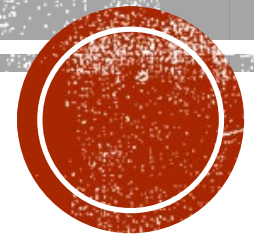
WELCOME TO THE TRM USER FORUM

MAY 15, 2024

AGENDA:

- WELCOME
- TRM UPDATES
- YOU SPOKE, WE LISTENED
- TRMG2 MTP APPLICATIONS
- WISDOM EXCHANGE: Insights and Tactics
- MIX & MINGLE



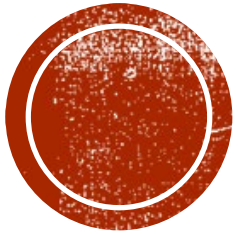
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

CAMPO NC Capital Area Metropolitan Planning Organization

DCHC Metropolitan Planning Organization Planning Tomorrow Today

GO Triangle

ITRE



TRM UPDATES

Leta Huntsinger, ITRE

TRMG2 V1.3.1

Official model always available on GitHub

V1.3.1 includes

- Project list modifications to reflect 2050 MTP Amendment as of Aug 2023
- Bug fixes for some reporting tools and summaries
- Additional reporting tools
- Full changelog is available on GitHub

We are encouraging our user community to use GitHub issues to notify us of bugs, data errors, or to request enhancements and/or tools.

Planning quarterly releases as needed to leverage new tools or bug/data fixes.

TRMG2 V2

Converted to TransCAD 10.0

Enhancements include:

- Improved method for evaluating non-motorized projects
- Optimization of the project manager
- Implementation of new peak periods to better align with transit operating schedules
- Modifications to equity performance measures
- Modifications to the mode choice model

Data development for 2055 is underway

Scheduled release to MPOs for MTP development June 2024.

CURRENT ACTIVITIES

- Ongoing model maintenance & applications
- Travel Trends report updated and published
- Telework analysis
- Ongoing development of user tools
- Planning underway for the next wave of the Triangle Travel Survey

FY25

TRMG2v3

- Boundary expansion
- Data development
- Expected RFP in fall 2025

Model Maintenance

Reporting Tools

Investigation to Improve School Forecasting

Deep dive into the new transit on-board survey

YOU SPOKE, WE LISTENED

Leta Huntsinger, ITRE

USER FORUM REQUESTS

- Update user guide to better describe how capacity is applied (we added an Excel sheet calculator!)
- Can we move TRMG2 to TransCAD 10
- Modifications to the Diff Tool
- Implement a new delete tool that deletes everything except the assignment files

MTP 2055 SCENARIO TESTING

Mike Bruff and Gerald Daniel, CAMPO

Scenarios Tested

(TRMG v1.3.1)

1. MTP 2050 Adopted (baseline)
2. TOD – CV Reallocation - County Control Totals
3. VMT Reduction
4. Flexible Funding
5. Equity
6. Highway Expanded

TOD_CV County Control Totals

Scenario Description

- Land Use – TOD- CV County Control Totals, **Used CV to allocate all new 2020-50 population and employment growth near BRT/LRT and CRT stations and HF Bus routes**
- Highway – MTP 2050 Adopted Project list
- Transit - MTP 2050 Adopted Transit project list with **doubled transit frequency**

Model Conclusions/Limitations

- Model responded to changes in land use patterns that clustered residential and employment near transit services and to changes in transit access policy that reduced headways.

VMT – Reduction Scenario

Scenario Description

- Land Use – TOD – CV County Control Totals, **allocate all new 2020-50 population and employment growth near BRT/LRT and CRT stations and HF Bus routes**
- Model Parameters - **modified production and attraction rates for HBW purpose to represent increased WFH**
- Highway - MTP 2050 Adopted Highway project list with **VMT Tax - added $0.05 toll on all non-toll drive links (current gas tax is $0.015 cents/mile, $.017 cents to administer, current tolled routes ~ $0.20/mile)**
- Transit - MTP 2050 Adopted Transit project list **with doubled transit frequency**

Model Conclusions/Limitations

- Model is sensitive to VMT tax, production/ attraction rate changes and increase in transit frequency.

