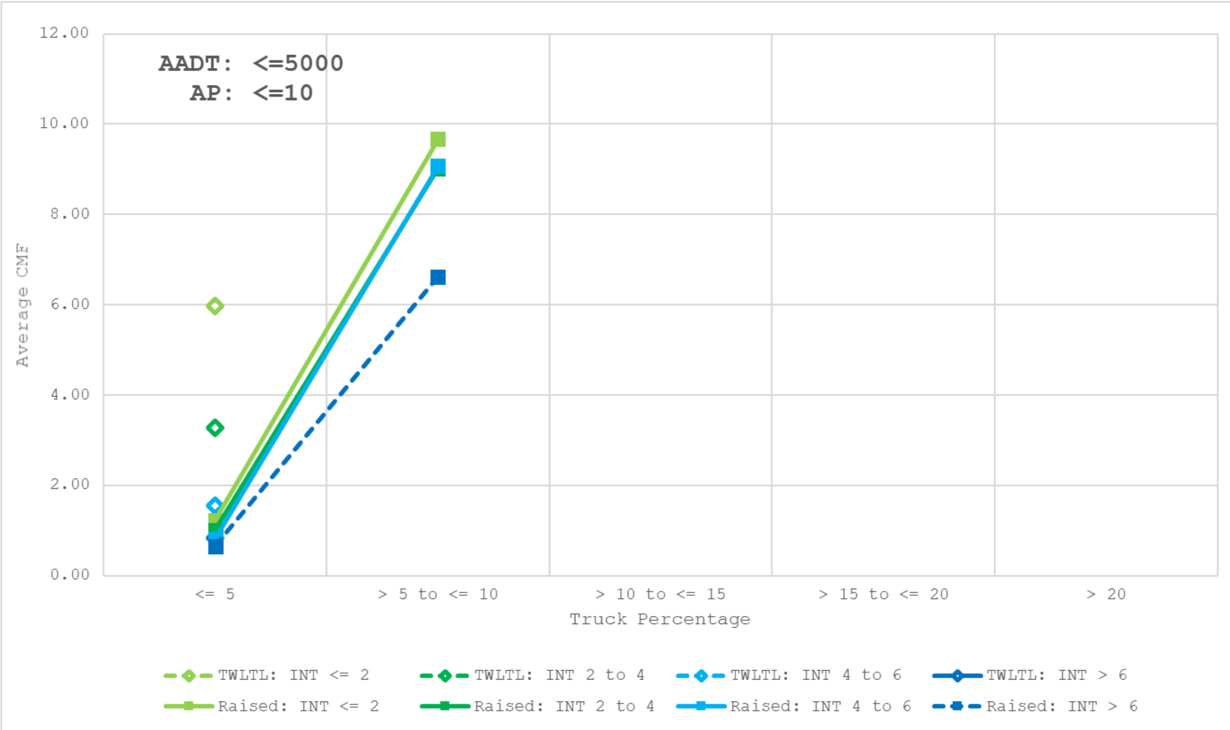
B-1-37 Suburban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: > 30)



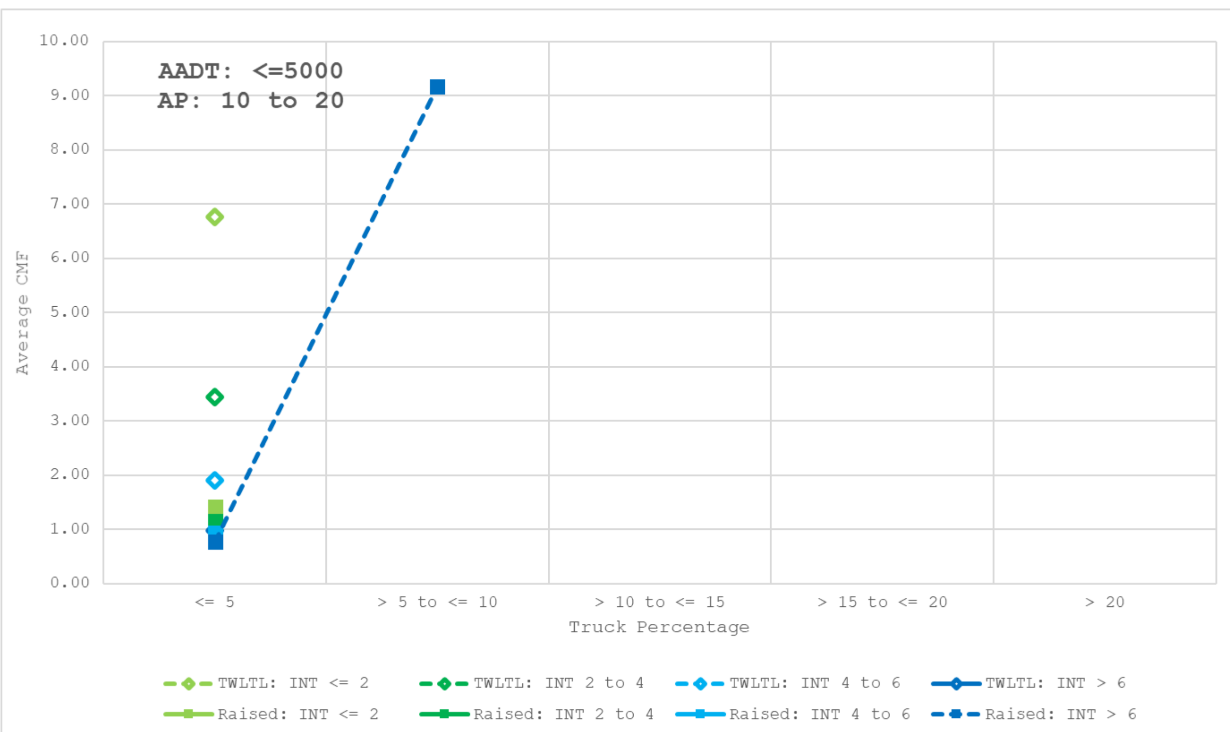
B-2-1 Suburban Residential KABCO CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Rasied : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6
0 to 5000	<= 5	5.96	3.27	1.56	0.83	1.22	1.00	0.81	0.65	6.76	3.44	1.89	0.97	1.41	1.15	0.94	0.77	7.39	3.94	1.96	1.07	1.62	1.32	1.07	0.88	8.84	4.35	2.28	1.18	1.86	1.52	1.24	1.00
	> 5 to <= 10	#N/A	#N/A	#N/A	#N/A	9.6684	9.0203	9.0667	6.62	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.17	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.5916	7.7554	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	3.16	1.64	0.86	0.45	1.22	0.99	0.81	0.66	3.55	1.85	0.96	0.50	1.40	1.14	0.93	0.76	4.02	2.10	1.09	0.57	1.61	1.32	1.07	0.87	4.58	2.38	1.24	0.64	1.87	1.52	1.24	1.01
	> 5 to <= 10	7.78	4.08	2.12	1.12	2.04	1.66	1.35	1.11	8.87	4.60	2.41	1.25	2.36	1.92	1.57	1.27	#N/A	5.25	2.71	1.41	2.72	2.22	1.80	1.46	#N/A	5.90	3.08	1.60	3.15	2.55	2.08	1.69
	> 10 to <= 15	#N/A	#N/A	5.40	2.82	3.52	2.87	2.33	1.90	#N/A	#N/A	6.12	3.18	4.06	3.31	2.70	2.19	#N/A	#N/A	6.84	3.62	4.70	3.79	3.08	2.53	#N/A	#N/A	7.80	4.06	5.37	4.41	3.57	2.91
	> 15 to <= 20	#N/A	#N/A	#N/A	7.29	6.17	5.04	4.13	3.33	#N/A	#N/A	#N/A	8.18	7.10	5.79	4.75	3.83	#N/A	#N/A	#N/A	9.33	8.26	6.68	5.41	4.45	#N/A	#N/A	#N/A	#N/A	9.49	7.67	6.30	5.17
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	8.9163	7.35	5.91	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.46	6.95	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.73	7.91	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.05
10000 to 15000	<= 5	2.68	1.39	0.73	0.38	1.25	1.02	0.83	0.67	3.03	1.57	0.82	0.43	1.44	1.17	0.95	0.78	3.42	1.77	0.93	0.48	1.66	1.35	1.10	0.90	3.86	2.01	1.05	0.55	1.91	1.56	1.27	1.03
	> 5 to <= 10	4.53	2.36	1.23	0.64	1.42	1.16	0.94	0.77	5.11	2.66	1.39	0.72	1.64	1.33	1.09	0.88	5.74	3.00	1.56	0.81	1.89	1.54	1.25	1.02	6.51	3.41	1.76	0.93	2.18	1.78	1.44	1.18
	> 10 to <= 15	7.69	3.98	2.08	1.08	1.63	1.33	1.08	0.88	8.70	4.50	2.35	1.23	1.88	1.53	1.25	1.02	9.78	5.11	2.66	1.38	2.17	1.77	1.44	1.17	#N/A	5.78	3.00	1.58	2.50	2.04	1.66	1.36
	> 15 to <= 20	#N/A	6.83	3.56	1.86	1.88	1.53	1.25	1.02	#N/A	7.65	4.03	2.09	2.18	1.76	1.44	1.17	#N/A	8.76	4.54	2.38	2.50	2.04	1.66	1.36	#N/A	9.84	5.14	2.67	2.89	2.35	1.92	1.56
	> 20	#N/A	#N/A	6.17	3.19	2.20	1.79	1.46	1.18	#N/A	#N/A	6.98	3.60	2.53	2.06	1.68	1.36	#N/A	#N/A	7.80	4.13	2.92	2.38	1.93	1.59	#N/A	#N/A	8.86	4.62	3.36	2.76	2.23	1.81
15000 to 20000	<= 5	2.41	1.26	0.66	0.34	1.28	1.04	0.85	0.69	2.73	1.42	0.74	0.39	1.47	1.20	0.98	0.80	3.09	1.61	0.84	0.44	1.70	1.38	1.13	0.92	3.48	1.82	0.94	0.49	1.96	1.59	1.30	1.06
	> 5 to <= 10	3.19	1.66	0.87	0.45	1.13	0.92	0.75	0.61	3.61	1.88	0.98	0.51	1.31	1.06	0.87	0.70	4.07	2.12	1.11	0.58	1.51	1.23	1.00	0.81	4.59	2.40	1.25	0.65	1.74	1.41	1.15	0.94
	> 10 to <= 15	4.22	2.20	1.15	0.60	1.01	0.82	0.67	0.55	4.76	2.49	1.30	0.67	1.16	0.95	0.77	0.63	5.39	2.81	1.46	0.76	1.34	1.09	0.89	0.72	6.11	3.19	1.66	0.86	1.55	1.26	1.03	0.83
	> 15 to <= 20	5.61	2.91	1.52	0.79	0.90	0.73	0.60	0.49	6.35	3.31	1.72	0.90	1.04	0.85	0.69	0.56	7.15	3.75	1.96	1.01	1.20	0.98	0.80	0.65	8.03	4.22	2.20	1.15	1.37	1.13	0.92	0.75
	> 20	7.47	3.88	2.04	1.06	0.81	0.65	0.54	0.44	8.43	4.41	2.30	1.20	0.93	0.76	0.61	0.50	9.60	4.96	2.60	1.36	1.07	0.87	0.71	0.58	#N/A	5.62	2.92	1.53	1.23	1.01	0.82	0.67
20000 to 25000	<= 5	2.25	1.17	0.61	0.32	1.31	1.07	0.87	0.71	2.54	1.32	0.69	0.36	1.50	1.23	1.00	0.81	2.88	1.50	0.78	0.41	1.74	1.41	1.15	0.94	3.24	1.69	0.88	0.46	2.00	1.63	1.33	1.08
	> 5 to <= 10	2.48	1.29	0.67	0.35	0.96	0.78	0.64	0.52	2.80	1.46	0.76	0.40	1.11	0.90	0.73	0.60	3.17	1.65	0.86	0.45	1.28	1.04	0.85	0.69	3.57	1.86	0.97	0.51	1.47	1.20	0.98	0.79
	> 10 to <= 15	2.75	1.42	0.74	0.39	0.71	0.58	0.47	0.38	3.08	1.61	0.84	0.44	0.82	0.67	0.54	0.44	3.48	1.82	0.94	0.49	0.94	0.77	0.62	0.51	3.95	2.04	1.07	0.56	1.09	0.88	0.72	0.59
	> 15 to <= 20	3.02	1.57	0.82	0.43	0.52	0.43	0.35	0.28	3.40	1.77	0.92	0.48	0.60	0.49	0.40	0.33	3.85	2.01	1.05	0.54	0.70	0.57	0.46	0.37	4.35	2.27	1.18	0.61	0.80	0.65	0.53	0.43
	> 20	3.34	1.74	0.91	0.47	0.39	0.32	0.26	0.21	3.78	1.96	1.03	0.54	0.45	0.36	0.30	0.24	4.24	2.21	1.16	0.60	0.51	0.42	0.34	0.28	4.82	2.50	1.30	0.68	0.60	0.48	0.39	0.32
25000 to 30000	<= 5	2.14	1.11	0.58	0.30	1.34	1.08	0.88	0.72	2.41	1.26	0.65	0.34	1.53	1.25	1.02	0.83	2.72	1.41	0.74	0.38	1.77	1.44	1.17	0.96	3.07	1.60	0.83	0.43	2.04	1.66	1.35	1.10
	> 5 to <= 10	2.03	1.06	0.55	0.29	0.85	0.69	0.56	0.46	2.29	1.20	0.62	0.32	0.97	0.79	0.65	0.52	2.59	1.35	0.70	0.36	1.12	0.91	0.75	0.60	2.93	1.52	0.79	0.41	1.29	1.05	0.86	0.70
	> 10 to <= 15	1.94	1.01	0.53	0.28	0.54	0.44	0.36	0.29	2.19	1.14	0.59	0.31	0.62	0.50	0.41	0.33	2.48	1.29	0.67	0.35	0.71	0.58	0.47	0.39	2.78	1.45	0.76	0.39	0.82	0.67	0.54	0.44
	> 15 to <= 20	1.85	0.96	0.50	0.26	0.34	0.28	0.23	0.18	2.08	1.09	0.57	0.30	0.39	0.32	0.26	0.21	2.36	1.23	0.64	0.33	0.46	0.37	0.30	0.25	2.67	1.38	0.72	0.38	0.52	0.43	0.35	0.28
	> 20	1.77	0.92	0.48	0.25	0.22	0.18	0.14	0.12	1.99	1.04	0.54	0.28	0.25	0.20	0.17	0.14	2.25	1.18	0.61	0.32	0.29	0.24	0.19	0.16	2.55	1.33	0.69	0.36	0.33	0.27	0.22	0.18
30000 to 35000	<= 5	2.04	1.06	0.55	0.29	1.36	1.10	0.90	0.73	2.31	1.20	0.63	0.33	1.56	1.27	1.04	0.84	2.61	1.36	0.71	0.37	1.81	1.46	1.19	0.97	2.94	1.53	0.80	0.41	2.08	1.69	1.38	1.12
	> 5 to <= 10	1.73	0.90	0.47	0.24	0.76	0.62	0.50	0.41	1.94	1.01	0.53	0.27	0.87	0.71	0.58	0.47	2.20	1.15	0.60	0.31	1.01	0.82	0.67	0.55	2.49	1.29	0.68	0.35	1.17	0.95	0.77	0.63
	> 10 to <= 15	1.46	0.76	0.39	0.21	0.43	0.35	0.28	0.23	1.65	0.86	0.45	0.23	0.49	0.40	0.33	0.27	1.86	0.97	0.50	0.26	0.57	0.46	0.38	0.31	2.10	1.09	0.57	0.30	0.66	0.53	0.43	0.35
	> 15 to <= 20	1.23	0.64	0.33	0.17	0.24	0.20	0.16	0.13	1.39	0.73	0.38	0.20	0.28	0.23	0.18	0.15	1.58	0.82	0.43	0.22	0.32	0.26	0.21	0.17	1.77	0.93	0.48	0.25	0.37	0.30	0.24	0.20
	> 20	1.04	0.54	0.28	0.15	0.14	0.11	0.09	0.07	1.18	0.62	0.32	0.17	0.16	0.13	0.10	0.08	1.34	0.69	0.36	0.19	0.18	0.15	0.12	0.10	1.50	0.78	0.41	0.21	0.21	0.17	0.14	0.11
35000 to 40000	<= 5	1.97	1.02	0.53	0.28	1.38	1.12	0.91	0.74	2.22	1.16	0.60	0.31	1.58	1.29	1.05	0.86	2.51	1.31	0.68	0.35	1.82	1.49	1.21	0.99	2.83	1.48	0.77	0.40	2.11	1.72	1.40	1.14
	> 5 to <= 10	1.50	0.78	0.41	0.21	0.69	0.57	0.46	0.38	1.70	0.88	0.46	0.24	0.80	0.65	0.53	0.43	1.91	1.00	0.52	0.27	0.92	0.75	0.61	0.50	2.15	1.12	0.59	0.30	1.06	0.86	0.70	0.57
	> 10 to <= 15	1.14	0.59	0.31	0.16	0.35	0.29	0.23	0.19	1.29	0.68	0.35	0.18	0.40	0.33	0.27	0.22	1.46	0.76	0.40	0.21	0.47	0.38	0.31	0.25	1.65	0.86	0.45	0.23	0.54	0.44	0.36	0.29
	> 15 to <= 20	0.87	0.45	0.24	0.12	0.18	0.14	0.12	0.10	0.99	0.51	0.27	0.14	0.21	0.17	0.14	0.11	1.11	0.58	0.30	0.16	0.24	0.19	0.16	0.13	1.25	0.65	0.34	0.18	0.27	0.22	0.18	0.15
	> 20	0.67	0.35	0.18	0.09	0.09	0.07	0.06	0.05	0.75	0.39	0.20	0.11	0.10	0.08	0.07	0.06	0.85	0.44	0.23	0.12	0.12	0.10	0.08	0.06	0.96	0.50	0.26	0.14	0.14	0.11	0.09	0.07
>40000	<= 5	1.91	0.99	0.52	0.27	1.40	1.14	0.93	0.75	2.14	1.12	0.58	0.30	1.60	1.31	1.07	0.87	2.43	1.27	0.66	0.34	1.86	1.51	1.23	1.00	2.74	1.43	0.75	0.39	2.13	1.74	1.42	1.16
	> 5 to <= 10	1.33	0.69	0.36	0.19	0.65	0.52	0.43	0.35	1.50	0.78	0.41	0.21	0.74	0.60	0.49	0.40	1.69	0.88	0.46	0.24	0.85	0.70	0.57	0.46	1.92	0.99	0.52	0.27	0.99	0.80	0.66	0.53
	> 10 to <= 15	0.92	0.48	0.25	0.13	0.30	0.24	0.20	0.16	1.04	0.54	0.28	0.15	0.34	0.28	0.23	0.18	1.18	0.61	0.32	0.17	0.39	0.32	0.26	0.21	1.33	0.69	0.36	0.19	0.46	0.37	0.30	0.25
	> 15 to <= 20	0.64	0.34	0.18	0.09	0.14	0.11	0.09	0.07	0.73	0.38	0.20	0.10	0.16	0.13	0.10	0.09	0.82	0.43	0.22	0.12	0.18	0.15	0.12	0.10	0.93	0.49	0.25	0.13	0.21	0.17	0.14	0.11
	> 20	0.45	0.23	0.12	0.06	0.06	0.05	0.04	0.03	0.51	0.27	0.14	0.07	0.07	0.06	0.05	0.04	0.58	0.30	0.16	0.08	0.08	0.07	0.06	0.05	0.65	0.34	0.18	0.09	0.10	0.08	0.06	0.05

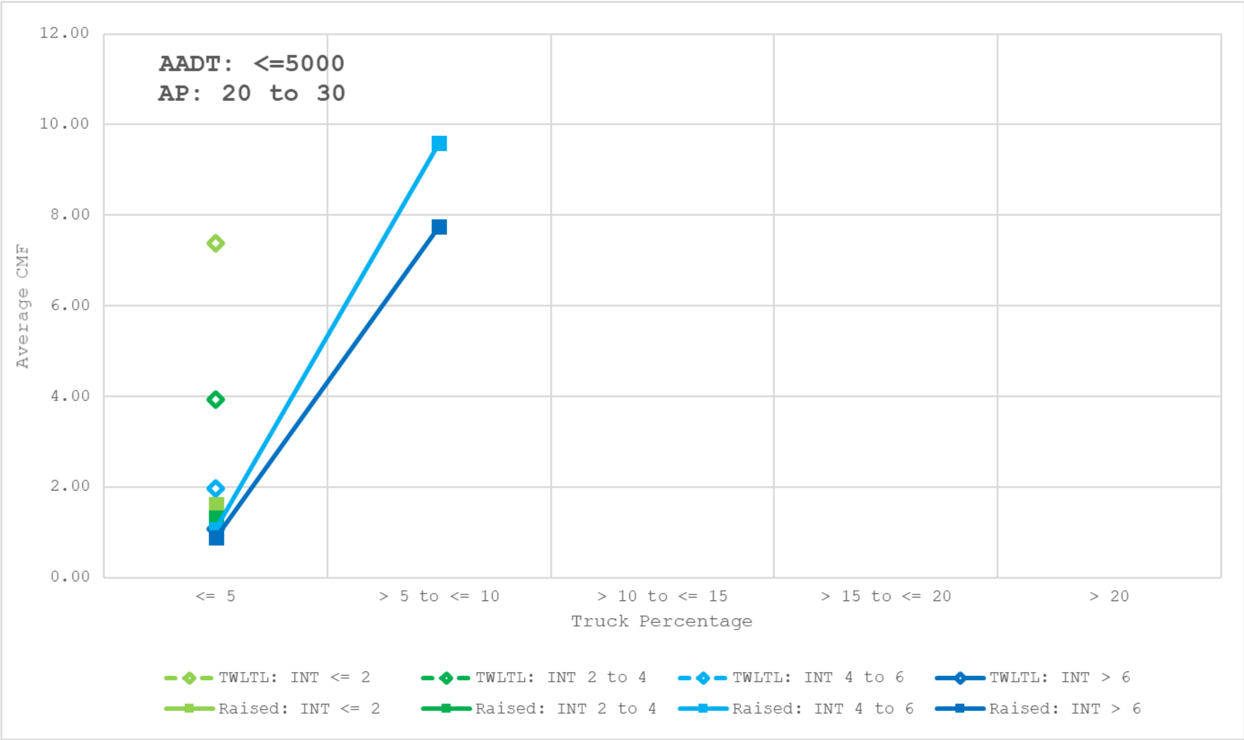
B-2-2 Suburban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: <= 10)



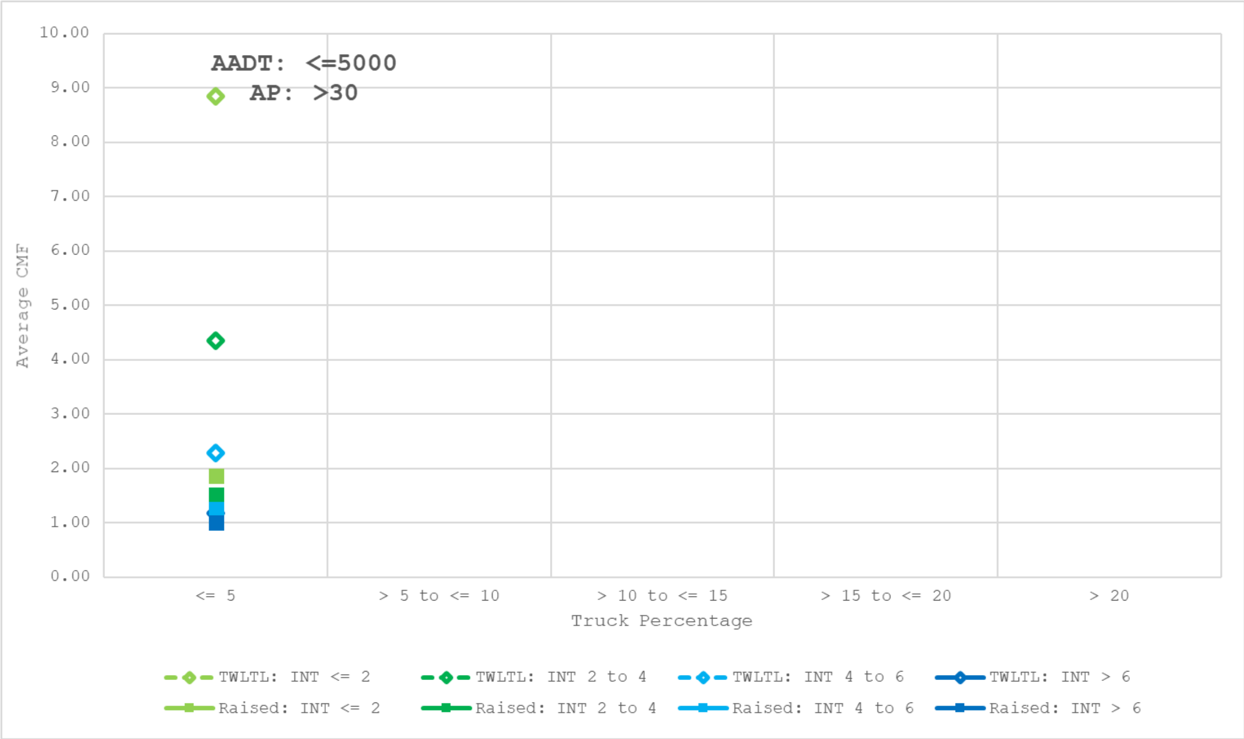
B-2-3 Suburban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: 10-20)



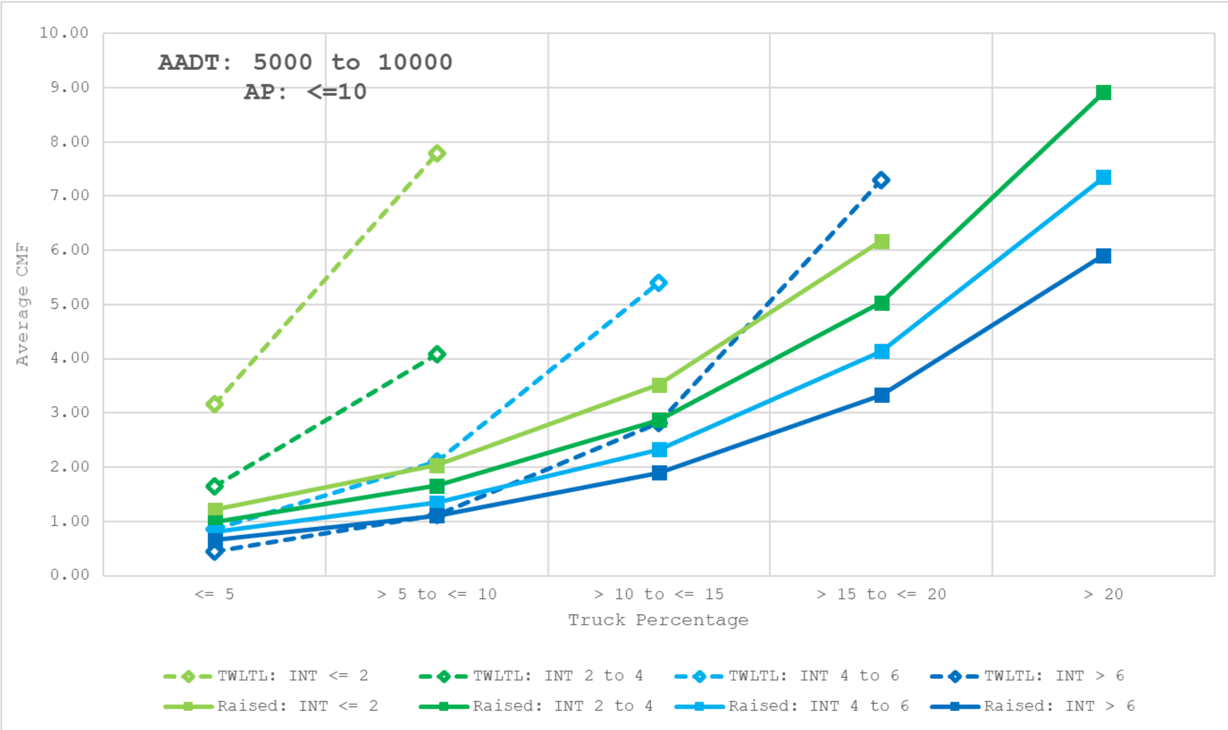
B-2-4 Suburban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: 20-30)



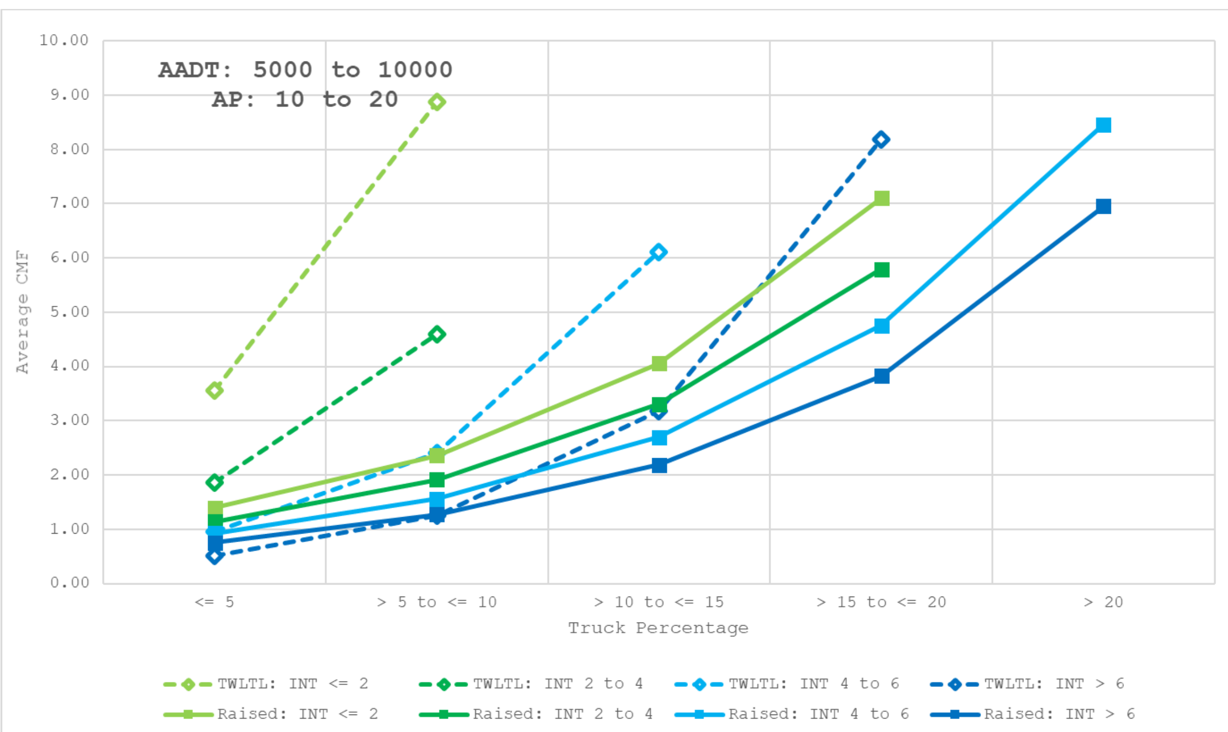
B-2-5 Suburban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: > 30)



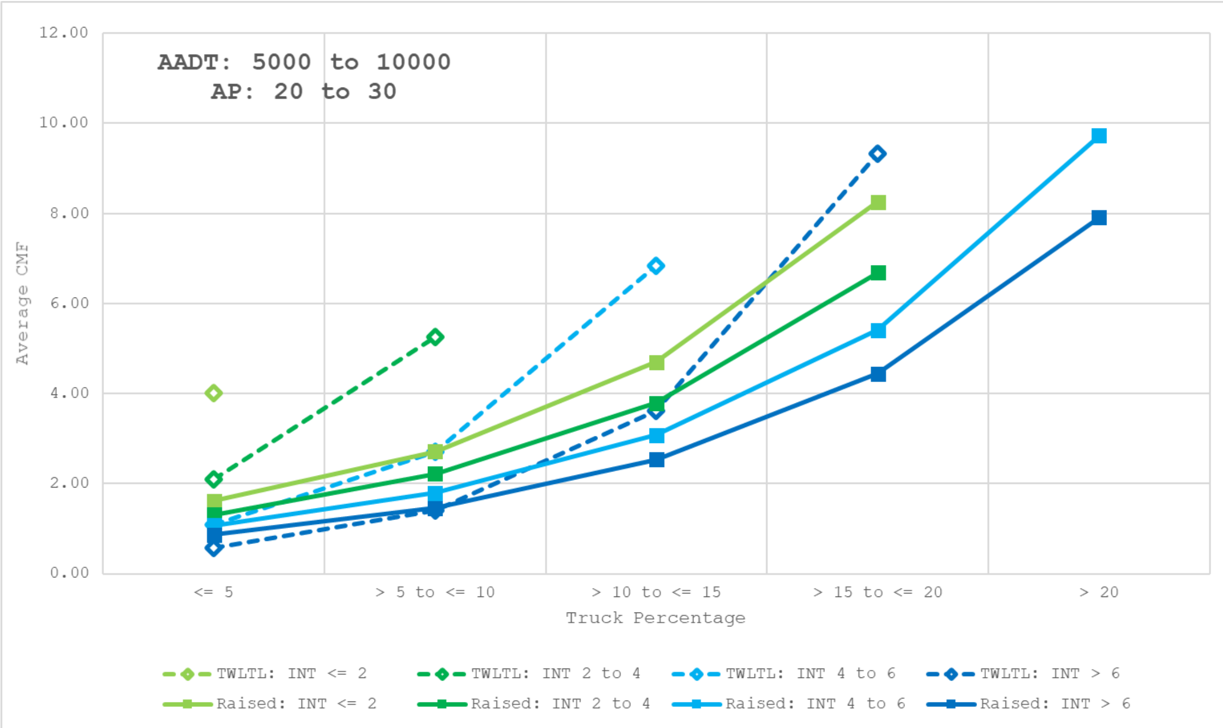
B-2-6 Suburban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



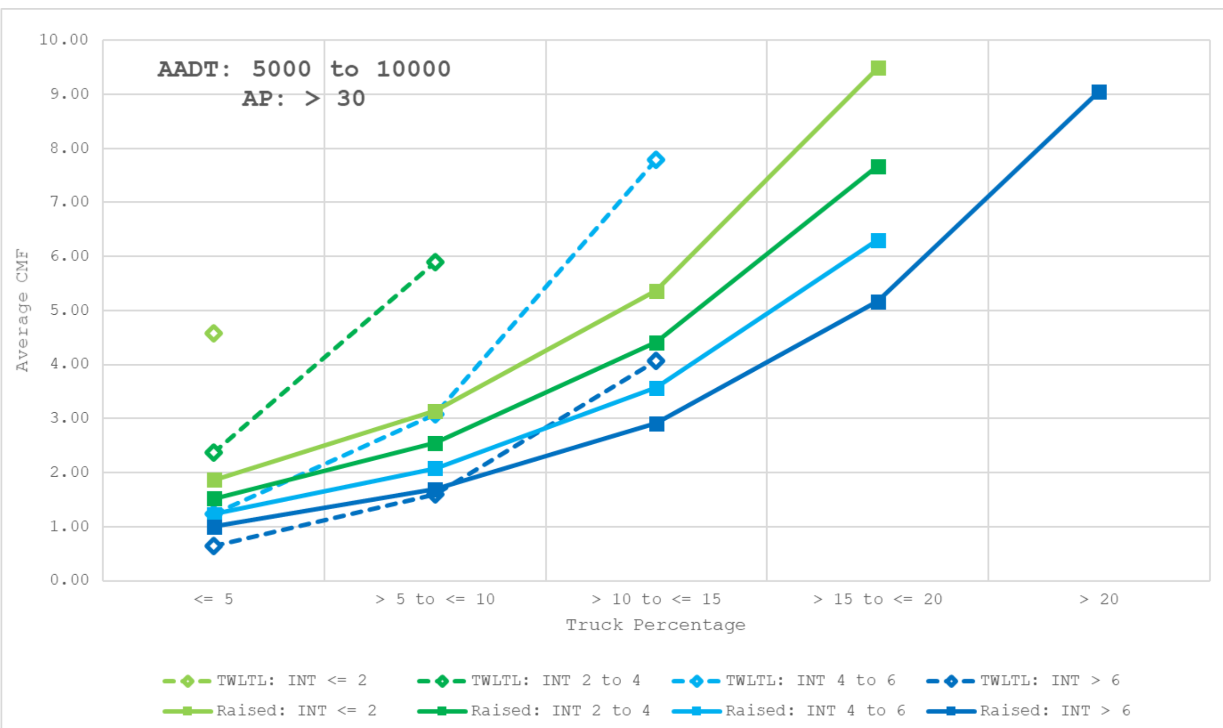
B-2-7 Suburban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



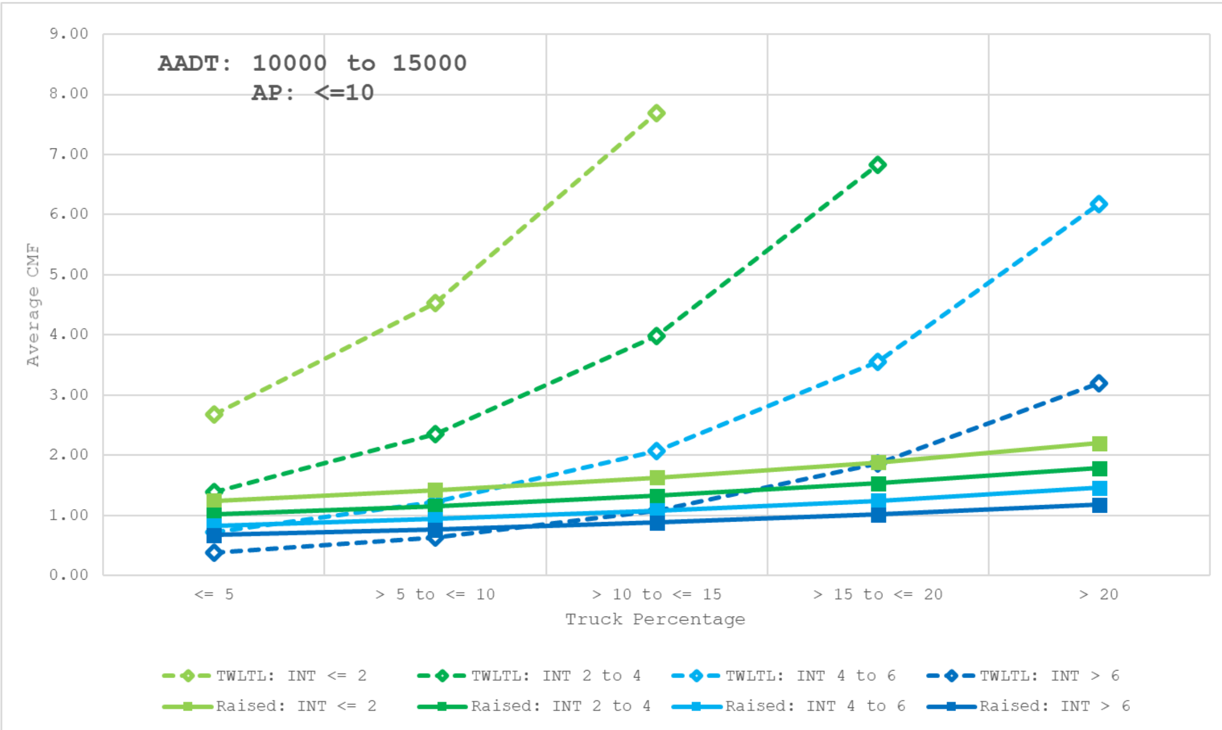
B-2-8 Suburban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



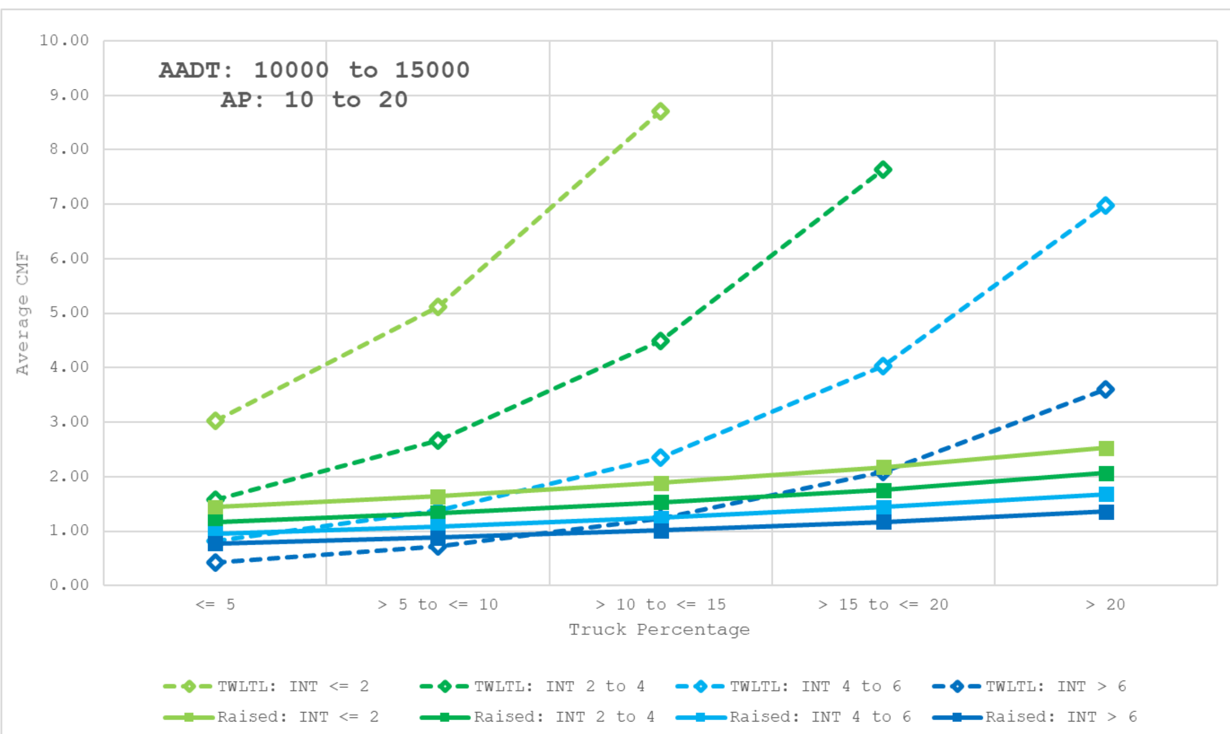
B-2-9 Suburban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



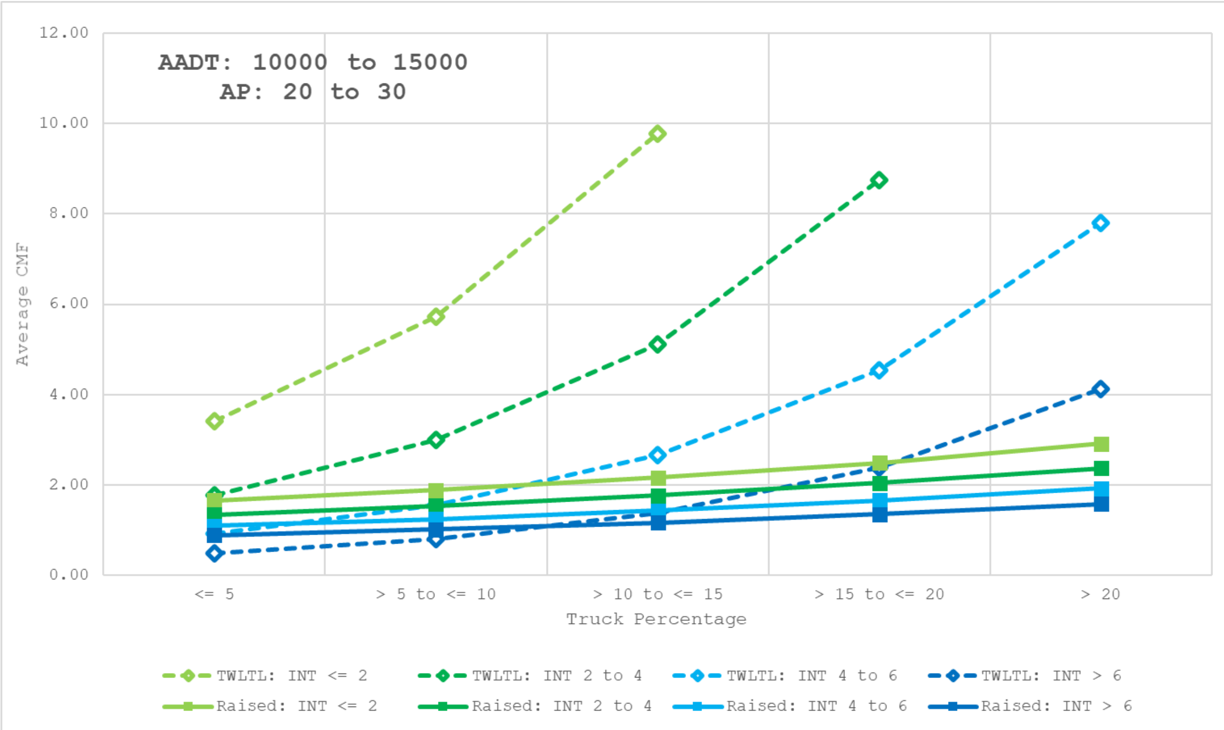
B-2-10 Suburban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



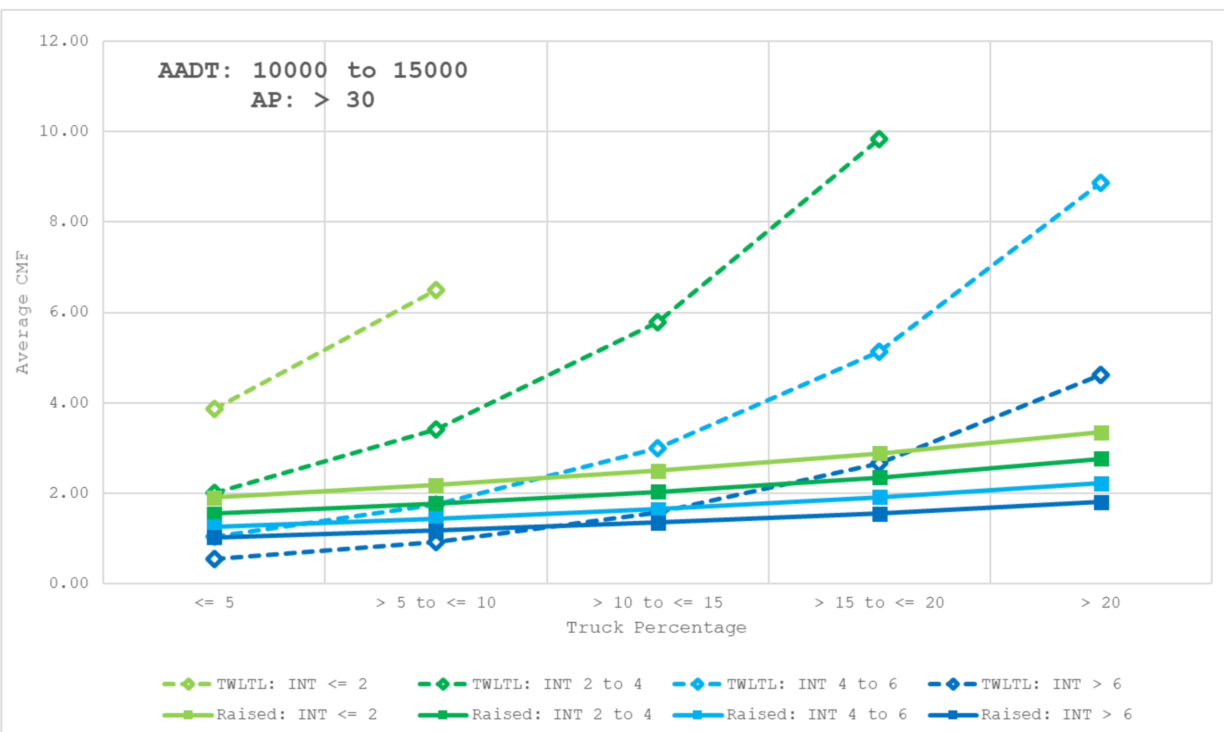
B-2-11 Suburban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



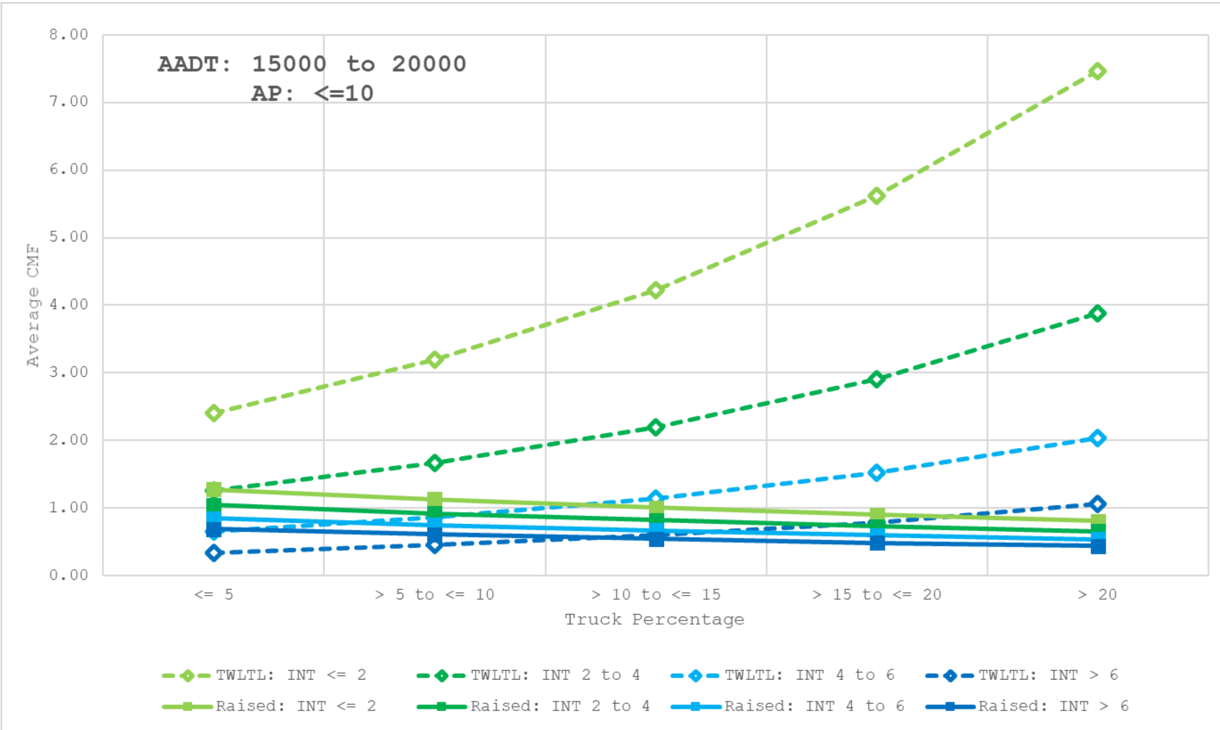
B-2-12 Suburban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



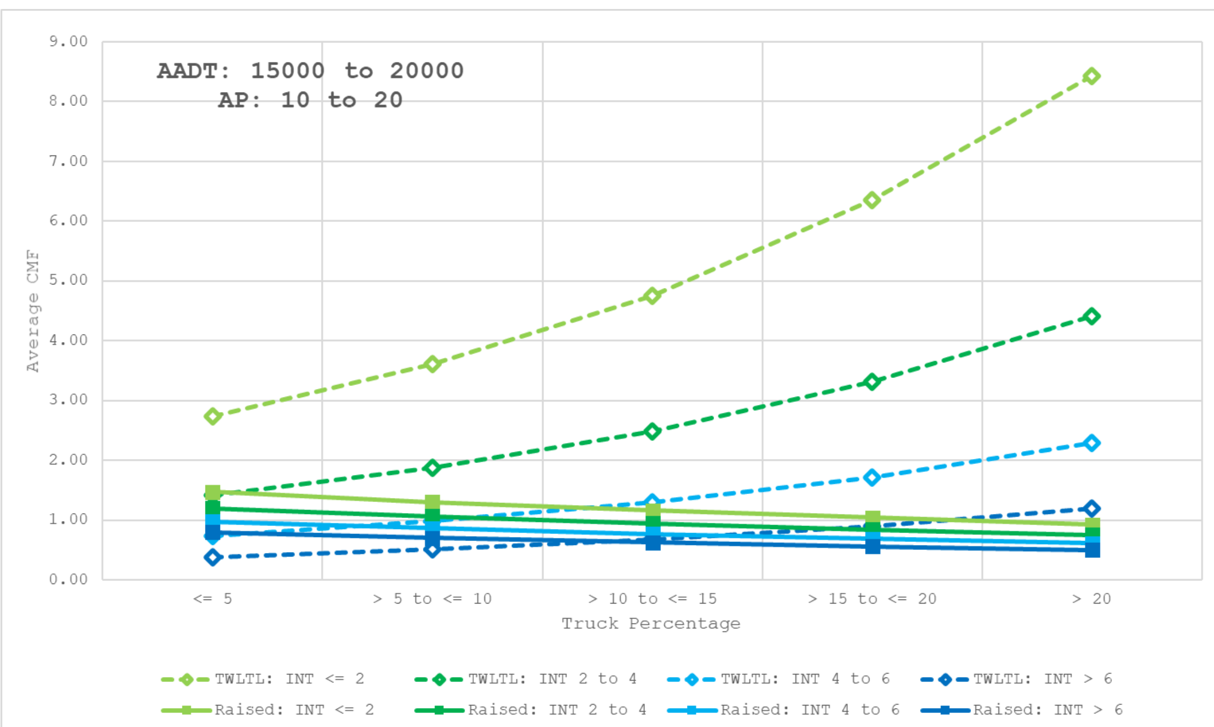
B-2-13 Suburban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



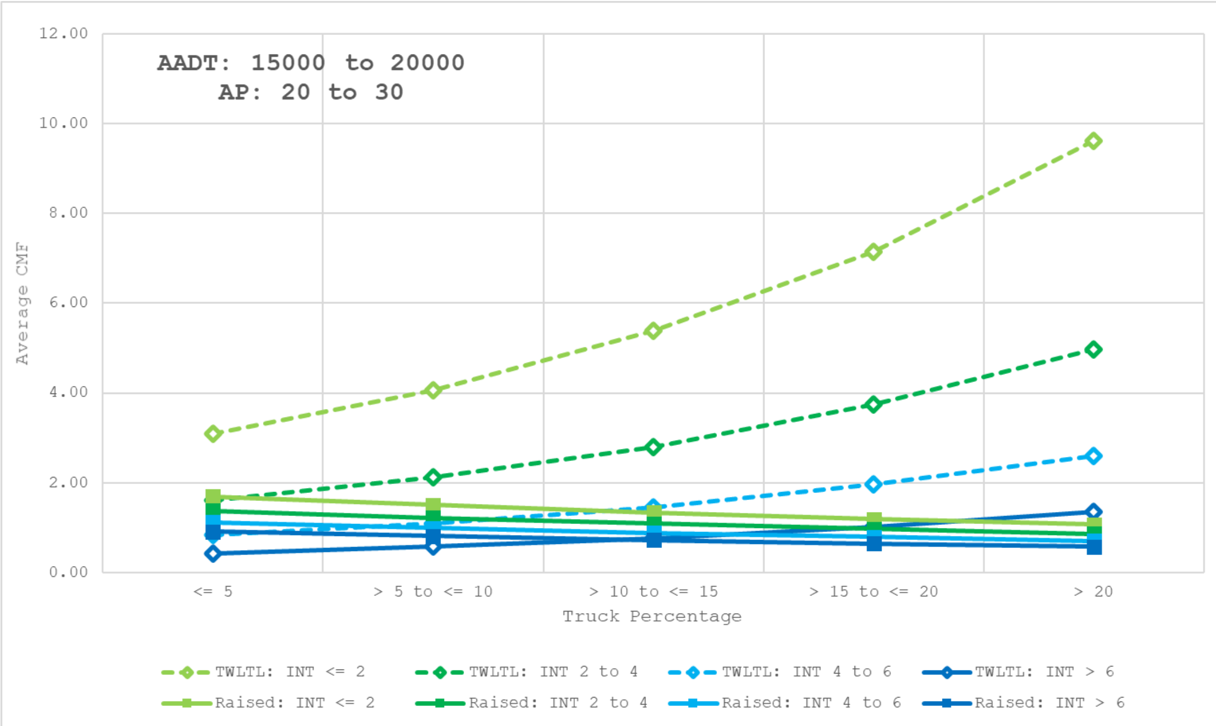
B-2-14 Suburban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



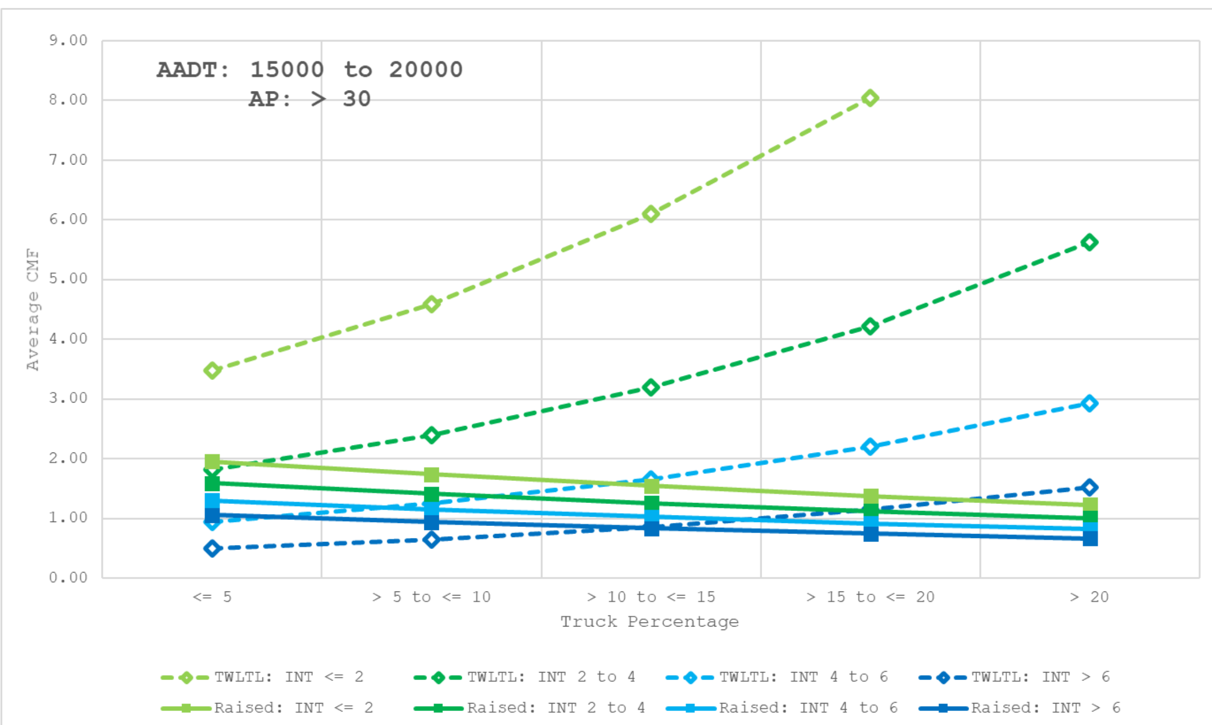
B-2-15 Suburban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



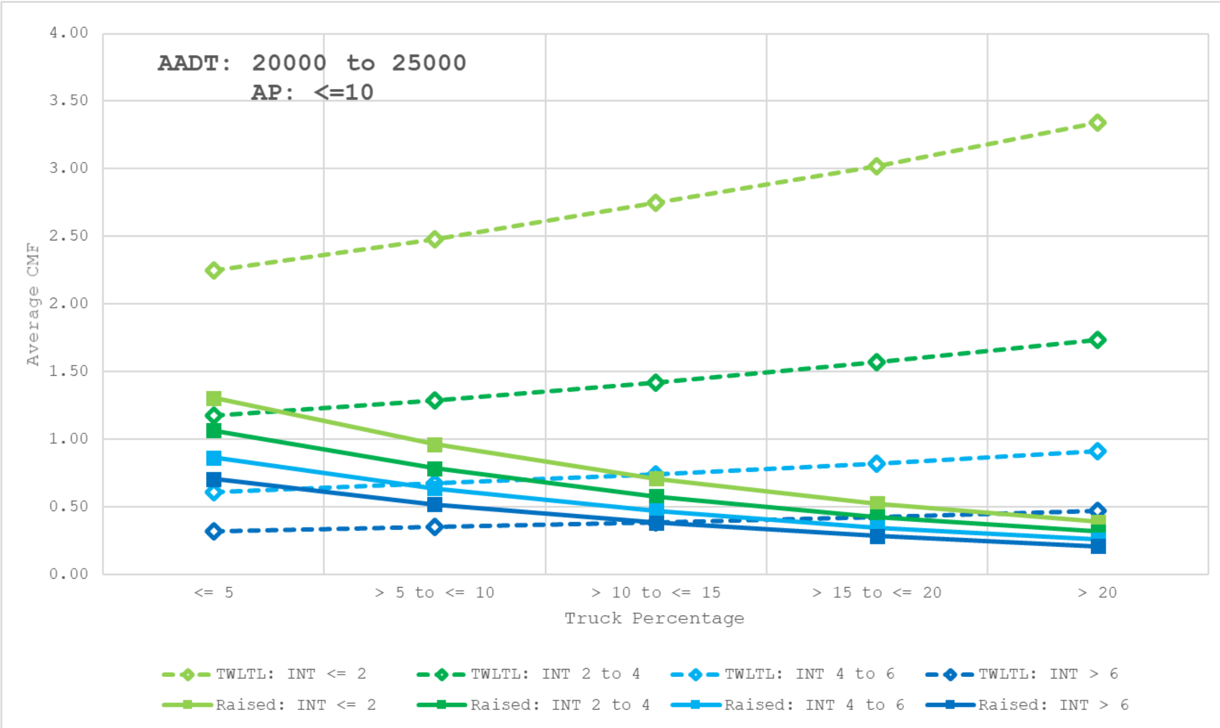
B-2-16 Suburban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



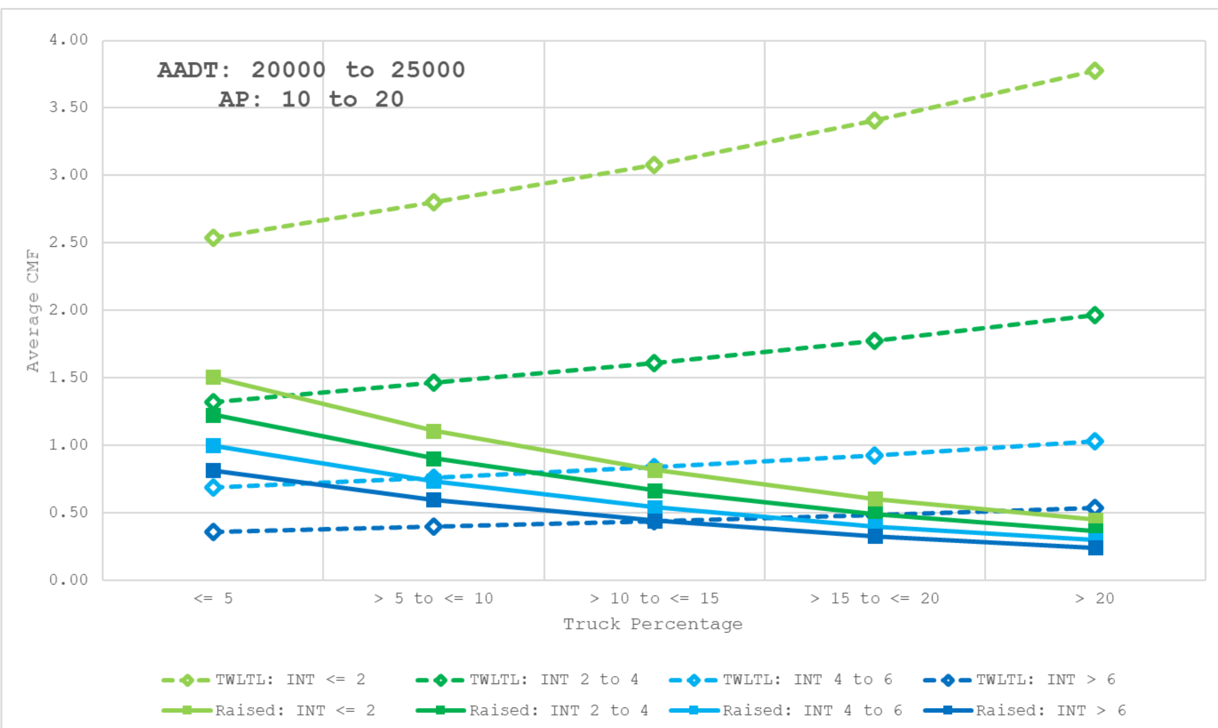
B-2-17 Suburban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



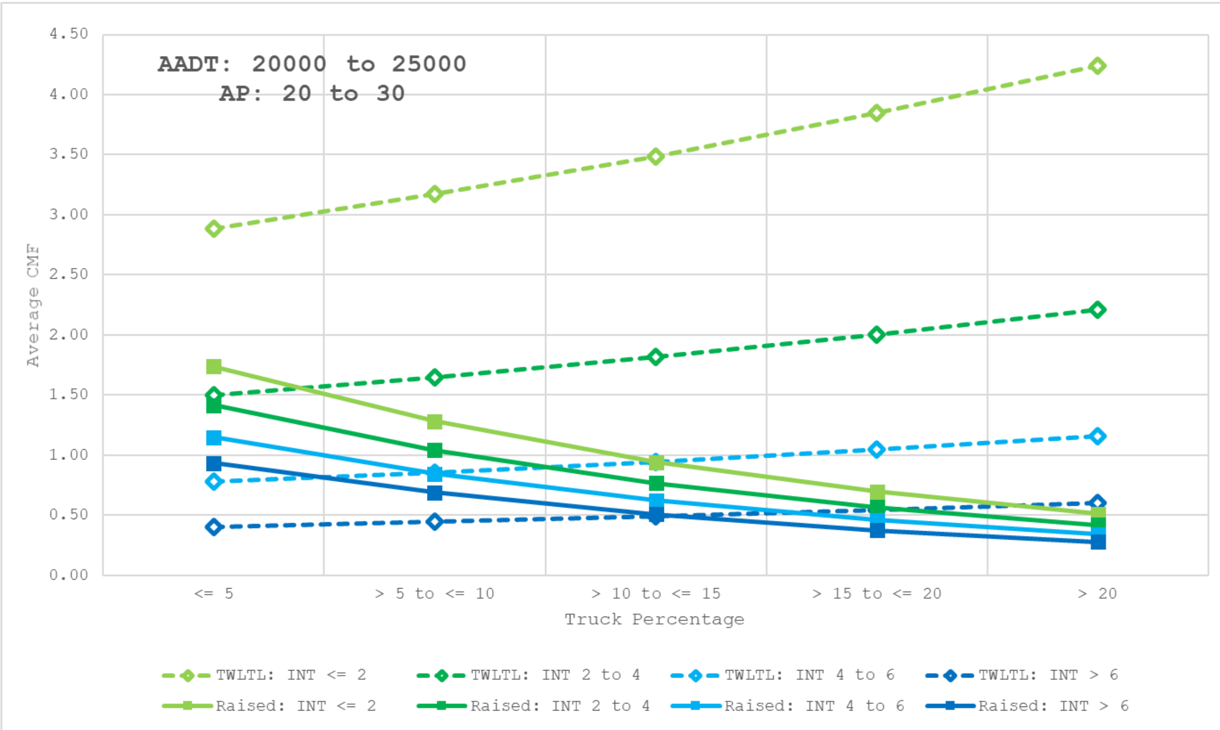
B-2-18 Suburban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



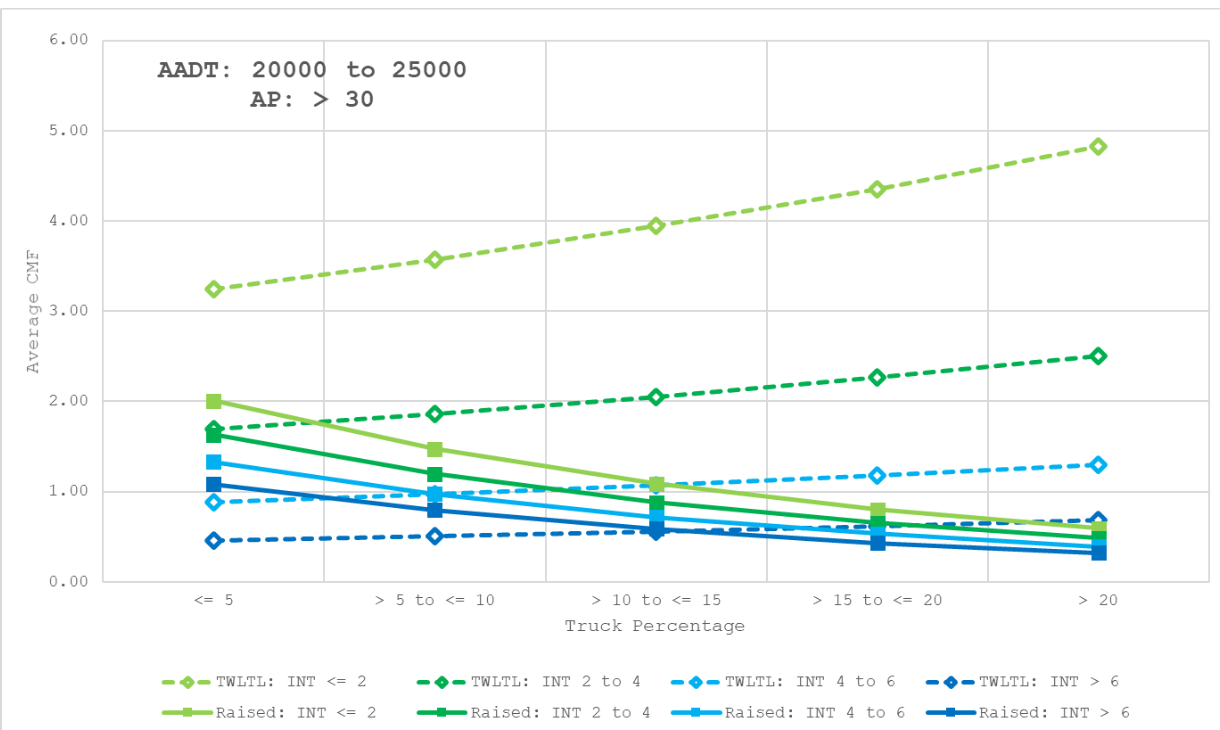
B-2-19 Suburban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



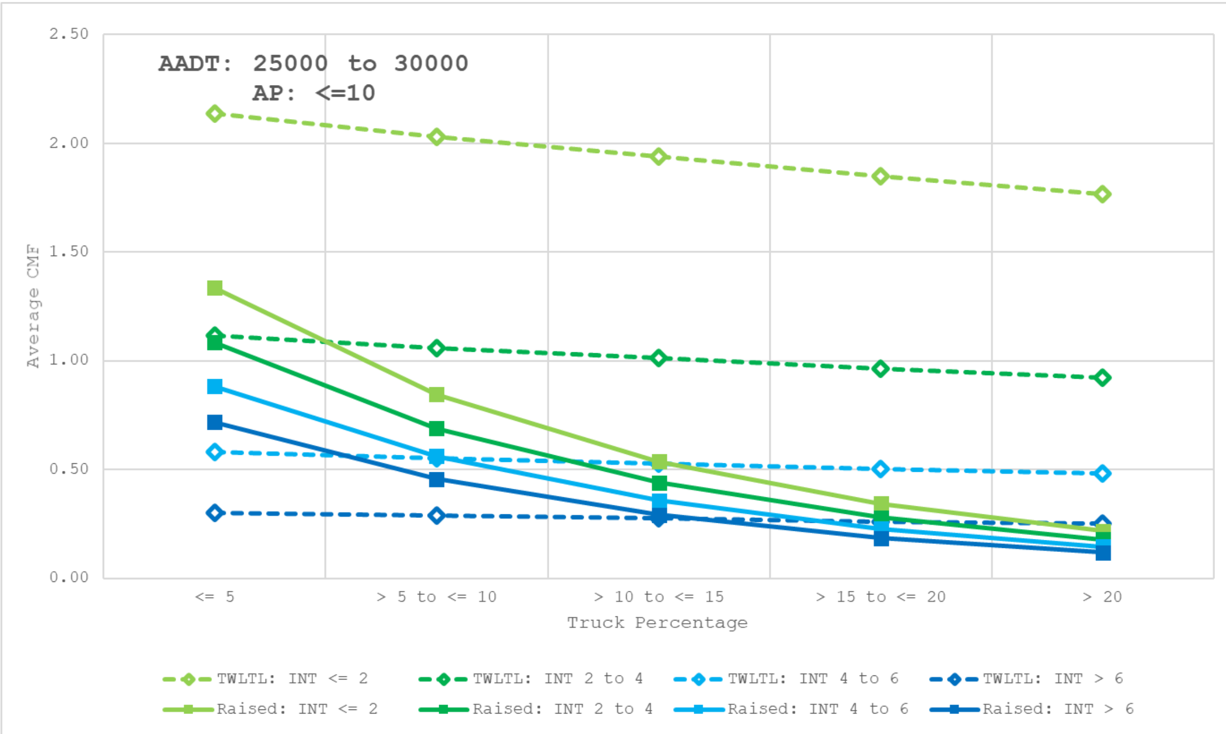
B-2-20 Suburban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



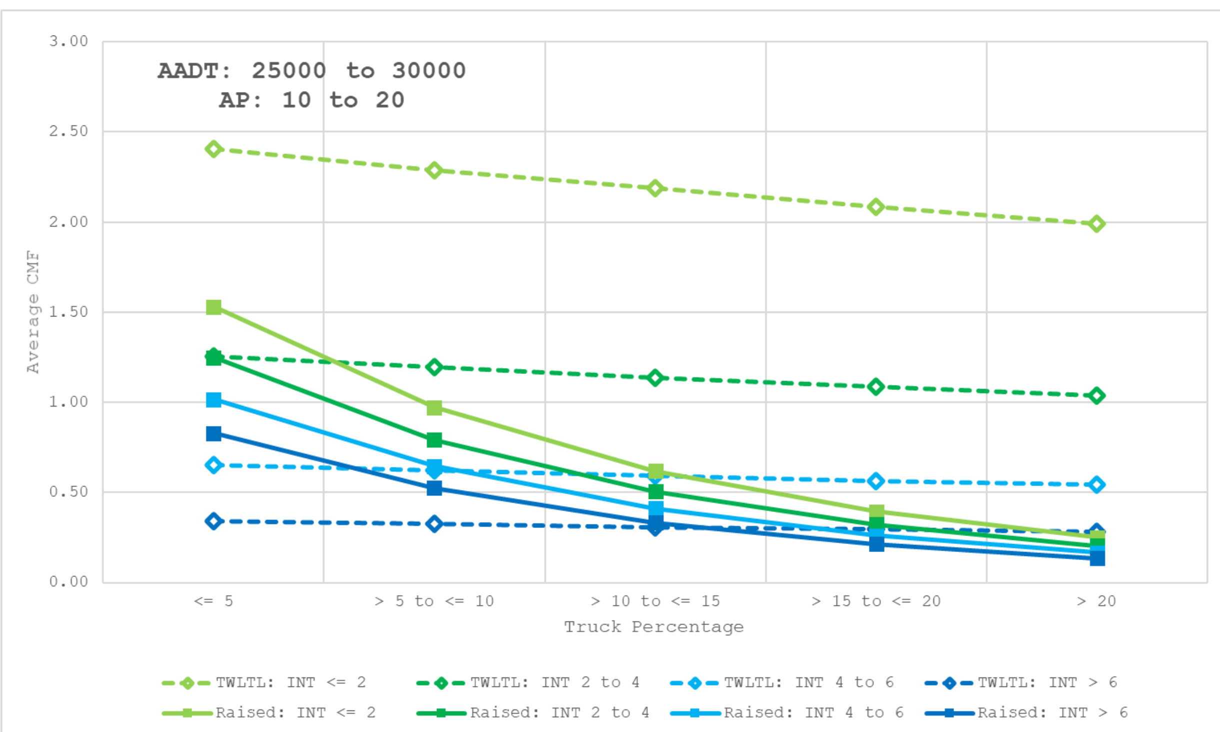
B-2-21 Suburban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



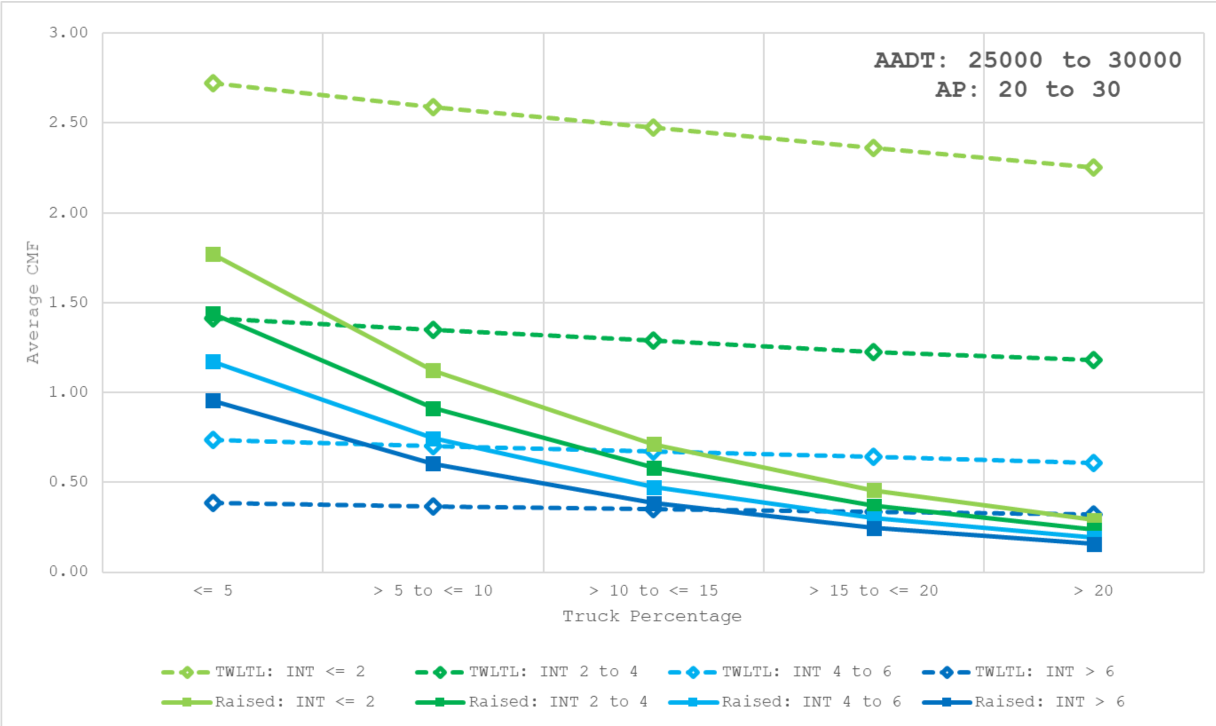
B-2-22 Suburban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



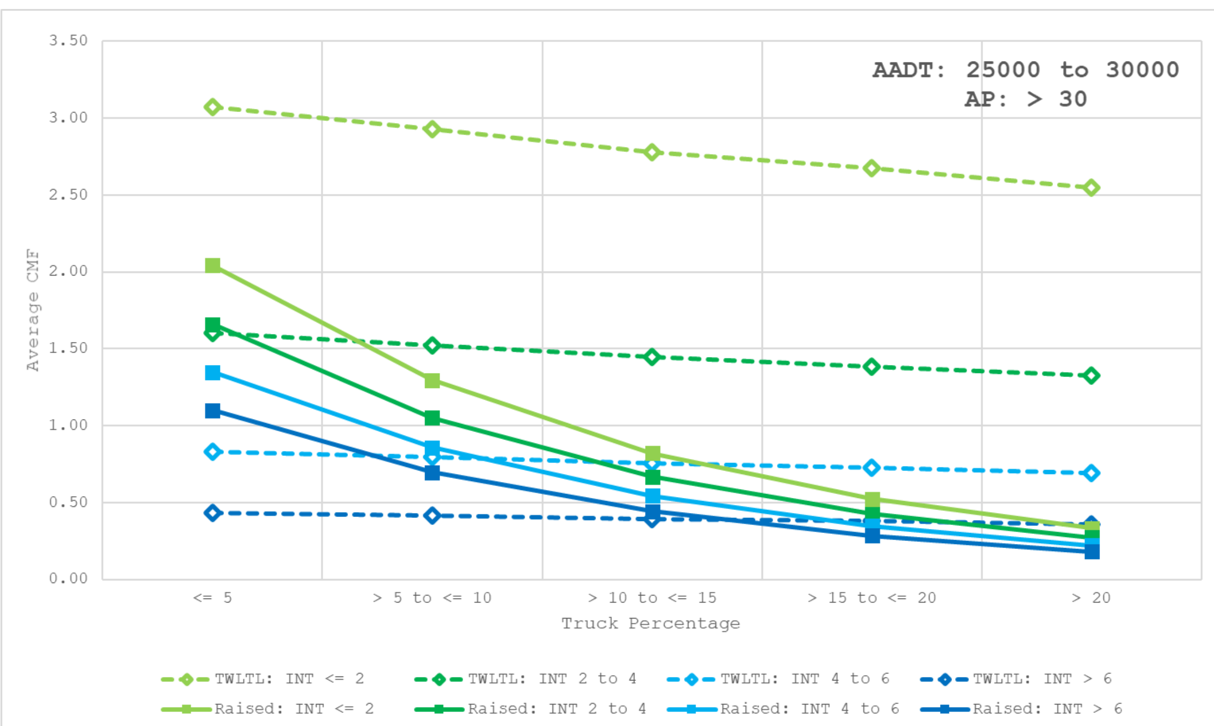
B-2-23 Suburban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



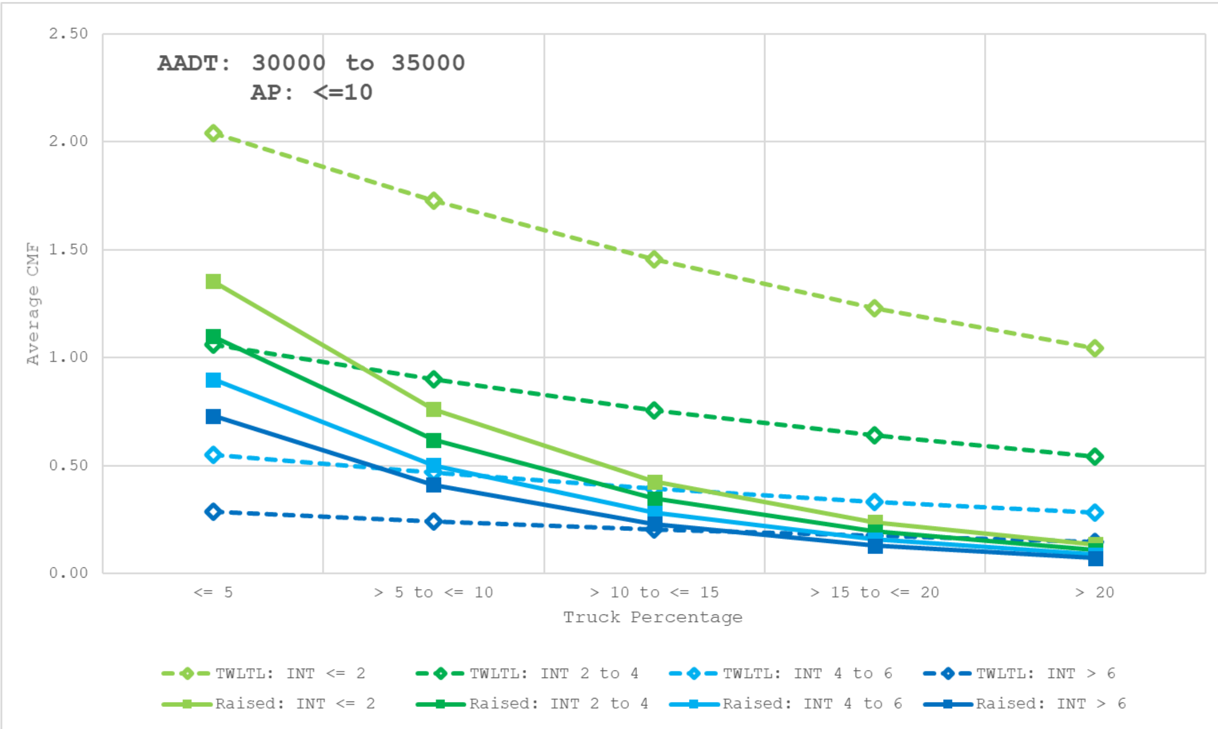
B-2-24 Suburban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



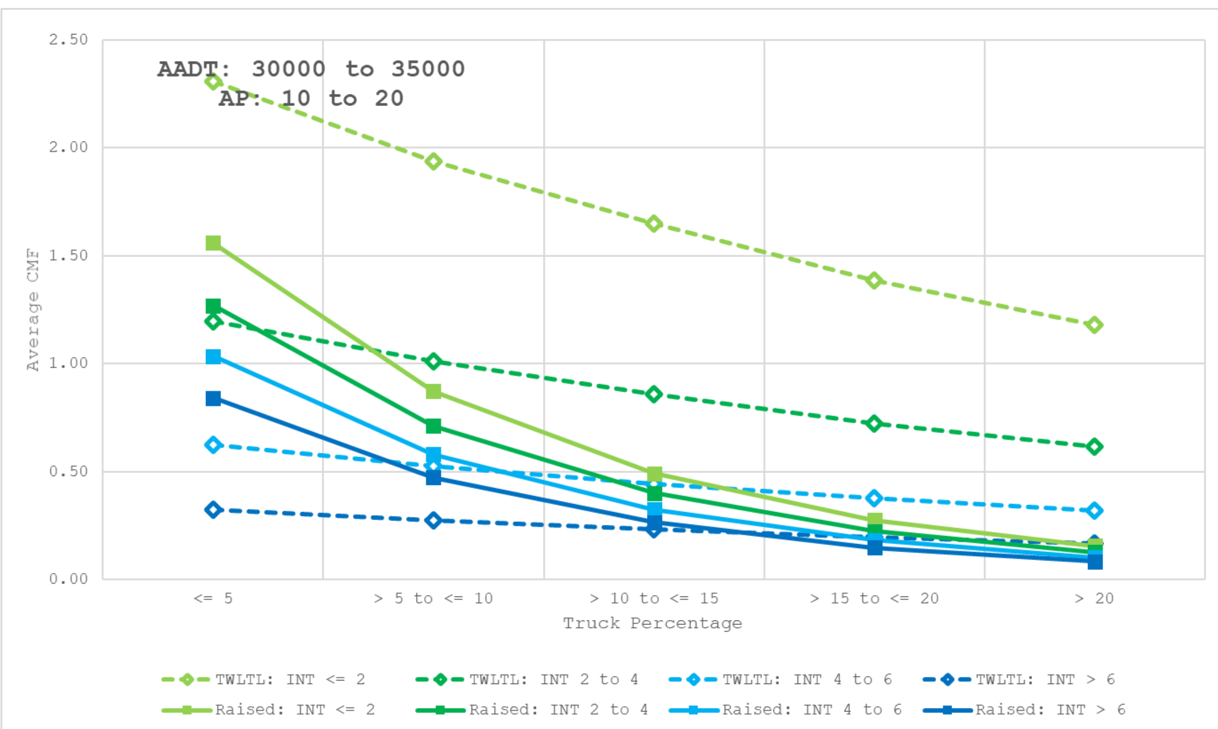
B-2-25 Suburban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



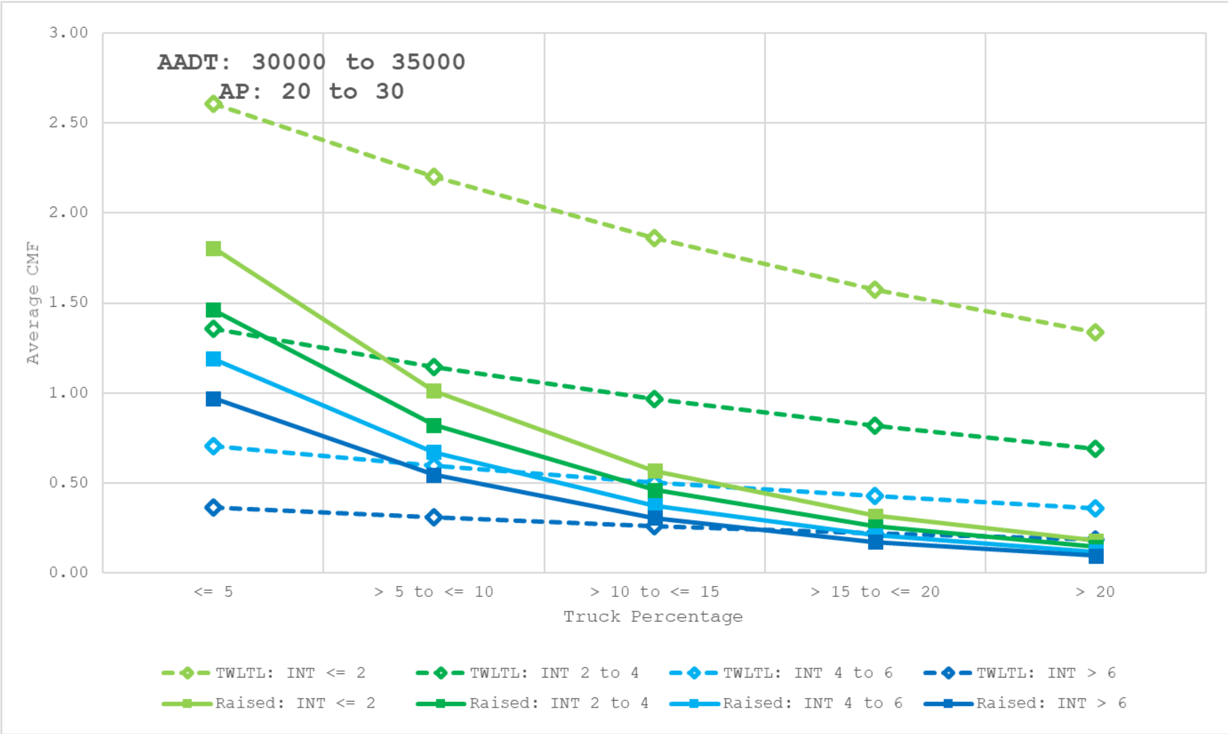
B-2-26 Suburban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



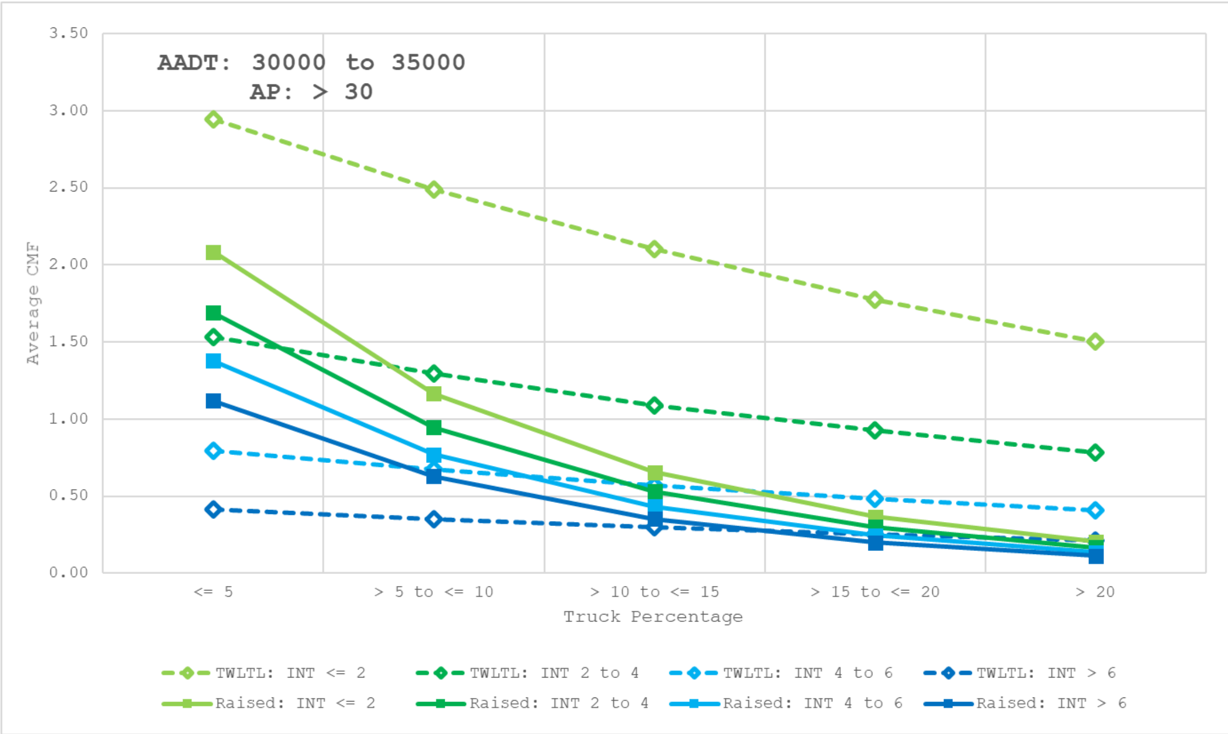
B-2-27 Suburban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



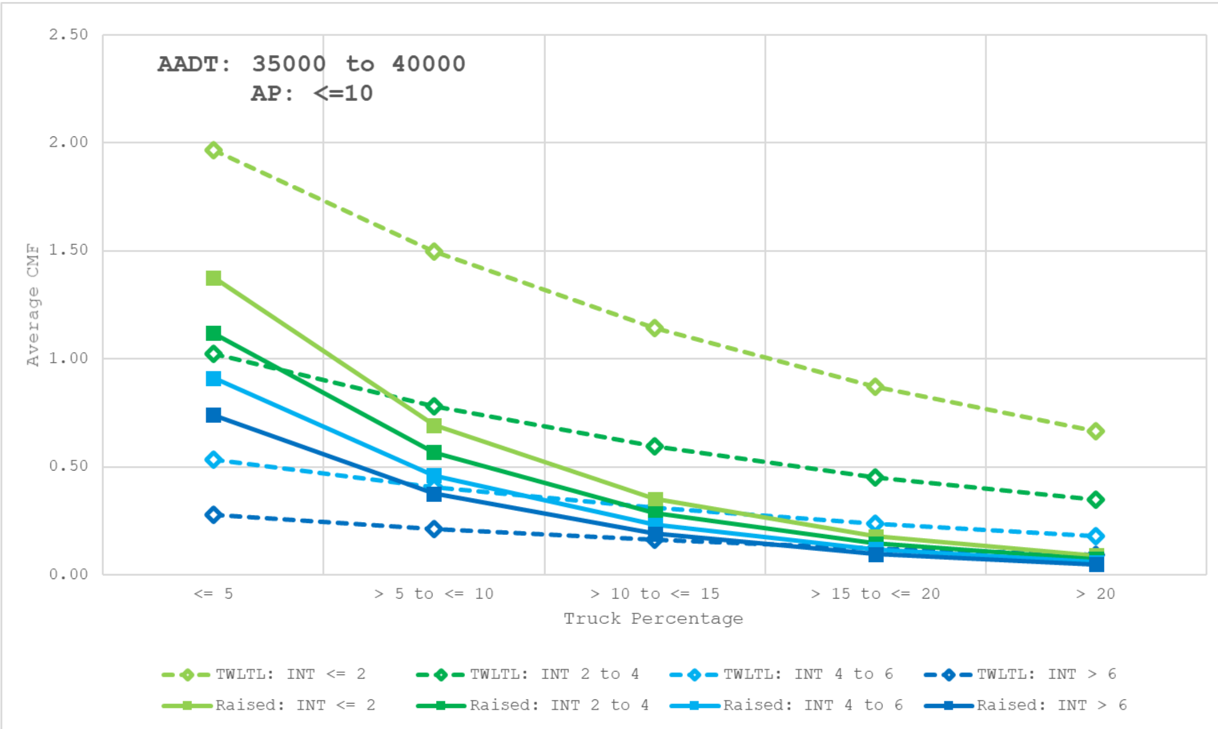
B-2-28 Suburban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



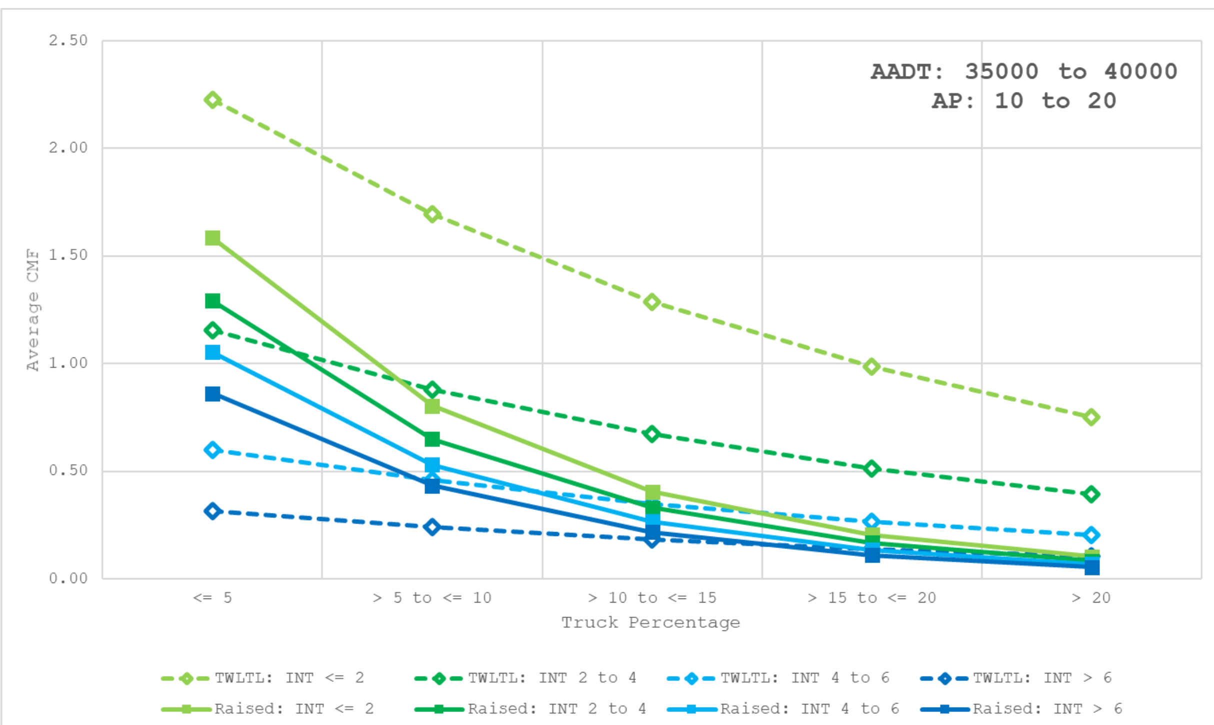
B-2-29 Suburban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



