

Gen3 Model Update

July 21, 2022

Presented by: Andrew Rohne



Overview

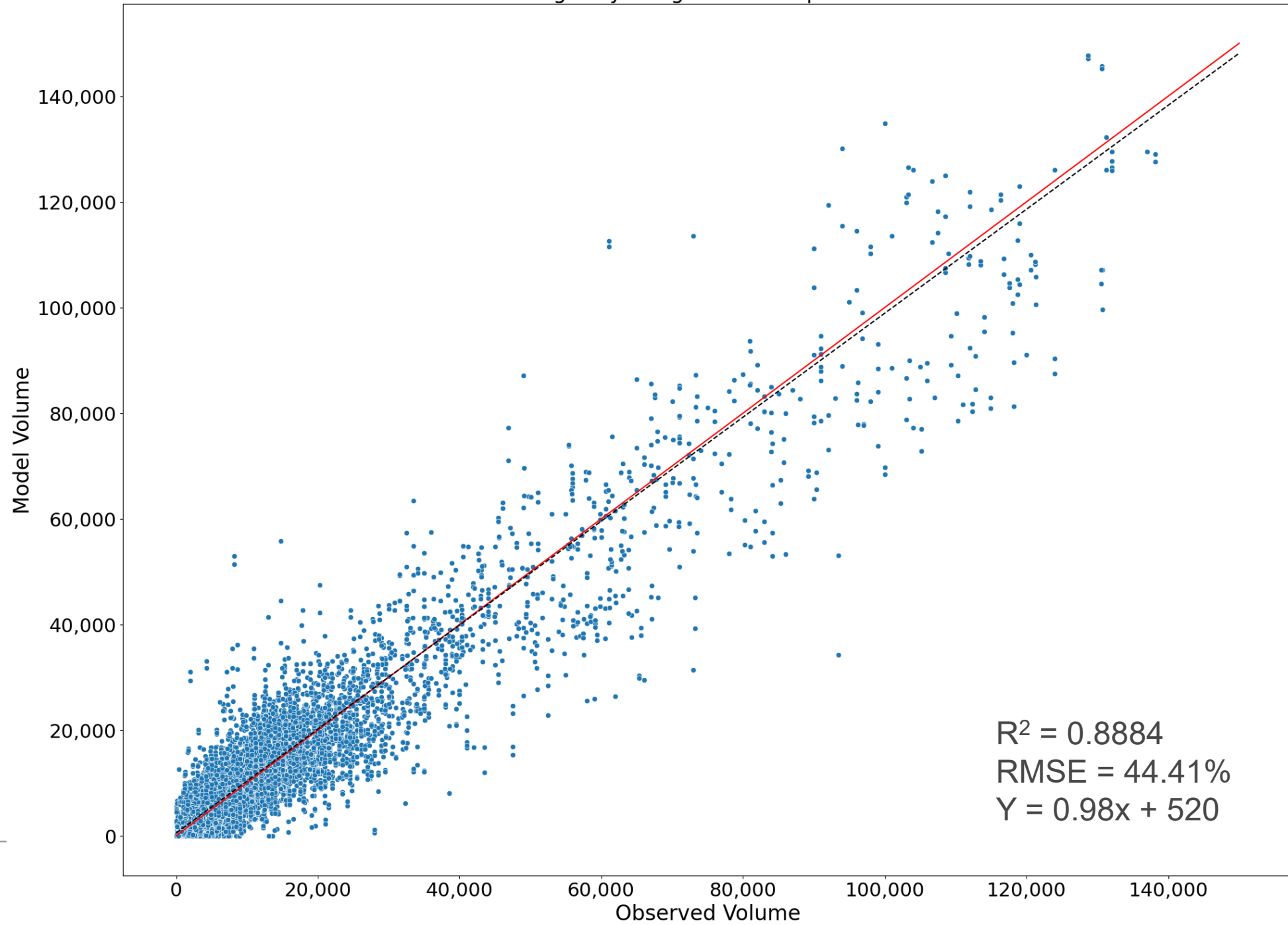
- Model Validation Updates
- Sensitivity Test Updates





Validation Updates – as of 7/20/23

Highway Assignment Comparison



VMT by Facility Type

FTYPE	Gen3	Gen2.4 (2018)	Standard (Acceptable)	Standard (Preferable)
Freeway	0.98	1.05	0.07	0.06
Major Arterial	1.01	1.07	0.15	0.10
Minor Arterial	1.05	1.09	0.15	0.10
Collector	0.68	0.74	0.25	0.20
Expressway	0.91	0.89	0.15	0.10
Total	0.98	1.03	0.05	0.02