Field	w_hbw_a (WFH)	w_hbw_a (orig)
Industry	1.43	1.43
Office_EL	0.9	1.029
Office_EH	0.595	0.713
Service_RateLow	0.884	0.884
Service_RateHigh	0.495	0.495
Retail	0.8	0.8
dc_attr_rates_WFH.csv		

trip_type	rule	base_rate	rate change	adj_rate
N_HB_OD_Long	is_worker = 1 and age >= 22 and age < 71	0.39	0.09	0.48
N_HB_OD_Short	oth_kids < 2 and e_access < 11.11 and oth_senior < 1	0.19	0.04	0.23
N_HB_OD_Short	oth_kids < 2 and e_access < 11.78 and oth_senior >= 1	0.35	0.08	0.43
N_HB_OD_Short	oth_kids < 2 and e_access >= 11.11 and oth_senior < 1	0.28	0.06	0.34
N_HB_OD_Short	oth_kids < 2 and e_access >= 11.78 and oth_senior >= 1	0.64	0.14	0.78
N_HB_OD_Short	oth_kids >= 2 and e_access < 11.99 and n_access >= 7.313 and g_access >= 11.	0.49	0.11	0.60
N_HB_OD_Short	oth_kids >= 2 and e_access >= 11.99 and n_access >= 7.313 and g_access >= 11	1.18	0.26	1.44
N_HB_OD_Short	oth_kids >= 2 and n_access < 7.313	0.22	0.05	0.27
N_HB_OD_Short	oth_kids >= 2 and oth_kids < 3 and n_access >= 7.313 and g_access < 11.66	0.5	0.11	0.61
N_HB_OD_Short	oth_kids >= 3 and n_access >= 7.313 and g_access < 11.66	0.97	0.21	1.18
N_HB_OME_All	age >= 31 and age < 63 and is_worker = 1	0.47	0.04	0.51
N_HB_OME_All	age >= 63 and age < 75 and g_access >= 11.65 and is_worker = 1	0.71	0.06	0.77
N_HB_OMED_All	retired_hh = 0 and age < 51	0.03	0.01	0.04
N_HB_OMED_All	retired_hh = 0 and age >= 51 and is_worker = 1	0.06	0.01	0.07
W_HB_O_All	is_worker = 1 and age >= 22 and oth_senior < 1 and oth_ppl < 1	0.46	-0.10	0.36
W_HB_O_All	is_worker = 1 and age >= 22 and oth_senior < 1 and oth_ppl >= 1	0.34	-0.07	0.27
W_HB_O_All	is_worker = 1 and age >= 22 and oth_senior >= 1 and per_inc < 28869	0.12	-0.03	0.09
W_HB_O_All	is_worker = 1 and age >= 22 and oth_senior >= 1 and per_inc >= 28869	0.28	-0.06	0.22
W_HB_W_All	is_worker = 1 and age >= 19 and age < 79 and oth_kids < 2 and oth_senior < 2	0.96	-0.20	0.76
W_HB_W_All	is_worker = 1 and age >= 19 and age < 79 and oth_kids < 2 and oth_senior >= 2	0.52	-0.11	0.41
W_HB_W_All	is_worker = 1 and age >= 19 and age < 79 and oth_kids >= 2 and oth_wrkr < 1	0.99	-0.21	0.78
W_HB_W_All	is_worker = 1 and age >= 19 and age < 79 and oth_kids >= 2 and oth_wrkr >= 1	0.73	-0.15	0.58

Flexible Funding

Scenario Description

- Land Use – Baseline SE 2050 data
- Transit – MTP 2050 Adopted Transit project list for A&B; **C - modified routes and transit project list in DCHC**
- Highway – **Three different highway project list scenarios based on changes in STI funding (A, B, C)**

Model Conclusions/Limitations

- VMT, congestion and delay vary based on mix of roadway projects
- Transit ridership varied based on route changes.