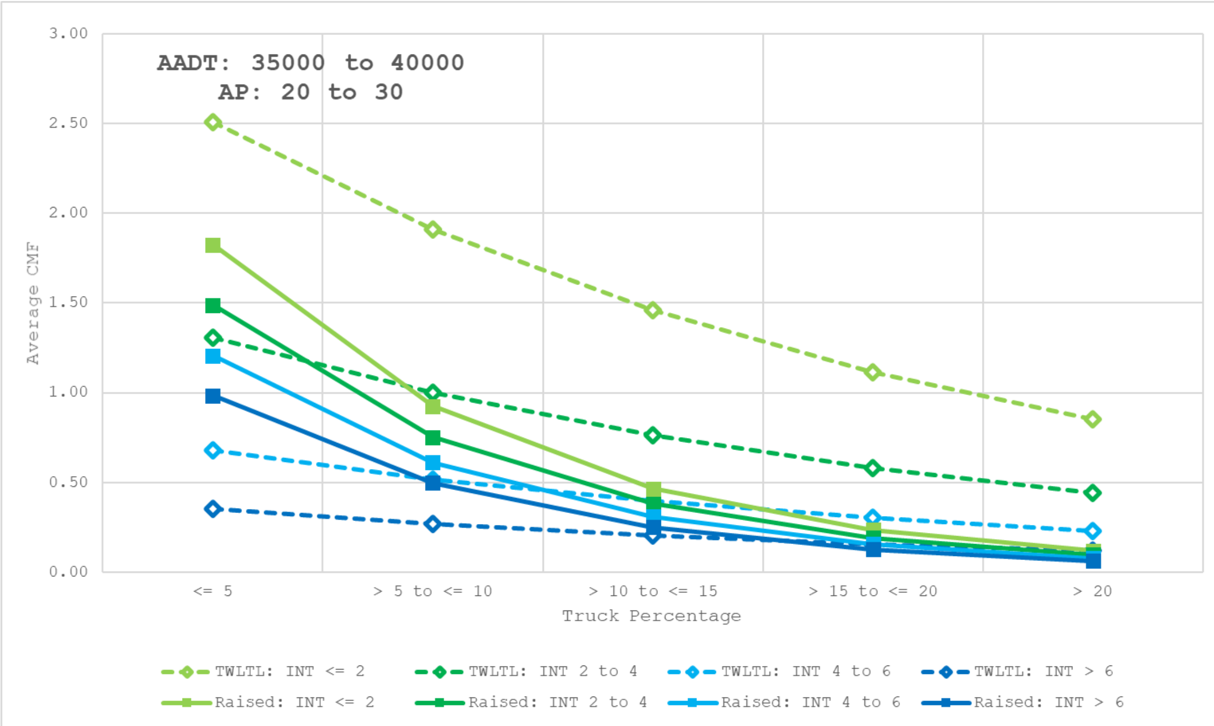
B-2-30 Suburban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



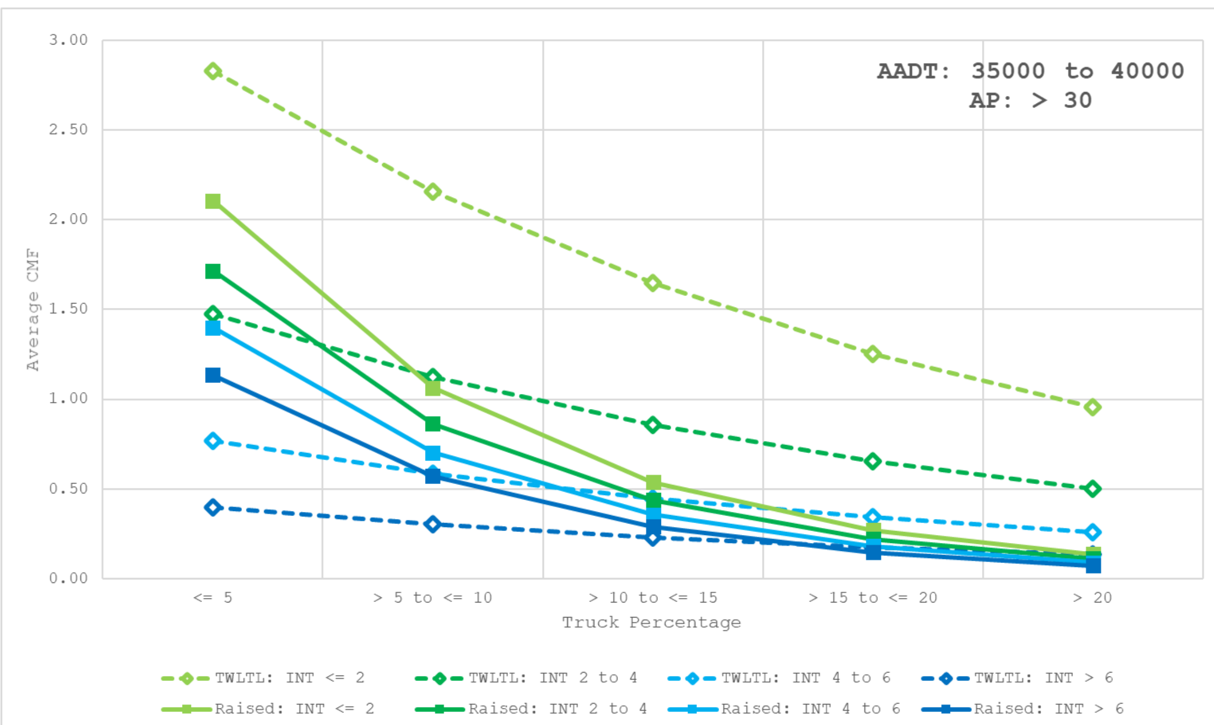
B-2-31 Suburban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



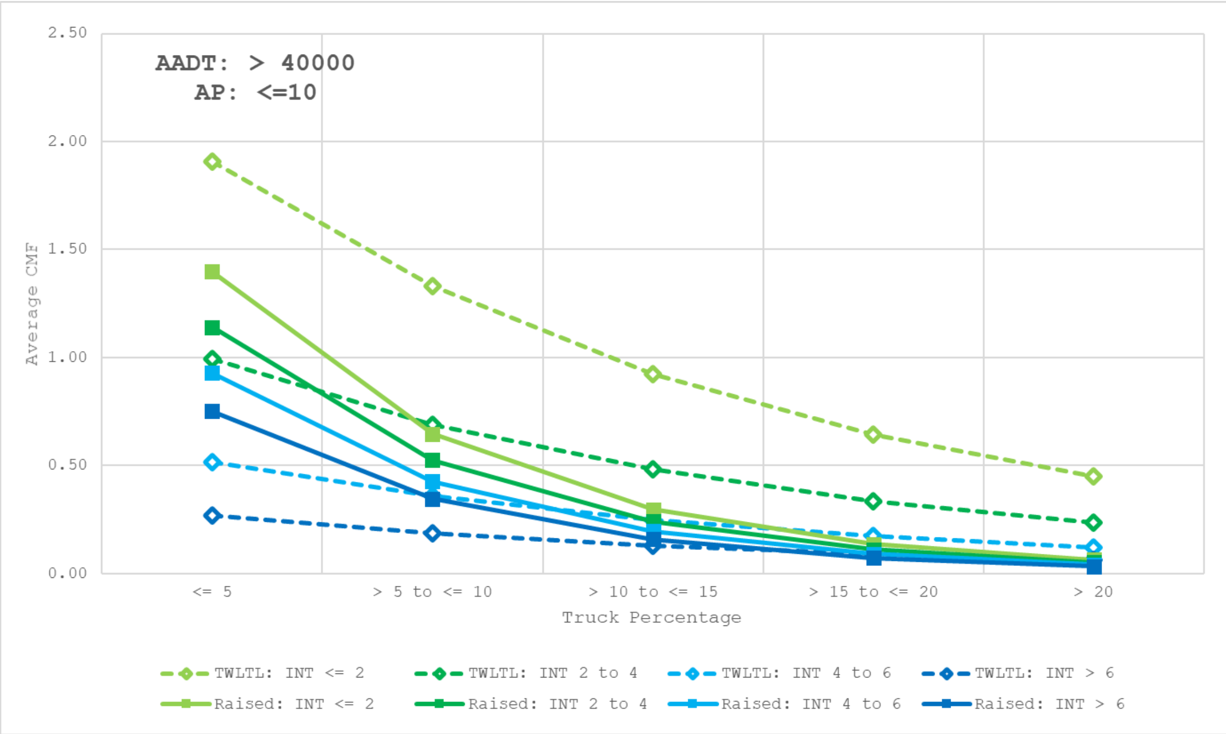
B-2-32 Suburban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



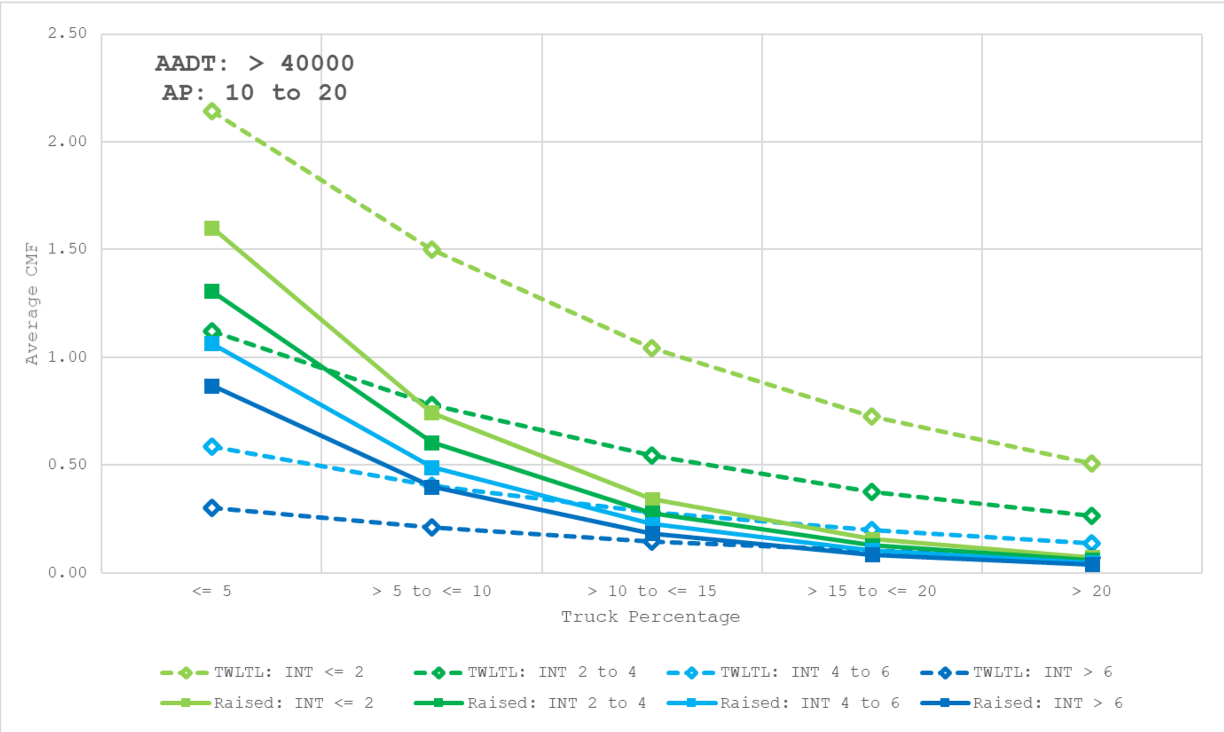
B-2-33 Suburban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



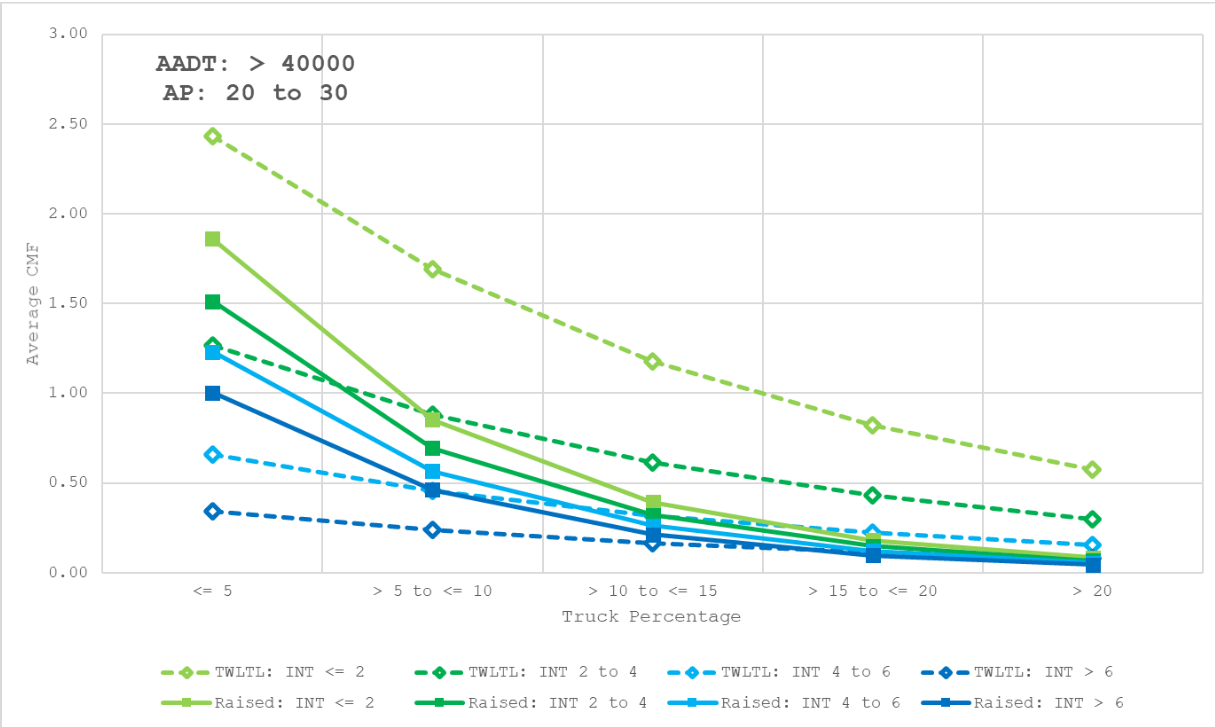
B-2-34 Suburban Residential KABCO CMF Graphs (AADT: > 40,000, AP: <= 10)



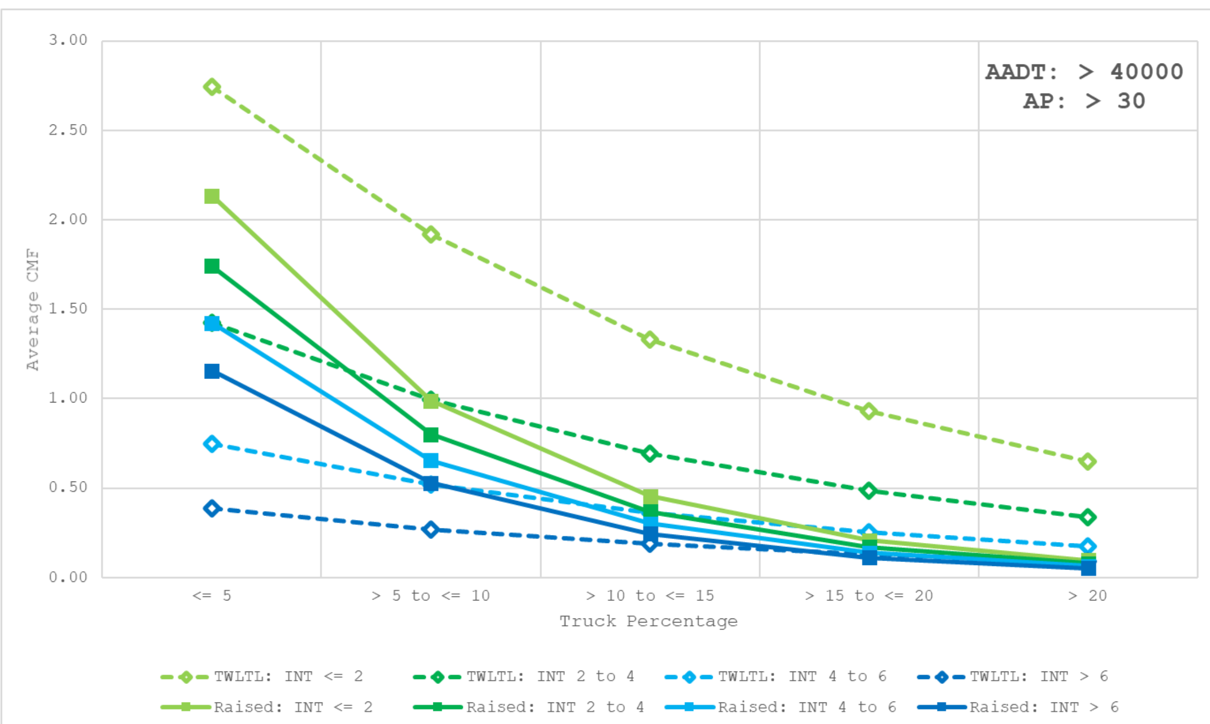
B-2-35 Suburban Residential KABCO CMF Graphs (AADT: > 40,000, AP: 10-20)



B-2-36 Suburban Residential KABCO CMF Graphs (AADT: > 40,000, AP: 20-30)



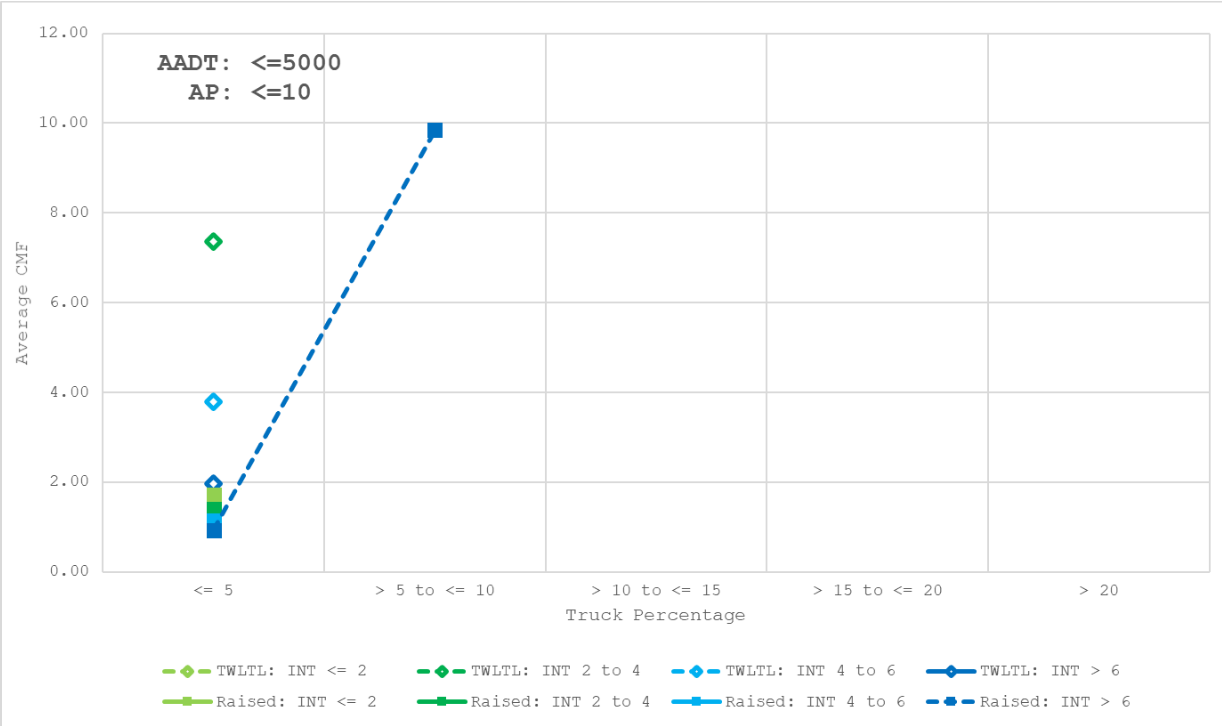
B-2-37 Suburban Residential KABCO CMF Graphs (AADT: > 40,000, AP: > 30)



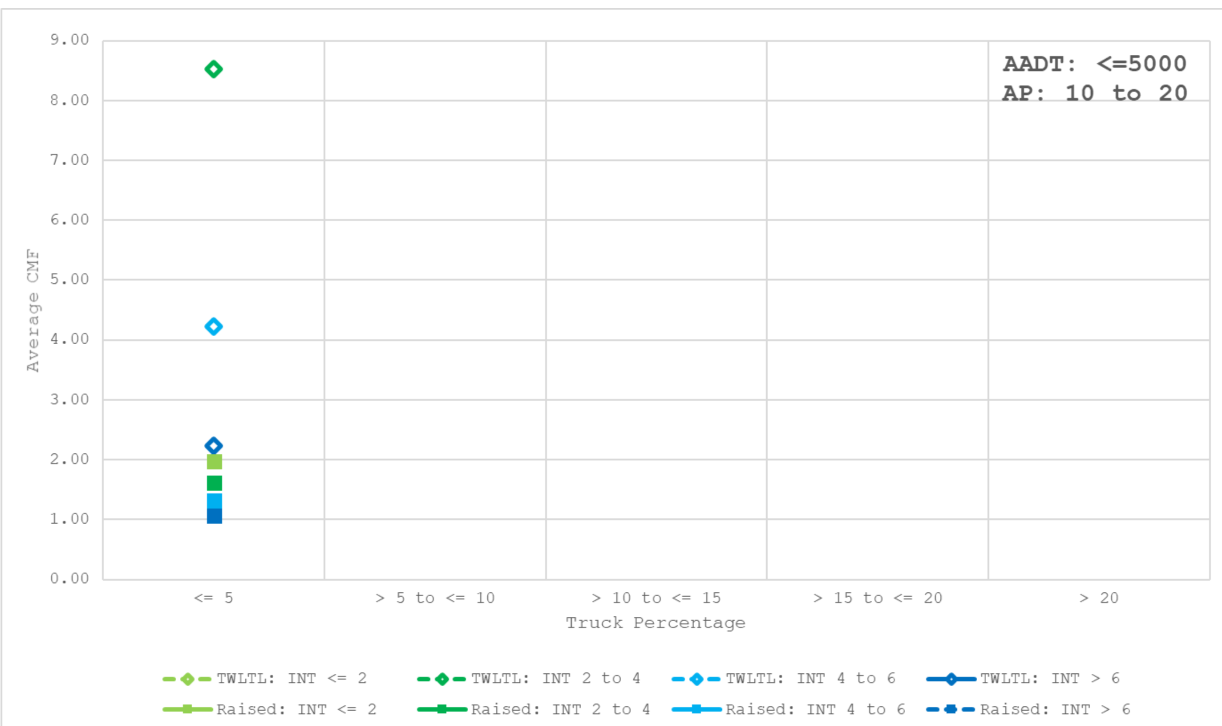
B-3-1 Urban Mixed-Use KABCO CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Rasied : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6
0 to 5000	<= 5	#N/A	7.36	3.80	1.96	1.72	1.40	1.14	0.93	#N/A	8.52	4.22	2.23	1.98	1.62	1.31	1.07	#N/A	9.15	5.08	2.58	2.29	1.85	1.51	1.23	#N/A	#N/A	5.55	2.81	2.63	2.15	1.75	1.42
	> 5 to <= 10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.84	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	7.45	3.84	2.02	1.06	1.71	1.38	1.13	0.92	8.46	4.37	2.29	1.19	1.98	1.60	1.31	1.06	9.54	4.97	2.57	1.35	2.28	1.85	1.50	1.23	#N/A	5.62	2.92	1.52	2.63	2.14	1.74	1.41
	> 5 to <= 10	#N/A	9.67	5.03	2.62	2.88	2.34	1.91	1.55	#N/A	#N/A	5.69	2.95	3.33	2.70	2.20	1.78	#N/A	#N/A	6.39	3.33	3.82	3.11	2.53	2.06	#N/A	#N/A	7.26	3.77	4.38	3.58	2.93	2.38
	> 10 to <= 15	#N/A	#N/A	#N/A	6.62	4.92	4.03	3.28	2.67	#N/A	#N/A	#N/A	7.53	5.70	4.68	3.77	3.08	#N/A	#N/A	#N/A	8.49	6.60	5.37	4.34	3.55	#N/A	#N/A	#N/A	9.65	7.58	6.16	5.04	4.11
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	8.71	7.01	5.77	4.69	#N/A	#N/A	#N/A	#N/A	9.97	8.19	6.56	5.37	#N/A	#N/A	#N/A	#N/A	#N/A	9.43	7.70	6.23	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.83	7.15
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.38	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.72	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
10000 to 15000	<= 5	6.33	3.29	1.72	0.89	1.76	1.43	1.16	0.95	7.12	3.71	1.93	1.01	2.02	1.65	1.34	1.09	8.08	4.19	2.18	1.14	2.34	1.90	1.55	1.26	9.12	4.73	2.47	1.29	2.69	2.19	1.78	1.45
	> 5 to <= 10	#N/A	5.56	2.91	1.51	2.00	1.63	1.33	1.08	#N/A	6.32	3.28	1.71	2.30	1.88	1.53	1.24	#N/A	7.07	3.70	1.92	2.66	2.16	1.76	1.43	#N/A	8.02	4.18	2.18	3.06	2.50	2.03	1.65
	> 10 to <= 15	#N/A	9.48	4.91	2.58	2.29	1.87	1.52	1.24	#N/A	#N/A	5.54	2.90	2.64	2.15	1.75	1.43	#N/A	#N/A	6.29	3.28	3.05	2.47	2.02	1.65	#N/A	#N/A	7.15	3.71	3.51	2.87	2.34	1.90
	> 15 to <= 20	#N/A	#N/A	8.43	4.41	2.66	2.17	1.76	1.44	#N/A	#N/A	9.52	4.92	3.04	2.49	2.03	1.64	#N/A	#N/A	#N/A	5.60	3.52	2.88	2.33	1.90	#N/A	#N/A	#N/A	6.34	4.06	3.32	2.70	2.19
	> 20	#N/A	#N/A	#N/A	7.55	3.08	2.50	2.05	1.67	#N/A	#N/A	#N/A	8.55	3.56	2.89	2.37	1.93	#N/A	#N/A	#N/A	9.67	4.11	3.35	2.73	2.21	#N/A	#N/A	#N/A	#N/A	4.72	3.86	3.13	2.55
15000 to 20000	<= 5	5.73	2.98	1.55	0.81	1.80	1.46	1.19	0.97	6.46	3.35	1.75	0.91	2.07	1.69	1.37	1.12	7.31	3.80	1.97	1.03	2.39	1.95	1.58	1.29	8.23	4.26	2.25	1.17	2.76	2.24	1.83	1.49
	> 5 to <= 10	7.53	3.93	2.05	1.07	1.60	1.30	1.06	0.86	8.52	4.43	2.32	1.20	1.84	1.49	1.22	0.99	9.61	5.01	2.62	1.36	2.12	1.73	1.40	1.14	#N/A	5.66	2.94	1.54	2.44	1.99	1.62	1.32
	> 10 to <= 15	9.97	5.21	2.70	1.41	1.42	1.16	0.94	0.77	#N/A	5.88	3.07	1.60	1.64	1.33	1.08	0.88	#N/A	6.66	3.45	1.81	1.88	1.53	1.25	1.02	#N/A	7.49	3.91	2.03	2.17	1.77	1.44	1.17
	> 15 to <= 20	#N/A	6.90	3.61	1.88	1.27	1.03	0.84	0.68	#N/A	7.83	4.06	2.13	1.46	1.20	0.97	0.79	#N/A	8.79	4.58	2.40	1.68	1.37	1.11	0.91	#N/A	9.97	5.22	2.71	1.94	1.58	1.29	1.05
	> 20	#N/A	9.26	4.84	2.51	1.13	0.93	0.76	0.61	#N/A	#N/A	5.41	2.81	1.31	1.07	0.86	0.70	#N/A	#N/A	6.13	3.20	1.52	1.23	1.00	0.82	#N/A	#N/A	6.93	3.62	1.74	1.42	1.16	0.94
20000 to 25000	<= 5	5.33	2.77	1.44	0.75	1.84	1.50	1.22	0.99	6.01	3.12	1.63	0.85	2.11	1.72	1.40	1.14	6.76	3.53	1.84	0.96	2.44	1.99	1.62	1.32	7.66	3.98	2.08	1.09	2.81	2.29	1.87	1.52
	> 5 to <= 10	5.85	3.05	1.60	0.83	1.35	1.10	0.90	0.73	6.60	3.44	1.80	0.94	1.56	1.27	1.04	0.84	7.46	3.89	2.02	1.06	1.79	1.46	1.19	0.97	8.44	4.39	2.29	1.19	2.07	1.69	1.38	1.12
	> 10 to <= 15	6.44	3.35	1.75	0.91	1.00	0.81	0.66	0.54	7.27	3.80	1.97	1.03	1.15	0.94	0.76	0.62	8.23	4.30	2.24	1.17	1.33	1.08	0.88	0.72	9.29	4.83	2.52	1.32	1.53	1.24	1.01	0.83
	> 15 to <= 20	7.10	3.71	1.94	1.01	0.73	0.60	0.49	0.40	8.06	4.20	2.19	1.14	0.85	0.69	0.56	0.46	9.11	4.73	2.46	1.29	0.98	0.80	0.65	0.53	#N/A	5.37	2.79	1.46	1.13	0.92	0.75	0.61
	> 20	7.88	4.12	2.14	1.11	0.55	0.45	0.36	0.29	8.91	4.65	2.42	1.26	0.63	0.51	0.42	0.34	#N/A	5.25	2.74	1.42	0.73	0.59	0.48	0.39	#N/A	5.91	3.09	1.60	0.83	0.68	0.55	0.45
25000 to 30000	<= 5	5.03	2.62	1.37	0.71	1.87	1.52	1.24	1.01	5.69	2.97	1.54	0.80	2.16	1.76	1.43	1.16	6.43	3.35	1.74	0.91	2.49	2.03	1.65	1.34	7.25	3.78	1.98	1.03	2.86	2.34	1.90	1.55
	> 5 to <= 10	4.78	2.50	1.30	0.68	1.19	0.97	0.79	0.64	5.40	2.82	1.47	0.77	1.37	1.12	0.91	0.74	6.13	3.20	1.66	0.86	1.58	1.29	1.04	0.85	6.91	3.61	1.88	0.97	1.82	1.48	1.21	0.98
	> 10 to <= 15	4.58	2.37	1.24	0.65	0.76	0.61	0.50	0.41	5.15	2.69	1.40	0.73	0.87	0.71	0.58	0.47	5.83	3.04	1.58	0.82	1.01	0.82	0.67	0.54	6.60	3.44	1.79	0.93	1.16	0.94	0.77	0.62
	> 15 to <= 20	4.35	2.27	1.18	0.62	0.48	0.39	0.32	0.26	4.93	2.58	1.34	0.70	0.55	0.45	0.37	0.30	5.57	2.89	1.52	0.79	0.64	0.52	0.42	0.34	6.26	3.28	1.71	0.89	0.74	0.60	0.49	0.40
	> 20	4.17	2.18	1.13	0.59	0.31	0.25	0.20	0.17	4.72	2.46	1.28	0.67	0.35	0.29	0.23	0.19	5.33	2.78	1.44	0.75	0.41	0.33	0.27	0.22	6.02	3.12	1.63	0.85	0.47	0.38	0.31	0.25
30000 to 35000	<= 5	4.82	2.51	1.31	0.68	1.91	1.56	1.26	1.03	5.46	2.83	1.48	0.77	2.20	1.79	1.46	1.18	6.14	3.20	1.67	0.87	2.53	2.06	1.68	1.37	6.94	3.62	1.89	0.98	2.92	2.38	1.94	1.58
	> 5 to <= 10	4.06	2.12	1.10	0.58	1.07	0.87	0.71	0.58	4.59	2.40	1.24	0.65	1.23	1.00	0.82	0.66	5.17	2.70	1.40	0.73	1.42	1.16	0.94	0.77	5.86	3.06	1.59	0.83	1.64	1.34	1.09	0.89
	> 10 to <= 15	3.42	1.79	0.93	0.49	0.60	0.49	0.40	0.32	3.88	2.03	1.06	0.55	0.69	0.57	0.46	0.37	4.39	2.29	1.19	0.62	0.80	0.65	0.53	0.43	4.94	2.57	1.35	0.70	0.92	0.75	0.61	0.50
	> 15 to <= 20	2.91	1.52	0.79	0.41	0.34	0.28	0.22	0.18	3.30	1.71	0.90	0.46	0.39	0.32	0.26	0.21	3.72	1.94	1.01	0.52	0.45	0.37	0.30	0.24	4.20	2.19	1.14	0.59	0.52	0.42	0.34	0.28
	> 20	2.47	1.29	0.67	0.35	0.19	0.15	0.13	0.10	2.79	1.45	0.76	0.39	0.22	0.18	0.15	0.12	3.14	1.64	0.86	0.44	0.25	0.21	0.17	0.14	3.55	1.85	0.97	0.50	0.29	0.24	0.19	0.16
35000 to 40000	<= 5	4.64	2.42	1.26	0.65	1.93	1.57	1.28	1.04	5.25	2.74	1.42	0.74	2.23	1.82	1.48	1.21	5.91	3.09	1.60	0.84	2.57	2.10	1.70	1.39	6.67	3.50	1.82	0.95	2.95	2.42	1.96	1.60
	> 5 to <= 10	3.53	1.84	0.96	0.50	0.98	0.79	0.65	0.53	3.99	2.08	1.08	0.56	1.12	0.92	0.75	0.61	4.50	2.35	1.22	0.64	1.30	1.06	0.86	0.70	5.10	2.66	1.39	0.72	1.50	1.21	0.99	0.81
	> 10 to <= 15	2.69	1.41	0.73	0.38	0.49	0.40	0.33	0.27	3.04	1.58	0.83	0.43	0.57	0.46	0.38	0.31	3.44	1.79	0.93	0.49	0.66	0.53	0.44	0.35	3.89	2.02	1.06	0.55	0.76	0.62	0.50	0.41
	> 15 to <= 20	2.05	1.08	0.56	0.29	0.25	0.20	0.17	0.14	2.33	1.21	0.63	0.33	0.29	0.23	0.19	0.16	2.63	1.36	0.72	0.37	0.33	0.27	0.22	0.18	2.96	1.55	0.81	0.42	0.38	0.31	0.25	0.21
	> 20	1.57	0.82	0.43	0.22	0.13	0.10	0.08	0.07	1.78	0.92	0.48	0.25	0.15	0.12	0.10	0.08	2.00	1.05	0.54	0.28	0.17	0.14	0.11	0.09	2.27	1.18	0.61	0.32	0.19	0.16	0.13	0.10
>40000	<= 5	4.50	2.35	1.22	0.64	1.96	1.60	1.31	1.06	5.09	2.64	1.38	0.72	2.26	1.84	1.51	1.22	5.77	2.99	1.56	0.81	2.61	2.12	1.74	1.41	6.50	3.39	1.76	0.92	3.01	2.46	1.99	1.62
	> 5 to <= 10	3.14	1.63	0.85	0.44	0.90	0.74	0.60	0.49	3.54	1.84	0.96	0.50	1.04	0.85	0.69	0.56	3.99	2.08	1.08	0.57	1.20	0.98	0.79	0.65	4.49	2.35	1.23	0.64	1.38	1.13	0.92	0.75
	> 10 to <= 15	2.18	1.14	0.59	0.31	0.42	0.34	0.28	0.23	2.46	1.28	0.67	0.35	0.48	0.39	0.32	0.26	2.78	1.45	0.76	0.39	0.55	0.45	0.37	0.30	3.15	1.64	0.86	0.45	0.64	0.52	0.42	0.35
	> 15 to <= 20	1.53	0.79	0.41	0.21	0.19	0.16	0.13	0.10	1.72	0.90	0.47	0.24	0.22	0.18	0.15	0.12	1.95	1.01	0.53	0.27	0.26	0.21	0.17	0.14	2.20	1.14	0.60	0.31	0.30	0.24	0.20	0.16
	> 20	1.06	0.55	0.29	0.15	0.09	0.07	0.06	0.05	1.20	0.63	0.33	0.17	0.10	0.08	0.07	0.06	1.36	0.71	0.37	0.19	0.12	0.10	0.08	0.06	1.53	0.80	0.42	0.22	0.14	0.11	0.09	0.07

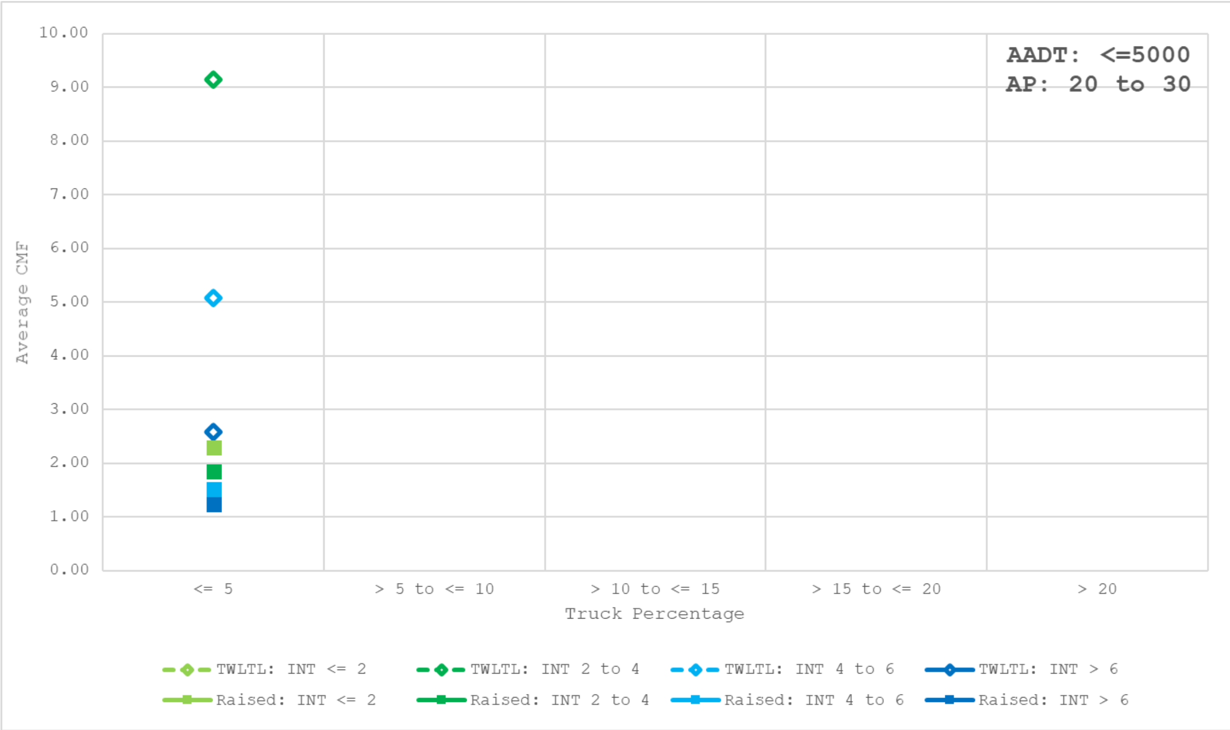
B-3-2 Urban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: <= 10)



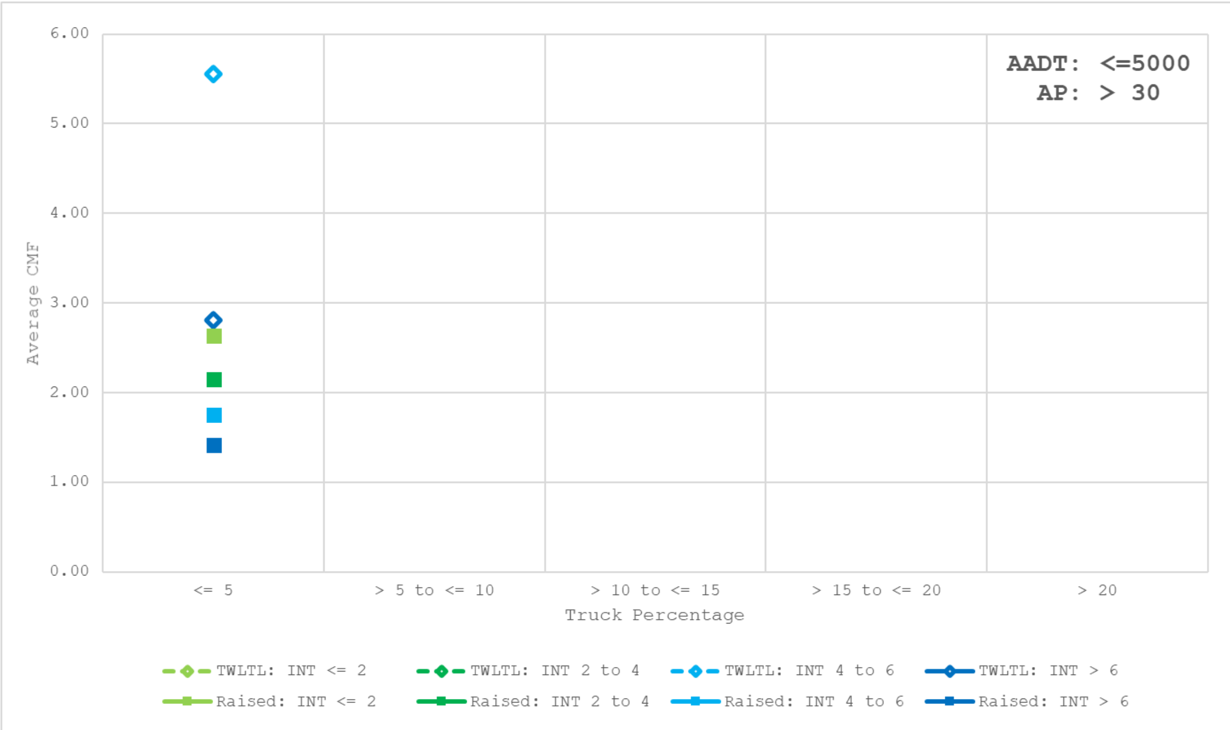
B-3-3 Urban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: 10-20)



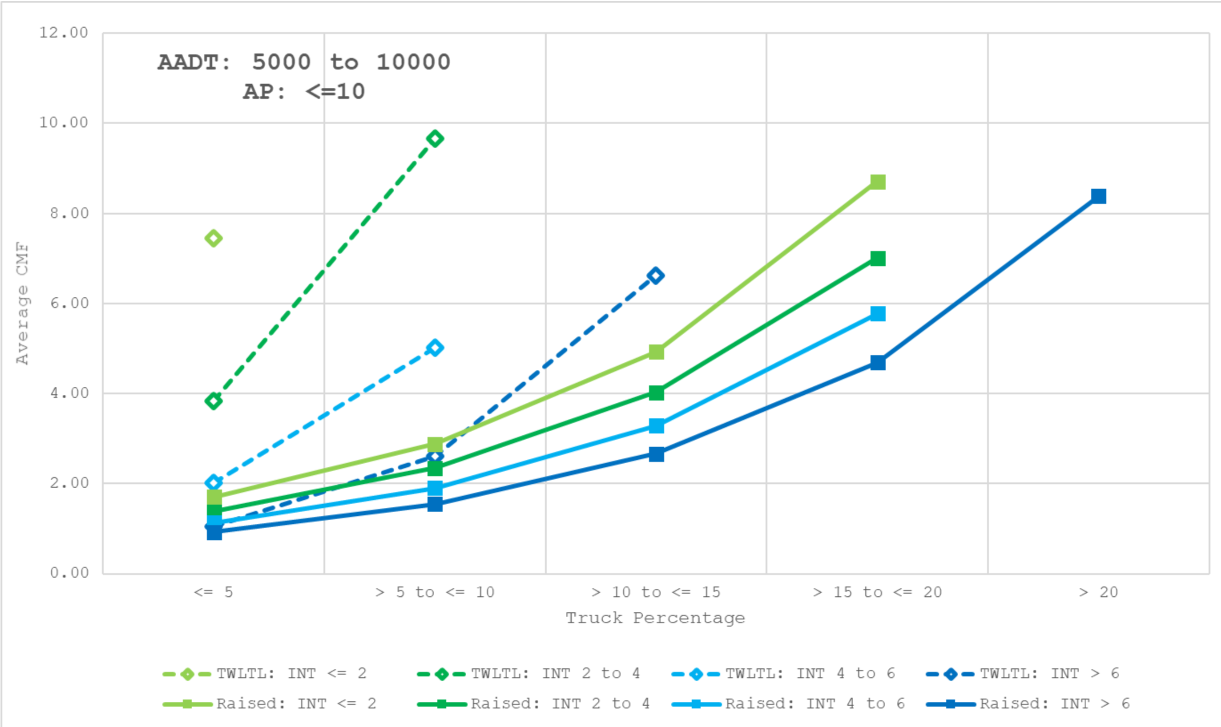
B-3-4 Urban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: 20-30)



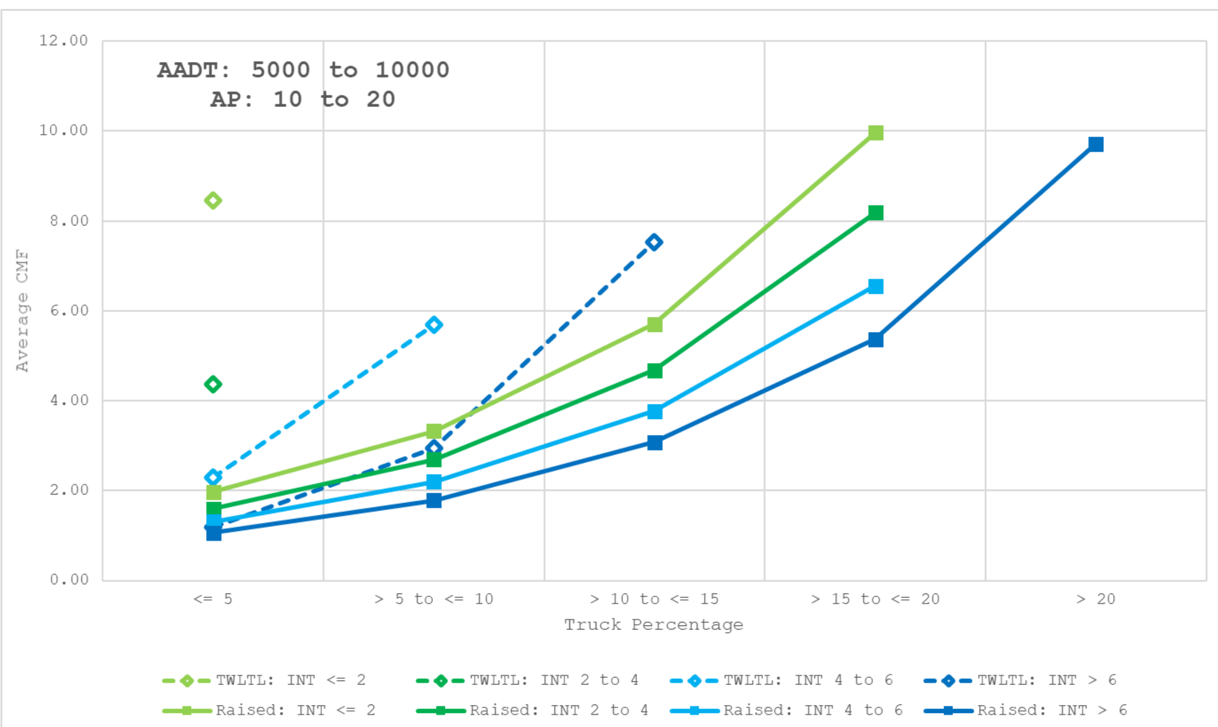
B-3-5 Urban Mixed-Use KABCO CMF Graphs (AADT: <= 5,000, AP: > 30)



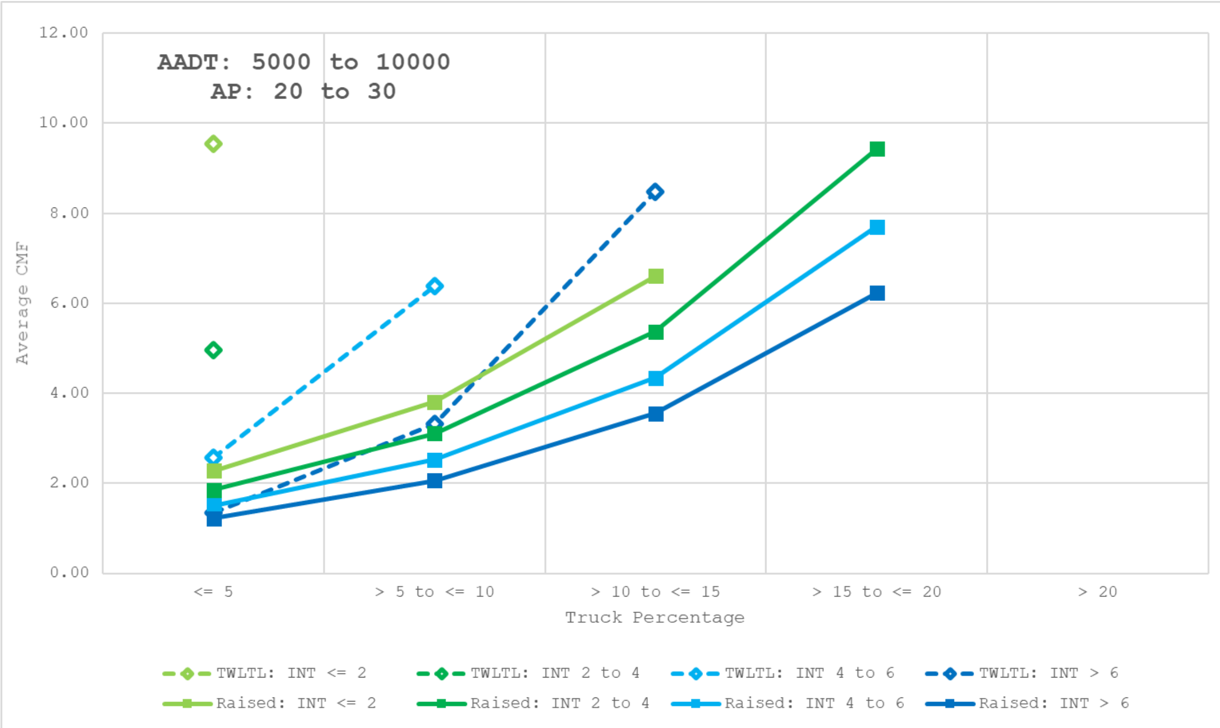
B-3-6 Urban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



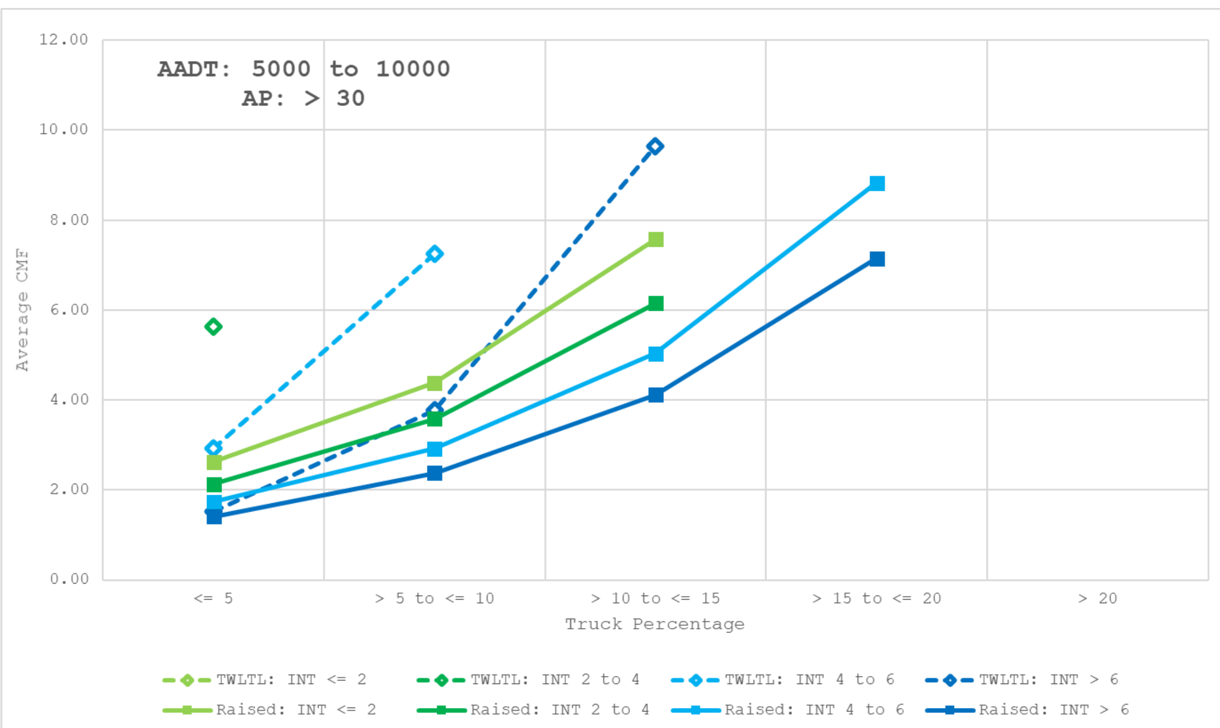
B-3-7 Urban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



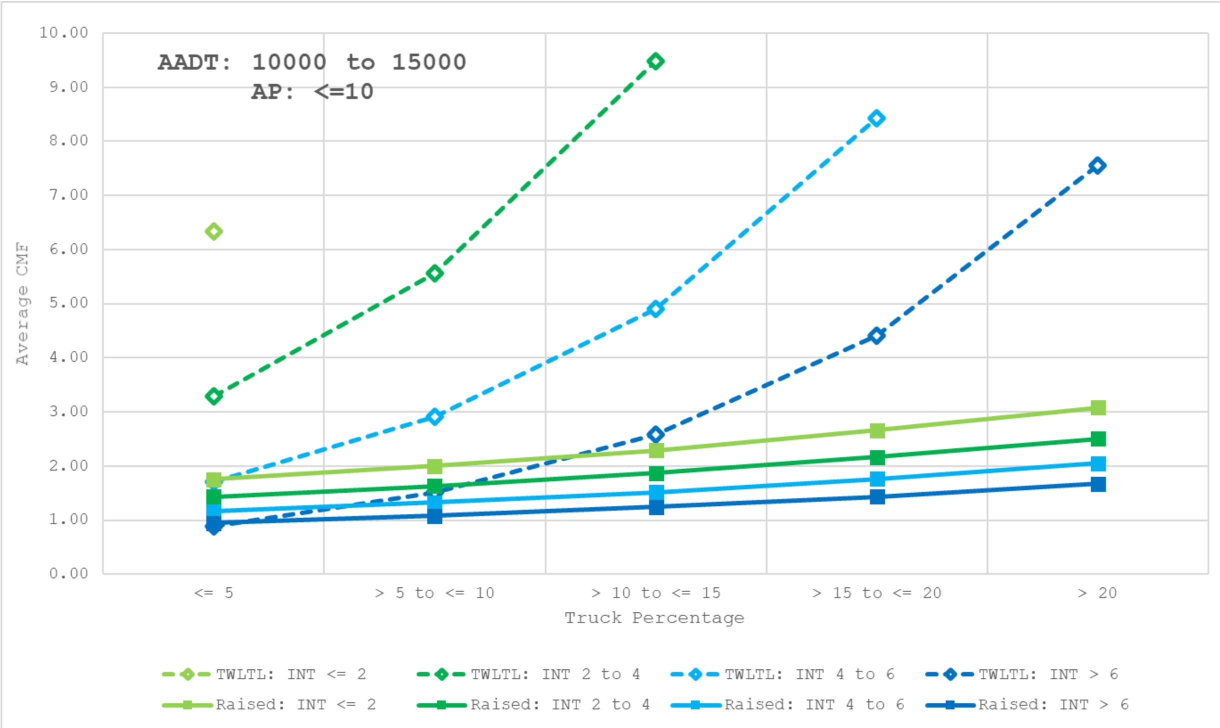
B-3-8 Urban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



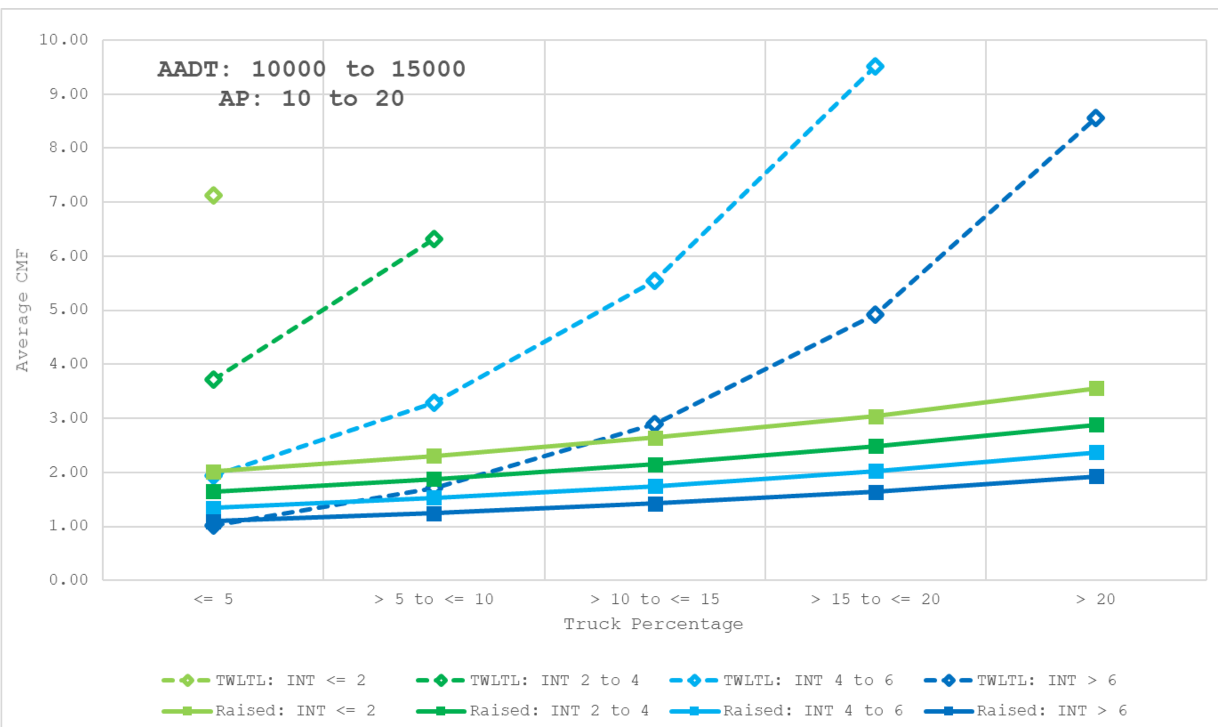
B-3-9 Urban Mixed-Use KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



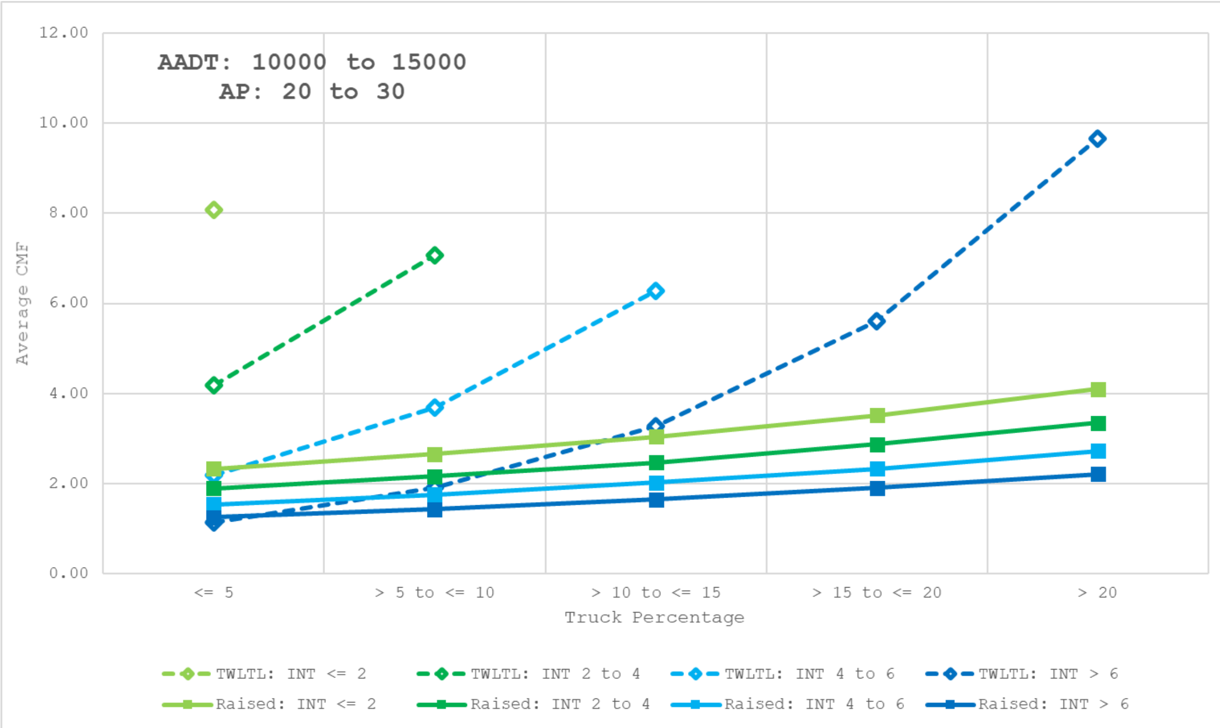
B-3-10 Urban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



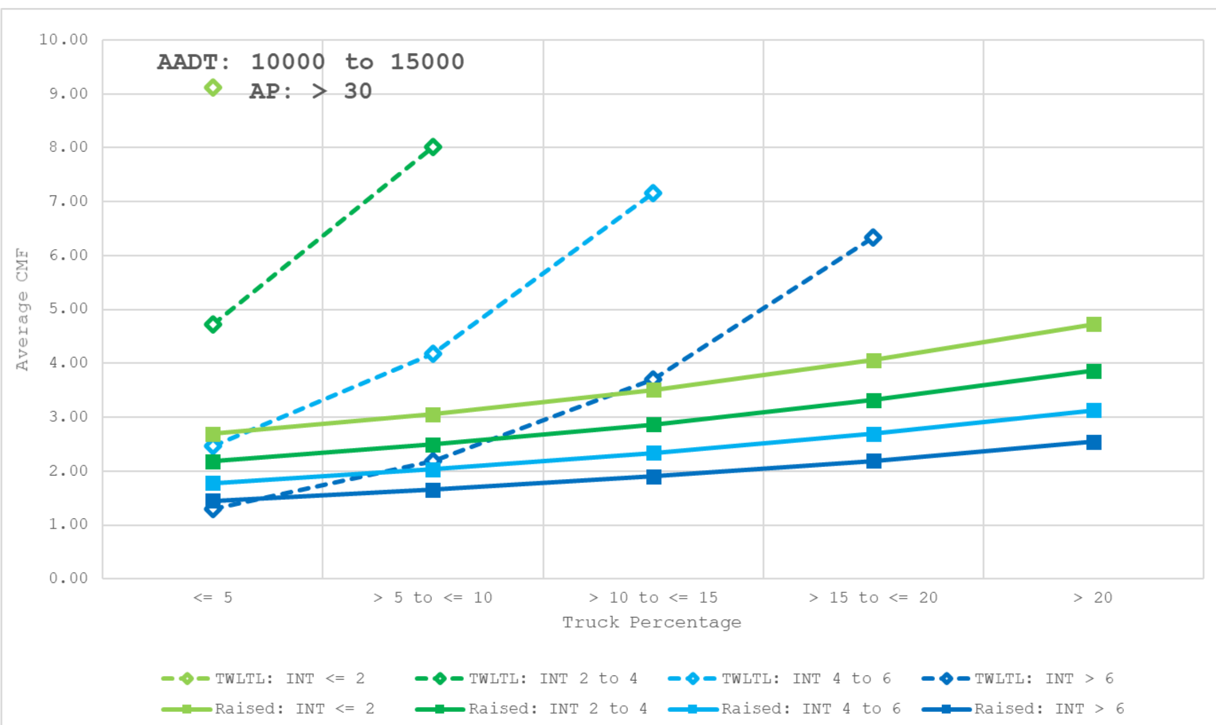
B-3-11 Urban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



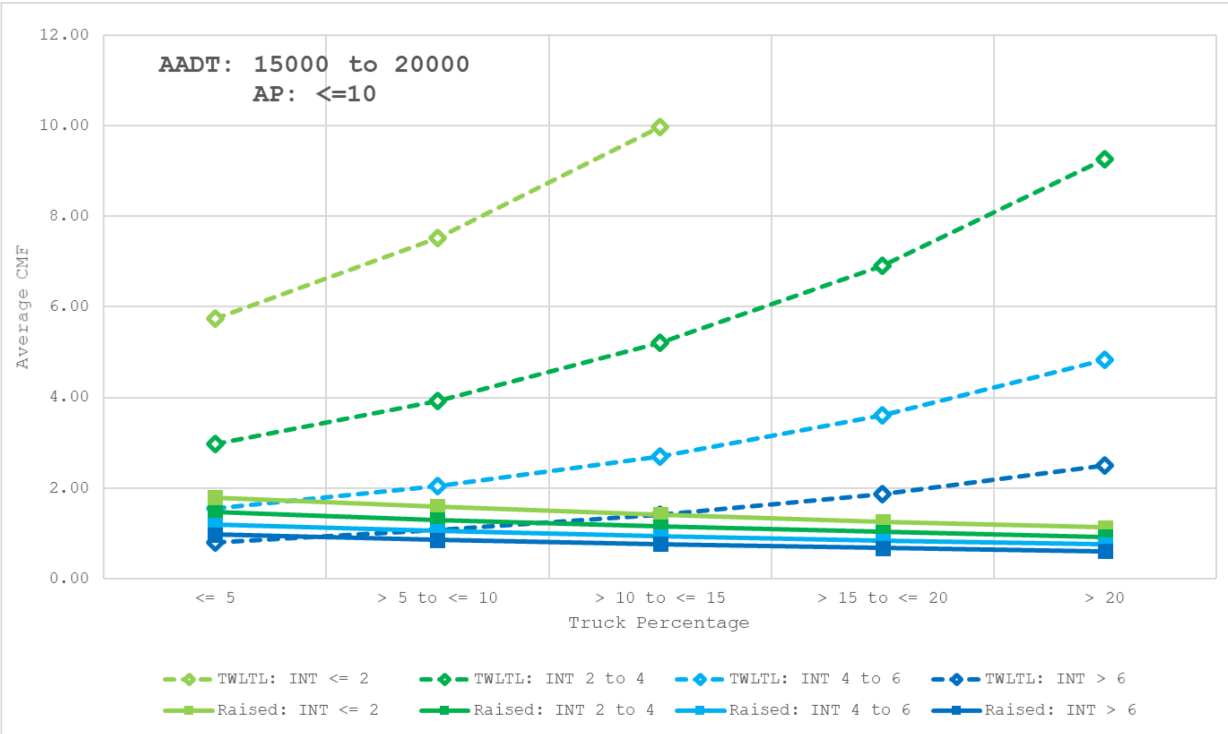
B-3-12 Urban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



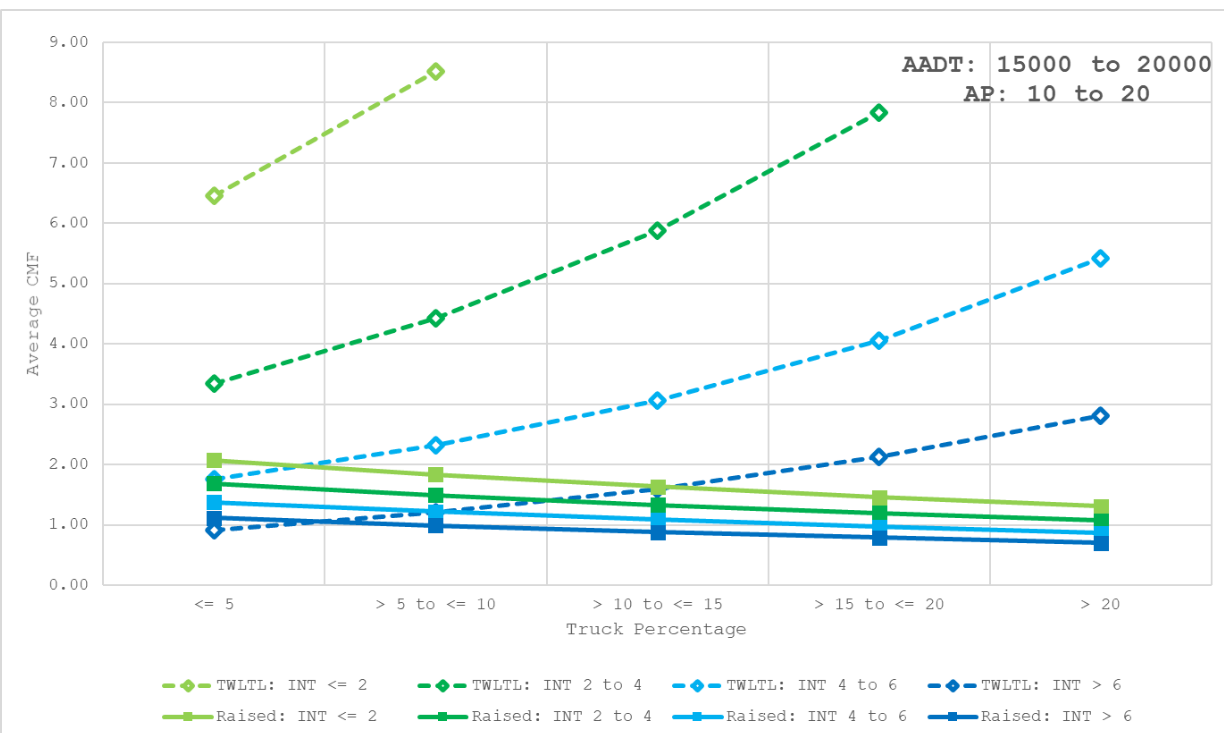
B-3-13 Urban Mixed-Use KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



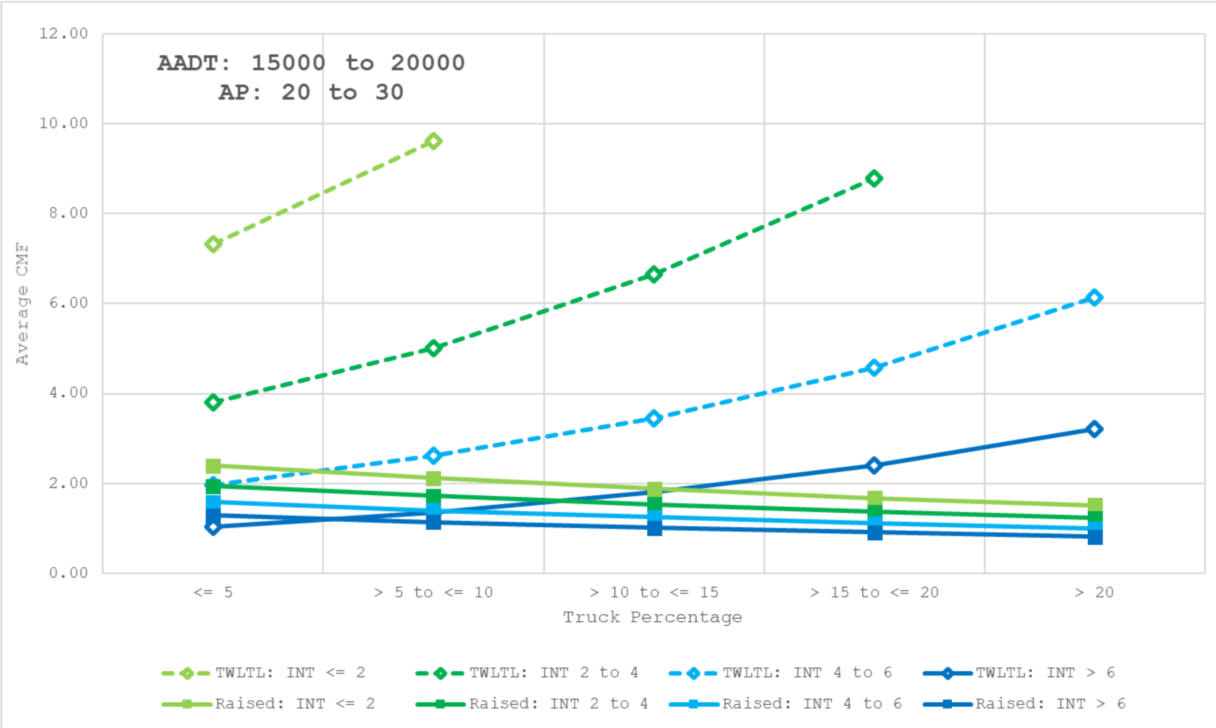
B-3-14 Urban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



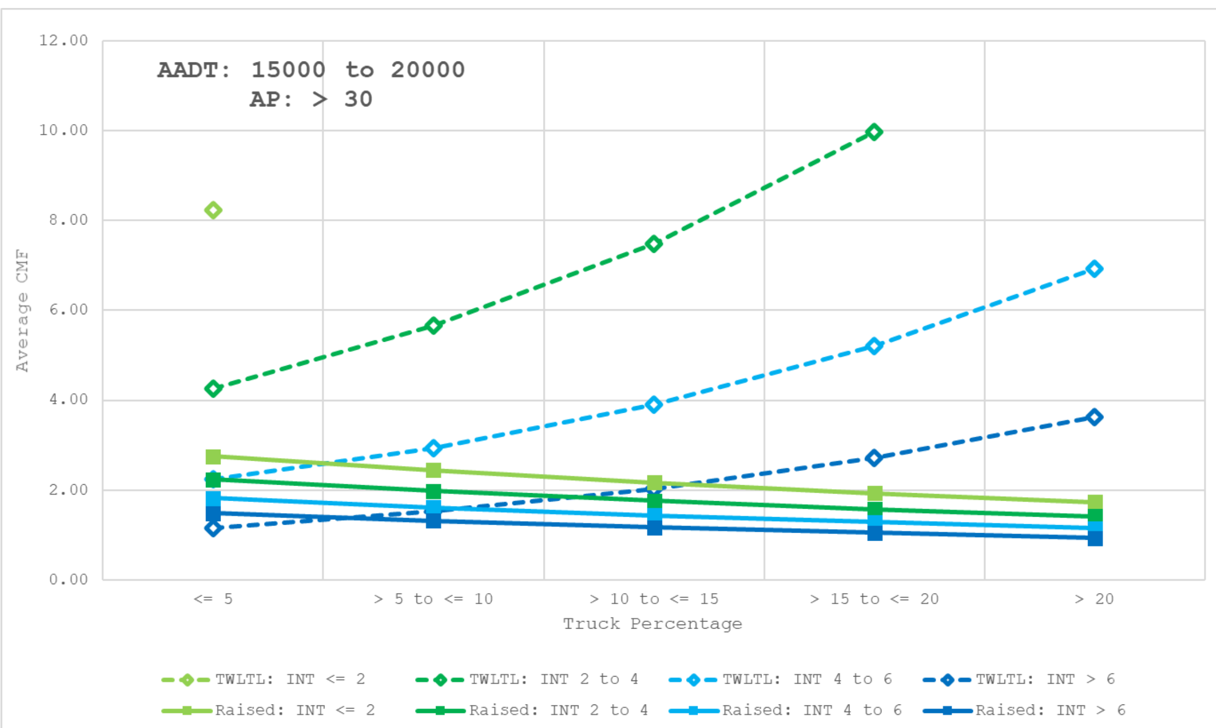
B-3-15 Urban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



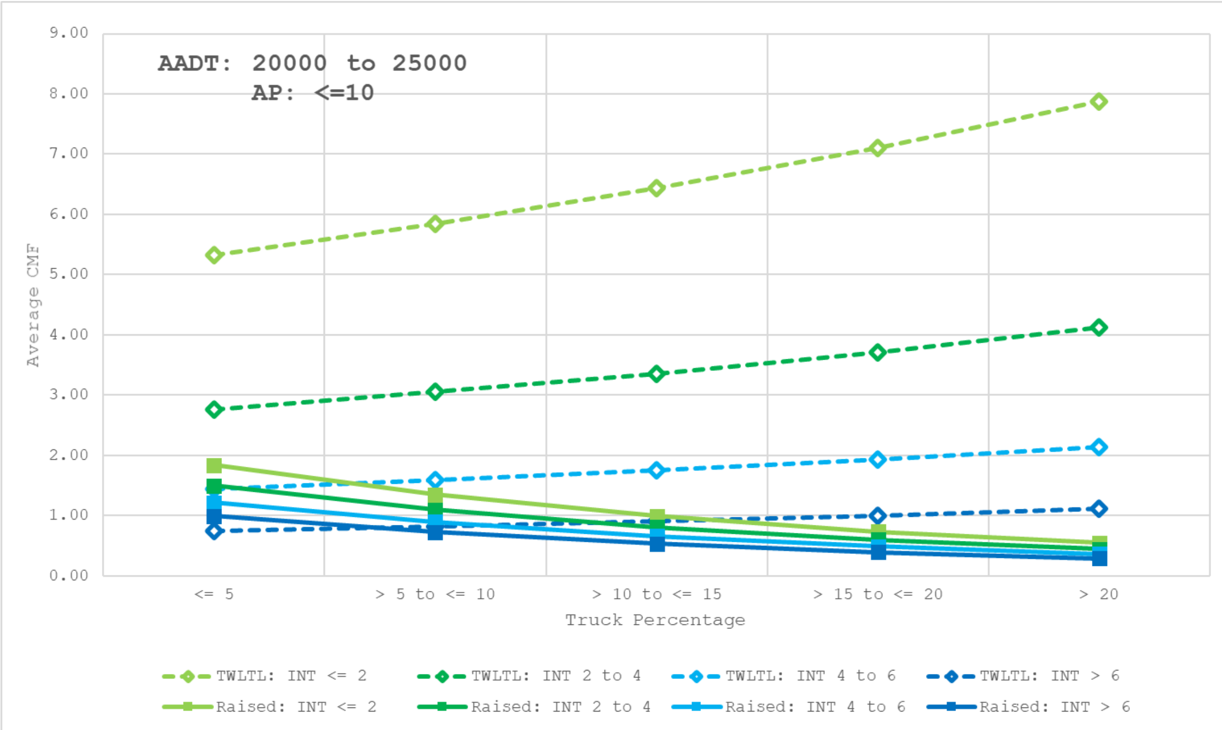
B-3-16 Urban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



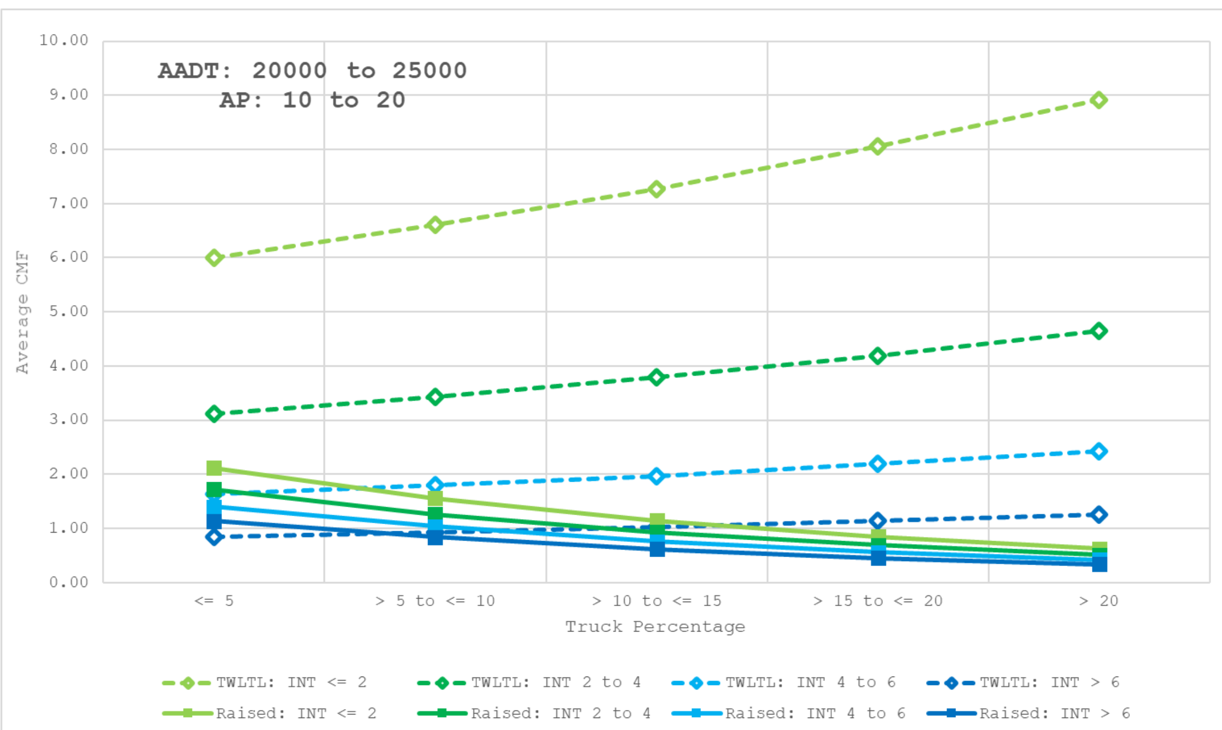
B-3-17 Urban Mixed-Use KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



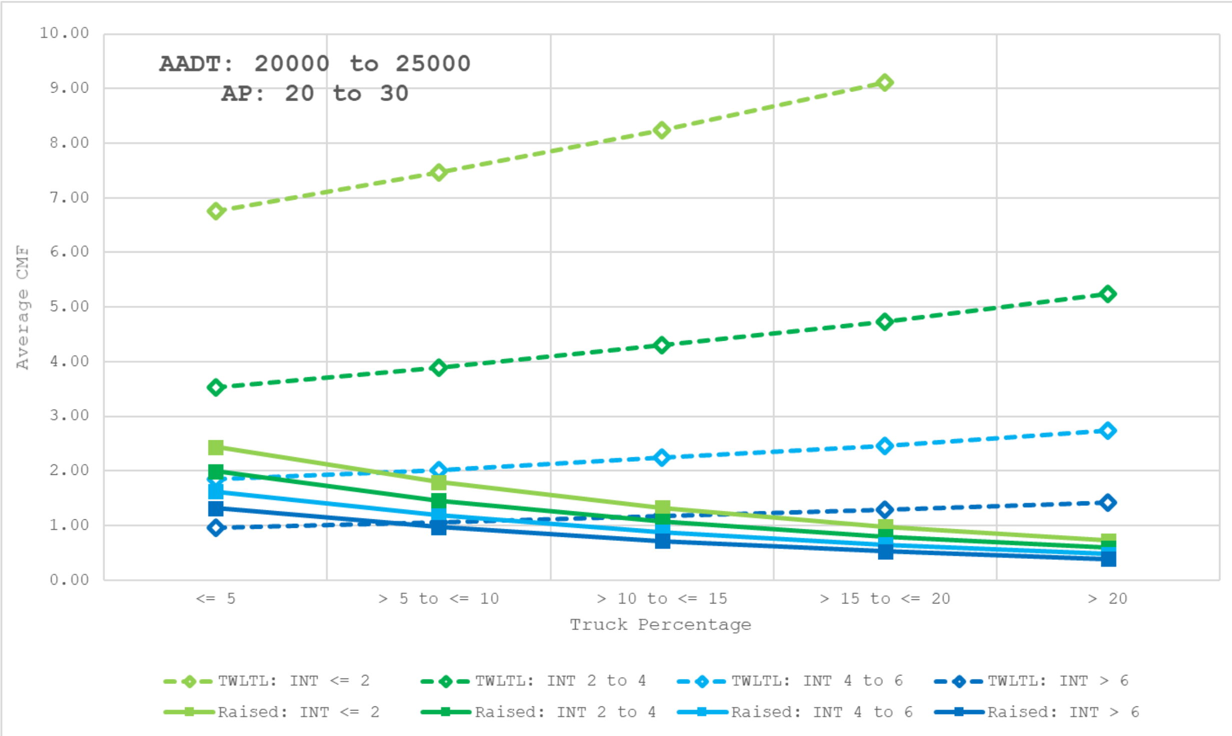
B-3-18 Urban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



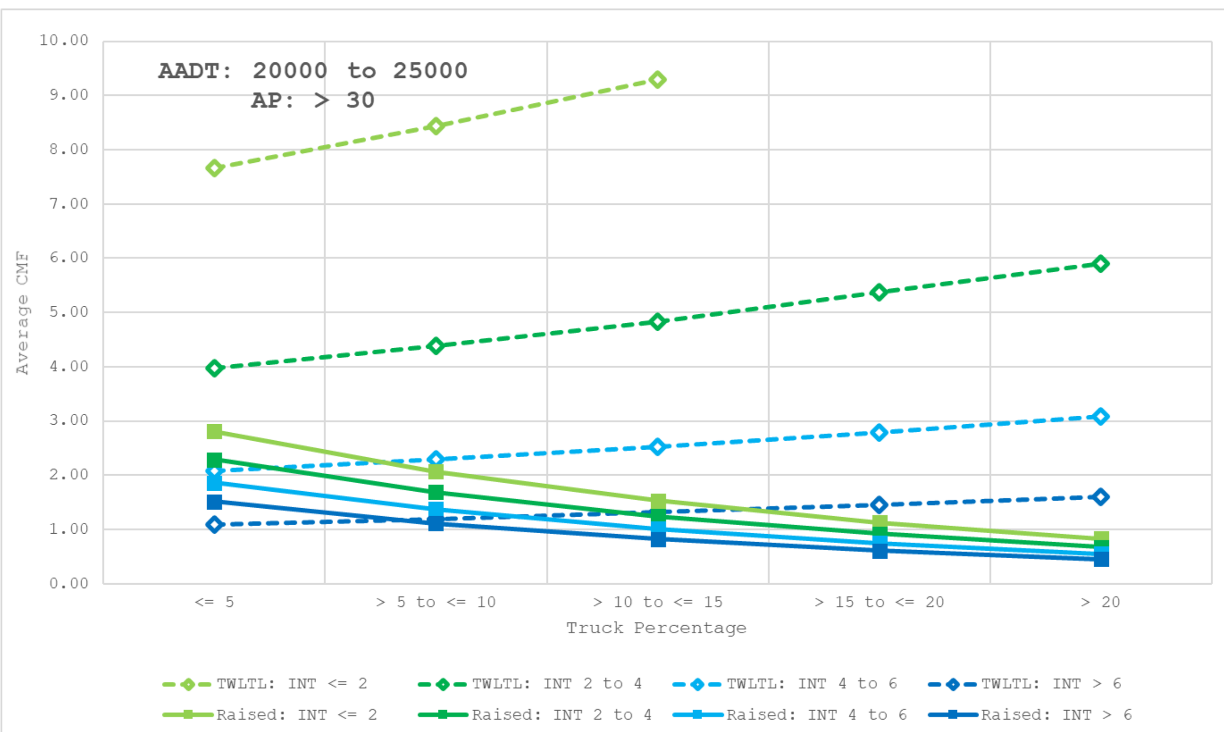
B-3-19 Urban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



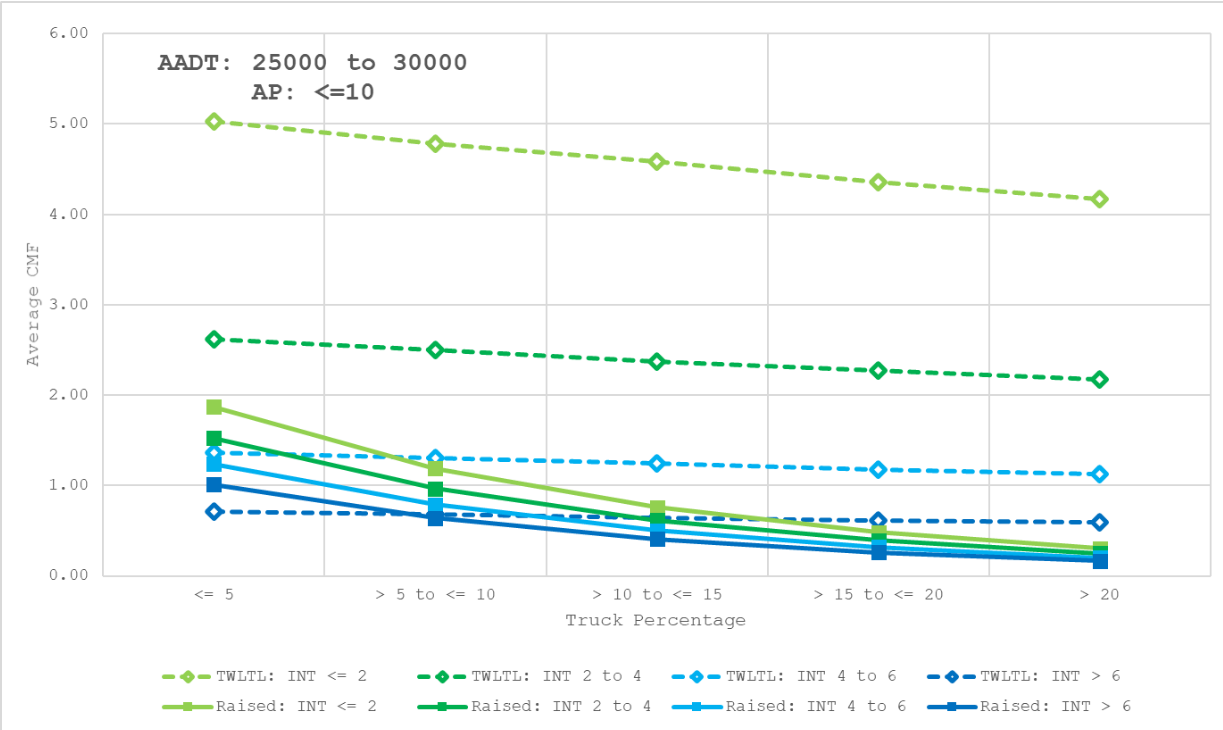
B-3-20 Urban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



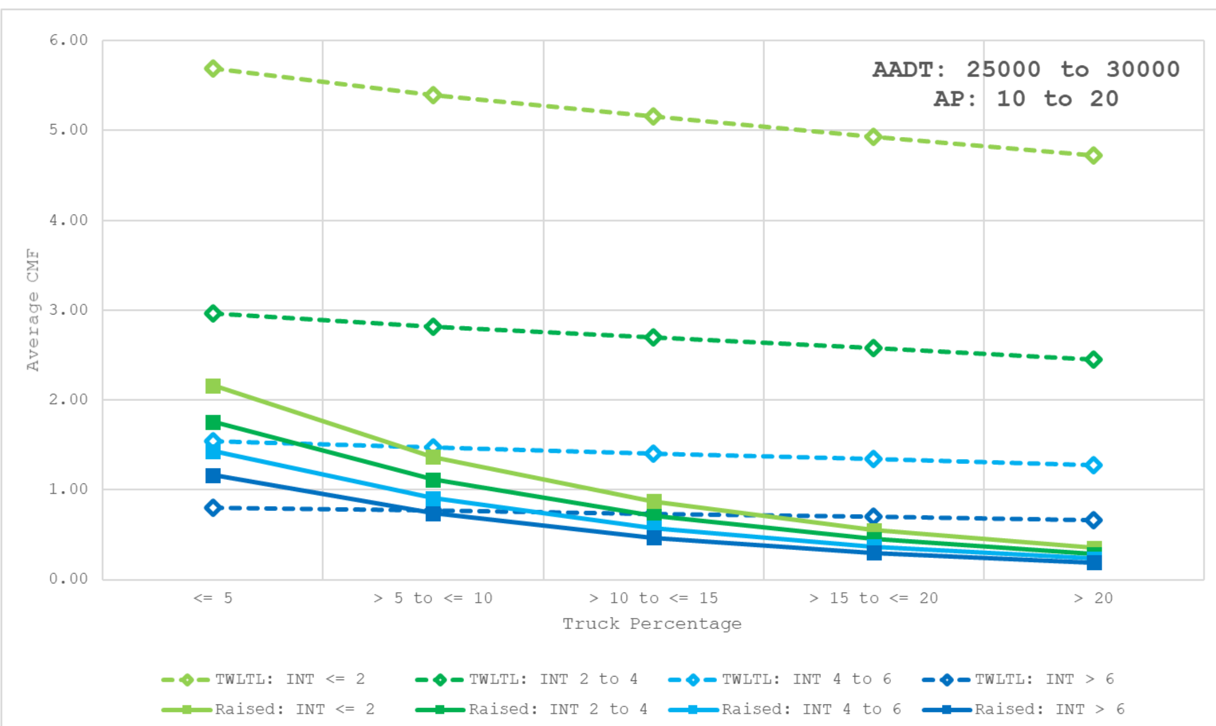
B-3-21 Urban Mixed-Use KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



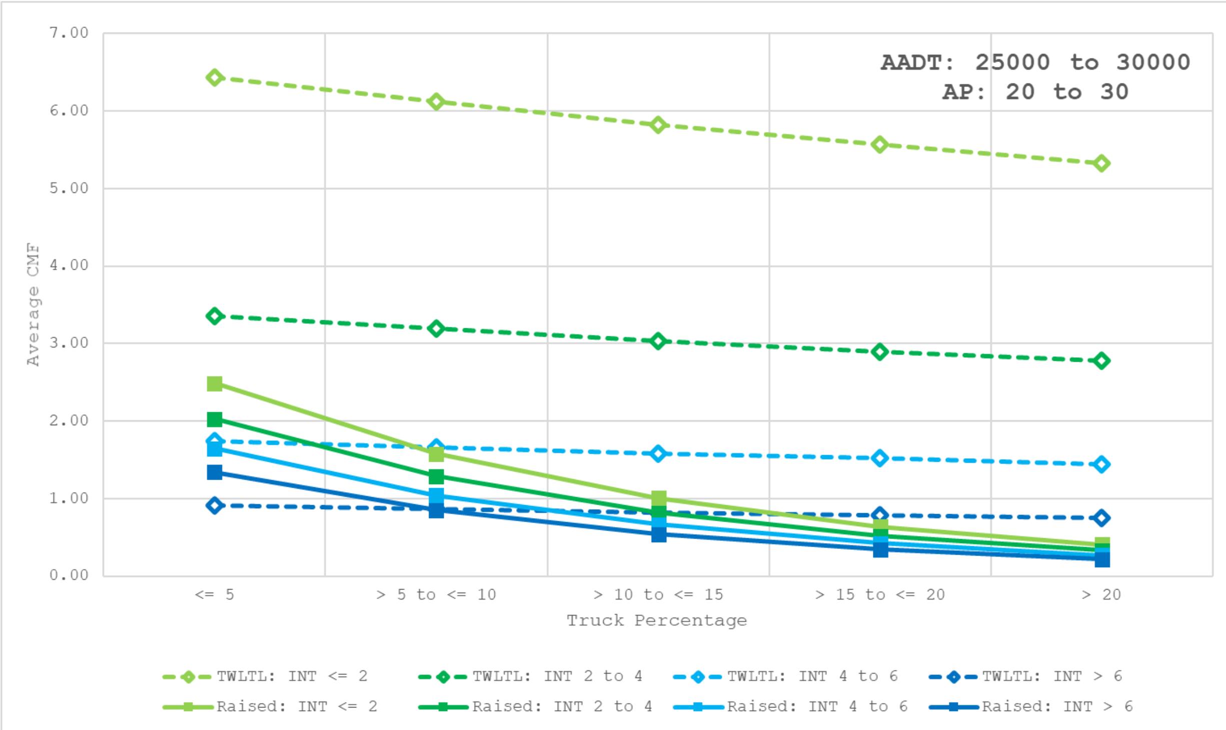
B-3-22 Urban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



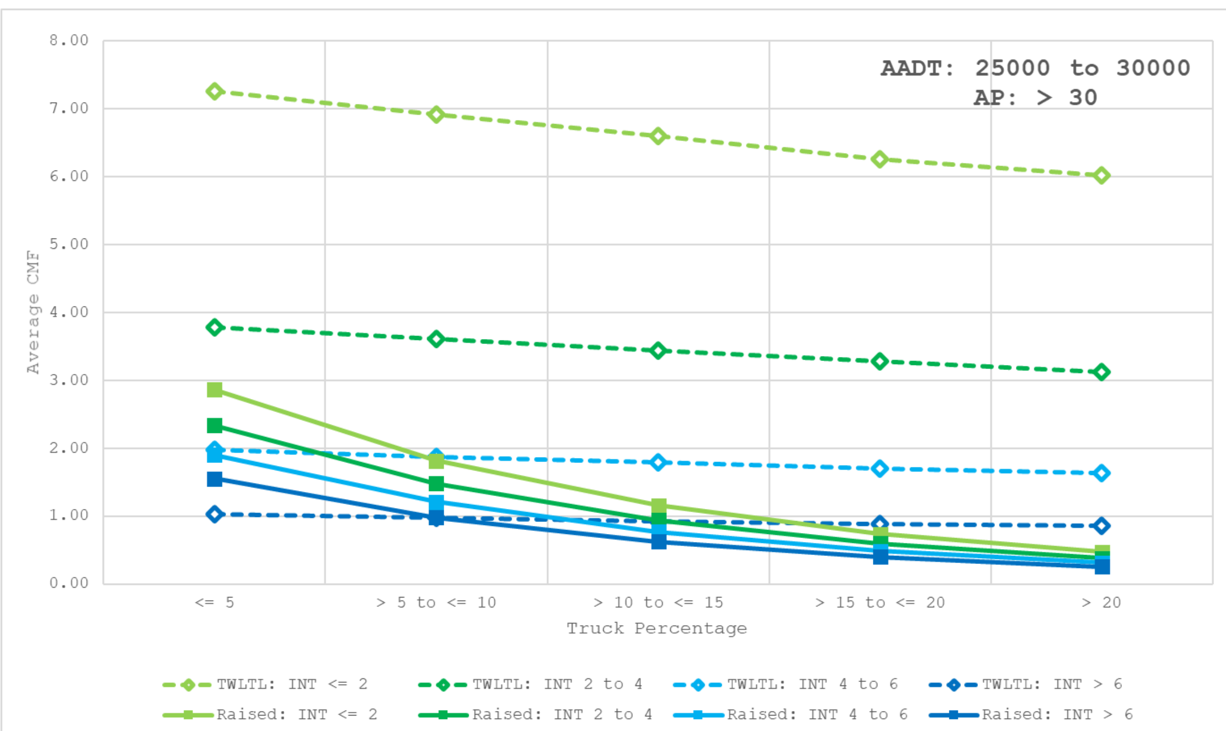
B-3-23 Urban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



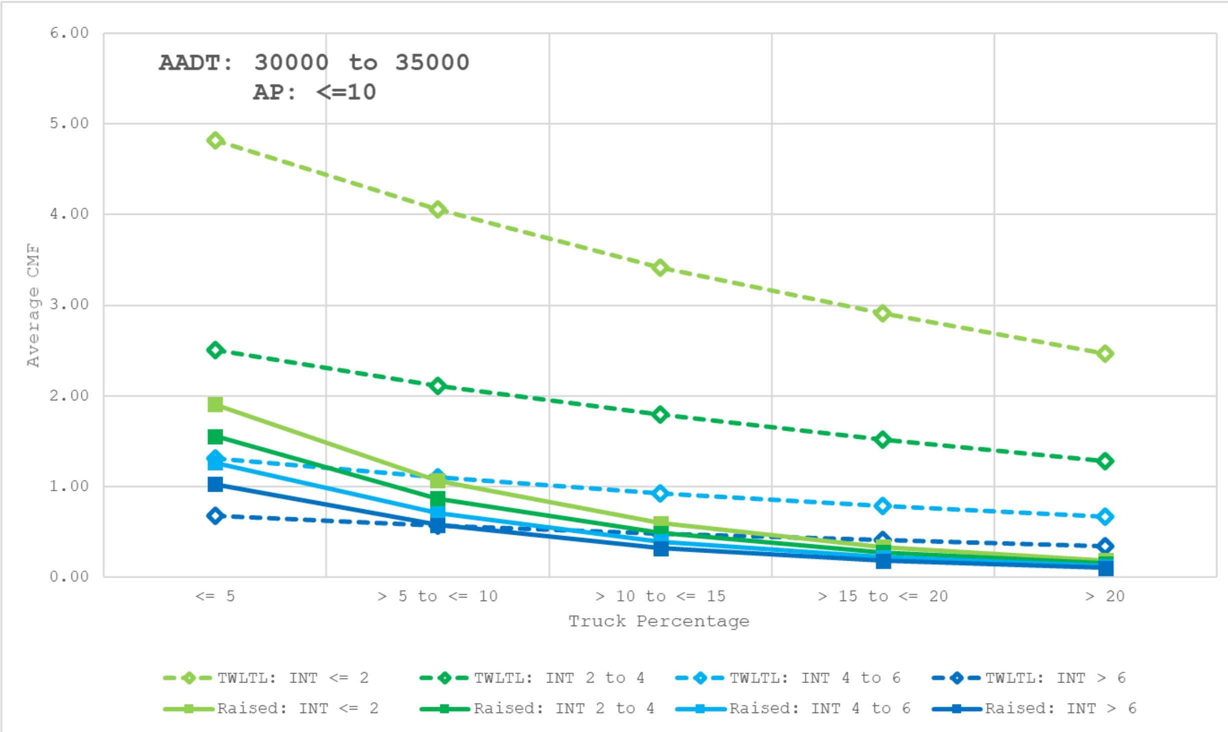
B-3-24 Urban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



