



Traffic Inputs for MEPDG

The North Carolina Experience

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- Generate Inputs for Levels 1, 2, & 3
- Clustering of data for Level 2
- Design sensitivity determined clusters
- Develop traffic input procedure
- Specify minimum monitoring needs

Key Traffic Inputs

AADTT: Base year AADT for trucks

VCD: Vehicle Class Distribution

HDF: Hourly Distribution Factors

MAF: Monthly Adjustment Factors

ALF: Axle Load Factors

Axles: Axles/Types per Truck Class

Truck Growth: Future AADTT/VCD

Use defaults for all other inputs

Sensitivity Analysis

	Flexible				Rigid (JPCP)		
	Rutting	Fatigue	Long.	IRI	Fault.	%Slabs	IRI
VCD	Yes	Yes	Yes	Yes	No	No	Yes
HDF	No	No	No	No	No	No	No
MAF	No	No	No	No	No	No	No
ALF	Yes	Yes	Yes	Yes	No	No	No

Based on 10% of failure threshold

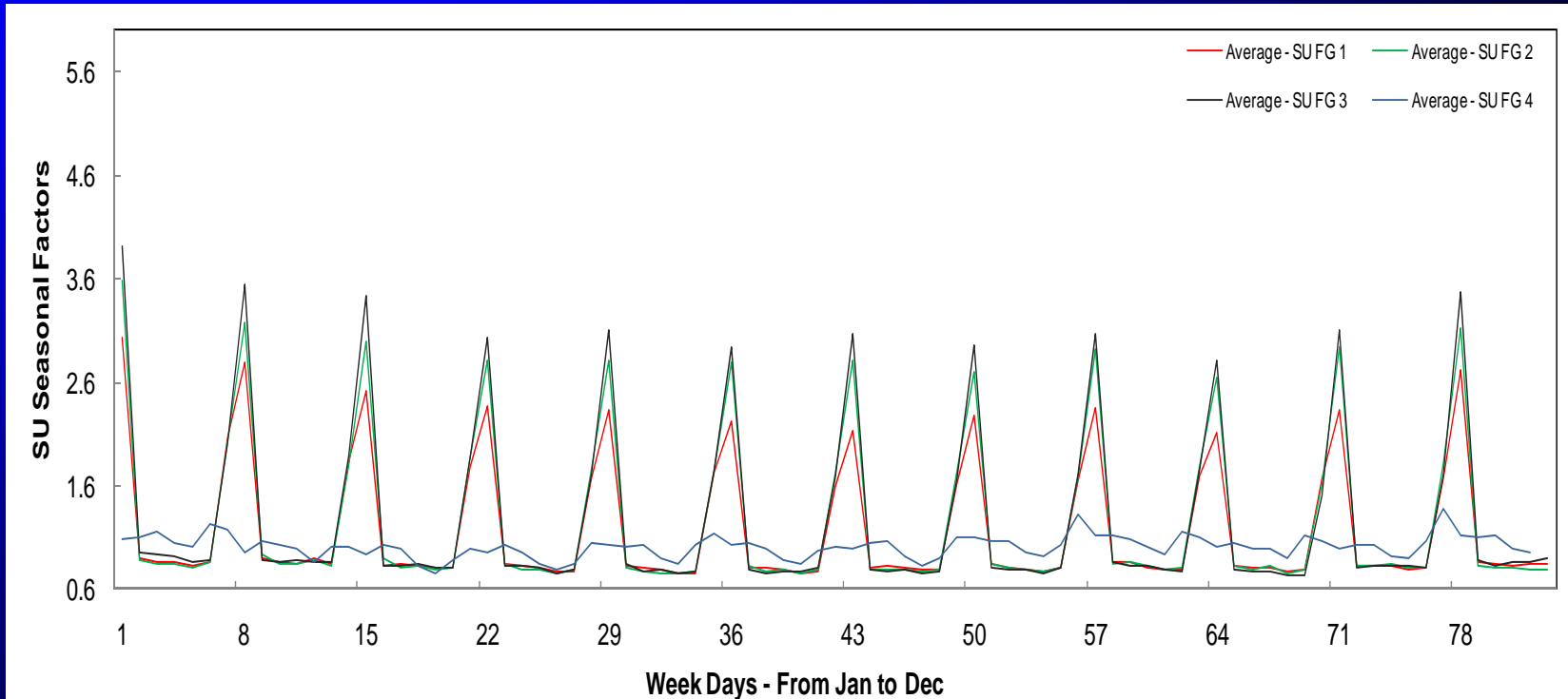
AADTT and VCD

AADTT: must collect a class count on a project to generate base year AADTT

VCD: Sensitivity analysis found it critical

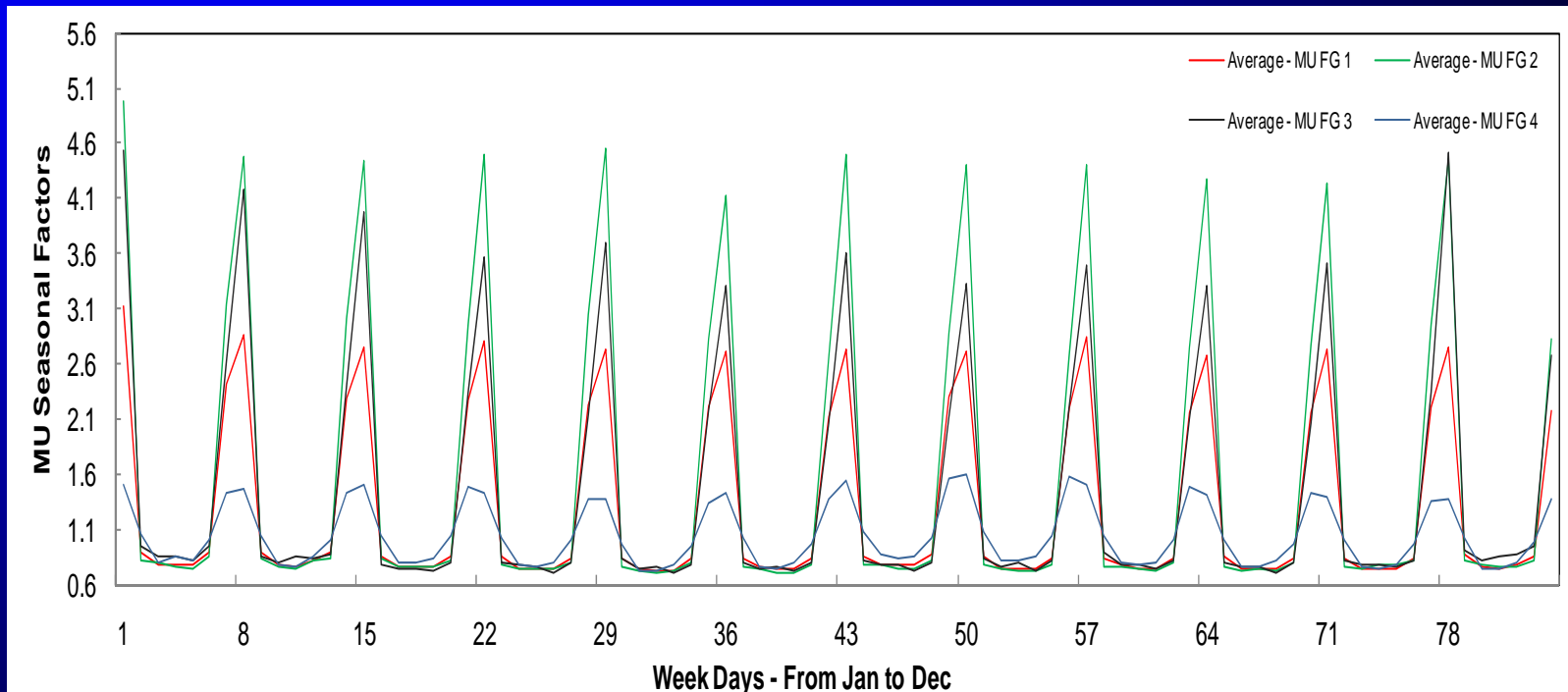
Recommendation: use annualized class data to generate project specific VCD