Equity Scenario

Scenario Description

- Land Use –
  - se_2050_equity - **reallocated all new employment to equity TAZs**
  - se_2050_equity_highpay - **adjust high pay TAZs in equity TAZs**
- Transit - MTP 2050 Adopted Transit project list
- Highway – MTP 2050 Adopted Roadway Project list

Model Conclusions/Limitations

- Congested VMT goes up when SE data is placed in clusters, likely created based on a restraint in base year estimation parameters. The model has been calibrated to the averages of base year conditions in terms of travel times and lengths (roughly 20-25 miles and 25 or so minutes). These values are constants in the travel time/distance calculations. Even though the SE data is overloaded unrealistically from the entire region to a few clusters, the model will still rely on those travel time/distances for the destination choice model. This results in some unusual employee travel behavior.

Highway Expansion Scenario

Scenario Description

- Land Use – **Used CV to reallocate new growth along major corridors**
- Transit - MTP 2050 Adopted Transit project list
- Highway – MTP 2050 Adopted Roadway project list, **Doubled capacity on all Freeway Links**

Model Conclusions/Limitations

- This scenario doubled the laneage/capacity for freeway facilities and as expected, had the highest reduction in Congested VMT and Hours of Delay.

- Congested VMT was reduced 91% compared to the 2050 MTP, however, total VMT increased by 7% suggesting induced demand due to additional capacity. This demand mitigated the expected realized benefit of increased travel speeds as observed in the chart below where the speeds between the Highway Expansion scenario and the Equity scenario that used the 2050 MTP Highway network are similar.

	HWYX Average Freeway Speeds		Equity Average Freeway Speeds	
	AB	BA	AB	BA
Downtown	50.01	63.82	50.29	65.29
Rural	61.53	62.77	61.66	61.97
Suburban	56.97	62.42	57.11	62.46
Urban	53.88	63.97	53.93	64.64

