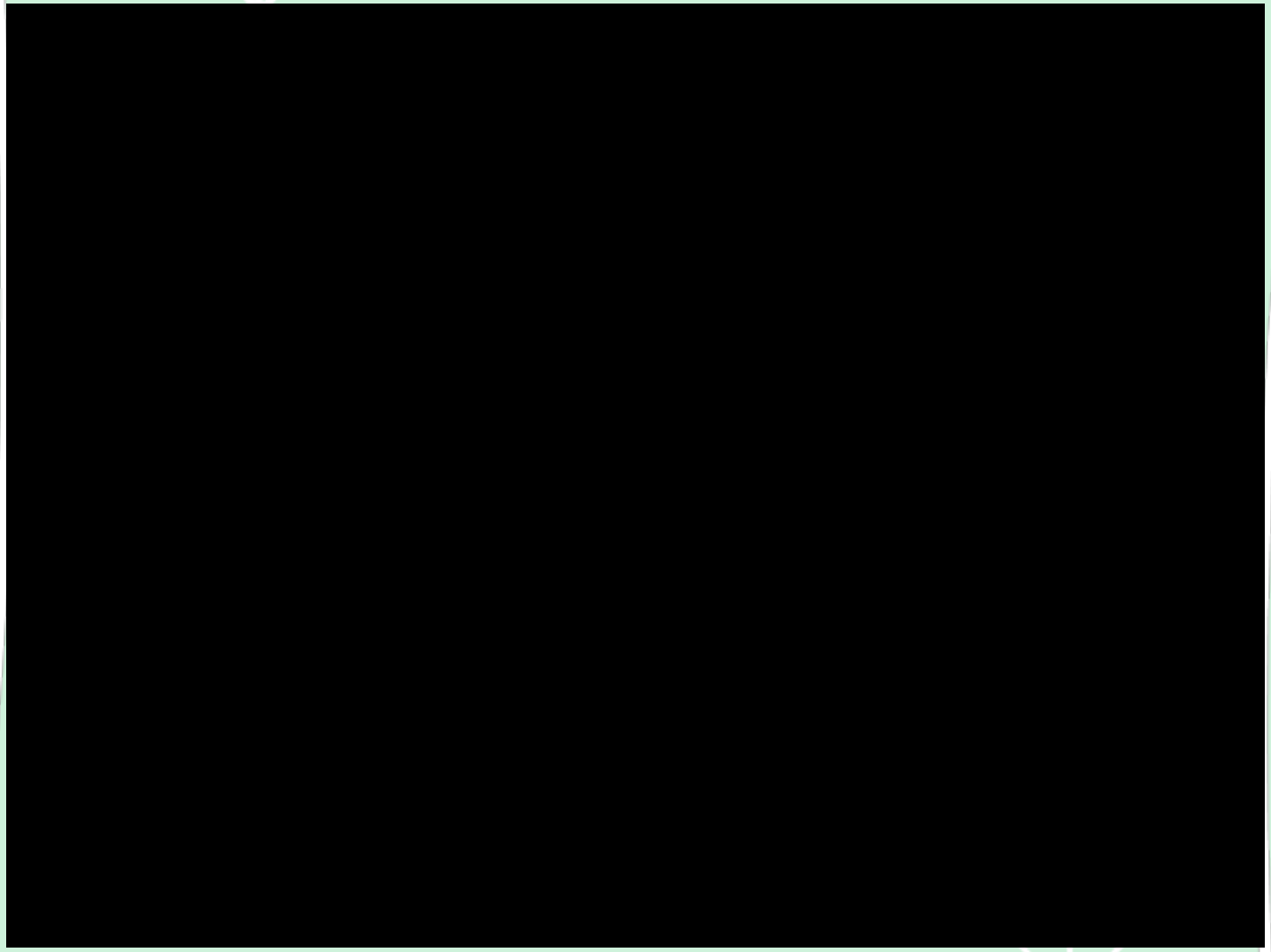
Welcome!



Using Models to Identify Needs & Solutions

Presented by:

Scott Thomson, P.E.

Bob Nunley, P.E.