Seasonal Factors - SU



Suitable for monitoring and design

Seasonal Factors - MU



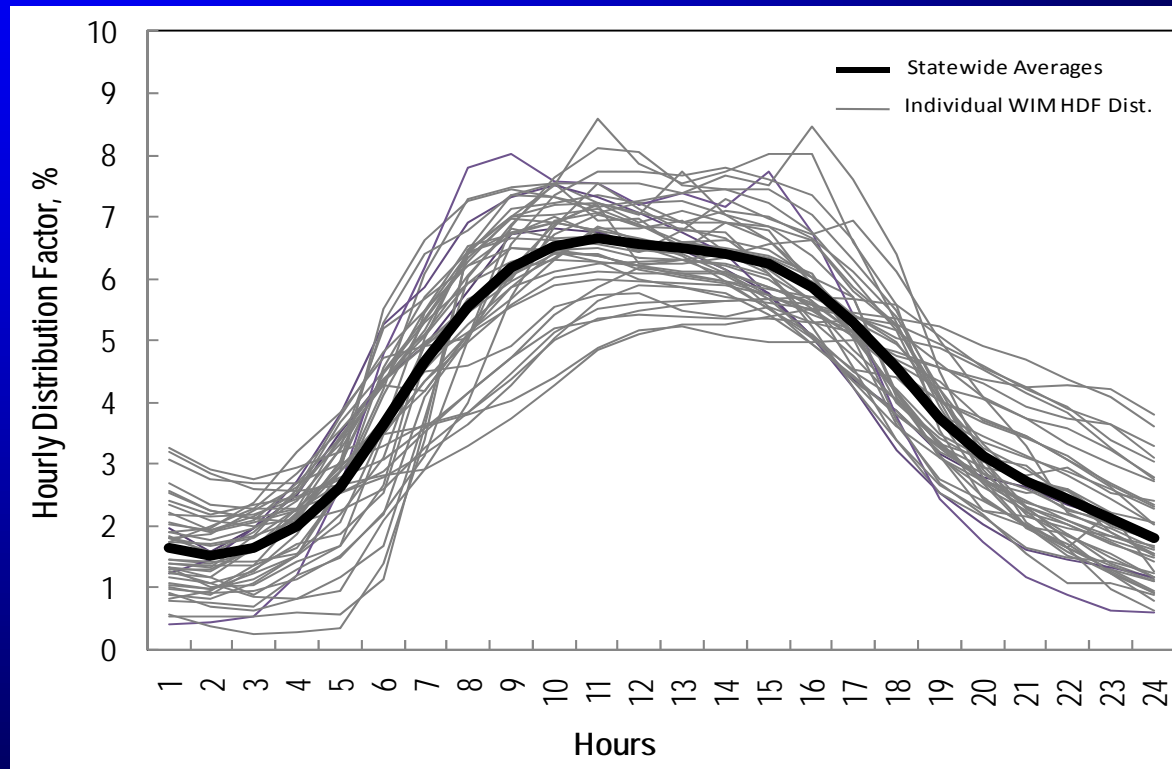
Suitable for monitoring and design

Draft Seasonal FG Selection

Pattern	SU/MU MIN.	SU/MU MAX.	SU Group	MU Group
High Through	0.10	0.50	1	1
Mixed	0.51	1.00	2	2
High Local	1.01	2.50	3	3
I-95	0.10	0.30	4	4