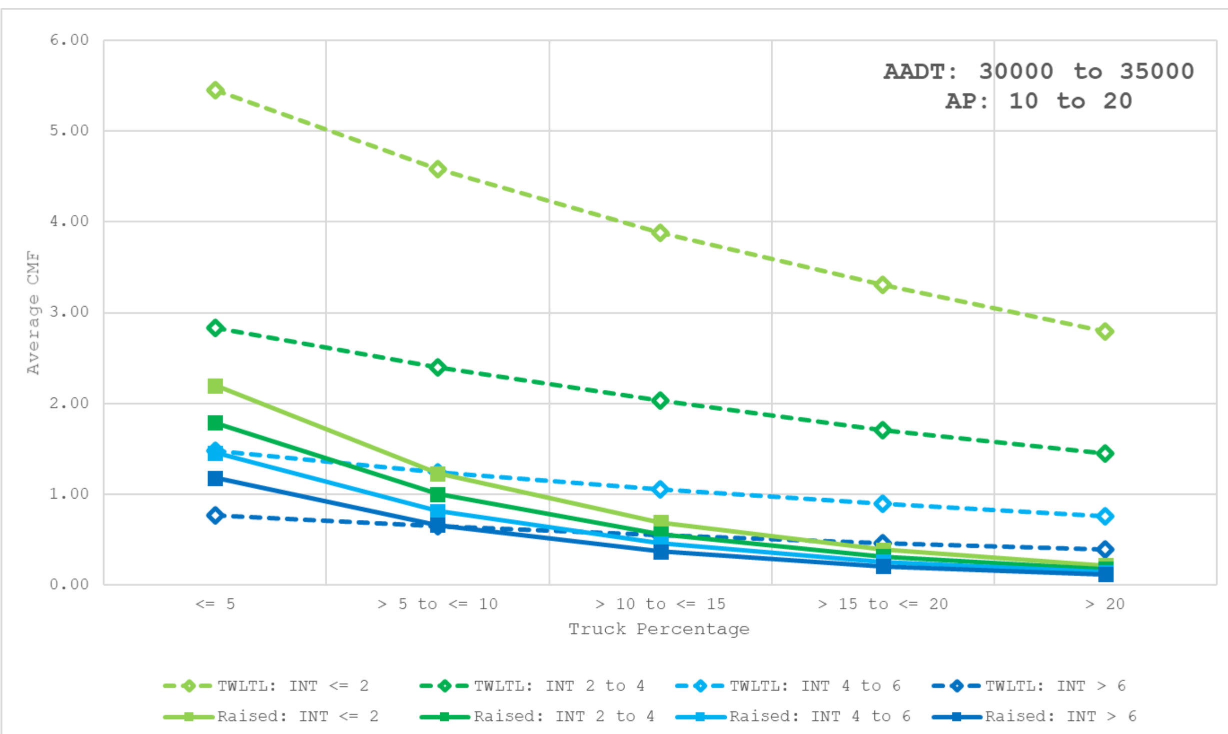
B-3-25 Urban Mixed-Use KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



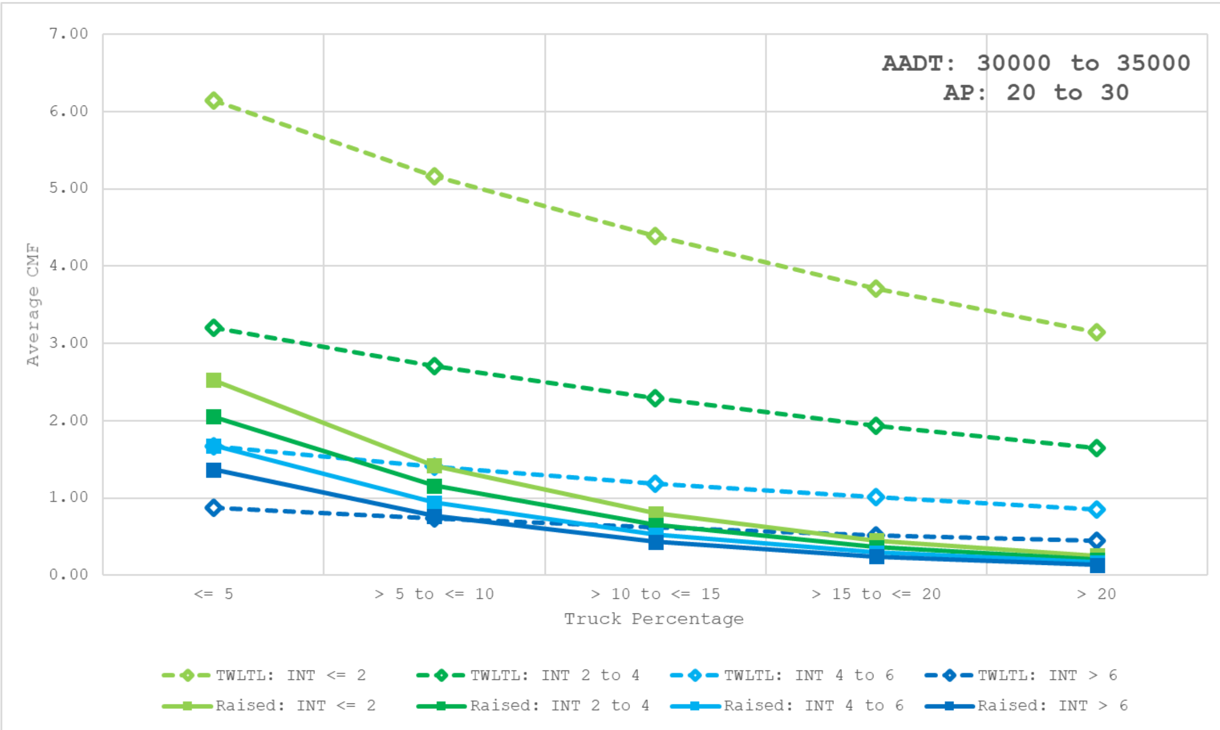
B-3-26 Urban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



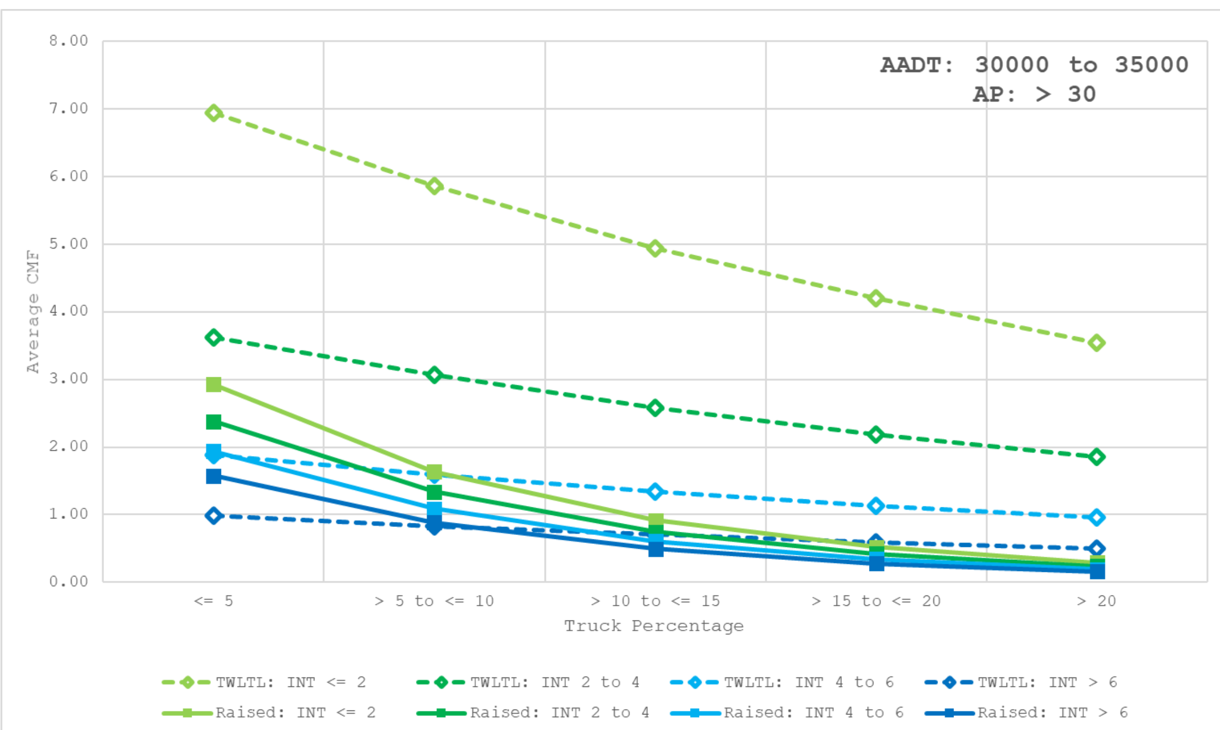
B-3-27 Urban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



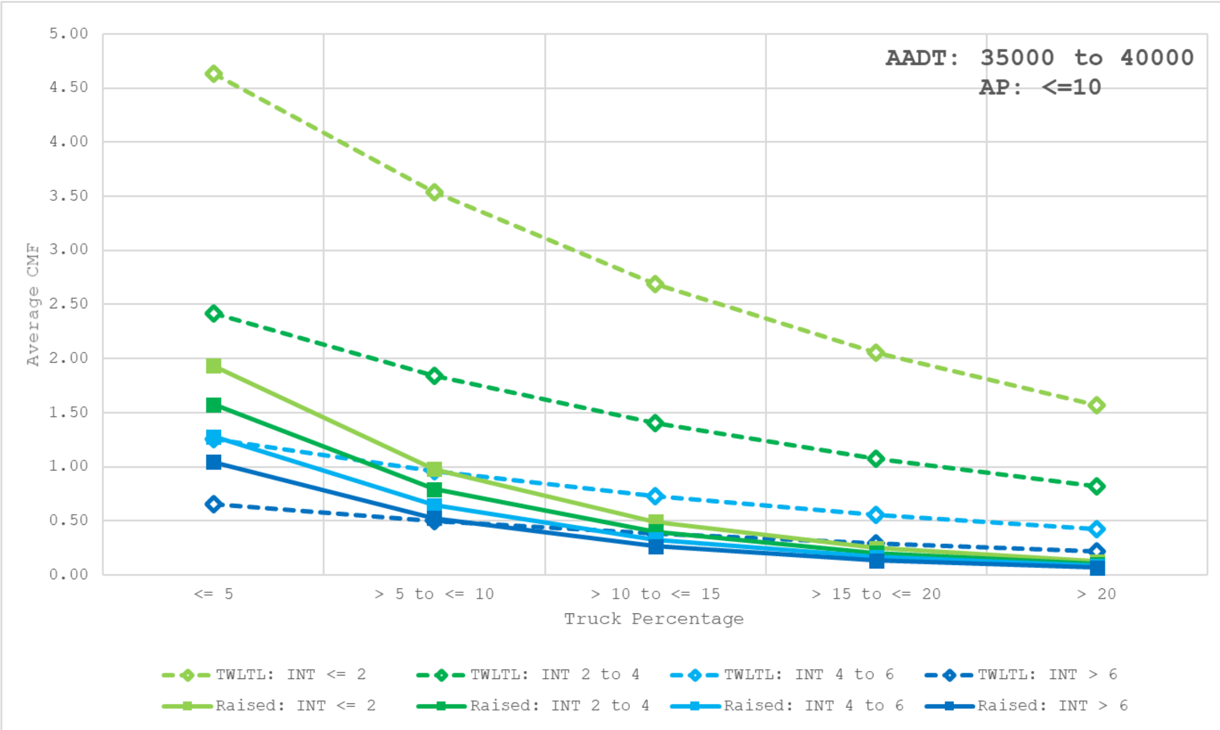
B-3-28 Urban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



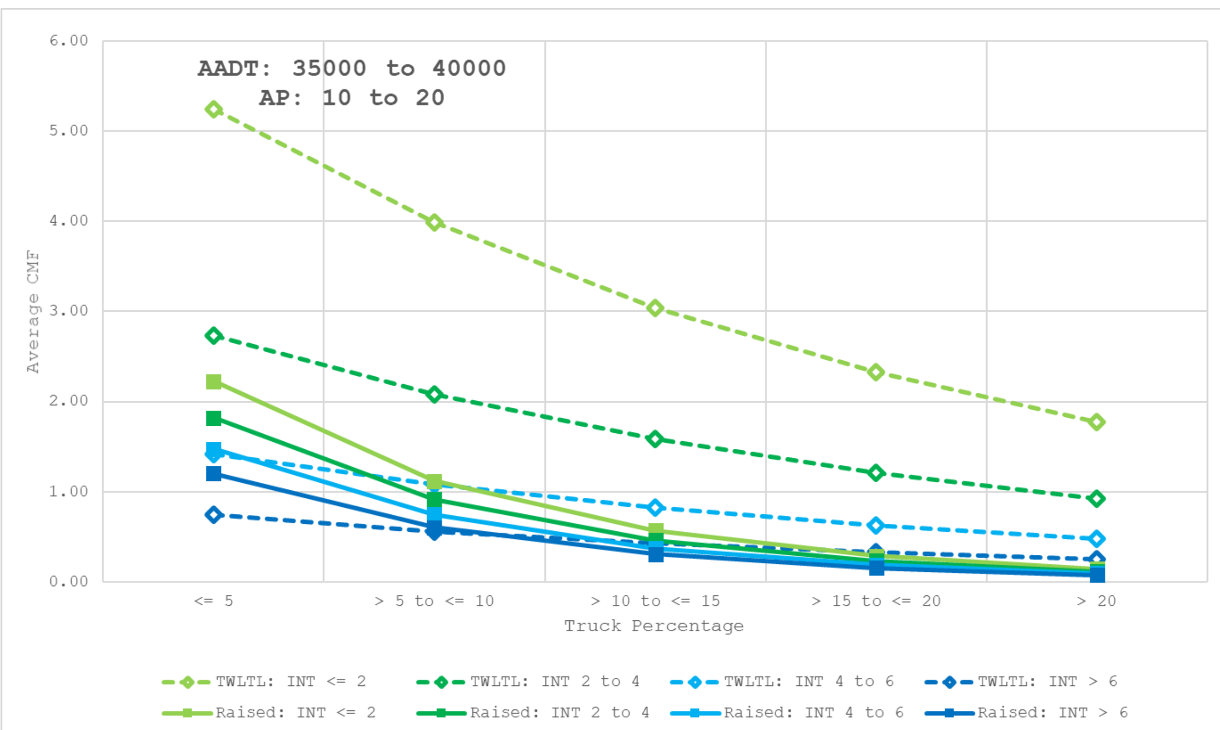
B-3-29 Urban Mixed-Use KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



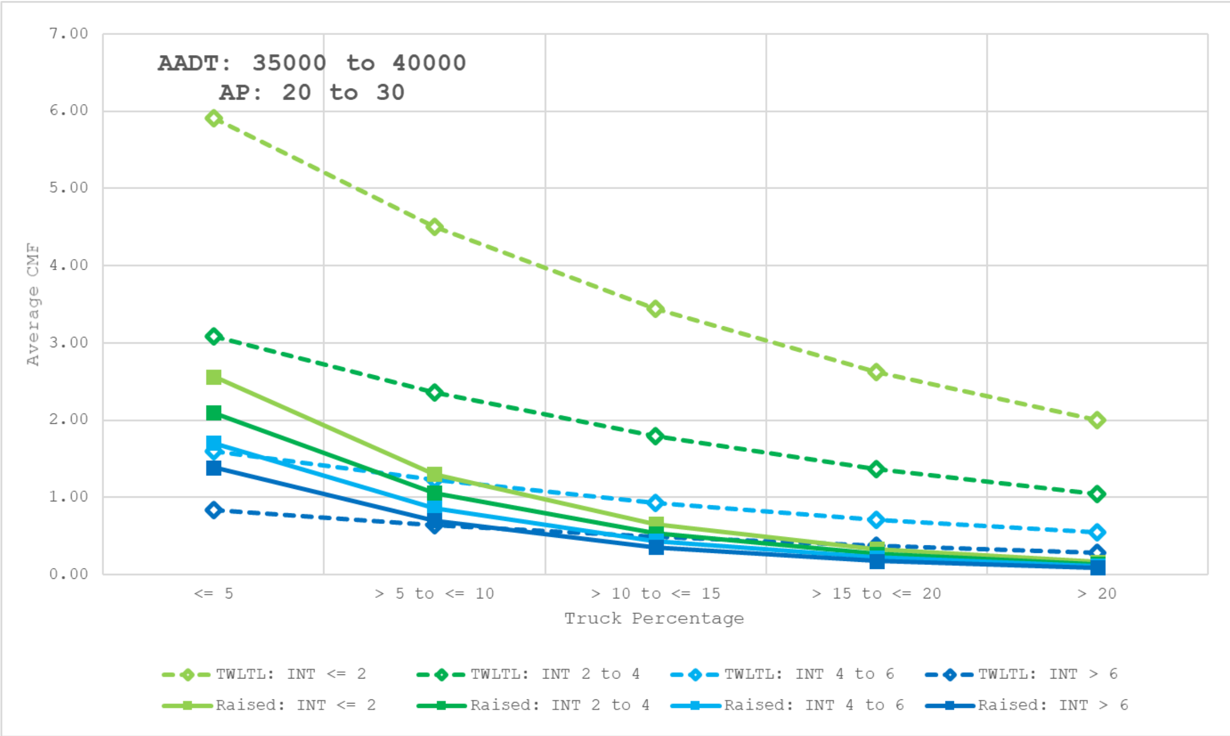
B-3-30 Urban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



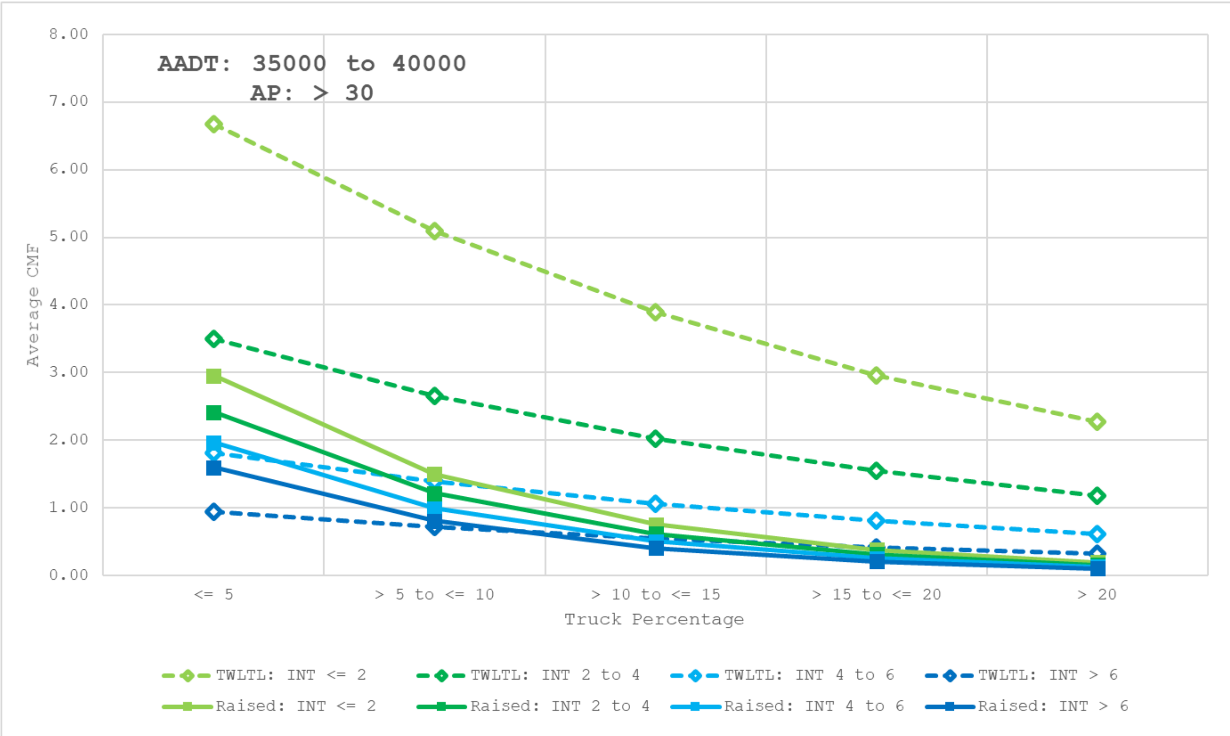
B-3-31 Urban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



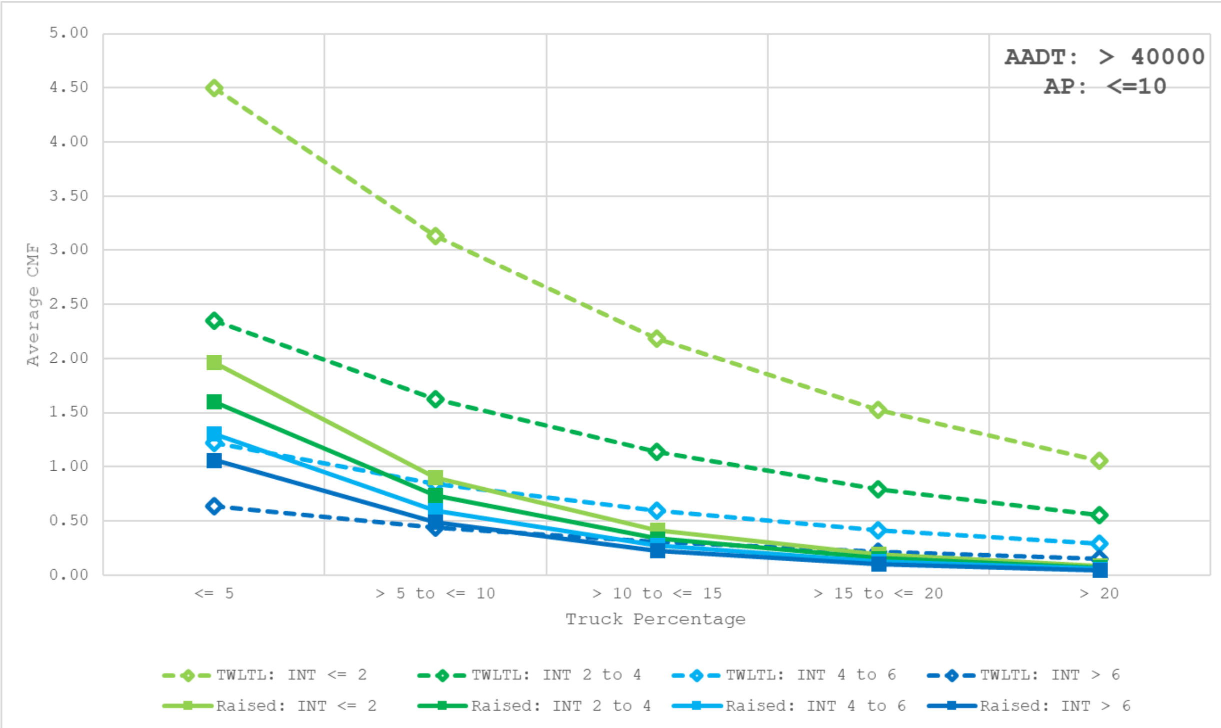
B-3-32 Urban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



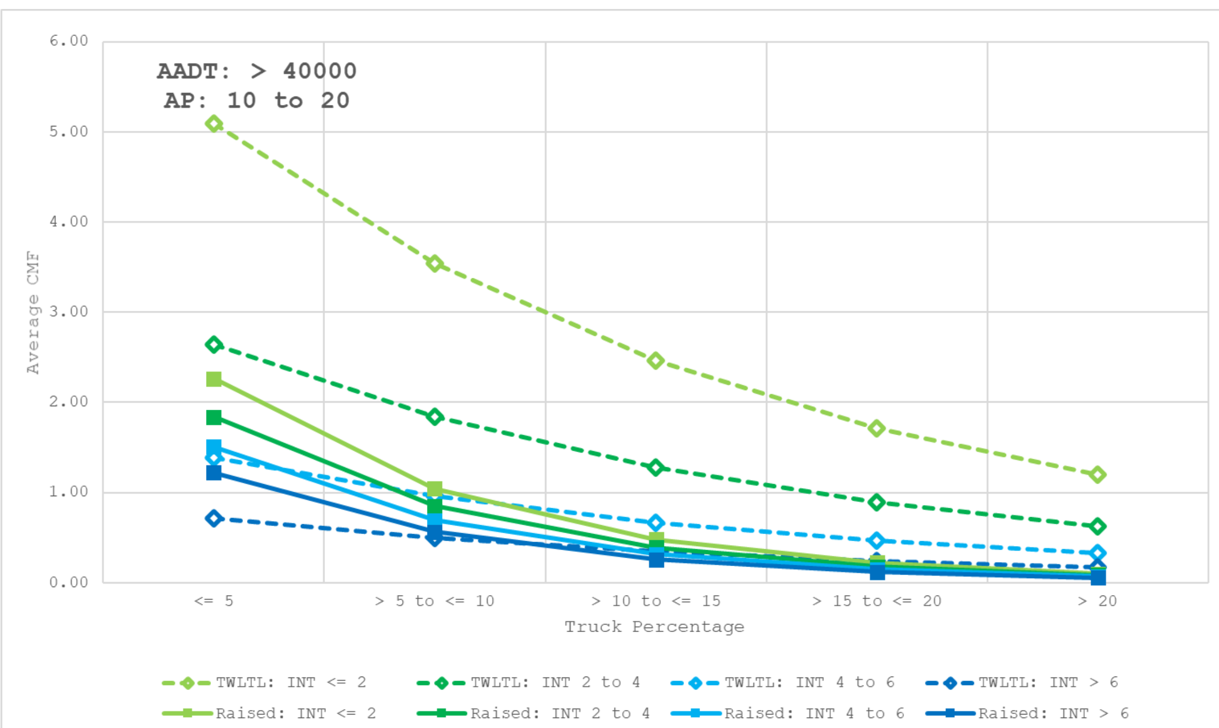
B-3-33 Urban Mixed-Use KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



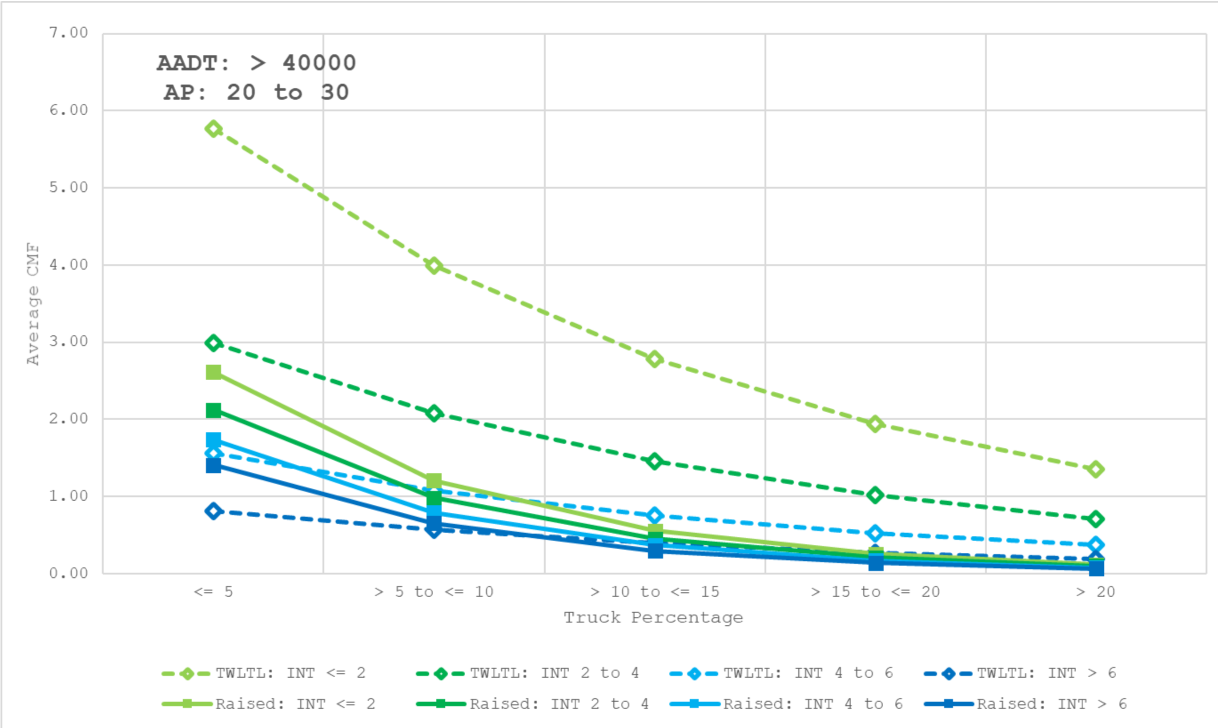
B-3-34 Urban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: <= 10)



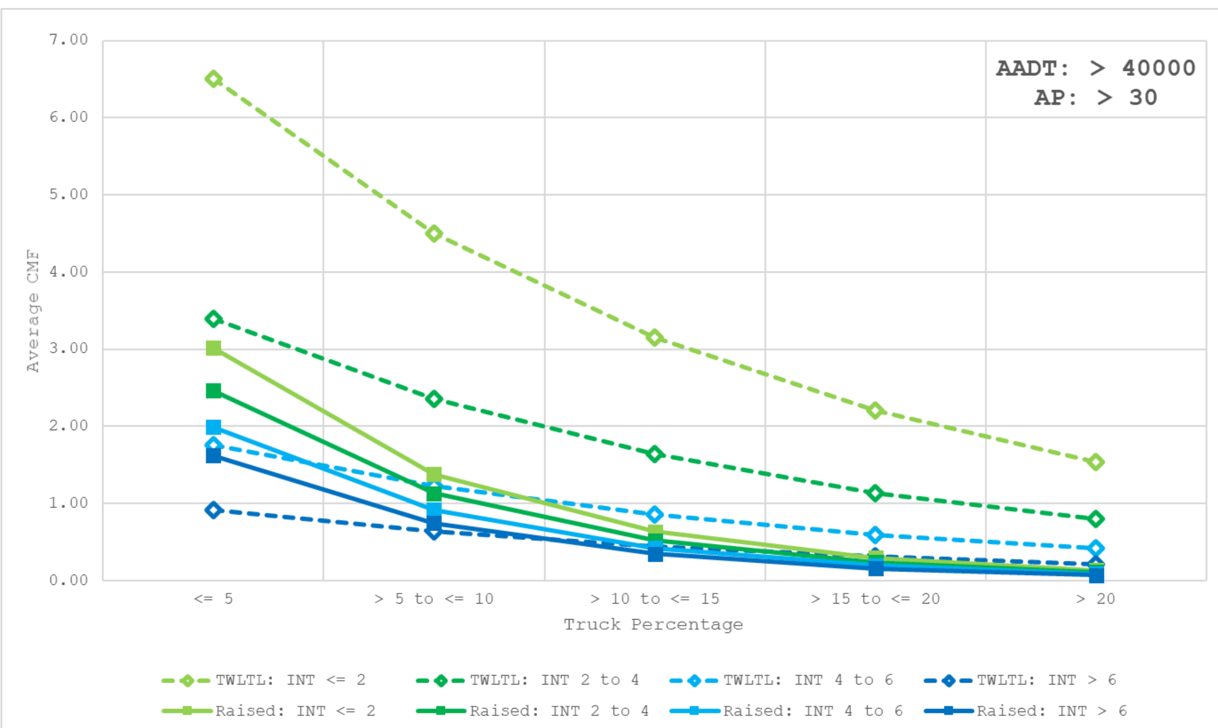
B-3-35 Urban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: 10-20)



B-3-36 Urban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: 20-30)



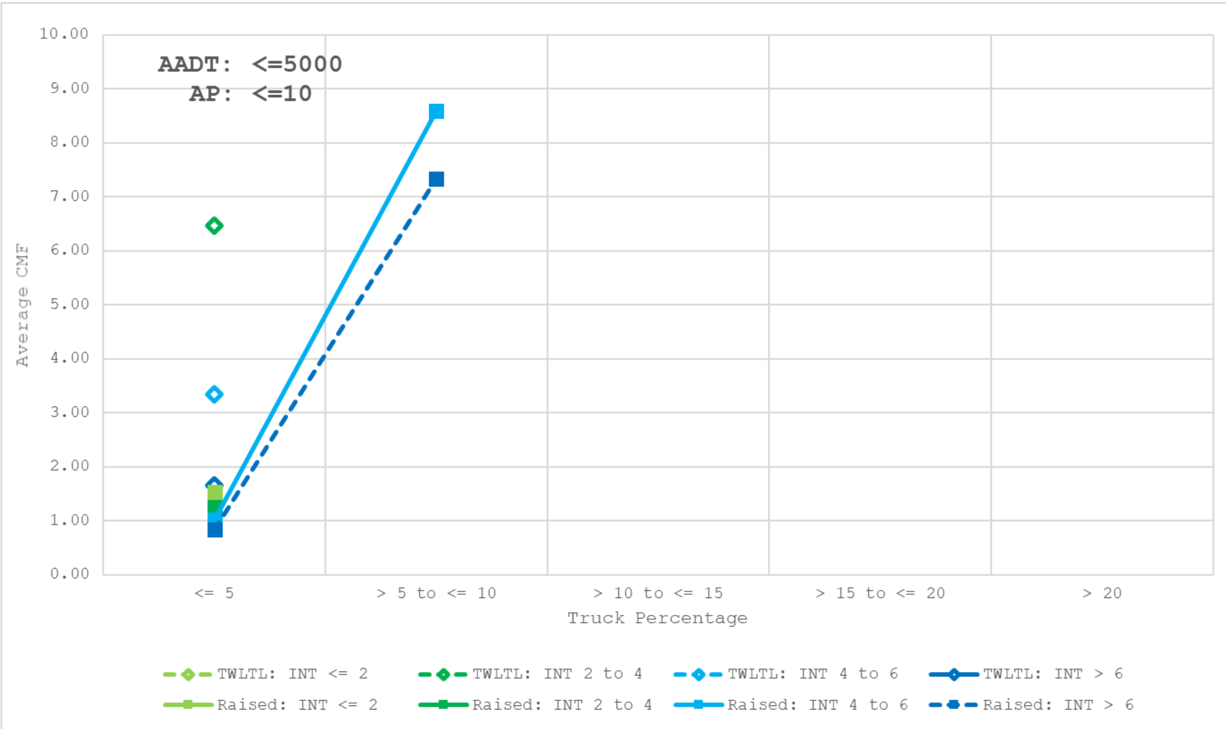
B-3-37 Urban Mixed-Use KABCO CMF Graphs (AADT: > 40,000, AP: > 30)



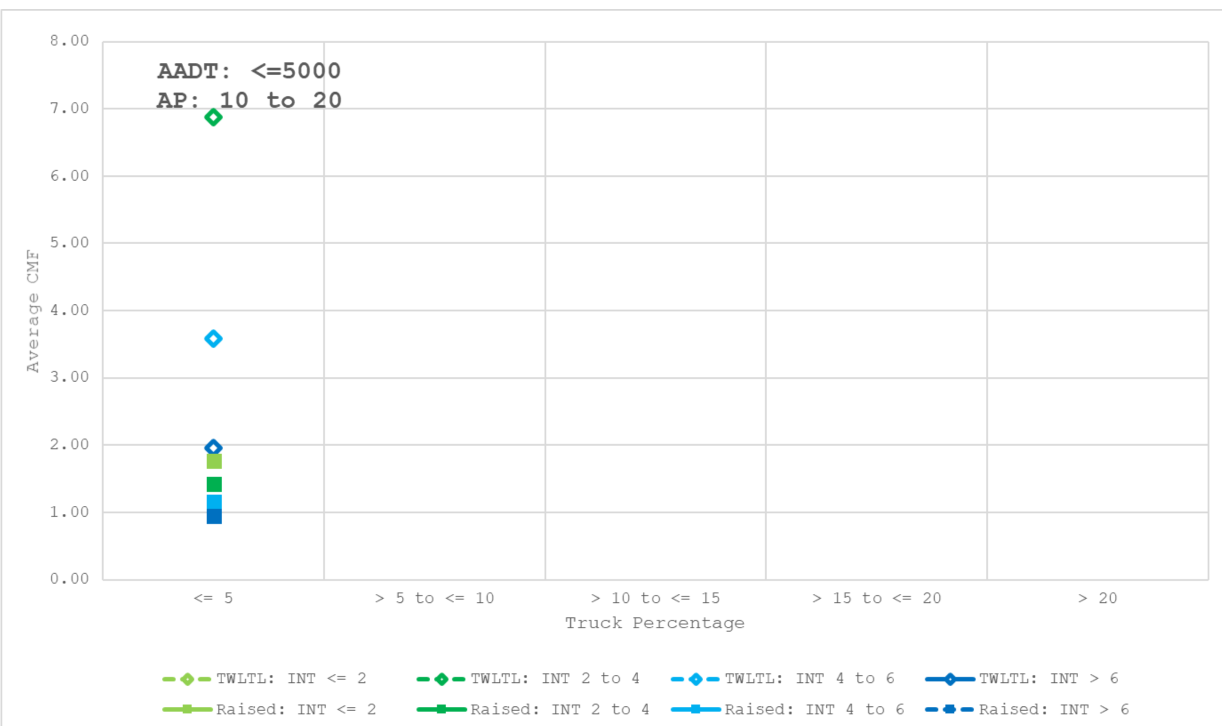
B-4-1 Urban Residential KABCO CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Rasied : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6
0 to 5000	<= 5	#N/A	6.46	3.34	1.66	1.53	1.25	1.01	0.83	#N/A	6.87	3.58	1.96	1.77	1.42	1.16	0.95	#N/A	7.95	4.04	2.27	2.04	1.66	1.35	1.09	#N/A	8.94	4.60	2.38	2.33	1.90	1.55	1.26
	> 5 to <= 10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.5915	7.34	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	6.38	3.31	1.72	0.90	1.52	1.24	1.01	0.82	7.24	3.74	1.95	1.02	1.76	1.43	1.16	0.95	8.08	4.24	2.20	1.15	2.02	1.65	1.34	1.09	9.16	4.79	2.49	1.29	2.33	1.90	1.54	1.25
	> 5 to <= 10	#N/A	8.20	4.32	2.24	2.56	2.08	1.70	1.38	#N/A	9.25	4.82	2.51	2.95	2.40	1.95	1.59	#N/A	#N/A	5.46	2.85	3.40	2.78	2.25	1.84	#N/A	#N/A	6.19	3.22	3.91	3.19	2.60	2.11
	> 10 to <= 15	#N/A	#N/A	#N/A	5.68	4.41	3.59	2.91	2.38	#N/A	#N/A	#N/A	6.38	5.07	4.15	3.37	2.73	#N/A	#N/A	#N/A	7.21	5.87	4.75	3.87	3.15	#N/A	#N/A	#N/A	8.08	6.72	5.47	4.50	3.61
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	7.71	6.27	5.11	4.17	#N/A	#N/A	#N/A	#N/A	8.92	7.27	5.96	4.82	#N/A	#N/A	#N/A	#N/A	#N/A	8.41	6.77	5.52	#N/A	#N/A	#N/A	#N/A	#N/A	9.66	7.84	6.40
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.29	7.52	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.64	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.97	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
10000 to 15000	<= 5	5.40	2.82	1.47	0.76	1.56	1.27	1.04	0.84	6.10	3.17	1.66	0.86	1.80	1.47	1.20	0.97	6.86	3.59	1.87	0.98	2.07	1.69	1.38	1.12	7.78	4.03	2.11	1.09	2.39	1.95	1.59	1.29
	> 5 to <= 10	9.09	4.75	2.46	1.29	1.78	1.45	1.18	0.96	#N/A	5.35	2.80	1.45	2.05	1.67	1.36	1.10	#N/A	6.09	3.15	1.64	2.37	1.93	1.57	1.27	#N/A	6.84	3.56	1.86	2.73	2.22	1.81	1.47
	> 10 to <= 15	#N/A	8.08	4.20	2.18	2.04	1.66	1.35	1.10	#N/A	9.09	4.74	2.47	2.35	1.92	1.56	1.27	#N/A	#N/A	5.36	2.79	2.72	2.21	1.80	1.46	#N/A	#N/A	6.06	3.17	3.13	2.54	2.08	1.69
	> 15 to <= 20	#N/A	#N/A	7.21	3.73	2.36	1.92	1.57	1.27	#N/A	#N/A	8.10	4.22	2.72	2.22	1.80	1.47	#N/A	#N/A	9.11	4.79	3.13	2.54	2.07	1.69	#N/A	#N/A	#N/A	5.38	3.62	2.95	2.40	1.94
	> 20	#N/A	#N/A	#N/A	6.45	2.75	2.25	1.81	1.48	#N/A	#N/A	#N/A	7.35	3.17	2.57	2.10	1.72	#N/A	#N/A	#N/A	8.29	3.65	2.98	2.42	1.98	#N/A	#N/A	#N/A	9.28	4.22	3.42	2.79	2.26
15000 to 20000	<= 5	4.88	2.53	1.33	0.69	1.60	1.30	1.06	0.86	5.51	2.88	1.49	0.78	1.84	1.50	1.22	1.00	6.22	3.24	1.69	0.88	2.13	1.73	1.41	1.15	7.02	3.66	1.91	0.99	2.45	2.00	1.63	1.32
	> 5 to <= 10	6.45	3.34	1.75	0.91	1.42	1.16	0.94	0.77	7.28	3.77	1.98	1.03	1.64	1.33	1.09	0.88	8.21	4.26	2.23	1.16	1.88	1.53	1.25	1.02	9.31	4.84	2.52	1.32	2.17	1.77	1.44	1.17
	> 10 to <= 15	8.52	4.46	2.31	1.20	1.26	1.03	0.84	0.68	9.59	5.01	2.62	1.36	1.45	1.18	0.97	0.79	#N/A	5.68	2.94	1.54	1.68	1.37	1.11	0.90	#N/A	6.37	3.34	1.74	1.93	1.57	1.28	1.04
	> 15 to <= 20	#N/A	5.89	3.07	1.61	1.13	0.92	0.75	0.61	#N/A	6.64	3.48	1.80	1.30	1.06	0.86	0.70	#N/A	7.53	3.93	2.04	1.49	1.22	0.99	0.81	#N/A	8.51	4.45	2.30	1.73	1.41	1.15	0.93
	> 20	#N/A	7.87	4.11	2.14	1.01	0.82	0.67	0.55	#N/A	8.89	4.60	2.40	1.17	0.95	0.77	0.63	#N/A	#N/A	5.21	2.71	1.35	1.09	0.89	0.72	#N/A	#N/A	5.88	3.09	1.54	1.26	1.02	0.84
20000 to 25000	<= 5	4.55	2.36	1.23	0.64	1.64	1.33	1.08	0.88	5.13	2.67	1.39	0.72	1.88	1.53	1.25	1.02	5.80	3.01	1.57	0.82	2.17	1.77	1.44	1.17	6.55	3.41	1.78	0.93	2.50	2.04	1.66	1.35
	> 5 to <= 10	4.99	2.61	1.36	0.71	1.20	0.98	0.80	0.65	5.68	2.95	1.53	0.80	1.39	1.13	0.92	0.75	6.39	3.31	1.73	0.90	1.60	1.30	1.06	0.86	7.19	3.75	1.95	1.02	1.84	1.50	1.22	0.99
	> 10 to <= 15	5.50	2.87	1.50	0.78	0.89	0.72	0.59	0.48	6.23	3.25	1.69	0.88	1.02	0.83	0.68	0.55	7.07	3.67	1.91	1.00	1.18	0.96	0.78	0.64	7.96	4.14	2.16	1.13	1.36	1.11	0.90	0.73
	> 15 to <= 20	6.09	3.17	1.66	0.86	0.66	0.53	0.44	0.35	6.87	3.59	1.87	0.97	0.76	0.62	0.50	0.41	7.77	4.05	2.10	1.10	0.87	0.71	0.58	0.47	8.74	4.57	2.38	1.24	1.00	0.82	0.67	0.54
	> 20	6.71	3.51	1.84	0.95	0.48	0.40	0.32	0.26	7.59	3.98	2.07	1.08	0.56	0.46	0.37	0.30	8.66	4.49	2.33	1.22	0.65	0.53	0.43	0.35	9.68	5.05	2.63	1.37	0.74	0.60	0.49	0.40
25000 to 30000	<= 5	4.29	2.25	1.17	0.61	1.67	1.36	1.11	0.90	4.86	2.53	1.31	0.69	1.92	1.57	1.27	1.04	5.51	2.86	1.49	0.78	2.22	1.81	1.47	1.20	6.18	3.22	1.68	0.88	2.55	2.07	1.69	1.38
	> 5 to <= 10	4.10	2.14	1.11	0.58	1.06	0.86	0.70	0.57	4.61	2.40	1.25	0.65	1.22	0.99	0.81	0.66	5.22	2.72	1.42	0.74	1.40	1.14	0.93	0.76	5.90	3.08	1.61	0.84	1.62	1.32	1.07	0.87
	> 10 to <= 15	3.89	2.03	1.06	0.55	0.67	0.55	0.45	0.36	4.41	2.30	1.20	0.62	0.77	0.63	0.51	0.42	4.97	2.59	1.35	0.70	0.89	0.73	0.59	0.48	5.62	2.92	1.53	0.80	1.03	0.84	0.68	0.55
	> 15 to <= 20	3.72	1.95	1.01	0.53	0.43	0.35	0.28	0.23	4.19	2.20	1.15	0.59	0.49	0.40	0.33	0.27	4.75	2.47	1.29	0.67	0.57	0.46	0.38	0.31	5.39	2.81	1.45	0.76	0.66	0.53	0.43	0.35
	> 20	3.55	1.85	0.96	0.50	0.27	0.22	0.18	0.15	4.03	2.11	1.09	0.57	0.32	0.26	0.21	0.17	4.54	2.38	1.23	0.64	0.36	0.29	0.24	0.20	5.13	2.68	1.39	0.72	0.42	0.34	0.28	0.23
30000 to 35000	<= 5	4.10	2.14	1.11	0.58	1.70	1.38	1.12	0.91	4.65	2.42	1.26	0.66	1.95	1.60	1.29	1.06	5.25	2.73	1.42	0.74	2.26	1.83	1.49	1.22	5.94	3.10	1.61	0.84	2.60	2.12	1.72	1.40
	> 5 to <= 10	3.47	1.81	0.94	0.49	0.95	0.78	0.63	0.51	3.91	2.04	1.06	0.55	1.10	0.89	0.72	0.59	4.43	2.31	1.20	0.63	1.27	1.03	0.84	0.69	5.00	2.62	1.36	0.71	1.46	1.19	0.97	0.79
	> 10 to <= 15	2.94	1.53	0.80	0.42	0.54	0.44	0.35	0.29	3.31	1.73	0.90	0.47	0.61	0.50	0.41	0.33	3.76	1.94	1.02	0.53	0.71	0.58	0.47	0.38	4.24	2.20	1.15	0.60	0.82	0.66	0.54	0.44
	> 15 to <= 20	2.48	1.30	0.67	0.35	0.30	0.24	0.20	0.16	2.80	1.46	0.76	0.40	0.35	0.28	0.23	0.19	3.17	1.65	0.86	0.45	0.40	0.32	0.27	0.22	3.57	1.87	0.97	0.51	0.46	0.38	0.31	0.25
	> 20	2.11	1.10	0.57	0.30	0.17	0.14	0.11	0.09	2.38	1.24	0.64	0.34	0.19	0.16	0.13	0.11	2.68	1.40	0.73	0.38	0.22	0.18	0.15	0.12	3.03	1.59	0.82	0.43	0.26	0.21	0.17	0.14
35000 to 40000	<= 5	3.96	2.06	1.08	0.56	1.72	1.40	1.14	0.93	4.48	2.33	1.21	0.63	1.99	1.62	1.32	1.07	5.06	2.63	1.37	0.72	2.29	1.86	1.52	1.24	5.74	2.97	1.55	0.81	2.65	2.15	1.75	1.42
	> 5 to <= 10	3.03	1.57	0.82	0.43	0.87	0.71	0.57	0.47	3.41	1.78	0.92	0.48	1.00	0.82	0.66	0.54	3.86	2.01	1.05	0.54	1.16	0.94	0.77	0.62	4.35	2.28	1.18	0.62	1.33	1.09	0.89	0.72
	> 10 to <= 15	2.31	1.20	0.63	0.33	0.44	0.36	0.29	0.24	2.60	1.35	0.71	0.37	0.51	0.41	0.34	0.27	2.94	1.53	0.80	0.42	0.58	0.48	0.39	0.32	3.33	1.73	0.90	0.47	0.68	0.55	0.45	0.36
	> 15 to <= 20	1.76	0.91	0.48	0.25	0.22	0.18	0.15	0.12	1.98	1.04	0.54	0.28	0.26	0.21	0.17	0.14	2.24	1.17	0.61	0.32	0.30	0.24	0.20	0.16	2.53	1.32	0.69	0.36	0.34	0.28	0.23	0.18
	> 20	1.35	0.70	0.36	0.19	0.11	0.09	0.07	0.06	1.52	0.79	0.41	0.21	0.13	0.11	0.09	0.07	1.72	0.90	0.47	0.24	0.15	0.12	0.10	0.08	1.93	1.01	0.53	0.27	0.17	0.14	0.11	0.09
>40000	<= 5	3.83	2.00	1.04	0.54	1.75	1.42	1.16	0.94	4.34	2.25	1.18	0.61	2.01	1.63	1.34	1.09	4.91	2.56	1.33	0.69	2.32	1.89	1.54	1.26	5.54	2.89	1.50	0.79	2.67	2.18	1.77	1.45
	> 5 to <= 10	2.68	1.39	0.73	0.38	0.81	0.66	0.53	0.43	3.02	1.57	0.82	0.43	0.93	0.75	0.61	0.50	3.42	1.78	0.92	0.48	1.07	0.87	0.71	0.58	3.86	2.01	1.05	0.54	1.24	1.00	0.82	0.67
	> 10 to <= 15	1.86	0.98	0.51	0.26	0.37	0.30	0.25	0.20	2.11	1.10	0.57	0.30	0.43	0.35	0.28	0.23	2.39	1.24	0.65	0.34	0.50	0.40	0.33	0.27	2.68	1.40	0.73	0.38	0.57	0.46	0.38	0.31
	> 15 to <= 20	1.29	0.68	0.35	0.18	0.17	0.14	0.11	0.09	1.47	0.76	0.40	0.21	0.20	0.16	0.13	0.11	1.66	0.86	0.45	0.23	0.23	0.18	0.15	0.12	1.88	0.98	0.51	0.26	0.26	0.21	0.17	0.14
	> 20	0.91	0.47	0.25	0.13	0.08	0.06	0.05	0.04	1.02	0.53	0.28	0.15	0.09	0.07	0.06	0.05	1.15	0.60	0.32	0.16	0.10	0.09	0.07	0.06	1.31	0.68	0.35	0.19	0.12	0.10	0.08	0.07

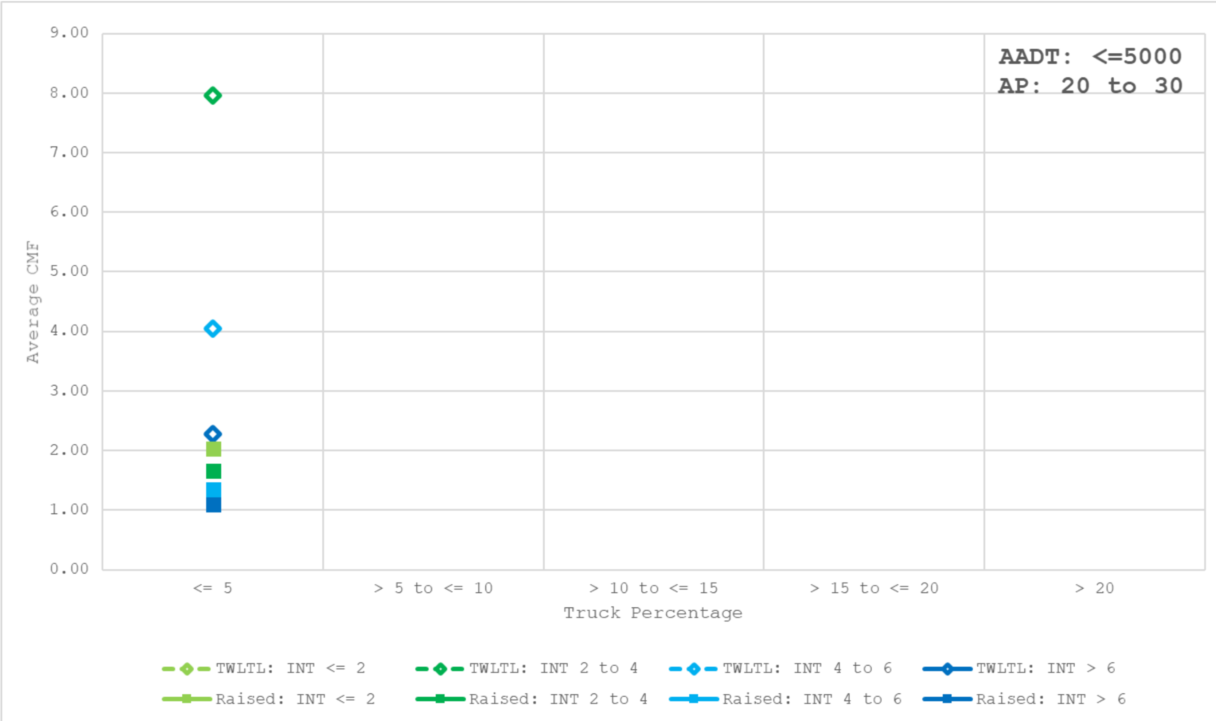
B-4-2 Urban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: <= 10)



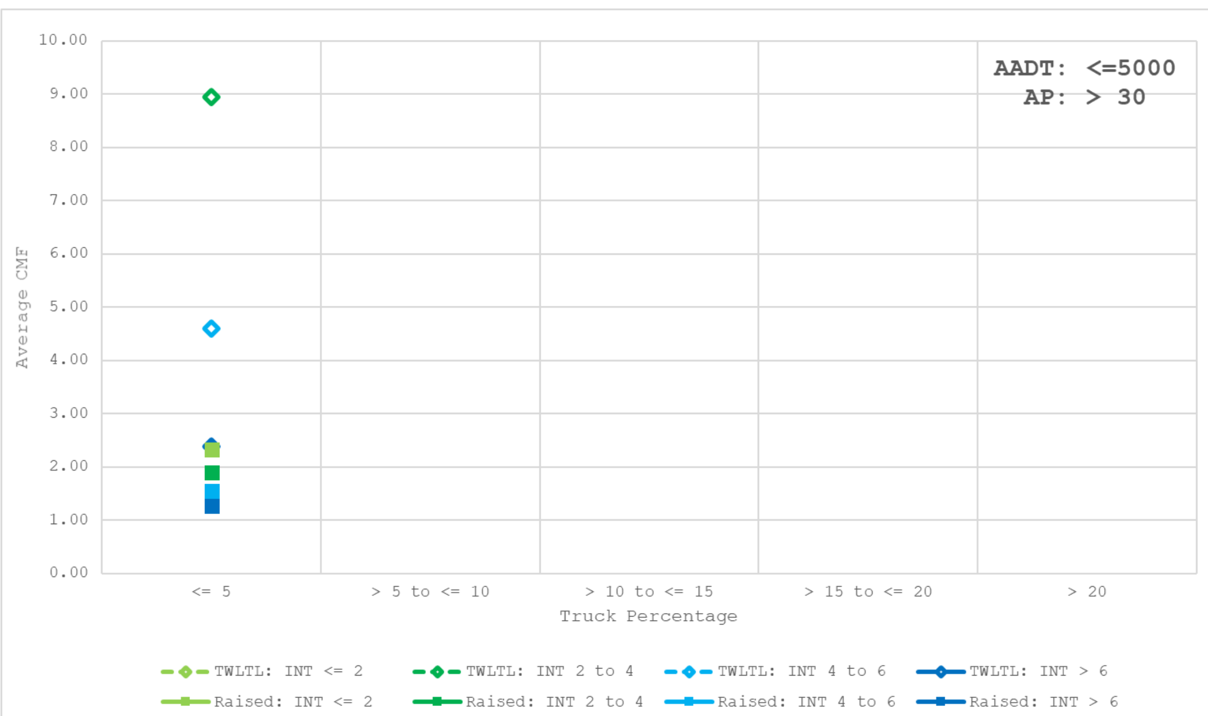
B-4-3 Urban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: 10-20)



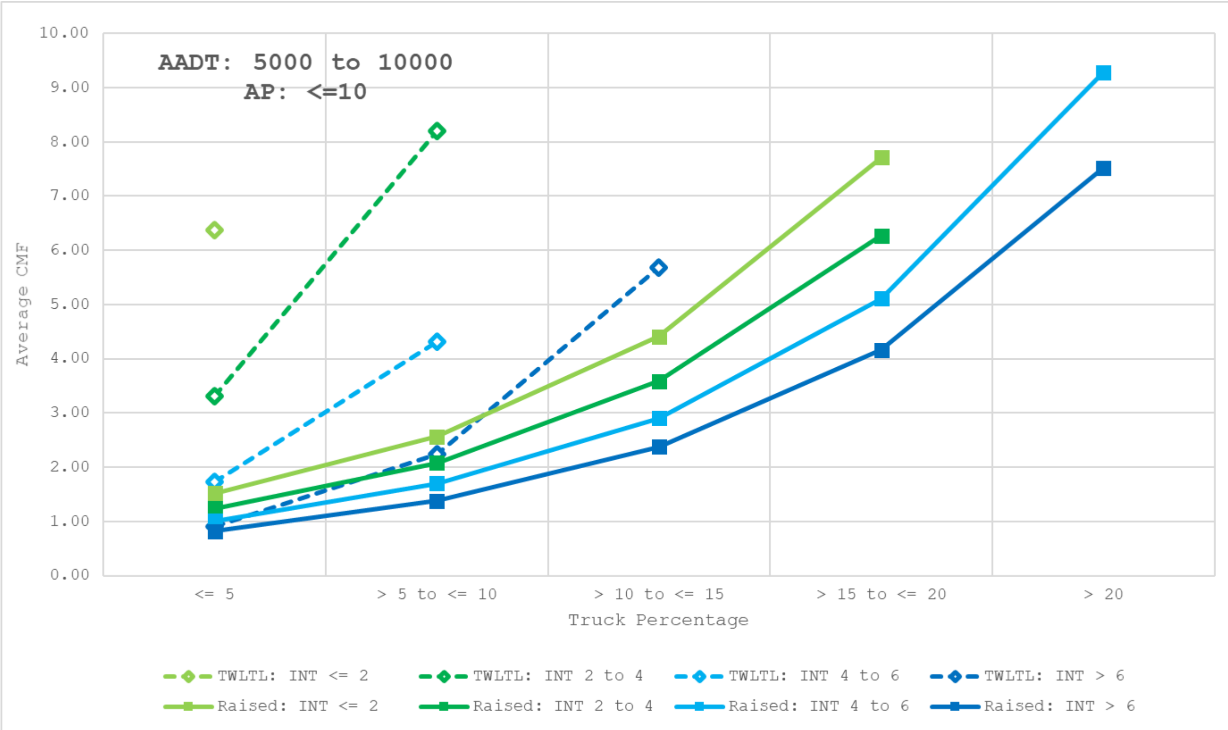
B-4-4 Urban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: 20-30)



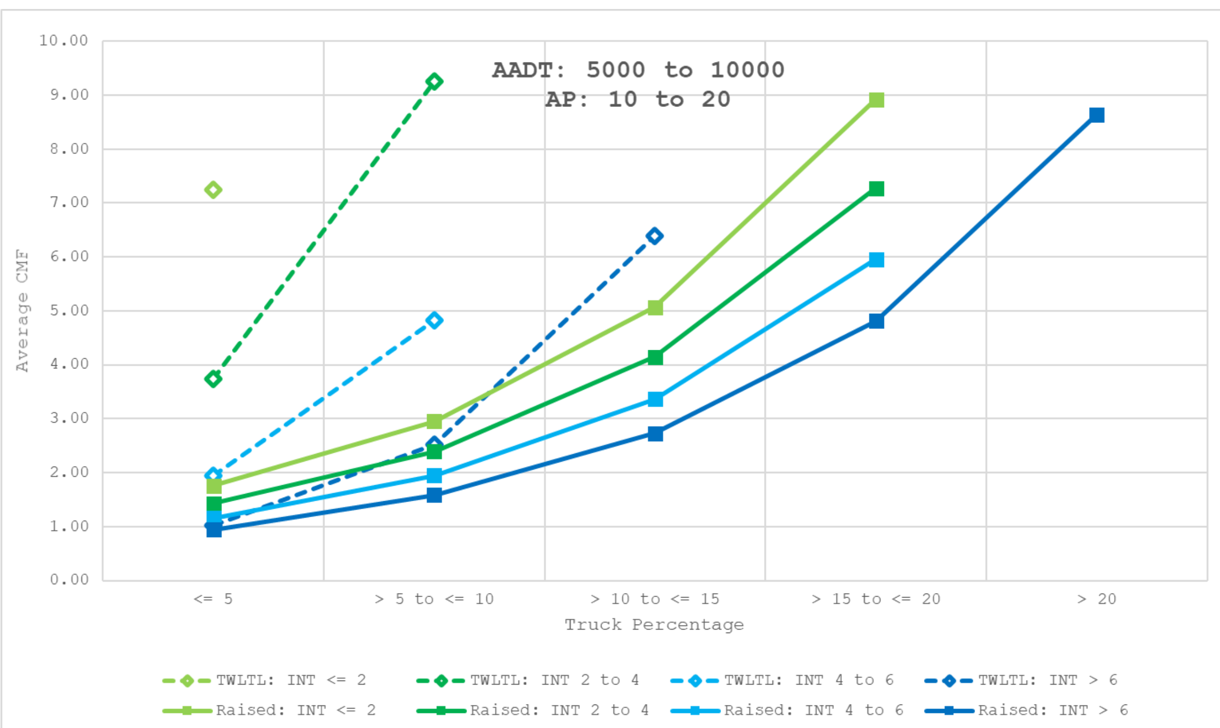
B-4-5 Urban Residential KABCO CMF Graphs (AADT: <= 5,000, AP: > 30)



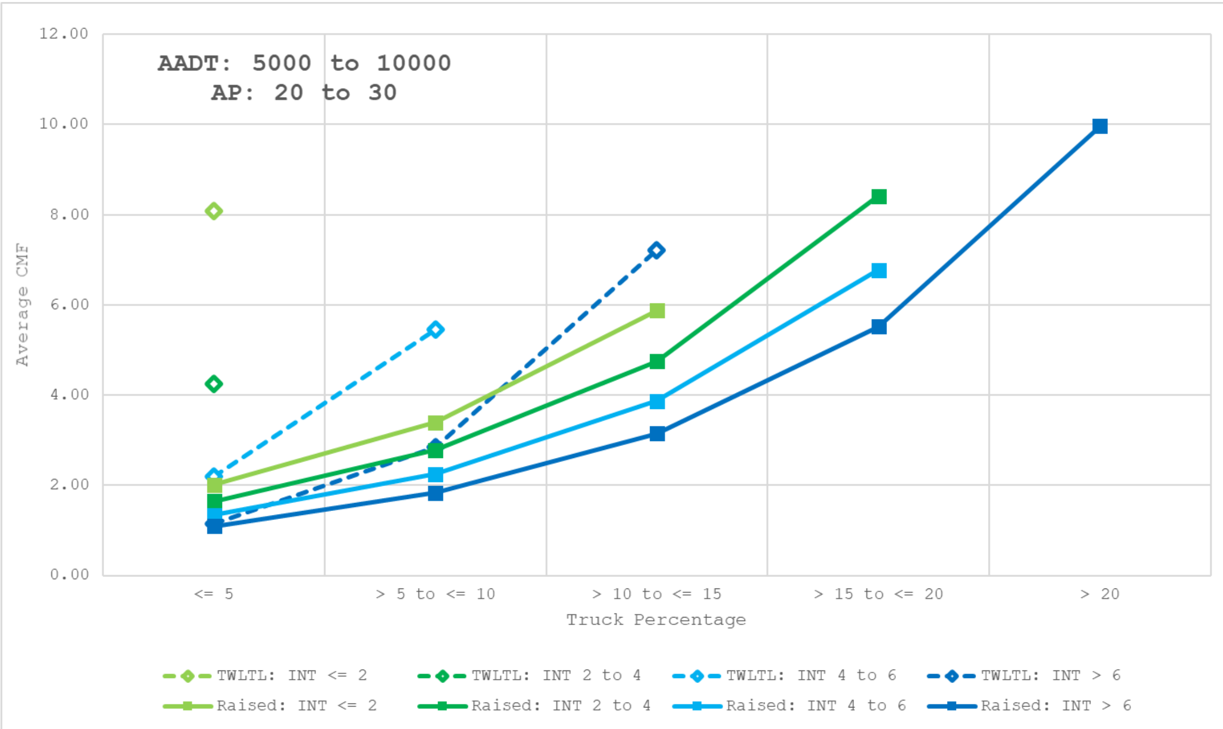
B-4-6 Urban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



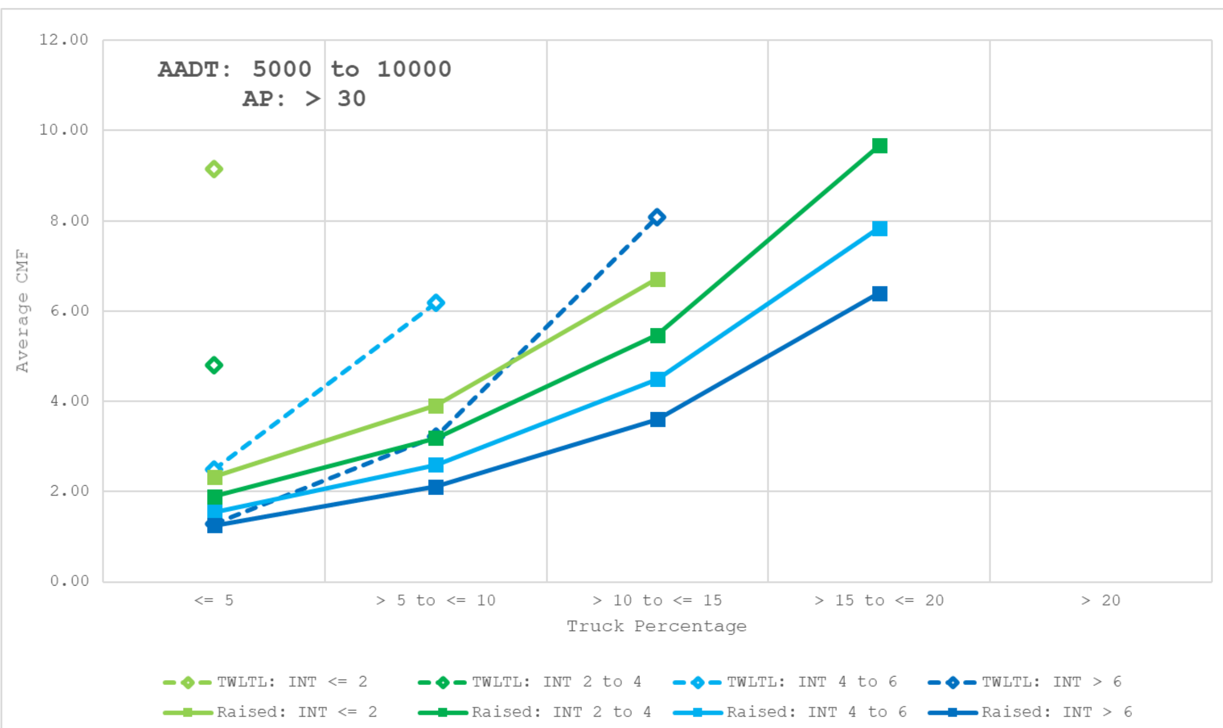
B-4-7 Urban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



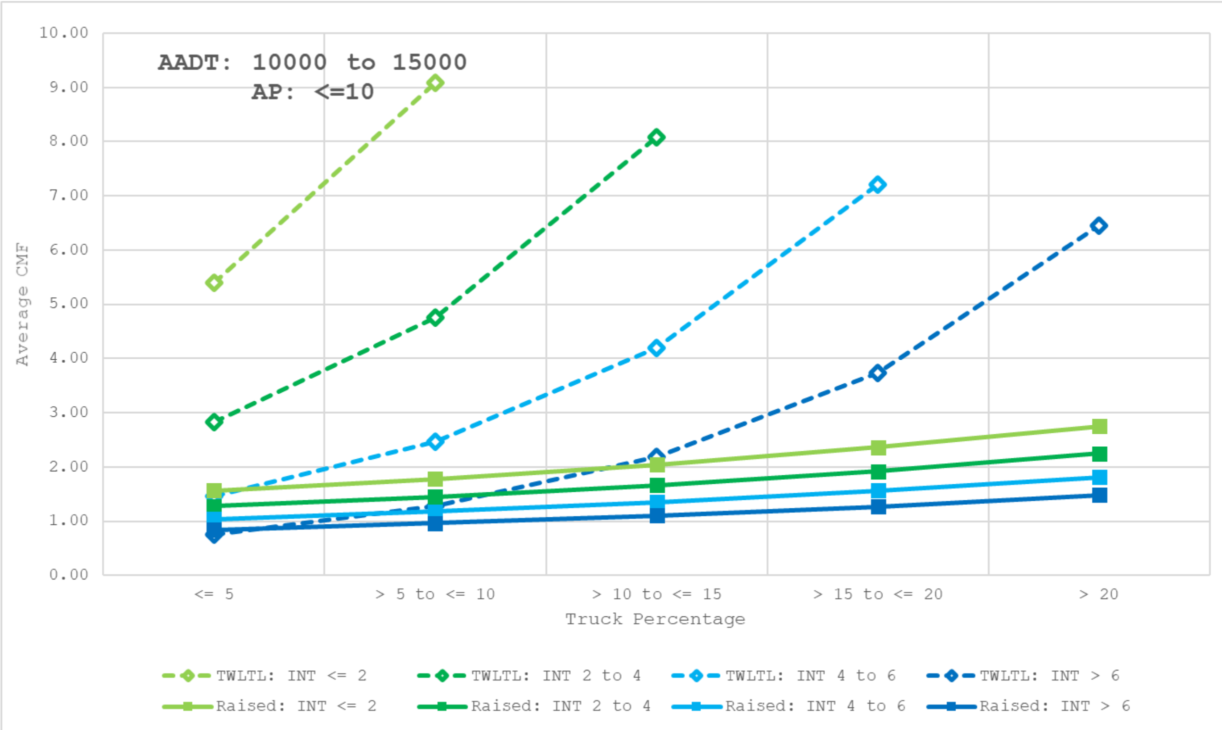
B-4-8 Urban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



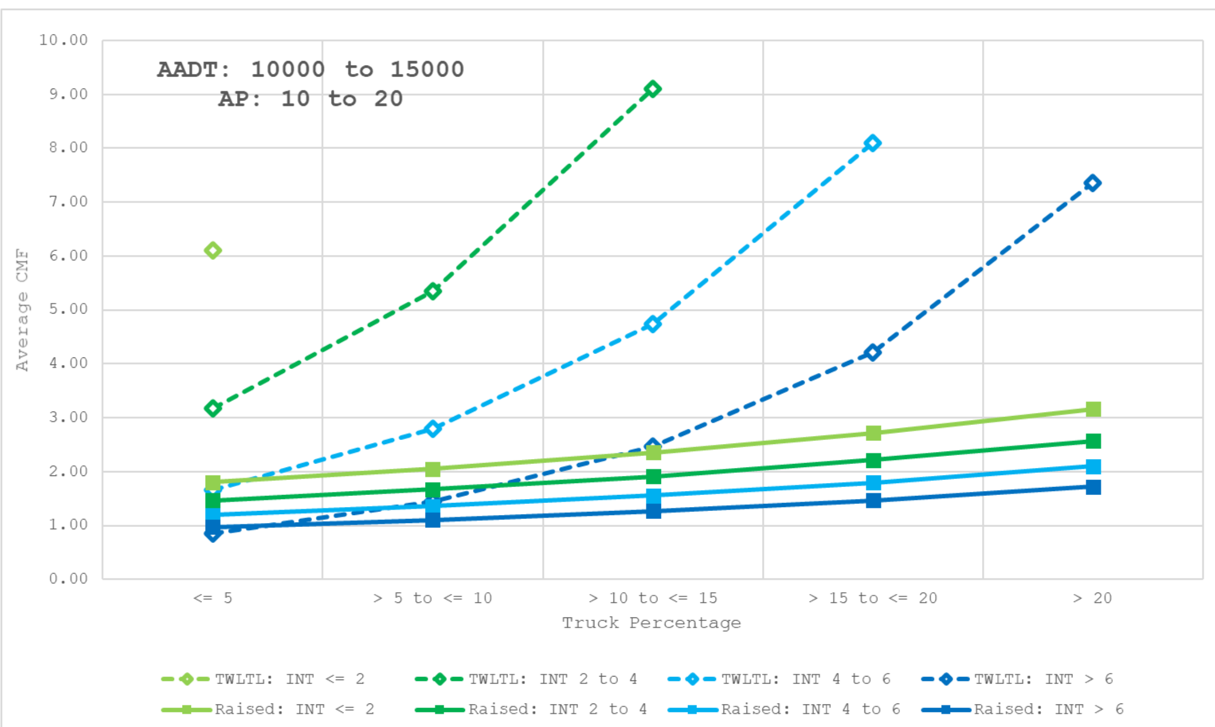
B-4-9 Urban Residential KABCO CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



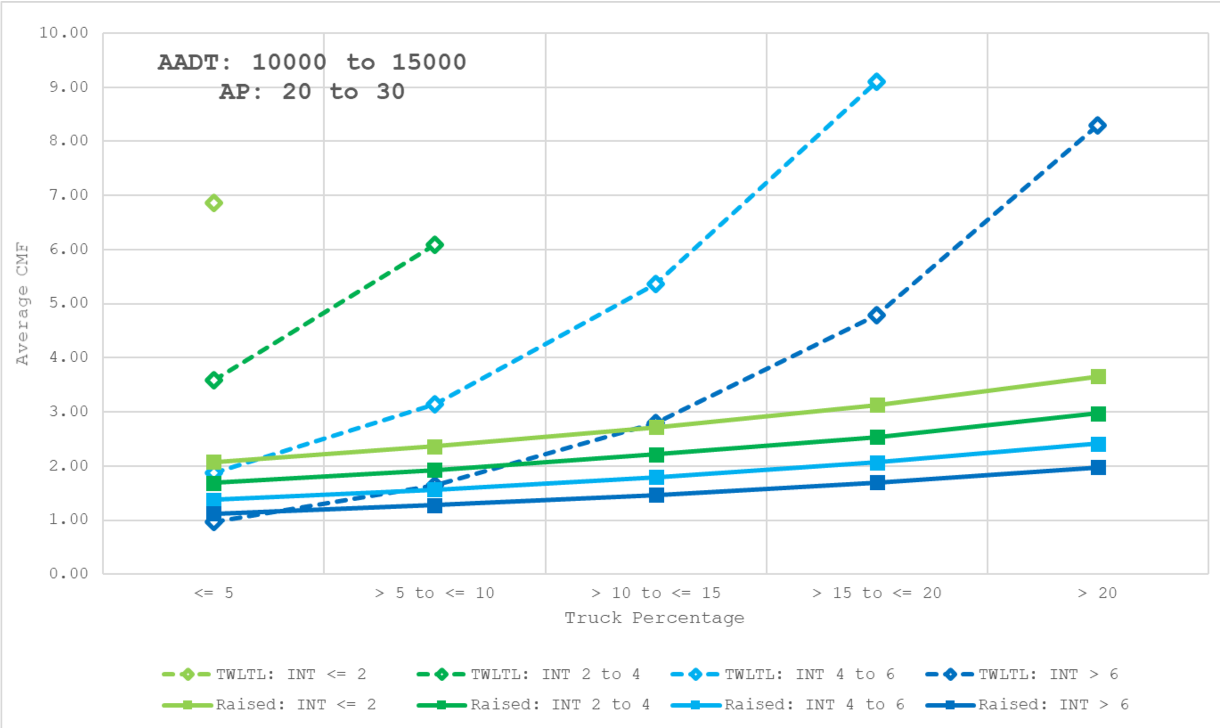
B-4-10 Urban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



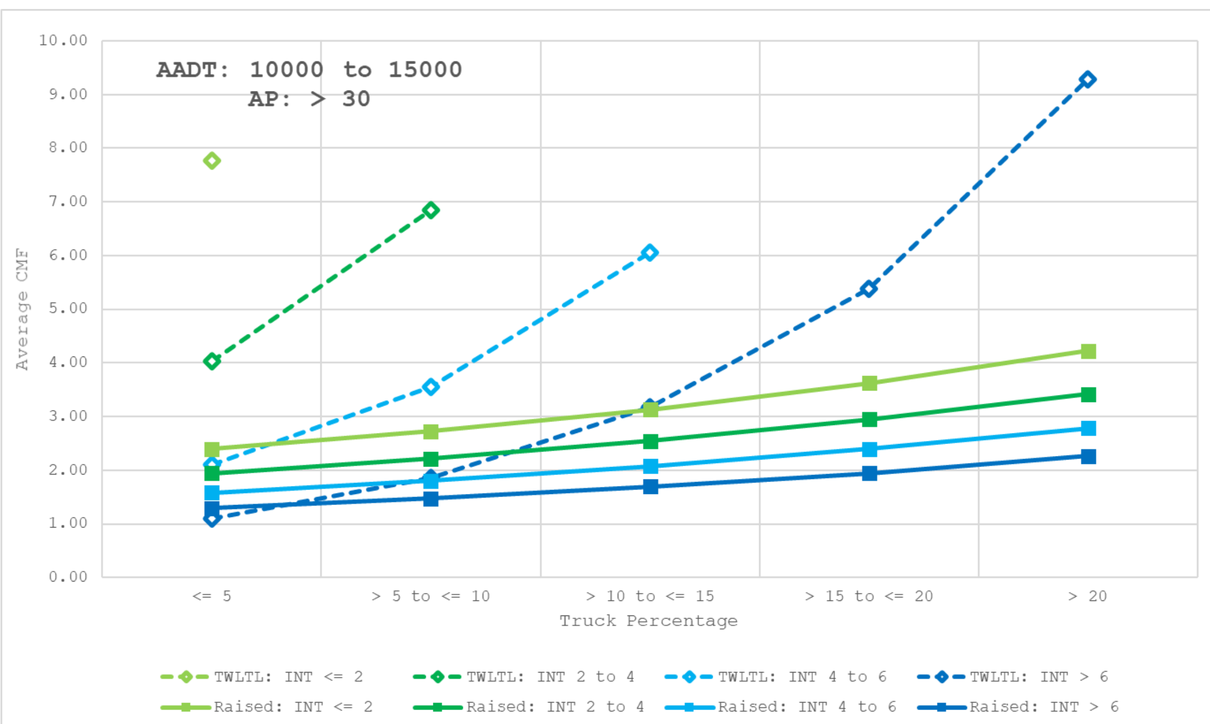
B-4-11 Urban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



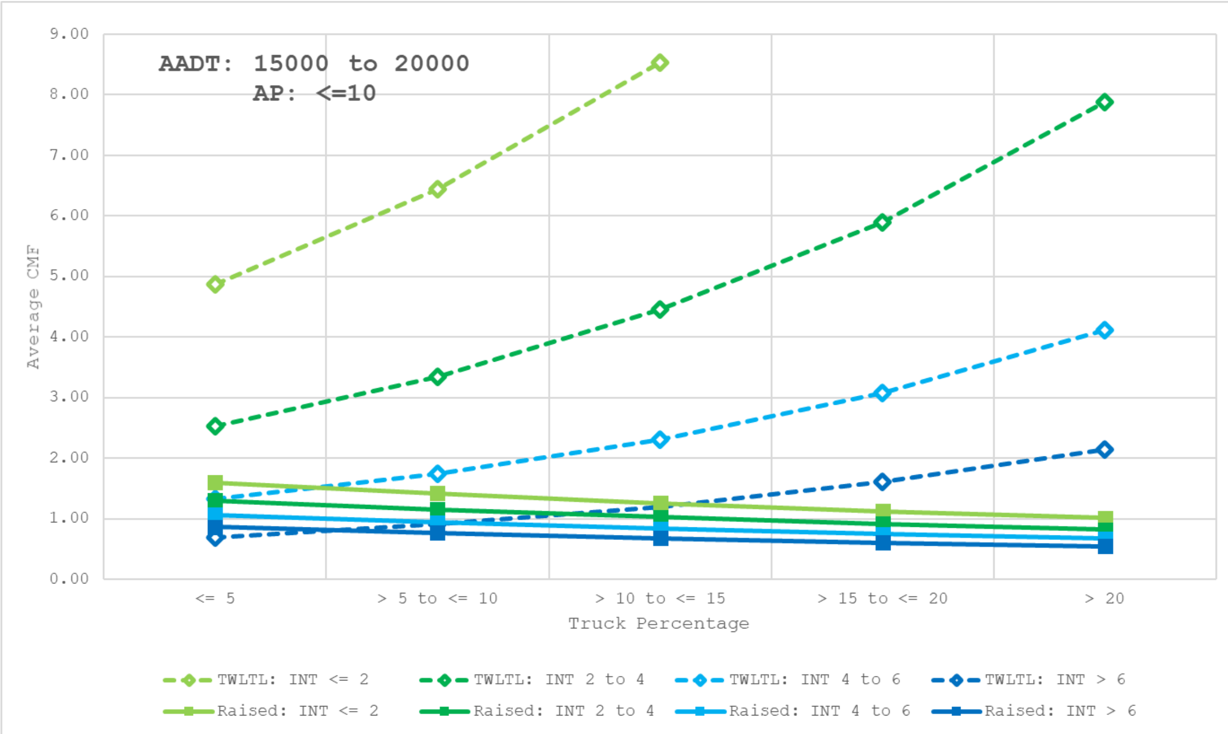
B-4-12 Urban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



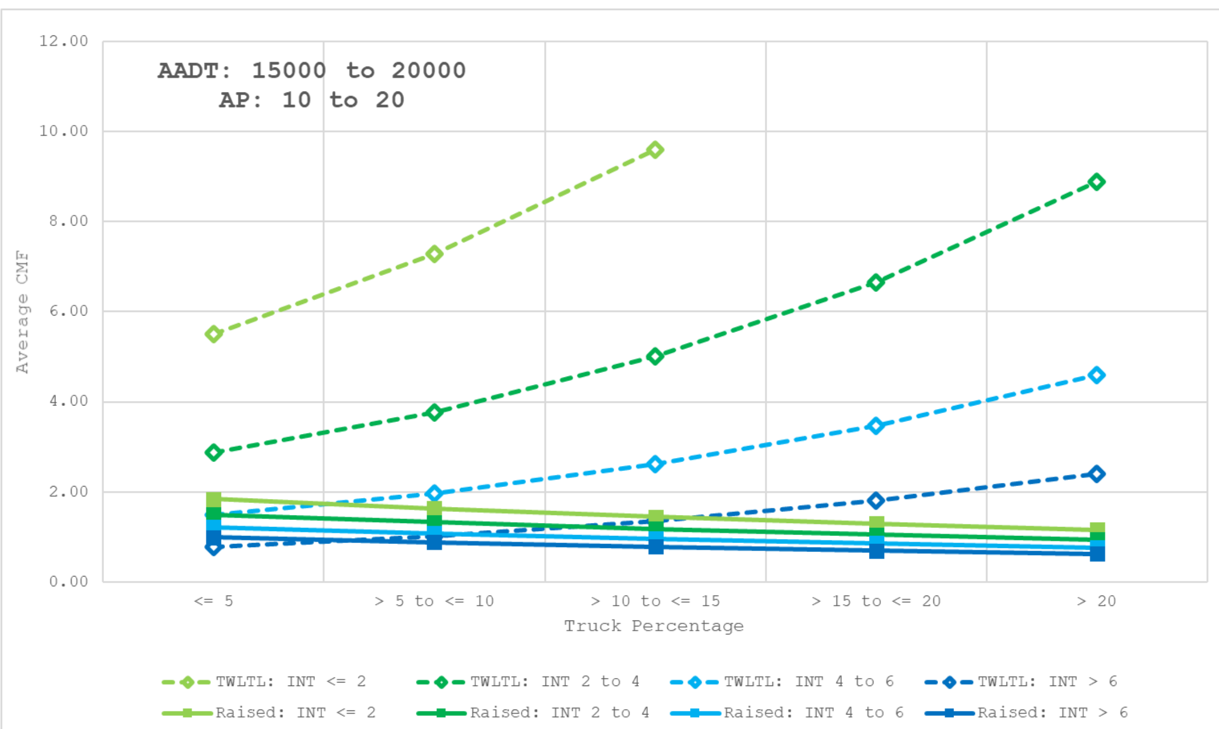
B-4-13 Urban Residential KABCO CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



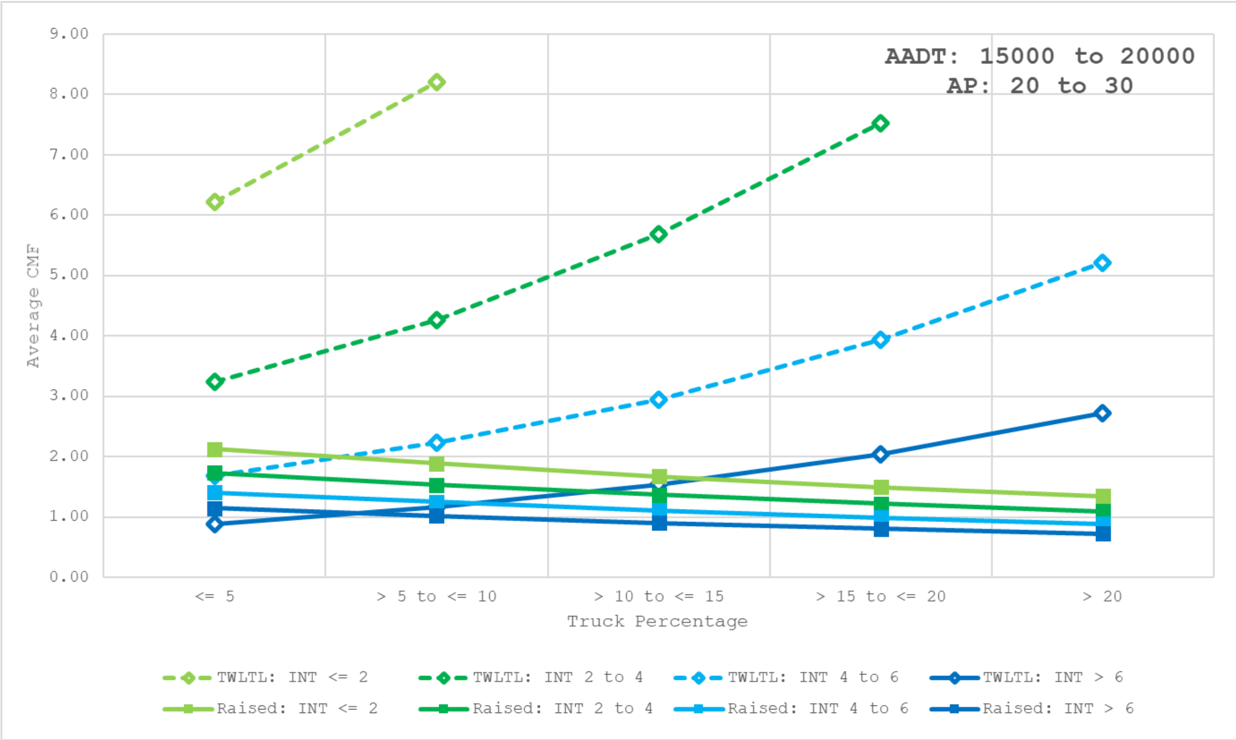
B-4-14 Urban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



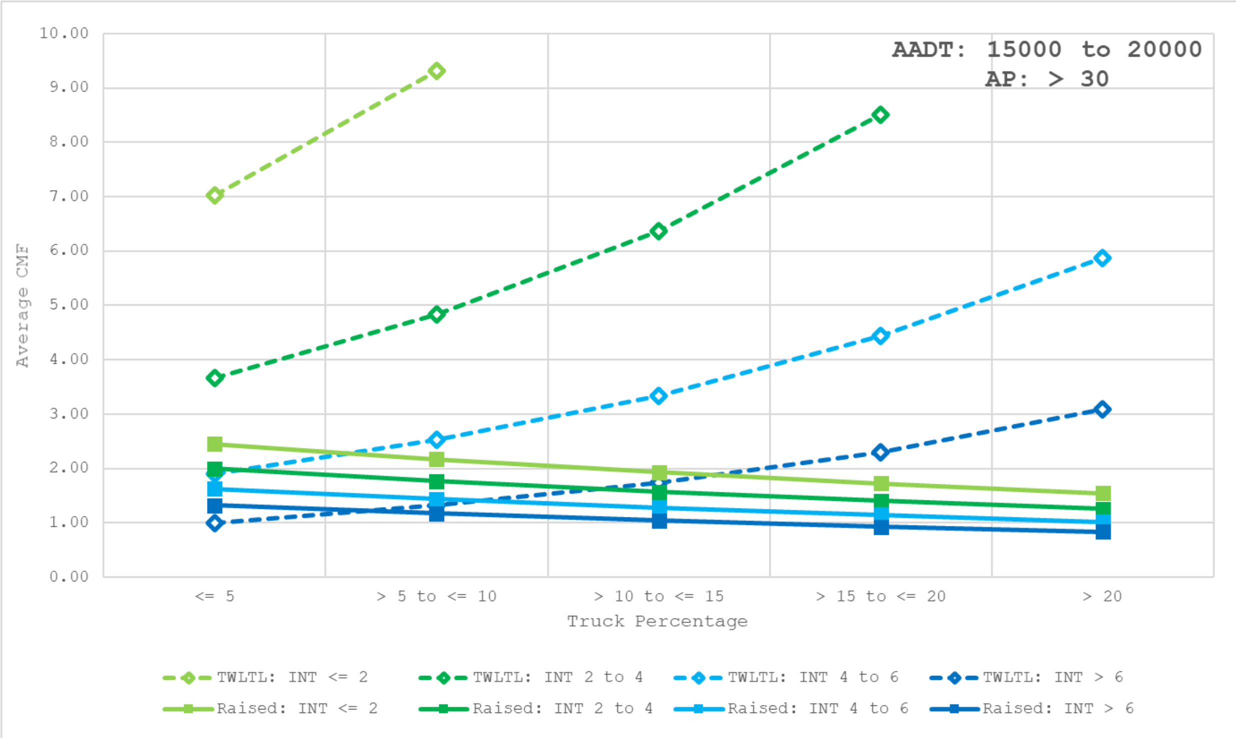
B-4-15 Urban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



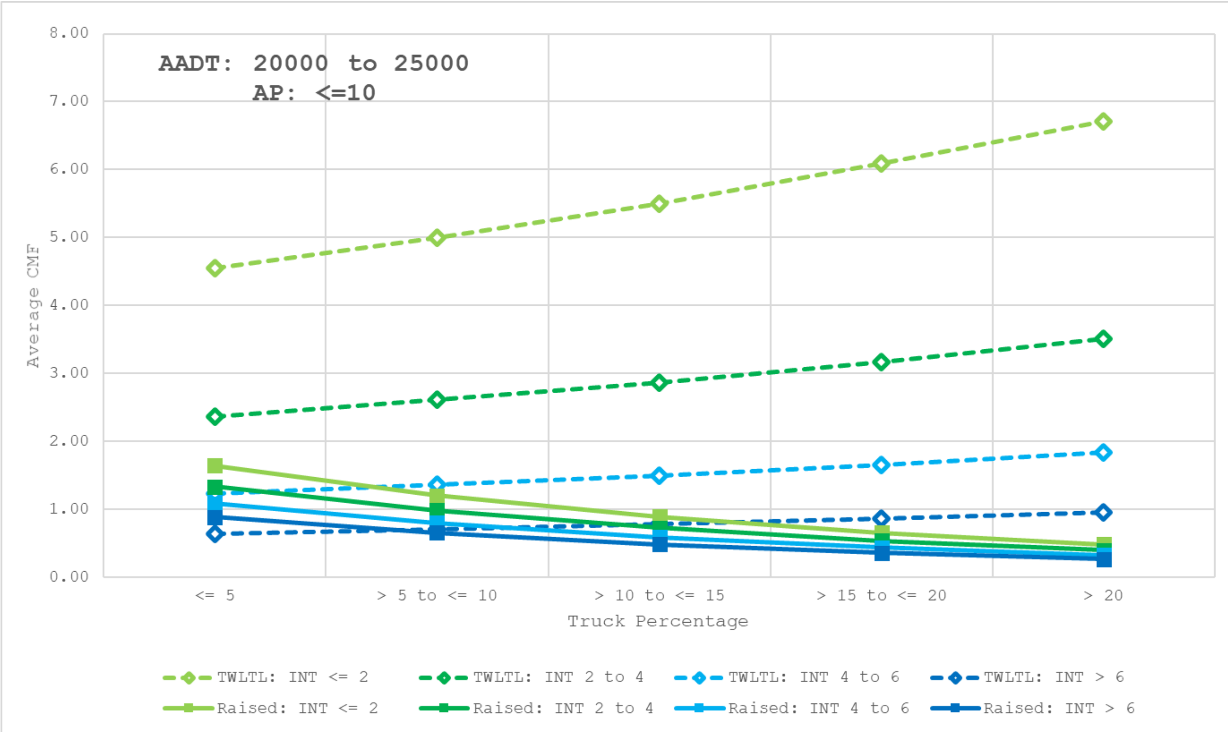
B-4-16 Urban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



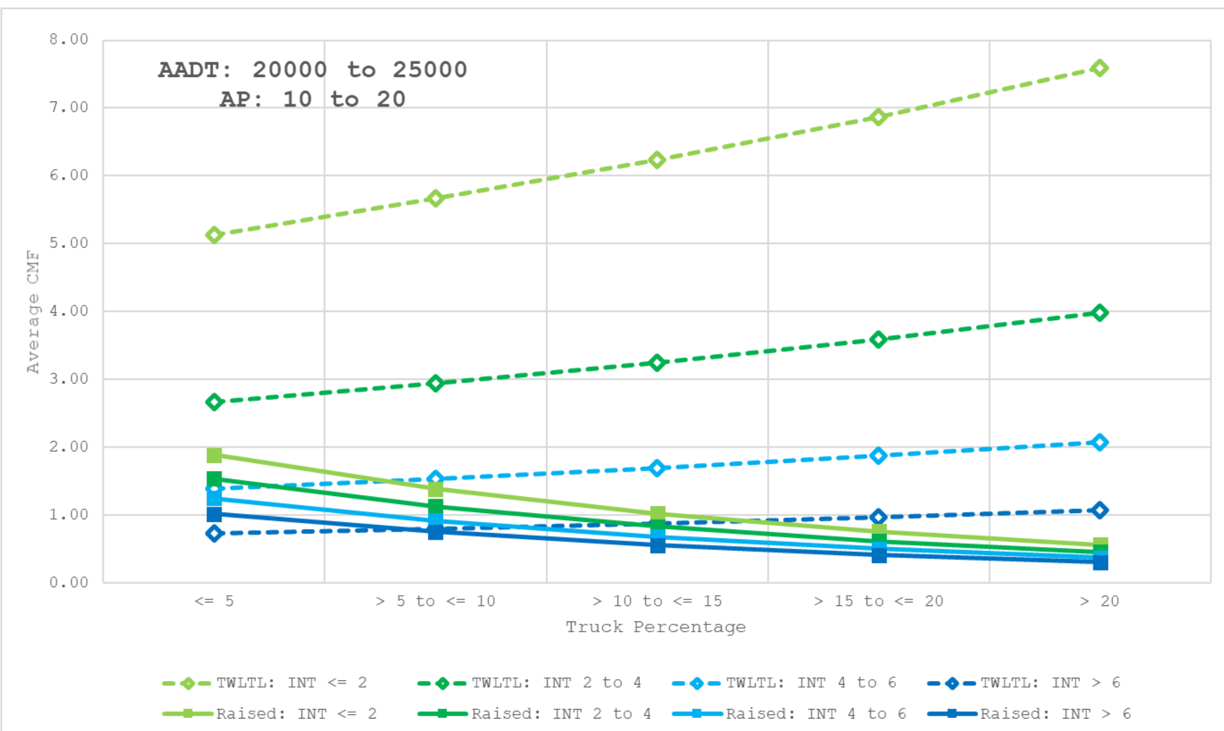
B-4-17 Urban Residential KABCO CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



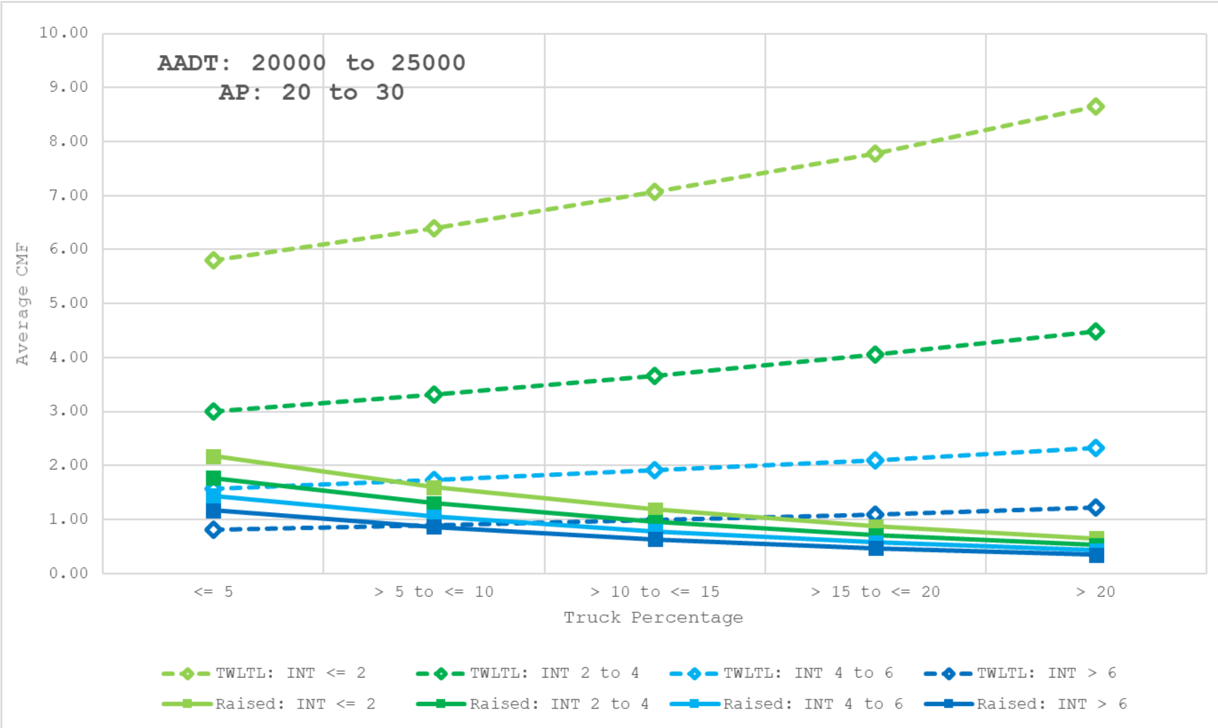
B-4-18 Urban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