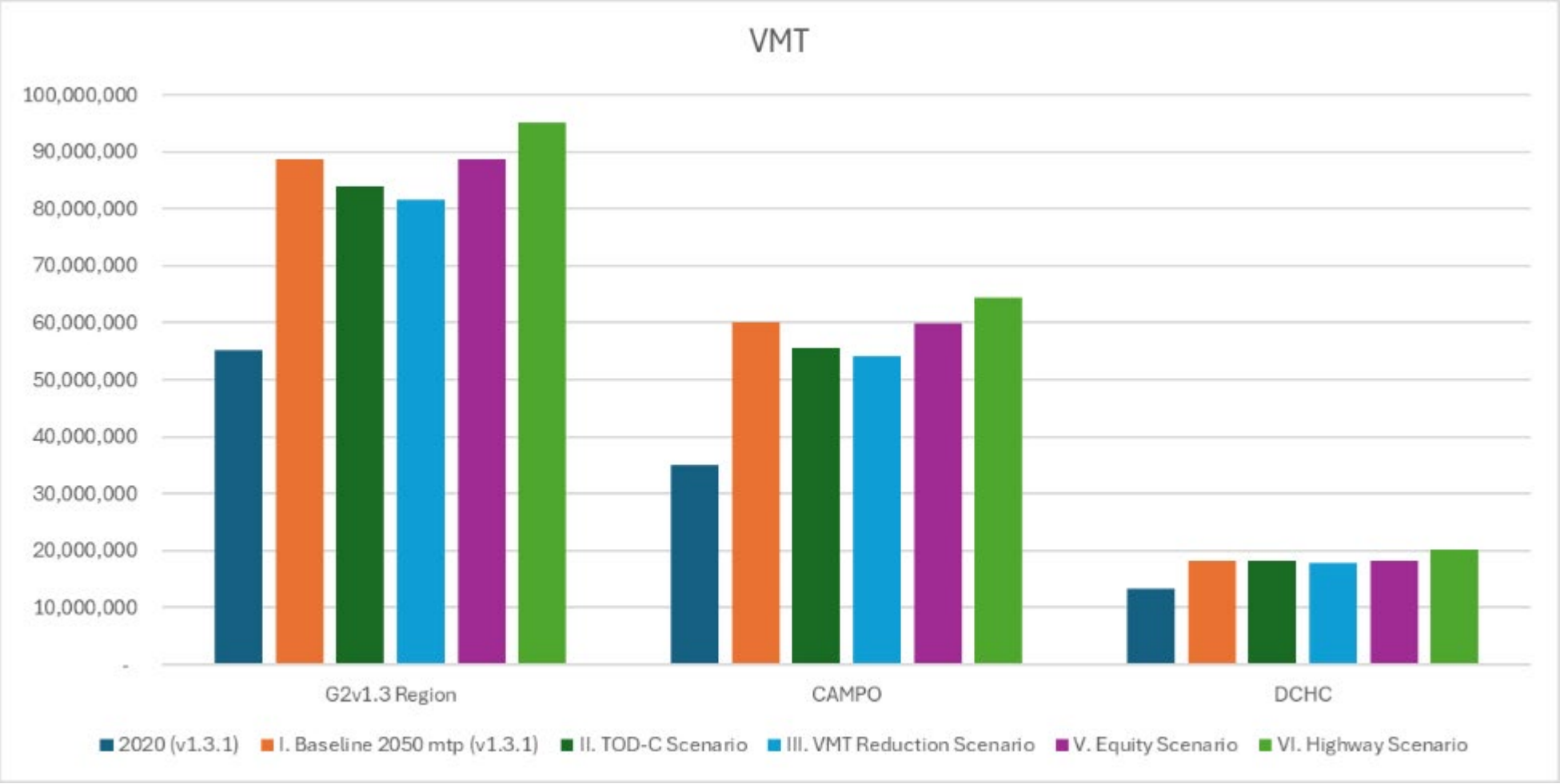
Performance Measure Results

			Scenario Results											% Change from Baseline Scenario						
PM Category	PM	Area	2020 (v1.3.1)	I. Baseline 2050 mtp (v1.3.1)	II. TOD-C Scenario	II. TOD-C Scenario (modify Inc)	III. VMT Reduction Scenario	IV. Flex Funding Scenario (A)	IV. Flex Funding Scenario (B)	IV. Flex Funding Scenario (C)	V. Equity Scenario	V1. Equity Scenario/High Pay Adjusted	VI. Highway Scenario	II. TOD-C Scenario	II. TOD-C Scenario (adjIncome)	III. VMT Reduction Scenario	IV. Flex Funding Scenario (C)	V. Equity Scenario	V1. Equity Scenario/High Pay Adjusted	VI. Highway Scenario
SE Data	Total Population	G2v1.3 Region	2,028,897	3,283,255	3,283,412	3,283,255	3,283,412	3,283,255	3,283,255	3,283,255	3,283,255	3,283,255	3,283,160	0%	0%	0%	0%	0%	0%	0%
		CAMPO	1,344,086	2,297,979	2,328,806	2,328,806	2,328,806	2,297,979	2,297,979	2,297,979	2,297,979	2,297,979	2,306,094	1.3%	1.3%	1.3%	0%	0%	0%	0.4%
		DCHC	471,445	671,073	688,948	688,948	688,948	671,073	671,073	671,073	671,073	671,073	670,920	2.7%	2.7%	2.7%	0%	0%	0%	0.0%
SE Data	Household Population	G2v1.3 Region	2,001,649	3,243,620	3,243,777	3,243,620	3,243,777	3,243,620	3,243,620	3,243,620	3,243,620	3,243,620	3,243,525	0%	0%	0%	0%	0%	0%	0%
		CAMPO	1,334,913	2,283,897	2,314,724	2,283,897	2,314,724	2,283,897	2,283,897	2,283,897	2,283,897	2,283,897	2,292,012	1.3%	0.0%	1.3%	0%	0%	0%	0.4%
		DCHC	453,370	645,520	663,395	645,520	663,395	645,520	645,520	645,520	645,520	645,520	644,737	2.8%	0.0%	2.8%	0%	0%	0%	-0.1%