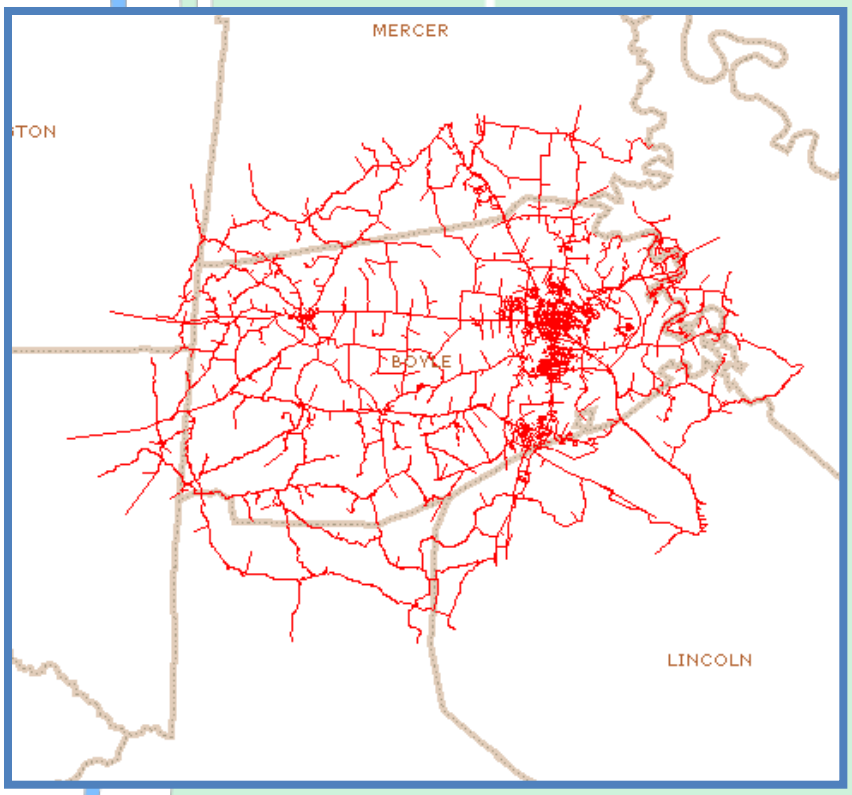
Who is the Audience?

- Designers & Planners
- Decision Makers
- Modelers

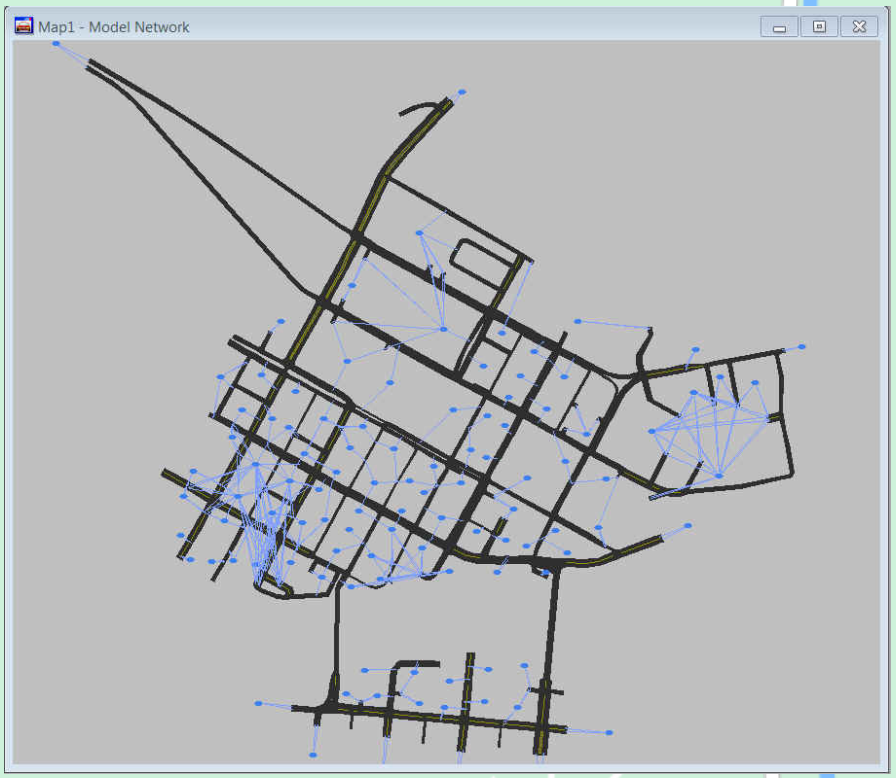
- When we say we model, some think of a totally different kind of modeler….