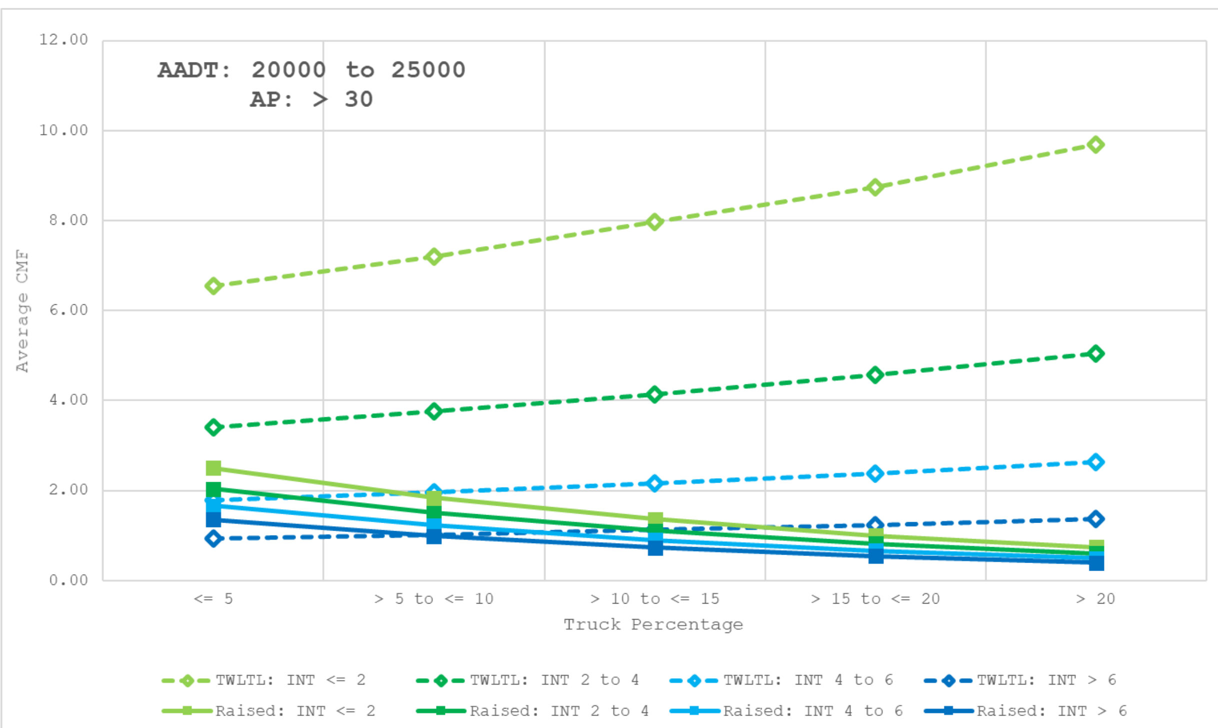
B-4-19 Urban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



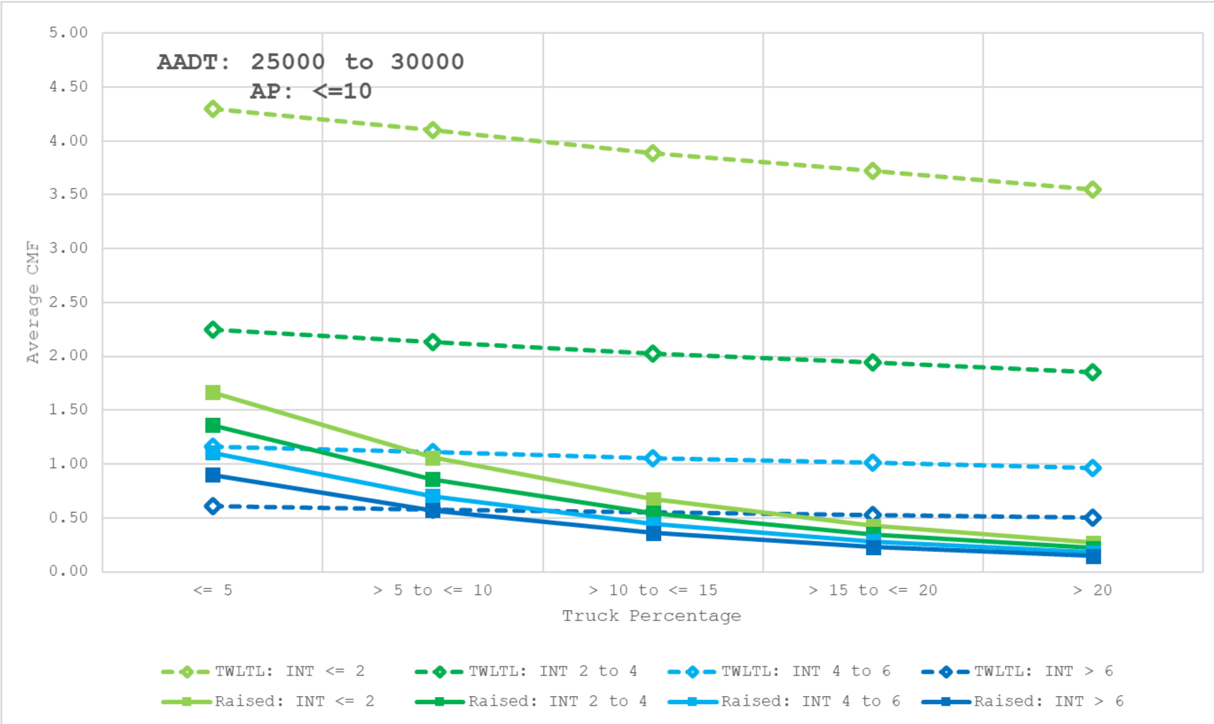
B-4-20 Urban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



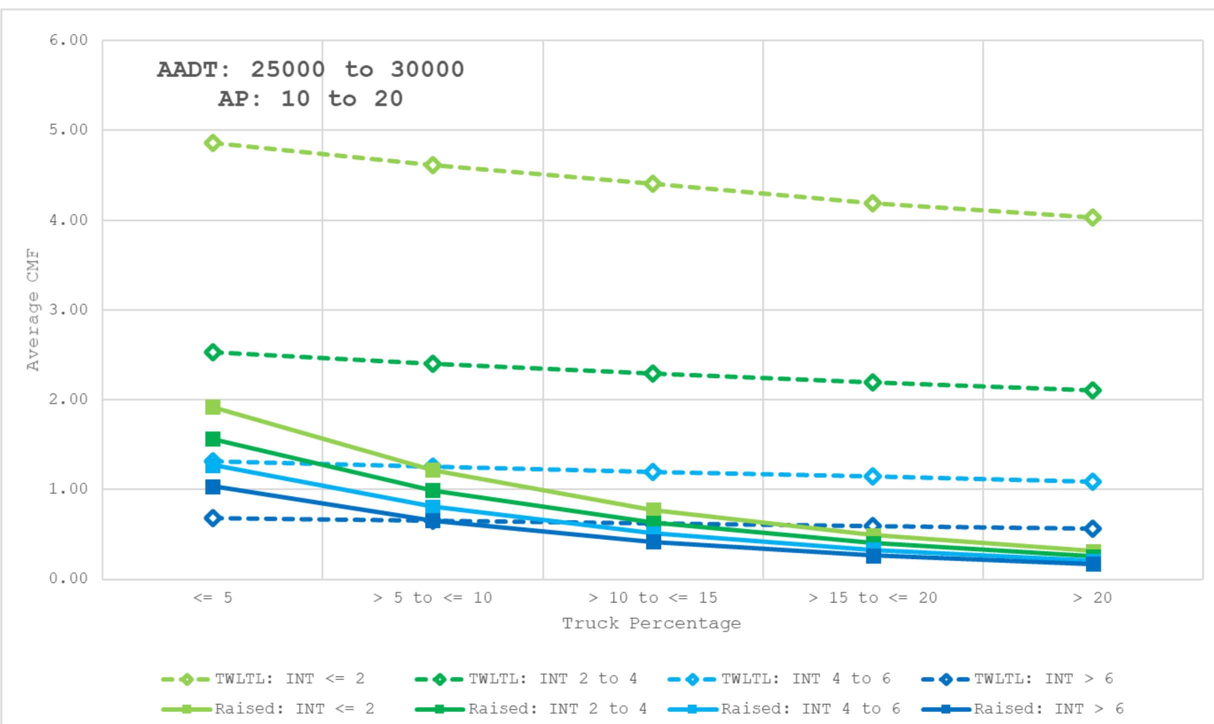
B-4-21 Urban Residential KABCO CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



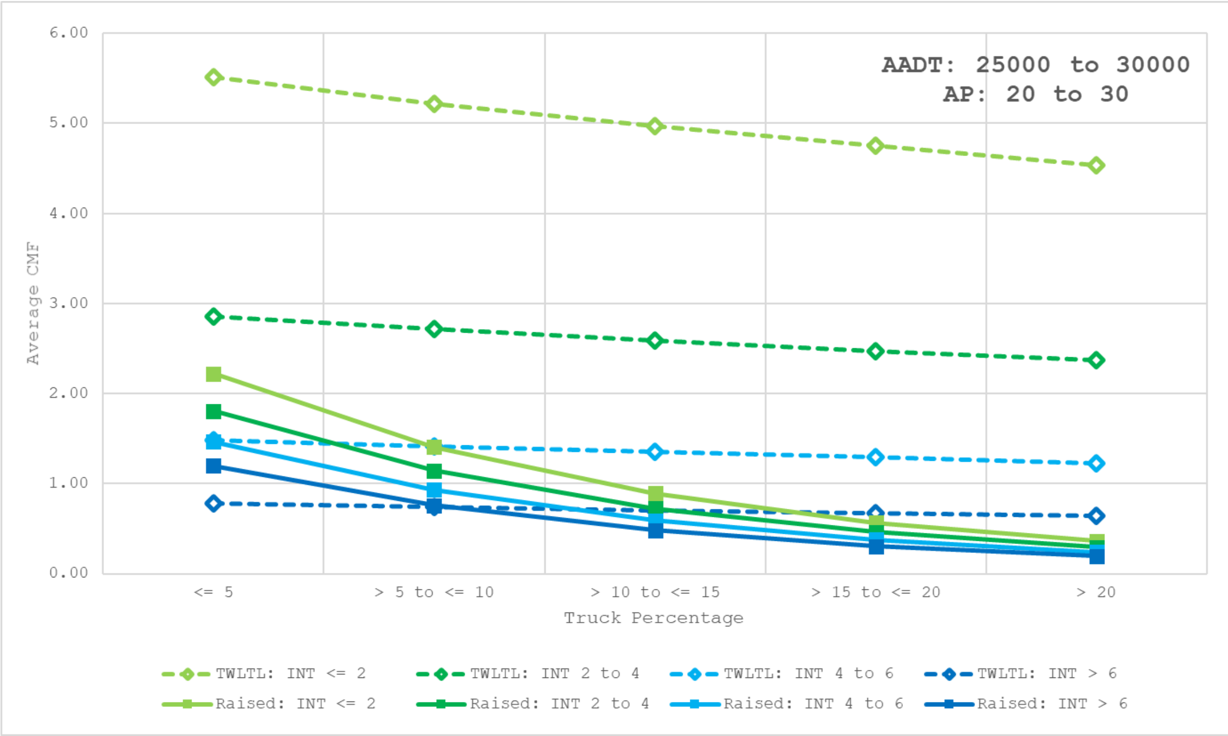
B-4-22 Urban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



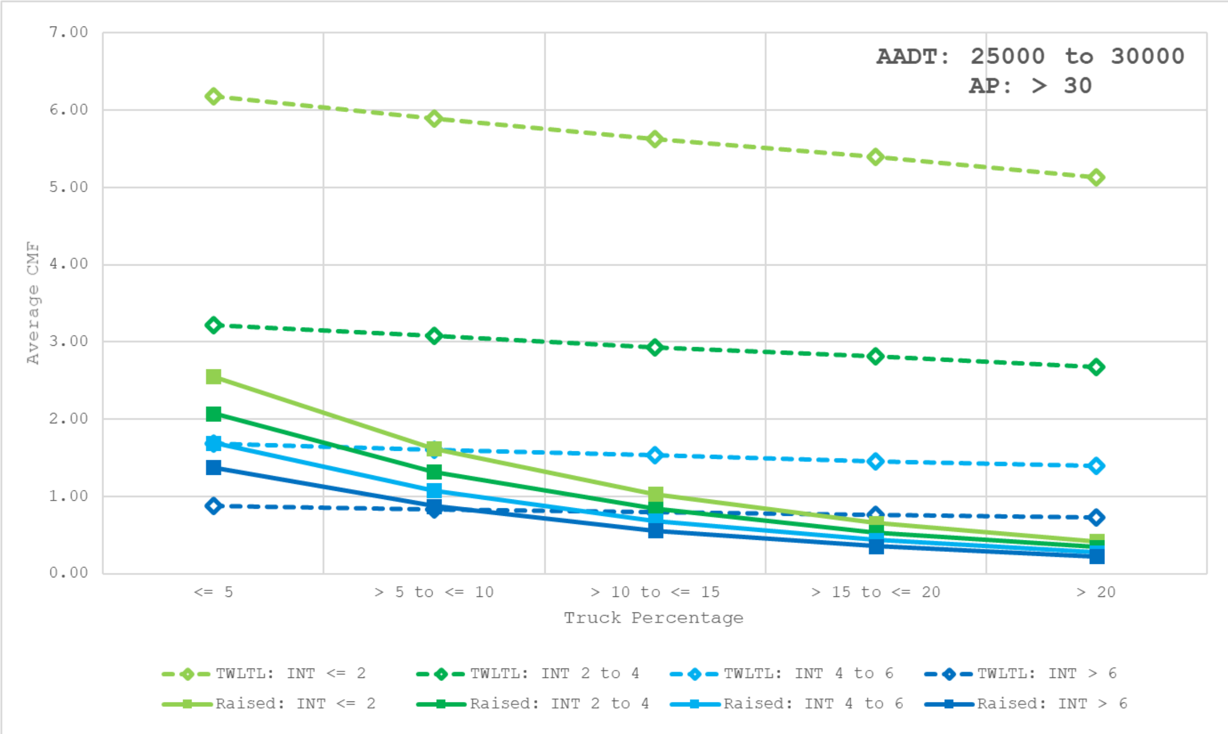
B-4-23 Urban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



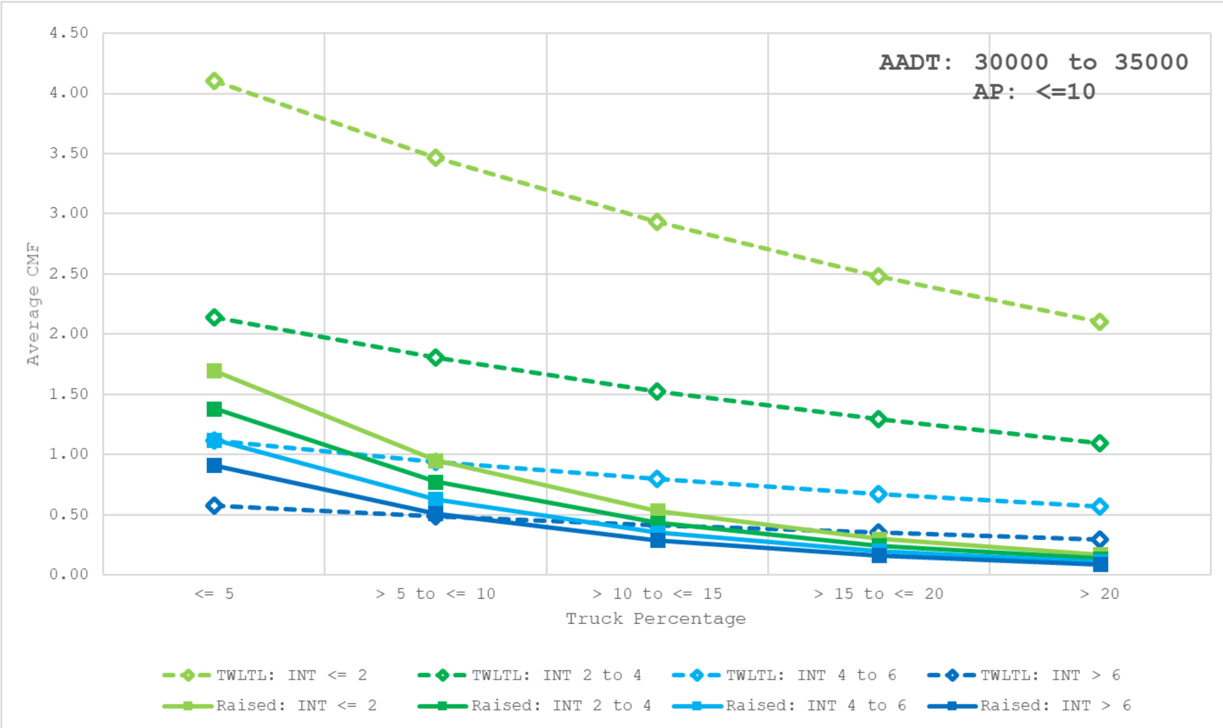
B-4-24 Urban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



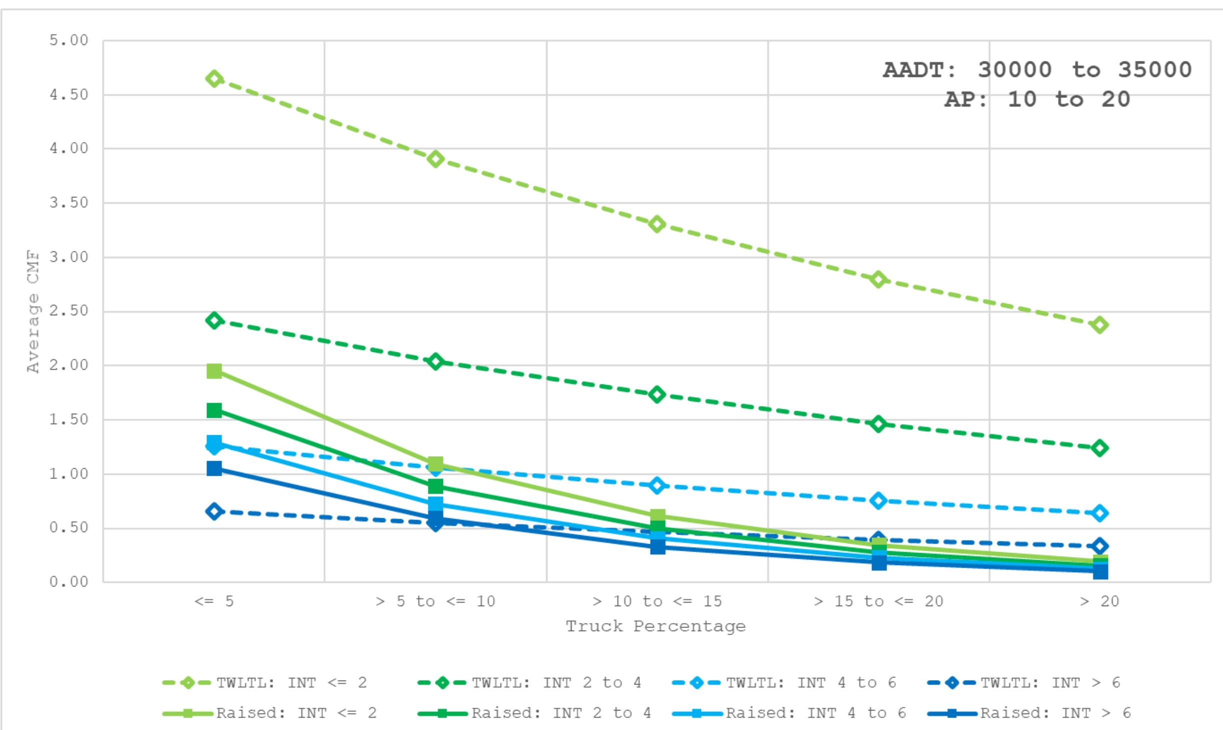
B-4-25 Urban Residential KABCO CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



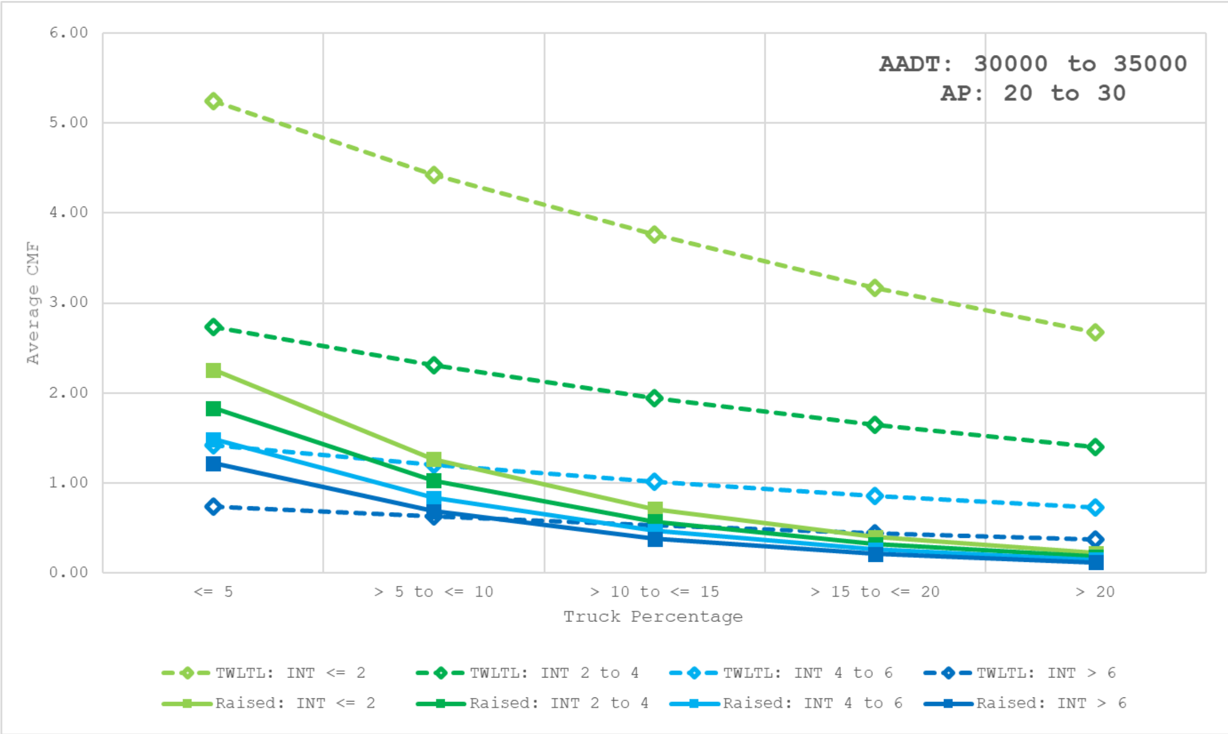
B-4-26 Urban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



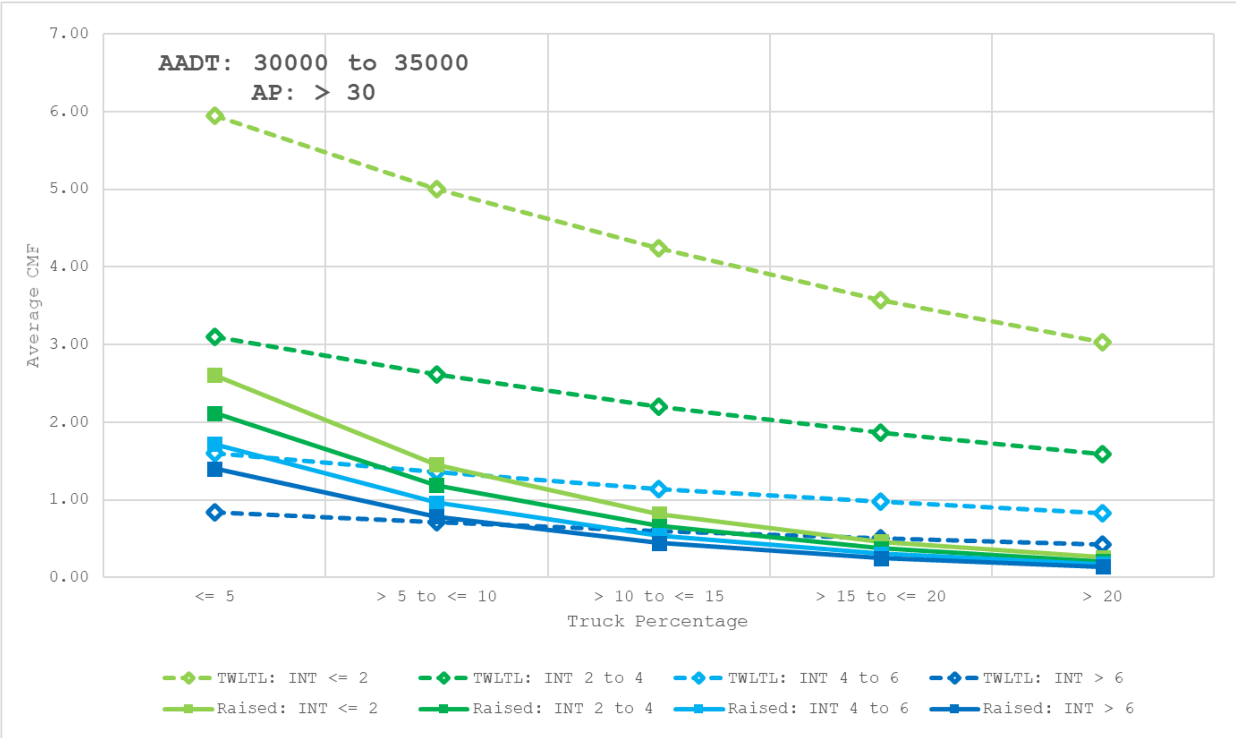
B-4-27 Urban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



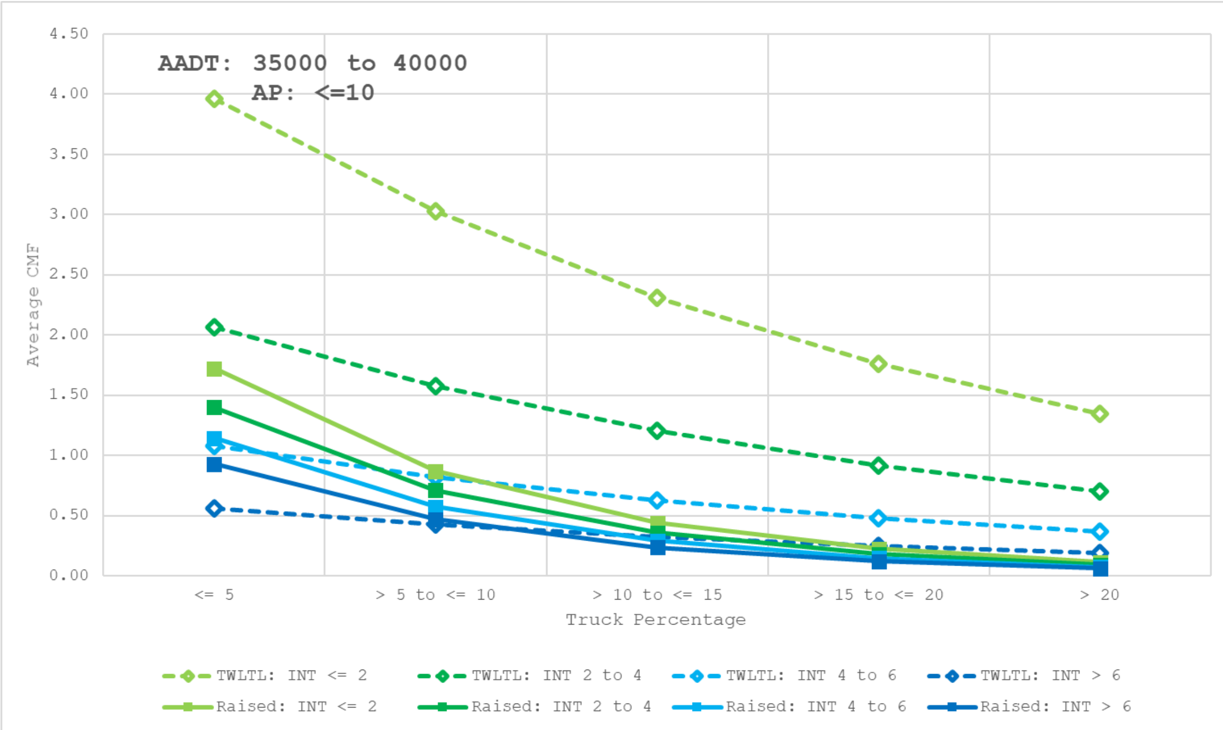
B-4-28 Urban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



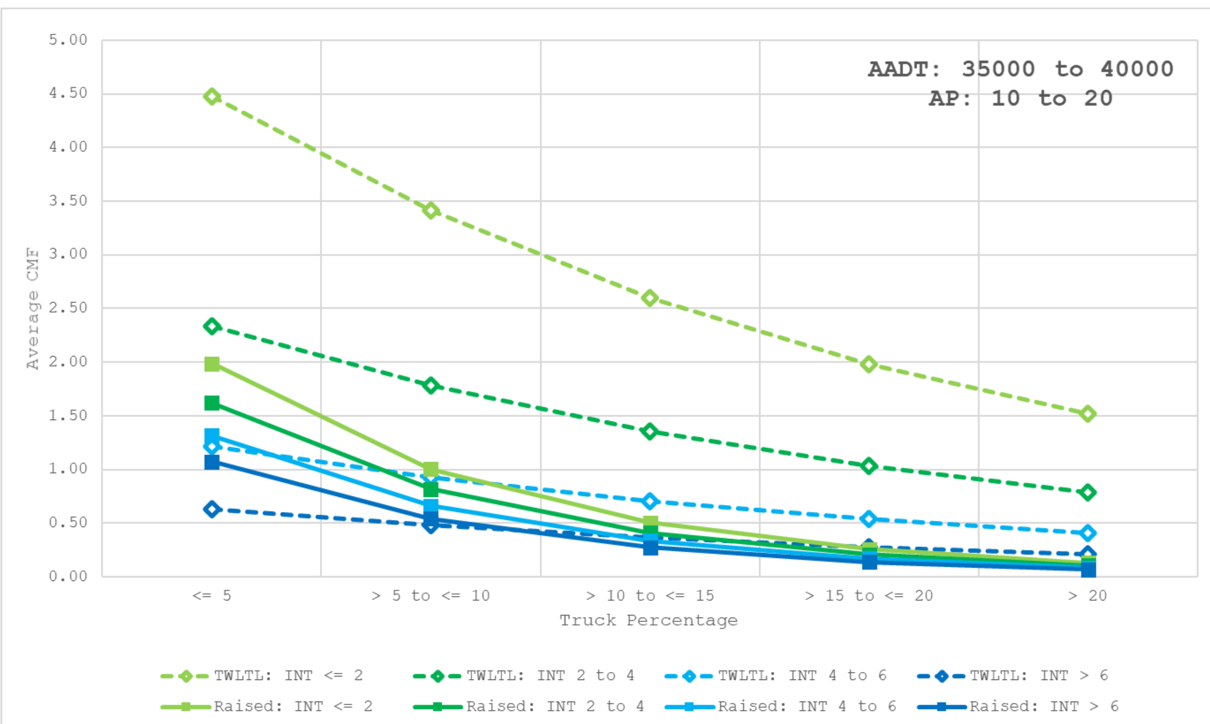
B-4-29 Urban Residential KABCO CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



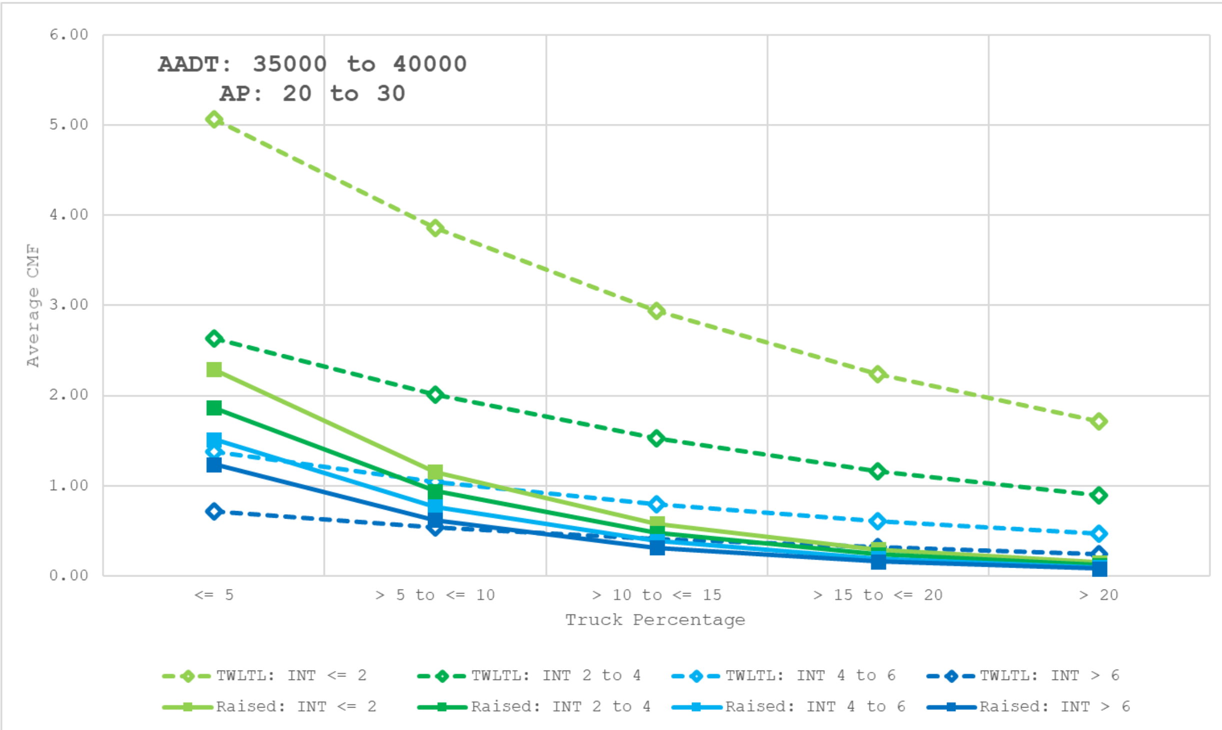
B-4-30 Urban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



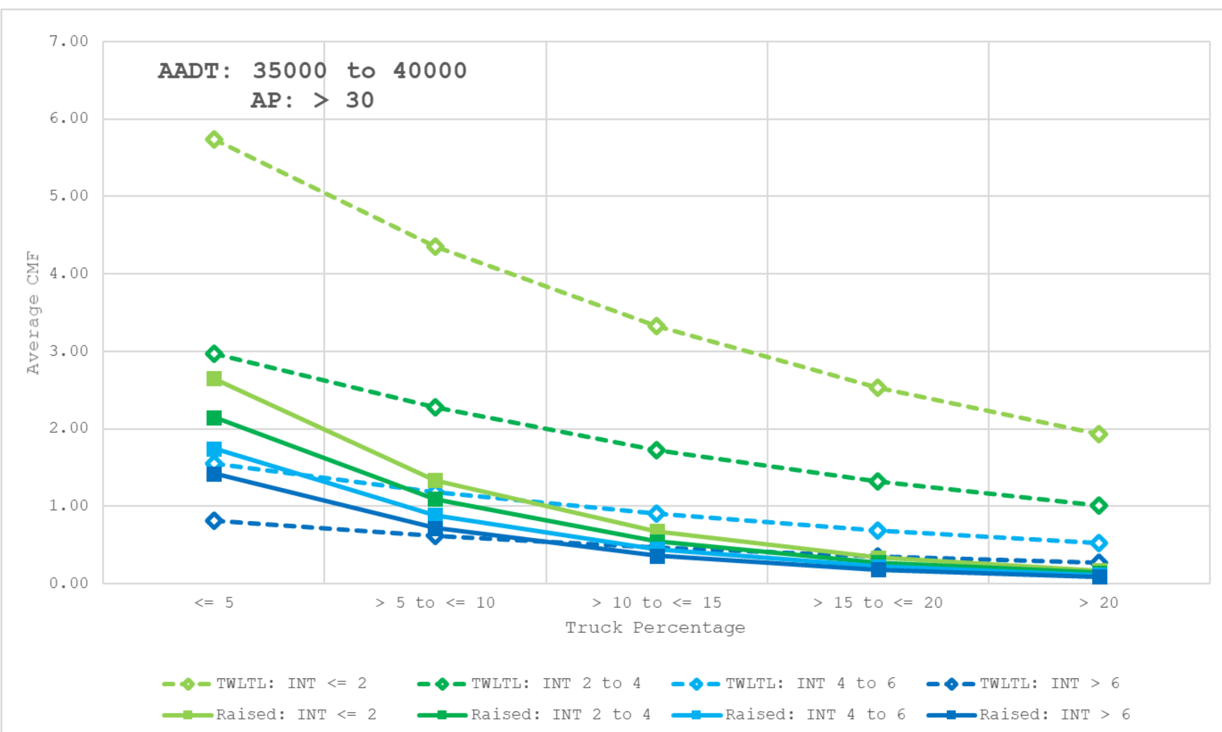
B-4-31 Urban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



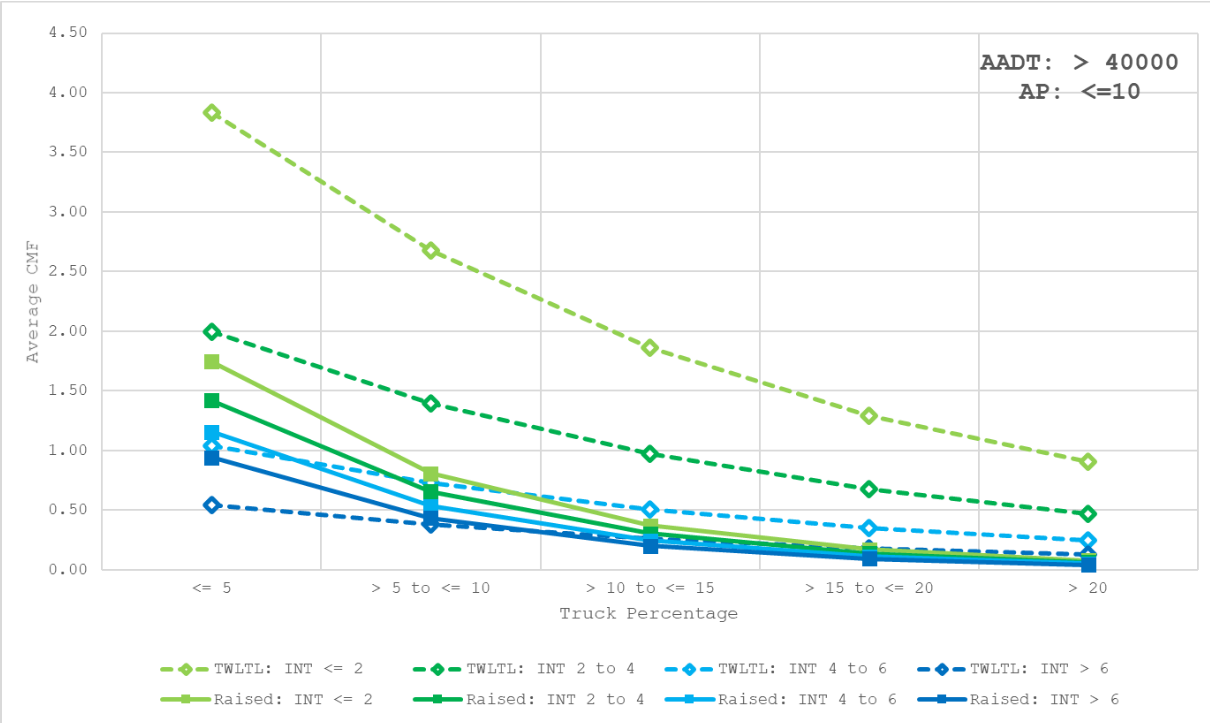
B-4-32 Urban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



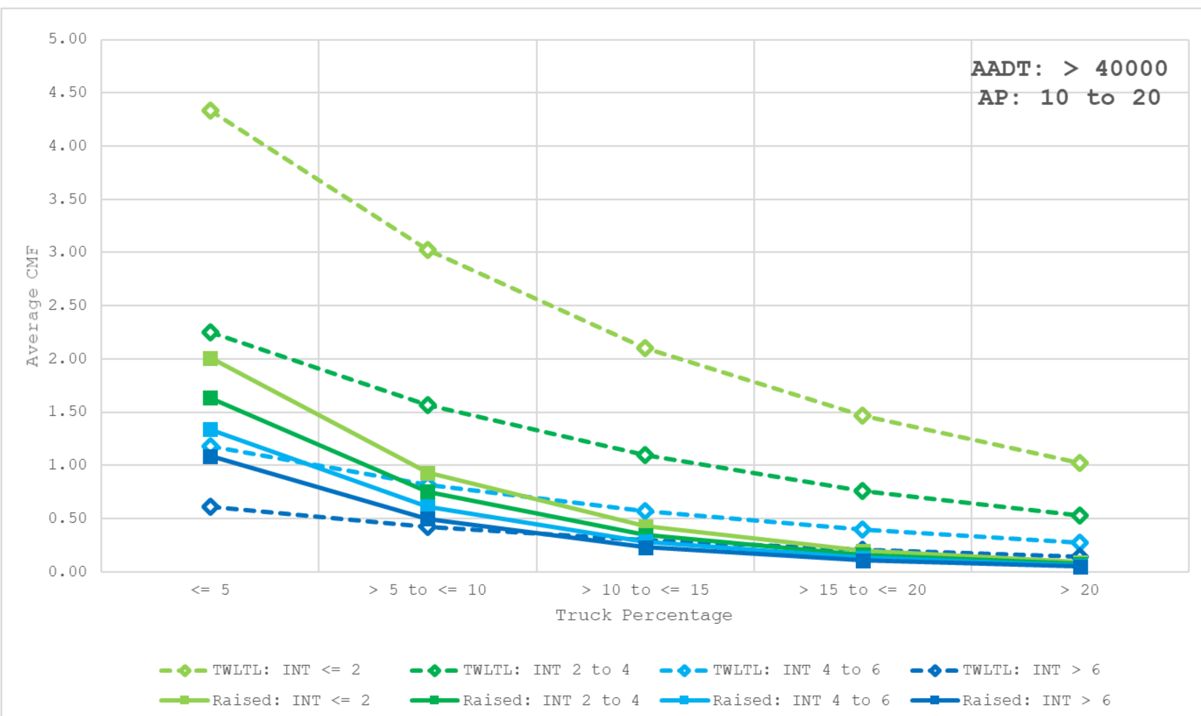
B-4-33 Urban Residential KABCO CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



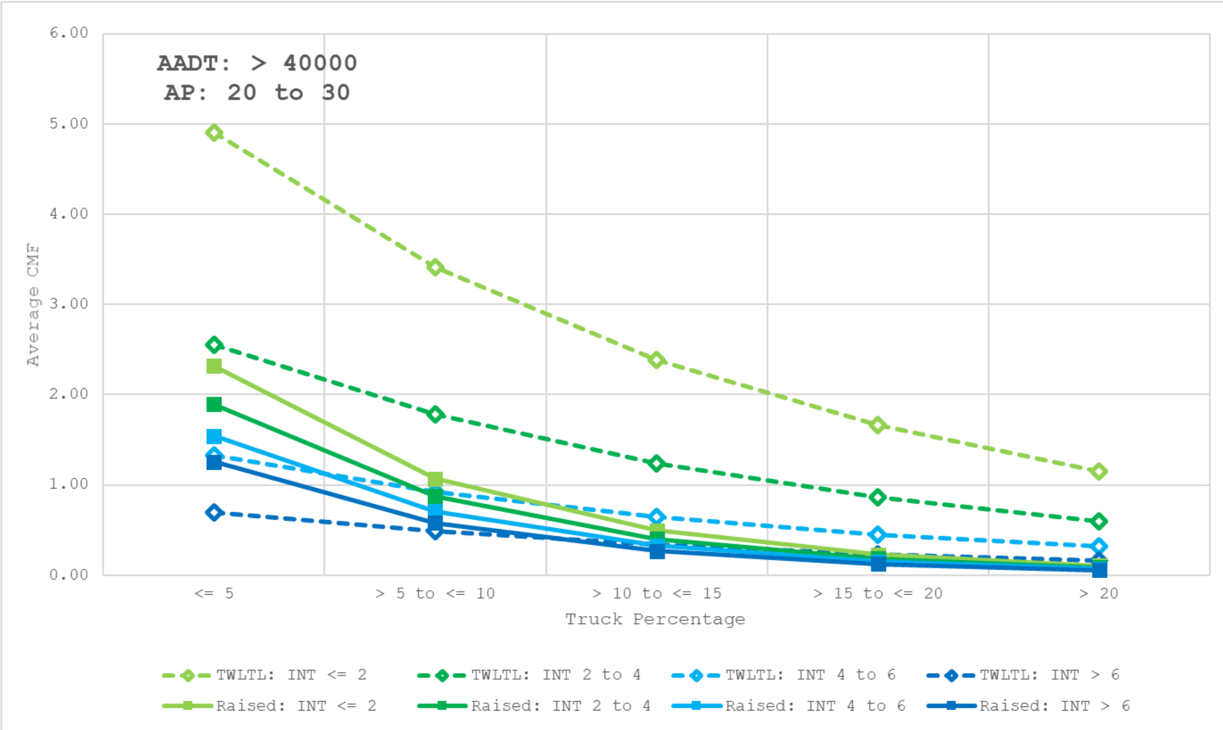
B-4-34 Urban Residential KABCO CMF Graphs (AADT: > 40,000, AP: <= 10)



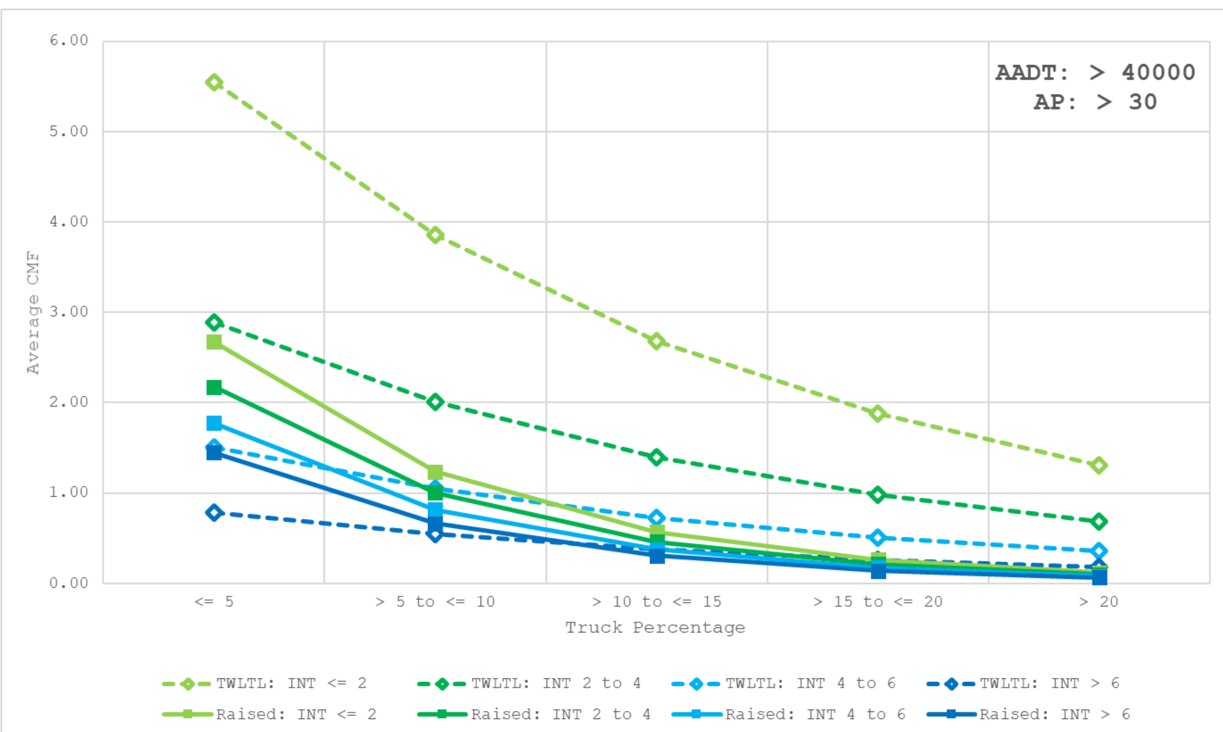
B-4-35 Urban Residential KABCO CMF Graphs (AADT: > 40,000, AP: 10-20)



B-4-36 Urban Residential KABCO CMF Graphs (AADT: > 40,000, AP: 20-30)



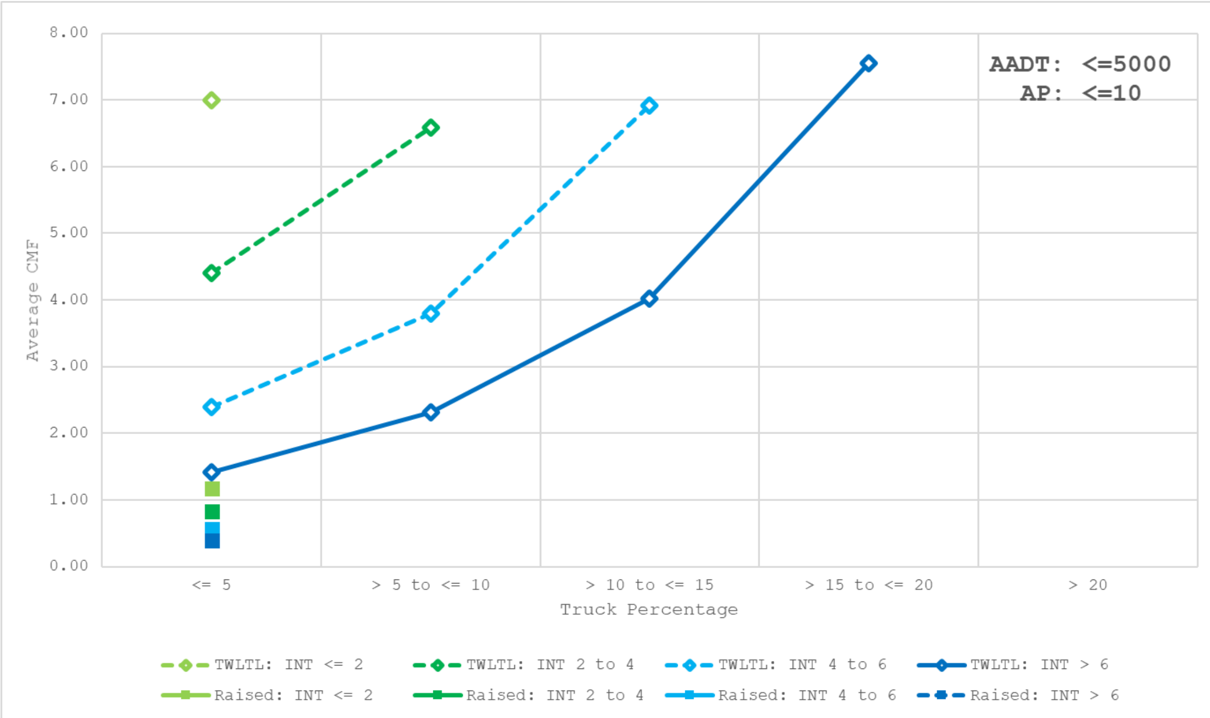
B-4-37 Urban Residential KABCO CMF Graphs (AADT: > 40,000, AP: > 30)



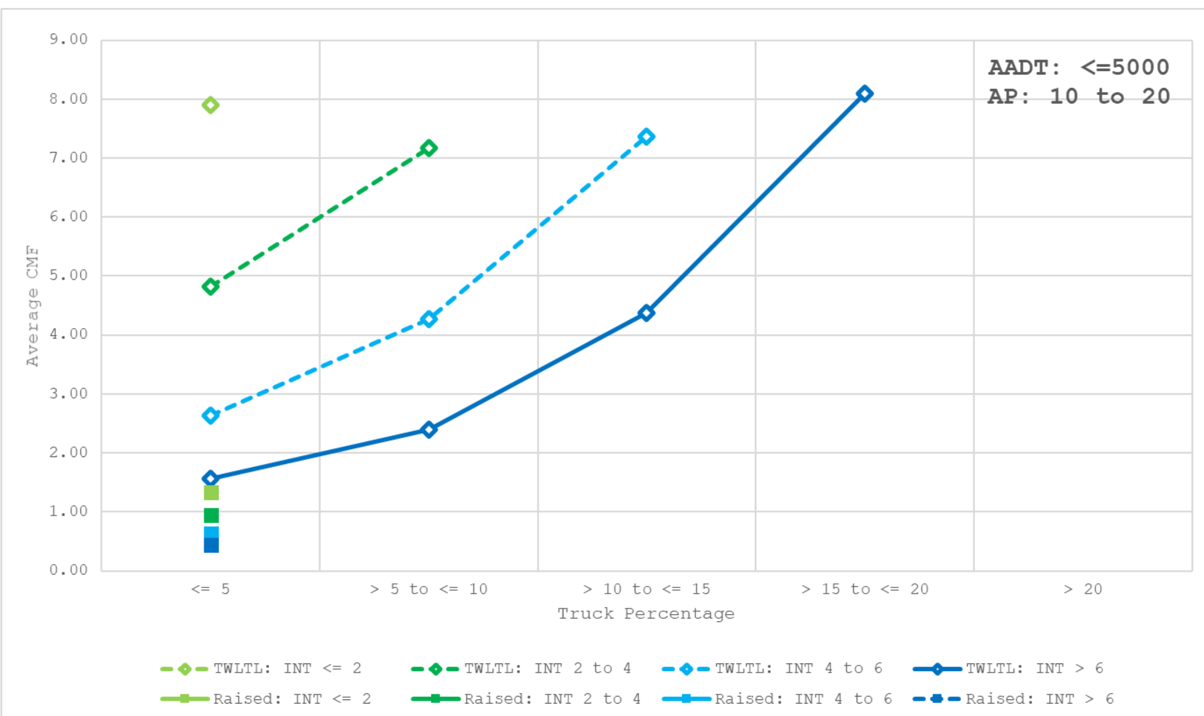
B-5-1 Suburban Mixed-Use KAB CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Rasied : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6
0 to 5000	<= 5	6.99	4.41	2.39	1.42	1.17	0.83	0.56	0.39	7.90	4.81	2.63	1.56	1.33	0.95	0.63	0.44	8.69	4.83	3.83	1.62	1.48	1.04	0.72	0.47	8.95	5.22	3.06	1.72	1.85	1.21	0.81	0.55
	> 5 to <= 10	#N/A	6.5827	3.7986	2.3089	#N/A	#N/A	#N/A	#N/A	#N/A	7.1698	4.263	2.3982	#N/A	#N/A	#N/A	#N/A	#N/A	8.019	4.433	2.6345	#N/A	#N/A	#N/A	#N/A	#N/A	8.2969	4.8668	2.8288	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	6.9197	4.0255	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.3599	4.3716	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.9515	4.6527	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.4506	4.9753	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	7.5536	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.0864	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.7133	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.3632	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	2.08	1.22	0.71	0.42	0.85	0.59	0.40	0.29	2.22	1.31	0.77	0.45	0.95	0.66	0.46	0.32	2.39	1.41	0.82	0.48	1.08	0.75	0.51	0.36	2.56	1.50	0.89	0.52	1.20	0.84	0.59	0.41
	> 5 to <= 10	5.11	3.01	1.76	1.04	7.25	5.08	3.50	2.44	5.50	3.24	1.90	1.12	8.15	5.71	3.99	2.78	5.93	3.47	2.04	1.20	9.33	6.44	4.48	3.13	6.33	3.73	2.19	1.29	#N/A	7.22	5.02	3.56
	> 10 to <= 15	#N/A	7.4794	4.38	2.58	#N/A	#N/A	#N/A	#N/A	#N/A	8.00	4.70	2.76	#N/A	#N/A	#N/A	#N/A	#N/A	8.63	5.09	2.96	#N/A	#N/A	#N/A	#N/A	#N/A	9.26	5.44	3.19	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	6.44	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	6.93	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.43	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.95	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
10000 to 15000	<= 5	1.48	0.87	0.51	0.30	0.84	0.58	0.41	0.29	1.59	0.93	0.55	0.32	0.95	0.66	0.46	0.32	1.71	1.00	0.58	0.35	1.07	0.74	0.51	0.36	1.83	1.07	0.63	0.37	1.20	0.84	0.58	0.41
	> 5 to <= 10	4.02	2.36	1.39	0.82	2.98	2.08	1.45	1.01	4.33	2.54	1.50	0.88	3.38	2.35	1.64	1.14	4.67	2.74	1.60	0.94	3.82	2.66	1.84	1.28	4.98	2.93	1.72	1.01	4.27	2.98	2.07	1.44
	> 10 to <= 15	#N/A	6.43	3.79	2.23	#N/A	7.61	5.34	3.71	#N/A	6.91	4.05	2.39	#N/A	8.65	5.98	4.16	#N/A	7.43	4.35	2.55	#N/A	9.67	6.75	4.68	#N/A	7.97	4.69	2.76	#N/A	#N/A	7.59	5.32
	> 15 to <= 20	#N/A	#N/A	#N/A	6.12	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	6.55	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	6.98	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.50	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
15000 to 20000	<= 5	1.20	0.70	0.41	0.24	0.87	0.60	0.42	0.29	1.28	0.75	0.44	0.26	0.98	0.68	0.47	0.33	1.37	0.81	0.47	0.28	1.10	0.77	0.53	0.37	1.47	0.86	0.51	0.30	1.24	0.86	0.60	0.42
	> 5 to <= 10	3.44	2.01	1.20	0.70	1.75	1.22	0.85	0.59	3.71	2.17	1.27	0.75	1.98	1.37	0.95	0.67	3.97	2.33	1.37	0.81	2.23	1.55	1.08	0.75	4.25	2.51	1.47	0.87	2.50	1.75	1.21	0.85
	> 10 to <= 15	9.97	5.87	3.43	2.02	3.63	2.52	1.75	1.22	#N/A	6.29	3.70	2.16	4.06	2.85	1.98	1.37	#N/A	6.77	4.00	2.33	4.58	3.21	2.24	1.55	#N/A	7.21	4.24	2.50	5.21	3.58	2.51	1.75
	> 15 to <= 20	#N/A	#N/A	#N/A	5.83	7.61	5.31	3.72	2.55	#N/A	#N/A	#N/A	6.30	8.57	5.94	4.14	2.89	#N/A	#N/A	#N/A	6.73	9.70	6.72	4.68	3.25	#N/A	#N/A	#N/A	7.25	#N/A	7.58	5.29	3.67
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.96	5.50	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.96	6.20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	6.99	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.82
20000 to 25000	<= 5	1.02	0.60	0.35	0.21	0.90	0.63	0.44	0.30	1.09	0.64	0.38	0.22	1.01	0.71	0.49	0.34	1.17	0.69	0.41	0.24	1.14	0.80	0.55	0.38	1.26	0.74	0.43	0.26	1.29	0.89	0.62	0.43
	> 5 to <= 10	3.08	1.81	1.07	0.62	1.21	0.84	0.59	0.41	3.31	1.93	1.14	0.67	1.36	0.94	0.66	0.46	3.54	2.07	1.22	0.71	1.53	1.06	0.74	0.52	3.80	2.23	1.31	0.77	1.72	1.20	0.83	0.58
	> 10 to <= 15	9.30	5.44	3.20	1.89	1.64	1.13	0.79	0.55	9.92	5.85	3.45	2.04	1.84	1.28	0.89	0.62	#N/A	6.27	3.69	2.18	2.08	1.44	1.00	0.70	#N/A	6.71	3.98	2.34	2.33	1.62	1.13	0.79
	> 15 to <= 20	#N/A	#N/A	9.69	5.71	2.25	1.55	1.08	0.76	#N/A	#N/A	#N/A	6.16	2.51	1.76	1.21	0.85	#N/A	#N/A	#N/A	6.57	2.84	1.97	1.37	0.96	#N/A	#N/A	#N/A	7.06	3.19	2.23	1.54	1.08
	> 20	#N/A	#N/A	#N/A	#N/A	3.10	2.13	1.49	1.04	#N/A	#N/A	#N/A	#N/A	3.50	2.42	1.69	1.18	#N/A	#N/A	#N/A	#N/A	3.92	2.72	1.90	1.31	#N/A	#N/A	#N/A	#N/A	4.44	3.08	2.14	1.49
25000 to 30000	<= 5	0.90	0.52	0.31	0.18	0.94	0.65	0.45	0.32	0.96	0.56	0.33	0.19	1.06	0.73	0.51	0.36	1.03	0.61	0.36	0.21	1.19	0.83	0.58	0.40	1.11	0.65	0.38	0.22	1.34	0.93	0.65	0.45
	> 5 to <= 10	2.80	1.65	0.97	0.57	0.90	0.63	0.44	0.30	3.03	1.78	1.04	0.61	1.02	0.71	0.49	0.34	3.25	1.89	1.11	0.65	1.15	0.80	0.55	0.39	3.47	2.03	1.19	0.70	1.29	0.90	0.63	0.43
	> 10 to <= 15	8.81	5.13	3.02	1.77	0.88	0.61	0.42	0.30	9.47	5.54	3.25	1.92	0.99	0.69	0.48	0.33	#N/A	5.95	3.51	2.05	1.11	0.78	0.54	0.38	#N/A	6.40	3.73	2.21	1.26	0.87	0.61	0.42
	> 15 to <= 20	#N/A	#N/A	9.53	5.59	0.86	0.60	0.42	0.29	#N/A	#N/A	#N/A	5.97	0.97	0.67	0.47	0.33	#N/A	#N/A	#N/A	6.48	1.09	0.76	0.53	0.37	#N/A	#N/A	#N/A	6.88	1.22	0.85	0.60	0.41
	> 20	#N/A	#N/A	#N/A	#N/A	0.85	0.59	0.41	0.28	#N/A	#N/A	#N/A	#N/A	0.96	0.66	0.46	0.32	#N/A	#N/A	#N/A	#N/A	1.07	0.75	0.52	0.36	#N/A	#N/A	#N/A	#N/A	1.21	0.84	0.58	0.41
30000 to 35000	<= 5	0.81	0.47	0.28	0.16	0.98	0.68	0.47	0.33	0.86	0.51	0.30	0.17	1.10	0.77	0.53	0.37	0.93	0.54	0.32	0.19	1.24	0.86	0.60	0.42	1.00	0.58	0.34	0.20	1.39	0.97	0.68	0.47
	> 5 to <= 10	2.57	1.52	0.89	0.53	0.72	0.50	0.35	0.24	2.81	1.64	0.96	0.57	0.81	0.56	0.39	0.27	3.00	1.76	1.03	0.61	0.91	0.63	0.44	0.31	3.24	1.89	1.11	0.65	1.03	0.71	0.50	0.35
	> 10 to <= 15	8.37	4.91	2.89	1.70	0.53	0.37	0.26	0.18	8.96	5.29	3.12	1.83	0.60	0.41	0.29	0.20	9.69	5.65	3.35	1.95	0.67	0.47	0.32	0.23	#N/A	6.07	3.59	2.11	0.75	0.52	0.37	0.25
	> 15 to <= 20	#N/A	#N/A	9.41	5.48	0.39	0.27	0.19	0.13	#N/A	#N/A	#N/A	5.88	0.44	0.31	0.21	0.15	#N/A	#N/A	#N/A	6.32	0.50	0.35	0.24	0.17	#N/A	#N/A	#N/A	6.79	0.56	0.39	0.27	0.19
	> 20	#N/A	#N/A	#N/A	#N/A	0.29	0.20	0.14	0.10	#N/A	#N/A	#N/A	#N/A	0.33	0.23	0.16	0.11	#N/A	#N/A	#N/A	#N/A	0.37	0.26	0.18	0.13	#N/A	#N/A	#N/A	#N/A	0.42	0.29	0.20	0.14
35000 to 40000	<= 5	0.73	0.43	0.25	0.15	1.02	0.71	0.49	0.34	0.79	0.46	0.27	0.16	1.14	0.79	0.55	0.38	0.85	0.50	0.29	0.17	1.29	0.90	0.62	0.43	0.91	0.54	0.31	0.18	1.45	1.01	0.71	0.49
	> 5 to <= 10	2.44	1.42	0.84	0.49	0.59	0.41	0.28	0.20	2.62	1.53	0.90	0.53	0.67	0.46	0.32	0.22	2.81	1.65	0.96	0.57	0.75	0.52	0.36	0.25	3.02	1.77	1.04	0.61	0.84	0.59	0.41	0.28
	> 10 to <= 15	8.06	4.73	2.79	1.64	0.35	0.24	0.17	0.12	8.64	5.05	3.00	1.76	0.39	0.27	0.19	0.13	9.35	5.45	3.19	1.89	0.44	0.30	0.21	0.15	9.88	5.86	3.41	2.02	0.49	0.34	0.24	0.17
	> 15 to <= 20	#N/A	#N/A	9.24	5.39	0.20	0.14	0.10	0.07	#N/A	#N/A	9.87	5.84	0.23	0.16	0.11	0.08	#N/A	#N/A	#N/A	6.24	0.26	0.18	0.12	0.09	#N/A	#N/A	#N/A	6.69	0.29	0.20	0.14	0.10
	> 20	#N/A	#N/A	#N/A	#N/A	0.12	0.08	0.06	0.04	#N/A	#N/A	#N/A	#N/A	0.13	0.09	0.06	0.04	#N/A	#N/A	#N/A	#N/A	0.15	0.10	0.07	0.05	#N/A	#N/A	#N/A	#N/A	0.17	0.12	0.08	0.06
>40000	<= 5	0.68	0.40	0.23	0.14	1.05	0.73	0.51	0.36	0.73	0.43	0.25	0.15	1.18	0.83	0.57	0.40	0.79	0.46	0.27	0.16	1.33	0.93	0.65	0.45	0.84	0.49	0.29	0.17	1.50	1.05	0.73	0.51
	> 5 to <= 10	2.31	1.35	0.80	0.47	0.50	0.35	0.24	0.17	2.47	1.44	0.85	0.50	0.56	0.39	0.27	0.19	2.64	1.56	0.92	0.53	0.64	0.44	0.31	0.21	2.84	1.67	0.98	0.58	0.72	0.50	0.35	0.24
	> 10 to <= 15	7.74	4.60	2.67	1.58	0.24	0.16	0.11	0.08	8.40	4.91	2.89	1.69	0.27	0.19	0.13	0.09	8.95	5.28	3.08	1.83	0.30	0.21	0.15	0.10	9.59	5.66	3.34	1.96	0.34	0.24	0.16	0.11
	> 15 to <= 20	#N/A	#N/A	9.08	5.33	0.11	0.08	0.05	0.04	#N/A	#N/A	9.76	5.74	0.13	0.09	0.06	0.04	#N/A	#N/A	#N/A	6.15	0.14	0.10	0.07	0.05	#N/A	#N/A	#N/A	6.63	0.16	0.11	0.08	0.05
	> 20	#N/A	#N/A	#N/A	#N/A	0.05	0.04	0.03	0.02	#N/A	#N/A	#N/A	#N/A	0.06	0.04	0.03	0.02	#N/A	#N/A	#N/A	#N/A	0.07	0.05	0.03	0.02	#N/A	#N/A	#N/A	#N/A	0.08	0.05	0.04	0.03

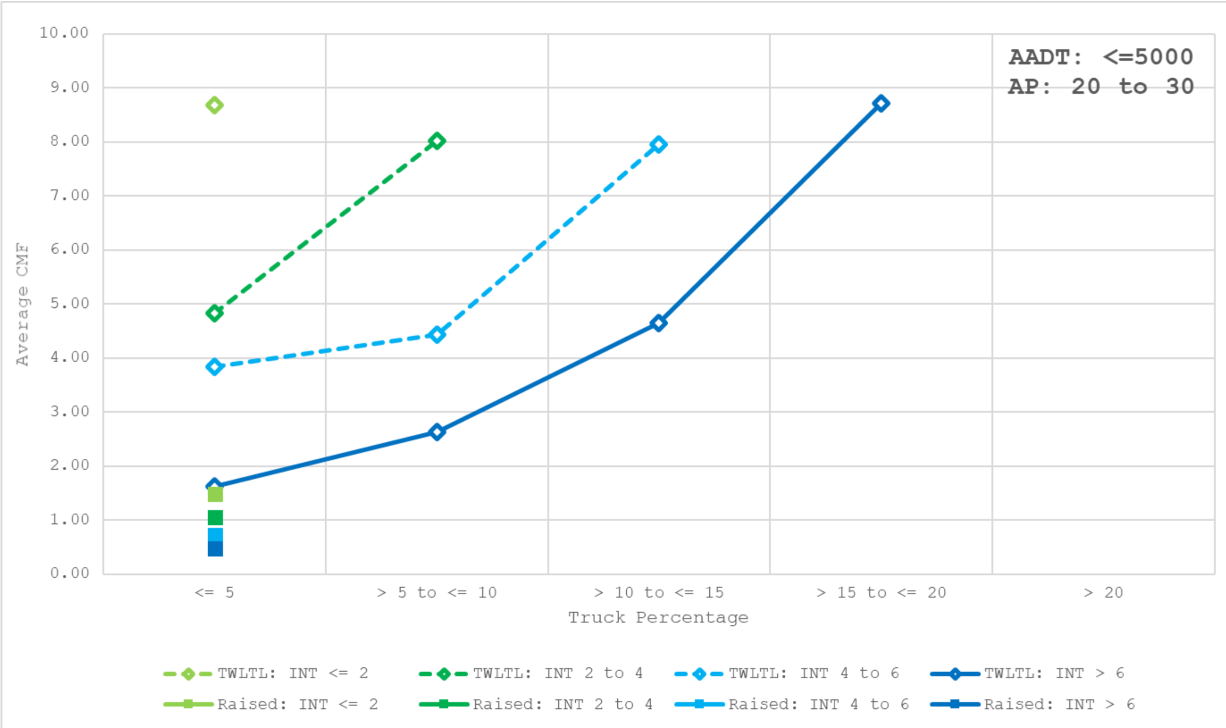
B-5-2 Suburban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: <= 10)



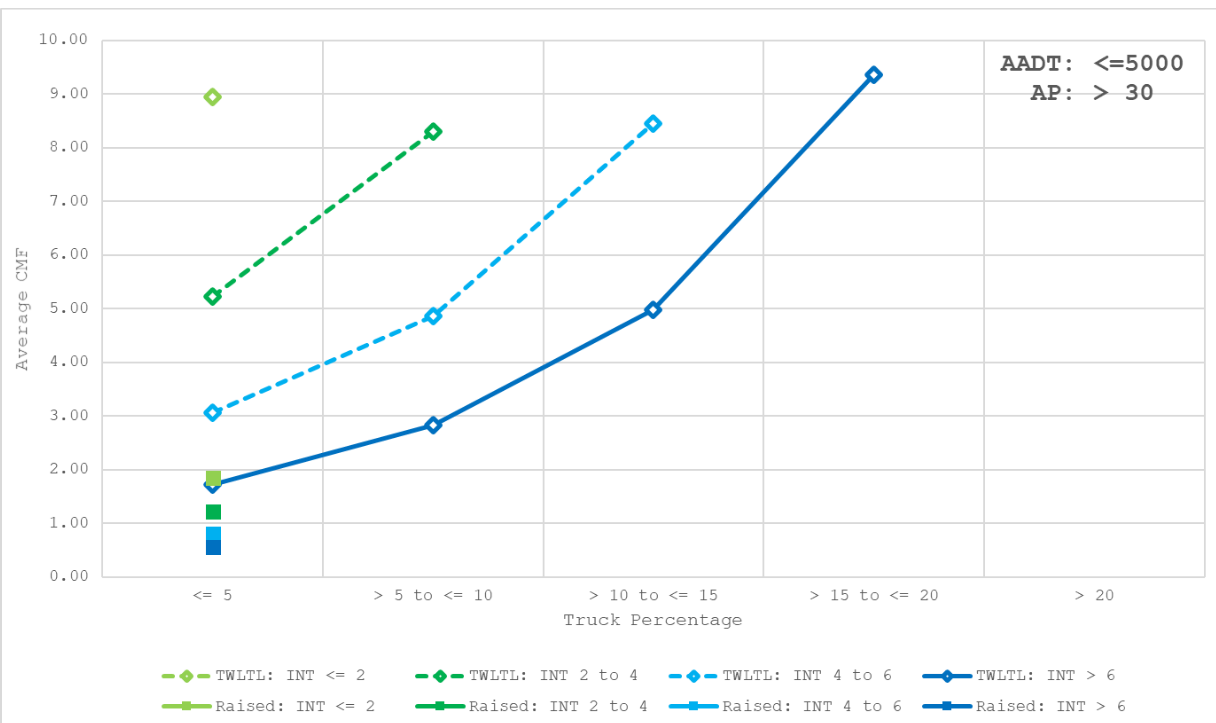
B-5-3 Suburban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: 10-20)



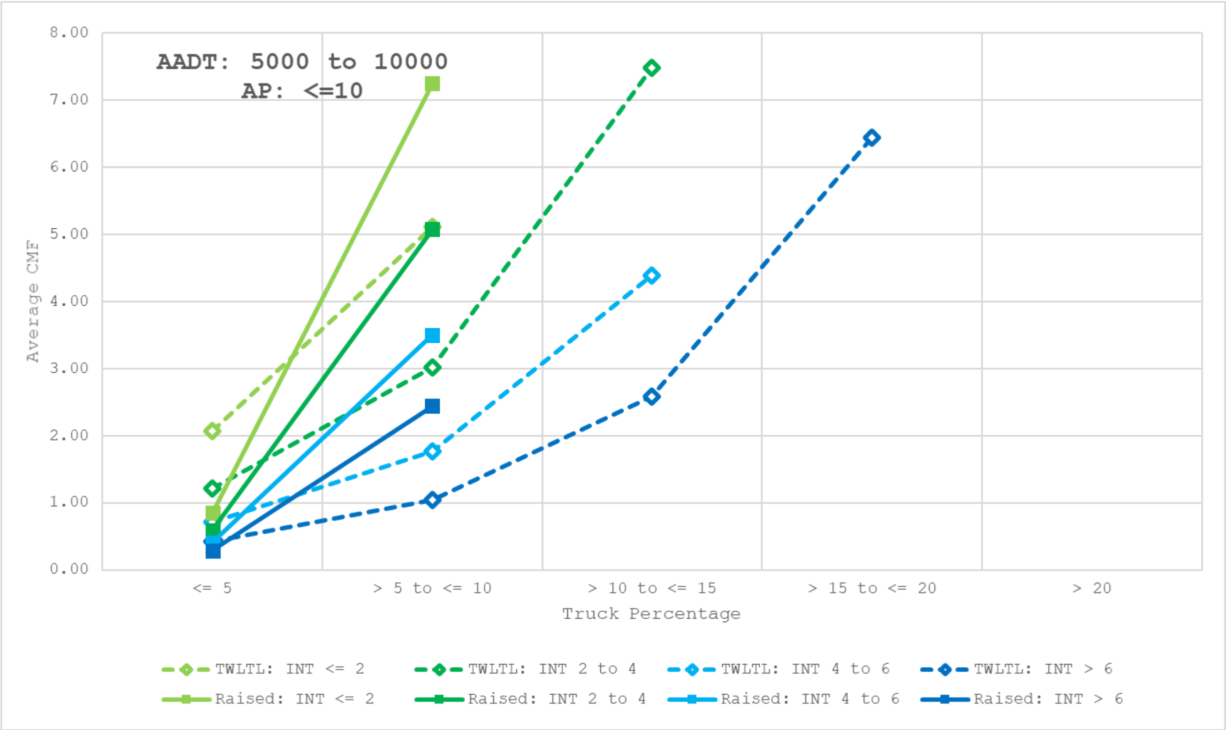
B-5-4 Suburban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: 20-30)



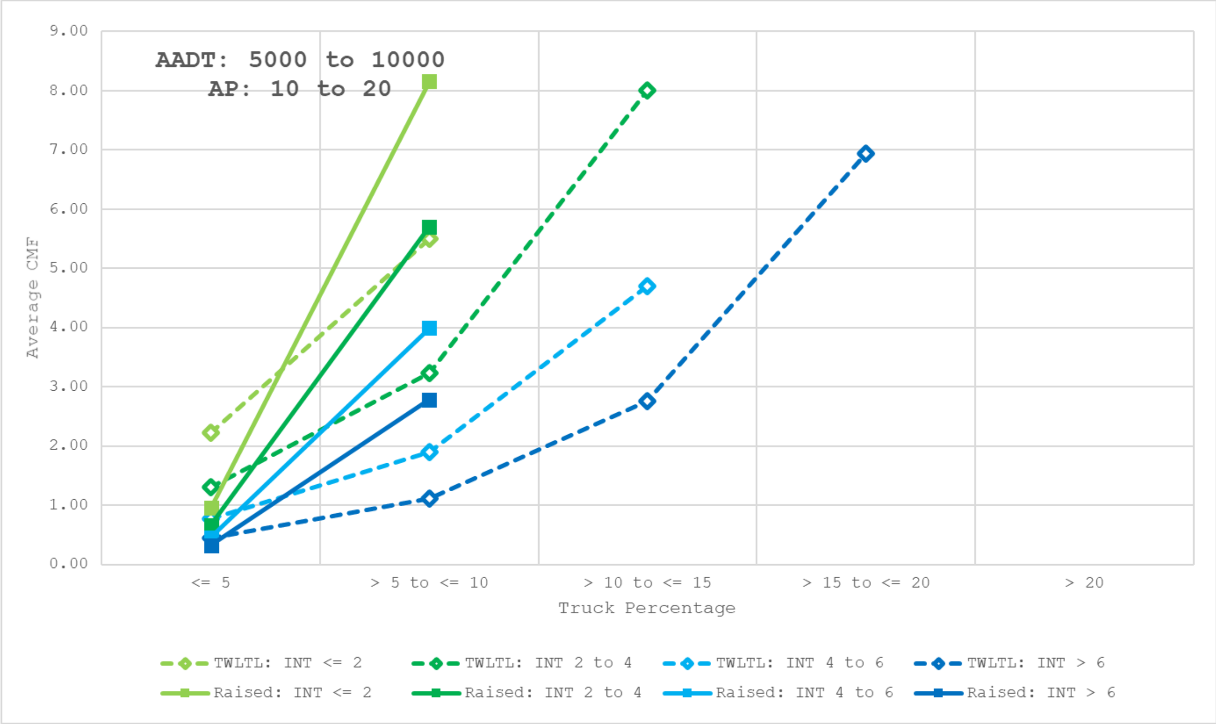
B-5-5 Suburban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: > 30)



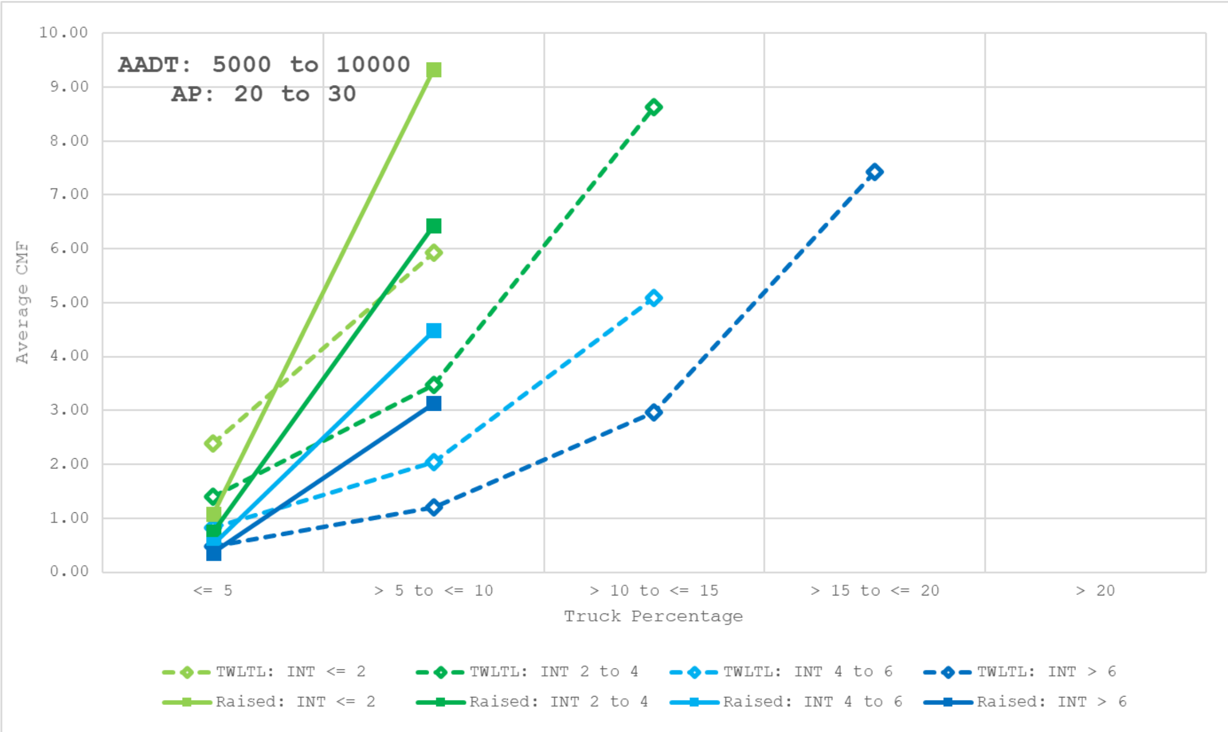
B-5-6 Suburban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



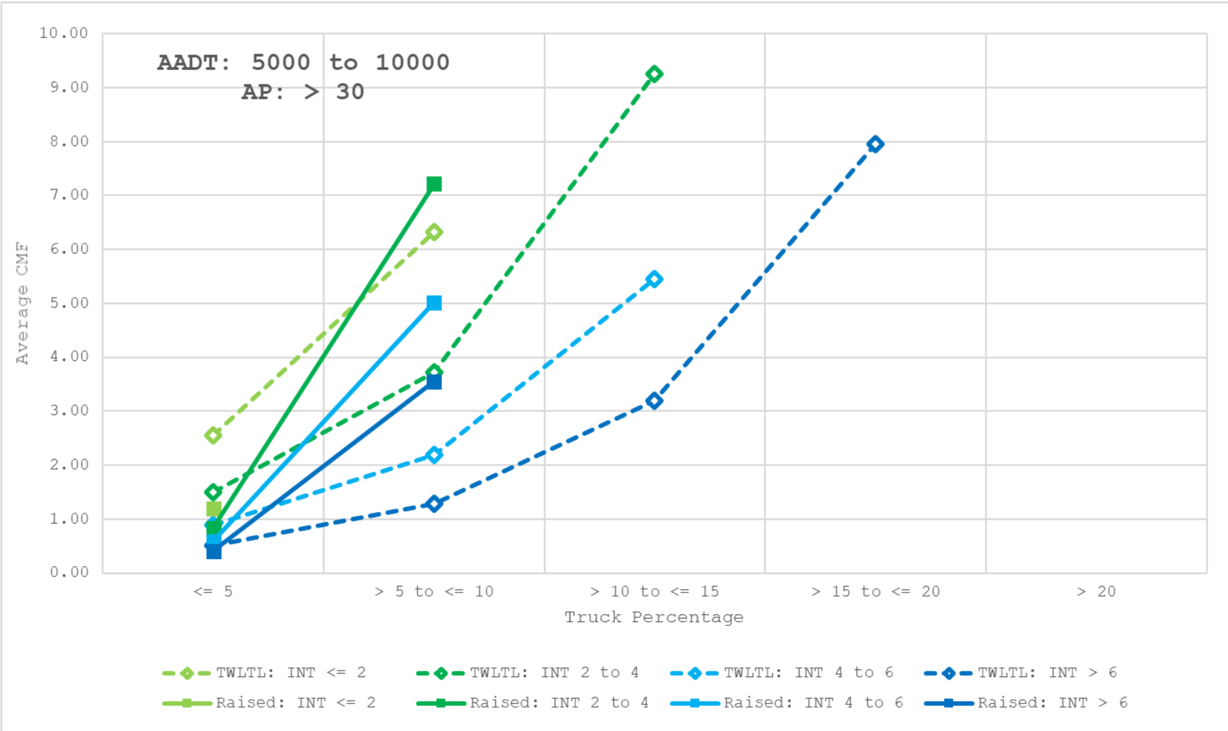
B-5-7 Suburban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



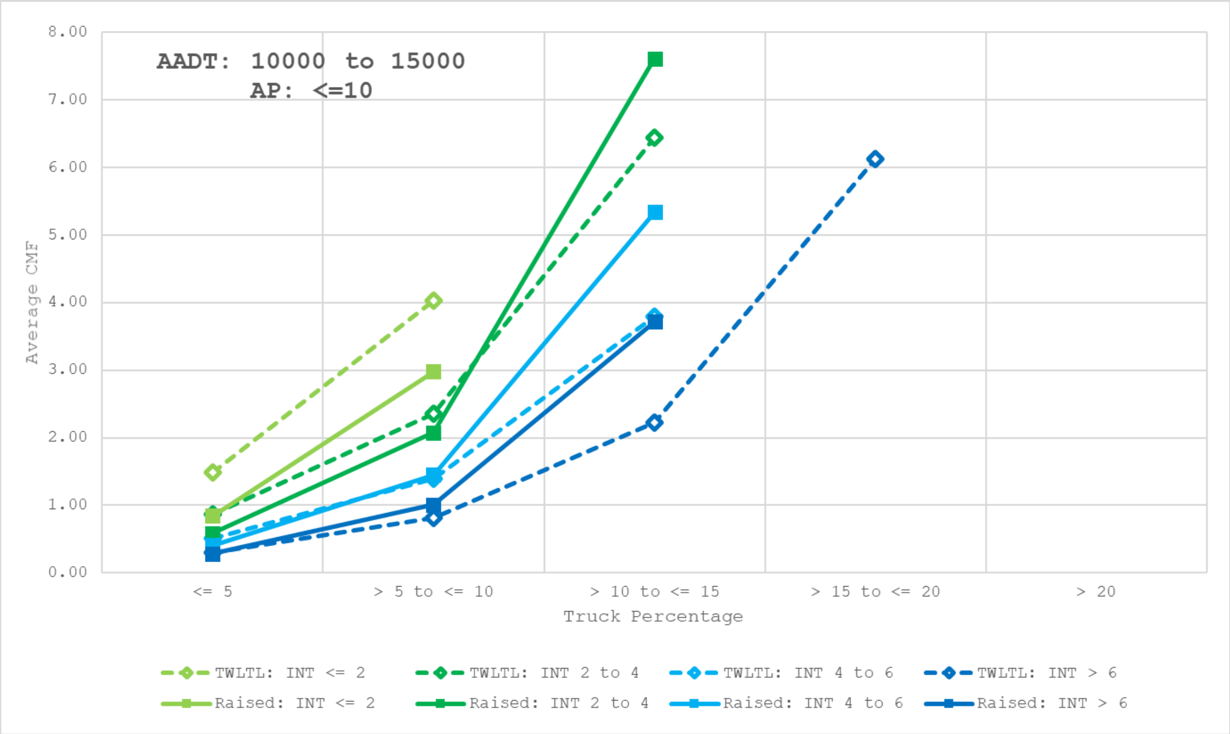
B-5-8 Suburban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



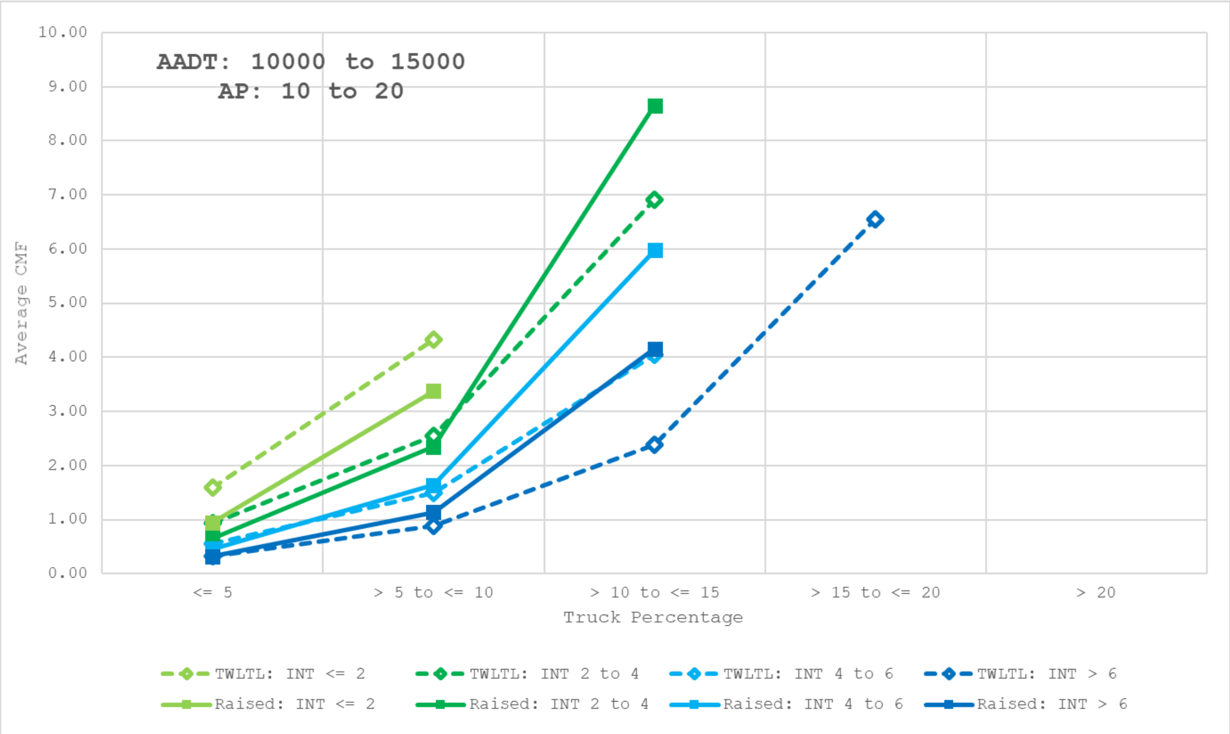
B-5-9 Suburban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



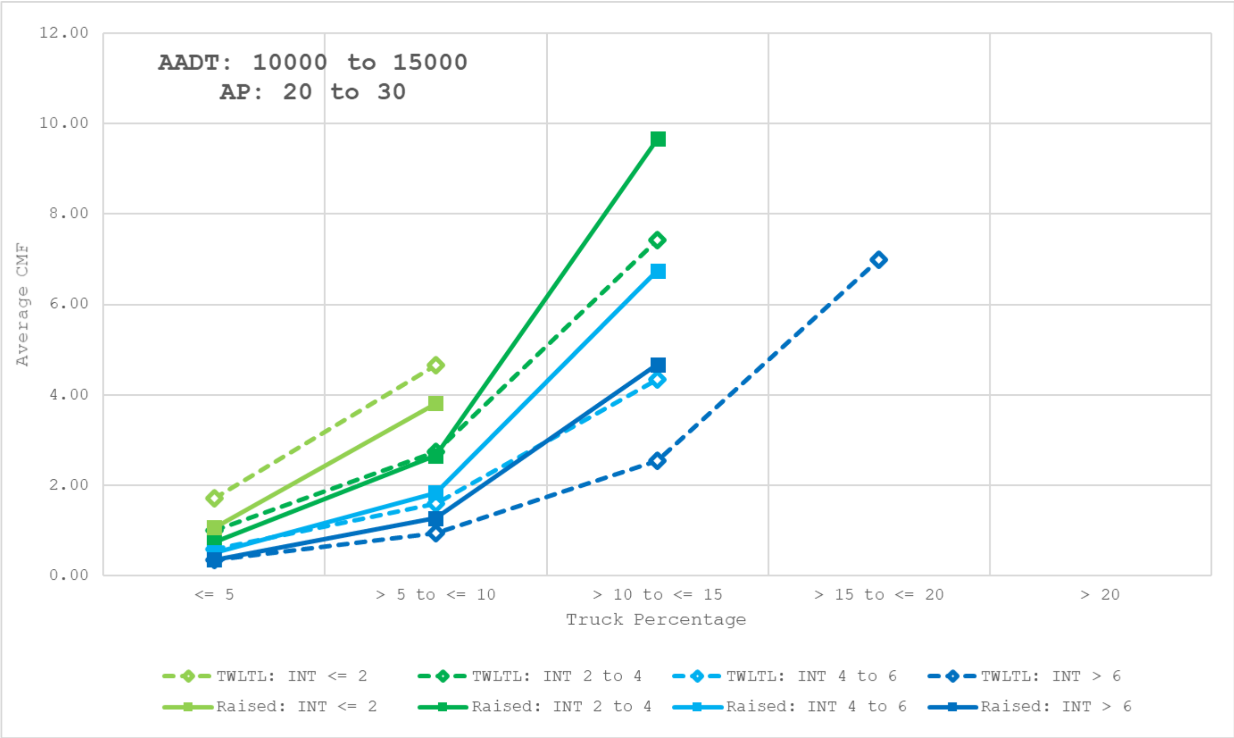
B-5-10 Suburban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



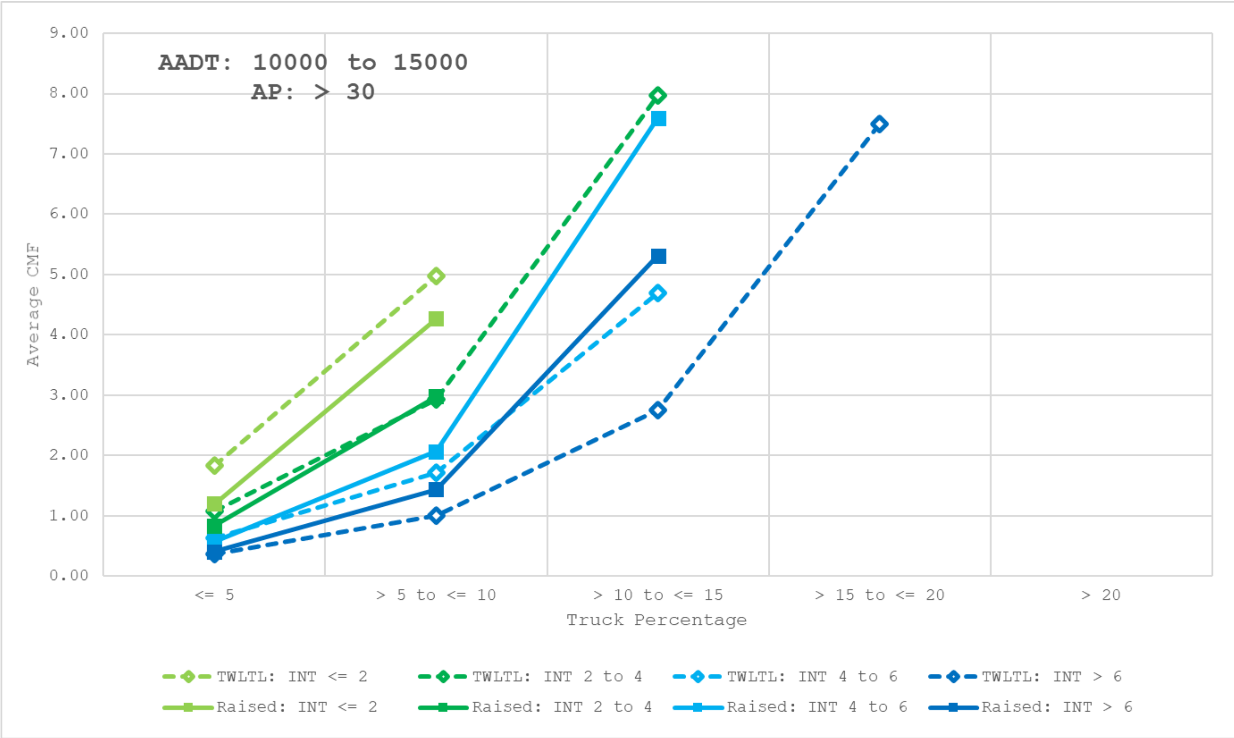
B-5-11 Suburban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



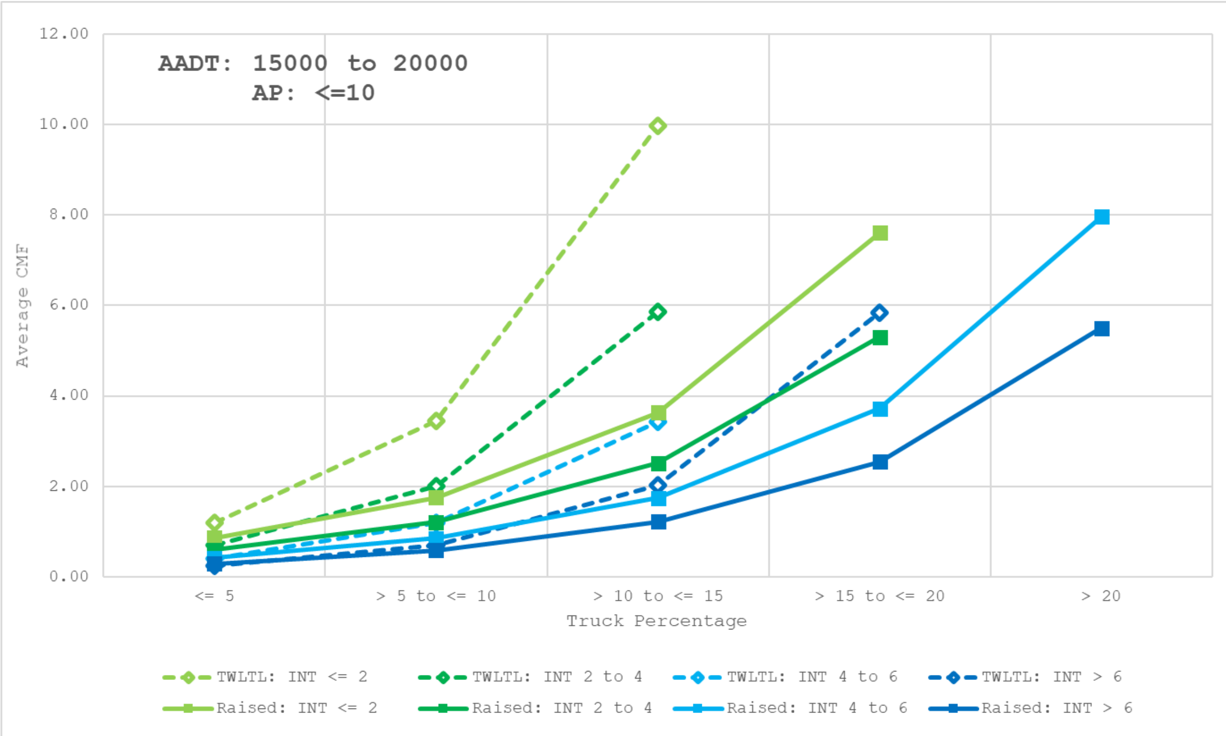
B-5-12 Suburban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



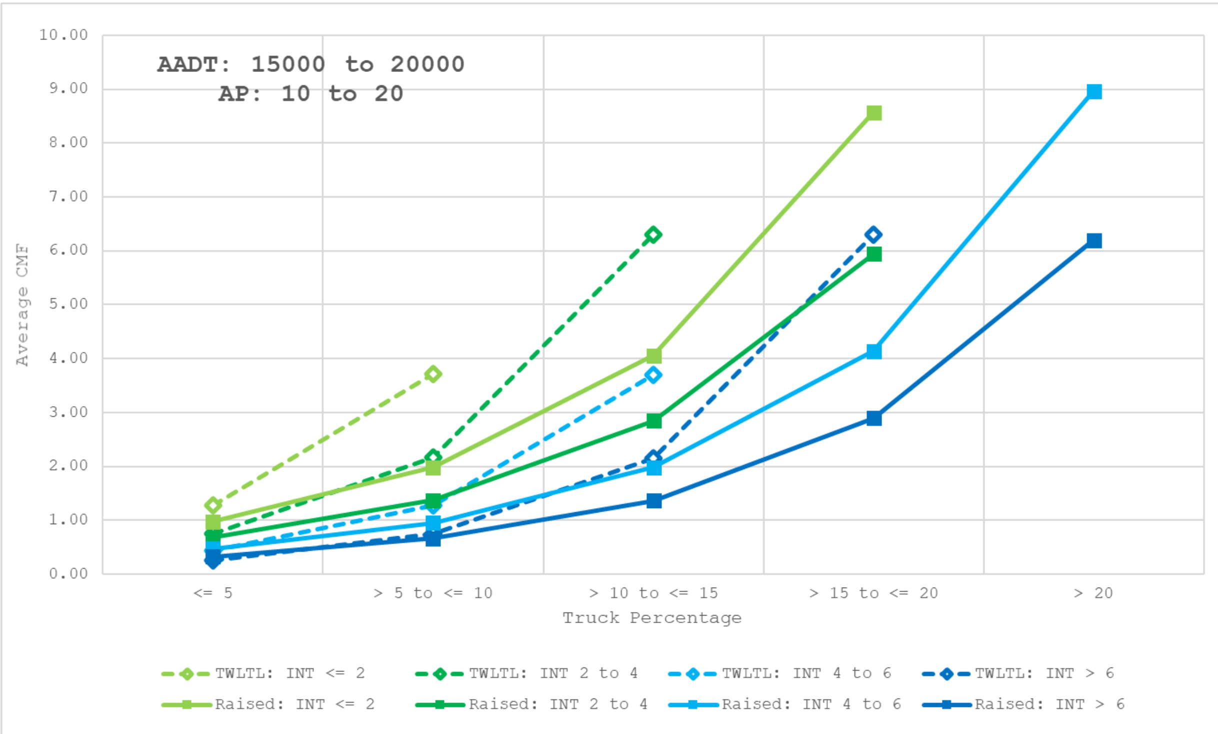
B-5-13 Suburban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