SE Data	Total Jobs	G2v1.3 Region	1,057,590	1,907,502	1,907,633	1,907,633	1,907,633	1,907,578	1,907,578	1,907,578	1,907,578	1,907,578	1,907,529	0%	0%	0%	0%	0%	0%	0%
		CAMPO	660,075	1,258,565	1,264,009	1,264,009	1,264,009	1,242,285	1,242,285	1,242,285	1,258,565	1,242,285	1,261,283	0.4%	0.4%	0.4%	-1%	0.0%	-1%	0.2%
		DCHC	310,883	519,254	529,374	529,374	529,374	519,254	519,254	519,254	528,051	528,051	521,410	1.9%	1.9%	1.9%	0%	1.7%	1.7%	0.4%
Transport	Highway Lane Miles	G2v1.3 Region	13,118	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	15,675	17,134	0%	0%	0%	0%	0%	0%	9.3%
		CAMPO	7,477	9,751	9,751	9,751	9,751	9,751	9,751	9,751	9,751	9,751	10,372	0%	0%	0%	0%	0%	0%	6.4%
		DCHC	2,580	2,741	2,741	2,741	2,741	2,741	2,741	2,741	2,741	2,741	3,257	0%	0%	0%	0%	0%	0%	18.8%
Transport	VMT	G2v1.3 Region	55,115,747	88,672,433	83,908,304	83,748,640	81,608,257			88,630,520	88,570,496	88,571,744	94,988,527	-5.4%	-5.6%	-8.0%	0%	-0.1%	-0.1%	7.1%
		CAMPO	35,081,387	60,001,384	55,685,351	55,555,737	54,029,549			59,999,788	59,827,195	59,828,515	64,349,952	-7.2%	-7.4%	-10.0%	0%	-0.3%	-0.3%	7.2%
		DCHC	13,260,026	18,199,210	18,251,130	18,213,492	17,770,622			18,185,372	18,229,714	18,232,744	20,249,078	0.3%	0.1%	-2.4%	0%	0.2%	0.2%	11.3%
Transport	VMT per Capita	G2v1.3 Region	27.2	27.0	25.6	25.5	24.9	0.0	0.0	27.0	27.0	27.0	28.9	-5.4%	-5.6%	-8.0%	0%	-0.1%	-0.1%	7.1%
		CAMPO	26.1	26.1	23.9	23.9	23.2	0.0	0.0	26.1	26.0	26.0	27.9	-8.4%	-8.6%	-11.1%	0%	-0.3%	-0.3%	6.9%
		DCHC	28.1	27.1	26.5	26.4	25.8	0.0	0.0	27.1	27.2	27.2	30.2	-2.3%	-2.5%	-4.9%	0%	0.2%	0.2%	11.3%
