

The San Francisco Model in Practice

Validation, Testing, and Application

presented to

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Modeling Conference**

presented by

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**CAMBRIDGE
SYSTEMATICS**



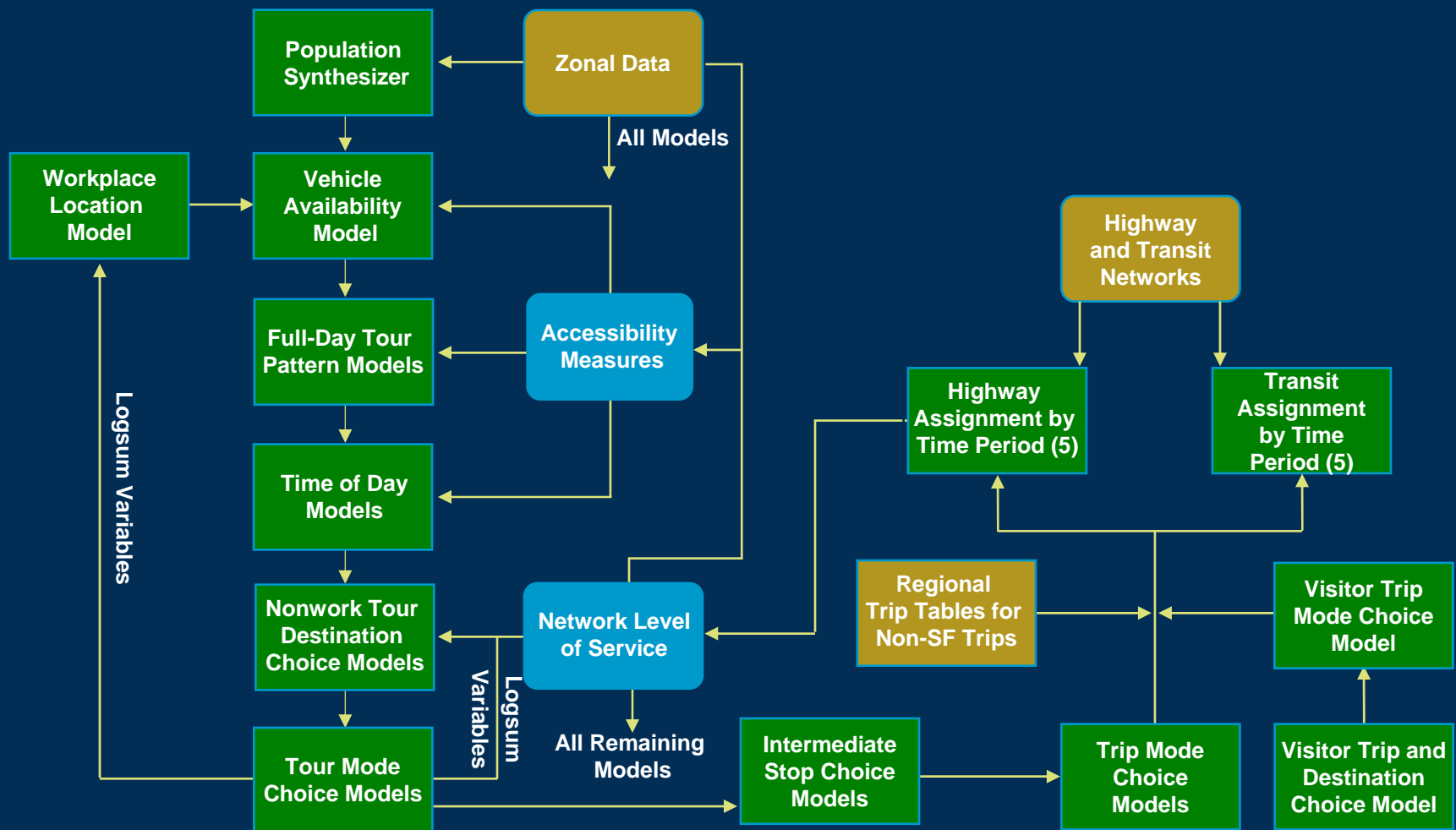
Transportation leadership you can trust.