VMT is based on links with counts
VMT is for TPB Modeled Area

Gen2 Model data from p. A-4 of of Seifu, Meseret, and Sanghyeon Ko. Memorandum to Feng Xie. "Year-2018 Validation of TPB Version 2.4 Travel Model." August 17, 2021



VMT by Area Type

ATYPE	Gen3	Gen2.4 (2014)	Standard (Acceptable)	Standard (Preferable)
AT 1 (CBD)	1.02	1.03	0.25	0.15
AT 2	0.89	0.95	0.25	0.15
AT 3	0.90	0.96	0.25	0.15
AT 4	0.94	1.02	0.25	0.15
AT 5	0.99	1.11	0.25	0.15
AT 6 (Exurban)	1.15	1.22	0.25	0.15
Total	0.98	1.06	0.25	0.15

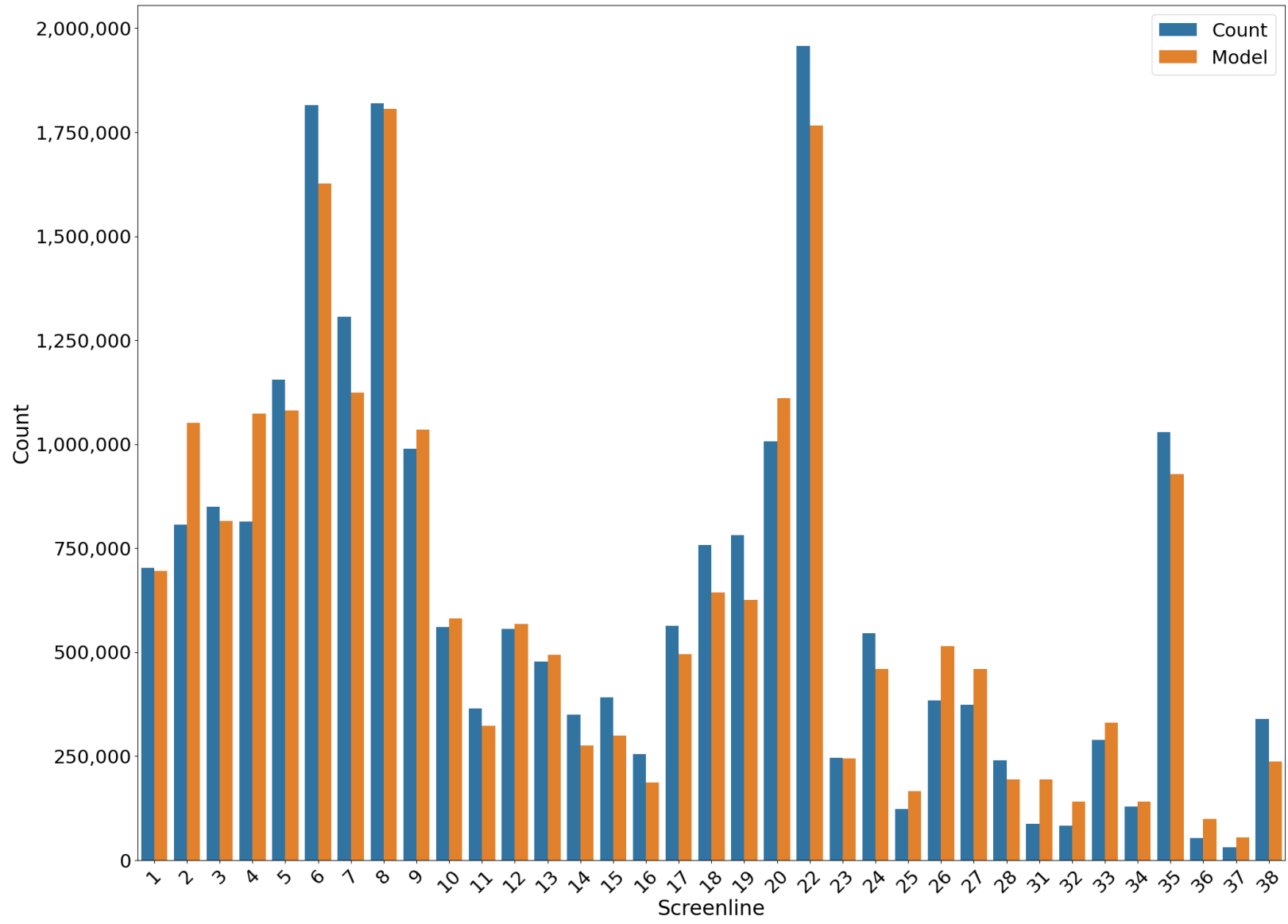
VMT is based on links with counts

VMT is for TPB Modeled Area

Gen2 Model data from p. A-3 of of Xie, Feng. Memorandum to Mark Moran and Dusan Vuksan. "Year-2014 Validation of TPB's Version 2.3 Travel Demand Model." March 12, 2019



