

RSPM Research #788
TFL ESTIMATED MODELS

May 2017
 intercept

Other Modules

Average Annual Daily VMT

REGIONWIDE VARIABLES

US Census Region (CENSUS_R: 01="NE",
 "02"="MW", "03"="S", "04"="W")

Transit miles per cap

Fwy lane miles per cap

Arterial lane miles per cap

SYNTHETIC HOUSEHOLD VARIABLES

HH Size

Worker Count

Income

Driving Age Pop

Vehicles Per Driver

Age0to14

Age65Plus

Life Cycle

(Single, Young Couple, Couple with children, Empty Nester)

Dwelling Unit Type (SFD, Dplx, Apt2-4 units, Apt5+ units)

HOME BUILT ENVIRONMENT/5Ds

5Ds: DENSITY

DUs/unprotected acre (SLD: D1A)

Pop/unprotected acre (SLD: D1B)

Emp/unprotected acre (SLD: D1C)

Emp + DUs/unprotected acre (SLD: D1D)

Census tract pop density (TRPOPDEN)

Urbanized Area Emp density(UZAEMPDEN)

5Ds: DIVERSITY/ENTROPY

Emp & HH entropy (SLD: D2A_EPHHM)

D1B * D2A_EPHHM

5Ds: DESIGN

Lane mile ped-oriented density/sqmi (SLD: D3apo)

Intersection density-4+ leg multi-modal/sqmi (SLD: D3bmm4)

Intersection density-4+ leg ped-oriented/sqmi (SLD: D3bpo4)

5Ds: TRANSIT

%CBG employment within ½ mile of fixed-guideway transit stop (SLD: D4b050)

D4c (PM Peak transit svc hrly freq within 1/4 mile of block group boundary)

Regionwide Transit miles per cap*D4c

5Ds: ACCESSIBILITY

Emp within 45 minutes auto (SLD: D5ar)

Ratio Emp Auto Accessibility vs Total MSA (SLD: D5cr)

Harmonic mean of Emp within 2 miles and Pop within 5 miles (ACCESS)

Emp within 5 mile of blockgroup centroid (EMPTOT_5)

RSPM VMT - Trip Frequency - Trip Length Models													
AADVMT		Transit Freq		Transit length		Bike Freq		Bike length		Walk Freq		Walk-Length	
Metro	NonMetro	Metro	NonMetro	Metro	NonMetro	Metro	NonMetro	Metro	NonMetro	Metro	NonMetro	Metro	NonMetro
x	x	x	x	x	x	x	x	x	x	x	x	x	x
Other Modules													
		x	x	x	x	x	x	x	x	x	x	x	x
REGIONWIDE VARIABLES													
		x											
x		x		x		x		x		x		x	
x		x		x		x		x		x		x	
SYNTHETIC HOUSEHOLD VARIABLES													
x	x	x	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x	x	x	x	x	x	x
x	x	x	x	x	x		x			x	x	x	x
x	x	x	x			x	x						
		x	x			x	x	x	x	x	x	x	x
HOME BUILT ENVIRONMENT/5Ds													
5Ds: DENSITY													
							x						
x	x		x	x	x		x						
						x							
		x	x		x		x		x	x	x	x	x
x	x			x									
						x			x				
5Ds: DIVERSITY/ENTROPY													
		x					x	x	x		x	x	x
		x											
5Ds: DESIGN													
						x		x		x	x		x
							x			x		x	
x				x					x		x	x	
5Ds: TRANSIT													
		x				x							
		x		x						x		x	
		x		x									
5Ds: ACCESSIBILITY													
		x						x			x	x	
		x				x							
x	x			x									

Notes/Possible Modifications

An alternative is census district*

Use bus-equivalent miles per capita

Will test using licensed drivers instead

Will use blockgroup density wherever possible

Will use entropy derived from HH & EMP (total and Ret/Svc)

Will investigate possible composite measure of these three Design measures

Can drop without significant effects on goodness-of-fit or accuracy in validation

Measure used in block group Place Types,

Will use ACCESS (as defined in block group Place Types, below) wherever possible

Measure used in block group Place Types,

*Alternative to Census_R, Census_D: '01'='New England', '02'='Middle Atlantic', '03'='East North Central', '04'='West North Central', '05'='South Atlantic', '06'='East South Central', '07'='West South Central', '08'='Mountain', '09'='Pacific'

SLD: https://www.epa.gov/sites/production/files/2014-03/documents/sld_userguide.pdf