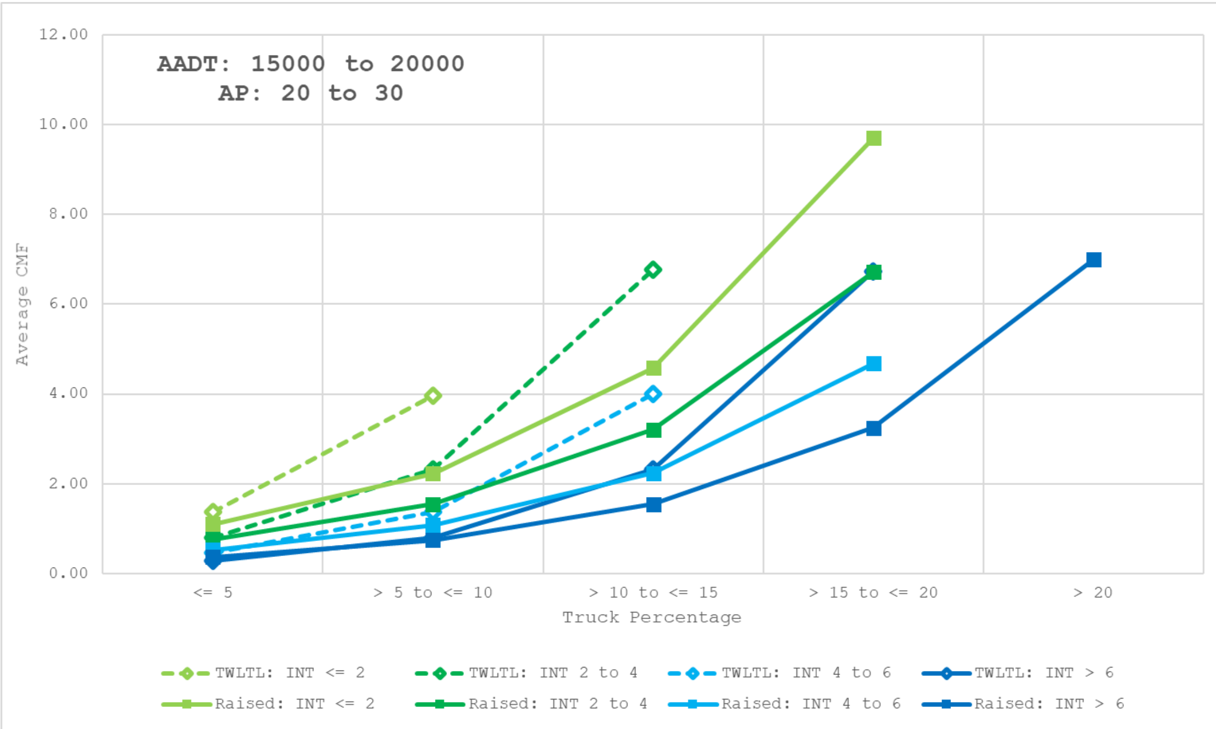
B-5-14 Suburban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



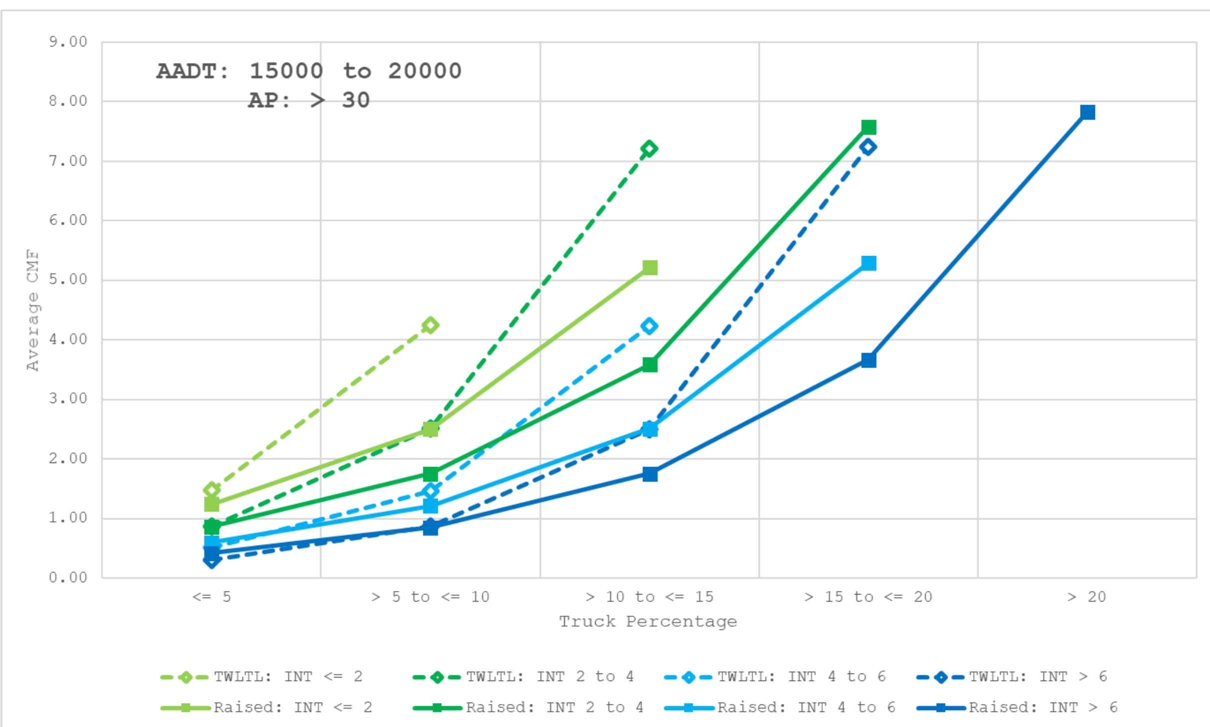
B-5-15 Suburban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



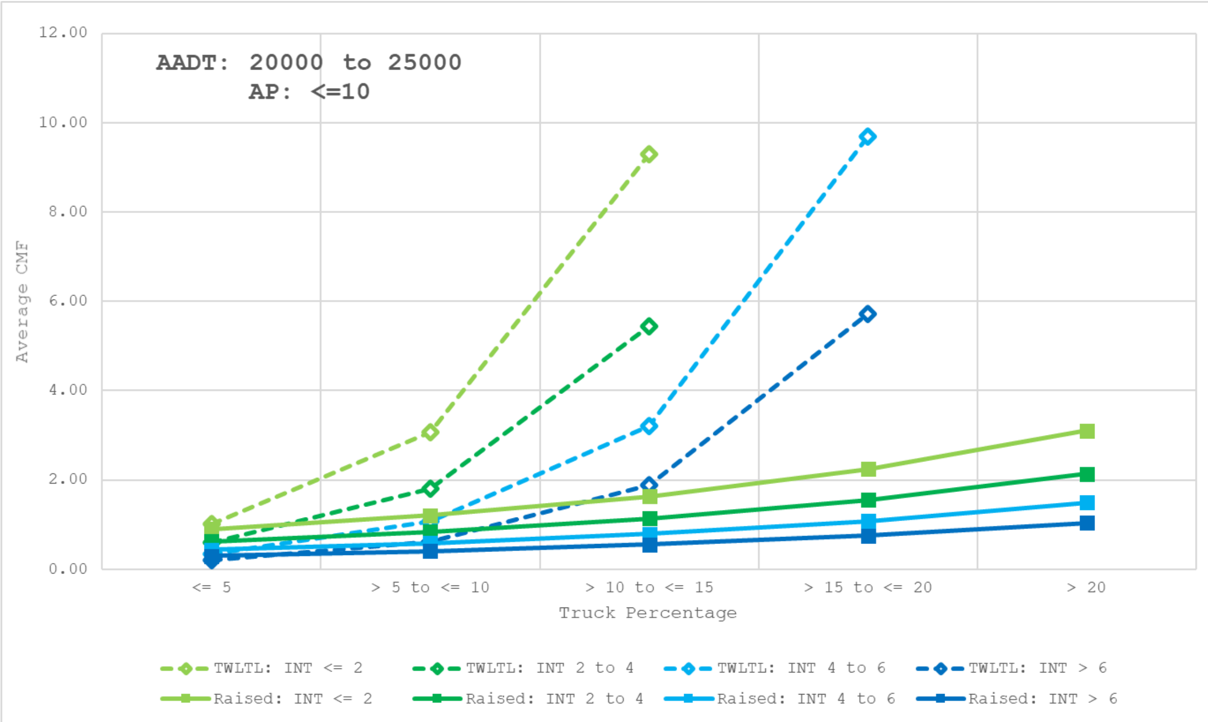
B-5-16 Suburban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



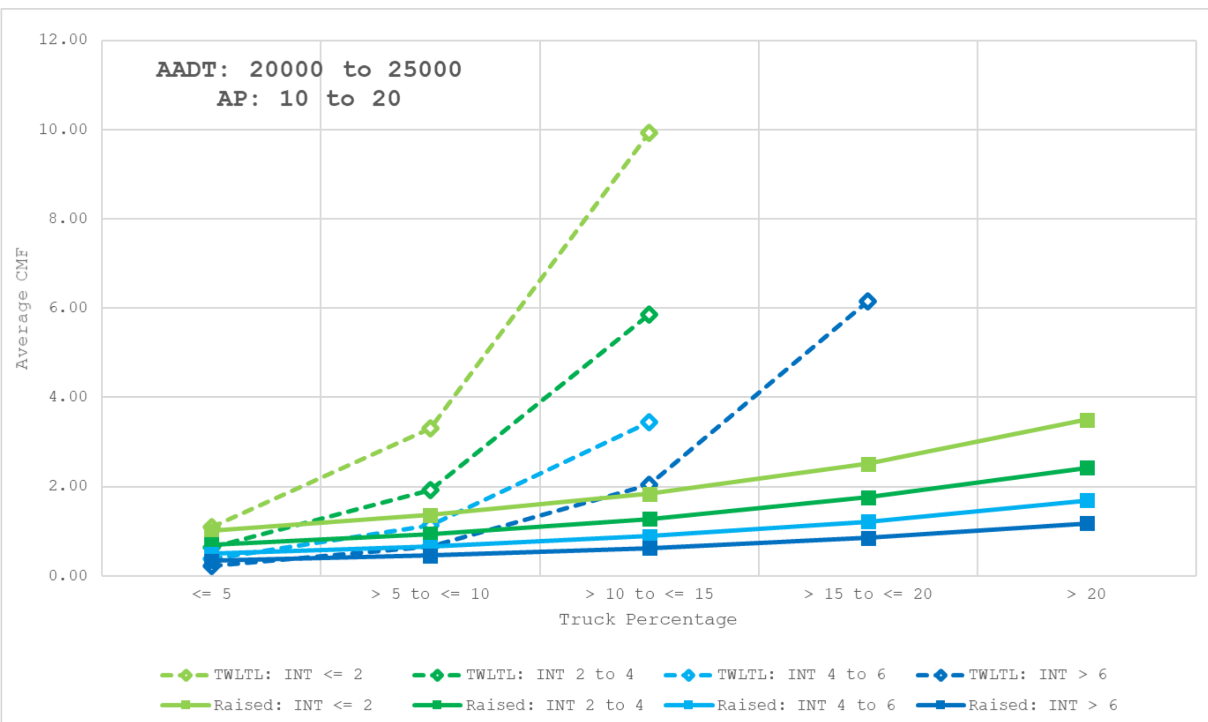
B-5-17 Suburban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



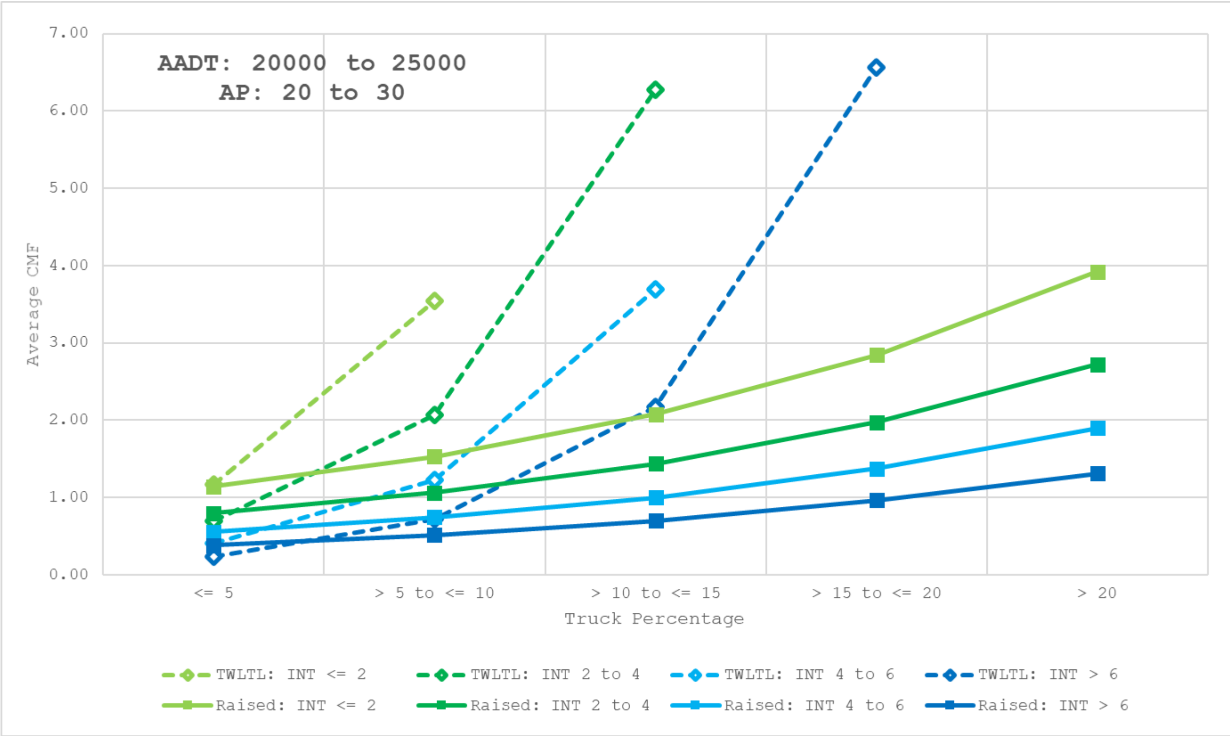
B-5-18 Suburban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



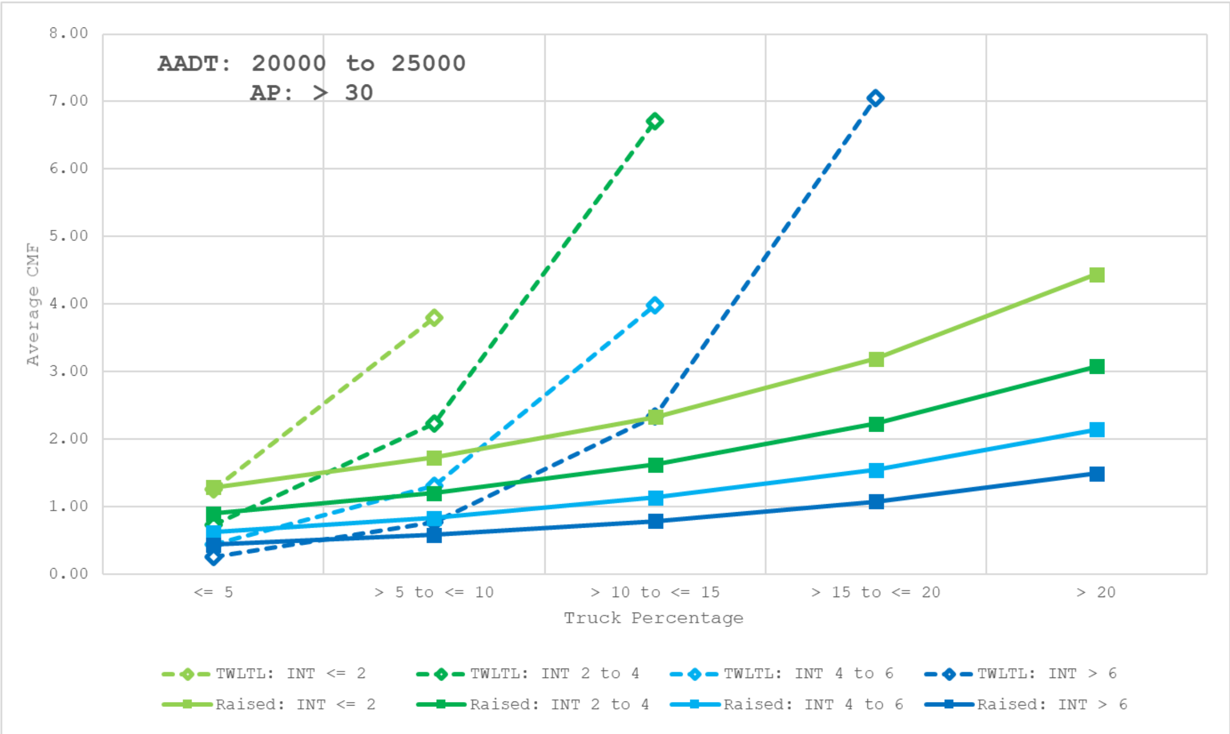
B-5-19 Suburban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



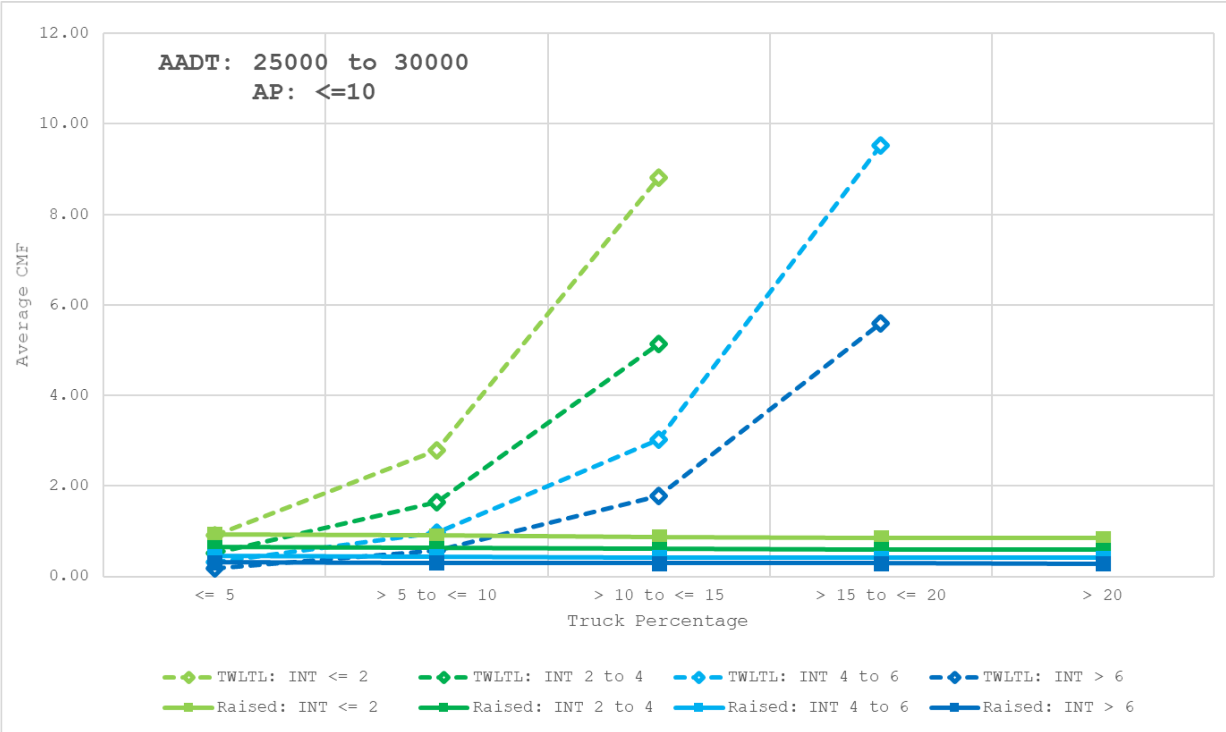
B-5-20 Suburban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



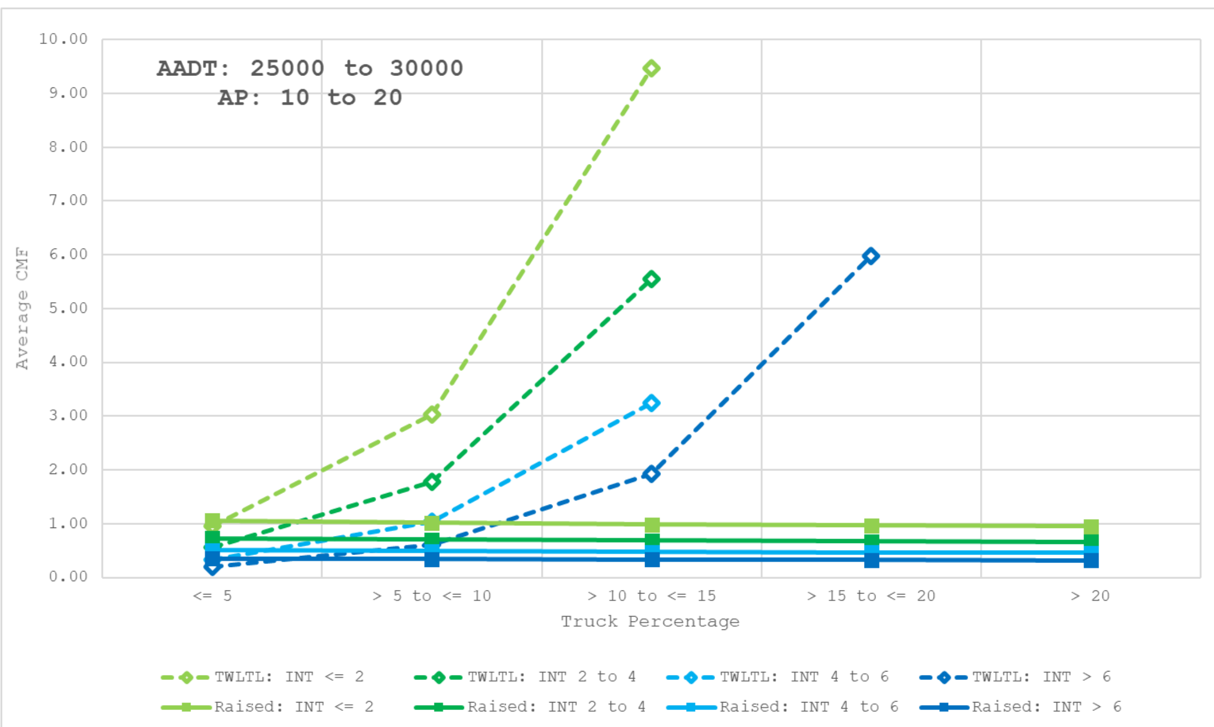
B-5-21 Suburban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



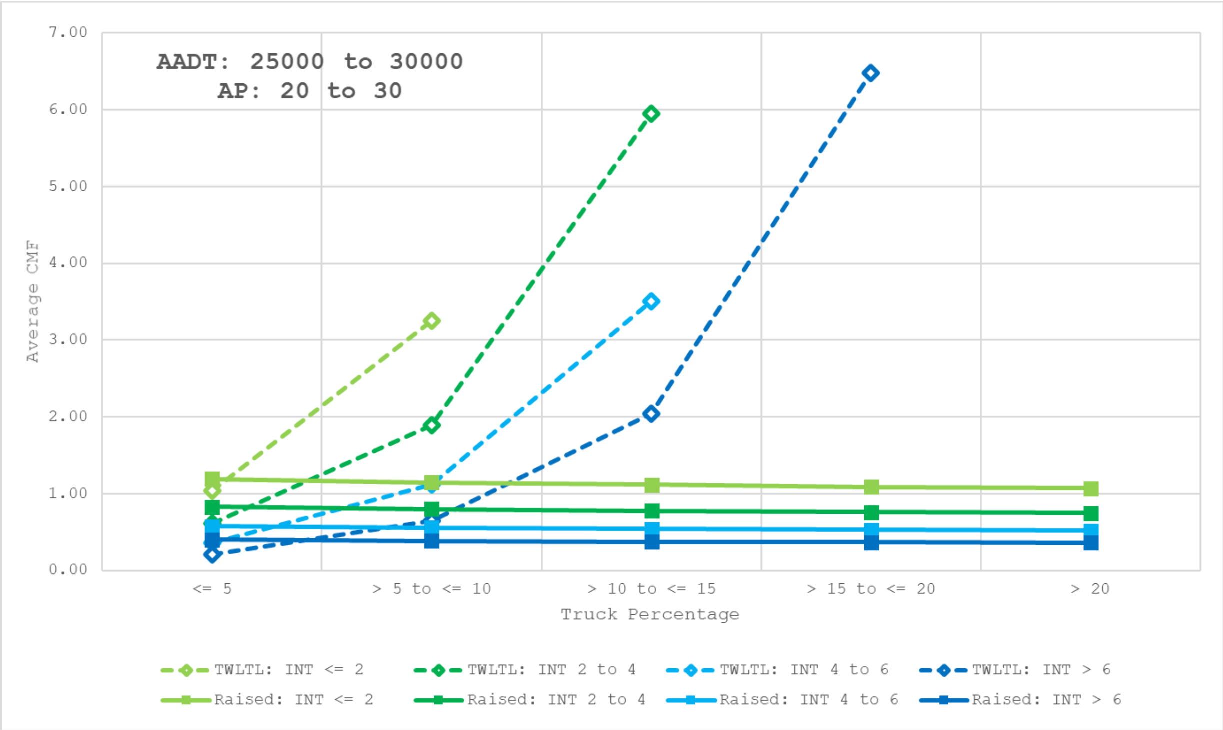
B-5-22 Suburban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



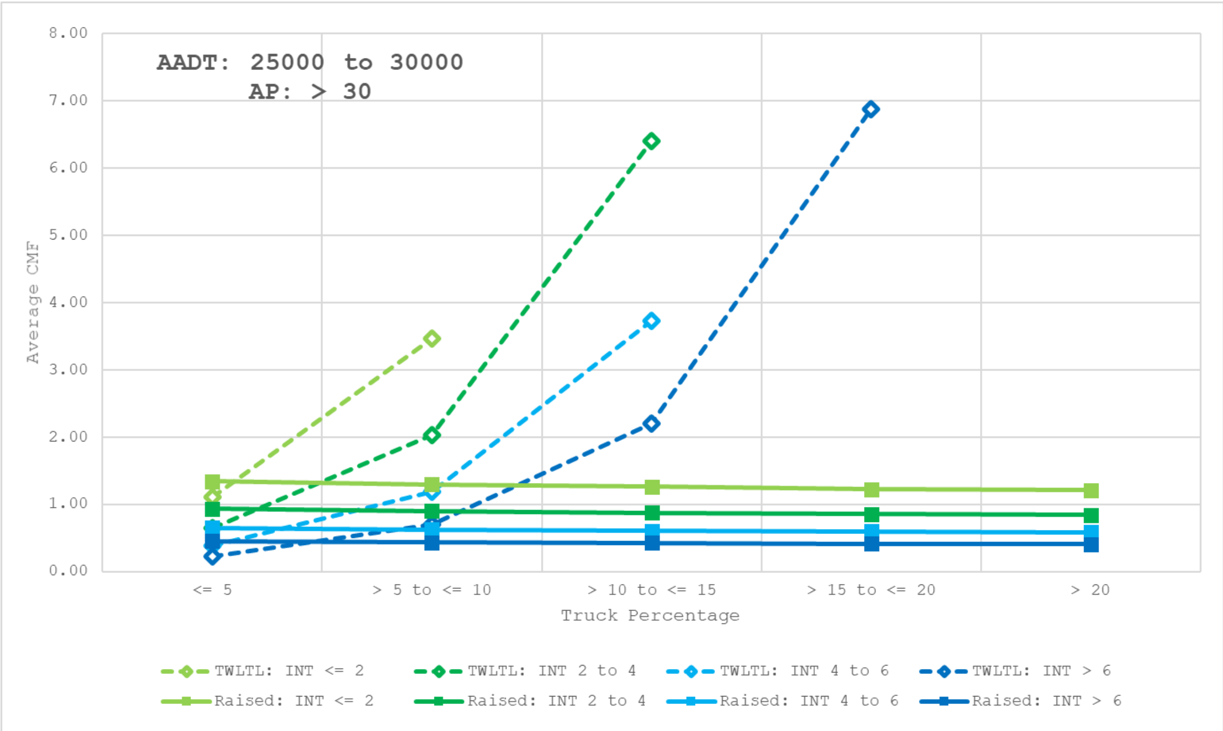
B-5-23 Suburban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



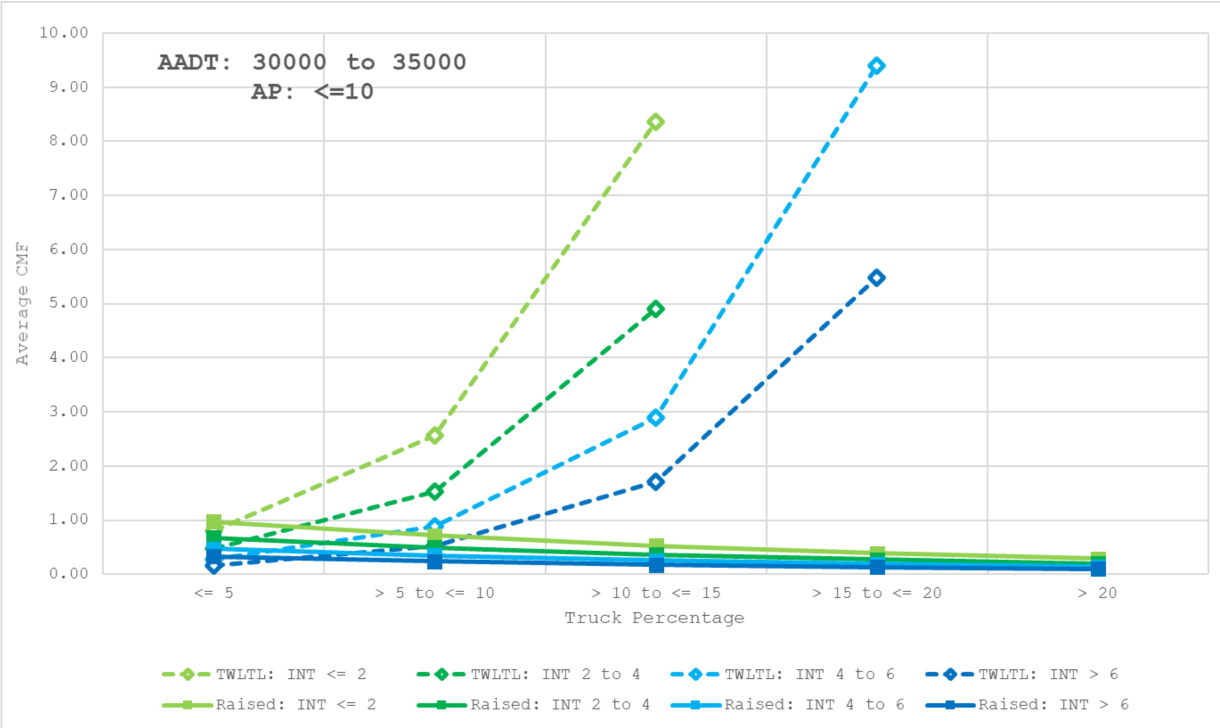
B-5-24 Suburban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



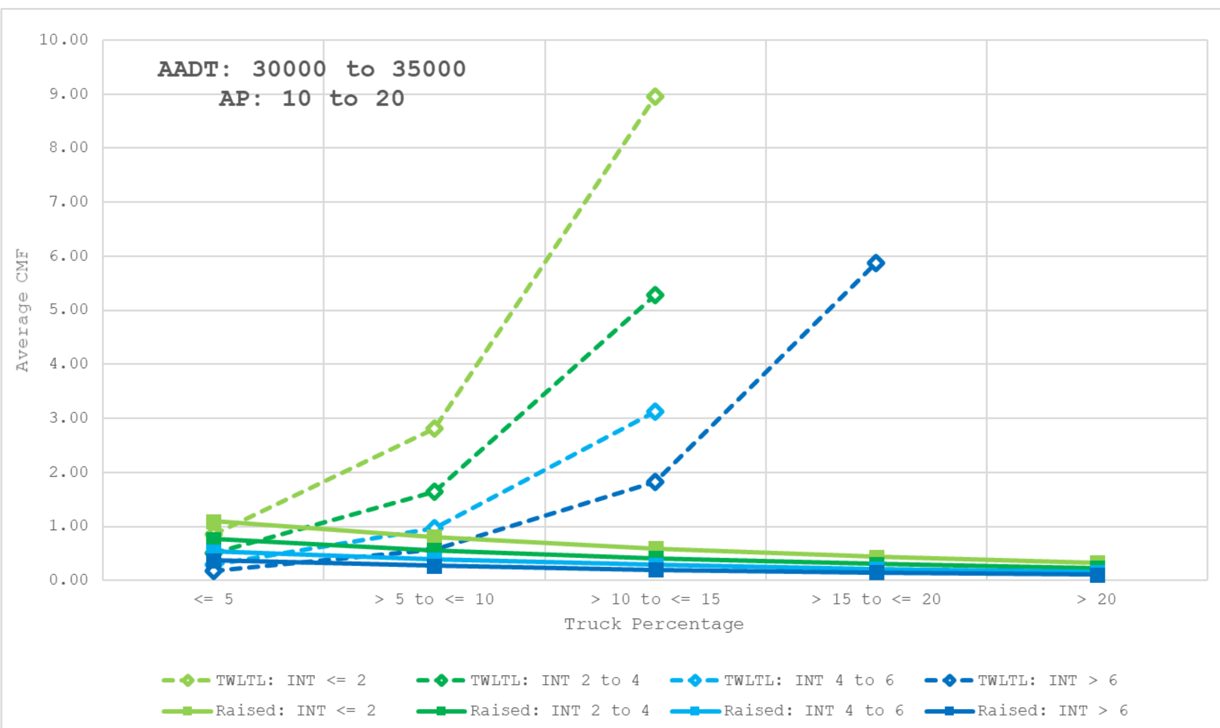
B-5-25 Suburban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



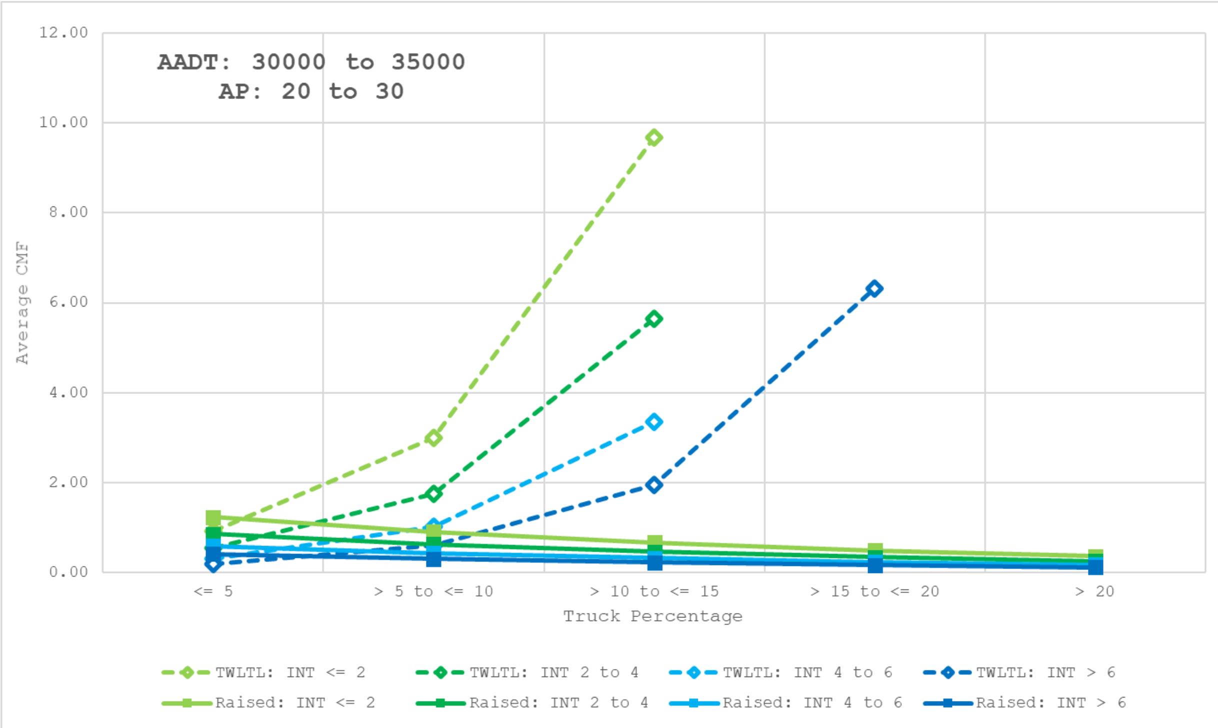
B-5-26 Suburban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



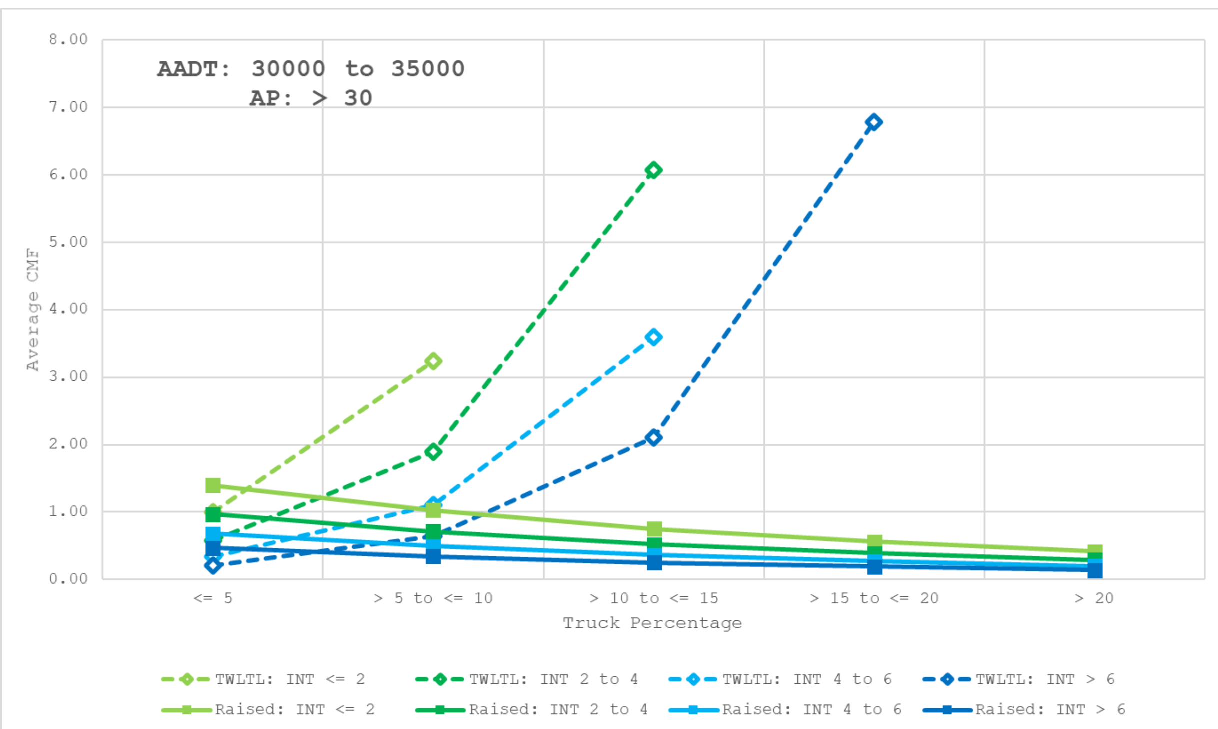
B-5-27 Suburban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



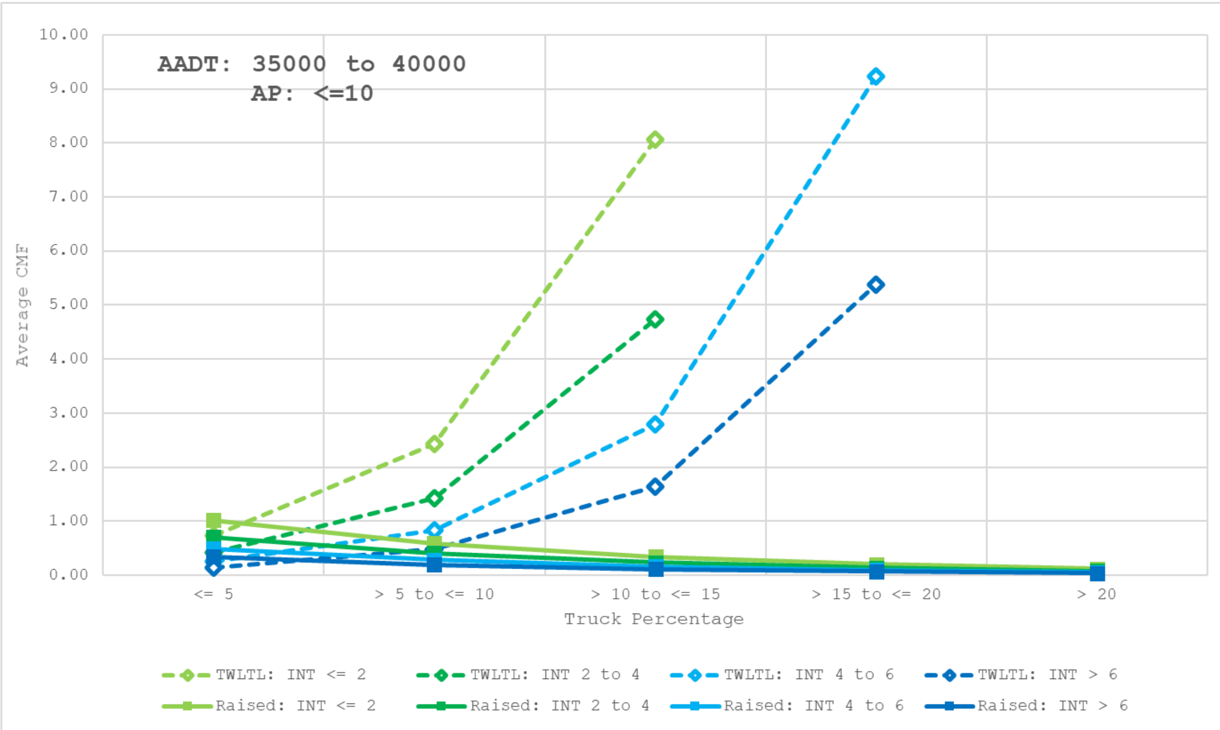
B-5-28 Suburban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



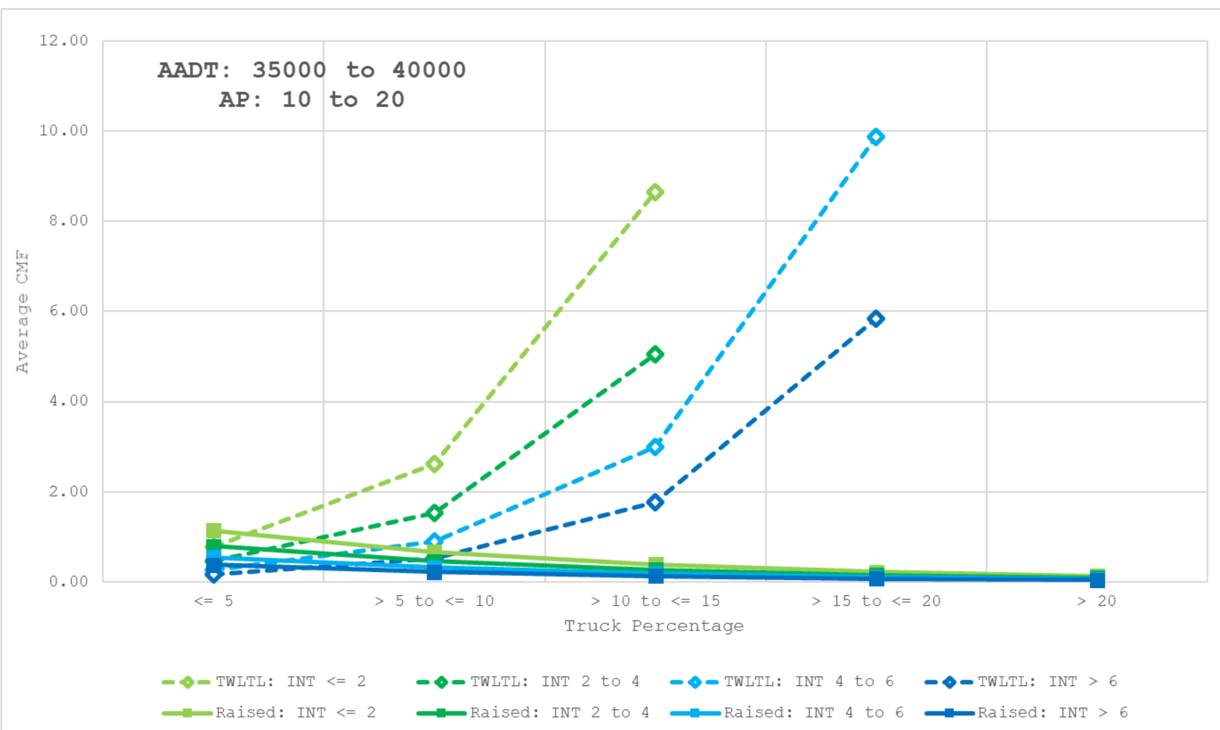
B-5-29 Suburban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



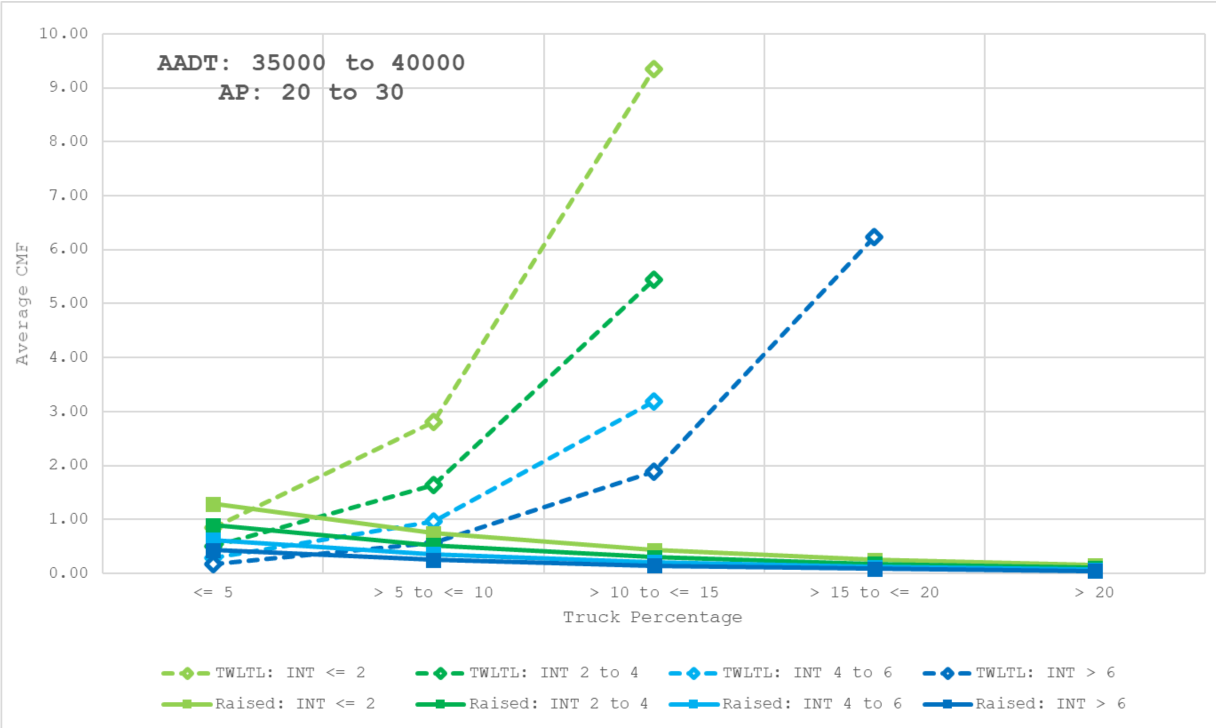
B-5-30 Suburban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



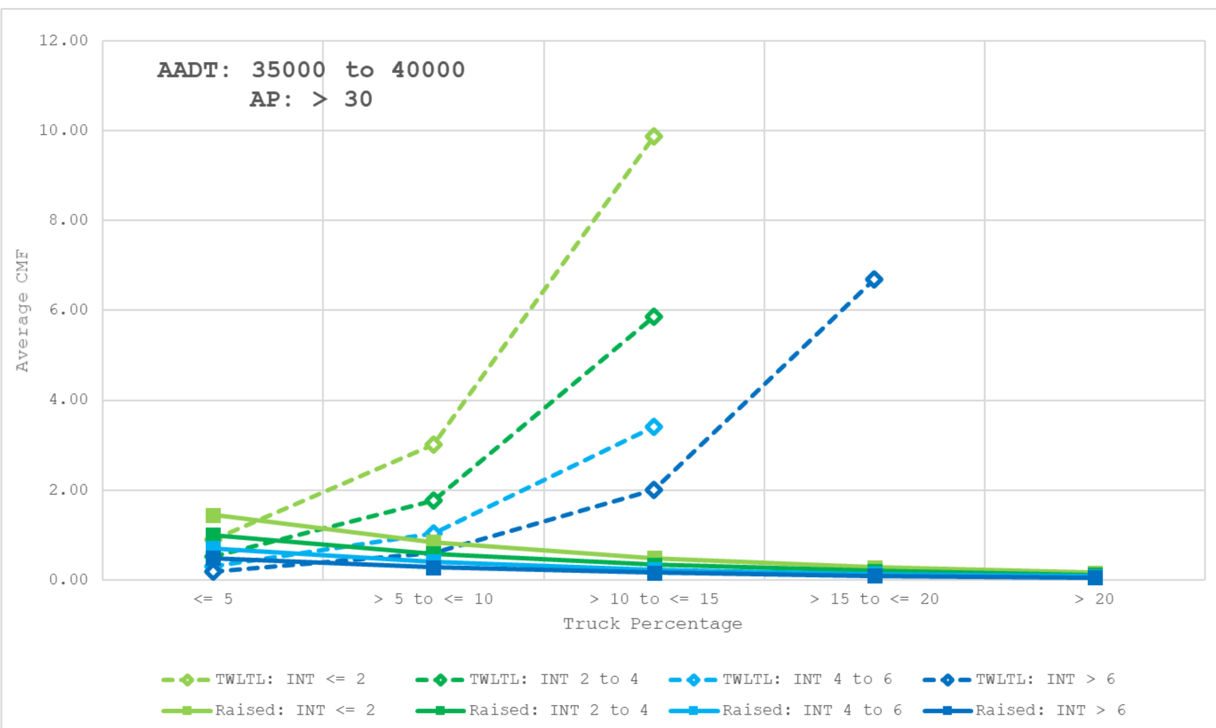
B-5-31 Suburban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



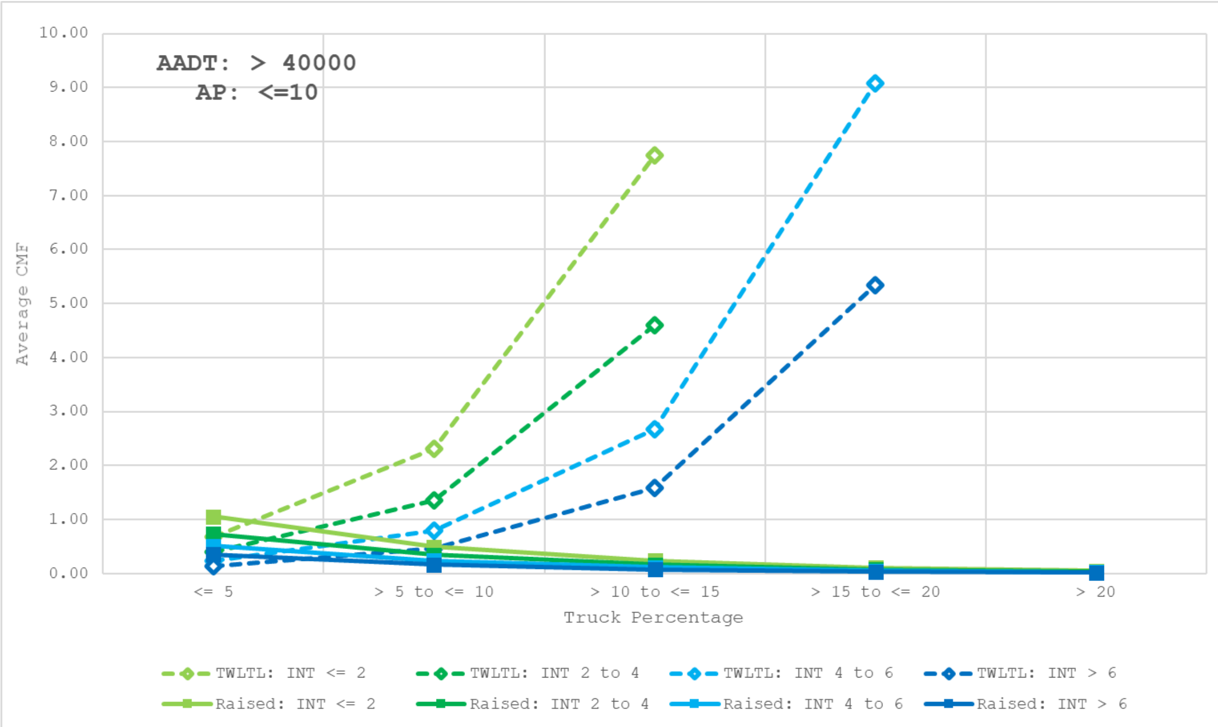
B-5-32 Suburban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



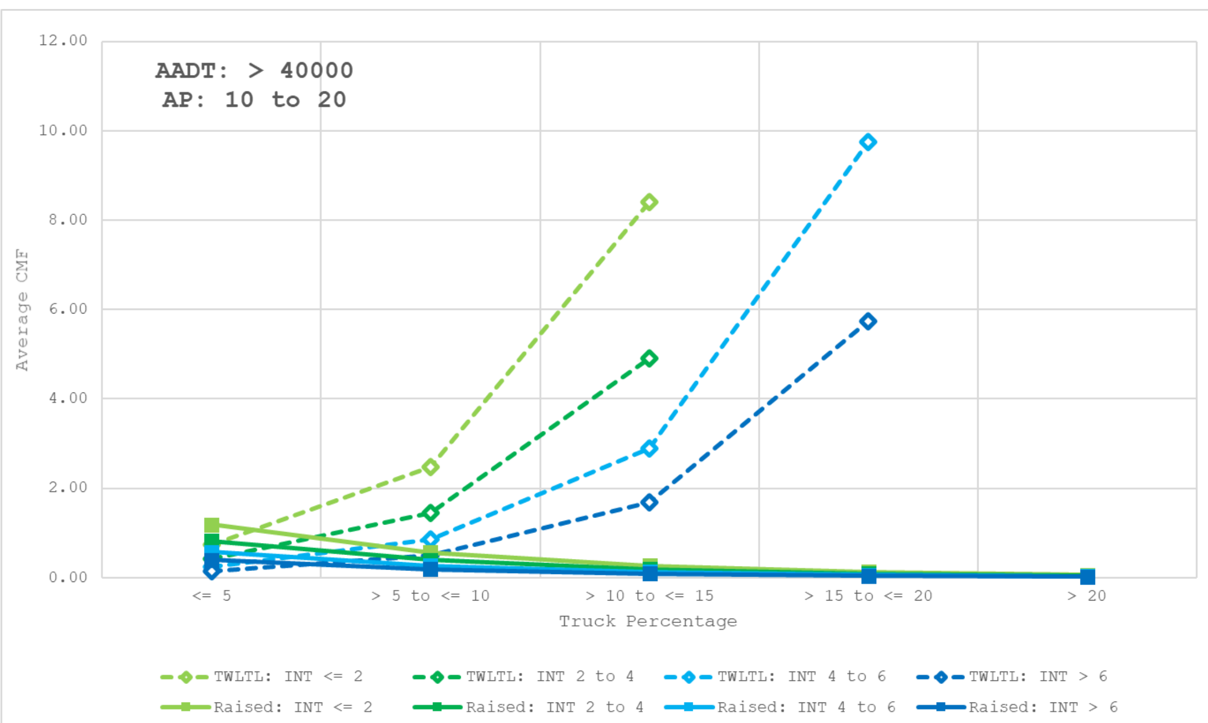
B-5-33 Suburban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



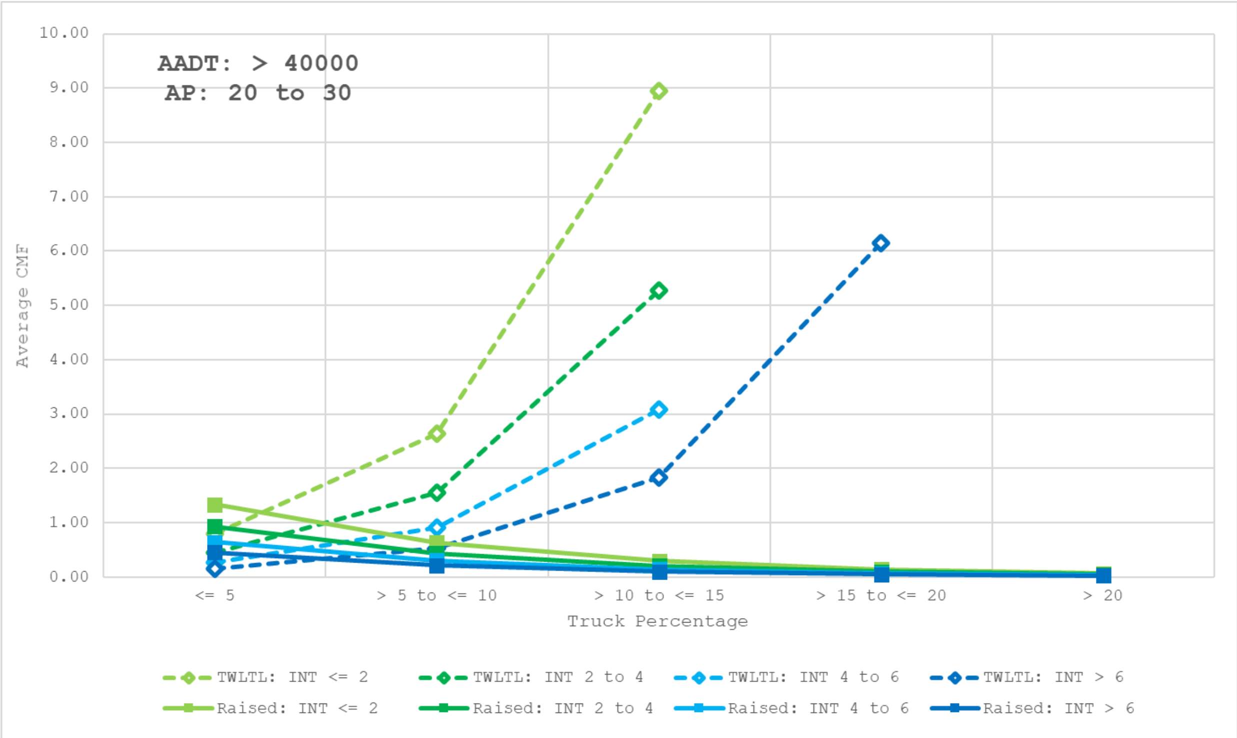
B-5-34 Suburban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: <= 10)



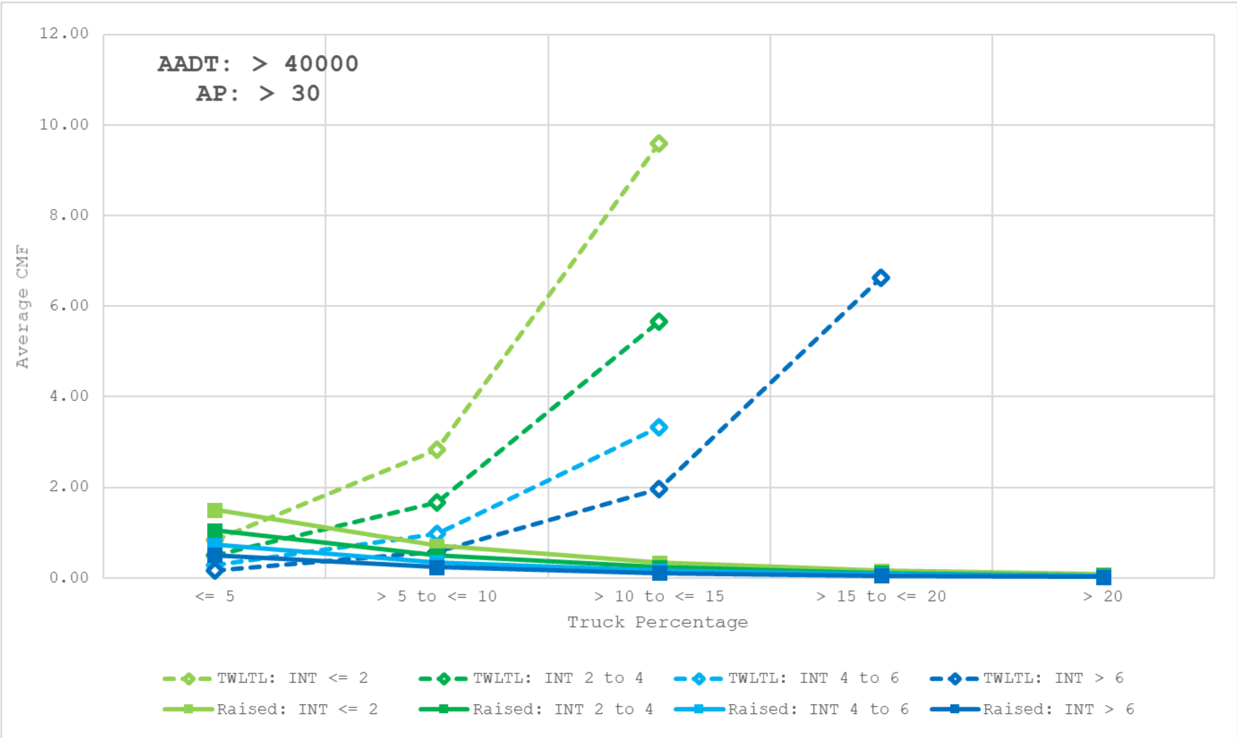
B-5-35 Suburban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: 10-20)



B-5-36 Suburban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: 20-30)



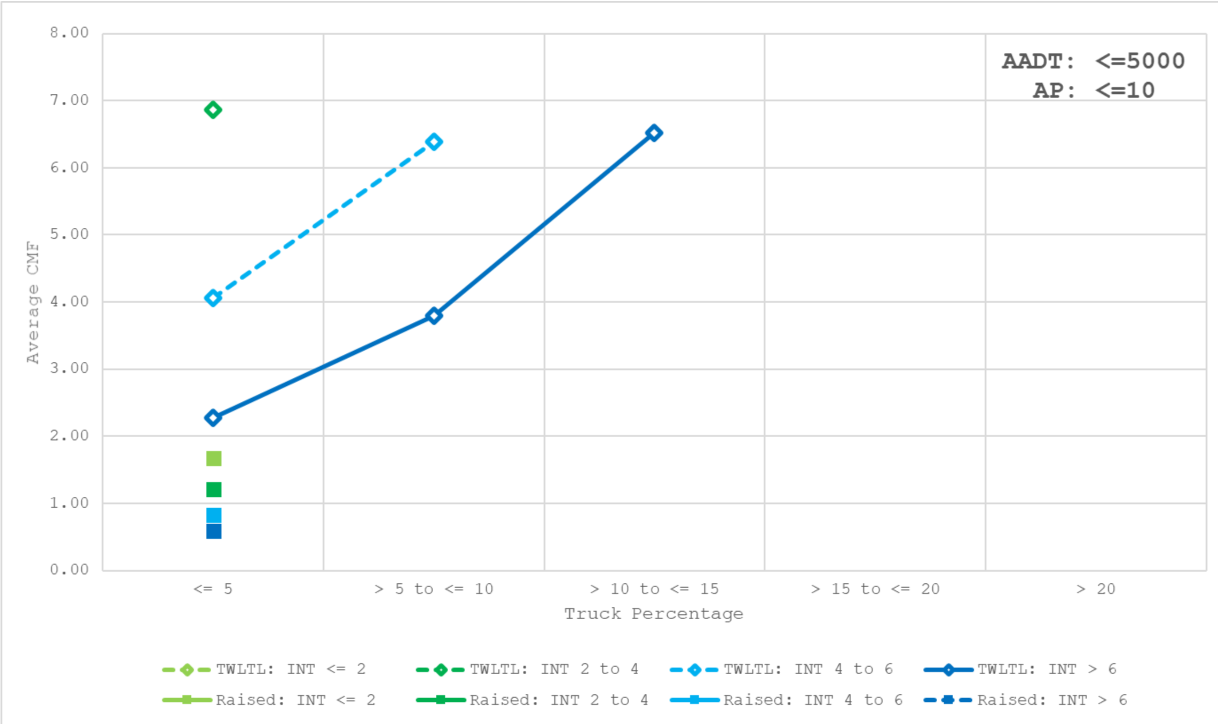
B-5-37 Suburban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: > 30)



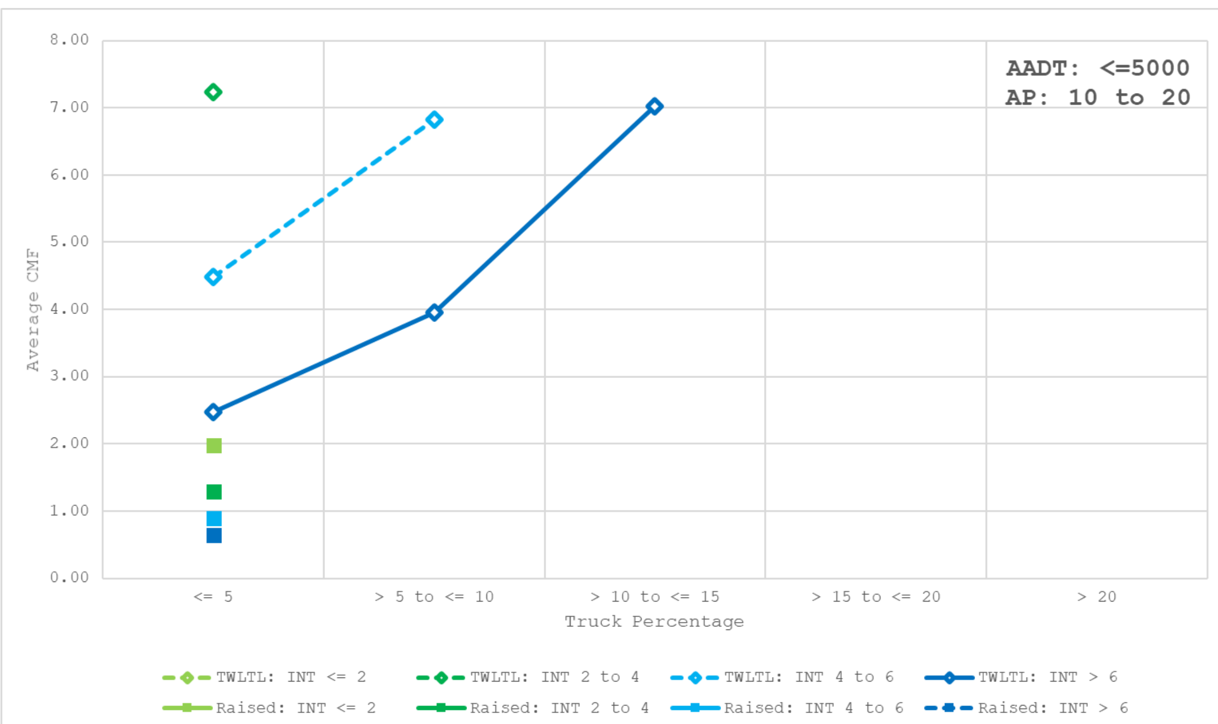
B-6-1 Suburban Residential KAB CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Rasied : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6
0 to 5000	<= 5	#N/A	6.87	4.06	2.28	1.67	1.21	0.83	0.59	#N/A	7.23	4.49	2.47	1.98	1.29	0.89	0.64	#N/A	7.53	4.52	2.72	2.99	1.50	1.02	0.70	#N/A	8.25	5.11	2.92	2.42	1.68	1.17	0.82
	> 5 to <= 10	#N/A	#N/A	6.3914	3.791	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	6.8199	3.9581	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.2363	4.2922	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.9286	4.6497	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	6.5198	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.0161	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.5343	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.1627	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	3.34	1.98	1.16	0.68	1.23	0.86	0.60	0.41	3.59	2.10	1.25	0.73	1.38	0.95	0.68	0.47	3.87	2.27	1.33	0.78	1.56	1.09	0.75	0.52	4.15	2.44	1.42	0.84	1.78	1.23	0.85	0.60
	> 5 to <= 10	8.35	4.87	2.86	1.69	#N/A	7.42	5.13	3.62	8.93	5.25	3.07	1.80	#N/A	8.40	5.79	4.02	9.61	5.67	3.30	1.95	#N/A	9.57	6.54	4.61	#N/A	6.02	3.55	2.09	#N/A	#N/A	7.39	5.11
	> 10 to <= 15	#N/A	#N/A	7.09	4.20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.64	4.50	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.22	4.82	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.79	5.19	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
10000 to 15000	<= 5	2.41	1.41	0.82	0.49	1.24	0.86	0.59	0.41	2.58	1.50	0.89	0.52	1.39	0.96	0.67	0.46	2.78	1.63	0.95	0.56	1.57	1.09	0.76	0.53	2.97	1.76	1.02	0.60	1.76	1.24	0.85	0.59
	> 5 to <= 10	6.50	3.83	2.25	1.33	4.35	3.04	2.12	1.48	6.99	4.11	2.43	1.41	4.92	3.42	2.40	1.65	7.51	4.41	2.61	1.53	5.52	3.86	2.70	1.87	8.03	4.74	2.79	1.64	6.21	4.33	3.01	2.11
	> 10 to <= 15	#N/A	#N/A	6.16	3.62	#N/A	#N/A	7.85	5.43	#N/A	#N/A	6.60	3.85	#N/A	#N/A	8.80	6.05	#N/A	#N/A	7.13	4.14	#N/A	#N/A	9.97	6.83	#N/A	#N/A	7.63	4.46	#N/A	#N/A	#N/A	7.78
	> 15 to <= 20	#N/A	#N/A	#N/A	9.87	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
15000 to 20000	<= 5	1.93	1.13	0.66	0.39	1.27	0.88	0.61	0.43	2.08	1.22	0.71	0.42	1.43	0.99	0.69	0.48	2.22	1.30	0.77	0.45	1.61	1.12	0.78	0.54	2.40	1.40	0.83	0.48	1.82	1.26	0.88	0.61
	> 5 to <= 10	5.63	3.27	1.93	1.13	2.58	1.78	1.24	0.86	6.01	3.51	2.06	1.22	2.90	2.00	1.40	0.98	6.44	3.78	2.23	1.31	3.26	2.26	1.58	1.10	6.93	4.05	2.38	1.40	3.68	2.55	1.77	1.23
	> 10 to <= 15	#N/A	9.46	5.58	3.28	5.27	3.68	2.57	1.79	#N/A	#N/A	5.98	3.51	5.93	4.18	2.89	2.01	#N/A	#N/A	6.42	3.78	6.73	4.66	3.25	2.27	#N/A	#N/A	6.92	4.05	7.53	5.24	3.68	2.55
	> 15 to <= 20	#N/A	#N/A	#N/A	9.46	#N/A	7.69	5.37	3.71	#N/A	#N/A	#N/A	#N/A	#N/A	8.69	6.08	4.18	#N/A	#N/A	#N/A	#N/A	#N/A	9.82	6.85	4.78	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.75	5.35
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.04	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.08	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
20000 to 25000	<= 5	1.64	0.96	0.57	0.33	1.31	0.91	0.64	0.44	1.76	1.03	0.61	0.36	1.48	1.03	0.72	0.50	1.90	1.11	0.65	0.38	1.67	1.16	0.81	0.56	2.03	1.19	0.70	0.41	1.88	1.31	0.91	0.63
	> 5 to <= 10	4.97	2.91	1.72	1.01	1.76	1.22	0.85	0.59	5.33	3.13	1.84	1.08	1.98	1.38	0.96	0.67	5.73	3.38	1.97	1.16	2.24	1.56	1.08	0.75	6.17	3.60	2.12	1.25	2.52	1.75	1.22	0.85
	> 10 to <= 15	#N/A	8.81	5.23	3.05	2.39	1.65	1.16	0.80	#N/A	9.52	5.61	3.29	2.70	1.88	1.30	0.91	#N/A	#N/A	5.99	3.53	3.03	2.11	1.46	1.02	#N/A	#N/A	6.42	3.76	3.42	2.37	1.66	1.15
	> 15 to <= 20	#N/A	#N/A	#N/A	9.21	3.28	2.28	1.58	1.11	#N/A	#N/A	#N/A	9.97	3.67	2.55	1.78	1.24	#N/A	#N/A	#N/A	#N/A	4.19	2.88	2.01	1.39	#N/A	#N/A	#N/A	#N/A	4.67	3.26	2.26	1.58
	> 20	#N/A	#N/A	#N/A	#N/A	4.53	3.15	2.18	1.53	#N/A	#N/A	#N/A	#N/A	5.09	3.56	2.45	1.73	#N/A	#N/A	#N/A	#N/A	5.78	4.00	2.78	1.94	#N/A	#N/A	#N/A	#N/A	6.43	4.47	3.14	2.17
25000 to 30000	<= 5	1.45	0.84	0.50	0.29	1.37	0.95	0.66	0.46	1.55	0.91	0.54	0.32	1.54	1.07	0.75	0.52	1.67	0.98	0.57	0.34	1.74	1.21	0.84	0.59	1.79	1.05	0.62	0.36	1.96	1.36	0.95	0.66
	> 5 to <= 10	4.53	2.66	1.57	0.92	1.32	0.92	0.64	0.44	4.86	2.86	1.69	0.99	1.49	1.04	0.72	0.50	5.22	3.09	1.79	1.06	1.68	1.17	0.81	0.56	5.64	3.31	1.93	1.14	1.89	1.31	0.92	0.64
	> 10 to <= 15	#N/A	8.33	4.93	2.89	1.28	0.89	0.62	0.43	#N/A	9.01	5.27	3.09	1.44	1.01	0.70	0.49	#N/A	9.60	5.68	3.33	1.63	1.13	0.79	0.55	#N/A	#N/A	6.07	3.57	1.84	1.28	0.89	0.62
	> 15 to <= 20	#N/A	#N/A	#N/A	9.07	1.25	0.87	0.60	0.42	#N/A	#N/A	#N/A	9.65	1.42	0.98	0.68	0.48	#N/A	#N/A	#N/A	#N/A	1.59	1.11	0.77	0.53	#N/A	#N/A	#N/A	#N/A	1.80	1.25	0.87	0.61
	> 20	#N/A	#N/A	#N/A	#N/A	1.23	0.86	0.60	0.42	#N/A	#N/A	#N/A	#N/A	1.39	0.97	0.67	0.47	#N/A	#N/A	#N/A	#N/A	1.57	1.08	0.76	0.53	#N/A	#N/A	#N/A	#N/A	1.77	1.23	0.85	0.60
30000 to 35000	<= 5	1.31	0.77	0.45	0.27	1.42	0.99	0.69	0.48	1.39	0.82	0.48	0.28	1.61	1.12	0.78	0.54	1.50	0.88	0.52	0.30	1.81	1.26	0.88	0.61	1.62	0.95	0.56	0.33	2.03	1.42	0.99	0.69
	> 5 to <= 10	4.21	2.48	1.45	0.85	1.05	0.73	0.51	0.35	4.52	2.67	1.56	0.92	1.18	0.82	0.57	0.40	4.86	2.86	1.67	0.98	1.33	0.93	0.64	0.45	5.18	3.05	1.80	1.06	1.50	1.04	0.72	0.51
	> 10 to <= 15	#N/A	8.01	4.69	2.74	0.77	0.54	0.37	0.26	#N/A	8.57	5.04	2.96	0.87	0.60	0.42	0.29	#N/A	9.20	5.41	3.17	0.98	0.68	0.47	0.33	#N/A	9.86	5.82	3.40	1.10	0.77	0.53	0.37
	> 15 to <= 20	#N/A	#N/A	#N/A	8.83	0.57	0.40	0.28	0.19	#N/A	#N/A	#N/A	9.51	0.64	0.45	0.31	0.22	#N/A	#N/A	#N/A	#N/A	0.73	0.50	0.35	0.24	#N/A	#N/A	#N/A	#N/A	0.82	0.57	0.40	0.28
	> 20	#N/A	#N/A	#N/A	#N/A	0.43	0.30	0.21	0.14	#N/A	#N/A	#N/A	#N/A	0.48	0.33	0.23	0.16	#N/A	#N/A	#N/A	#N/A	0.54	0.38	0.26	0.18	#N/A	#N/A	#N/A	#N/A	0.61	0.43	0.30	0.21
35000 to 40000	<= 5	1.19	0.70	0.41	0.24	1.48	1.03	0.72	0.50	1.27	0.75	0.44	0.26	1.67	1.16	0.80	0.56	1.37	0.80	0.47	0.28	1.88	1.31	0.91	0.63	1.48	0.86	0.51	0.30	2.12	1.47	1.03	0.71
	> 5 to <= 10	3.95	2.32	1.35	0.80	0.86	0.60	0.42	0.29	4.22	2.49	1.46	0.86	0.97	0.67	0.47	0.33	4.52	2.67	1.56	0.92	1.09	0.76	0.53	0.37	4.89	2.87	1.68	0.99	1.23	0.86	0.60	0.41
	> 10 to <= 15	#N/A	7.69	4.51	2.65	0.50	0.35	0.24	0.17	#N/A	8.30	4.83	2.83	0.57	0.39	0.27	0.19	#N/A	8.88	5.18	3.04	0.64	0.44	0.31	0.21	#N/A	9.45	5.62	3.27	0.72	0.50	0.35	0.24
	> 15 to <= 20	#N/A	#N/A	#N/A	8.75	0.29	0.20	0.14	0.10	#N/A	#N/A	#N/A	9.37	0.33	0.23	0.16	0.11	#N/A	#N/A	#N/A	#N/A	0.37	0.26	0.18	0.13	#N/A	#N/A	#N/A	#N/A	0.42	0.29	0.20	0.14
	> 20	#N/A	#N/A	#N/A	#N/A	0.17	0.12	0.08	0.06	#N/A	#N/A	#N/A	#N/A	0.20	0.14	0.09	0.07	#N/A	#N/A	#N/A	#N/A	0.22	0.15	0.11	0.07	#N/A	#N/A	#N/A	#N/A	0.25	0.17	0.12	0.08
>40000	<= 5	1.10	0.64	0.38	0.22	1.54	1.08	0.74	0.52	1.17	0.70	0.41	0.24	1.74	1.20	0.84	0.59	1.26	0.75	0.44	0.26	1.96	1.36	0.95	0.66	1.35	0.80	0.47	0.27	2.21	1.53	1.07	0.75
	> 5 to <= 10	3.73	2.19	1.29	0.76	0.73	0.51	0.35	0.25	3.98	2.36	1.38	0.81	0.83	0.57	0.40	0.28	4.29	2.53	1.48	0.87	0.93	0.64	0.45	0.31	4.59	2.71	1.59	0.93	1.05	0.73	0.51	0.35
	> 10 to <= 15	#N/A	7.45	4.36	2.55	0.35	0.24	0.17	0.12	#N/A	7.98	4.61	2.74	0.39	0.27	0.19	0.13	#N/A	8.55	5.00	2.96	0.44	0.31	0.21	0.15	#N/A	9.12	5.36	3.16	0.50	0.35	0.24	0.17
	> 15 to <= 20	#N/A	#N/A	#N/A	8.66	0.17	0.12	0.08	0.06	#N/A	#N/A	#N/A	9.24	0.19	0.13	0.09	0.06	#N/A	#N/A	#N/A	9.90	0.21	0.15	0.10	0.07	#N/A	#N/A	#N/A	#N/A	0.24	0.17	0.11	0.08
	> 20	#N/A	#N/A	#N/A	#N/A	0.08	0.06	0.04	0.03	#N/A	#N/A	#N/A	#N/A	0.09	0.06	0.04	0.03	#N/A	#N/A	#N/A	#N/A	0.10	0.07	0.05	0.03	#N/A	#N/A	#N/A	#N/A	0.11	0.08	0.06	0.04

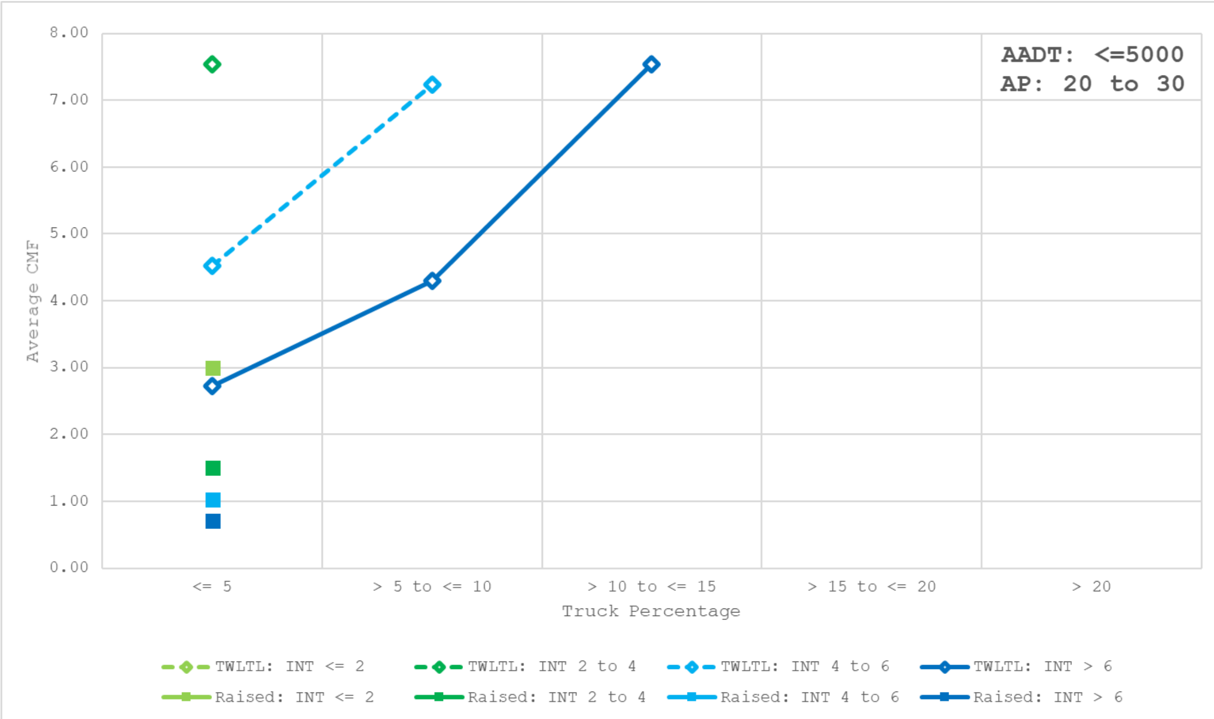
B-6-2 Suburban Residential KAB CMF Graphs (AADT: <= 5,000, AP: <= 10)



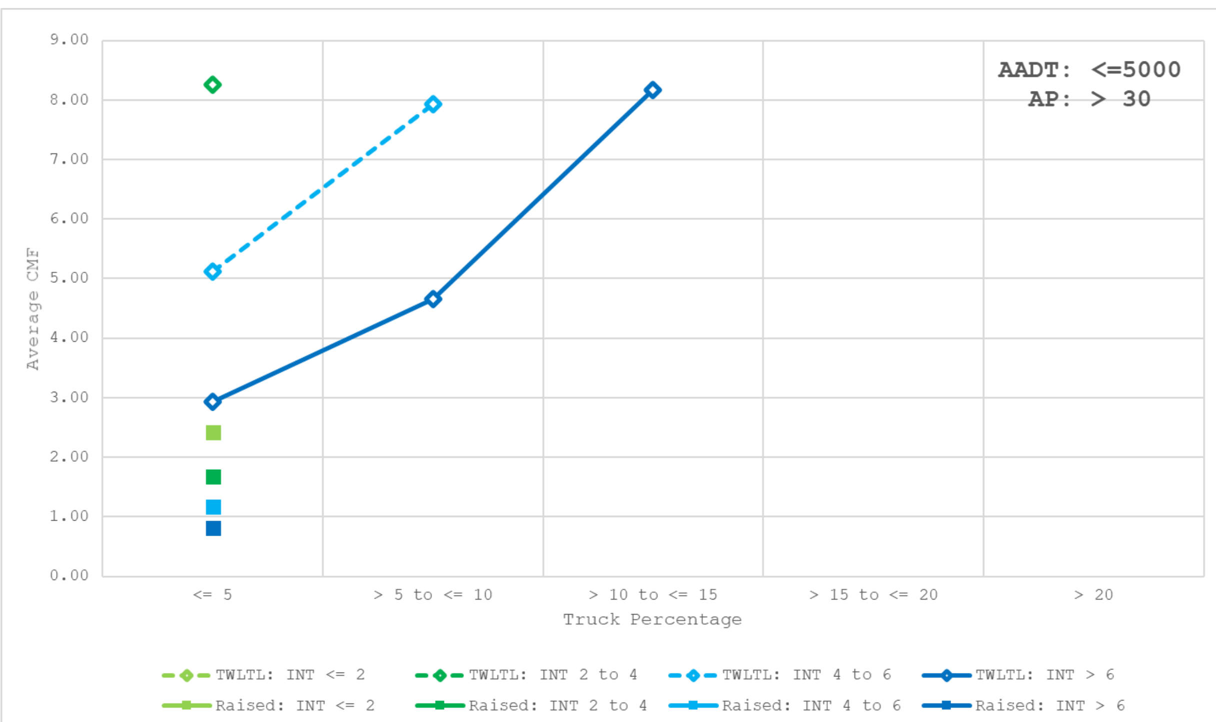
B-6-3 Suburban Residential KAB CMF Graphs (AADT: <= 5,000, AP: 10-20)



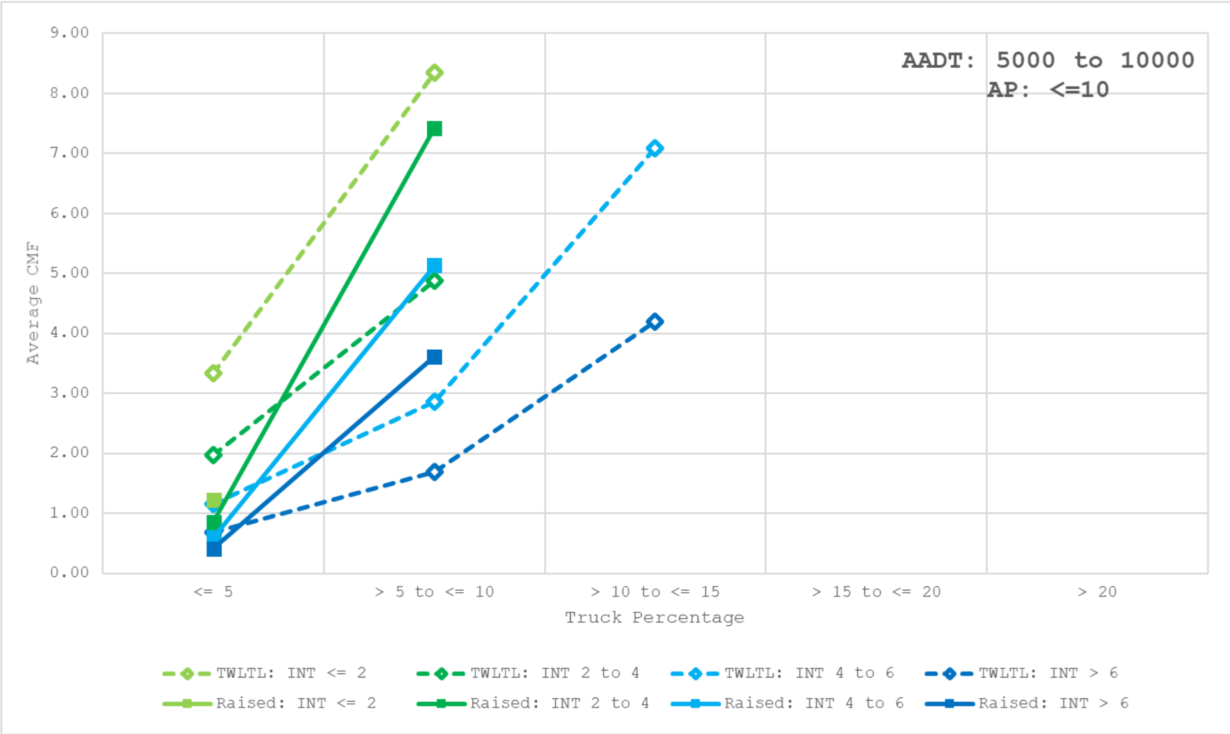
B-6-4 Suburban Residential KAB CMF Graphs (AADT: <= 5,000, AP: 20-30)



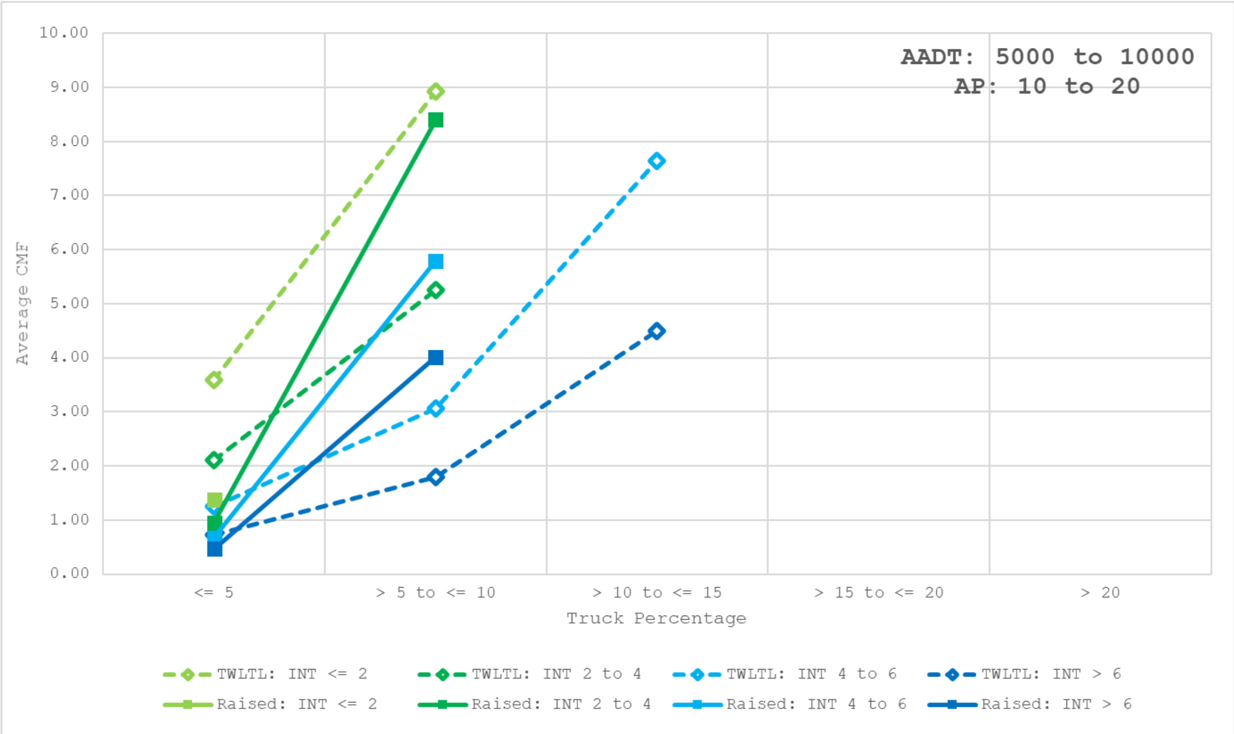
B-6-5 Suburban Residential KAB CMF Graphs (AADT: <= 5,000, AP: > 30)



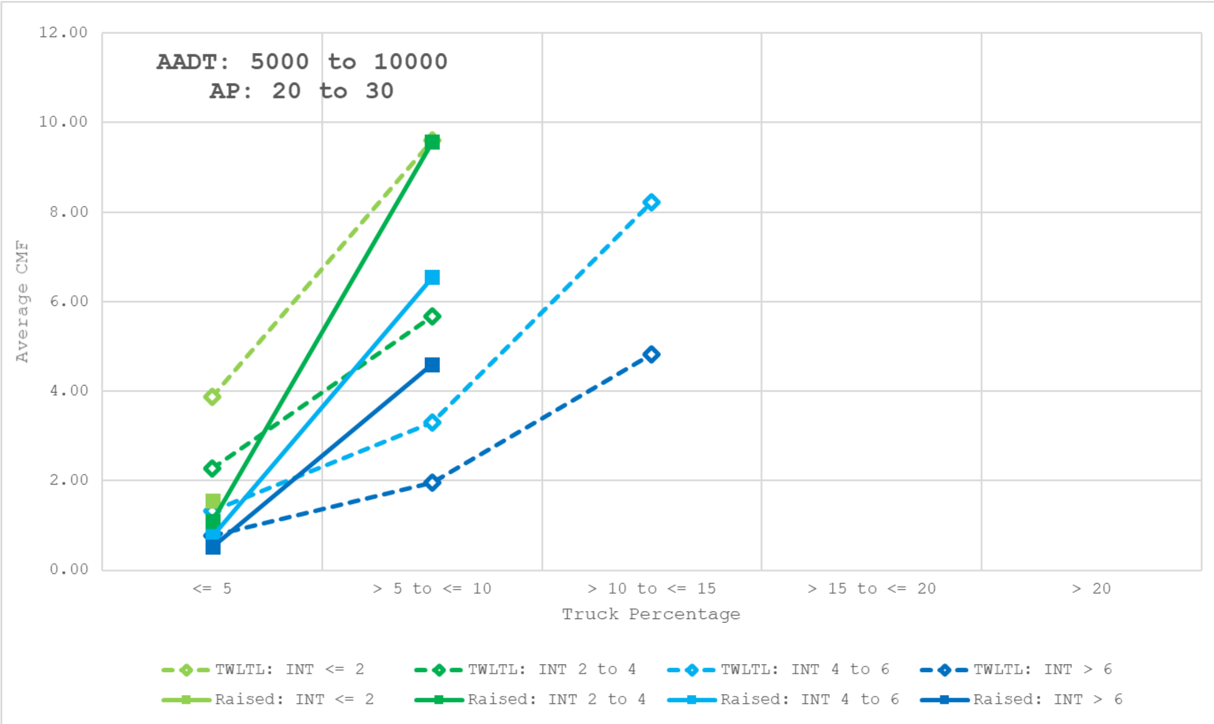
B-6-6 Suburban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



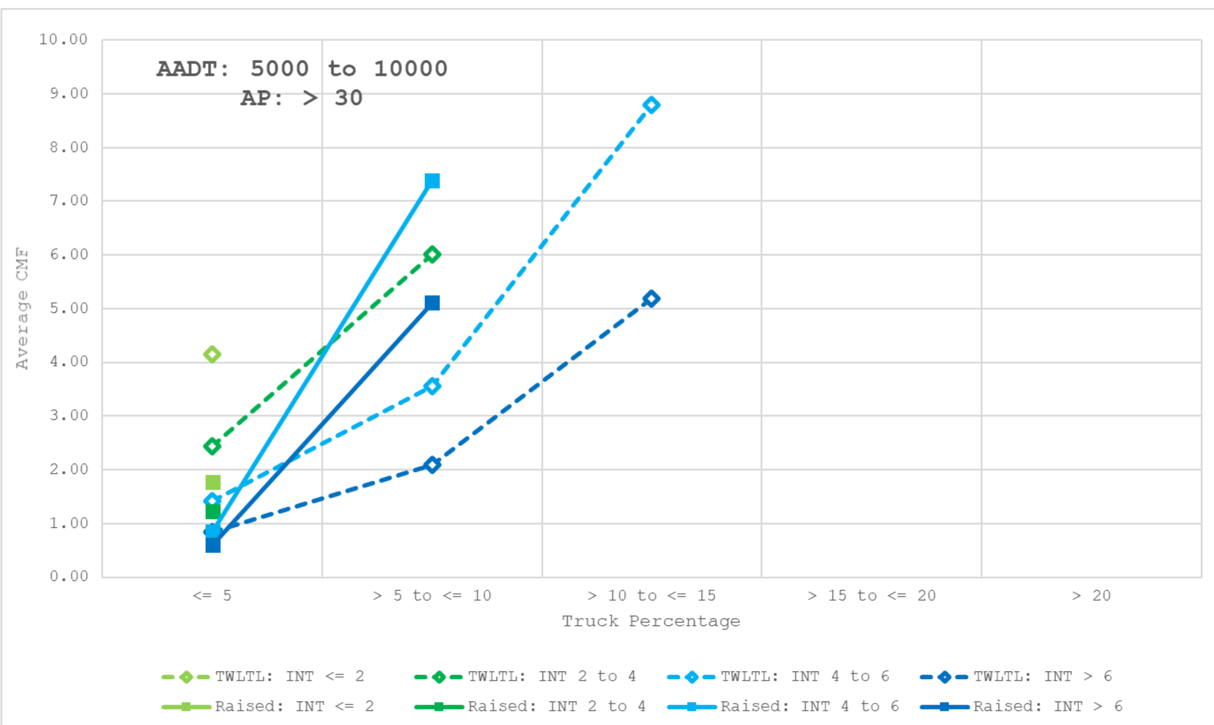
B-6-7 Suburban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



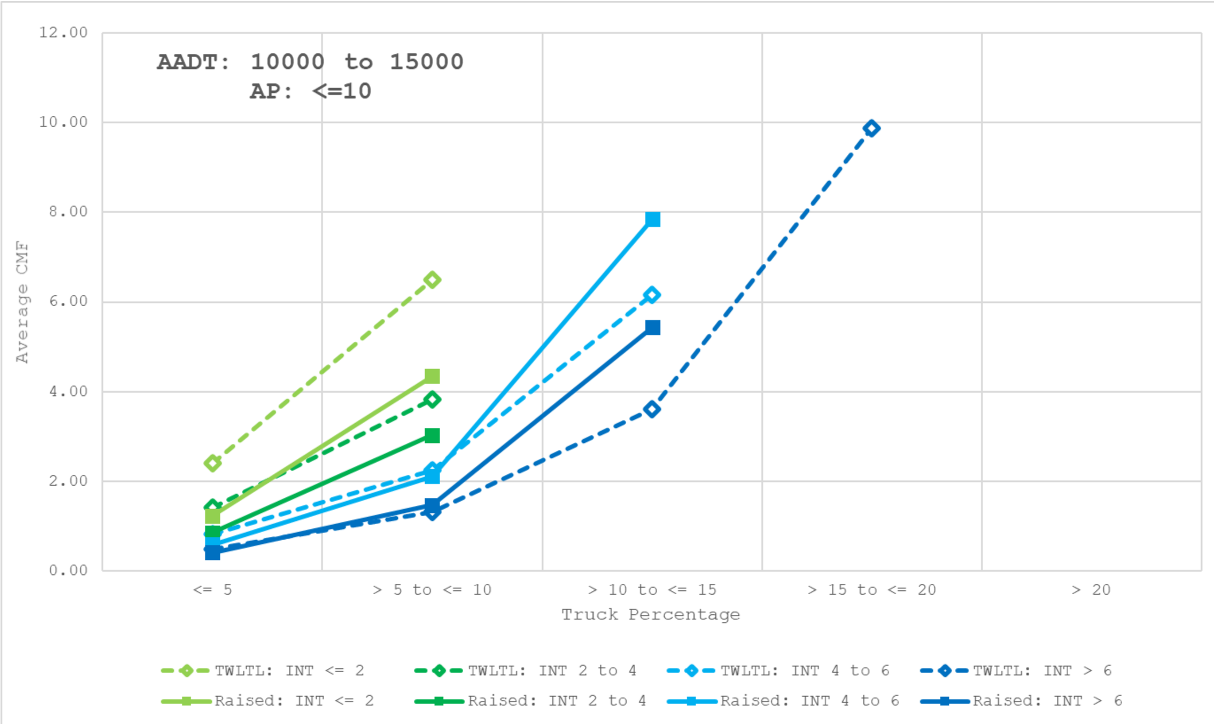
B-6-8 Suburban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