Focus of this Presentation

- **Original Approach and Limitations**
- **Model Validation**
- **Comparison to 4-step Model**
 - **Base Year**
 - **Forecast Year**
- **Model Applications**



San Francisco Model Process



Resource Limitations on Approach

- ✓ No onboard survey data to validate mode choice (completed recently and being used to update mode choice)
- ✓ Peak spreading model was transferred and did not meet expectations (new models estimated from FHWA research)
- ✓ Aggregate assignments lose detail on travelers and include aggregation bias
- ✓ Trips from households outside SF County produced by MTC trip-based model
- ✓ Reliability and crowding were tested in the models, but found to be inconsistent with survey data

Model Validation

- **Extensive validation for each model component**
- **Validation against different observed data**
 - 1990/1996 MTC Surveys
 - 1998 Observed Traffic Counts and Transit Ridership
 - 1990 CTPP
 - DMV Auto Registrations
- **Additional validation conducted by comparing results to the 1998 MTC regional trip-based travel model**



Comparison to 4-step Trip-Based Model

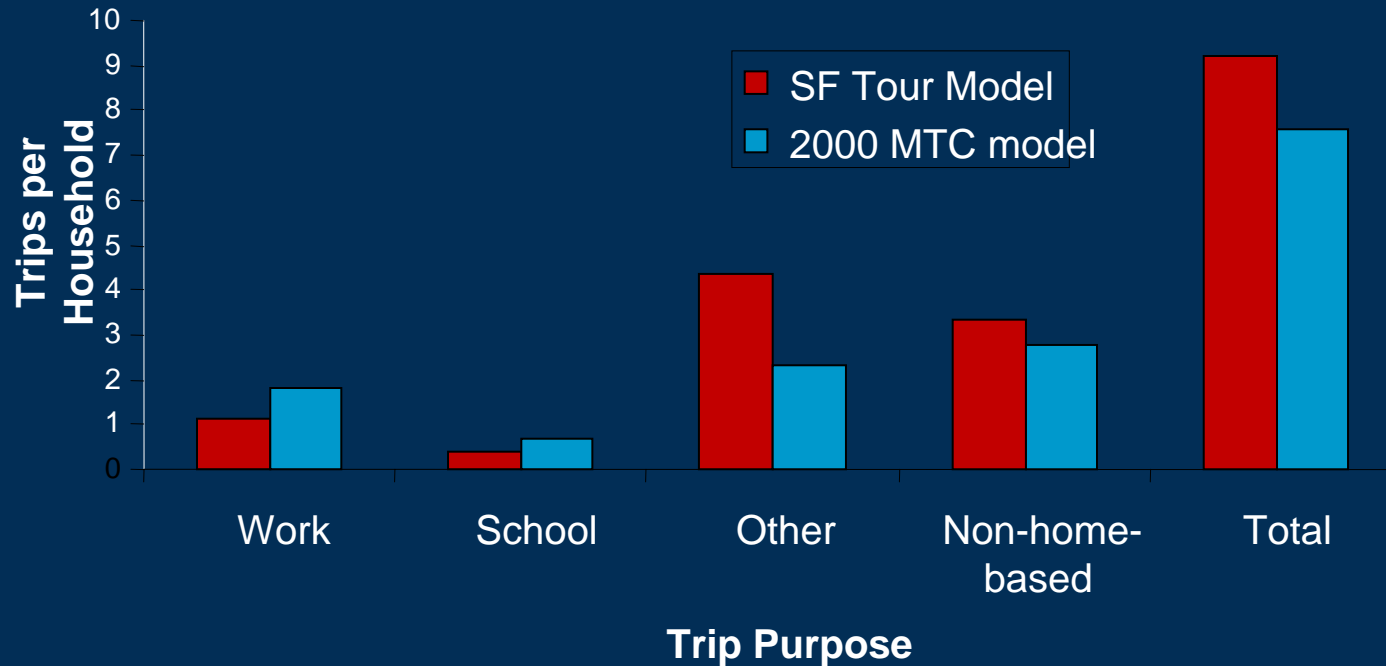
- **San Francisco County tour-based model compared to MTC 9-county region trip-based model within SF County**
- **Comparison of all input data, assumptions, and model output for the base and forecast year**
- **Comparison only at the trip level**