Transit	Transit Ridership	G2v1.3 Region	126,876	397,557	532,355	549,332	578,138			388,523	427,327	427,627	363,952	33.9%	38.2%	45.4%	-2%	7.5%	7.6%	-8.5%
	Passenger Service Miles	G2v1.3 Region	414,838	1,911,556	2,660,564	2,730,096	2,910,055			1,871,815	2,078,079	2,078,843	1,773,547	39.2%	42.8%	52.2%	-2%	8.7%	8.8%	-7.2%
	Transit Service Miles	G2v1.3 Region	45,566	149,419	200,068	200,068	200,068			145,051	149,419	149,419	149,419	33.9%	33.9%	33.9%	-3%	0.0%	0.0%	0.0%
Transport	SOV Mode Share (sov/(sov+hov2+hov3))	G2v1.3 Region	76.7%	75.6%	75.5%	75.5%	74.3%			75.6%	75.6%	75.6%	75.6%	-0.1%	-0.2%	-1.7%	0%	0.0%	0.0%	0.0%
		CAMPO	73.2%	72.1%	71.9%	71.8%	70.5%			72.1%	72.1%	72.1%	72.1%	-0.3%	-0.4%	-2.2%	0%	0.0%	0.0%	0.0%
		DCHC	76.5%	75.3%	75.1%	75.0%	73.9%			75.3%	75.3%	75.3%	75.4%	-0.3%	-0.4%	-1.9%	0%	0.0%	0.0%	0.1%
Transport	Congested VMT (All Trips)	G2v1.3 Region	5,072,996	20,630,269	20,500,381	20,328,212	18,135,889			20,229,858	21,326,860	21,341,093	1,798,138	-0.6%	-1.5%	-12.1%	-2%	3.4%	3.4%	-91.3%
		CAMPO	2,903,054	13,326,323	13,123,704	12,970,616	11,271,865			12,893,906	14,100,374	14,112,937	1,028,602	-1.5%	-2.7%	-15.4%	-3%	5.8%	5.9%	-92.3%
		DCHC	1,938,233	5,563,132	5,613,583	5,594,189	5,132,023			5,578,850	5,467,199	5,468,853	583,951	0.9%	0.6%	-7.7%	0%	-1.7%	-1.7%	-89.5%
Transport	Average Cong Travel Time (sov AM)	G2v1.3 Region	33.91	34.81	34.82	34.80	34.26			34.91	35.13	35.14	31.80	0.0%	0.0%	-1.6%	0%	0.9%	0.9%	-8.6%
		CAMPO	25.18	25.30	25.09	25.07	24.71			25.07	25.46	25.46	23.21	-0.8%	-0.9%	-2.3%	-1%	0.6%	0.6%	-8.3%
		DCHC	15.45	16.47	16.59	16.58	16.27			16.54	16.56	16.56	15.01	0.7%	0.7%	-1.2%	0%	0.5%	0.5%	-8.9%