Comparison of Estimated and Observed Volumes by Screen Line



VMT by Jurisdiction (TPB Planning Area)

	Model	Observed	Est / Obs	Gen2.4 (2018)
District of Columbia	8,743,563	8,410,547	1.04	0.97
Montgomery County	20,144,839	20,844,658	0.97	1.00
Prince George's County	22,668,092	25,320,822	0.90	0.89
Arlington County	3,977,073	4,115,600	0.97	1.00
City of Alexandria	2,166,682	1,851,663	1.17	1.16
Fairfax County	25,788,985	28,284,350	0.91	0.99
Loudoun County	7,491,711	7,342,782	1.02	1.01
Prince William County	9,508,642	10,300,396	0.92	0.99
Frederick County	8,668,994	8,391,370	1.03	1.08
Charles County	3,010,372	3,426,164	0.88	0.94
TPB Planning Area Total	112,168,953	118,288,352	0.95	0.98

VMT source: 2018 Highway Performance Monitoring System (HPMS)



VMT by Jurisdiction (Non-TPB Member Area)

	Model	HPMS_VMT	Est / Obs	Gen2.4 (2018)
Howard County	11,642,985	11,526,986	1.01	0.99
Anne Arundel County	15,448,382	16,518,082	0.94	0.97
Carrol County	4,364,940	3,408,904	1.28	1.29
Calvert County	1,381,702	2,019,452	0.68	0.82
St. Mary's County	1,740,513	2,367,534	0.74	0.90
King George County	749,510	932,207	0.80	0.90
City of Fredericksburg	837,934	990,749	0.85	0.90
Stafford County	4,027,341	4,358,421	0.92	1.08
Spotsylvania County (1)	2,301,947	3,774,287	0.61	0.63
Fauquier County (2)	3,455,589	3,686,566	0.94	1.03
Clarke County	1,060,348	827,733	1.28	1.31
Jefferson County	1,436,482	1,069,310	1.34	1.41
Non-TPB Member Area	48,447,675	51,480,231	0.94	0.98

VMT source: 2018 Highway Performance Monitoring System (HPMS)

(1): Observed VMT includes entire county, estimated VMT is only the northern portion

(2): Fauquier County urbanized area is part of TPB planning area, but remaining county is not, HPMS VMT is only available for the entire county.



Transit Validation Summary

	Model	Observed	Est / Obs	Gen2.4 Est / Obs
Metrorail	655,043	641,227	1.02	1.30
Commuter Rail	53,841	56,580	0.95	0.76
All Bus	597,577	575,642	1.04	1.20
Transit Total	1,306,459	1,273,449	1.03	1.24

2018 Simulation Year

Gen2 Model data from p. B-1 of of Seifu, Meseret, and Sanghyeon Ko. Memorandum to Feng Xie. "Year-2018 Validation of TPB Version 2.4 Travel Model." August 17, 2021



Bus Validation Summary

	Model	Observed	Est / Obs	Gen2.4 Est / Obs
Metrobus	351,446	360,000	0.98	
Other Bus in WMATA Area	180,050	141,390	1.27	
Other Bus Not in WMATA Area	66,079	74,252	0.89	
Bus Total	597,577	575,642	1.04	1.20

2018 Simulation Year

Gen2 Model data from p. B-1 of of Seifu, Meseret, and Sanghyeon Ko. Memorandum to Feng Xie. "Year-2018 Validation of TPB Version 2.4 Travel Model." August 17, 2021