When we say model we're talking about…

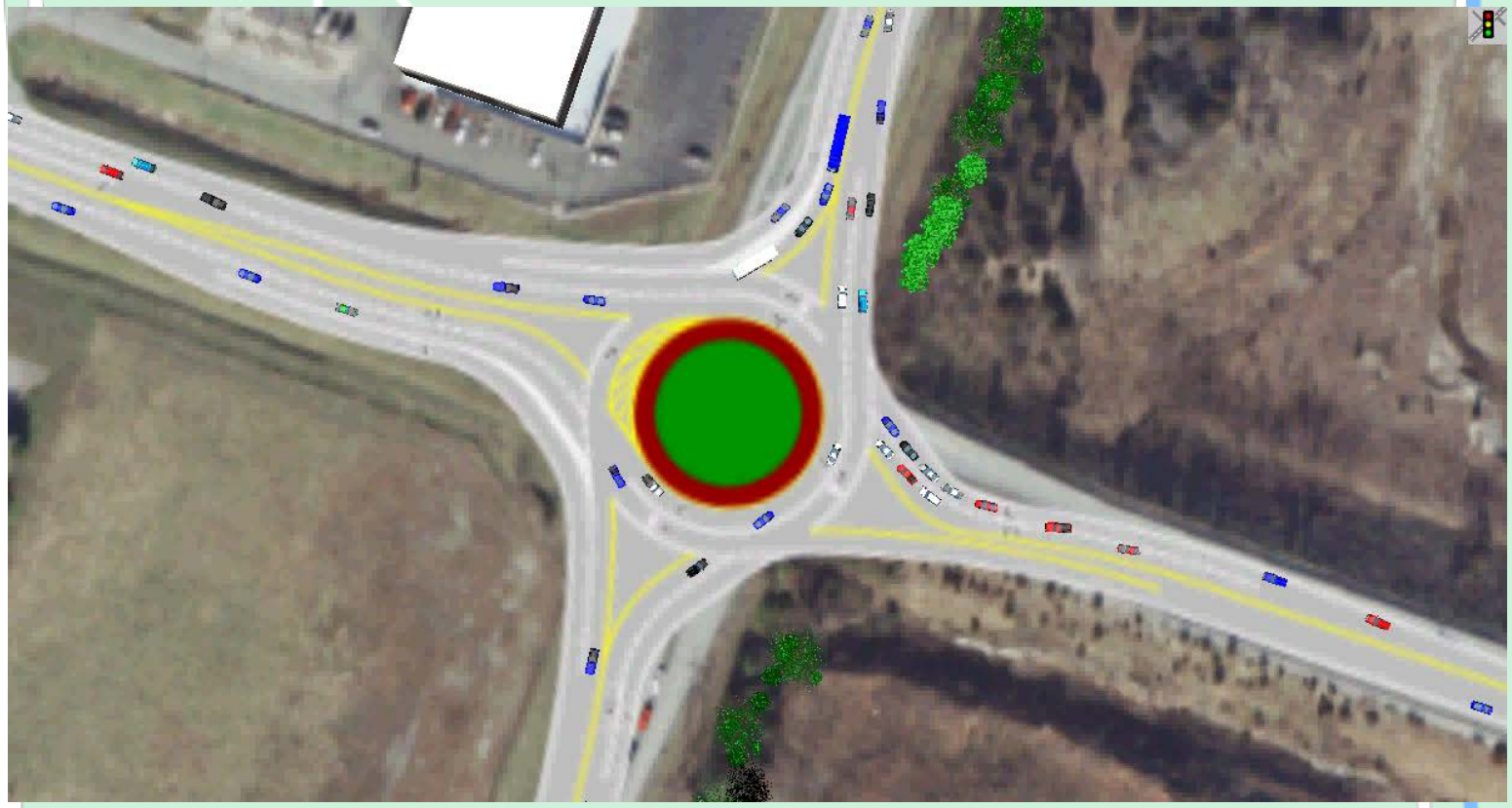
Static Area Models



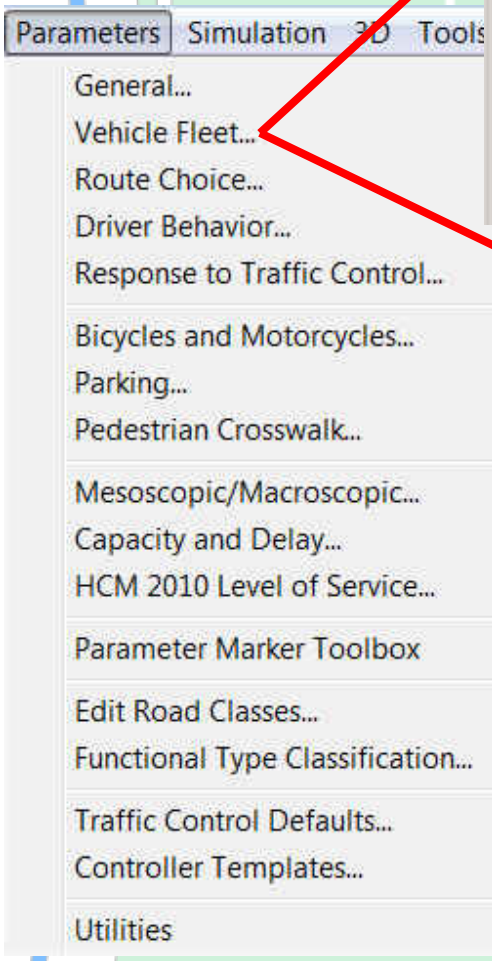
Dynamic Simulation Models



Simulation Models can be 3-D, too



Here are some of Vehicle inputs

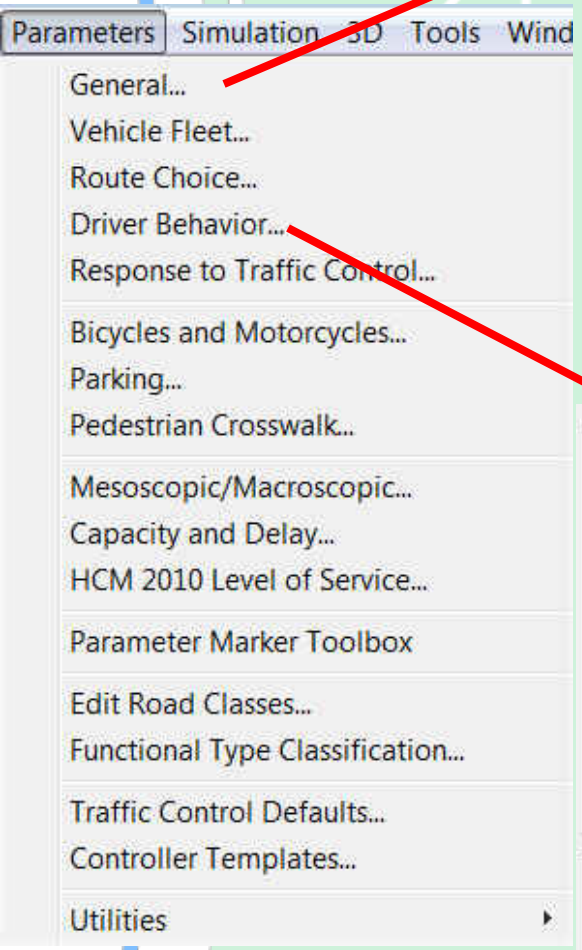


Vehicle Class Table

	Percentage (%)		Name	Description
1	**5.3**	26.00	PC1	High performance passenger cars
2	**33.8**	30.70	PC2	Middle performance passenger cars
3	**7.1**	26.00	PC3	Low performance passenger cars
4	**44.3**	16.00	PU	Pickup trucks or utility vehicles
5	**5.5**	0.00	ST	Single-unit trucks
6	**1.6**	0.00	TT	Trailer trucks
7	**0.1**	1.00	B	Buses
8	**0.0**	0.00	AB	Articulated transit buses
9	**0.0**	0.00	T	Trains
10	**2.2**	0.30	M	Motorcycles

Class	Mass (lbs)	Power (hp)	Toll class	Lb/HP
PC1	3417.2	214.6	Non-commercial 2 Axles	15.9
PC2	3417.2	187.7	Non-commercial 2 Axles	18.2
PC3	3417.2	174.3	Non-commercial 2 Axles	19.6
PU	4188.8	174.3	Commercial 2 Axles	24.0
ST	9920.8	214.6	Commercial 3+ Axles	46.2
TT	17637.0	214.6	Commercial 3+ Axles	82.2
B	11023.1	241.4	Commercial 2 Axles	45.7
AB	17637.0	268.2	Commercial 3+ Axles	65.8