Performance Measure Results

			Scenario Results									% Change from Baseline Scenario						
PM Category	PM	Area	2020 (v1.3.1)	I. Baseline 2050 mtp (v1.3.1)	II. TOD-C Scenario	V. Equitable TOD	III. VMT Reduction Scenario	IV. Flex Funding Scenario (A)	IV. Flex Funding Scenario (B)	IV. Flex Funding Scenario (C)	VI. Highway Scenario	II. TOD-C Scenario	V. Equitable TOD	III. VMT Reduction Scenario	IV. Flex Funding Scenario (A)	IV. Flex Funding Scenario (B)	IV. Flex Funding Scenario (C)	VI. Highway Scenario
Equity	Poverty Average Transit Congested Time (mean) am	G2v1.3 Region	26.60	25.10	24.00	26.82	23.78			25.05	24.4	-4.4%	6.9%	-5.3%			0%	-2.8%
		CAMPO	23.12	19.61	19.03	23.06	18.86			19.58	19.1	-3.0%	17.6%	-3.8%			0%	-2.9%
		DCHC	30.90	31.71	29.59	31.56	29.46			31.70	31.6	-6.7%	-0.5%	-7.1%			0%	-0.3%
Equity	Zero Car Average Transit Congested Time (mean) am	G2v1.3 Region	36.60	36.40	35.50	35.88	35.24			36.36	35.5	-2.5%	-1.4%	-3.2%			0%	-2.5%
		CAMPO	38.85	35.01	34.95	36.31	34.66			34.92	34.0	-0.2%	3.7%	-1.0%			0%	-2.8%
		DCHC	34.85	37.03	34.19	33.42	34.05			37.03	36.6	-7.7%	-9.7%	-8.0%			0%	-1.1%
Equity	Poverty Average Auto Congested Time (mean) am	G2v1.3 Region	7.73	8.45	8.34	7.92	8.22			8.43	7.69	-1.3%	-6.3%	-2.7%			0%	-9.0%
		CAMPO	4.36	4.49	4.41	4.53	4.35			4.46	4.15	-1.8%	0.9%	-3.1%			-1%	-7.6%
		DCHC	4.59	5.03	5.08	5.22	4.99			5.03	4.64	1.0%	3.8%	-0.8%			0%	-7.8%
Equity	Zero Car Average Auto Congested Time (mean) am	G2v1.3 Region	6.55	7.02	6.95	6.87	6.84			7.01	6.43	-1.0%	-2.1%	-2.6%			0%	-8.4%
		CAMPO	4.10	4.33	4.34	4.44	4.28			4.32	4.07	0.2%	2.5%	-1.2%			0%	-6.0%
		DCHC	4.79	5.50	5.53	5.35	5.44			5.50	5.07	0.5%	-2.7%	-1.1%			0%	-7.8%
Equity	Zero Car - Jobs within 30 mins by TRANSIT	G2v1.3 Region	9,662,244	30,946,895	38,849,924	40,434,060	39,345,420			30,921,422	29,961,529	25.5%	30.7%	27.1%			0%	-3.2%
		CAMPO	4,722,847	20,554,150	24,682,768	26,193,185	25,104,603			20,524,723	19,633,641	20.1%	27.4%	22.1%			0%	-4.5%
		DCHC	4,939,397	10,392,745	14,167,156	14,238,801	14,240,817			10,396,699	10,327,888	36.3%	37.0%	37.0%			0%	-0.6%
Equity	Zero Car - Jobs within 30 mins by AUTO	G2v1.3 Region	508,595,971	895,363,346	901,108,753	913,760,243	926,510,188			896,178,705	1,045,130,746	0.6%	2.1%	3.5%			0%	16.7%
		CAMPO	293,541,910	543,456,392	546,521,355	478,170,717	558,432,365			456,824,200	603,535,796	0.6%	-12.0%	2.8%			-16%	11.1%
		DCHC	212,403,921	349,498,566	352,481,908	170,687,435	365,790,733			171,701,775	439,178,117	0.9%	-51.2%	4.7%			-51%	25.7%
Equity	Zero Car - Jobs within 30 mins by WALK	G2v1.3 Region	10,881,149	23,609,965	25,919,995	26,073,673	25,919,995			23,617,232	21,898,841	9.8%	10.4%	9.8%			0%	-7.2%
		CAMPO	5,756,361	13,235,741	15,039,121	15,188,993	15,039,121			13,243,008	11,997,984	13.6%	14.8%	13.6%			0%	-9.4%
		DCHC	5,060,281	10,310,060	10,825,995	10,850,248	10,825,995			10,309,227	9,850,022	5.0%	5.2%	5.0%			0%	-4.5%
Equity	Poverty - Jobs within 30 mins by TRANSIT	G2v1.3 Region	6,010,925	16,732,619	21,031,290	25,835,718	21,291,628			16,696,315	16,068,533	25.7%	54.4%	27.2%			0%	-4.0%
		CAMPO	2,400,268	9,447,657	11,054,304	16,032,509	11,252,635			9,410,380	9,331,512	17.0%	69.7%	19.1%			0%	-1.2%
		DCHC	3,610,657	7,284,962	9,976,986	9,803,209	10,038,993			7,285,935	6,737,021	37.0%	34.6%	37.8%			0%	-7.5%
Equity	Poverty - Jobs within 30 mins by AUTO	G2v1.3 Region	395,476,891	659,999,990	665,656,727	727,333,446	686,965,134			662,118,868	801,750,261	0.9%	10.2%	4.1%			0%	21.5%
		CAMPO	194,233,050	342,092,063	340,912,358	404,438,071	349,461,923			295,108,226	393,622,702	-0.3%	18.2%	2.2%			-14%	15.1%
		DCHC	190,084,257	301,634,388	309,261,584	311,225,287	320,900,840			147,955,660	380,813,400	2.5%	3.2%	6.4%			-51%	26.2%
Equity	Poverty - Jobs within 30 mins by WALK	G2v1.3 Region	6,784,155	13,344,743	13,898,105	16,237,036	13,898,105			13,352,722	12,035,019	4.1%	21.7%	4.1%			0%	-9.8%
		CAMPO	2,914,454	5,981,861	6,474,535	8,922,222	6,474,535			5,988,834	5,362,569	8.2%	49.2%	8.2%			0%	-10.4%
		DCHC	3,695,346	7,125,383	7,175,129	7,101,213	7,175,129			7,125,205	6,451,693	0.7%	-0.3%	0.7%			0%	-9.5%

VMT Comparison



Takeaways

- G2 reacted as expected for most of the scenarios
- G2 showed some constraints based on model estimation parameters used for calibration. Need to look at reducing the travel times/distance constants in addition to reallocating growth into disadvantaged communities or TODs
- Enhanced tools and summary reports were useful
- For VMT Tax, need to look at refinement in how tax can be applied to the network
- For WFH, need to explore refinement in how WFH applied to different employment categories

WISDOM EXCHANGE

Insights and Tactics – all invited to partcipate

TOPICS TO KICK THINGS OFF

- GitHub experience sharing
- TRM webpage
- Other???

Mix and Mingle