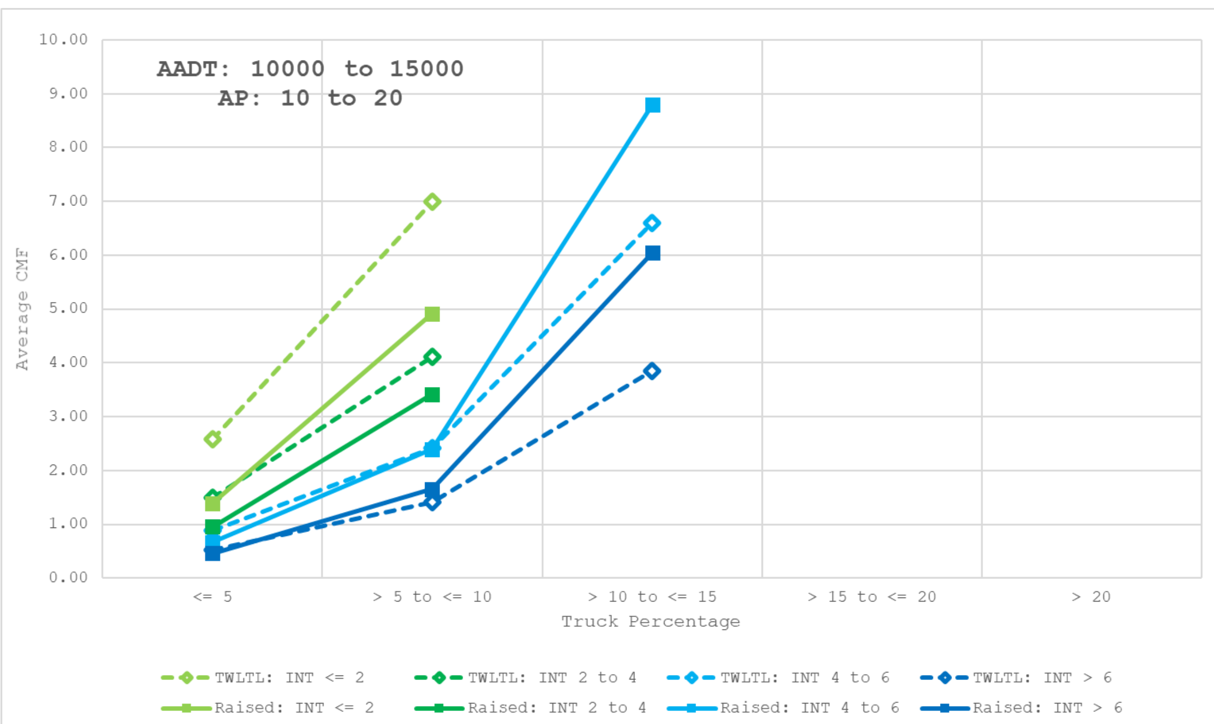
B-6-9 Suburban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



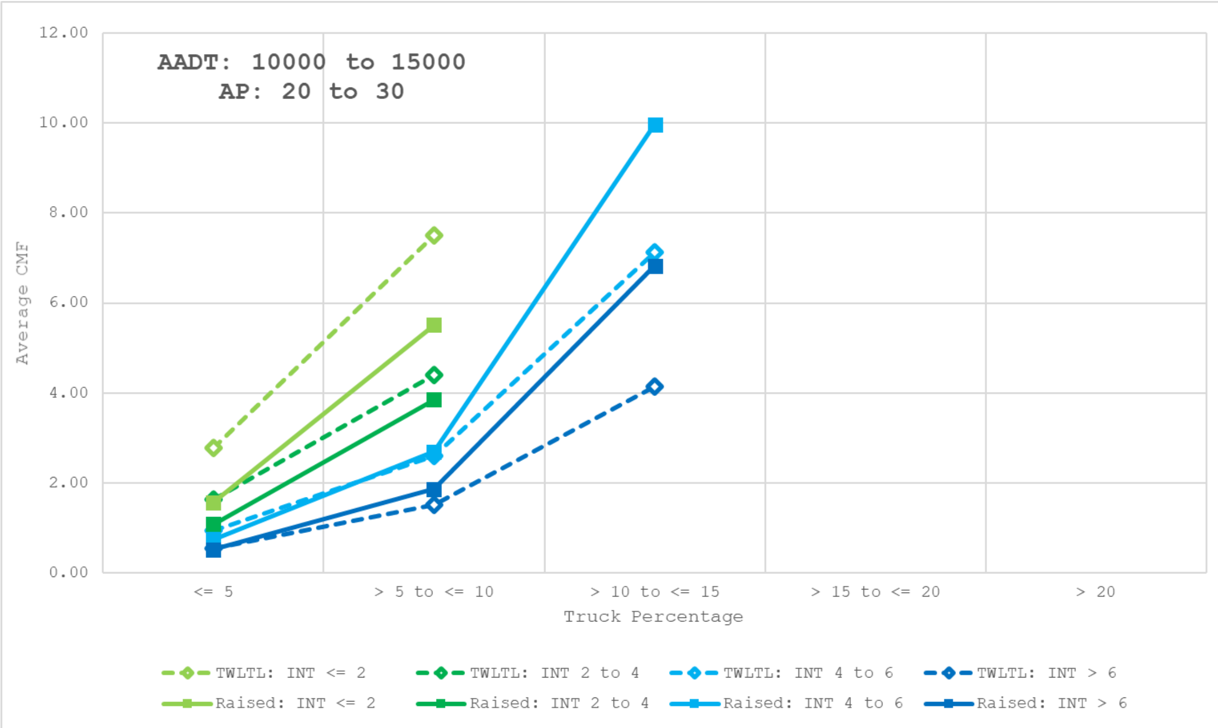
B-6-10 Suburban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



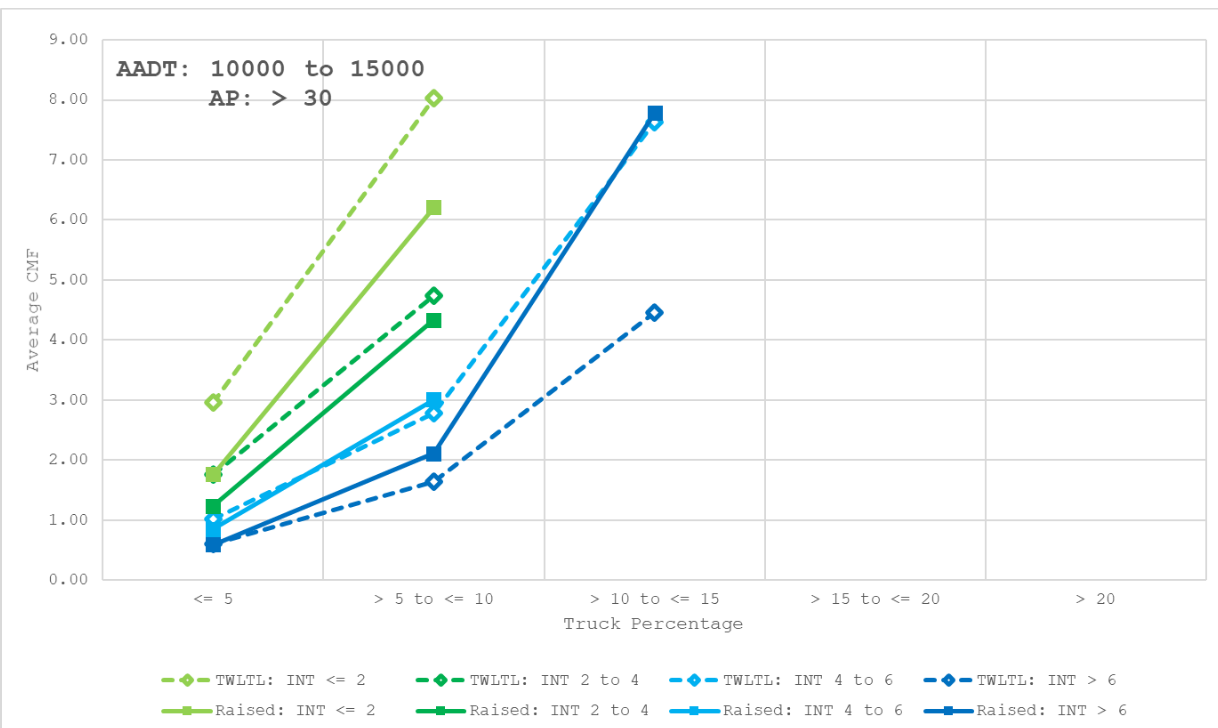
B-6-11 Suburban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



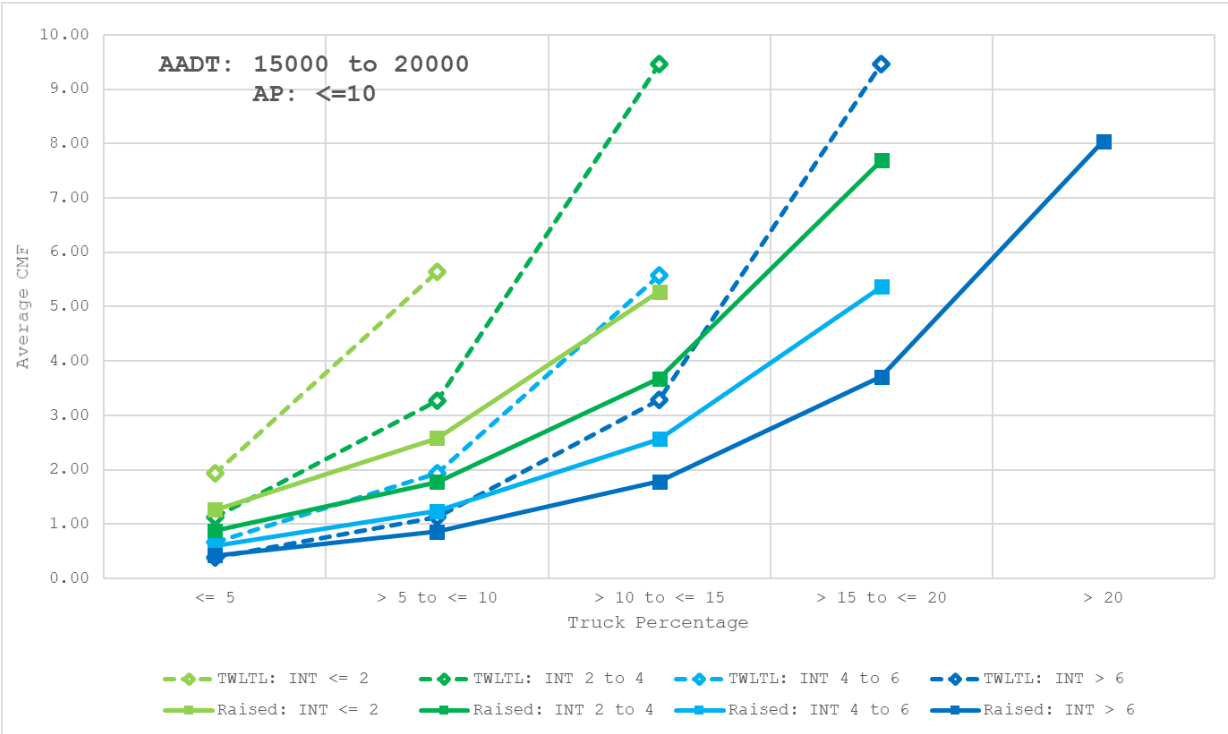
B-6-12 Suburban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



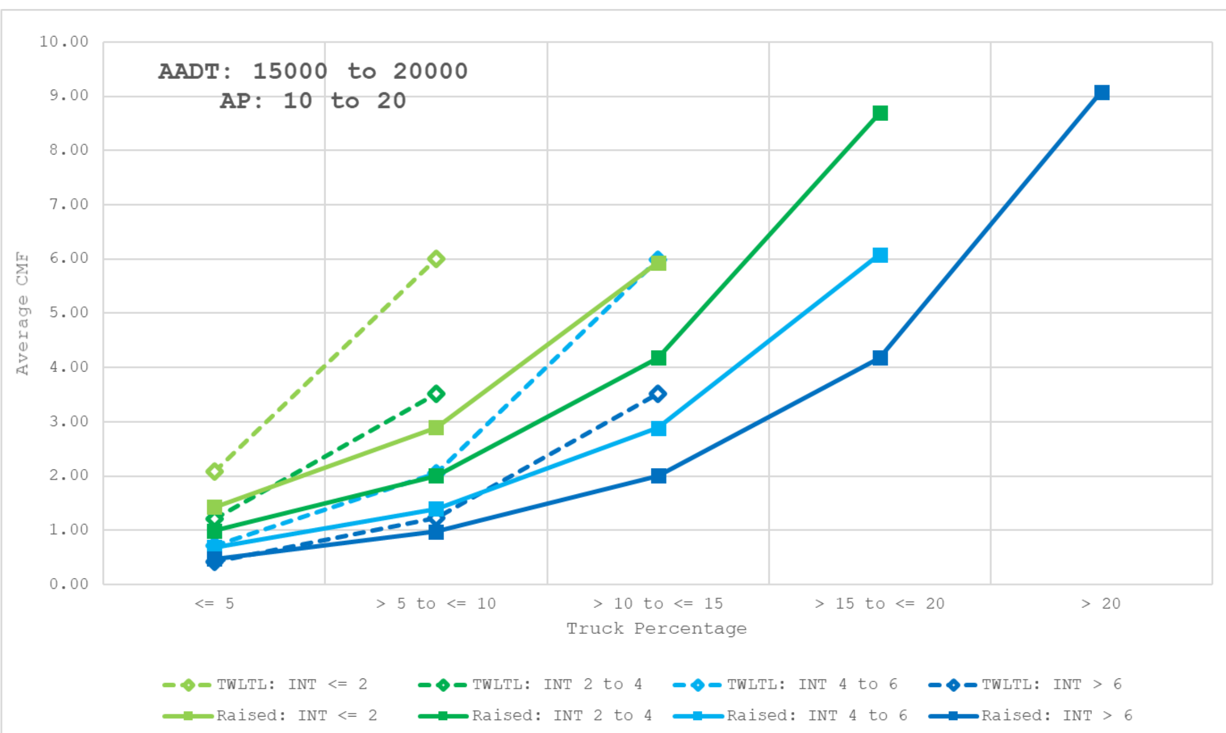
B-6-13 Suburban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



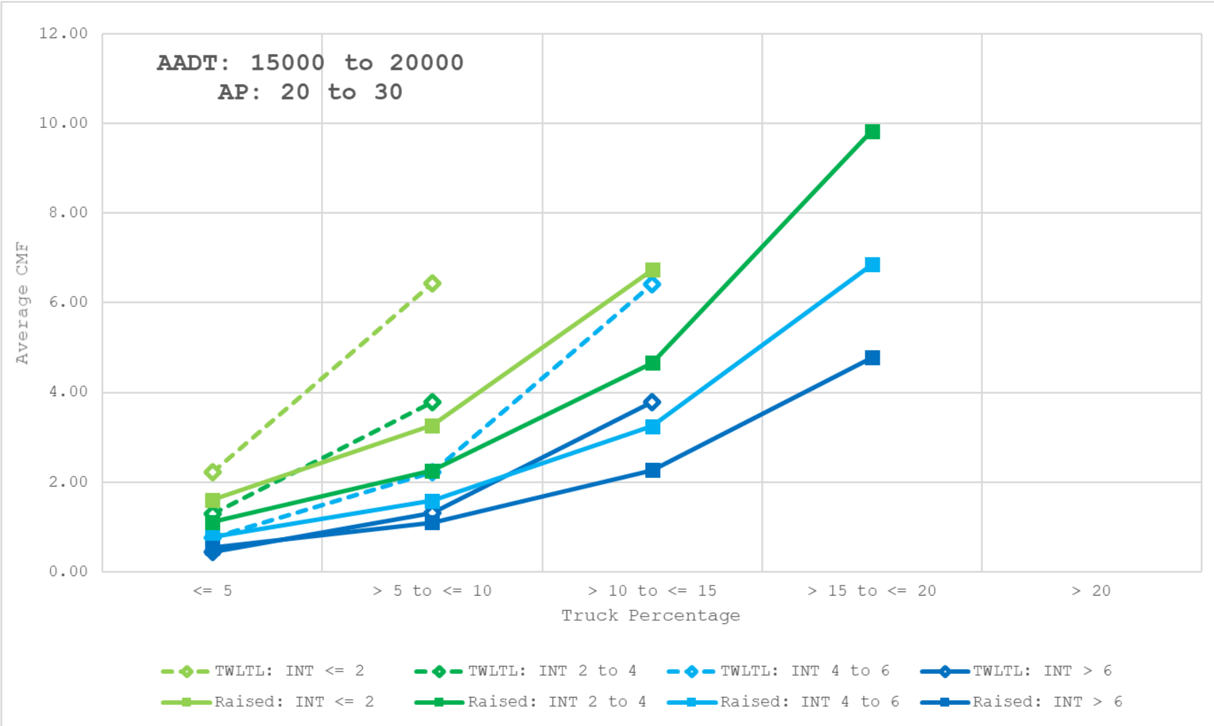
B-6-14 Suburban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



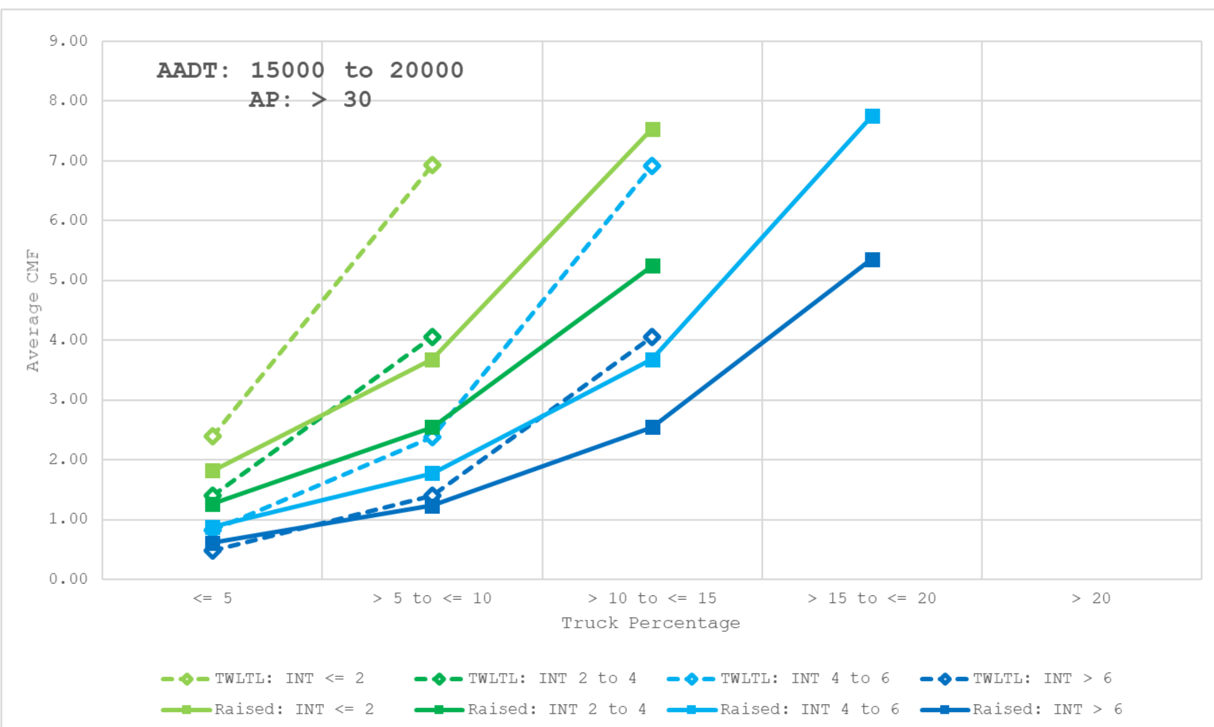
B-6-15 Suburban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



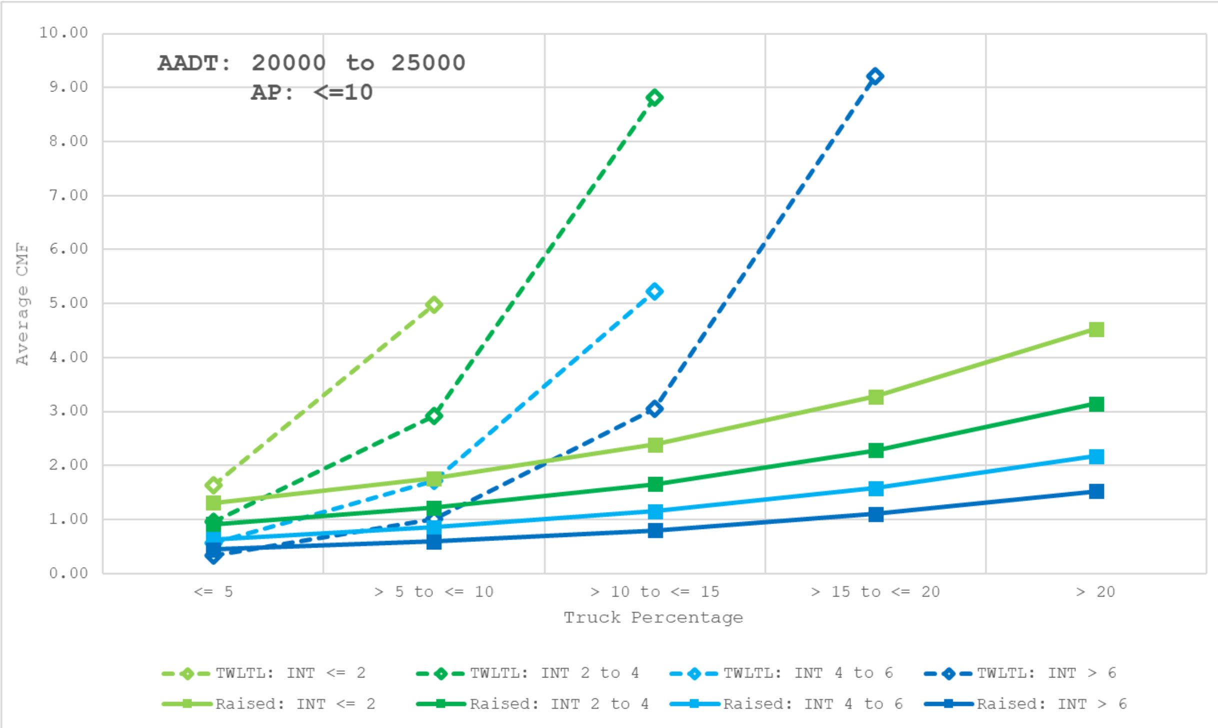
B-6-16 Suburban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



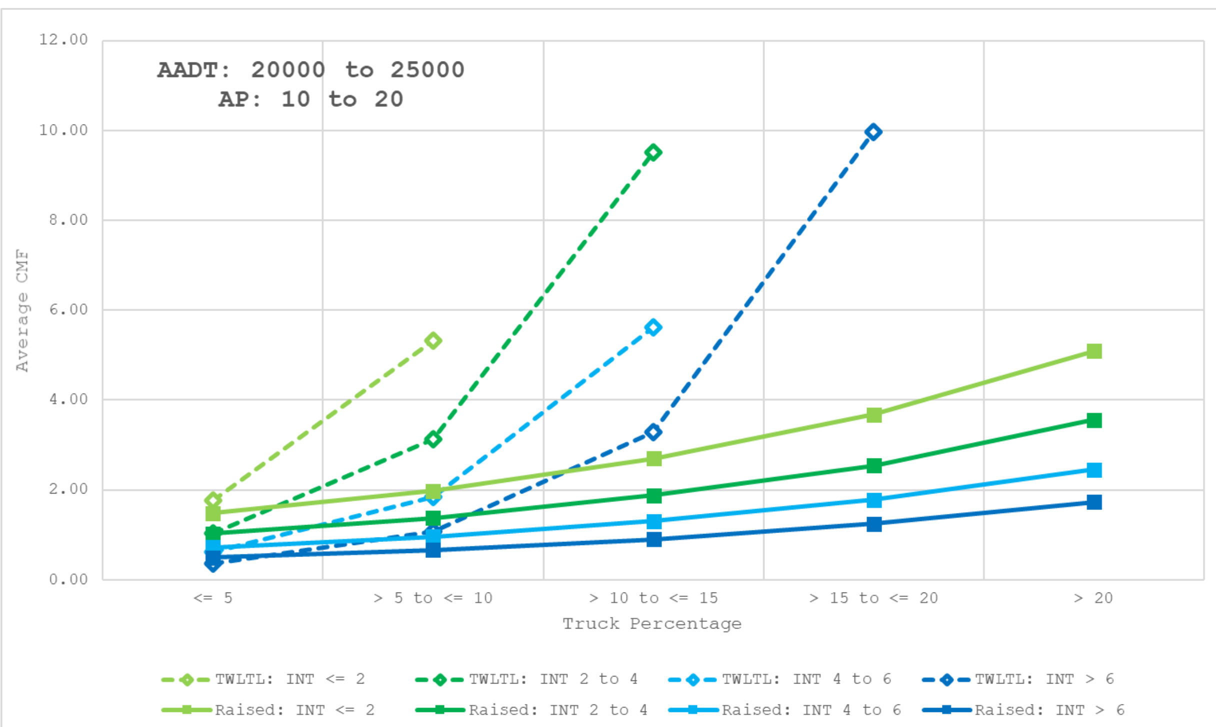
B-6-17 Suburban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



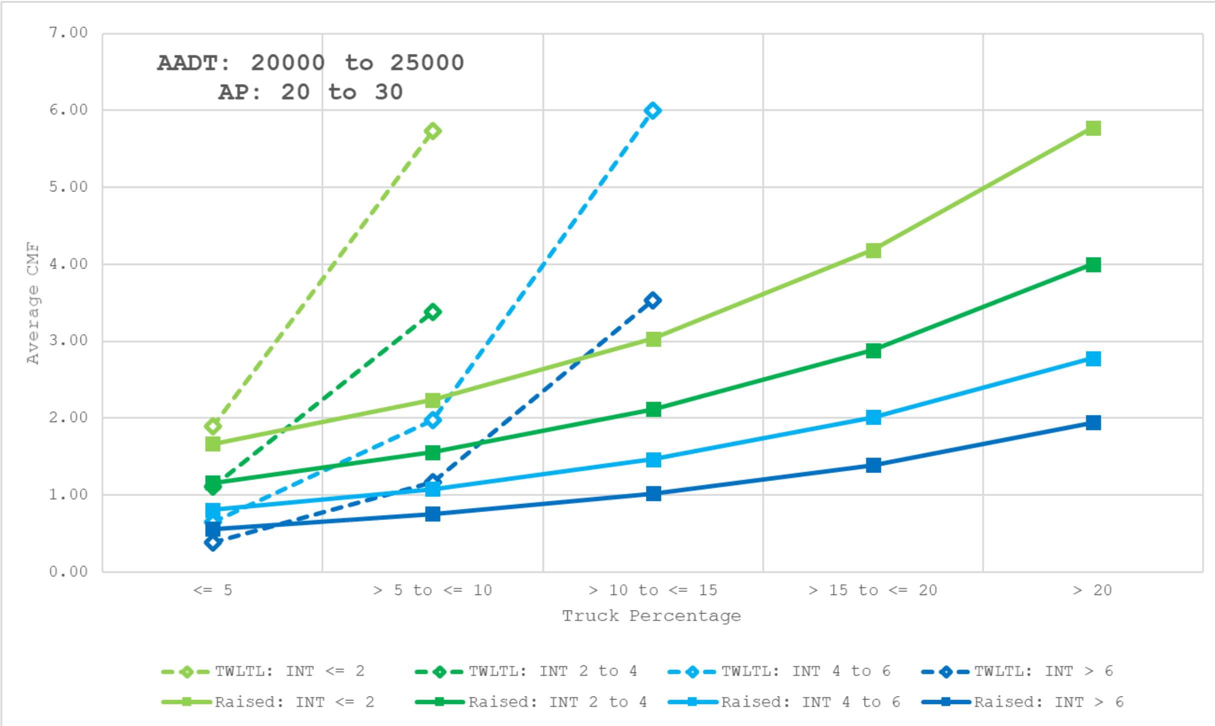
B-6-18 Suburban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



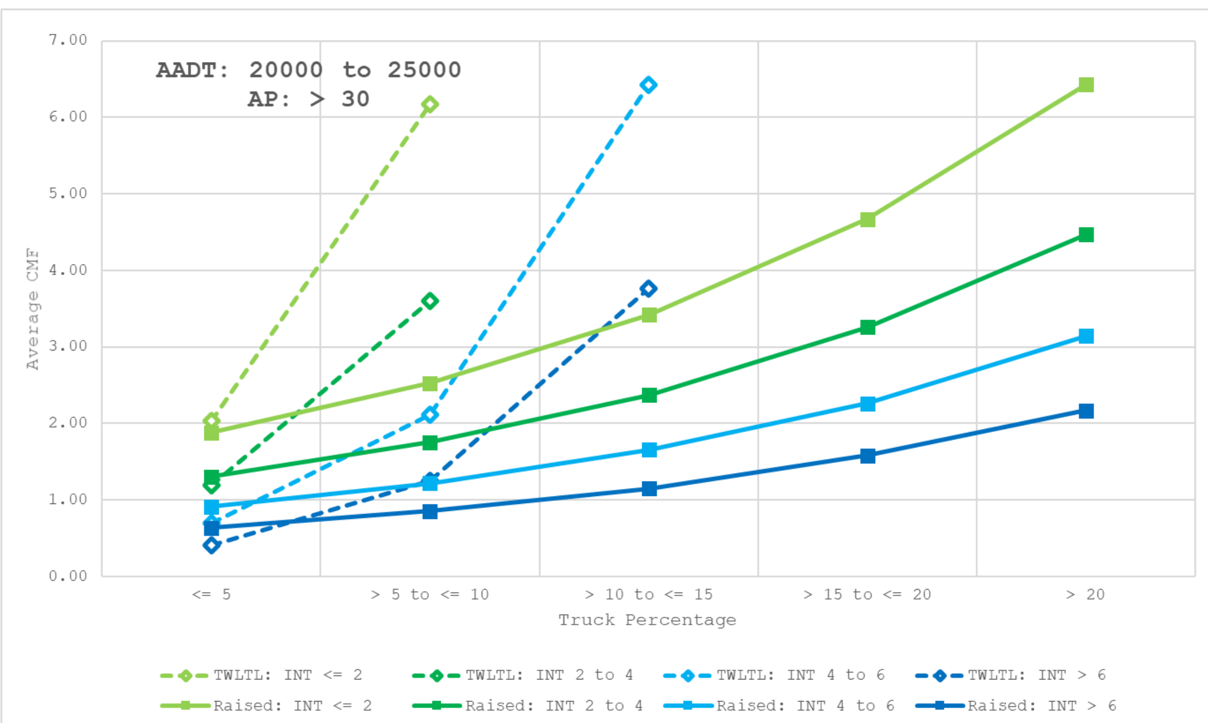
B-6-19 Suburban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



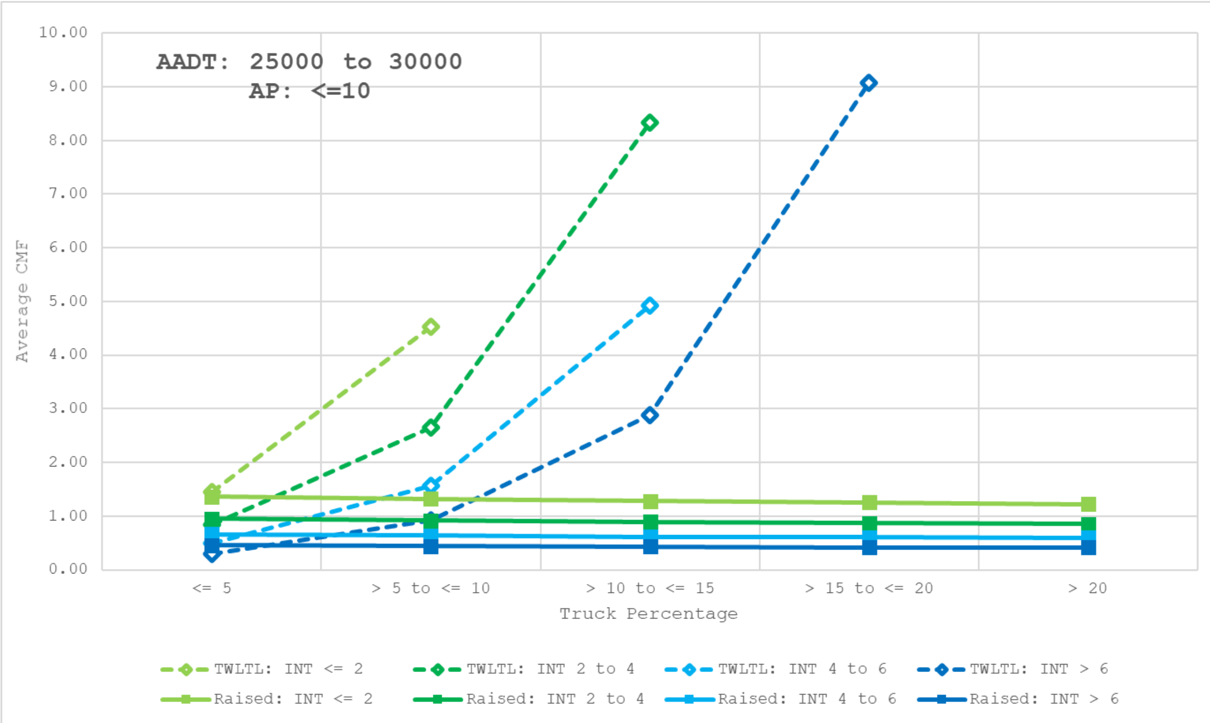
B-6-20 Suburban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



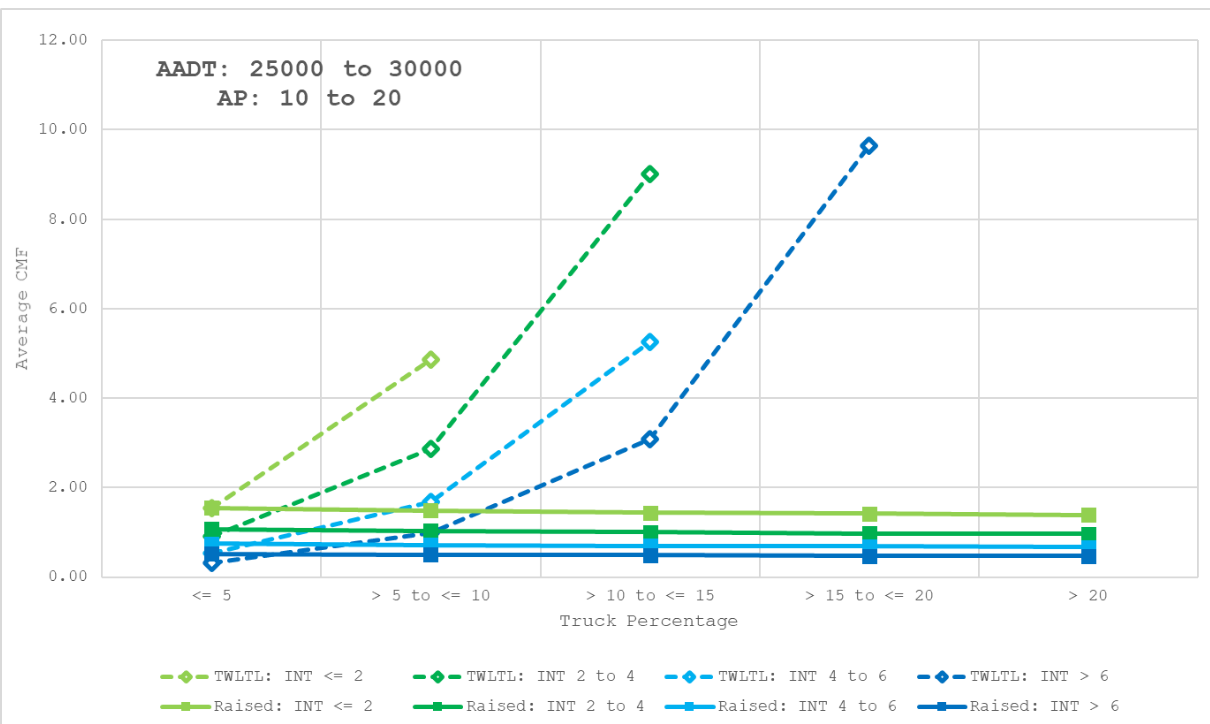
B-6-21 Suburban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



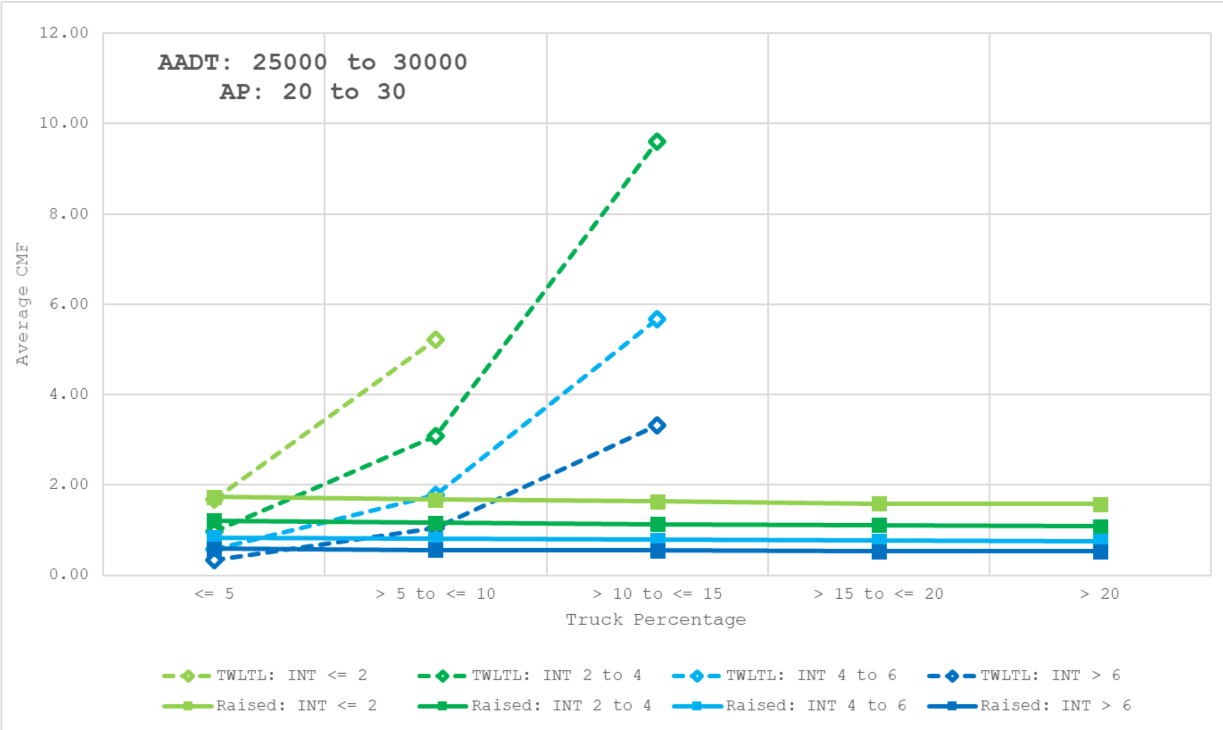
B-6-22 Suburban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



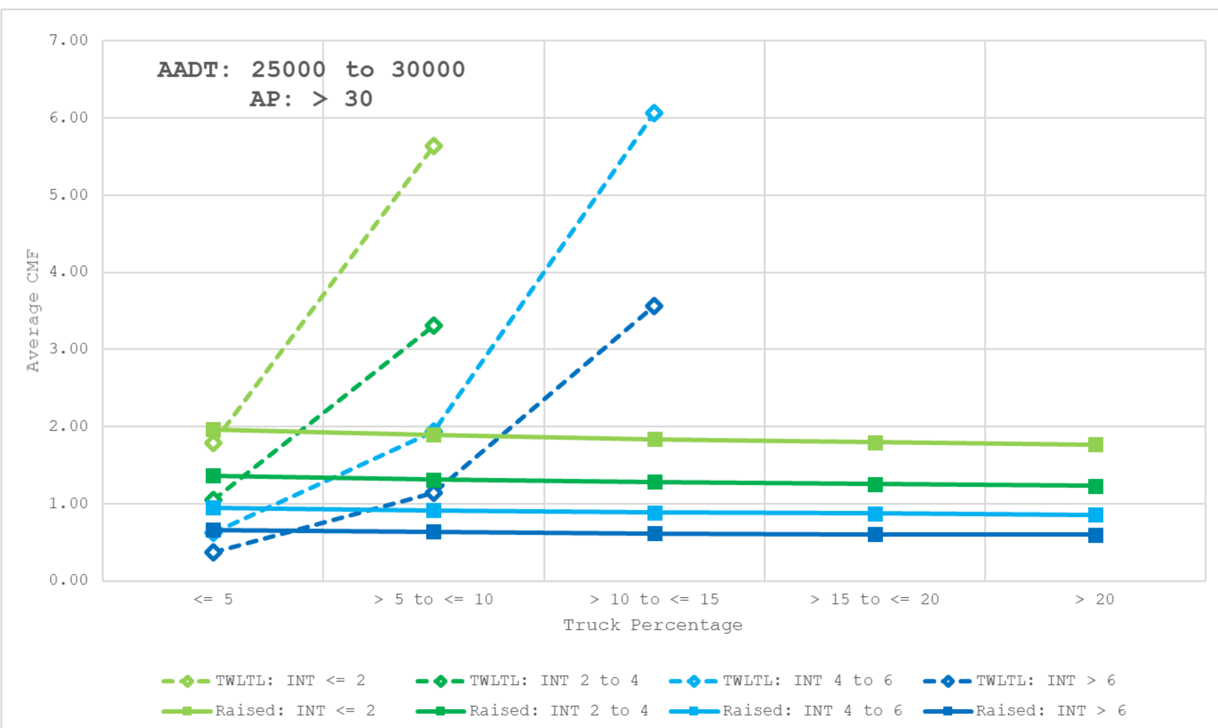
B-6-23 Suburban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



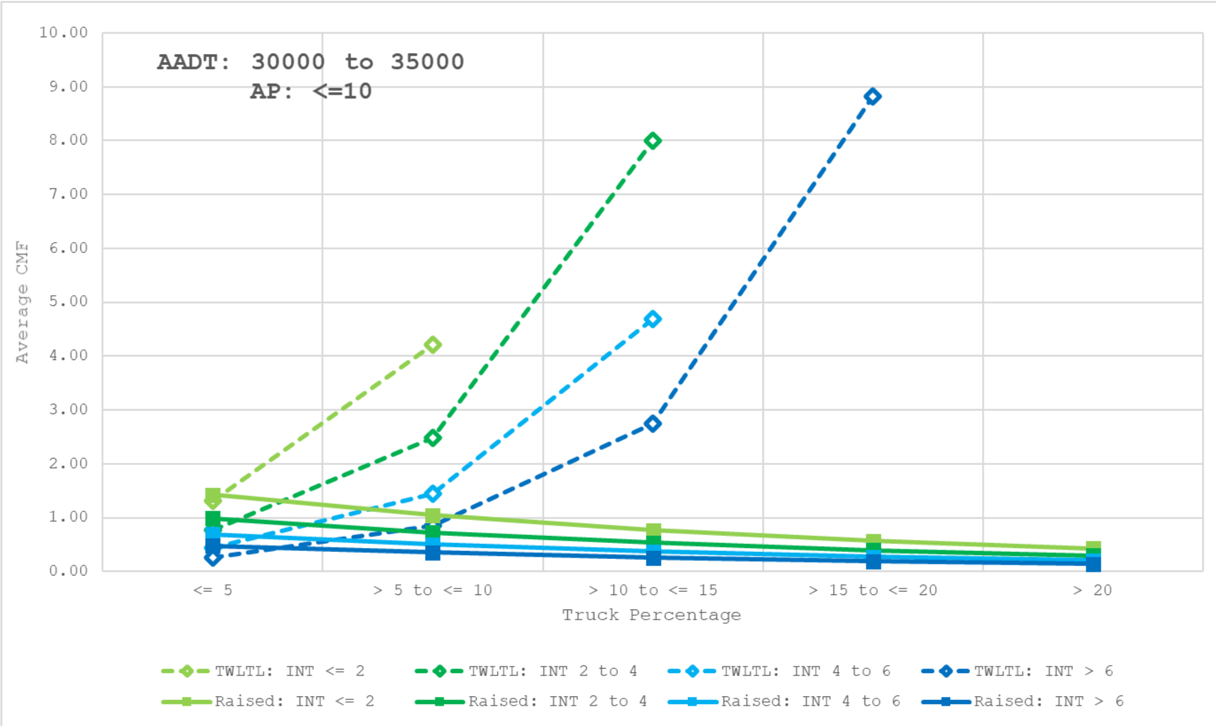
B-6-24 Suburban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



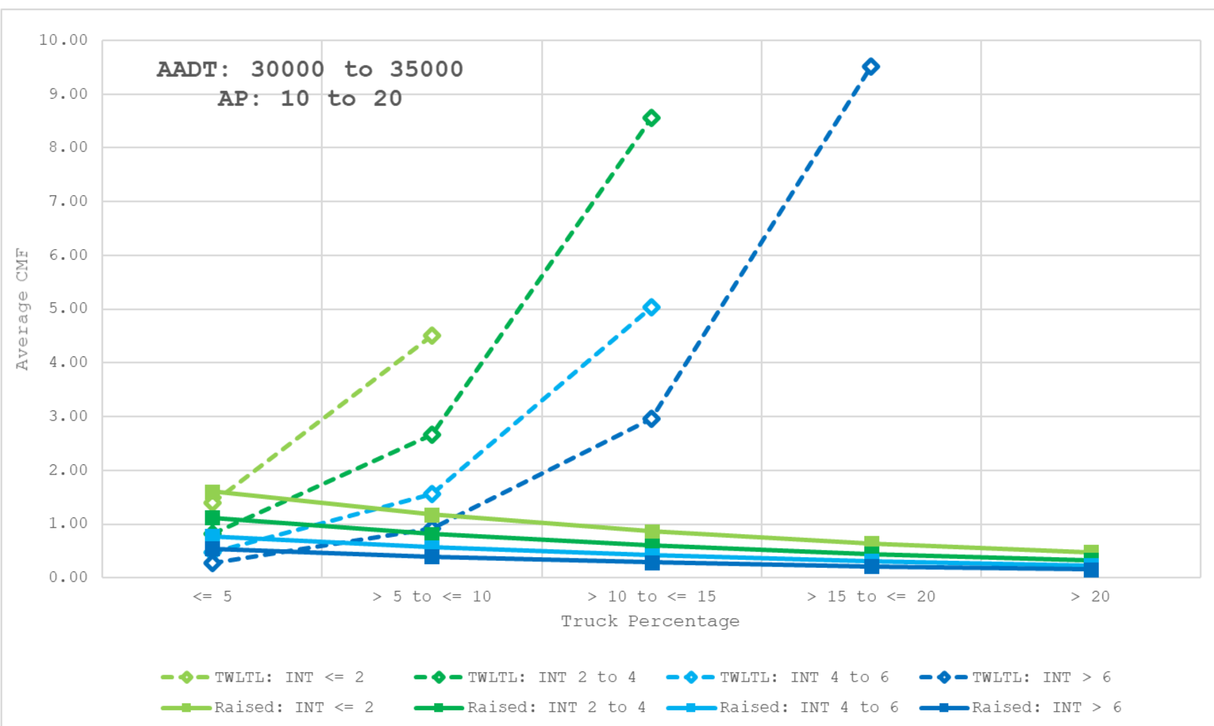
B-6-25 Suburban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



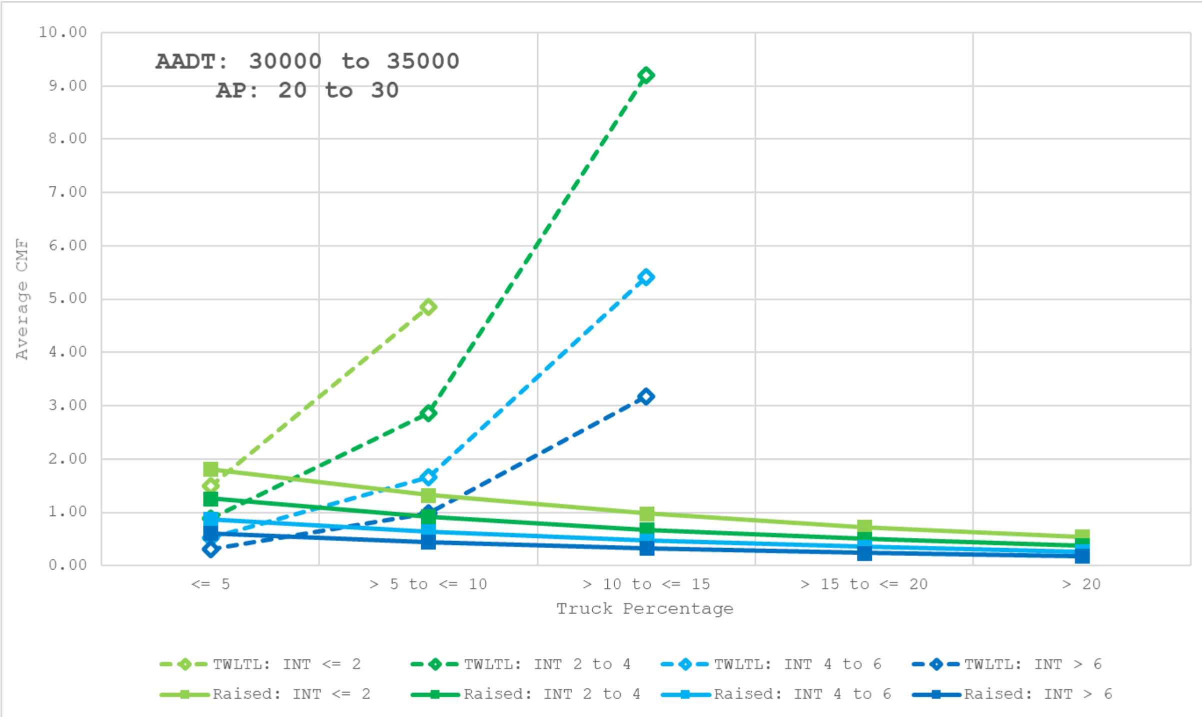
B-6-26 Suburban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



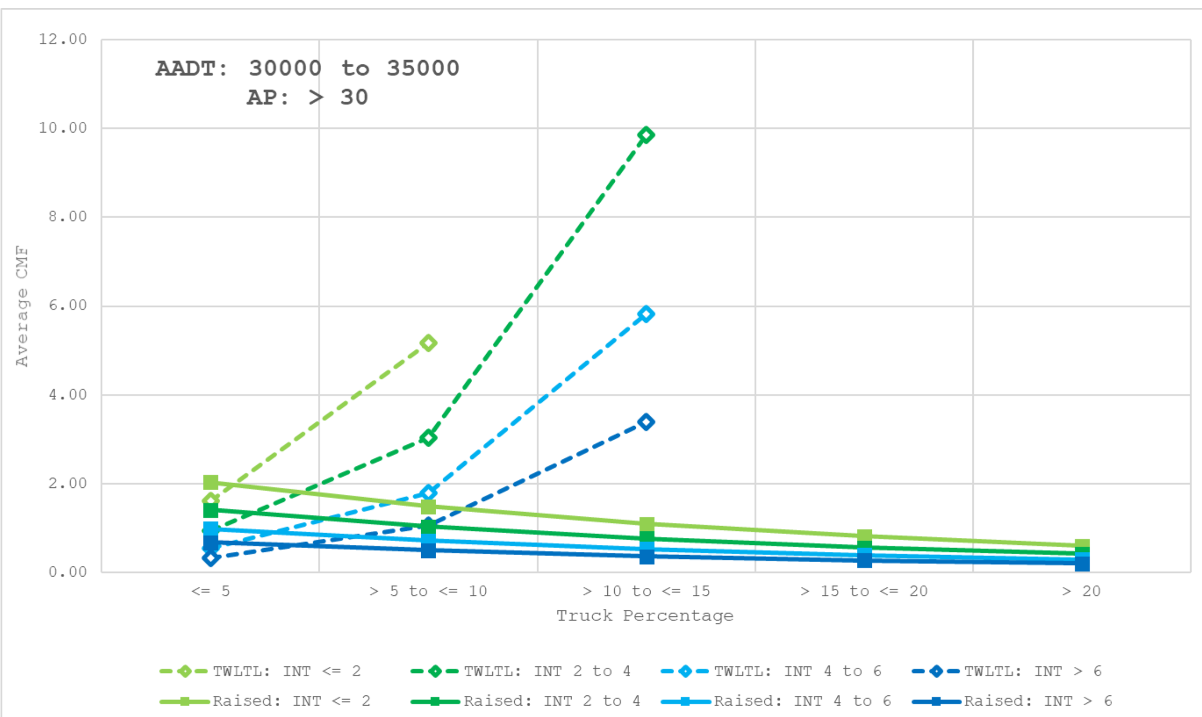
B-6-27 Suburban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



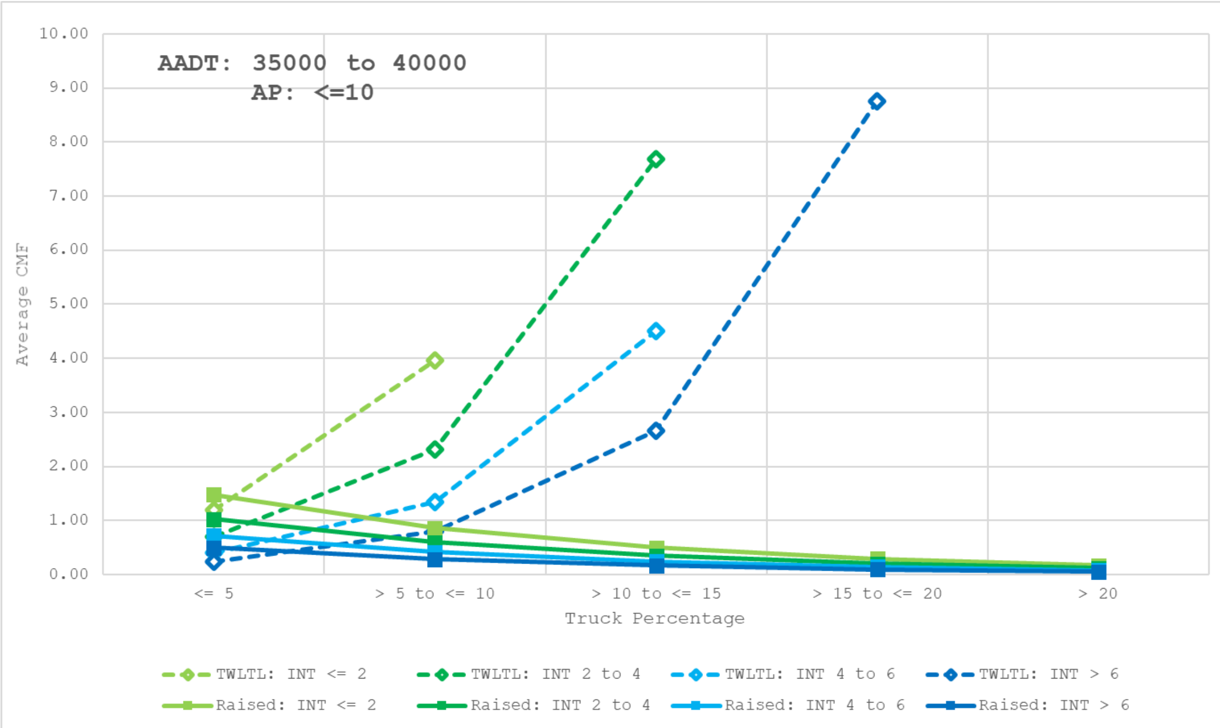
B-6-28 Suburban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



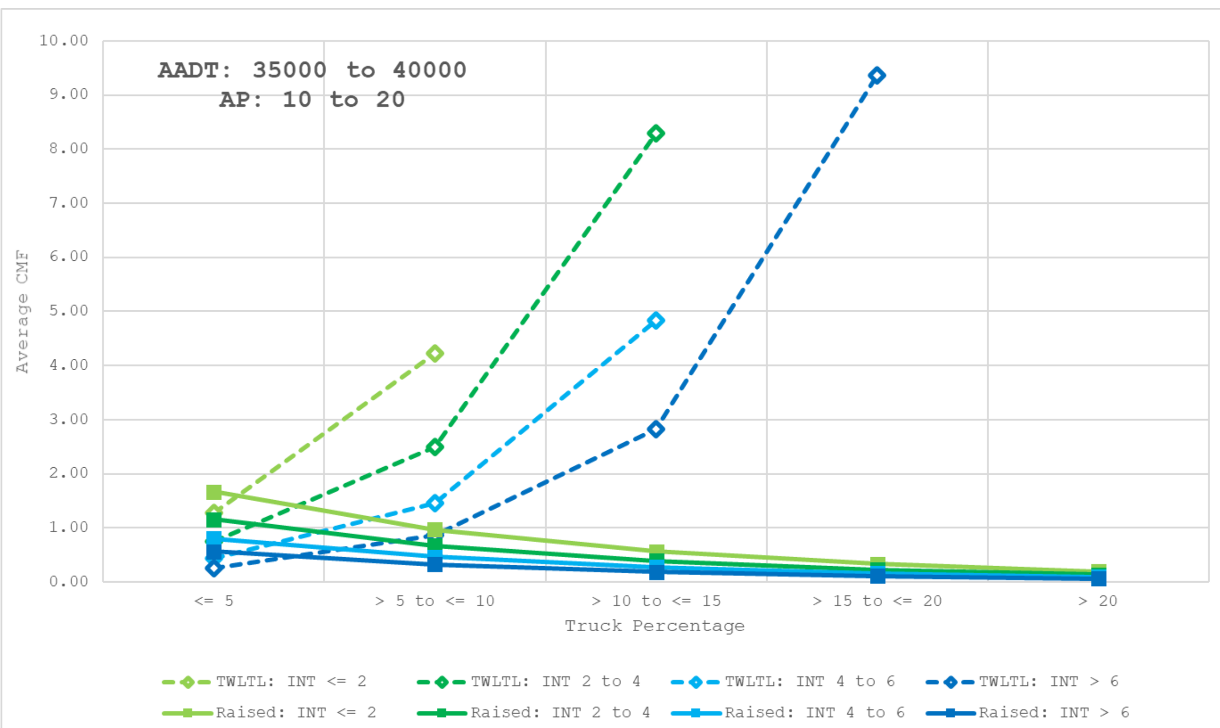
B-6-29 Suburban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



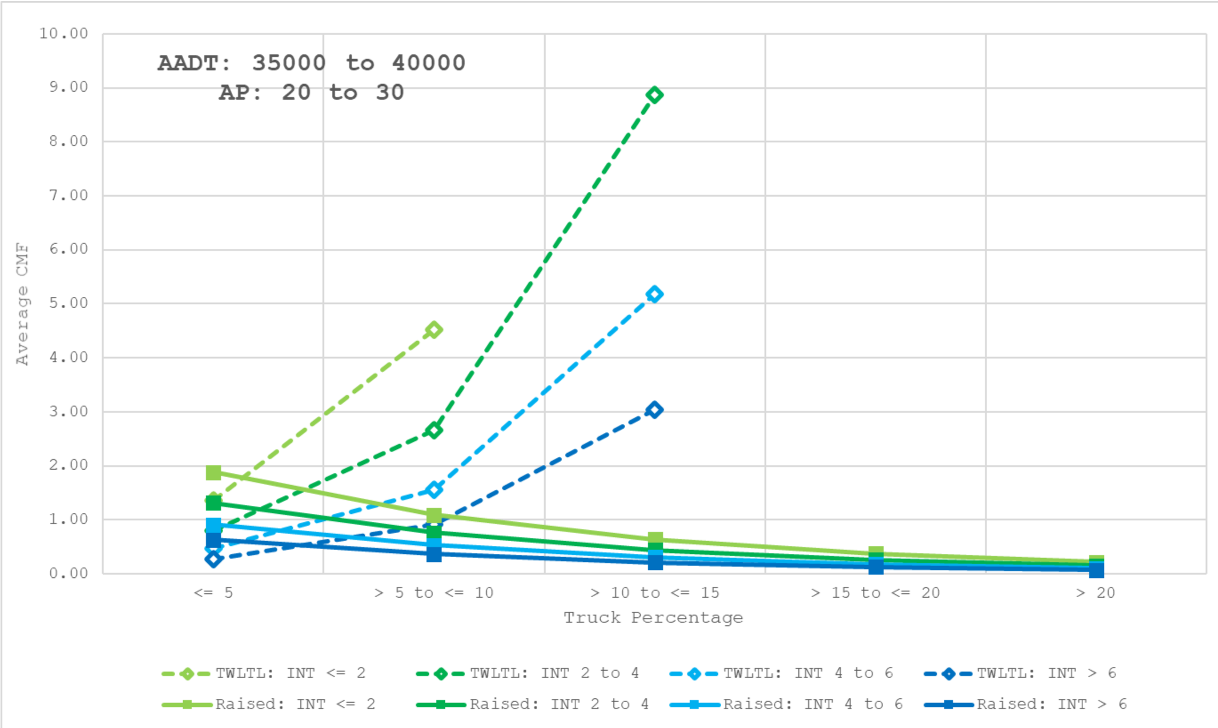
B-6-30 Suburban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



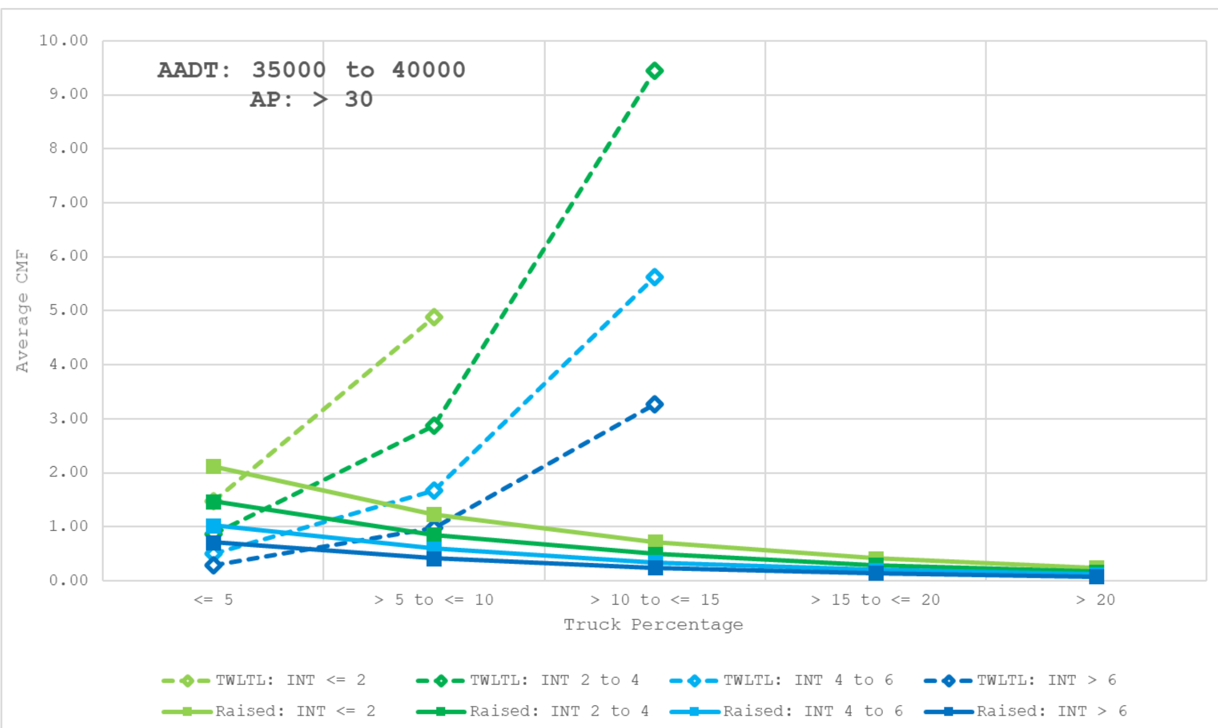
B-6-31 Suburban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



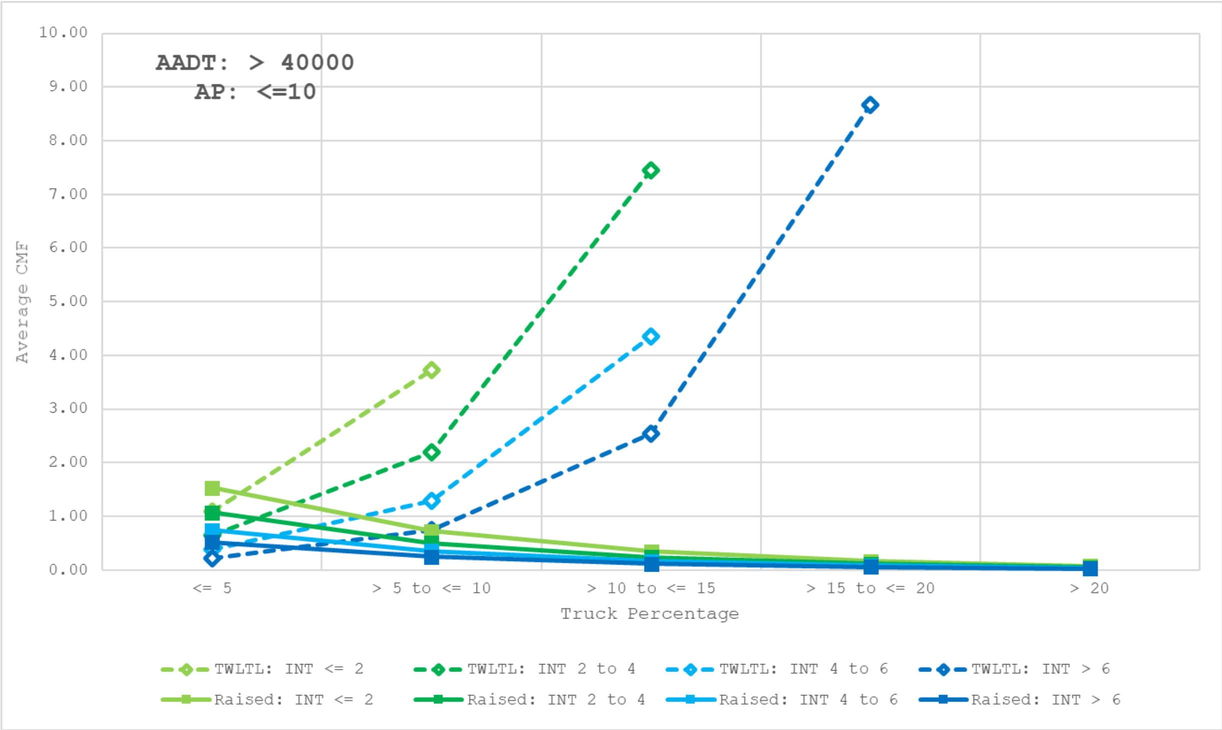
B-6-32 Suburban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



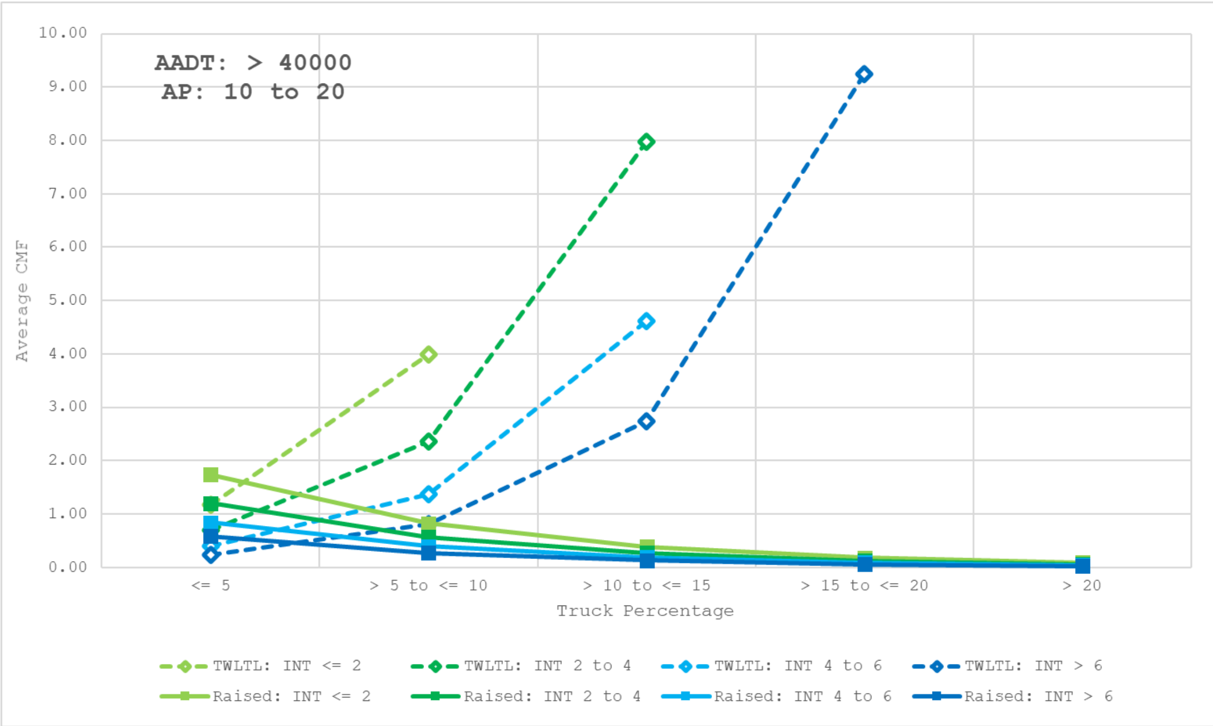
B-6-33 Suburban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



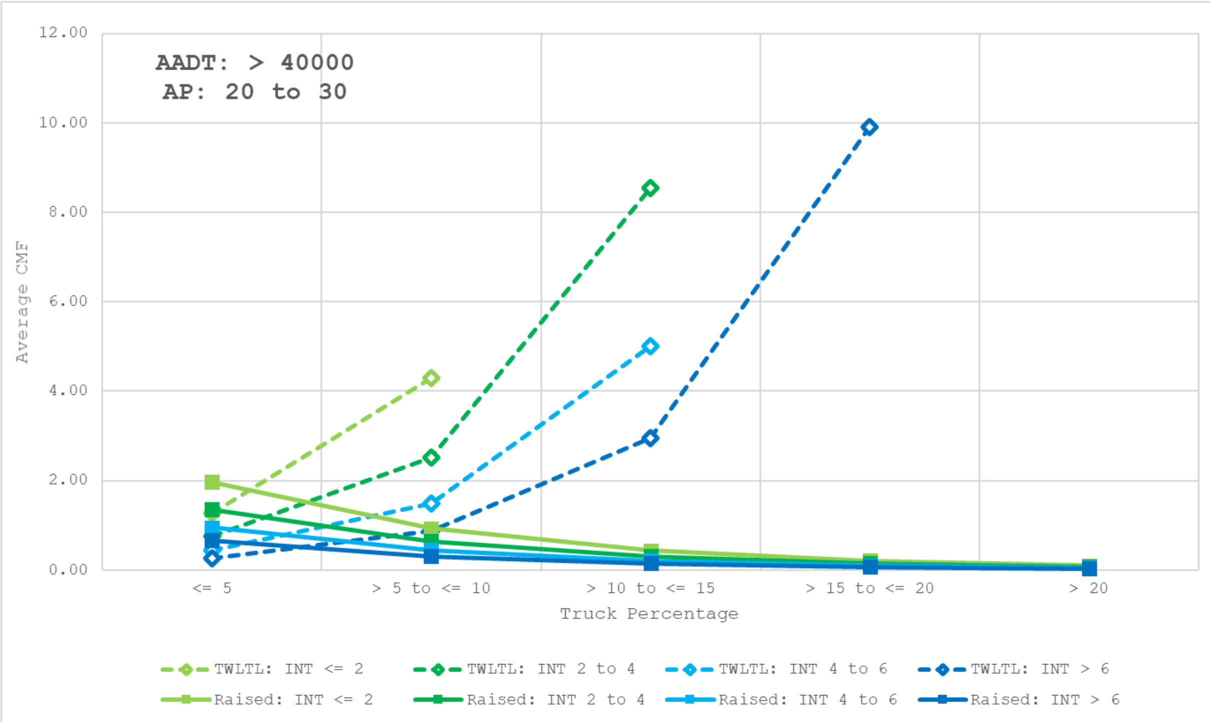
B-6-34 Suburban Residential KAB CMF Graphs (AADT: > 40,000, AP: <= 10)



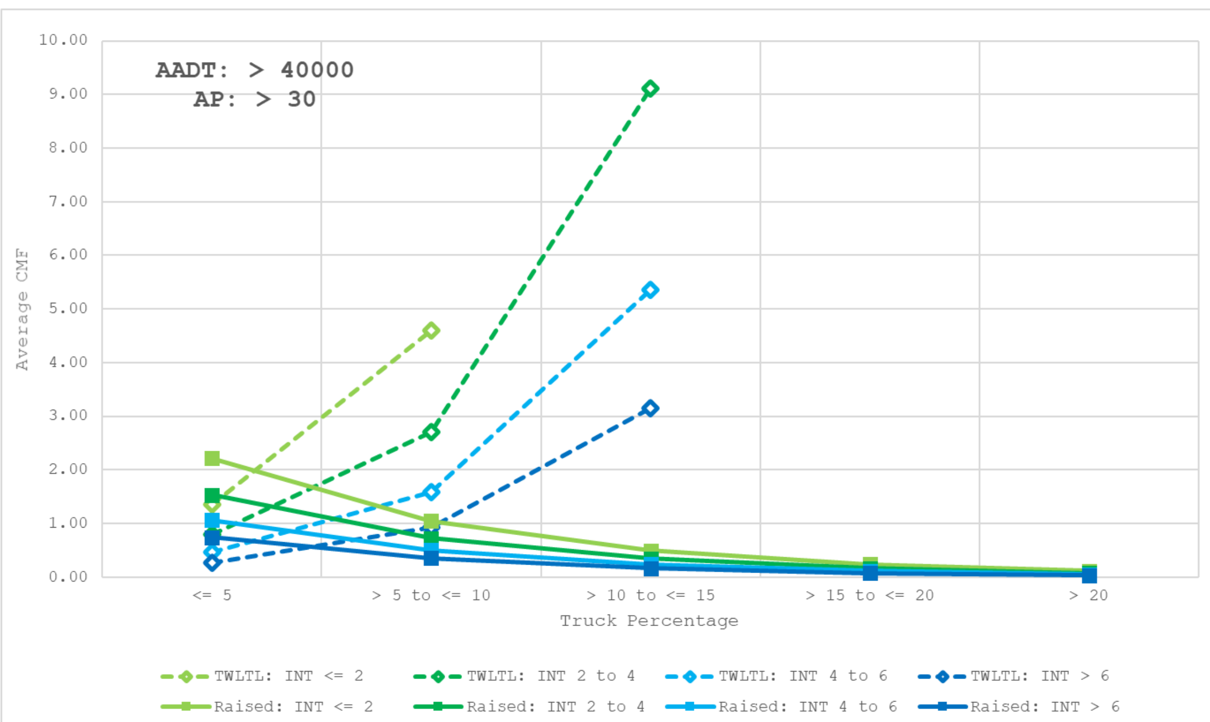
B-6-35 Suburban Residential KAB CMF Graphs (AADT: > 40,000, AP: 10-20)



B-6-36 Suburban Residential KAB CMF Graphs (AADT: > 40,000, AP: 20-30)



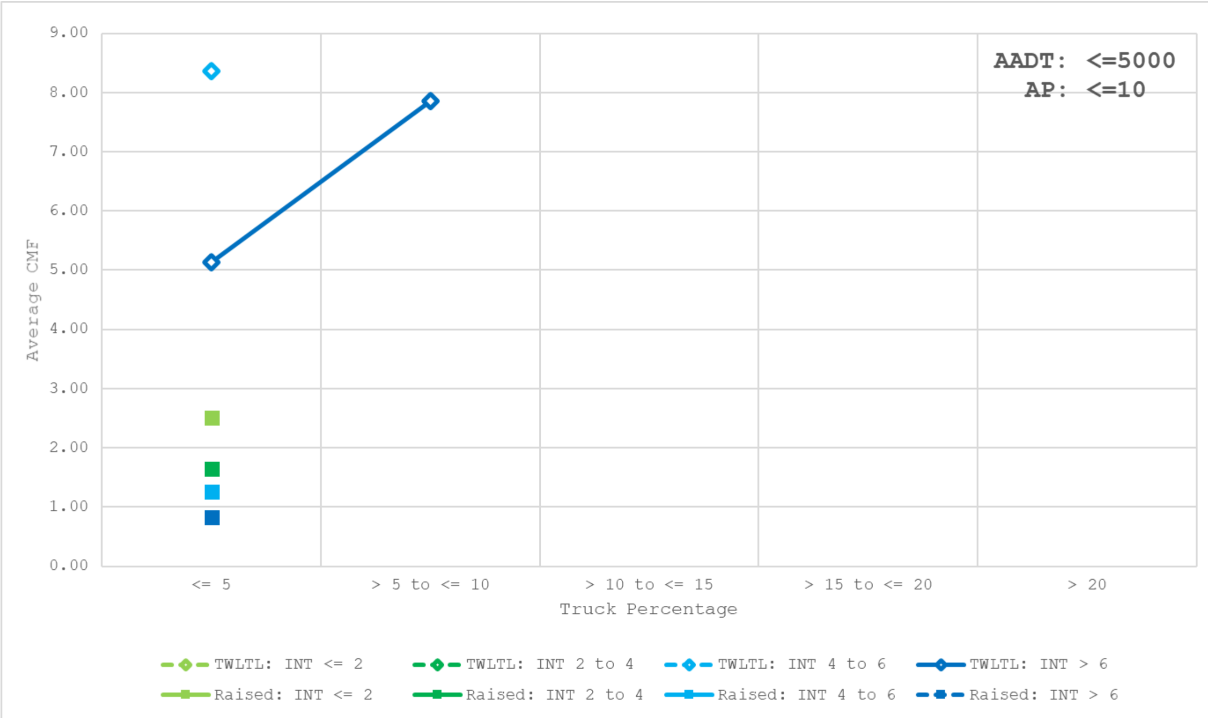
B-6-37 Suburban Residential KAB CMF Graphs (AADT: > 40,000, AP: > 30)



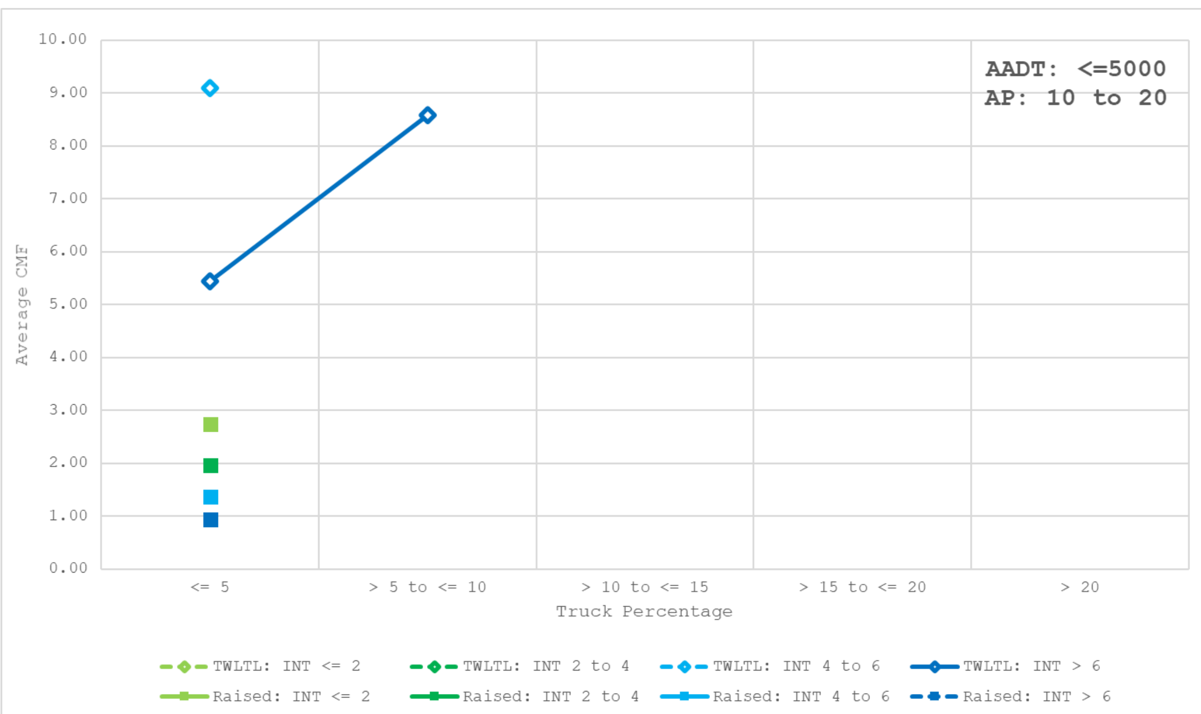
B-7-1 Urban Mixed-Use KAB CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Rasied : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6
0 to 5000	<= 5	#N/A	#N/A	8.35	5.14	2.51	1.64	1.26	0.82	#N/A	#N/A	9.09	5.44	2.74	1.96	1.36	0.93	#N/A	#N/A	9.66	5.39	3.17	2.22	1.53	1.03	#N/A	#N/A	#N/A	6.04	3.68	2.43	1.71	1.21
	> 5 to <= 10	#N/A	#N/A	#N/A	7.8598	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.5709	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.112	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.7665	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	7.13	4.16	2.44	1.44	1.78	1.23	0.86	0.60	7.62	4.48	2.63	1.53	2.01	1.39	0.97	0.67	8.20	4.79	2.83	1.67	2.27	1.57	1.10	0.77	8.74	5.17	3.04	1.78	2.54	1.78	1.23	0.86
	> 5 to <= 10	#N/A	#N/A	6.10	3.57	#N/A	#N/A	7.50	5.20	#N/A	#N/A	6.54	3.83	#N/A	#N/A	8.40	5.80	#N/A	#N/A	6.99	4.10	#N/A	#N/A	9.42	6.55	#N/A	#N/A	7.51	4.42	#N/A	#N/A	#N/A	7.43
	> 10 to <= 15	#N/A	#N/A	#N/A	8.91	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.52	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
10000 to 15000	<= 5	5.07	2.99	1.75	1.03	1.78	1.24	0.86	0.60	5.44	3.21	1.88	1.10	2.00	1.40	0.97	0.68	5.84	3.45	2.01	1.18	2.26	1.58	1.09	0.76	6.28	3.66	2.16	1.27	2.55	1.76	1.23	0.86
	> 5 to <= 10	#N/A	8.13	4.77	2.80	6.28	4.41	3.06	2.14	#N/A	8.71	5.13	3.01	7.13	4.98	3.45	2.41	#N/A	9.38	5.52	3.23	8.02	5.60	3.90	2.70	#N/A	#N/A	5.91	3.47	9.05	6.29	4.39	3.04
	> 10 to <= 15	#N/A	#N/A	#N/A	7.65	#N/A	#N/A	#N/A	7.88	#N/A	#N/A	#N/A	8.23	#N/A	#N/A	#N/A	8.87	#N/A	#N/A	#N/A	8.78	#N/A	#N/A	#N/A	9.92	#N/A	#N/A	#N/A	9.42	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
15000 to 20000	<= 5	4.11	2.41	1.41	0.83	1.84	1.28	0.89	0.62	4.37	2.56	1.50	0.89	2.06	1.43	1.00	0.70	4.72	2.76	1.63	0.95	2.33	1.62	1.13	0.78	5.05	2.96	1.75	1.02	2.62	1.82	1.27	0.88
	> 5 to <= 10	#N/A	6.95	4.07	2.38	3.70	2.58	1.80	1.24	#N/A	7.45	4.41	2.58	4.19	2.91	2.03	1.41	#N/A	7.98	4.72	2.78	4.72	3.28	2.29	1.60	#N/A	8.56	5.04	2.96	5.32	3.69	2.57	1.79
	> 10 to <= 15	#N/A	#N/A	#N/A	6.96	7.62	5.35	3.73	2.58	#N/A	#N/A	#N/A	7.47	8.62	5.97	4.18	2.92	#N/A	#N/A	#N/A	7.98	9.79	6.73	4.75	3.28	#N/A	#N/A	#N/A	8.58	#N/A	7.64	5.32	3.69
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.84	5.45	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.75	6.11	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	9.96	6.92	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.79
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
20000 to 25000	<= 5	3.49	2.04	1.20	0.70	1.91	1.32	0.92	0.64	3.75	2.19	1.29	0.76	2.15	1.49	1.04	0.72	4.02	2.35	1.38	0.81	2.42	1.68	1.17	0.81	4.29	2.54	1.49	0.87	2.72	1.90	1.32	0.92
	> 5 to <= 10	#N/A	6.22	3.64	2.14	2.56	1.78	1.23	0.86	#N/A	6.67	3.92	2.31	2.88	2.00	1.39	0.97	#N/A	7.12	4.20	2.47	3.23	2.25	1.57	1.09	#N/A	7.69	4.50	2.65	3.65	2.55	1.77	1.23
	> 10 to <= 15	#N/A	#N/A	#N/A	6.48	3.46	2.40	1.68	1.16	#N/A	#N/A	#N/A	6.92	3.89	2.71	1.89	1.31	#N/A	#N/A	#N/A	7.46	4.40	3.07	2.13	1.48	#N/A	#N/A	#N/A	7.98	4.94	3.46	2.39	1.66
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	4.73	3.31	2.29	1.59	#N/A	#N/A	#N/A	#N/A	5.36	3.71	2.58	1.80	#N/A	#N/A	#N/A	#N/A	6.00	4.19	2.91	2.02	#N/A	#N/A	#N/A	#N/A	6.80	4.72	3.28	2.27
	> 20	#N/A	#N/A	#N/A	#N/A	6.56	4.54	3.18	2.21	#N/A	#N/A	#N/A	#N/A	7.40	5.14	3.58	2.48	#N/A	#N/A	#N/A	#N/A	8.31	5.81	4.02	2.81	#N/A	#N/A	#N/A	#N/A	9.35	6.48	4.55	3.16
25000 to 30000	<= 5	3.06	1.79	1.06	0.62	1.98	1.38	0.96	0.67	3.29	1.94	1.13	0.67	2.23	1.56	1.08	0.75	3.55	2.07	1.22	0.71	2.52	1.75	1.21	0.85	3.81	2.24	1.31	0.77	2.84	1.97	1.38	0.95
	> 5 to <= 10	9.70	5.65	3.32	1.96	1.91	1.33	0.93	0.64	#N/A	6.07	3.55	2.10	2.16	1.50	1.04	0.73	#N/A	6.51	3.82	2.24	2.43	1.69	1.17	0.82	#N/A	6.99	4.09	2.43	2.74	1.91	1.32	0.92
	> 10 to <= 15	#N/A	#N/A	#N/A	6.09	1.86	1.29	0.90	0.62	#N/A	#N/A	#N/A	6.56	2.09	1.46	1.02	0.71	#N/A	#N/A	#N/A	7.05	2.36	1.64	1.14	0.79	#N/A	#N/A	#N/A	7.56	2.65	1.85	1.29	0.90
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	1.81	1.27	0.88	0.61	#N/A	#N/A	#N/A	#N/A	2.05	1.42	0.99	0.69	#N/A	#N/A	#N/A	#N/A	2.30	1.61	1.12	0.78	#N/A	#N/A	#N/A	#N/A	2.60	1.80	1.26	0.87
	> 20	#N/A	#N/A	#N/A	#N/A	1.79	1.25	0.87	0.61	#N/A	#N/A	#N/A	#N/A	2.02	1.40	0.97	0.68	#N/A	#N/A	#N/A	#N/A	2.28	1.58	1.10	0.76	#N/A	#N/A	#N/A	#N/A	2.56	1.79	1.24	0.86
30000 to 35000	<= 5	2.75	1.63	0.95	0.56	2.07	1.44	1.00	0.69	2.96	1.74	1.03	0.60	2.33	1.62	1.13	0.78	3.17	1.87	1.10	0.64	2.62	1.82	1.27	0.88	3.42	2.01	1.18	0.69	2.96	2.06	1.43	1.00
	> 5 to <= 10	8.95	5.22	3.07	1.82	1.51	1.06	0.73	0.51	9.56	5.65	3.30	1.93	1.71	1.18	0.83	0.58	#N/A	6.04	3.54	2.08	1.92	1.34	0.93	0.65	#N/A	6.45	3.80	2.24	2.17	1.51	1.05	0.73
	> 10 to <= 15	#N/A	#N/A	9.91	5.84	1.12	0.78	0.54	0.38	#N/A	#N/A	#N/A	6.27	1.26	0.88	0.61	0.42	#N/A	#N/A	#N/A	6.72	1.42	0.99	0.69	0.48	#N/A	#N/A	#N/A	7.25	1.60	1.12	0.77	0.54
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	0.83	0.58	0.40	0.28	#N/A	#N/A	#N/A	#N/A	0.94	0.65	0.45	0.31	#N/A	#N/A	#N/A	#N/A	1.05	0.74	0.51	0.35	#N/A	#N/A	#N/A	#N/A	1.19	0.83	0.57	0.40
	> 20	#N/A	#N/A	#N/A	#N/A	0.62	0.43	0.30	0.21	#N/A	#N/A	#N/A	#N/A	0.70	0.48	0.34	0.23	#N/A	#N/A	#N/A	#N/A	0.78	0.54	0.38	0.26	#N/A	#N/A	#N/A	#N/A	0.88	0.62	0.43	0.30
35000 to 40000	<= 5	2.53	1.48	0.87	0.51	2.14	1.50	1.04	0.72	2.70	1.58	0.93	0.55	2.42	1.69	1.17	0.81	2.89	1.71	1.00	0.59	2.73	1.90	1.32	0.92	3.12	1.83	1.08	0.63	3.08	2.15	1.49	1.04
	> 5 to <= 10	8.31	4.94	2.87	1.70	1.25	0.87	0.61	0.42	9.00	5.21	3.07	1.82	1.41	0.98	0.68	0.47	9.68	5.66	3.31	1.95	1.59	1.10	0.77	0.53	#N/A	6.05	3.56	2.11	1.79	1.24	0.86	0.60
	> 10 to <= 15	#N/A	#N/A	9.55	5.63	0.73	0.51	0.35	0.24	#N/A	#N/A	#N/A	5.99	0.82	0.57	0.40	0.28	#N/A	#N/A	#N/A	6.46	0.93	0.65	0.45	0.31	#N/A	#N/A	#N/A	6.91	1.04	0.73	0.50	0.35
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	0.43	0.30	0.21	0.14	#N/A	#N/A	#N/A	#N/A	0.48	0.34	0.23	0.16	#N/A	#N/A	#N/A	#N/A	0.54	0.38	0.26	0.18	#N/A	#N/A	#N/A	#N/A	0.61	0.42	0.29	0.20
	> 20	#N/A	#N/A	#N/A	#N/A	0.25	0.17	0.12	0.08	#N/A	#N/A	#N/A	#N/A	0.28	0.20	0.14	0.10	#N/A	#N/A	#N/A	#N/A	0.32	0.22	0.15	0.11	#N/A	#N/A	#N/A	#N/A	0.36	0.25	0.17	0.12
>40000	<= 5	2.33	1.37	0.81	0.47	2.23	1.56	1.08	0.75	2.51	1.46	0.86	0.51	2.52	1.76	1.22	0.85	2.71	1.58	0.92	0.54	2.83	1.97	1.38	0.96	2.88	1.71	0.99	0.59	3.20	2.22	1.55	1.08
	> 5 to <= 10	7.92	4.63	2.74	1.61	1.06	0.74	0.51	0.35	8.51	4.98	2.95	1.72	1.19	0.83	0.58	0.40	9.15	5.32	3.14	1.84	1.34	0.93	0.65	0.45	9.79	5.76	3.36	1.97	1.52	1.06	0.73	0.51
	> 10 to <= 15	#N/A	#N/A	9.24	5.37	0.50	0.35	0.24	0.17	#N/A	#N/A	9.89	5.76	0.57	0.39	0.27	0.19	#N/A	#N/A	#N/A	6.24	0.64	0.44	0.31	0.22	#N/A	#N/A	#N/A	6.70	0.72	0.50	0.35	0.24
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	0.24	0.17	0.12	0.08	#N/A	#N/A	#N/A	#N/A	0.27	0.19	0.13	0.09	#N/A	#N/A	#N/A	#N/A	0.31	0.21	0.15	0.10	#N/A	#N/A	#N/A	#N/A	0.34	0.24	0.17	0.12
	> 20	#N/A	#N/A	#N/A	#N/A	0.11	0.08	0.06	0.04	#N/A	#N/A	#N/A	#N/A	0.13	0.09	0.06	0.04	#N/A	#N/A	#N/A	#N/A	0.15	0.10	0.07	0.05	#N/A	#N/A	#N/A	#N/A	0.16	0.11	0.08	0.06

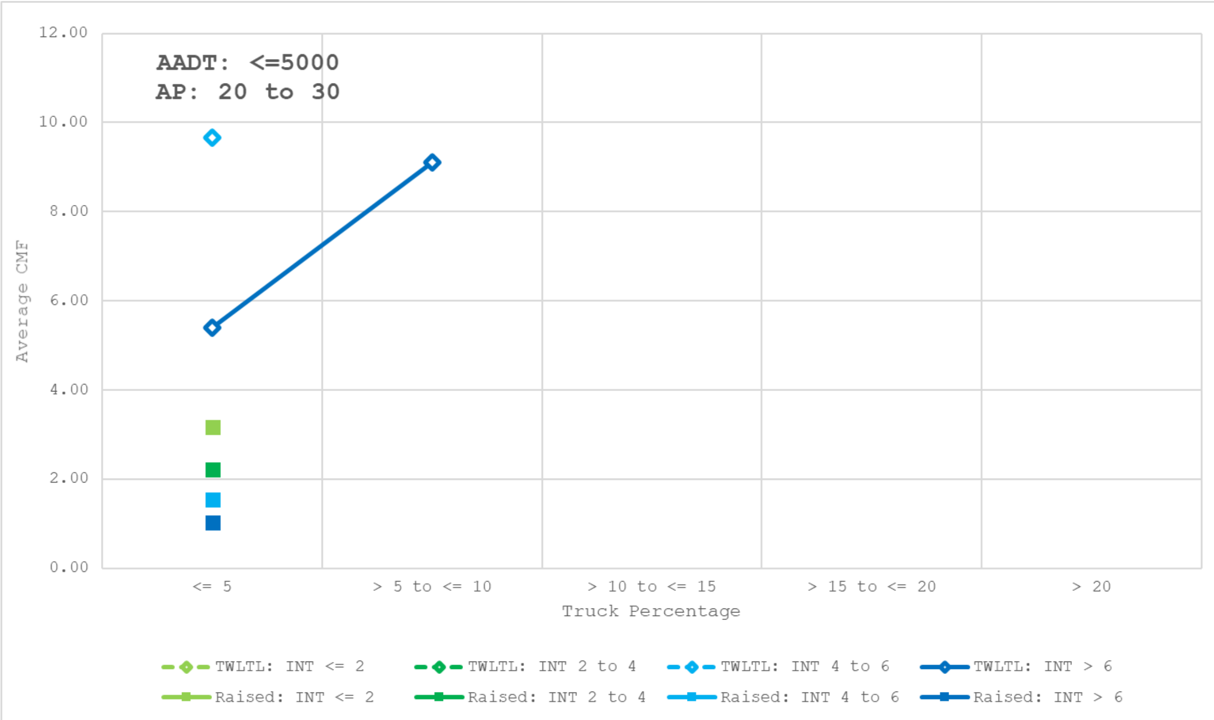
B-7-2 Urban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: <= 10)



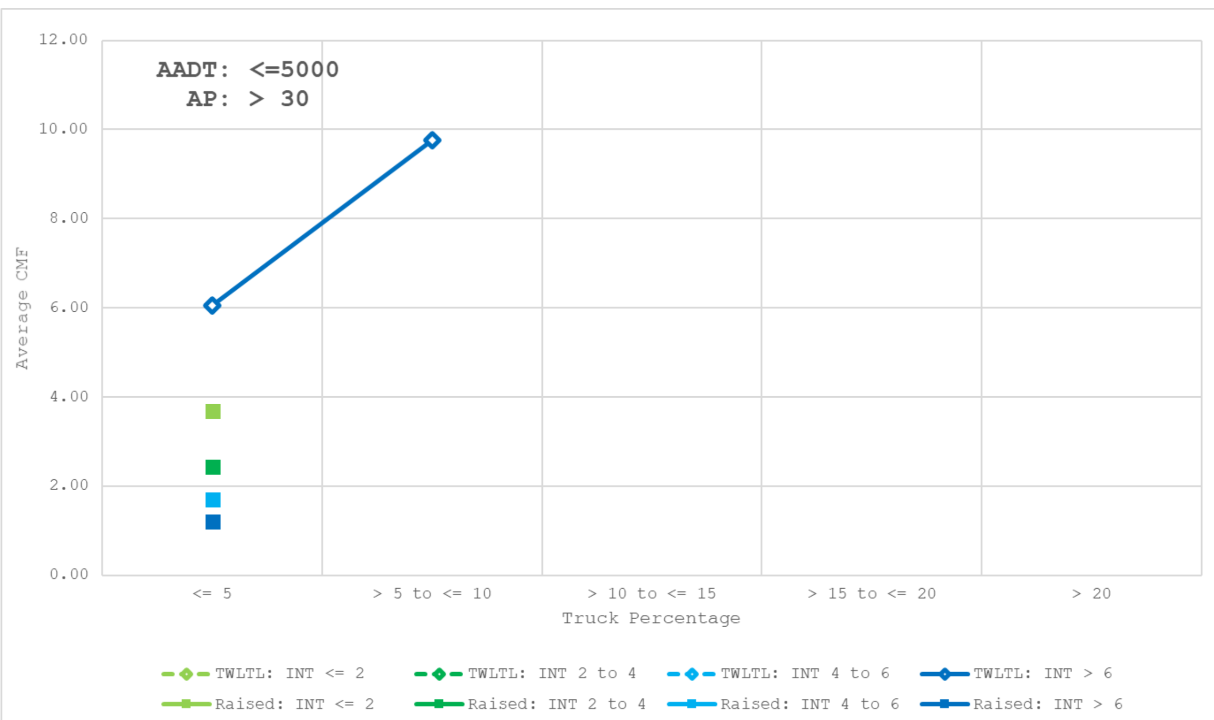
B-7-3 Urban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: 10-20)