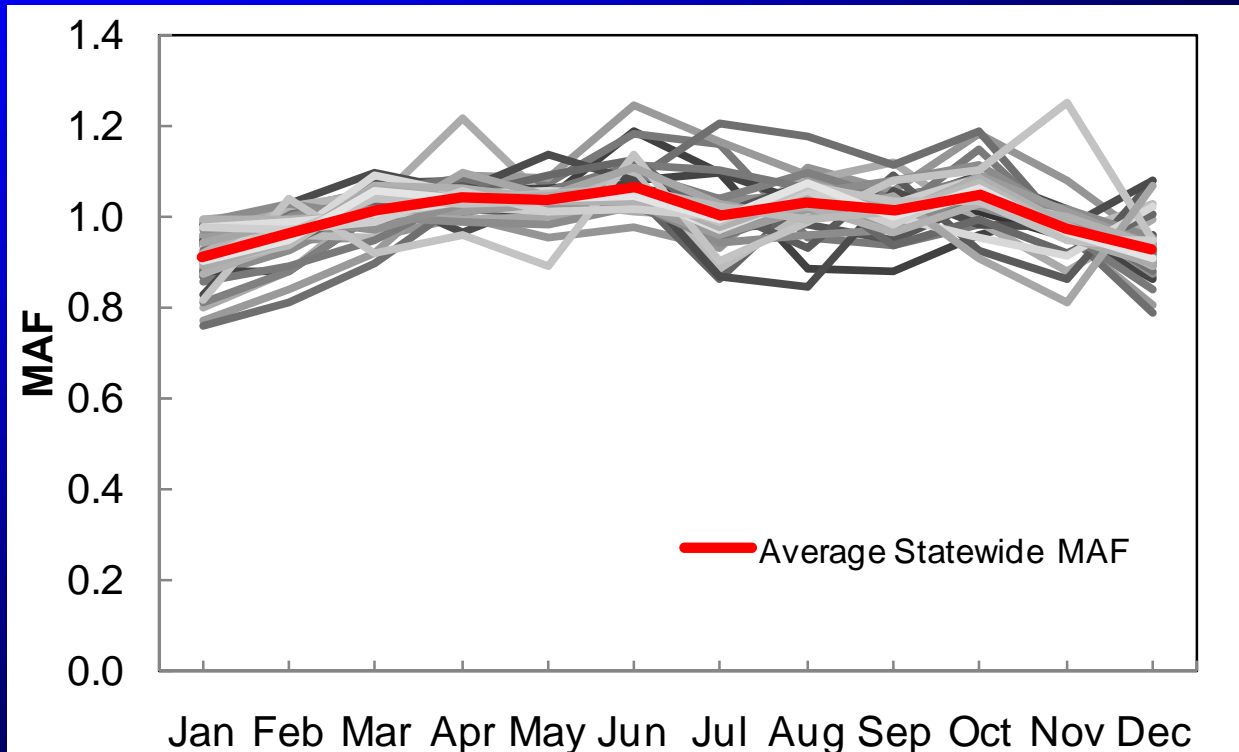
Use count based weekday volumes

HDF – Not Sensitive



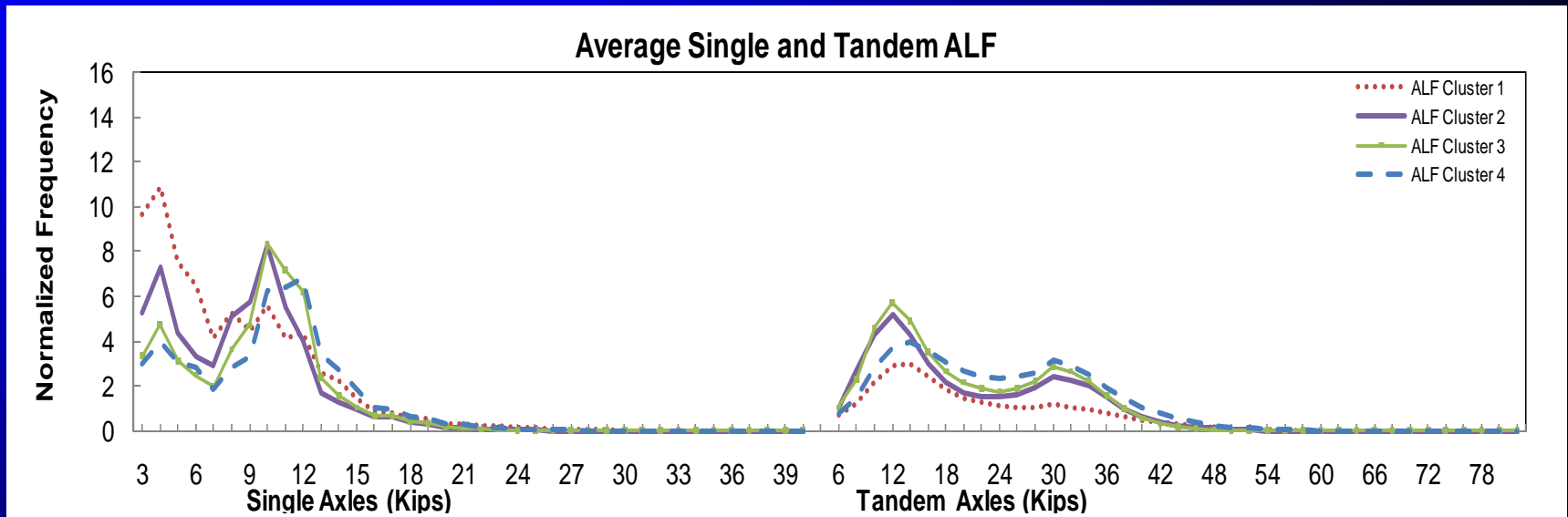
Statewide average for all designs

MAF – Not Sensitive



Statewide average for all designs

ALF – Four Groups



Clustered on Singles and Tandems only

ALF – Decision Tree

Class 5 & Class 9 (% of trucks):

ALF 1 and part of ALF 4 are exclusive

ALF 2, ALF 3 and part of ALF 4 overlap

Route Function: Look at AADTT, FC, and truck route connectivity

Geography & orientation are not factors

Truck Growth

Based on indicators:

SU Growth: similar to total traffic growth

MU Growth: Depends on through volumes (national trends) and local trip generators for this truck type

Existing and planned land use are key

Monitoring Requirements

	D (current)	Current # of WIMs	D (desired)	# of WIMs required *	# of WIMs to Install (Abandon)
SU FG 1	0.04	12	0.10	6	(6)
SU FG 2	0.04	10	0.10	6	(4)
SU FG 3	0.04	6	0.10	6	2
SU FG 4	0.10	2	0.10	6	7
MU FG 1	0.04	18	0.10	6	(13)
MU FG 2	0.04	10	0.10	6	(4)
MU FG 3	0.04	7	0.10	6	1
MU FG 4	0.05	2	0.10	6	2
ALF Cluster 1	0.23	7	0.15	12	6
ALF Cluster 2	0.14	8	0.10	14	6
ALF Cluster 3	0.05	13	0.10	6	(7)
ALF Cluster 4	0.10	13	0.10	14	1

MEPDG Process Summary

- We provide count based AADTT and VCD
- Forecasters provide base and future AADTT and VCD based on projects
- Pavement designers select ALF
- We must provide truck seasonal factors for AADTT & VCD and weight data for ALF
- Approximately 60 WIMs needed



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Thank You!



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