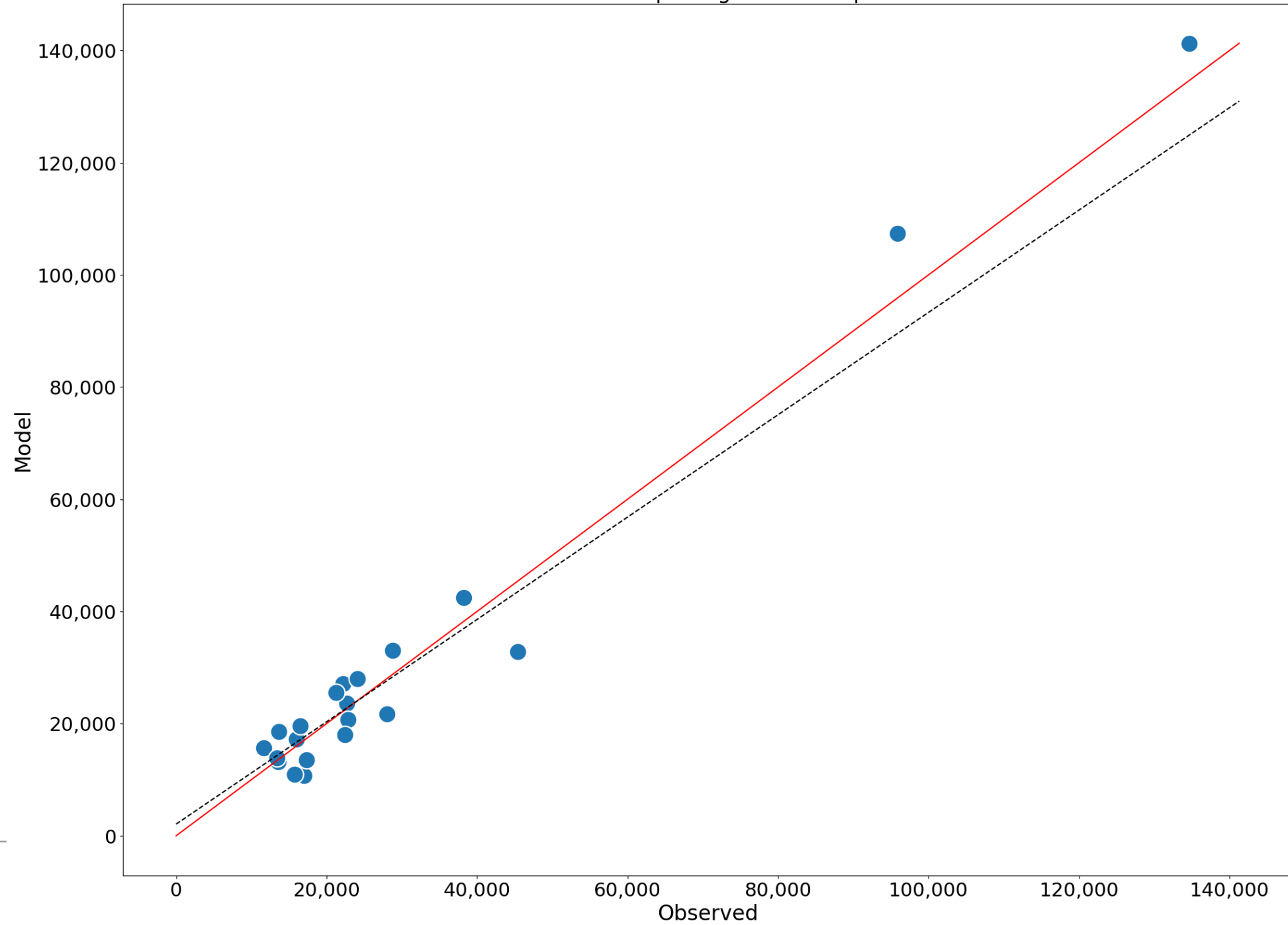
Transit Transfers

	Model Boards/Trips	Survey Boards/Trips	Source
All Bus Path	1.36	1.30	Metrobus survey
Metrorail Only	1.00	1.00	Inferred rate since boards = trips
Bus + Metrorail	2.10	2.14	Metrorail survey
Commuter Rail	1.42	1.42	Average of MARC and VRE

2018 Simulation Year



MR Station Group Assignment Comparison



Next Steps

- Updated highway network from MWCOCG (Currently Running)
- Adjustments to mode choice and/or trip destination based on new run
- Finish User's Guide
- Finish Model Calibration and Validation Report





Sensitivity Test Updates

Sensitivity Tests

- Telecommute Change for DC Workers
- VMT Tax
- Bridge Closure
- Double Frequency of High-Capacity Transit

Status: All tests have been run and the data is in the process of being analyzed





Contacts



Andrew Rohne

Senior Consultant

Andrew.Rohne@rsginc.com



www.rsginc.com