Comparison to 4-step Model

Base Year Trips by Purpose

- Different trip purpose definitions based on intermediate stops



Comparison to 4-step Model

Base Year Trip Tables by Super-District

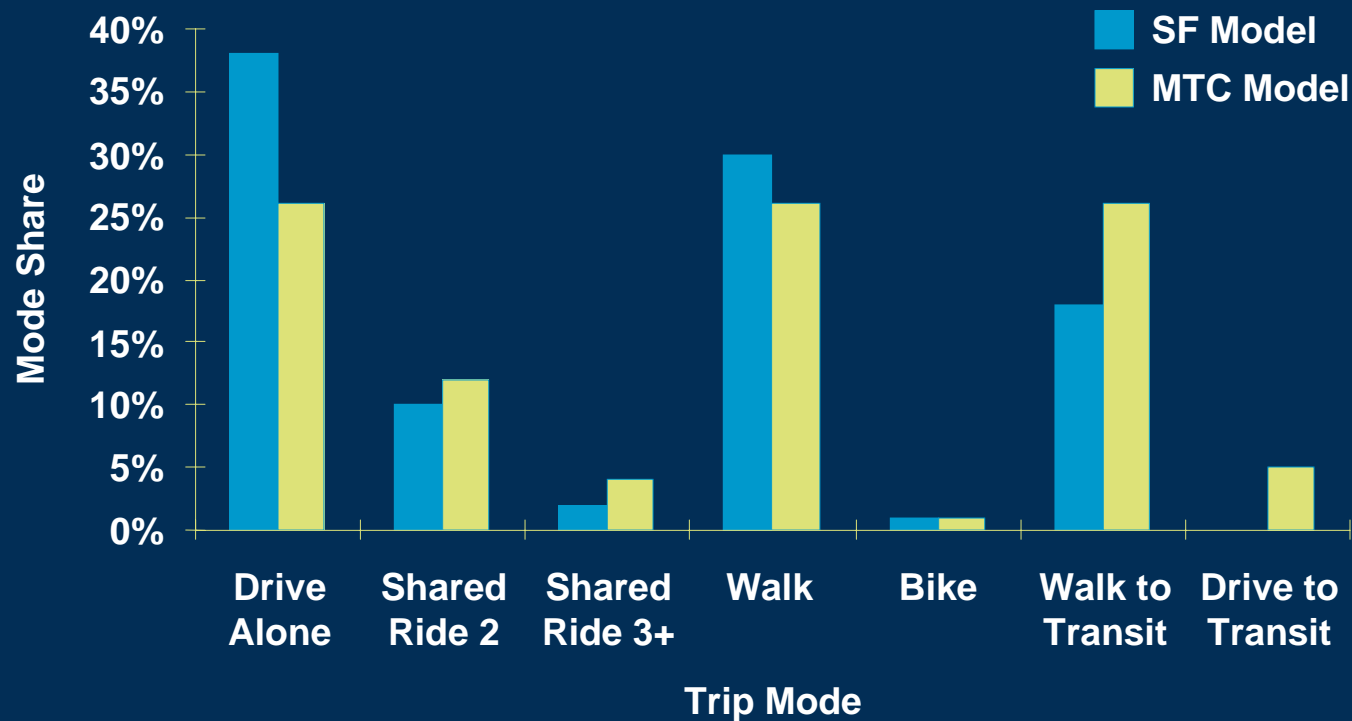
SF Model Percent by District					
1	21%	7%	6%	1%	34%
2	7%	12%	5%	2%	26%
3	6%	5%	14%	3%	27%
4	1%	2%	3%	5%	12%
Total	35%	26%	27%	12%	100%
MTC Model Percent by District					
1	18%	7%	6%	2%	33%
2	7%	12%	4%	2%	25%
3	7%	4%	17%	3%	30%
4	2%	2%	3%	6%	12%
Total	33%	24%	30%	12%	100%



Comparison to 4-step Model

Base Year Mode Shares

- Transit trips validated to boardings and CTPP, conflicts with MTC model and survey



Comparison to 4-step Model

Base Year Summary

- **Significant differences by trip purpose, because of different definition of non-home-based trips**
- **No significant difference of trip tables by district**
- **Significant differences by mode, because of need to validate transit trips to boardings and work mode shares to CTPP, which did not match household survey or MTC model results**



Comparison to 4-step Model – 2030 Trip Tables by Super-district

SF Model Percent by District					
1	20%	6%	6%	1%	33%
2	6%	11%	6%	2%	25%
3	6%	6%	16%	3%	31%
4	1%	2%	3%	4%	11%
Total	33%	25%	31%	11%	100%
MTC Model Percent by District					
1	22%	6%	7%	1%	36%
2	6%	11%	3%	2%	22%
3	8%	3%	18%	2%	32%
4	1%	2%	2%	5%	10%
Total	37%	22%	31%	10%	100%



Change in Trips by District from 2000 to 2030

SF Model Percent by District					
1	-2%	-1%	0%	0%	-1%
2	-1%	-1%	1%	0%	-1%
3	0%	1%	2%	0%	4%
4	0%	0%	0%	-1%	-1%
Total	-2%	-1%	4%	-1%	0%
MTC Model Percent by District					
1	4%	-1%	1%	-1%	3%
2	-1%	-1%	-1%	-1%	-3%
3	1%	-1%	1%	-1%	2%
4	-1%	0%	-1%	-1%	-2%
Total	4%	-2%	1%	-2%	0%



Change in Mode Shares from 2000 to 2030

	SF-CHAMP	MTC	Difference
Drive Alone	3.6%	6.1%	-2.6%
Shared Ride 2	1.0%	1.3%	-0.3%
Shared Ride 3	0.3%	-0.9%	1.2%
Walk	-0.8%	-5.5%	4.7%
Bike	0.0%	-0.3%	0.3%
Walk to Transit	-4.0%	-2.6%	-1.5%
Drive to Transit	0.0%	0.7%	-0.7%



Application Issues

- Disaggregate Equity Analysis
- FTA New Starts
- Neighborhood residents
- Model run time issues