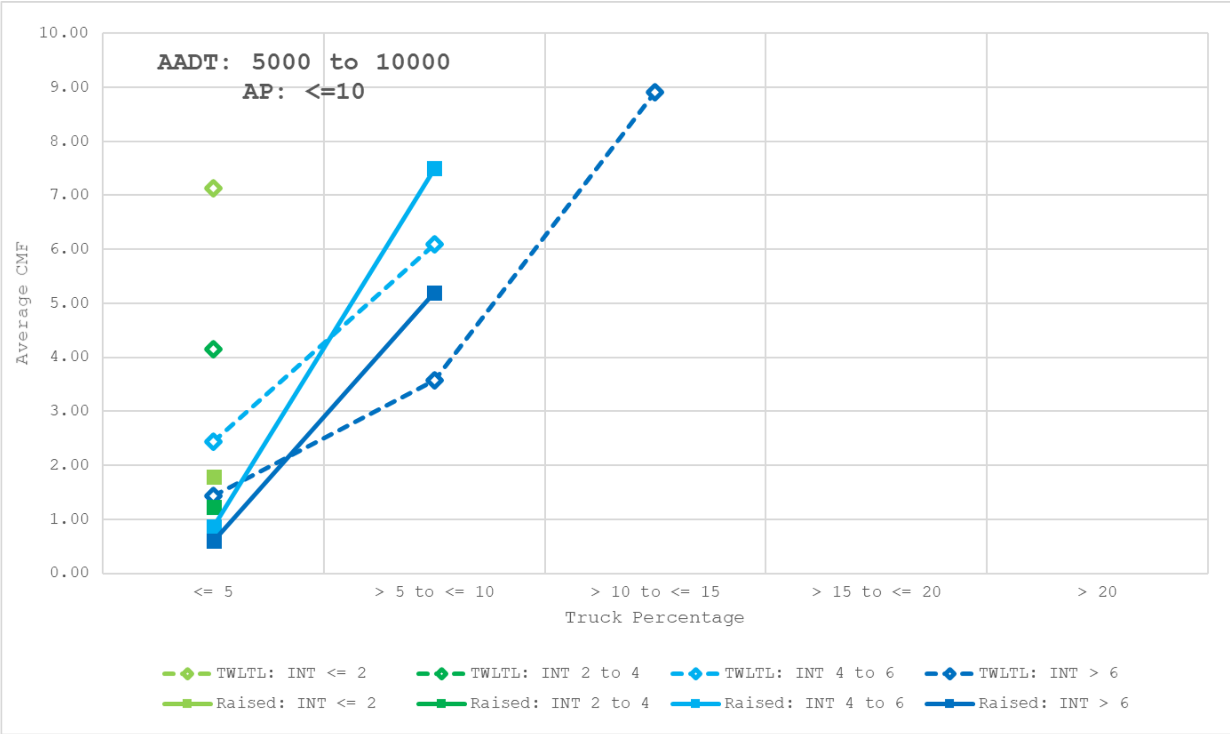
B-7-4 Urban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: 20-30)



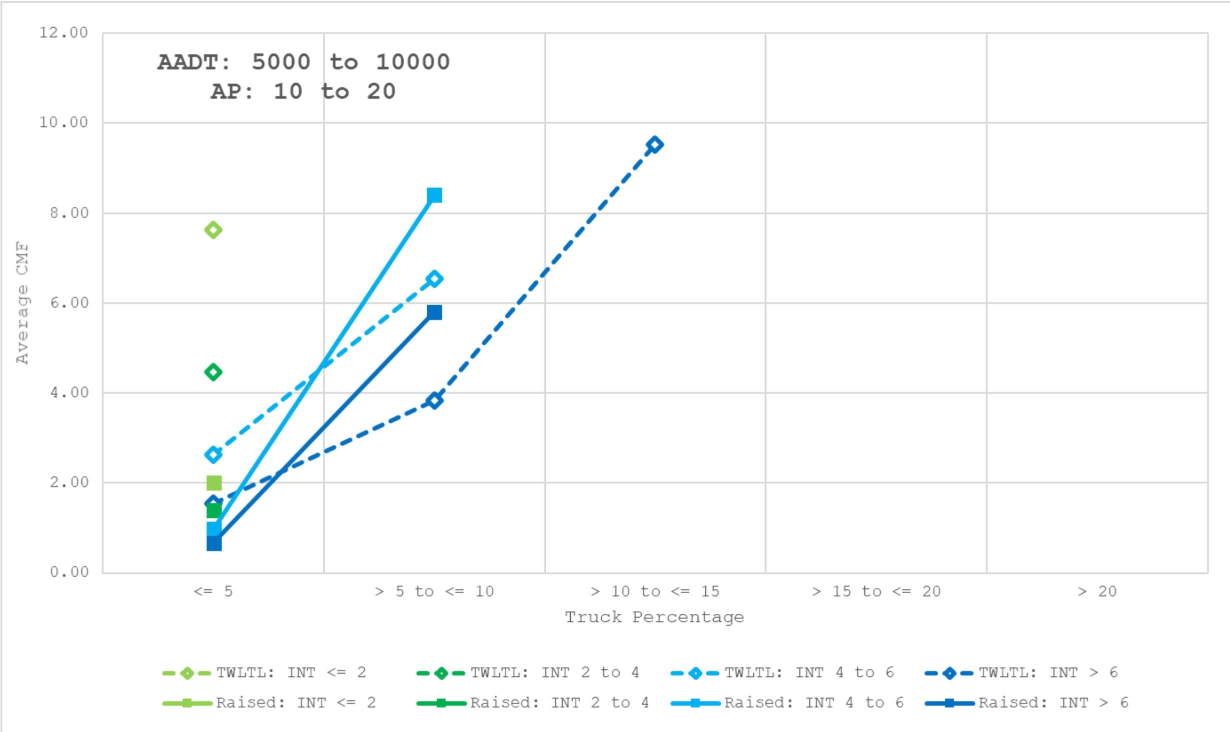
B-7-5 Urban Mixed-Use KAB CMF Graphs (AADT: <= 5,000, AP: > 30)



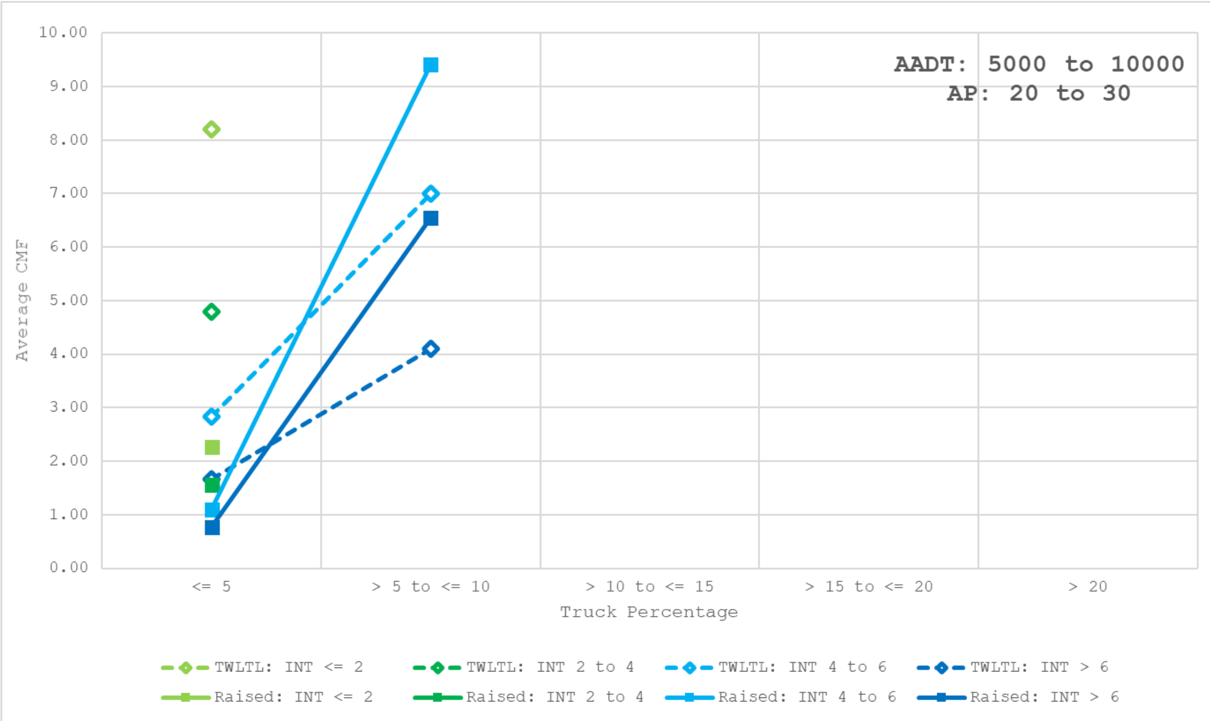
B-7-6 Urban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



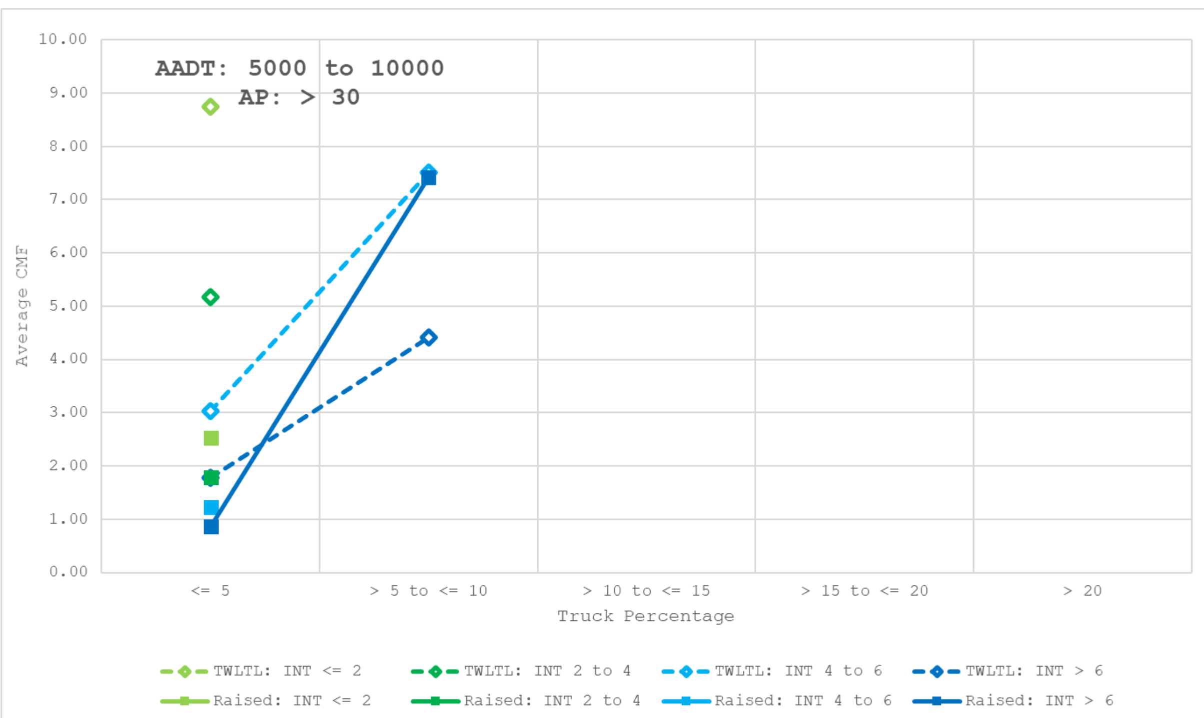
B-7-7 Urban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



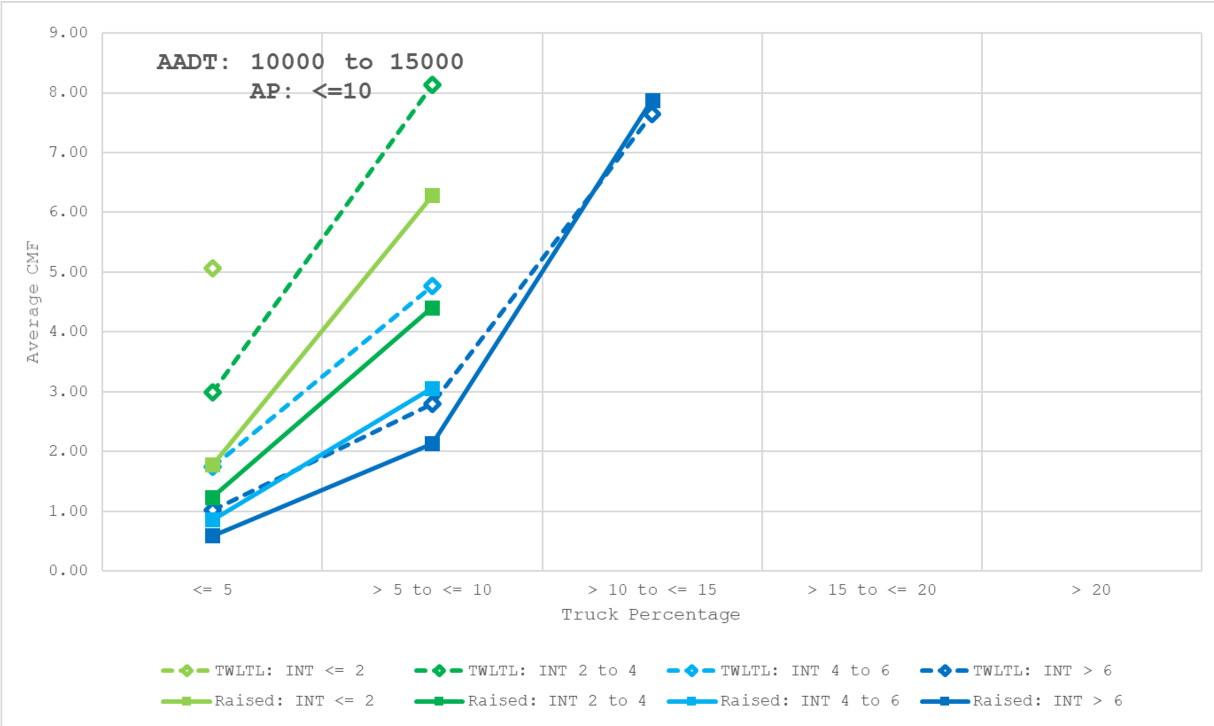
B-7-8 Urban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



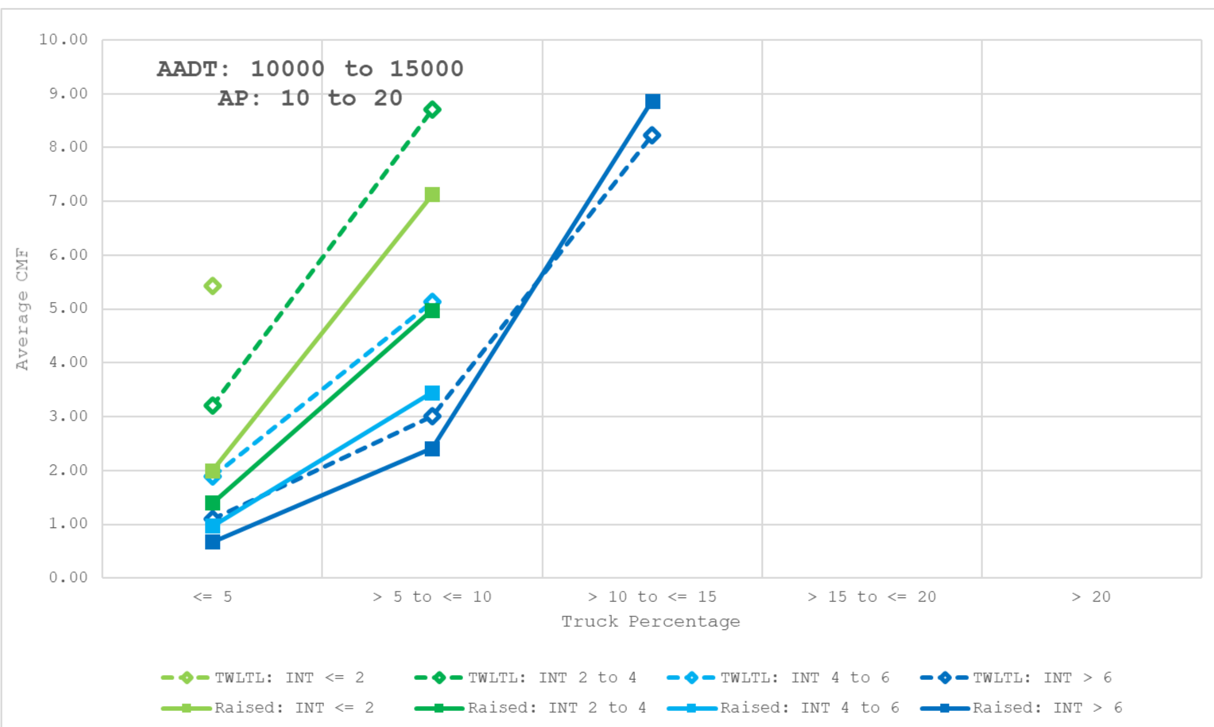
B-7-9 Urban Mixed-Use KAB CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



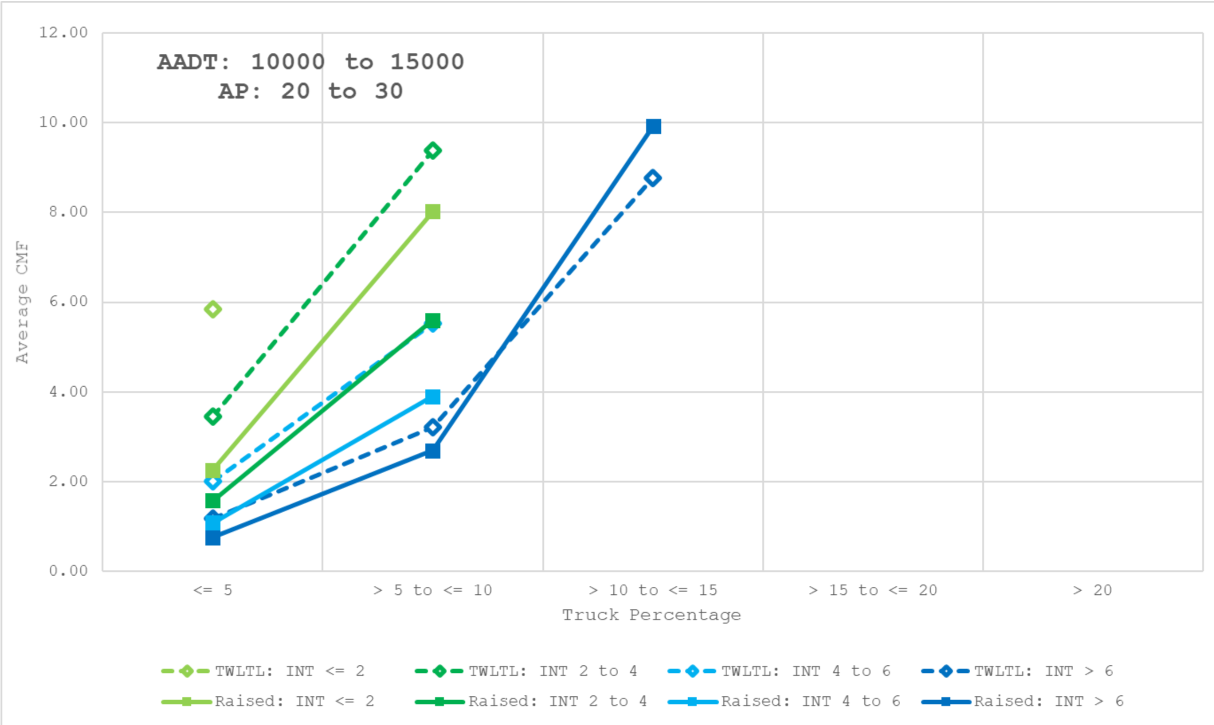
B-7-10 Urban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



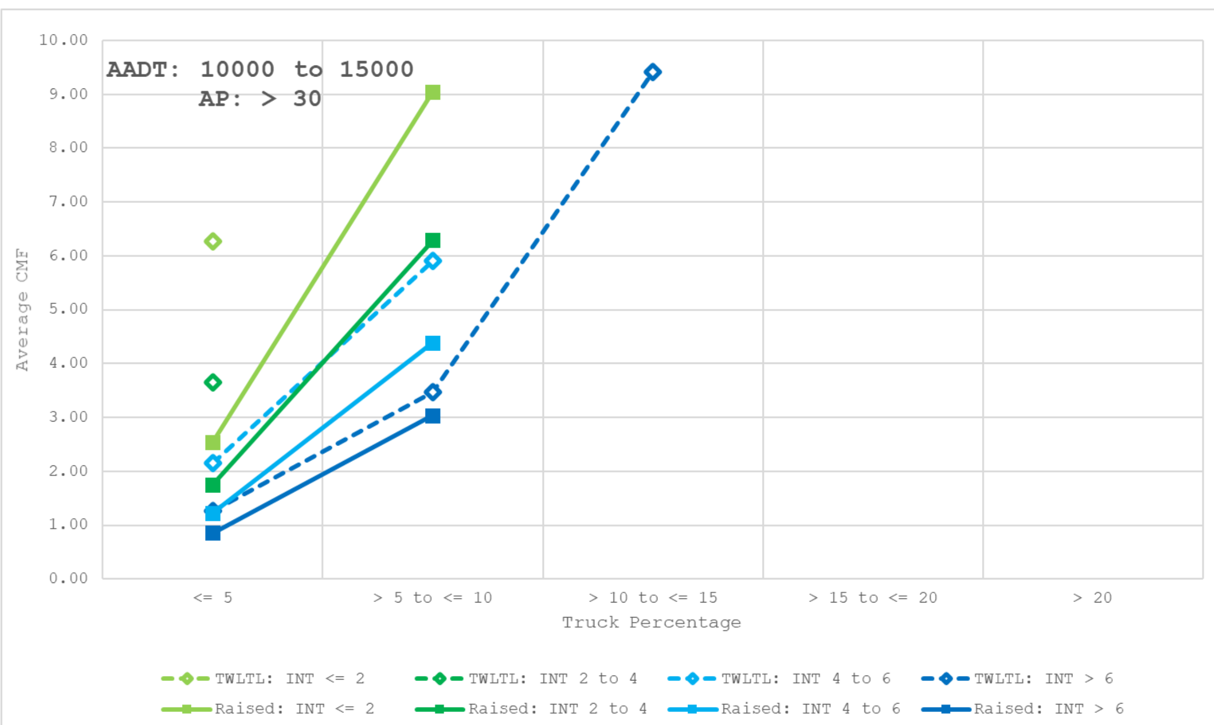
B-7-11 Urban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



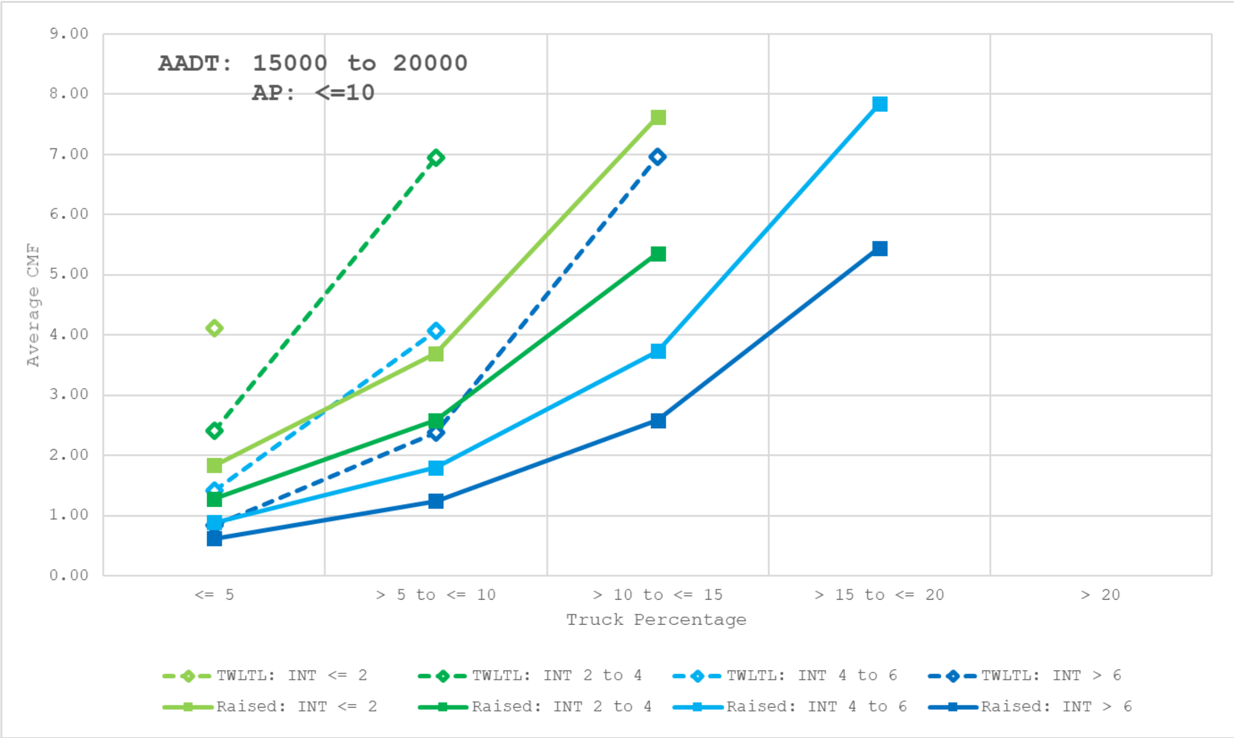
B-7-12 Urban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



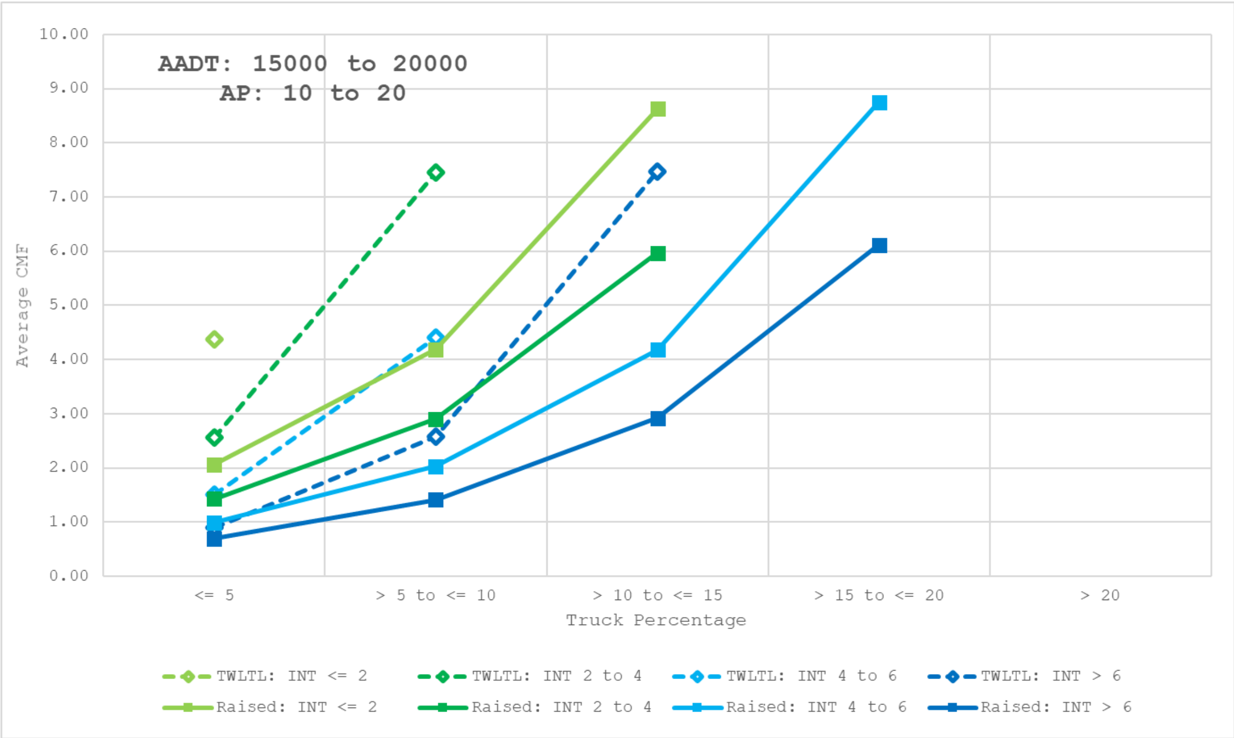
B-7-13 Urban Mixed-Use KAB CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



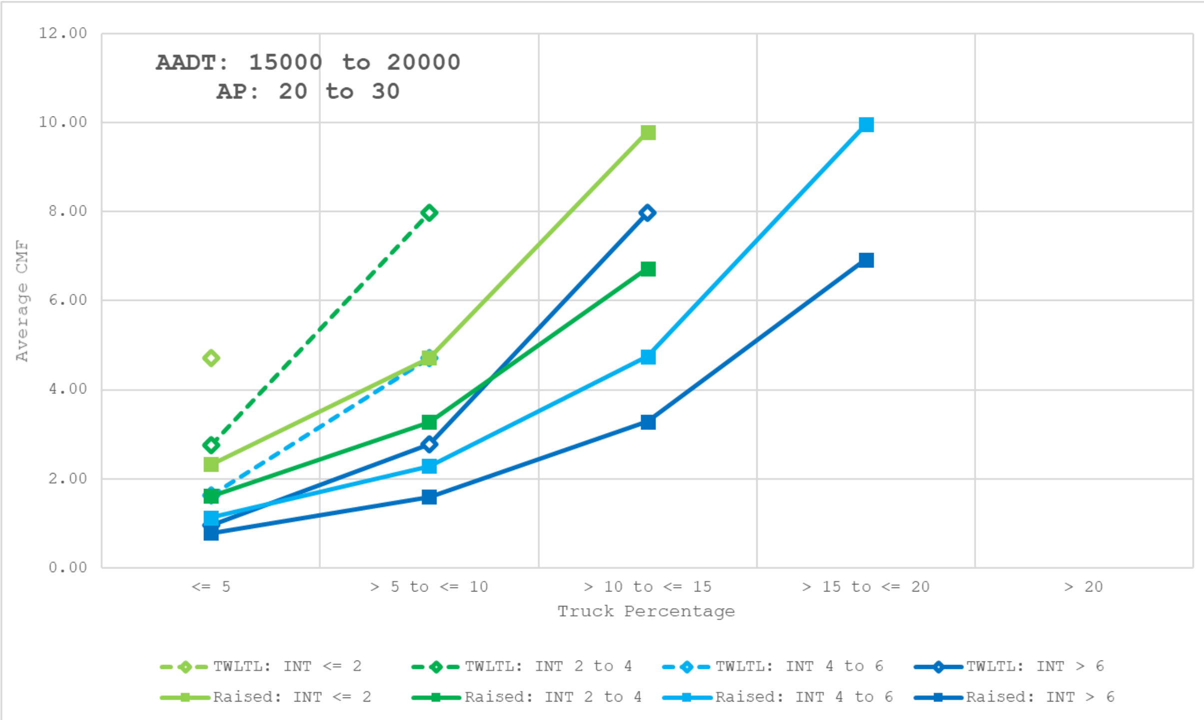
B-7-14 Urban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



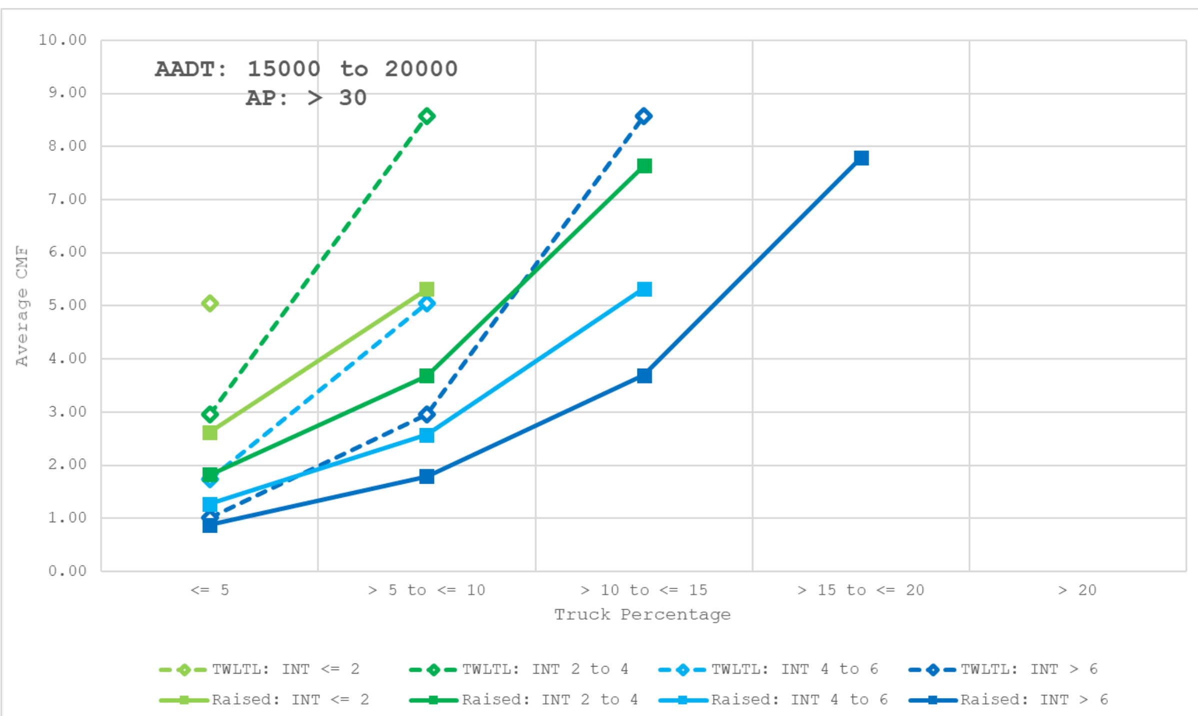
B-7-15 Urban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



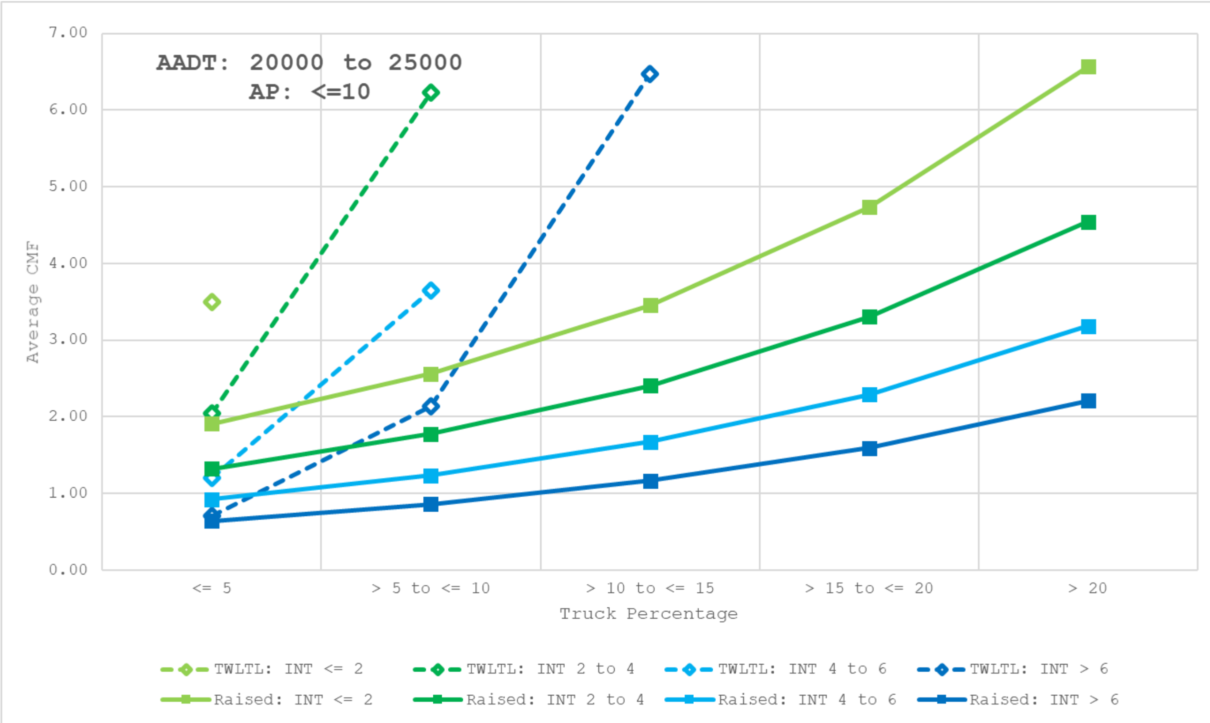
B-7-16 Urban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



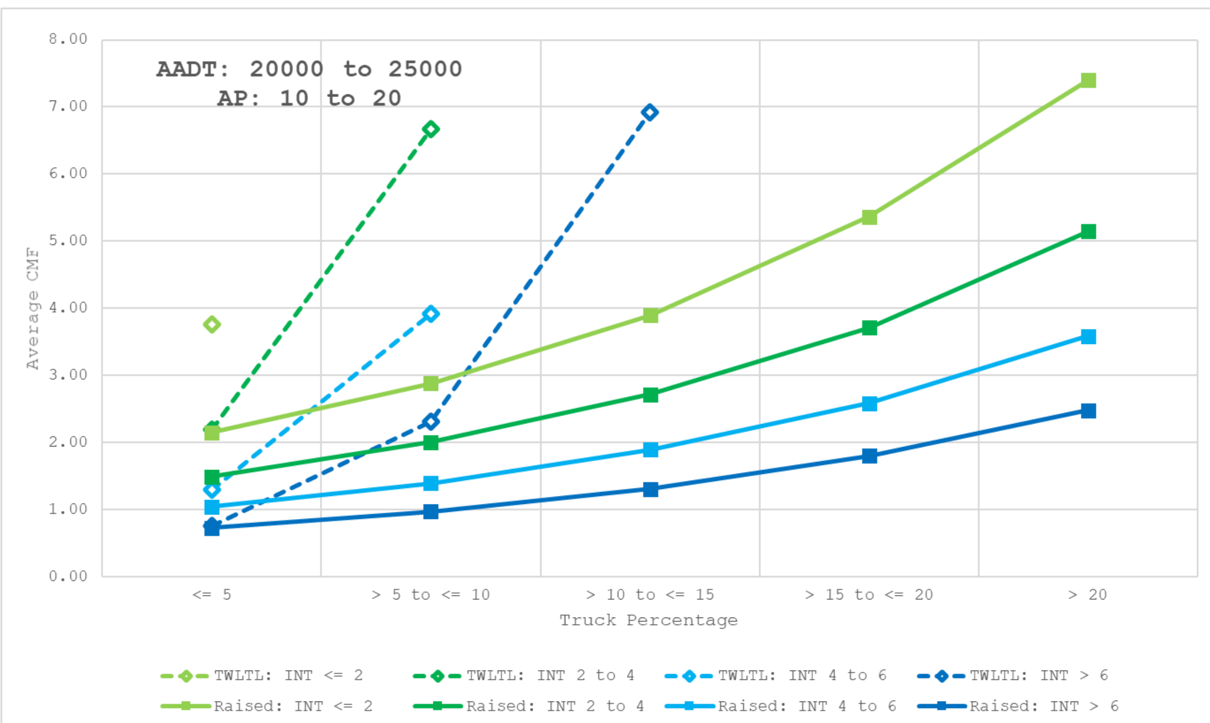
B-7-17 Urban Mixed-Use KAB CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



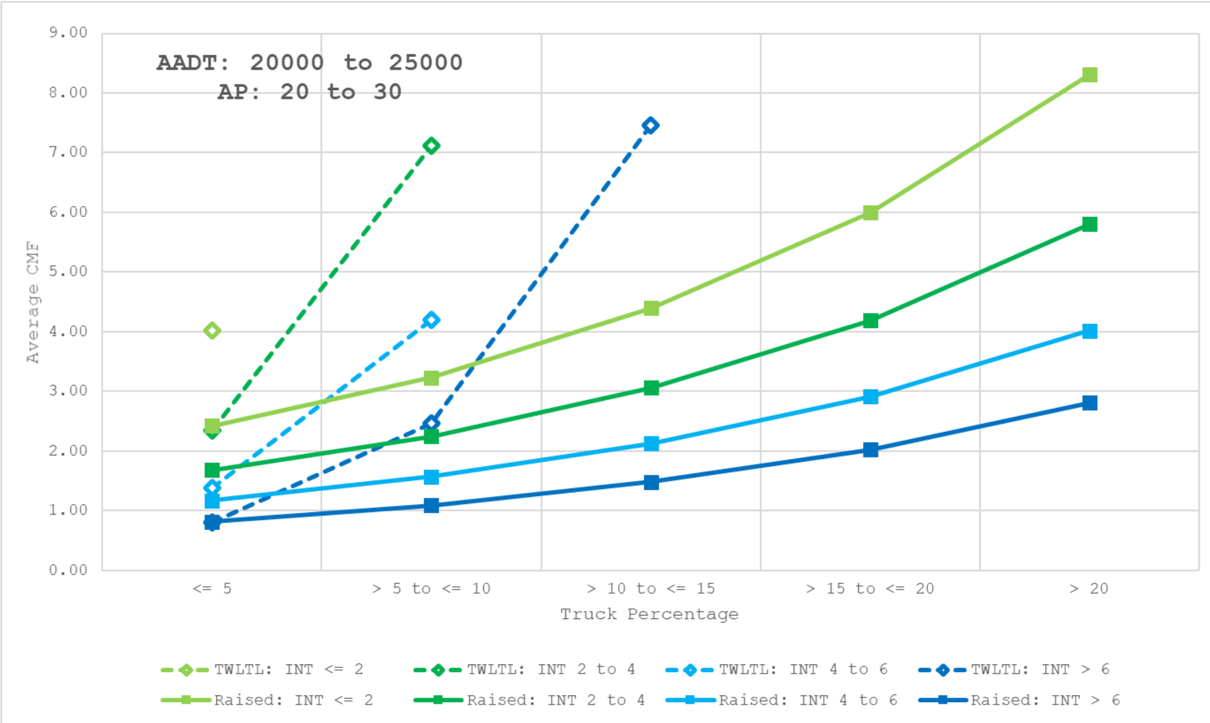
B-7-18 Urban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



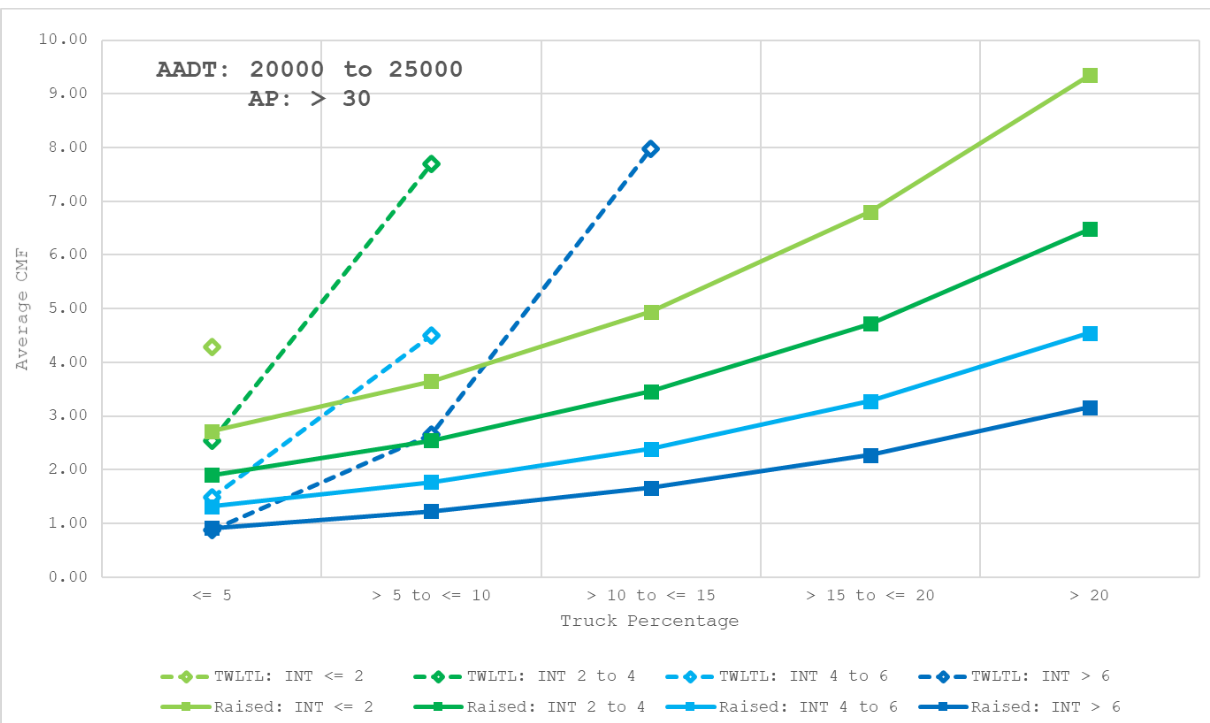
B-7-19 Urban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



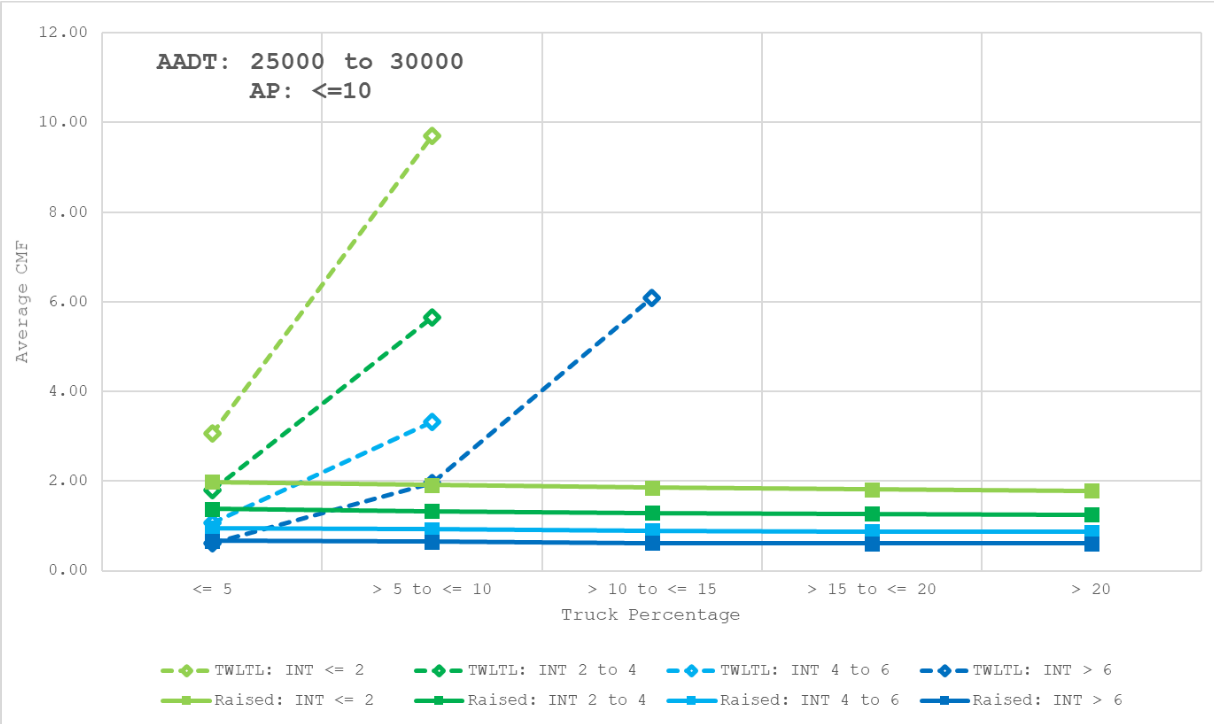
B-7-20 Urban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



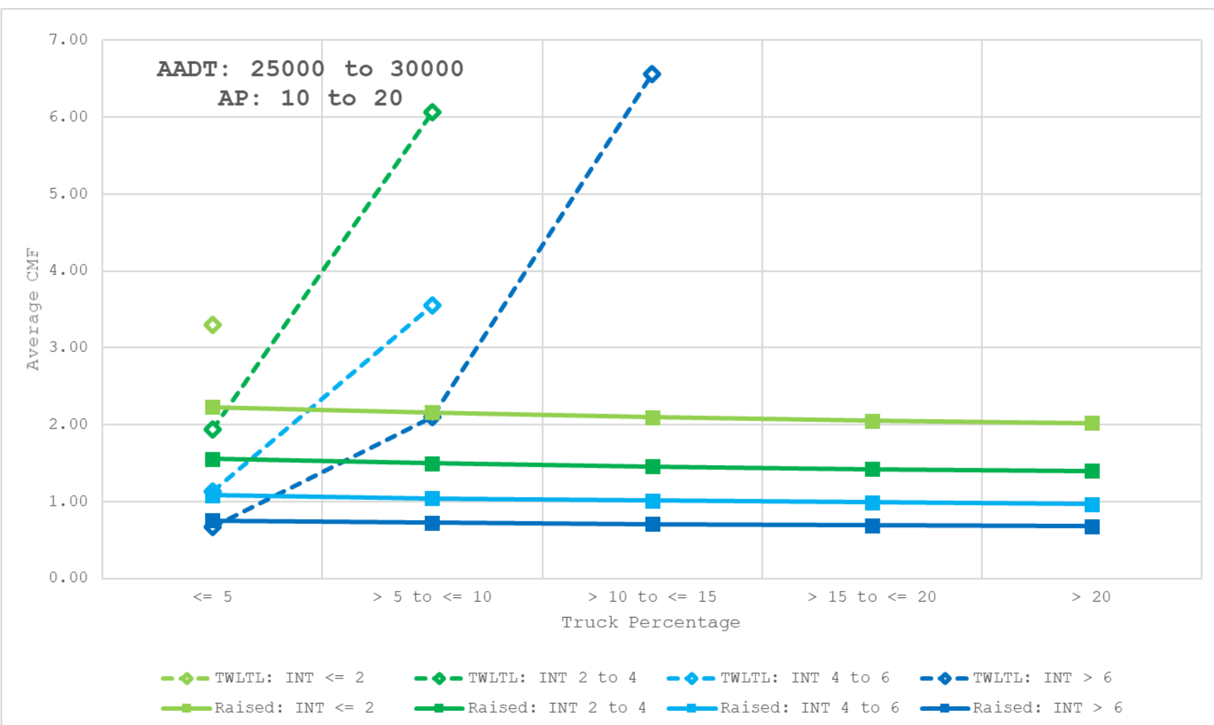
B-7-21 Urban Mixed-Use KAB CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



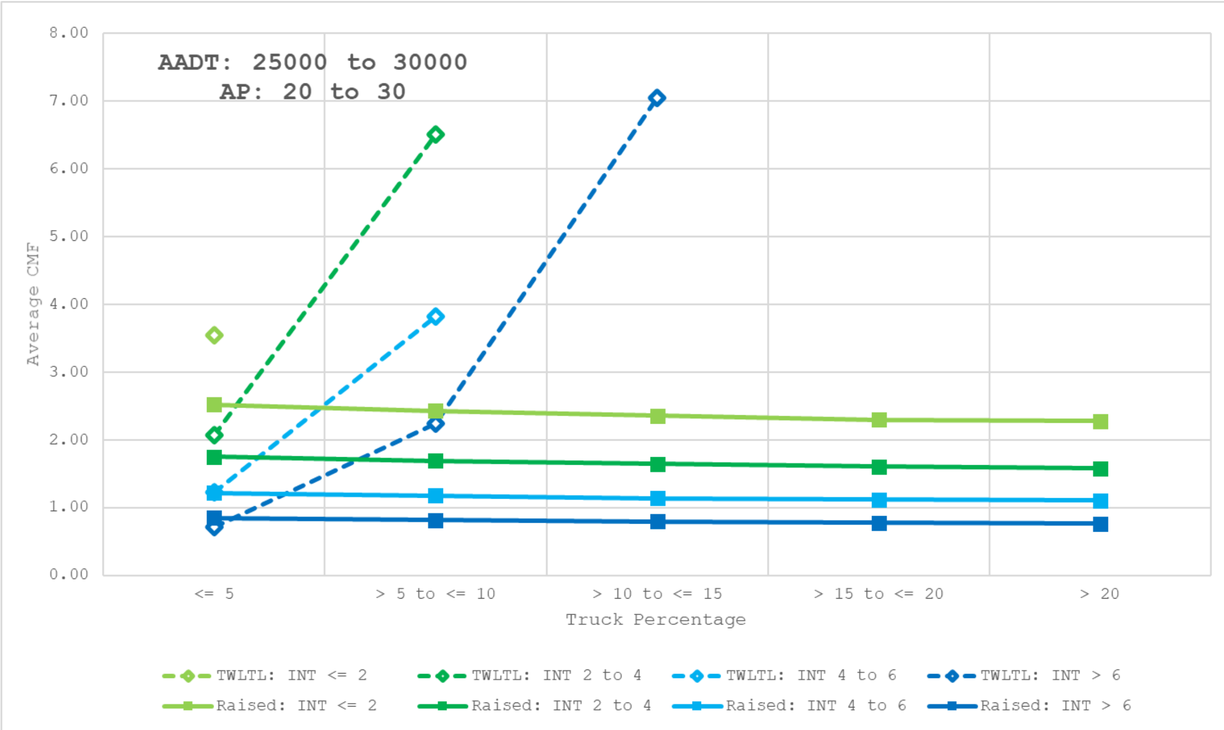
B-7-22 Urban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



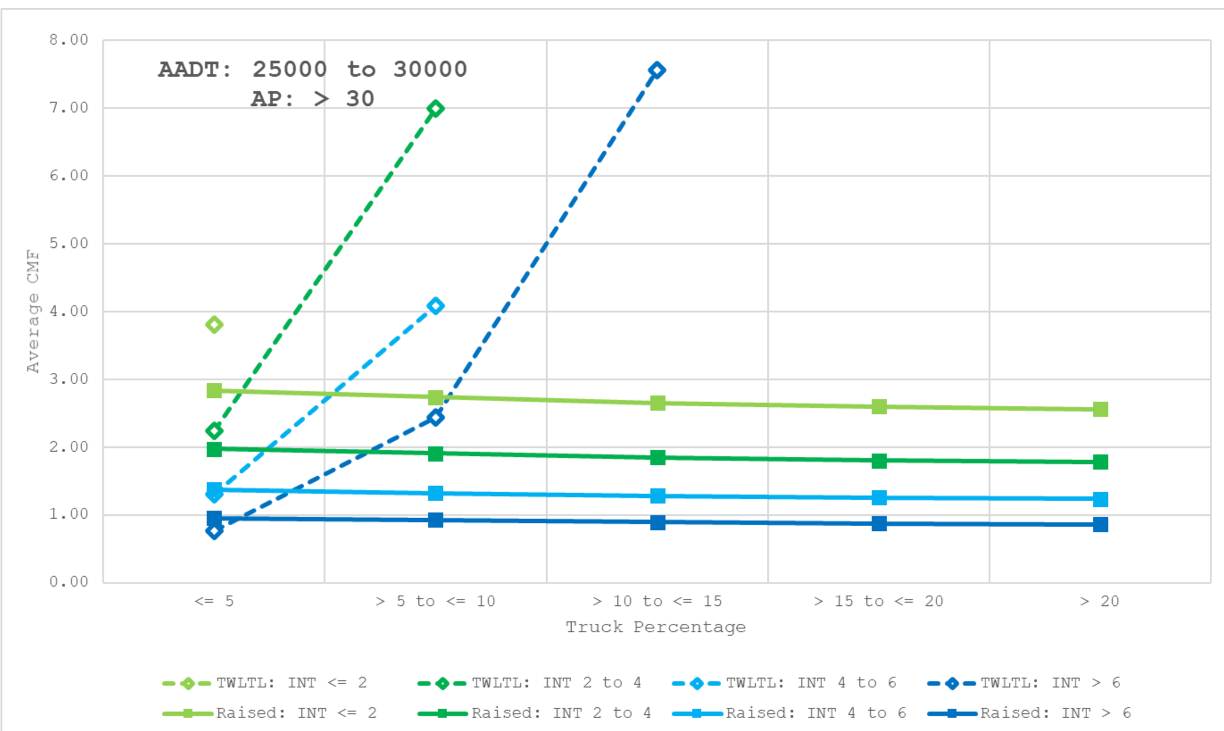
B-7-23 Urban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



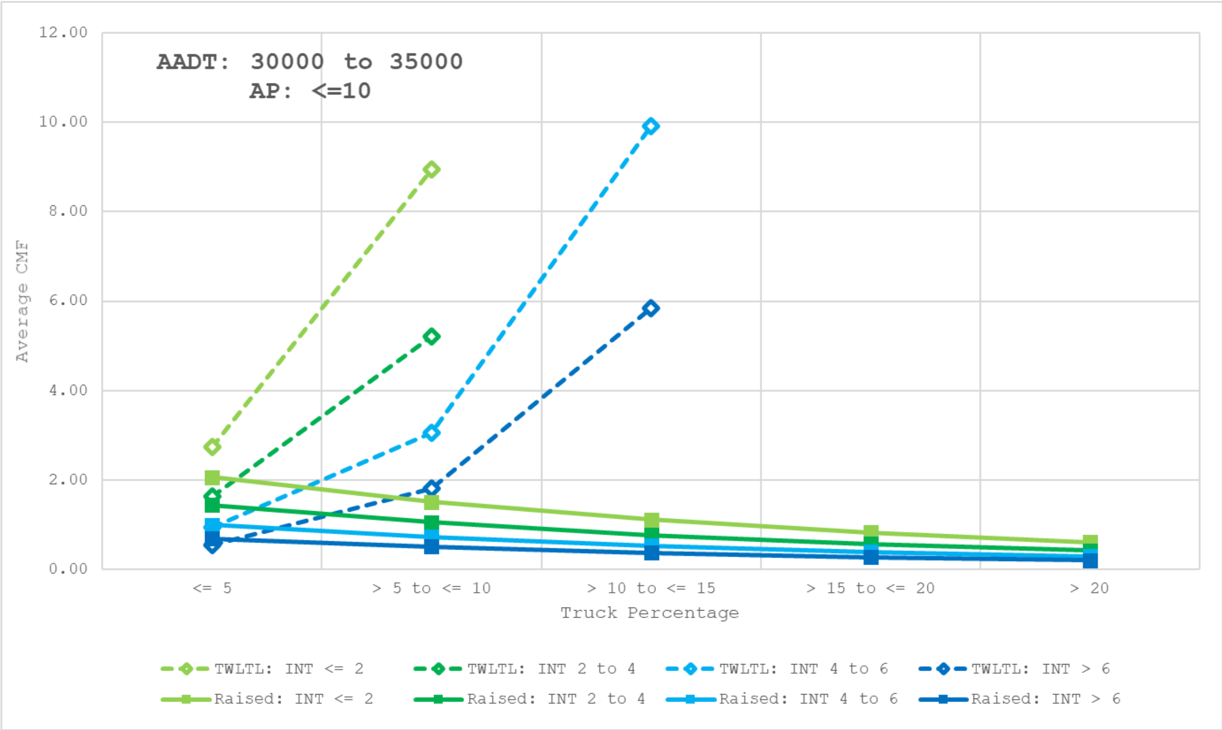
B-7-24 Urban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



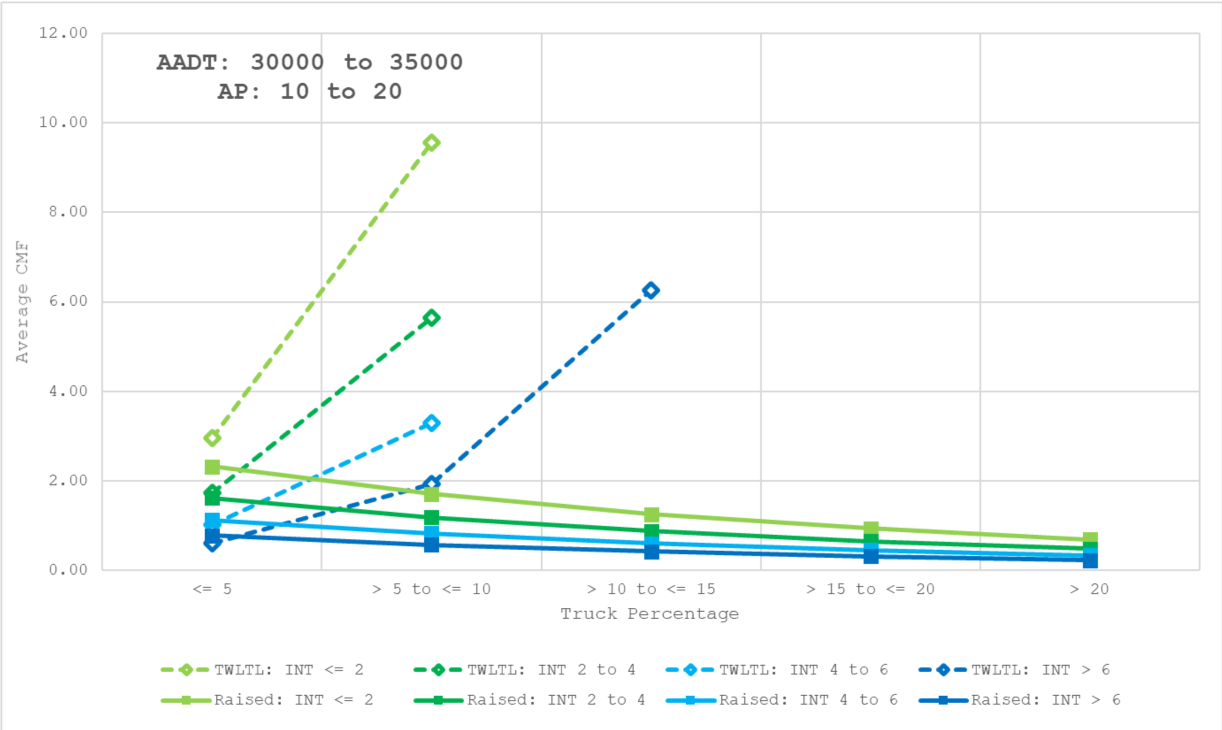
B-7-25 Urban Mixed-Use KAB CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



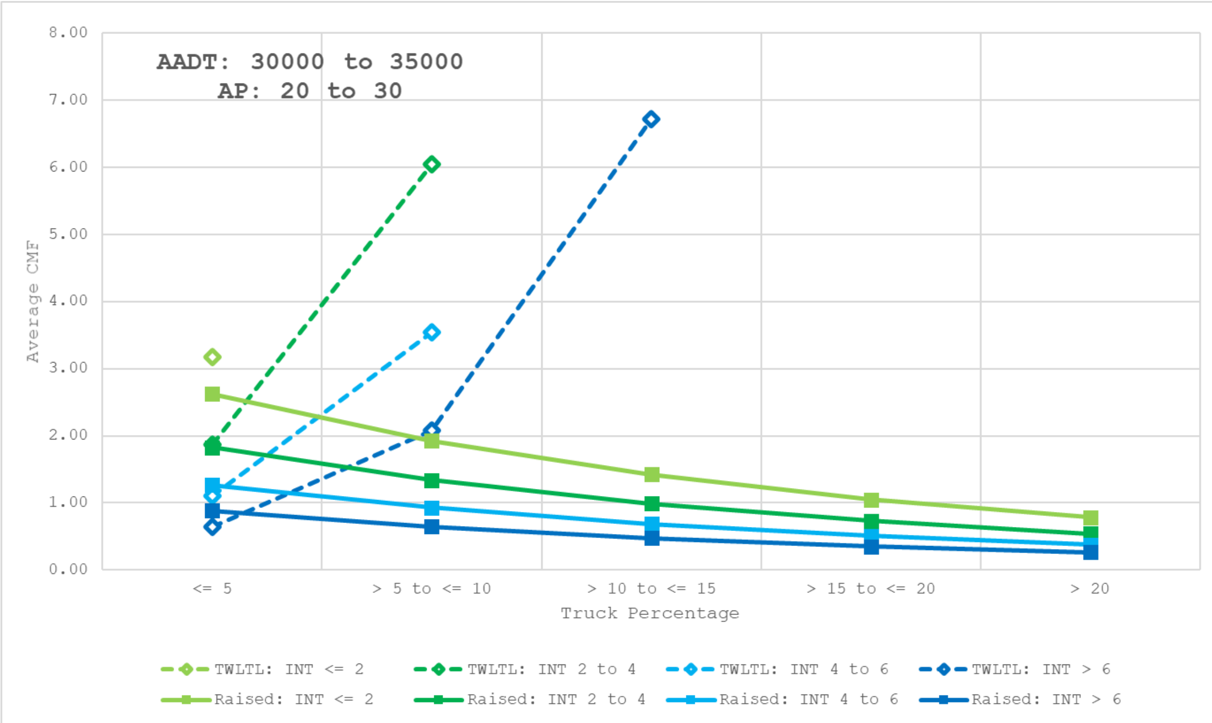
B-7-26 Urban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



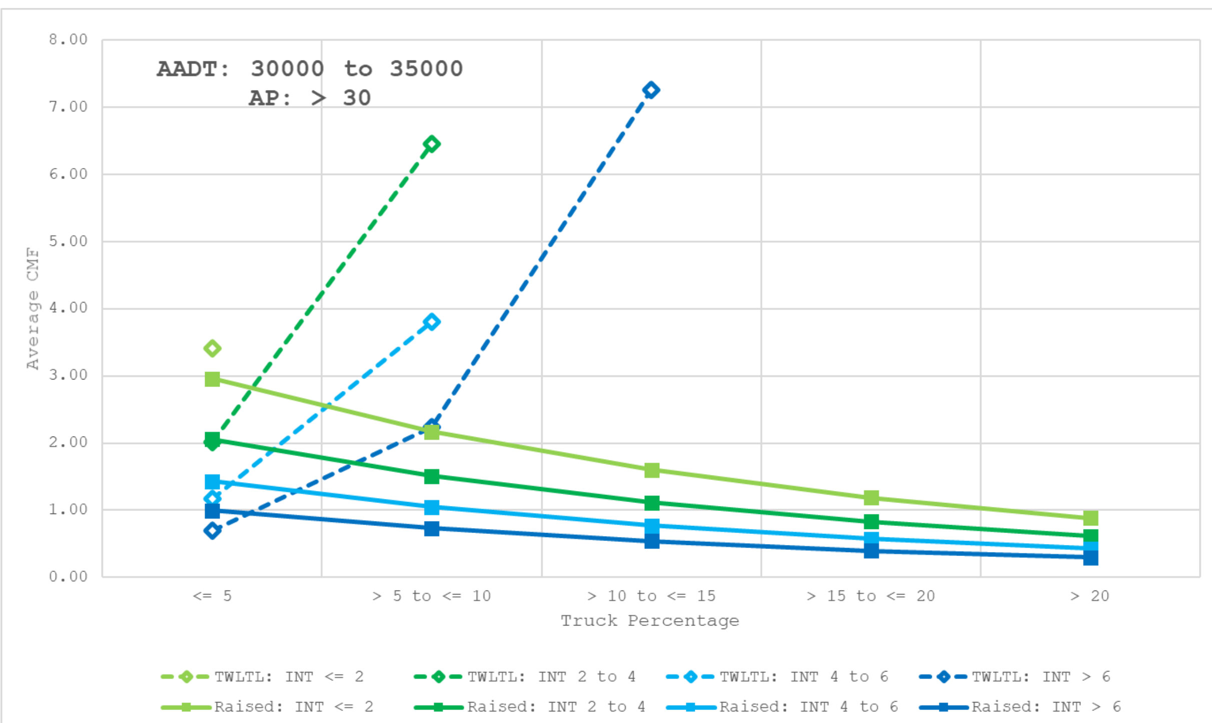
B-7-27 Urban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



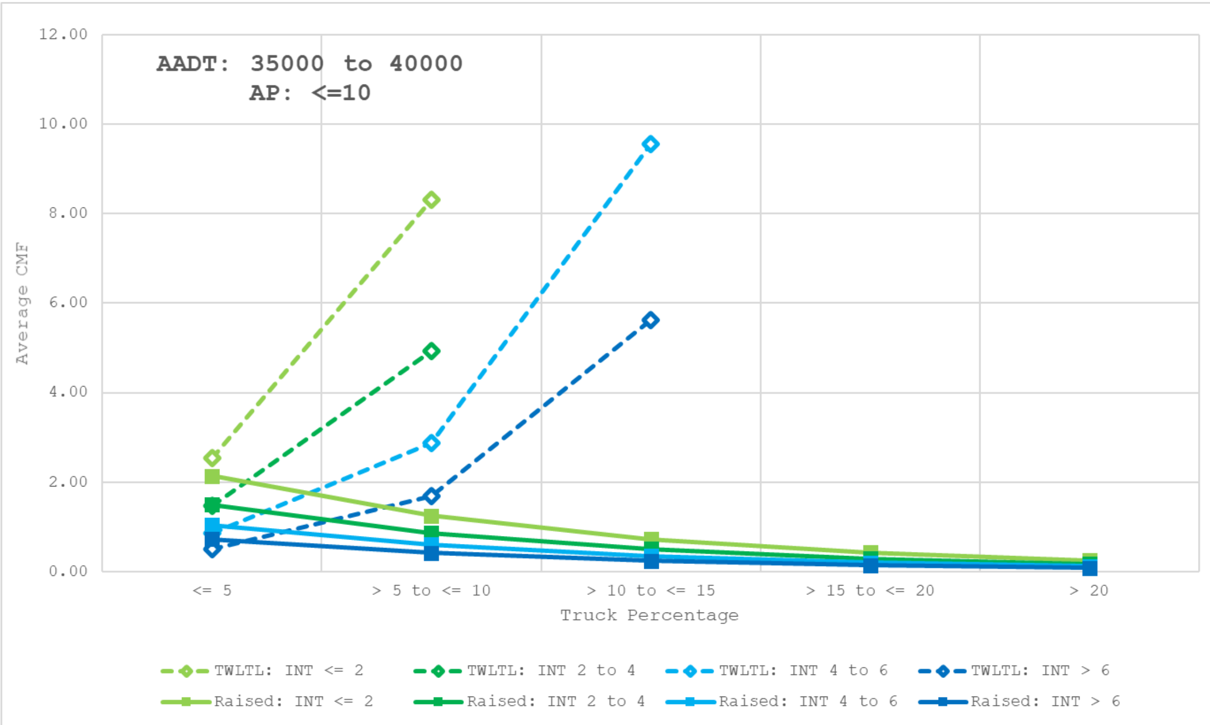
B-7-28 Urban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



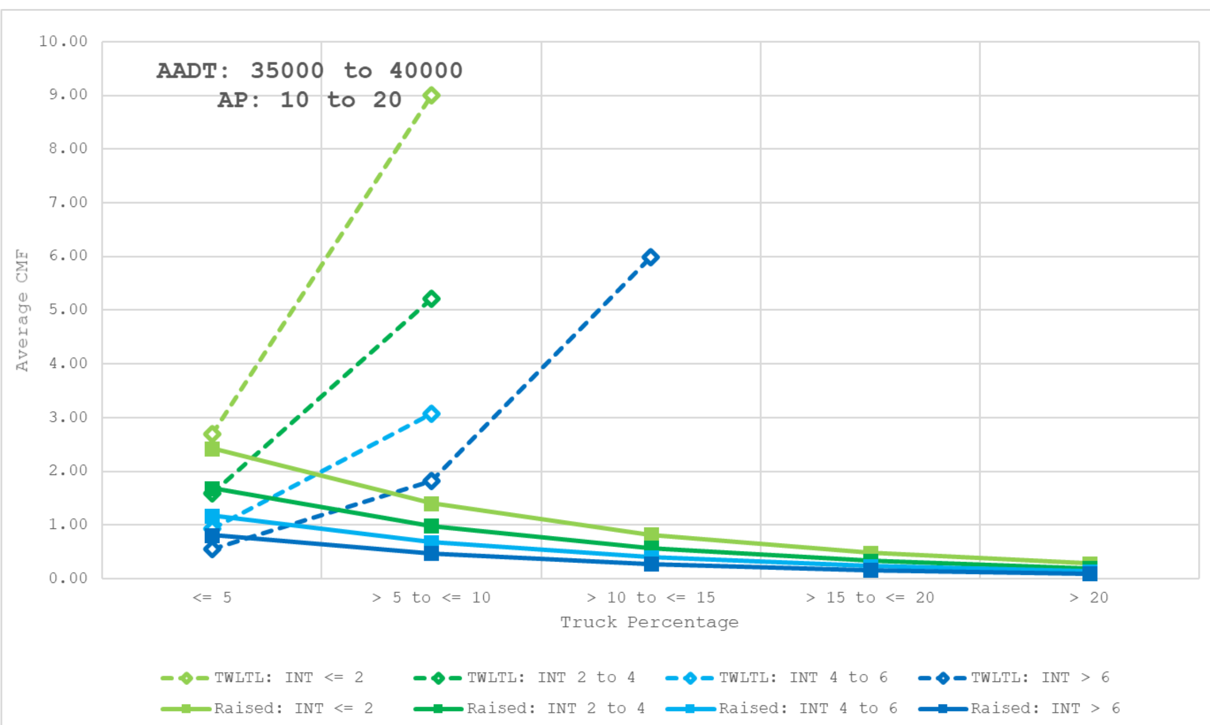
B-7-29 Urban Mixed-Use KAB CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



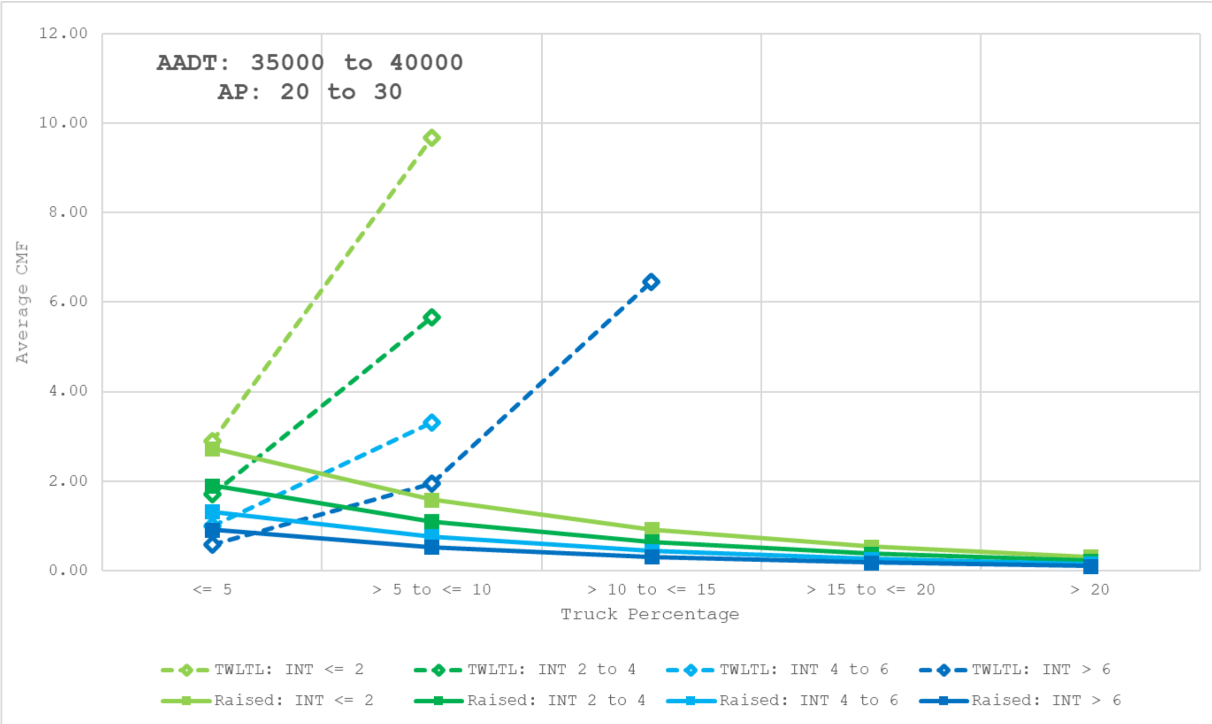
B-7-30 Urban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



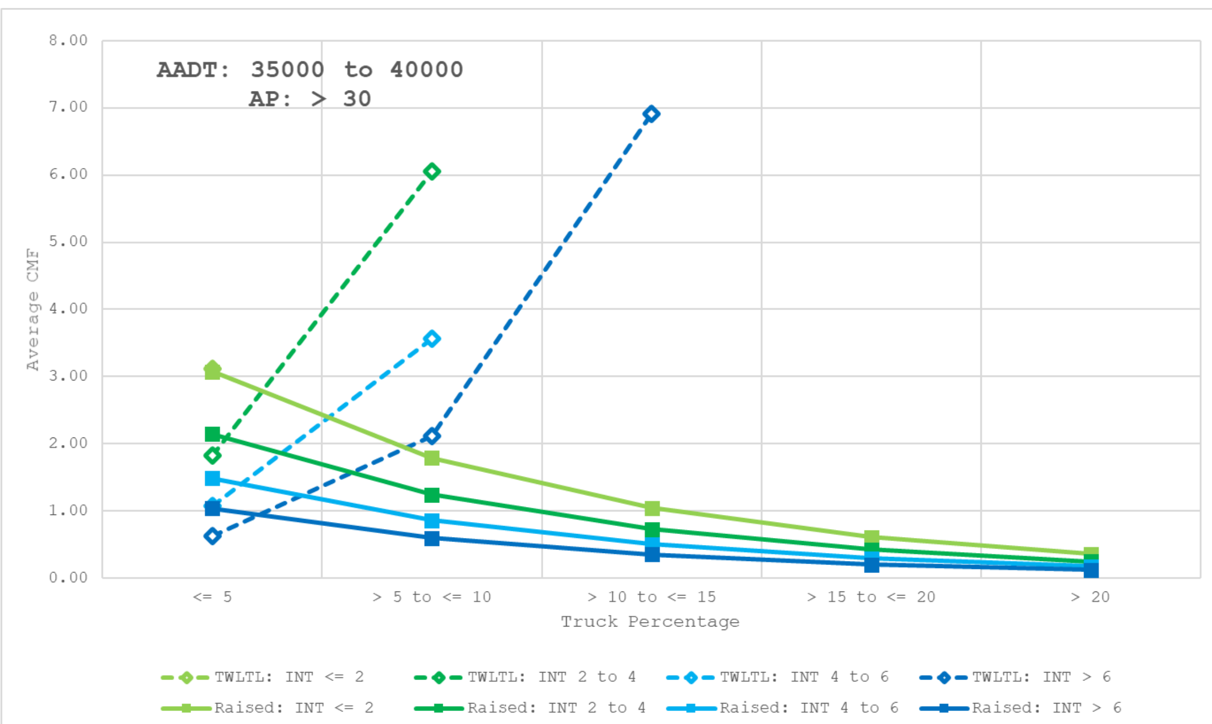
B-7-31 Urban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



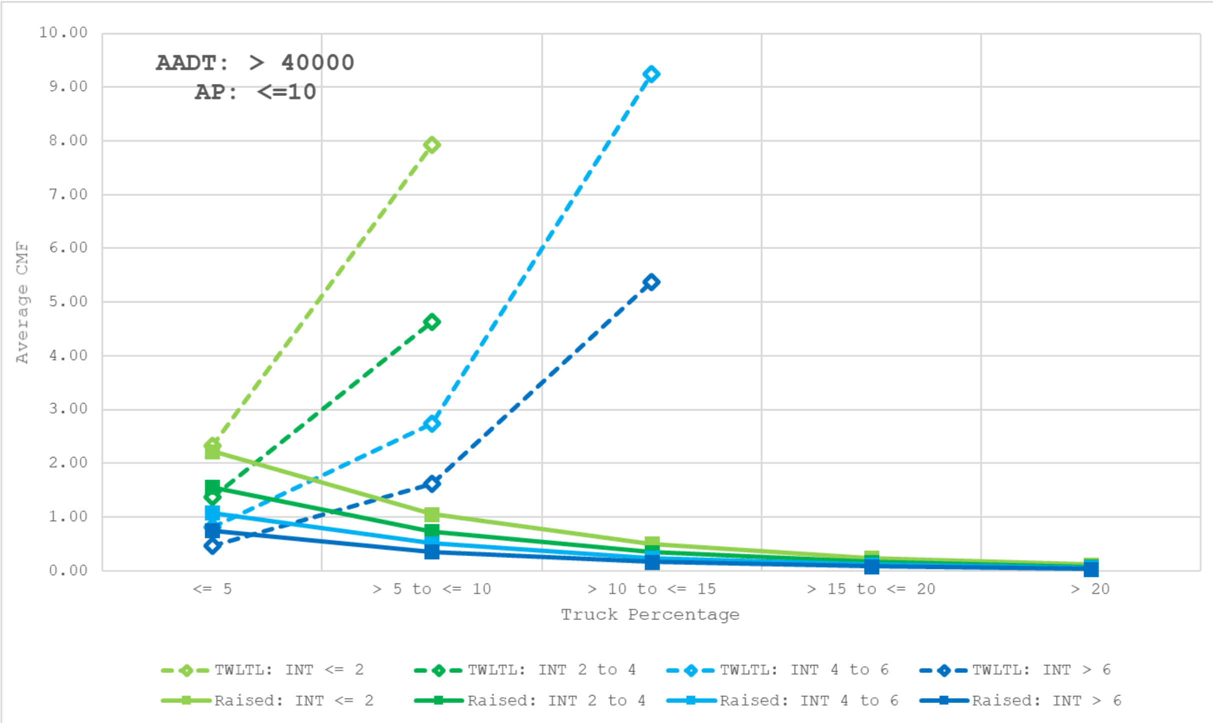
B-7-32 Urban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



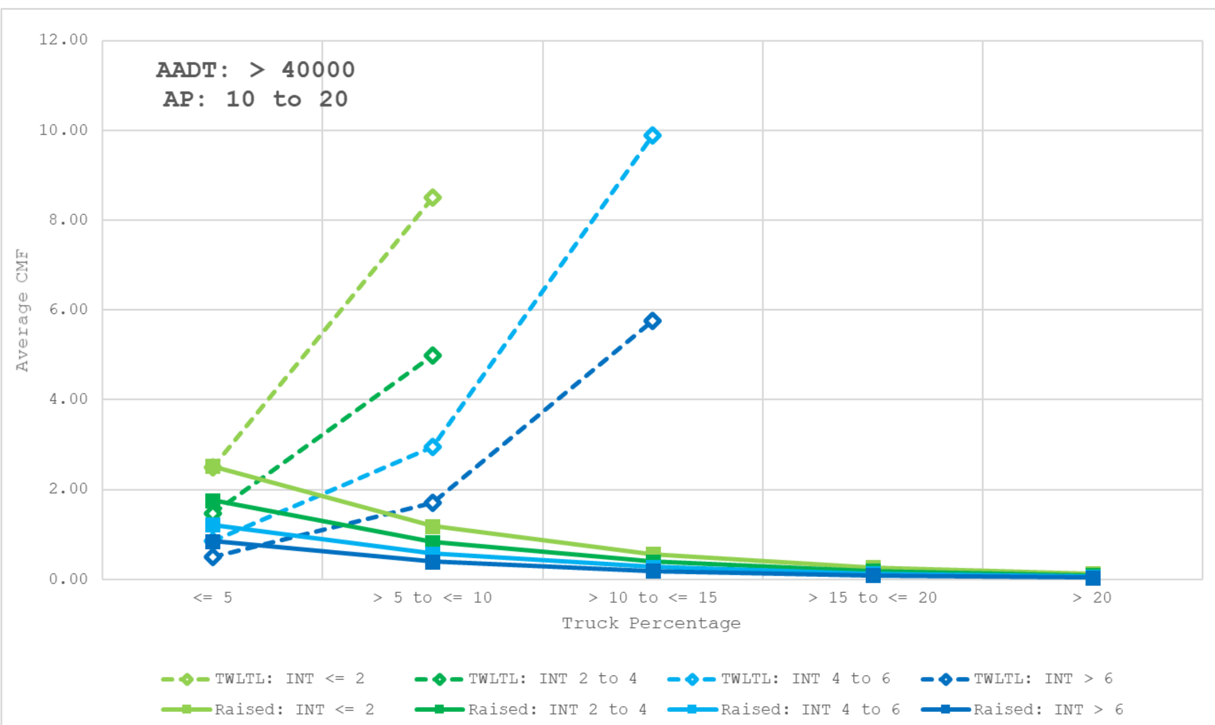
B-7-33 Urban Mixed-Use KAB CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



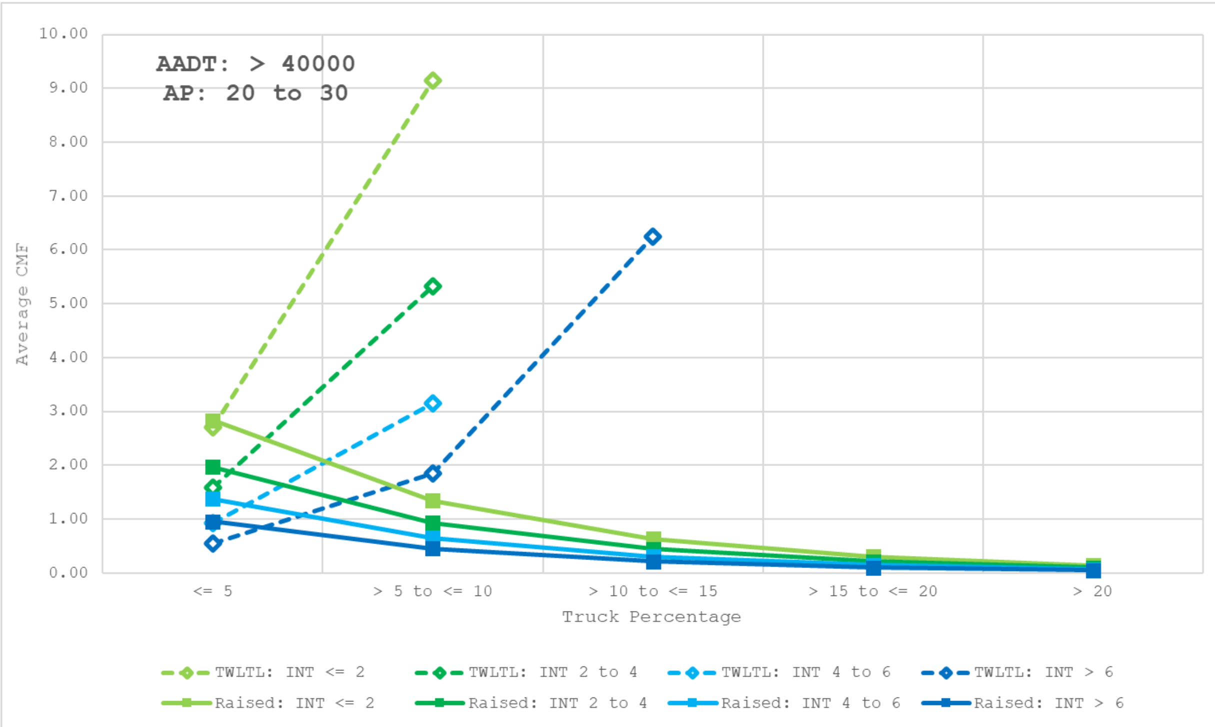
B-7-34 Urban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: <= 10)



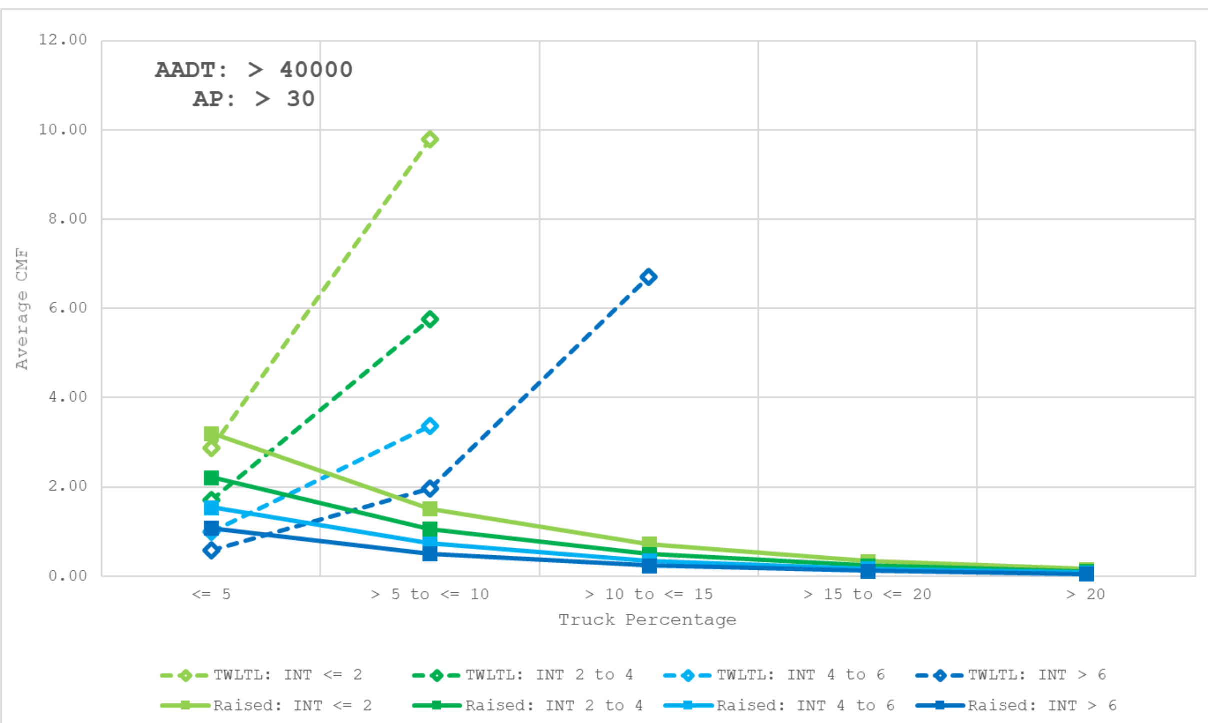
B-7-35 Urban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: 10-20)



B-7-36 Urban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: 20-30)



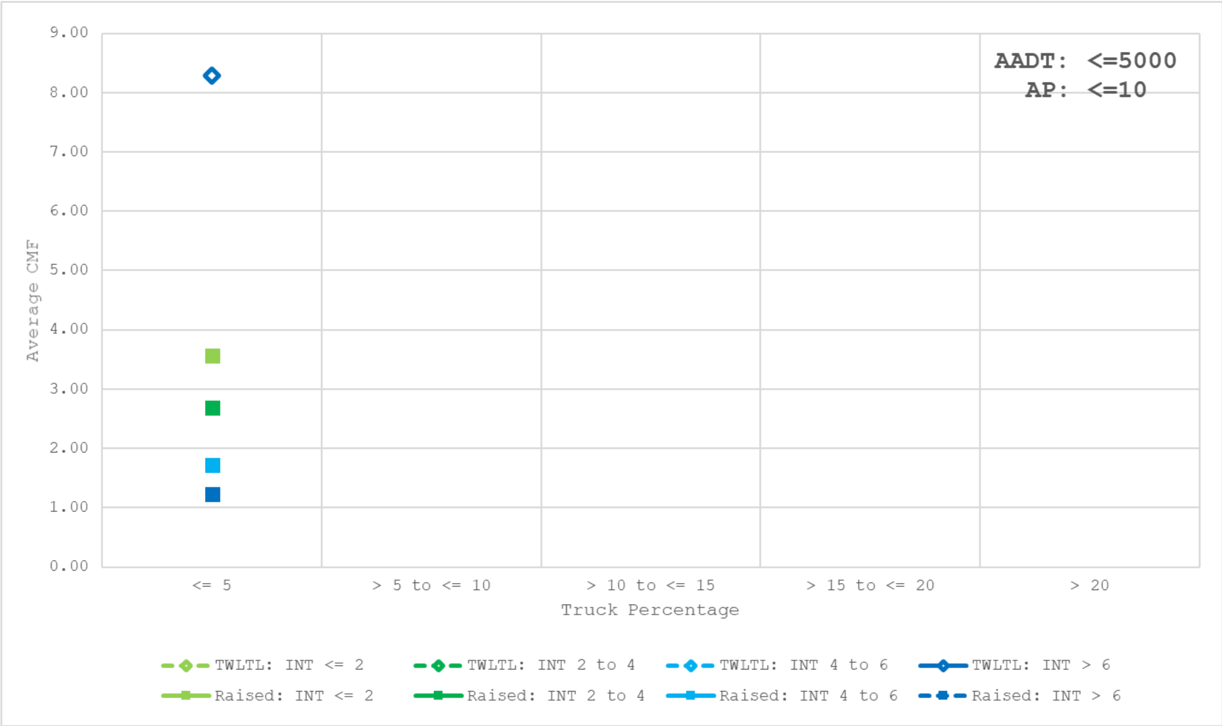
B-7-37 Urban Mixed-Use KAB CMF Graphs (AADT: > 40,000, AP: > 30)



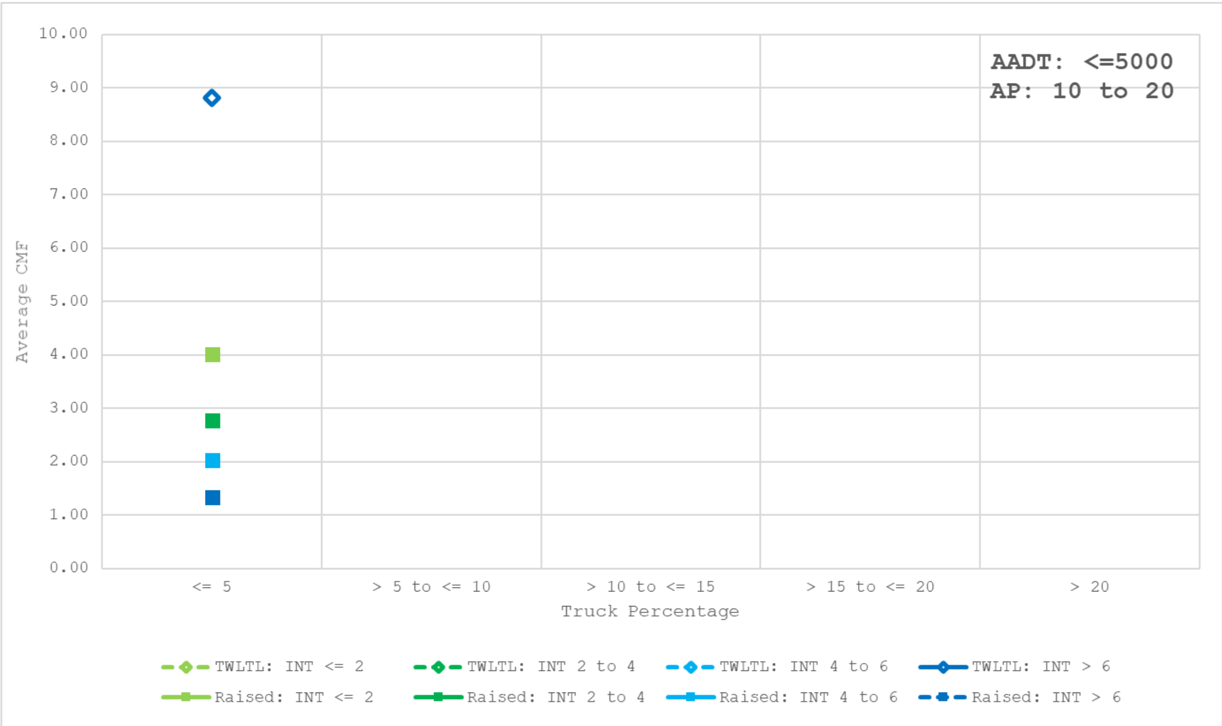
B-8-1 Urban Residential KAB CMFs

		TWLTL: <=10 AP				Raised: <=10 AP				TWLTL: >10 to 20 AP				Raised: >10 to 20 AP				TWLTL: >20 to 30 AP				Rasied : >20 to 30 AP				TWLTL: >30 AP				Raised: >30 AP			
AADT		TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6	TWLTL: INT <= 2	TWLTL: INT 2 to 4	TWLTL: INT 4 to 6	TWLTL: INT > 6	Raised: INT <= 2	Raised: INT 2 to 4	Raised: INT 4 to 6	Raised: INT > 6
0 to 5000	<= 5	#N/A	#N/A	#N/A	8.28	3.56	2.69	1.72	1.23	#N/A	#N/A	#N/A	8.81	4.01	2.77	2.02	1.34	#N/A	#N/A	#N/A	9.21	4.54	3.31	2.18	1.60	#N/A	#N/A	#N/A	#N/A	5.10	3.57	2.40	1.66
	> 5 to <= 10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
5000 to 10000	<= 5	#N/A	6.77	3.96	2.35	2.61	1.82	1.26	0.89	#N/A	7.27	4.27	2.50	2.96	2.06	1.42	0.98	#N/A	7.84	4.57	2.69	3.32	2.32	1.61	1.10	#N/A	8.39	4.90	2.87	3.70	2.62	1.80	1.25
	> 5 to <= 10	#N/A	#N/A	9.81	5.75	#N/A	#N/A	#N/A	7.48	#N/A	#N/A	#N/A	6.23	#N/A	#N/A	#N/A	8.64	#N/A	#N/A	#N/A	6.64	#N/A	#N/A	#N/A	9.55	#N/A	#N/A	#N/A	7.14	#N/A	#N/A	#N/A	#N/A
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
10000 to 15000	<= 5	8.23	4.83	2.85	1.67	2.60	1.81	1.27	0.88	8.80	5.17	3.07	1.78	2.92	2.03	1.43	0.98	9.48	5.56	3.27	1.91	3.31	2.30	1.60	1.11	#N/A	5.96	3.53	2.06	3.74	2.58	1.82	1.25
	> 5 to <= 10	#N/A	#N/A	7.73	4.56	9.26	6.40	4.48	3.13	#N/A	#N/A	8.25	4.86	#N/A	7.24	5.03	3.49	#N/A	#N/A	8.90	5.25	#N/A	8.12	5.68	3.98	#N/A	#N/A	9.60	5.59	#N/A	9.25	6.44	4.44
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
15000 to 20000	<= 5	6.62	3.90	2.28	1.34	2.68	1.87	1.29	0.90	7.15	4.18	2.45	1.45	3.03	2.10	1.46	1.02	7.65	4.51	2.63	1.55	3.41	2.38	1.64	1.15	8.21	4.82	2.83	1.66	3.84	2.67	1.86	1.29
	> 5 to <= 10	#N/A	#N/A	6.61	3.90	5.44	3.79	2.63	1.83	#N/A	#N/A	7.05	4.17	6.13	4.26	2.95	2.06	#N/A	#N/A	7.65	4.49	6.86	4.82	3.35	2.33	#N/A	#N/A	8.19	4.81	7.78	5.42	3.76	2.61
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	#N/A	7.78	5.42	3.75	#N/A	#N/A	#N/A	#N/A	#N/A	8.83	6.09	4.25	#N/A	#N/A	#N/A	#N/A	#N/A	9.83	6.86	4.78	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.76	5.38
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	7.92	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	8.94	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	> 20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
20000 to 25000	<= 5	5.62	3.28	1.95	1.14	2.78	1.93	1.35	0.93	6.07	3.53	2.09	1.22	3.13	2.18	1.52	1.05	6.53	3.80	2.25	1.31	3.54	2.46	1.71	1.19	6.93	4.10	2.42	1.41	3.98	2.77	1.93	1.34
	> 5 to <= 10	#N/A	#N/A	5.87	3.48	3.73	2.60	1.80	1.26	#N/A	#N/A	6.31	3.73	4.21	2.92	2.03	1.42	#N/A	#N/A	6.83	4.01	4.73	3.29	2.30	1.60	#N/A	#N/A	7.33	4.28	5.35	3.71	2.59	1.80
	> 10 to <= 15	#N/A	#N/A	#N/A	#N/A	5.06	3.50	2.45	1.70	#N/A	#N/A	#N/A	#N/A	5.69	3.96	2.75	1.93	#N/A	#N/A	#N/A	#N/A	6.41	4.46	3.10	2.16	#N/A	#N/A	#N/A	#N/A	7.23	5.05	3.50	2.44
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	6.90	4.85	3.32	2.33	#N/A	#N/A	#N/A	#N/A	7.82	5.43	3.77	2.63	#N/A	#N/A	#N/A	#N/A	8.75	6.12	4.23	2.97	#N/A	#N/A	#N/A	#N/A	9.89	6.86	4.79	3.32
	> 20	#N/A	#N/A	#N/A	#N/A	9.50	6.69	4.62	3.22	#N/A	#N/A	#N/A	#N/A	#N/A	7.52	5.18	3.63	#N/A	#N/A	#N/A	#N/A	#N/A	8.43	5.90	4.08	#N/A	#N/A	#N/A	#N/A	#N/A	9.53	6.63	4.60
25000 to 30000	<= 5	4.96	2.91	1.71	1.01	2.90	2.02	1.40	0.97	5.36	3.13	1.84	1.08	3.27	2.27	1.58	1.10	5.74	3.36	1.97	1.17	3.68	2.56	1.78	1.24	6.13	3.59	2.13	1.24	4.15	2.89	2.01	1.39
	> 5 to <= 10	#N/A	9.17	5.35	3.14	2.79	1.95	1.35	0.94	#N/A	9.86	5.74	3.39	3.15	2.19	1.52	1.06	#N/A	#N/A	6.18	3.64	3.55	2.47	1.72	1.20	#N/A	#N/A	6.62	3.91	4.00	2.78	1.93	1.35
	> 10 to <= 15	#N/A	#N/A	#N/A	9.91	2.71	1.89	1.31	0.92	#N/A	#N/A	#N/A	#N/A	3.05	2.12	1.48	1.03	#N/A	#N/A	#N/A	#N/A	3.45	2.40	1.67	1.16	#N/A	#N/A	#N/A	#N/A	3.89	2.70	1.87	1.31
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	2.65	1.85	1.28	0.89	#N/A	#N/A	#N/A	#N/A	3.02	2.08	1.45	1.01	#N/A	#N/A	#N/A	#N/A	3.38	2.35	1.62	1.14	#N/A	#N/A	#N/A	#N/A	3.78	2.65	1.84	1.28
	> 20	#N/A	#N/A	#N/A	#N/A	2.61	1.82	1.27	0.88	#N/A	#N/A	#N/A	#N/A	2.95	2.05	1.43	0.99	#N/A	#N/A	#N/A	#N/A	3.33	2.30	1.60	1.11	#N/A	#N/A	#N/A	#N/A	3.74	2.61	1.82	1.26
30000 to 35000	<= 5	4.46	2.64	1.54	0.91	3.02	2.10	1.46	1.02	4.81	2.81	1.65	0.97	3.40	2.37	1.65	1.14	5.16	3.04	1.78	1.05	3.83	2.67	1.85	1.29	5.50	3.26	1.89	1.13	4.32	3.00	2.09	1.45
	> 5 to <= 10	#N/A	8.49	4.94	2.93	2.22	1.54	1.07	0.75	#N/A	9.06	5.35	3.13	2.50	1.73	1.21	0.84	#N/A	9.72	5.76	3.37	2.82	1.96	1.36	0.95	#N/A	#N/A	6.18	3.60	3.18	2.20	1.53	1.07
	> 10 to <= 15	#N/A	#N/A	#N/A	9.44	1.63	1.14	0.79	0.55	#N/A	#N/A	#N/A	#N/A	1.84	1.28	0.89	0.62	#N/A	#N/A	#N/A	#N/A	2.07	1.44	1.00	0.70	#N/A	#N/A	#N/A	#N/A	2.33	1.63	1.14	0.79
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	1.21	0.84	0.59	0.41	#N/A	#N/A	#N/A	#N/A	1.36	0.95	0.66	0.46	#N/A	#N/A	#N/A	#N/A	1.54	1.07	0.74	0.52	#N/A	#N/A	#N/A	#N/A	1.74	1.20	0.84	0.59
	> 20	#N/A	#N/A	#N/A	#N/A	0.90	0.63	0.44	0.30	#N/A	#N/A	#N/A	#N/A	1.01	0.71	0.49	0.34	#N/A	#N/A	#N/A	#N/A	1.14	0.80	0.56	0.39	#N/A	#N/A	#N/A	#N/A	1.29	0.90	0.63	0.43
35000 to 40000	<= 5	4.09	2.38	1.42	0.83	3.14	2.18	1.52	1.06	4.40	2.58	1.51	0.89	3.53	2.45	1.71	1.19	4.69	2.76	1.63	0.96	4.00	2.77	1.93	1.35	5.03	2.97	1.75	1.02	4.50	3.13	2.17	1.51
	> 5 to <= 10	#N/A	7.91	4.67	2.75	1.82	1.27	0.88	0.61	#N/A	8.55	4.97	2.95	2.05	1.43	1.00	0.69	#N/A	9.25	5.39	3.16	2.32	1.61	1.12	0.78	#N/A	9.84	5.75	3.39	2.61	1.82	1.27	0.88
	> 10 to <= 15	#N/A	#N/A	#N/A	9.09	1.07	0.74	0.51	0.36	#N/A	#N/A	#N/A	9.73	1.20	0.84	0.58	0.40	#N/A	#N/A	#N/A	#N/A	1.35	0.94	0.65	0.45	#N/A	#N/A	#N/A	#N/A	1.52	1.06	0.74	0.51
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	0.62	0.44	0.30	0.21	#N/A	#N/A	#N/A	#N/A	0.70	0.49	0.34	0.24	#N/A	#N/A	#N/A	#N/A	0.79	0.55	0.38	0.27	#N/A	#N/A	#N/A	#N/A	0.89	0.62	0.43	0.30
	> 20	#N/A	#N/A	#N/A	#N/A	0.36	0.25	0.18	0.12	#N/A	#N/A	#N/A	#N/A	0.41	0.29	0.20	0.14	#N/A	#N/A	#N/A	#N/A	0.47	0.33	0.22	0.16	#N/A	#N/A	#N/A	#N/A	0.52	0.37	0.25	0.18
>40000	<= 5	3.78	2.22	1.30	0.76	3.26	2.27	1.58	1.10	4.07	2.36	1.40	0.82	3.66	2.56	1.78	1.24	4.36	2.56	1.50	0.88	4.16	2.88	2.00	1.40	4.65	2.74	1.61	0.94	4.68	3.23	2.27	1.57
	> 5 to <= 10	#N/A	7.51	4.44	2.60	1.54	1.08	0.75	0.52	#N/A	8.02	4.70	2.80	1.74	1.21	0.84	0.59	#N/A	8.65	5.09	3.00	1.97	1.36	0.95	0.66	#N/A	9.32	5.48	3.21	2.21	1.54	1.07	0.74
	> 10 to <= 15	#N/A	#N/A	#N/A	8.79	0.74	0.51	0.35	0.25	#N/A	#N/A	#N/A	9.40	0.83	0.57	0.40	0.28	#N/A	#N/A	#N/A	#N/A	0.93	0.65	0.45	0.31	#N/A	#N/A	#N/A	#N/A	1.05	0.73	0.51	0.35
	> 15 to <= 20	#N/A	#N/A	#N/A	#N/A	0.35	0.24	0.17	0.12	#N/A	#N/A	#N/A	#N/A	0.39	0.28	0.19	0.13	#N/A	#N/A	#N/A	#N/A	0.44	0.31	0.22	0.15	#N/A	#N/A	#N/A	#N/A	0.50	0.35	0.24	0.17
	> 20	#N/A	#N/A	#N/A	#N/A	0.17	0.12	0.08	0.06	#N/A	#N/A	#N/A	#N/A	0.19	0.13	0.09	0.06	#N/A	#N/A	#N/A	#N/A	0.21	0.15	0.10	0.07	#N/A	#N/A	#N/A	#N/A	0.24	0.17	0.12	0.08

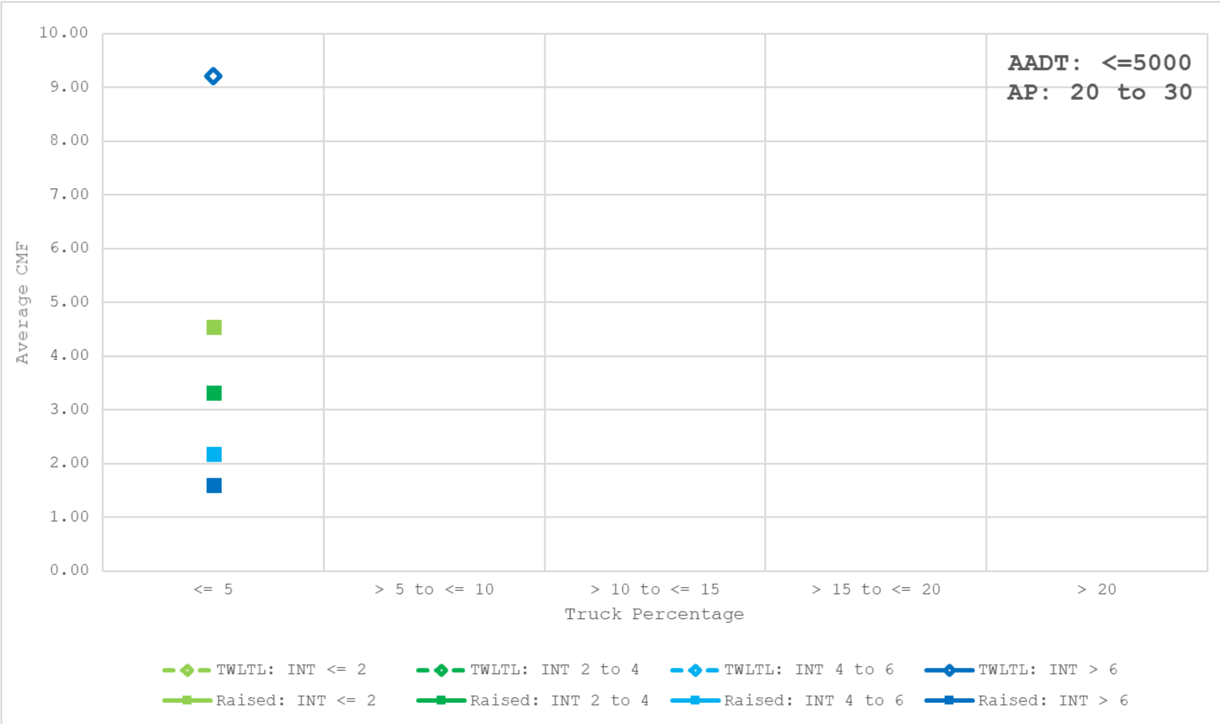
B-8-2 Urban Residential KAB CMF Graphs (AADT: <= 5,000, AP: <= 10)



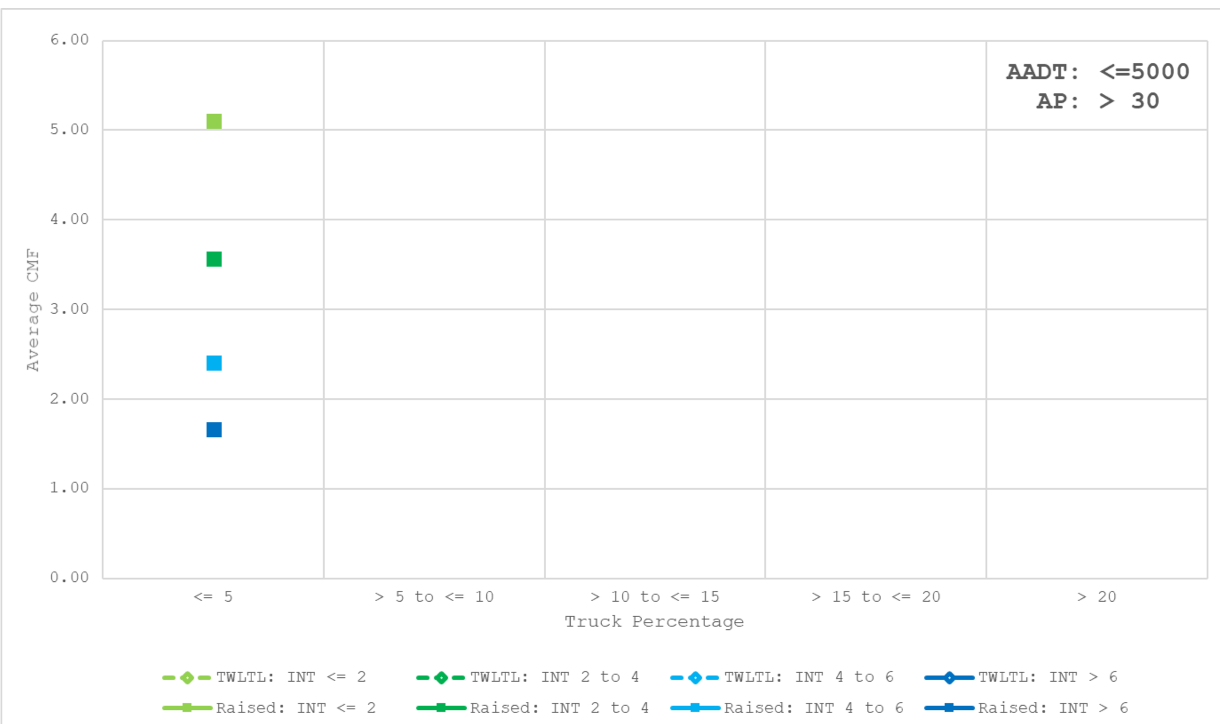
B-8-3 Urban Residential KAB CMF Graphs (AADT: <= 5,000, AP: 10-20)



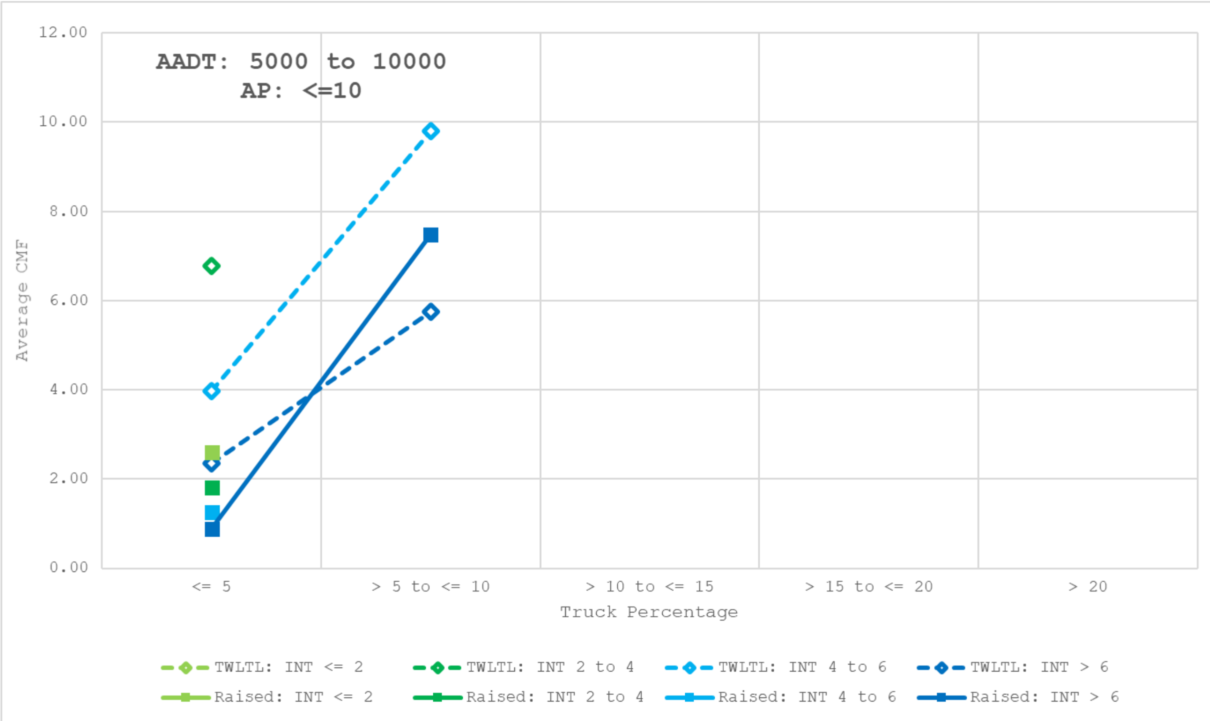
B-8-4 Urban Residential KAB CMF Graphs (AADT: <= 5,000, AP: 20-30)



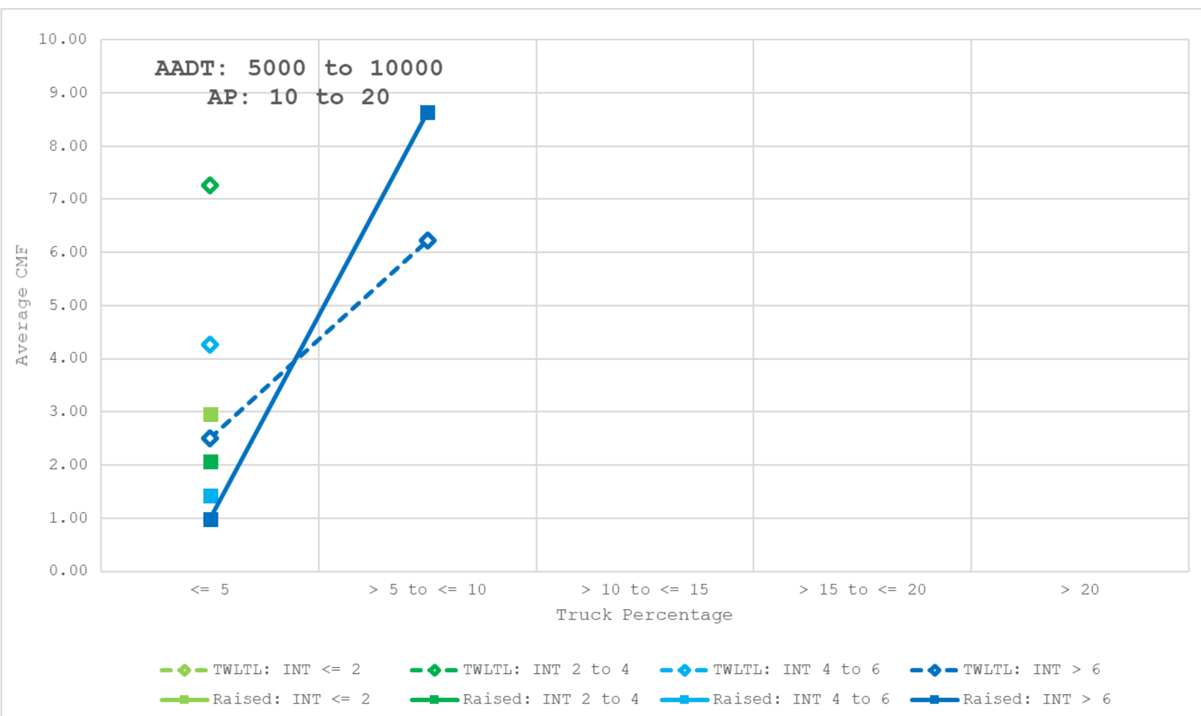
B-8-5 Urban Residential KAB CMF Graphs (AADT: <= 5,000, AP: > 30)



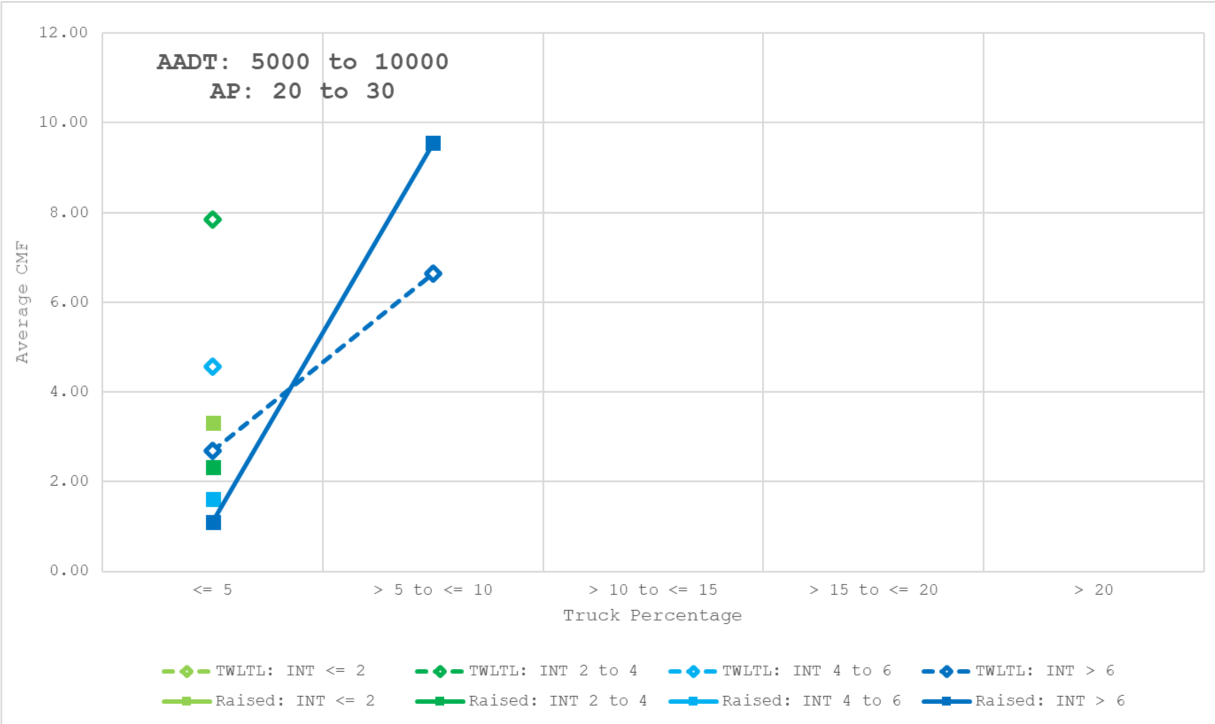
B-8-6 Urban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: <= 10)



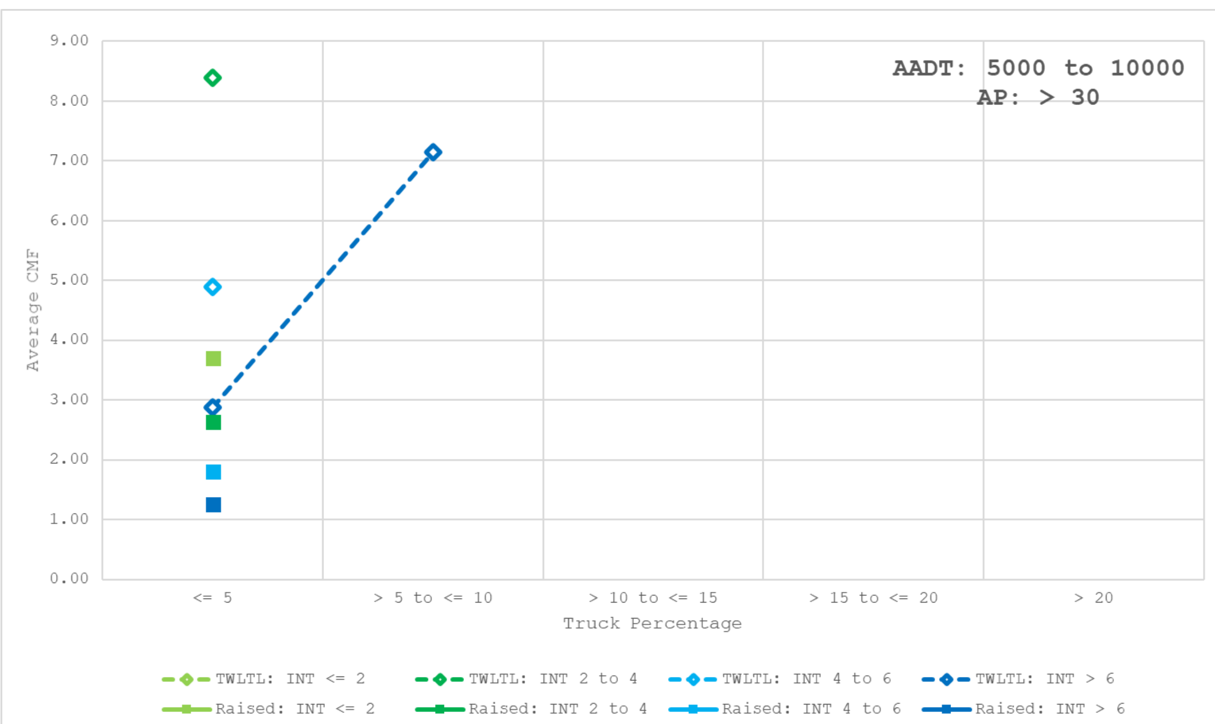
B-8-7 Urban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 10-20)



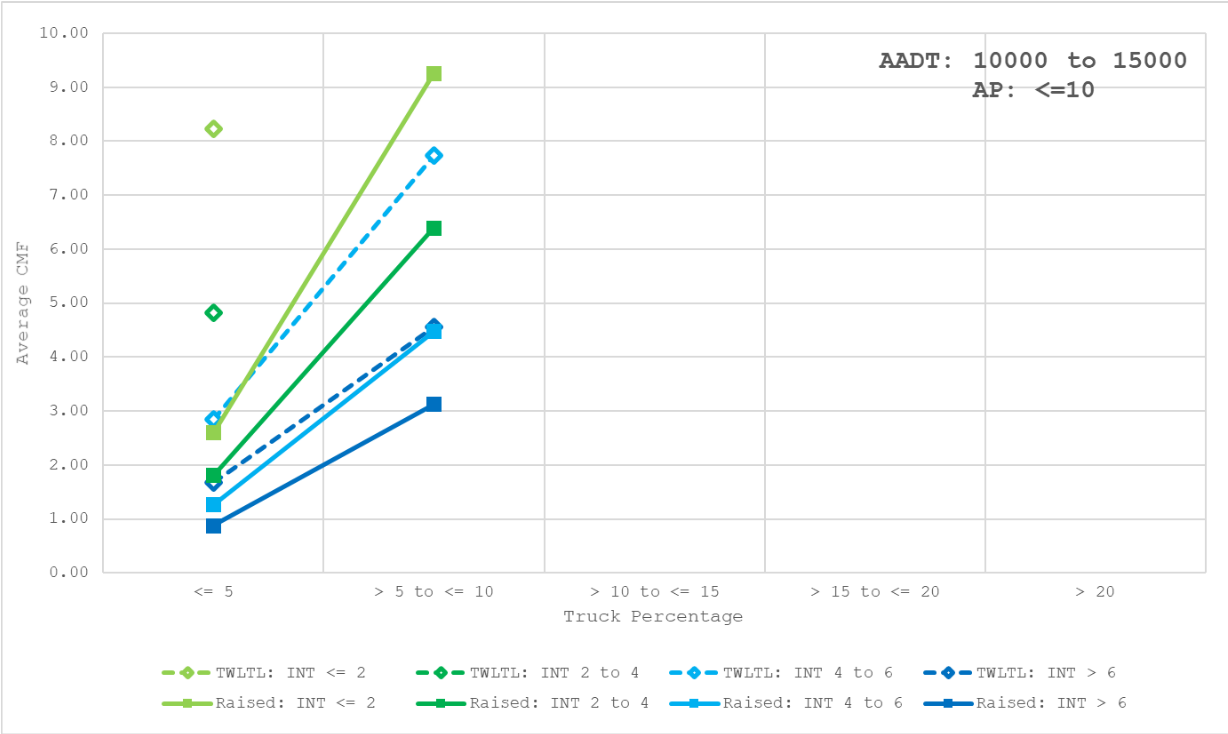
B-8-8 Urban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: 20-30)



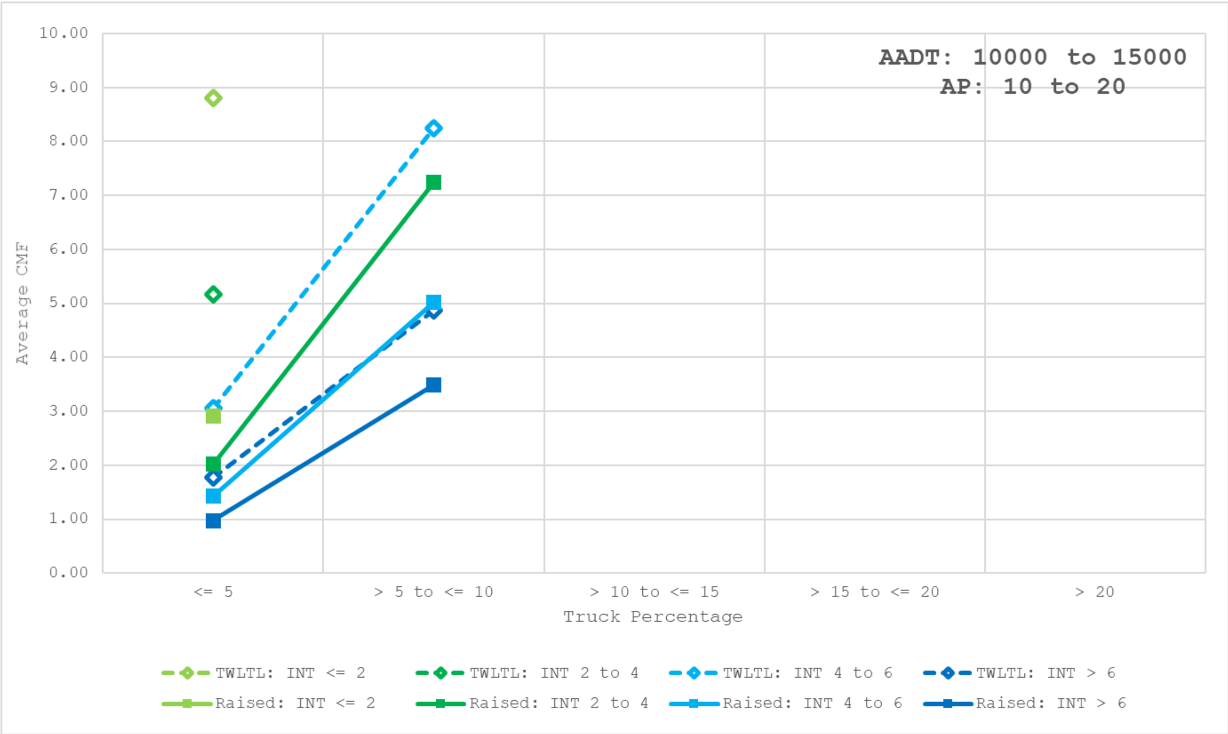
B-8-9 Urban Residential KAB CMF Graphs (AADT: 5,000 to 10,000, AP: > 30)



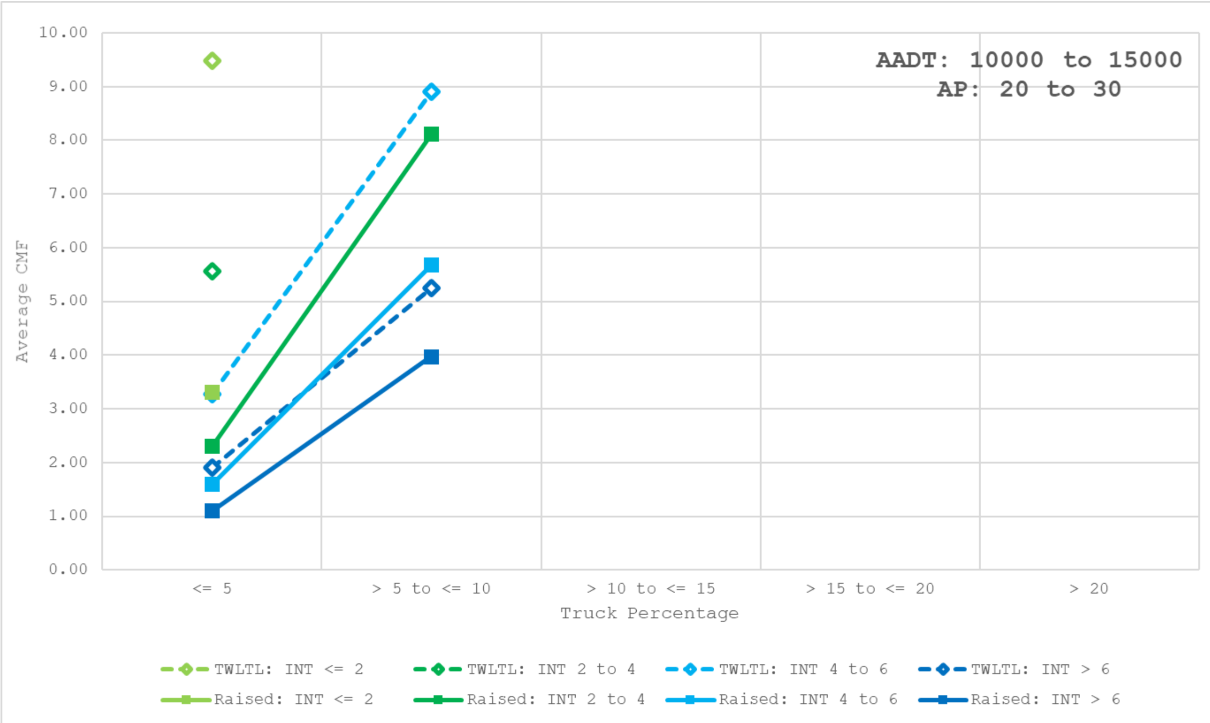
B-8-10 Urban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: <= 10)



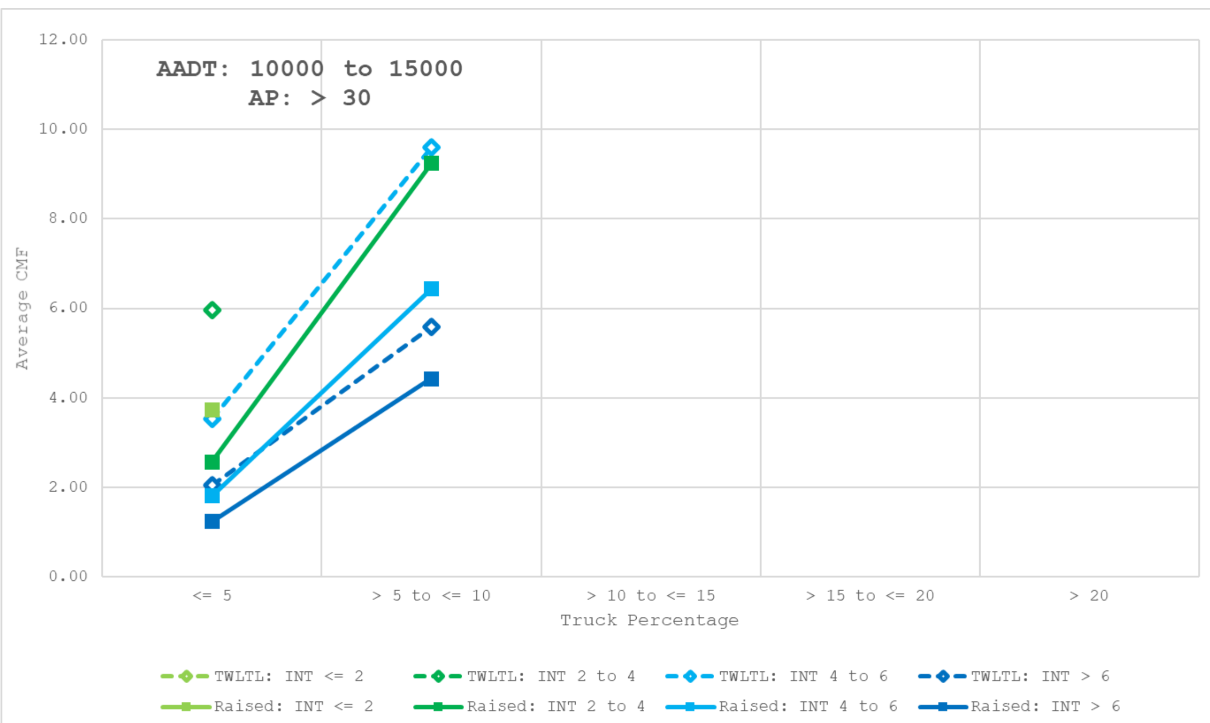
B-8-11 Urban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 10-20)



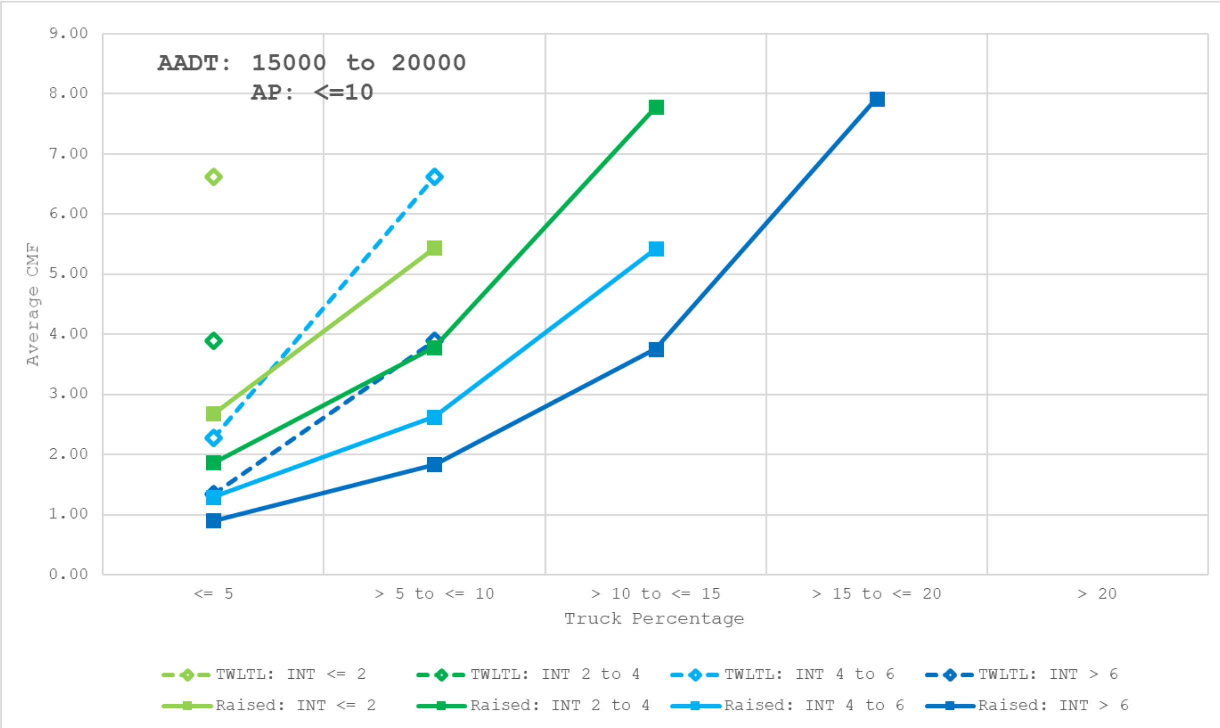
B-8-12 Urban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: 20-30)



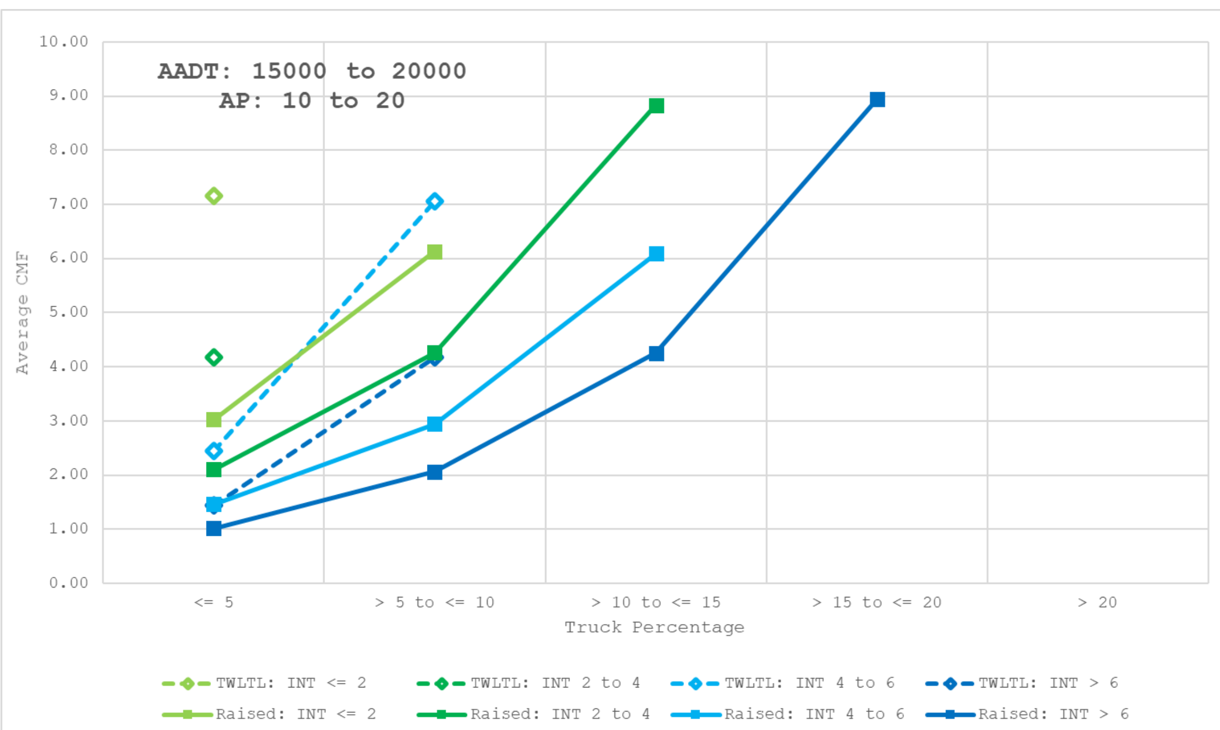
B-8-13 Urban Residential KAB CMF Graphs (AADT: 10,000 to 15,000, AP: > 30)



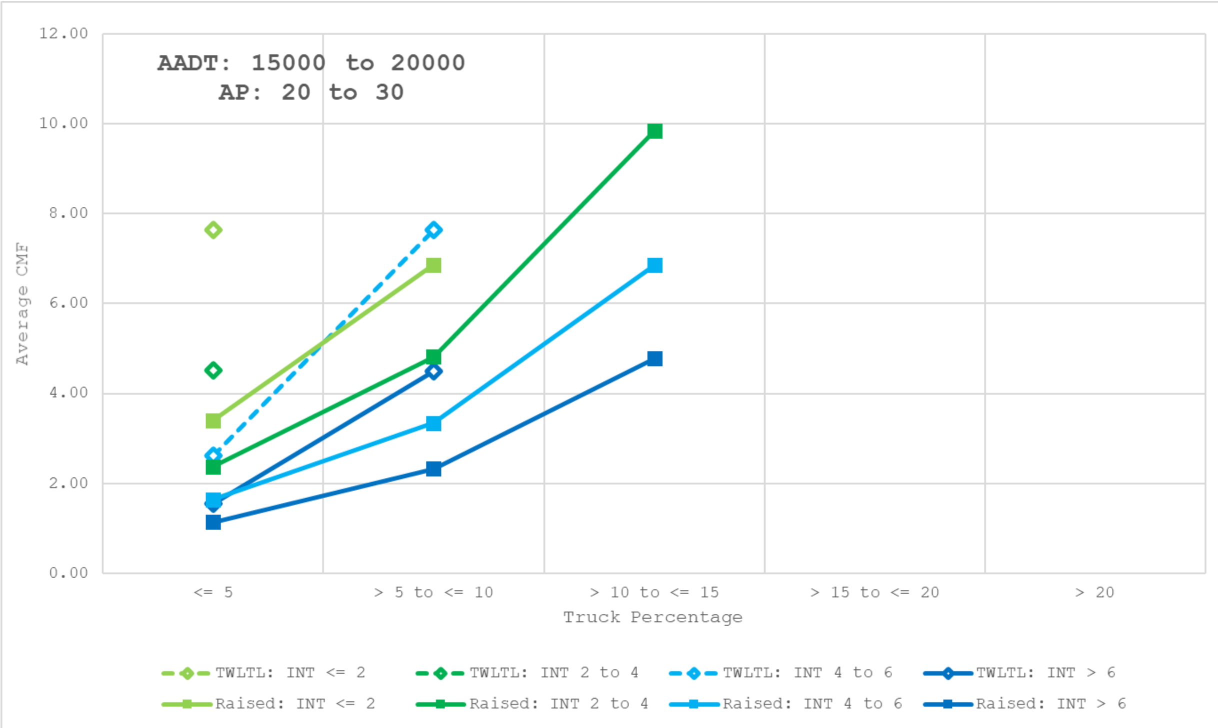
B-8-14 Urban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: <= 10)



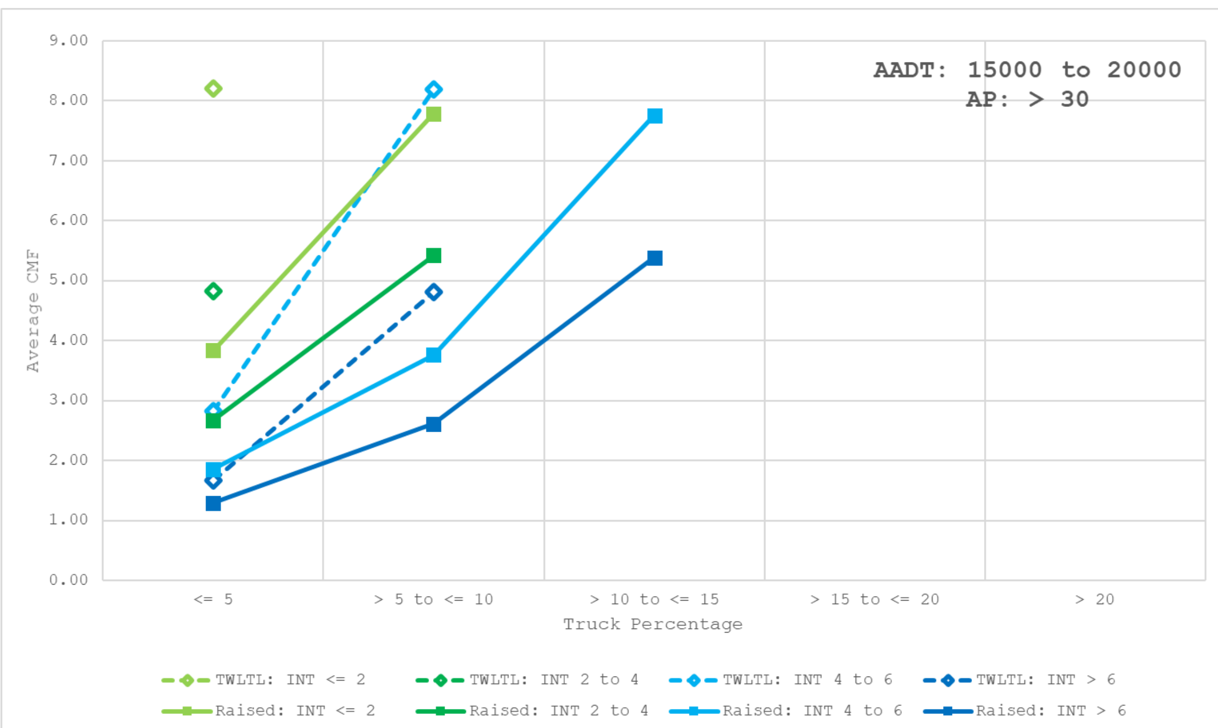
B-8-15 Urban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 10-20)



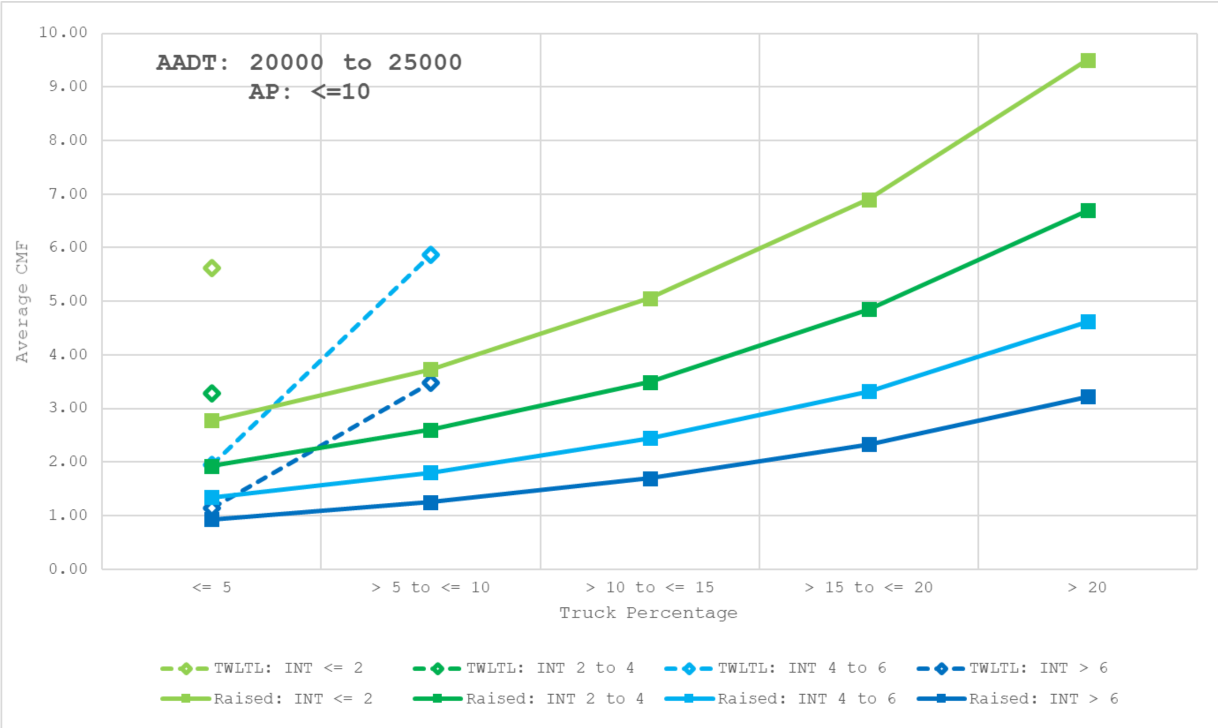
B-8-16 Urban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: 20-30)



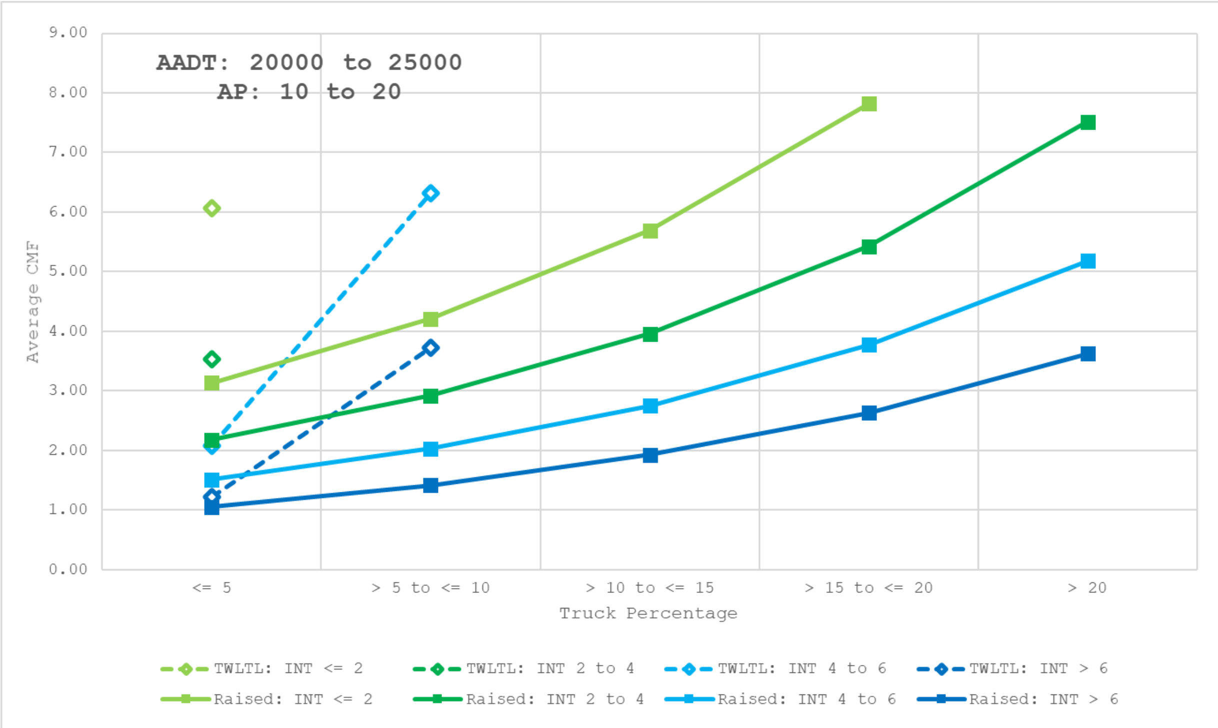
B-8-17 Urban Residential KAB CMF Graphs (AADT: 15,000 to 20,000, AP: > 30)



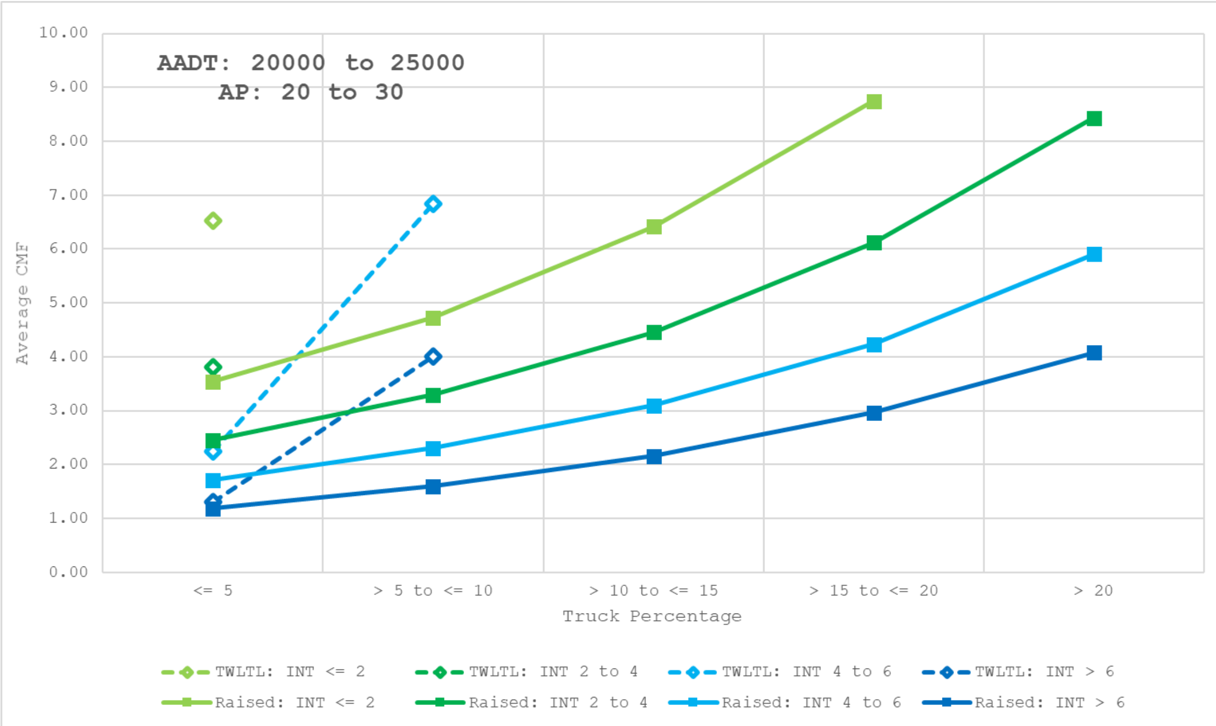
B-8-18 Urban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: <= 10)



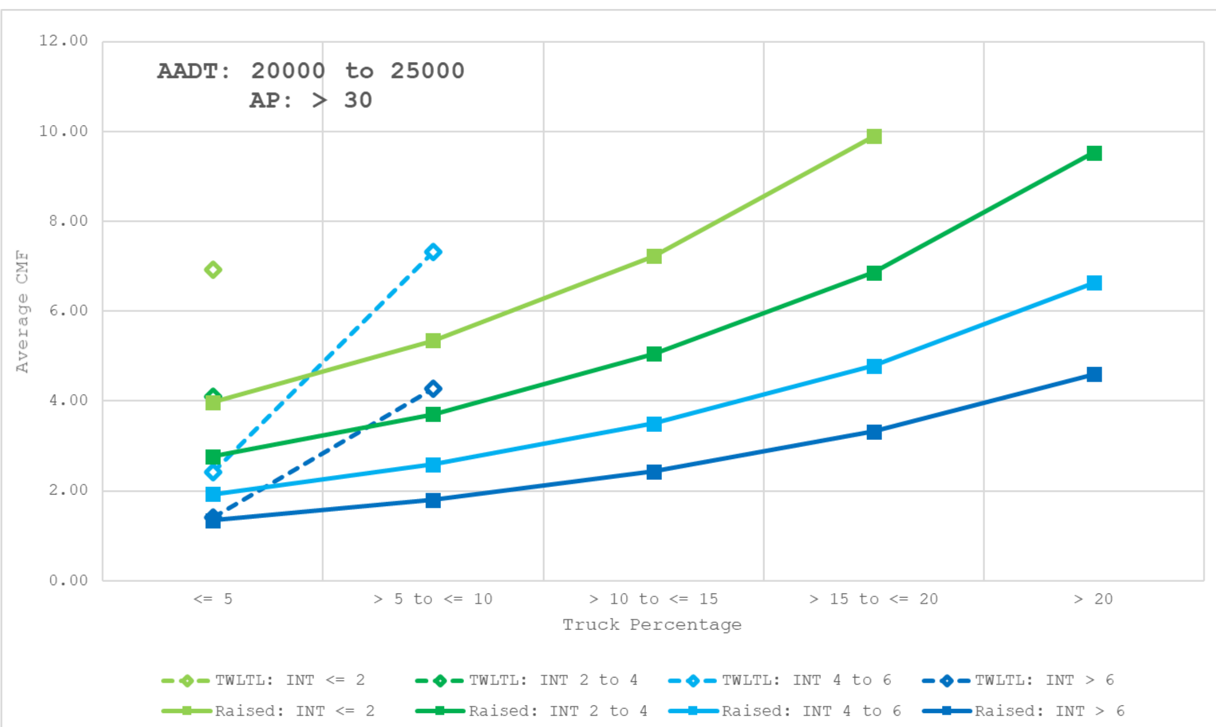
B-8-19 Urban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 10-20)



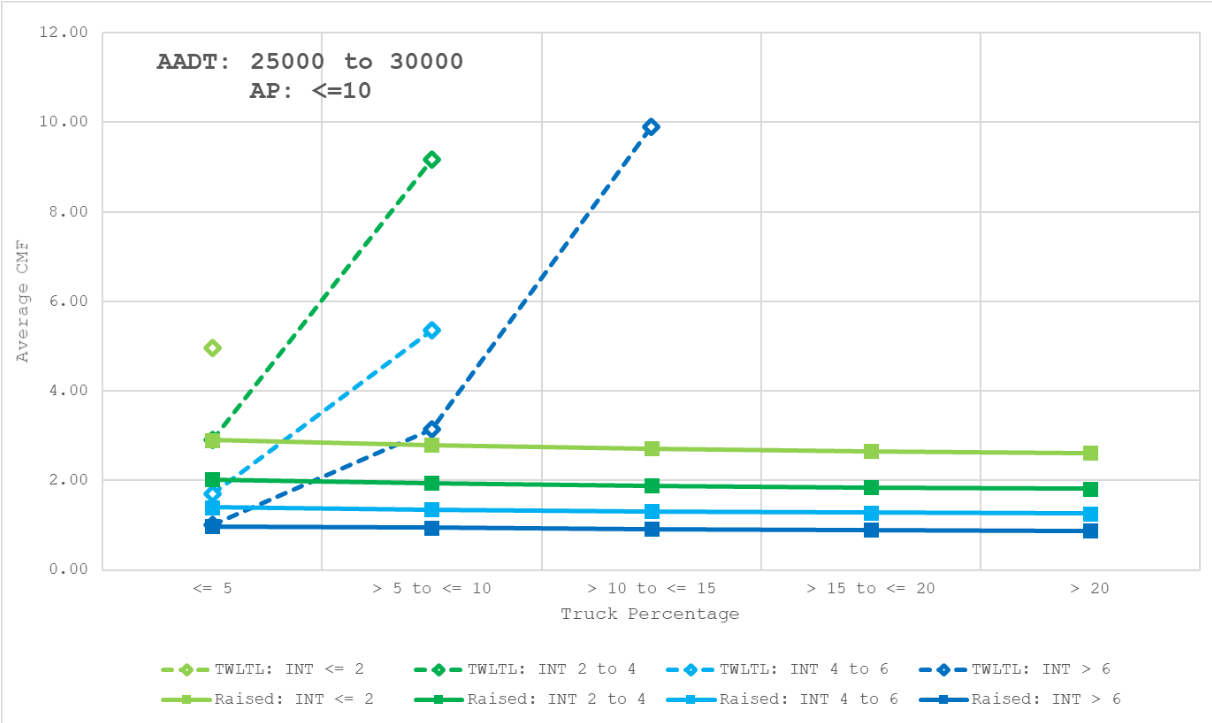
B-8-20 Urban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: 20-30)



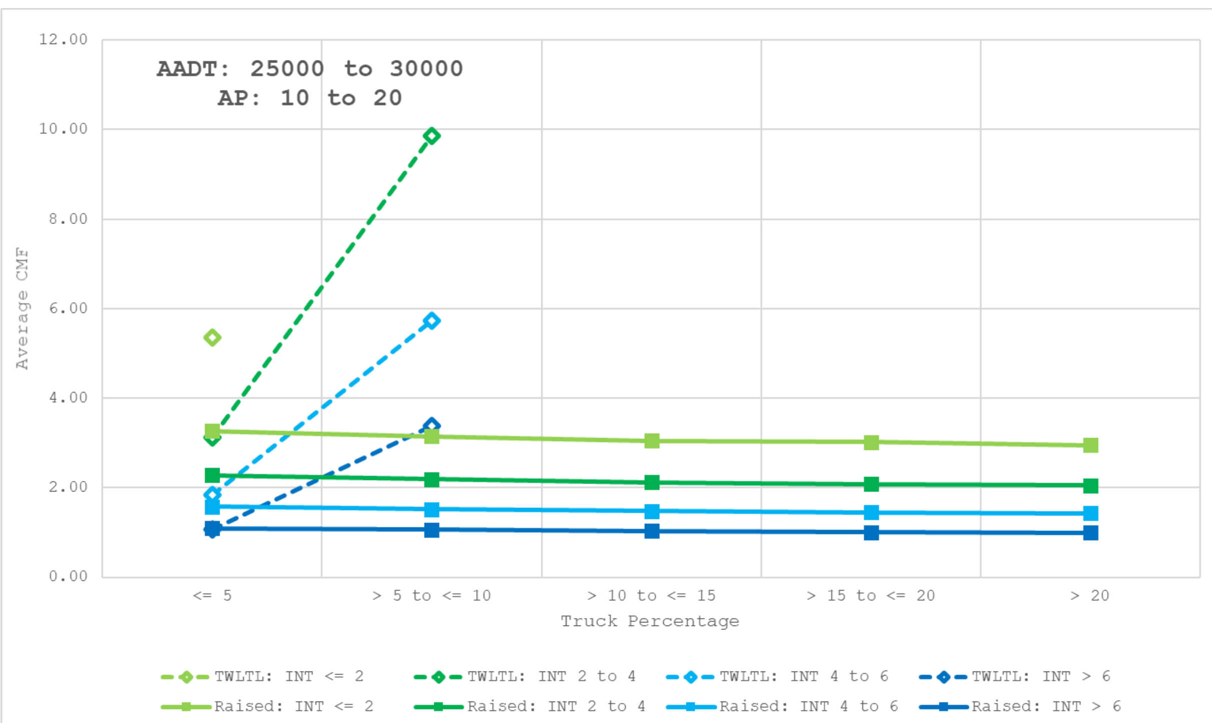
B-8-21 Urban Residential KAB CMF Graphs (AADT: 20,000 to 25,000, AP: > 30)



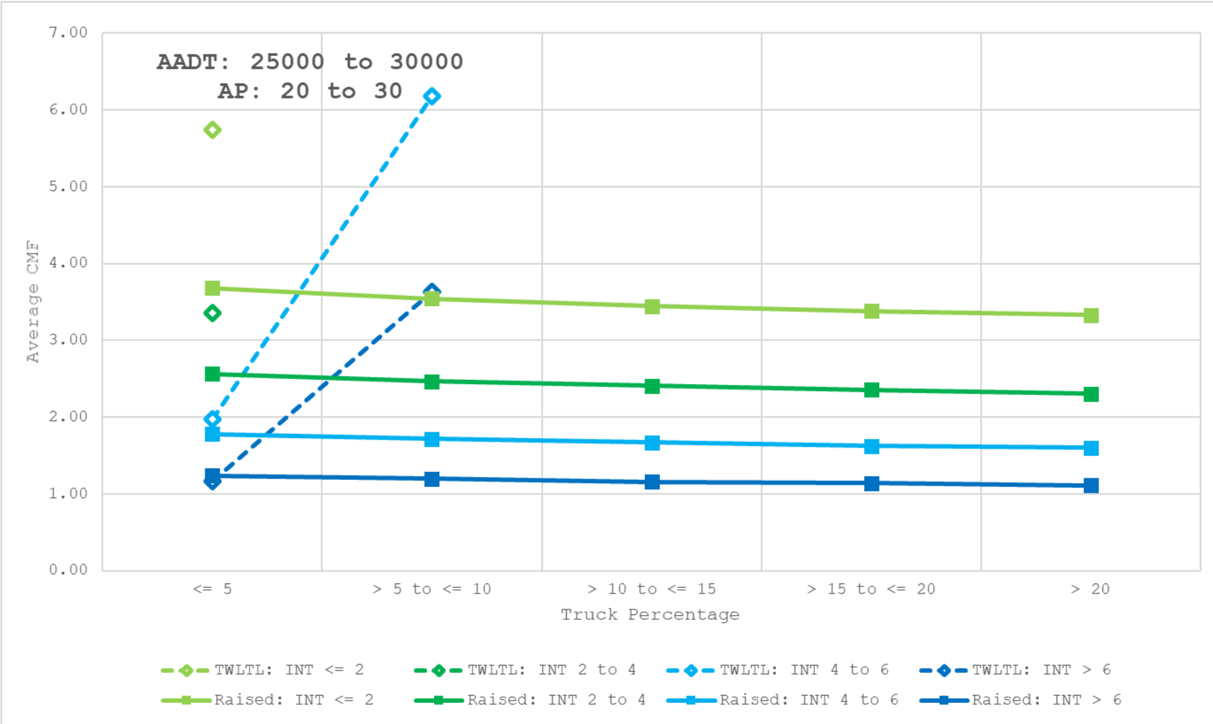
B-8-22 Urban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: <= 10)



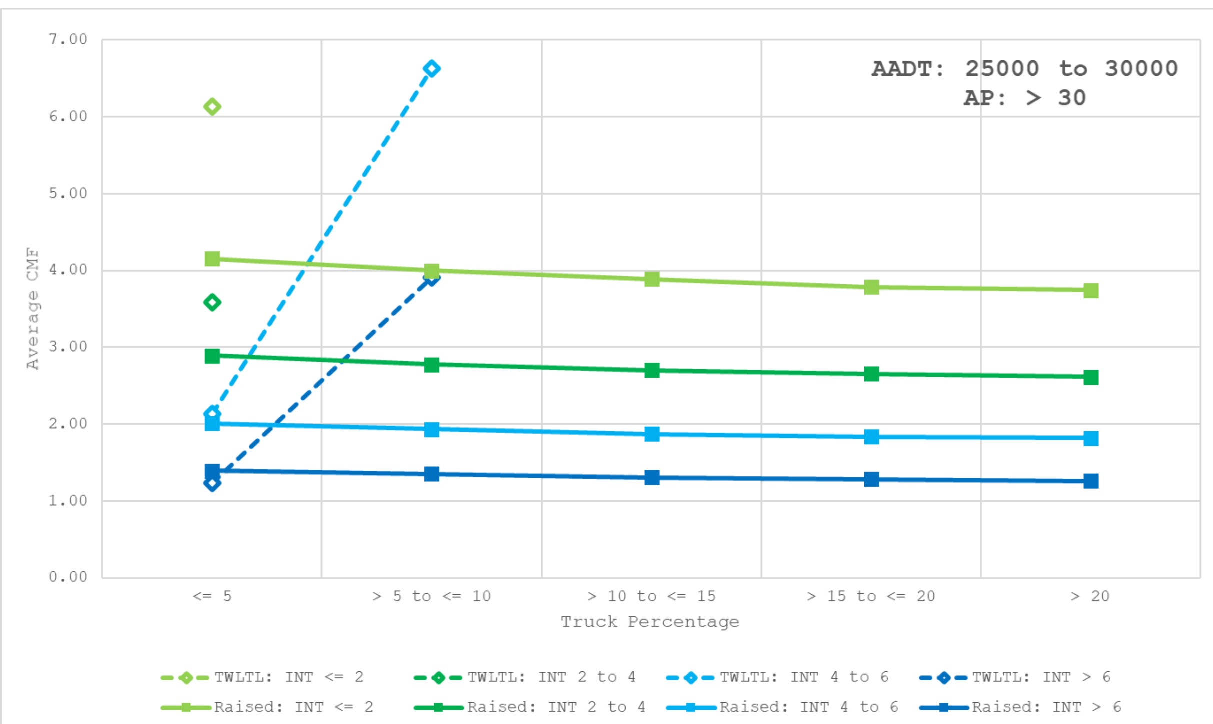
B-8-23 Urban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 10-20)



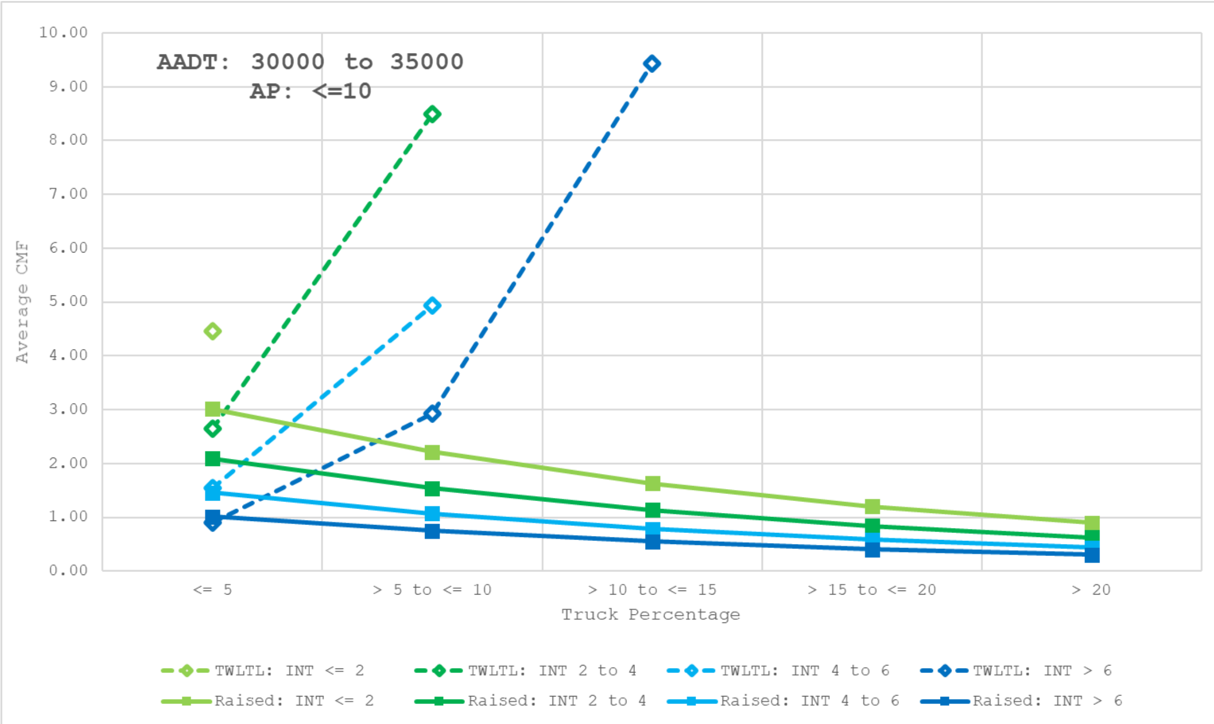
B-8-24 Urban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: 20-30)



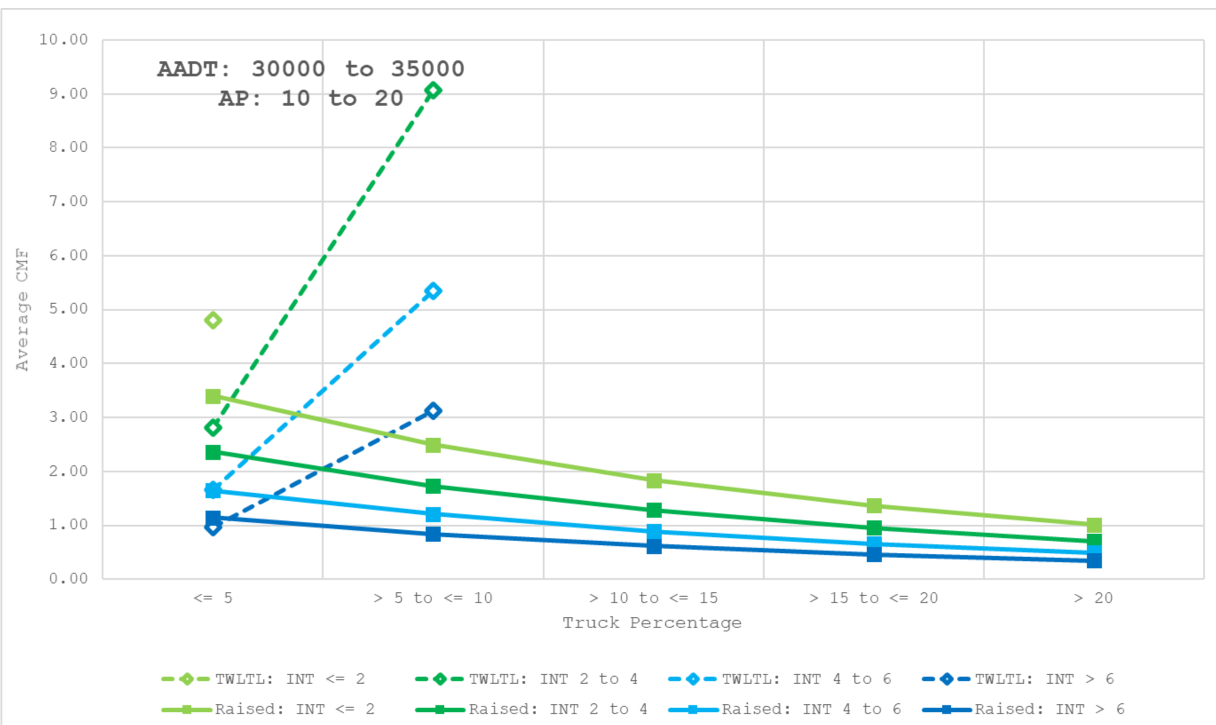
B-8-25 Urban Residential KAB CMF Graphs (AADT: 25,000 to 30,000, AP: > 30)



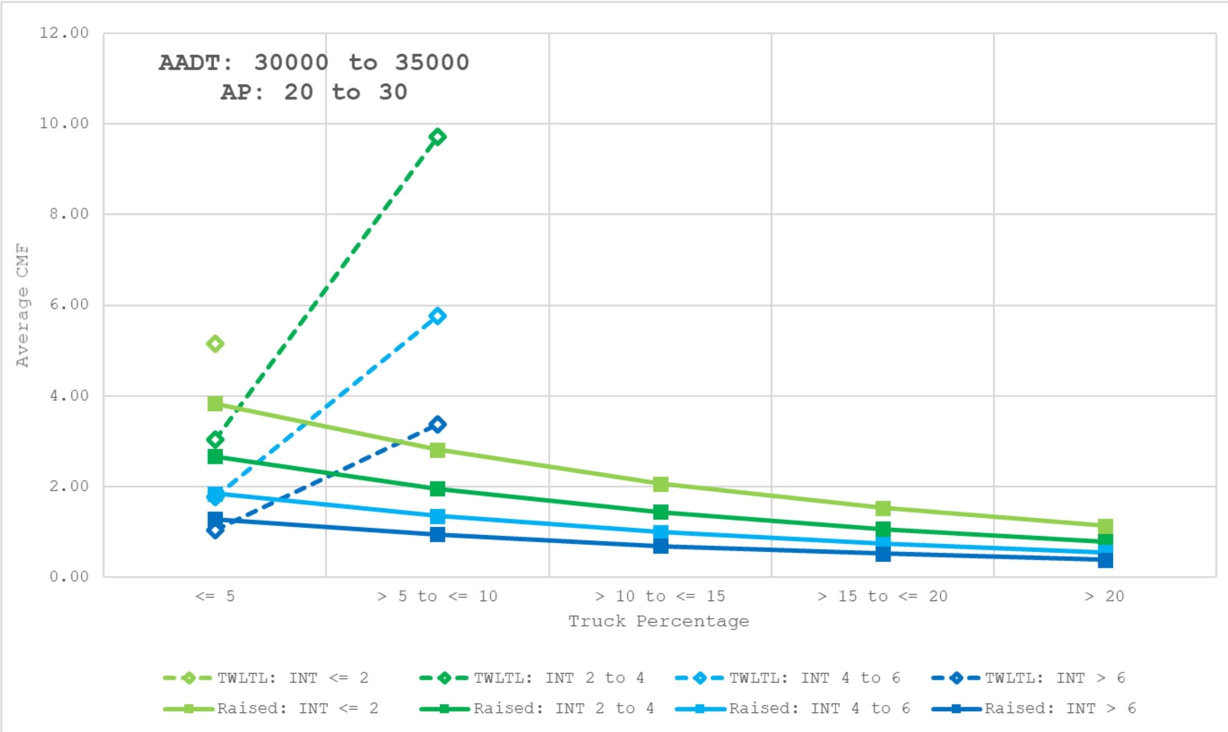
B-8-26 Urban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: <= 10)



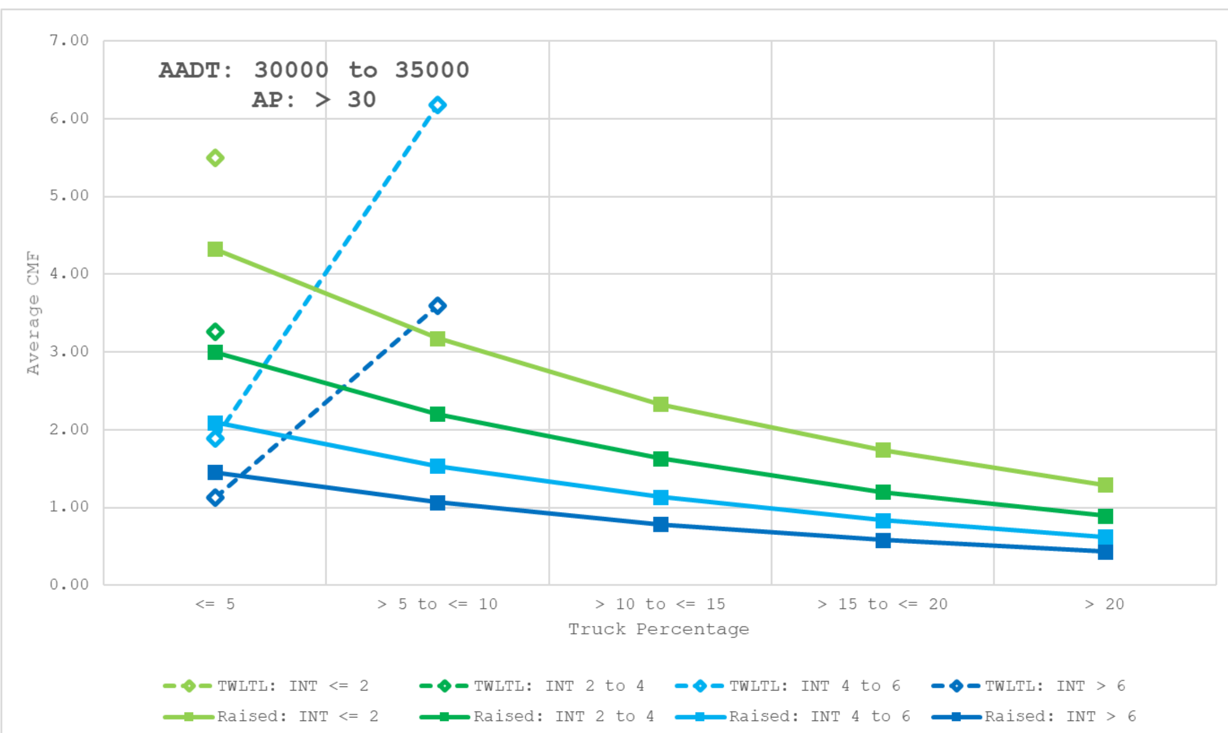
B-8-27 Urban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 10-20)



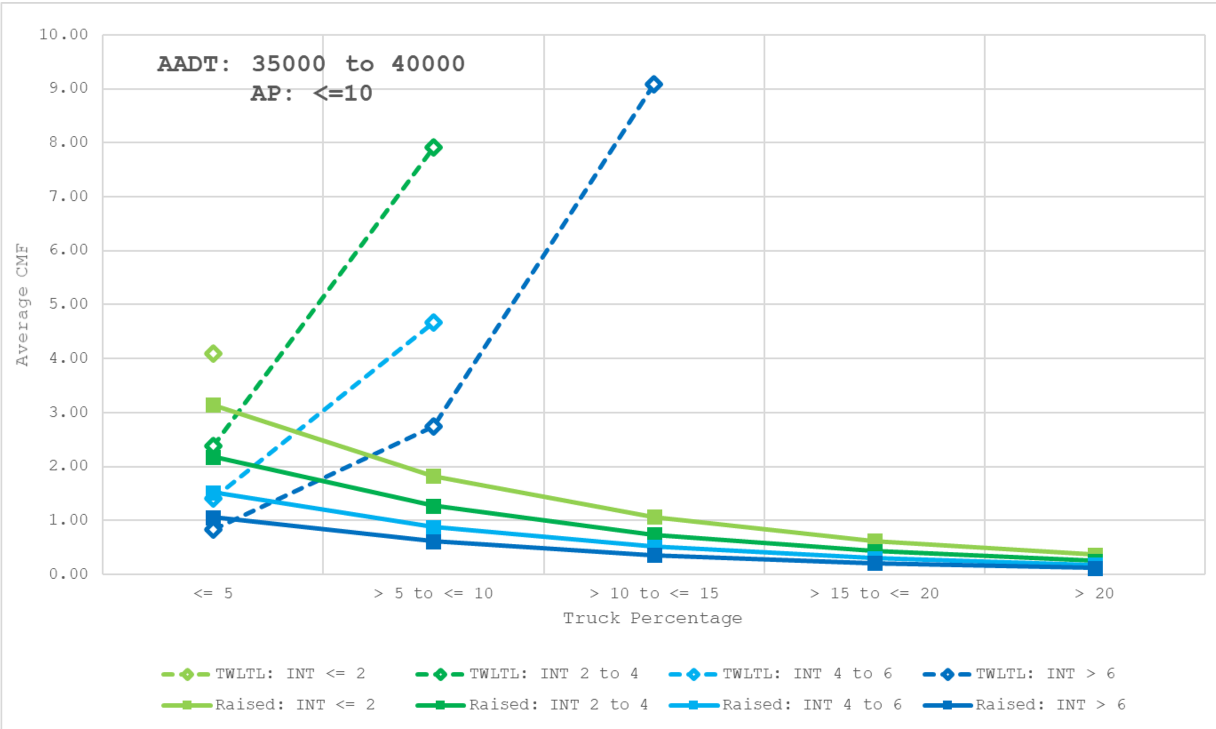
B-8-28 Urban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: 20-30)



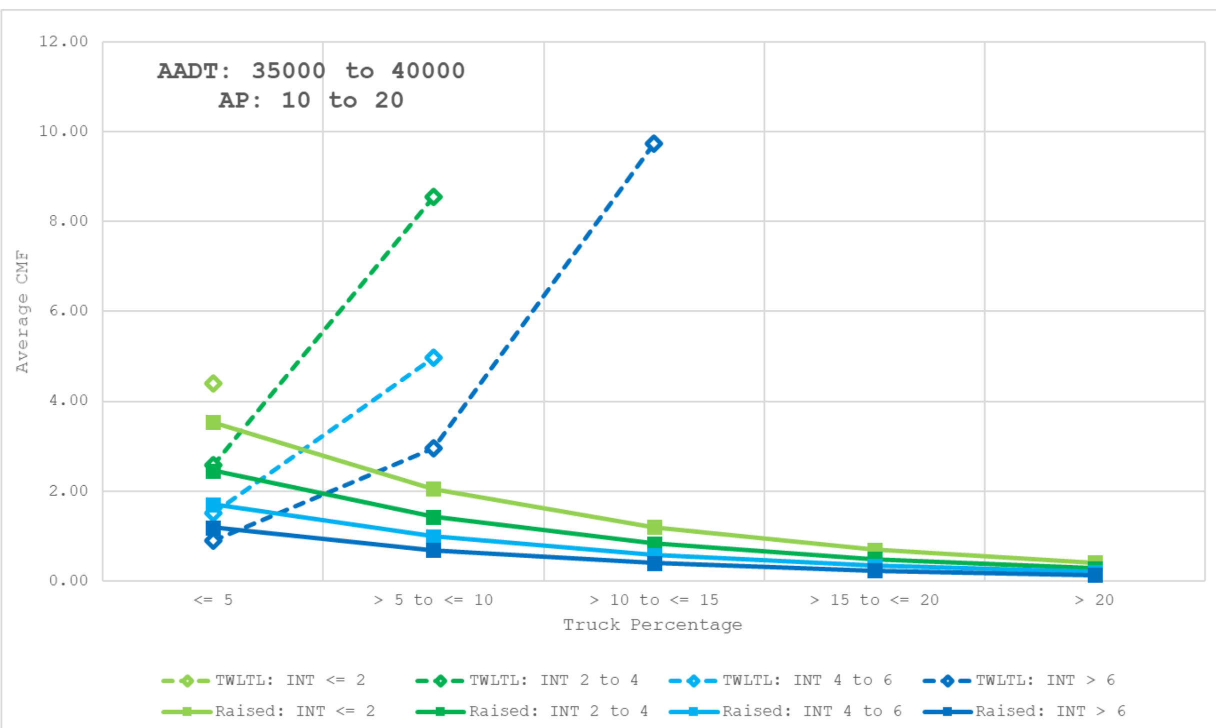
B-8-29 Urban Residential KAB CMF Graphs (AADT: 30,000 to 35,000, AP: > 30)



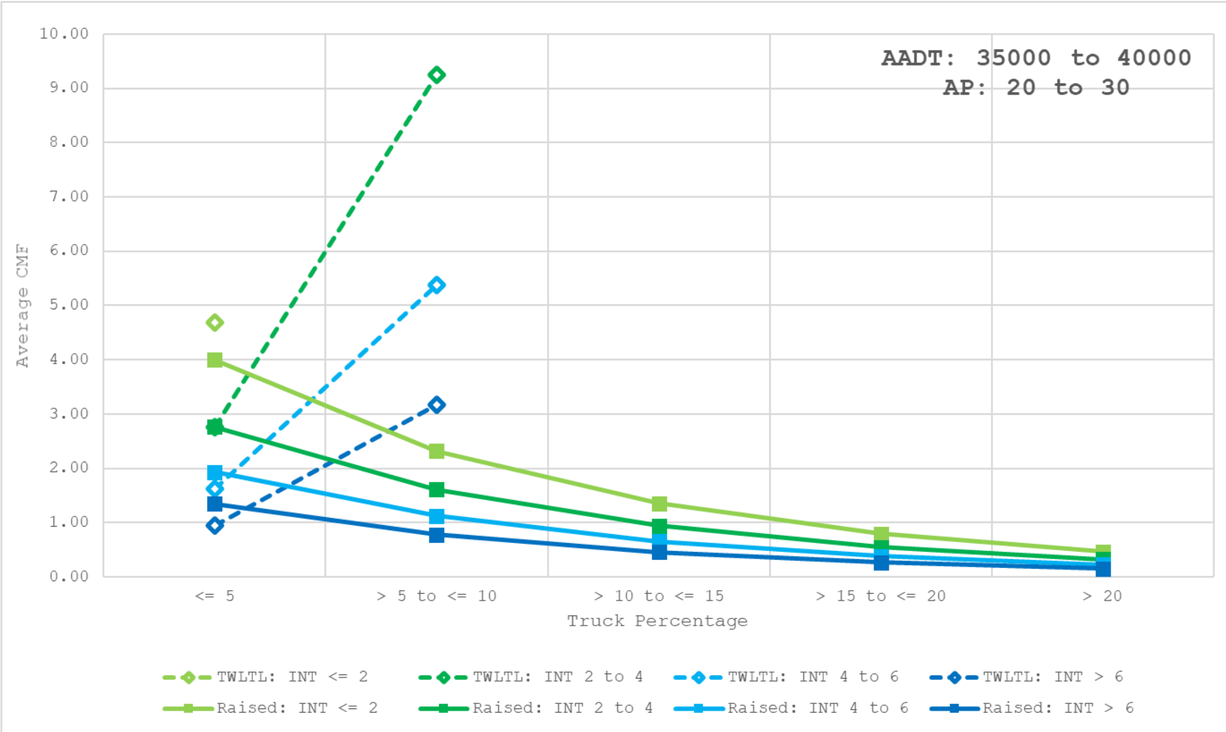
B-8-30 Urban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: <= 10)



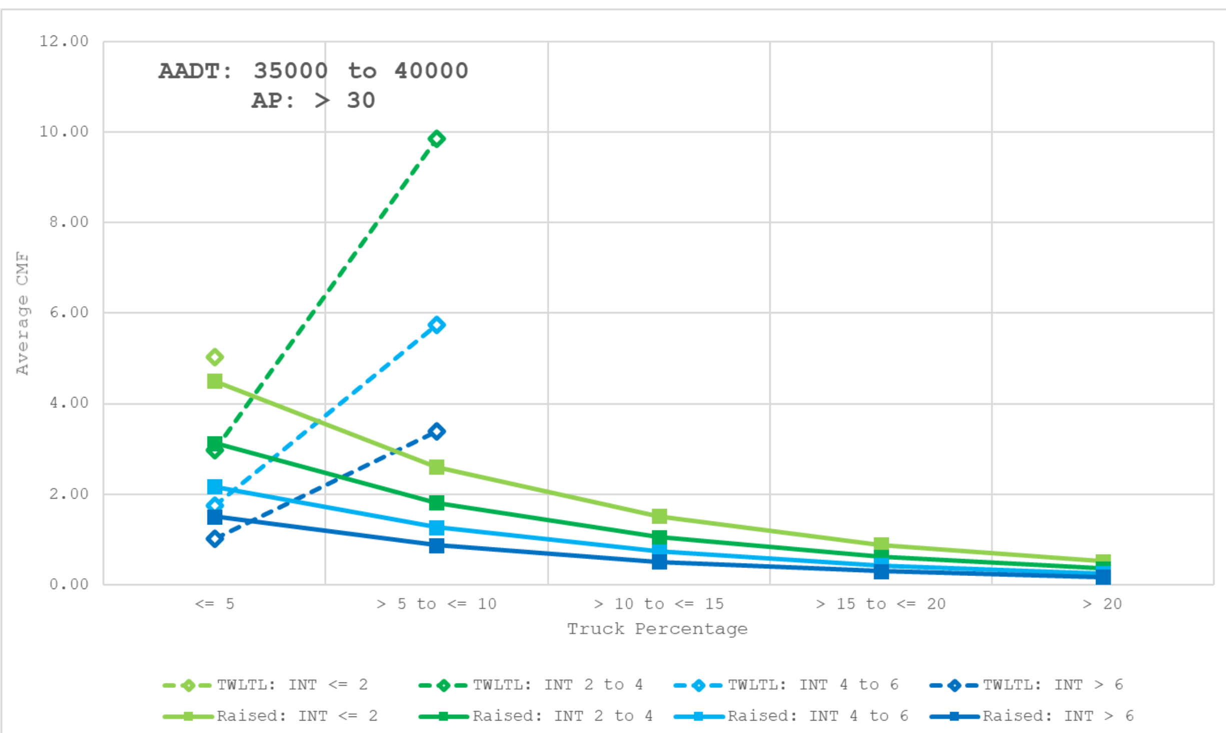
B-8-31 Urban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 10-20)



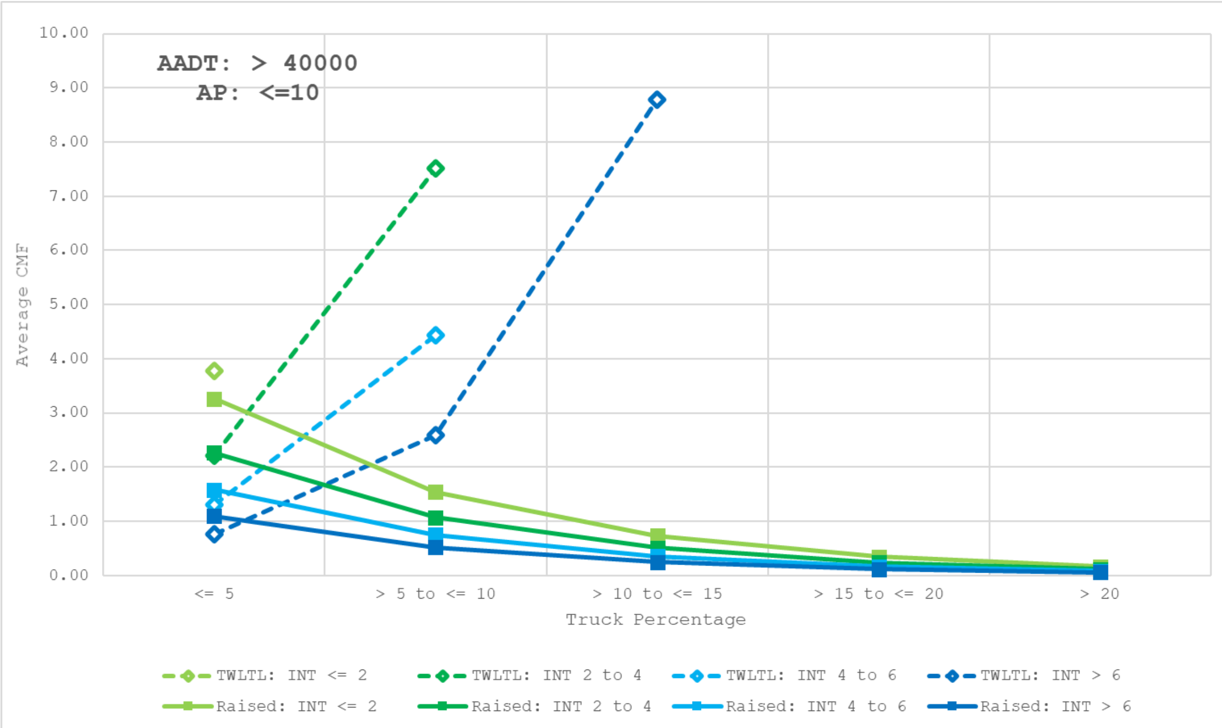
B-8-32 Urban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: 20-30)



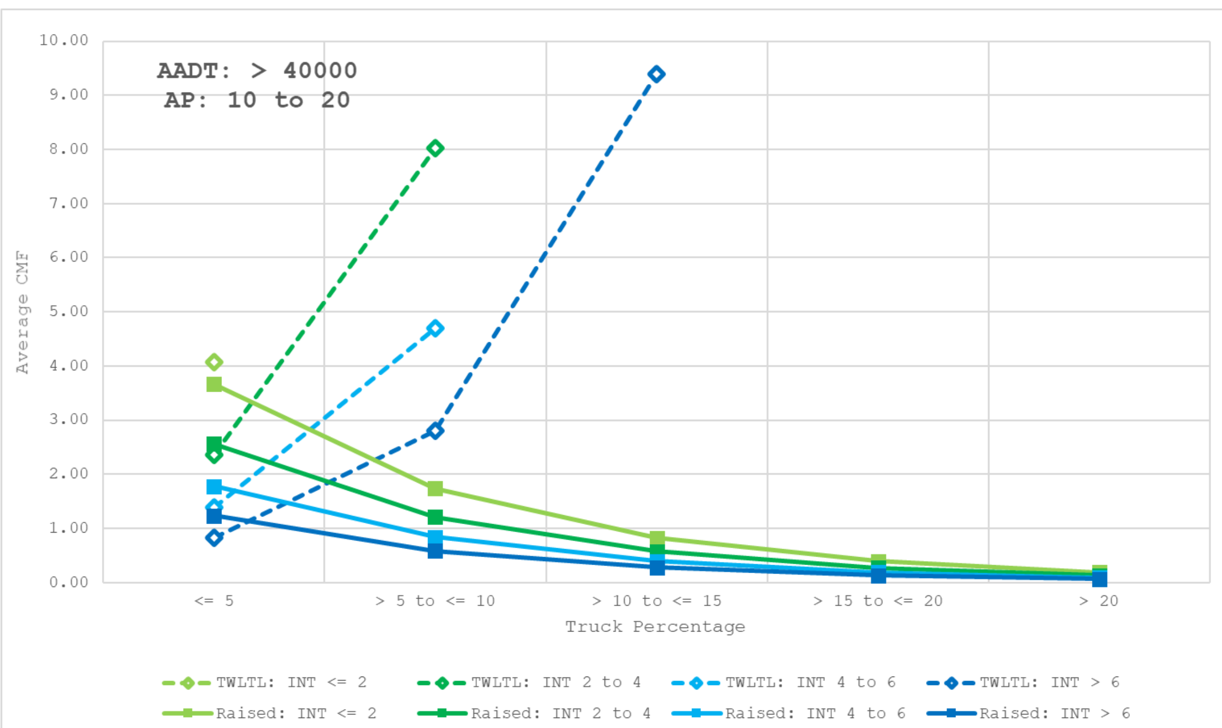
B-8-33 Urban Residential KAB CMF Graphs (AADT: 35,000 to 40,000, AP: > 30)



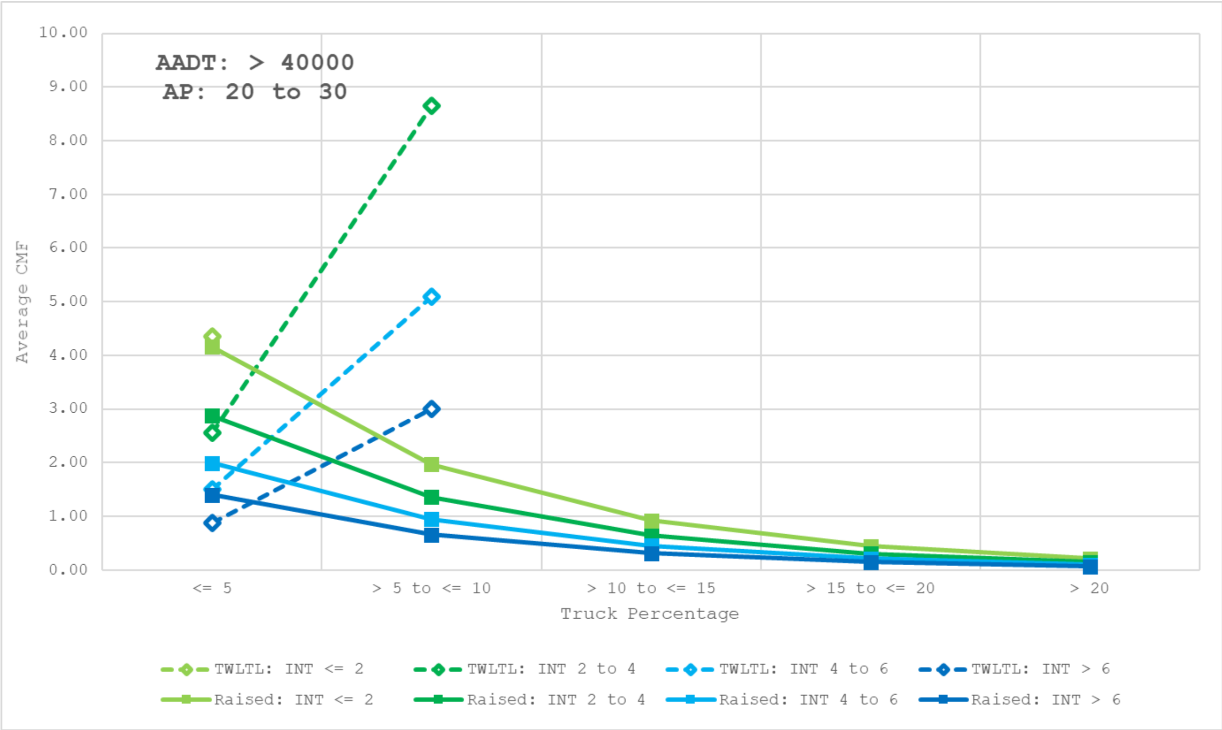
B-8-34 Urban Residential KAB CMF Graphs (AADT: > 40,000, AP: <= 10)



B-8-35 Urban Residential KAB CMF Graphs (AADT: > 40,000, AP: 10-20)



B-8-36 Urban Residential KAB CMF Graphs (AADT: > 40,000, AP: 20-30)



B-8-37 Urban Residential KAB CMF Graphs (AADT: > 40,000, AP: > 30)