T	88184.9	2011.5	Commercial 3+ Axles	43.8
M	440.9	134.1	Non-commercial 2 Axles	3.3
BK	198.4	0.2	Non-commercial 2 Axles	990.0

Here are some Driver Inputs



Default Distribution of Desired Speed

Deviation from Speed Limit (mph)	Driver Population (%)
-10.0	2.0
-5.0	5.0
0.0	15.0
5.0	25.0
10.0	25.0
15.0	15.0
20.0	10.0
25.0	3.0

Stop Time at Stop Signs

Percentage (%)	No competing traffic (sec)	With competing traffic (sec)
45.0	0.0	0.5
25.0	0.3	0.7
15.0	0.5	1.0
10.0	0.7	1.3
5.0	1.0	1.5

Parameters

Vehicle search distance (ft)	160.0
Stop distance (ft)	5.0
Stop speed (fps)	10.0

Assessing validity

Accomplished modelers (n=15)

Criteria	# mentions
Replicates traffic counts	9
Theoretically plausible	5
Established practice	5
Matches calibration targets	5
Software verification	4
Sensitivity testing	2
Market understanding	2
Parallel studies	2
Peer review panel	2

Decision-makers (n=15)

Criteria	# mentions
Independent review	11
Confidence in analyst	11
Comparable forecasts	10
Squares with intuition	8
Free from obvious flaws	8
Agency/investor buy-in	6
Effective presentation	6
Established practice	3
Aligns with theory	2

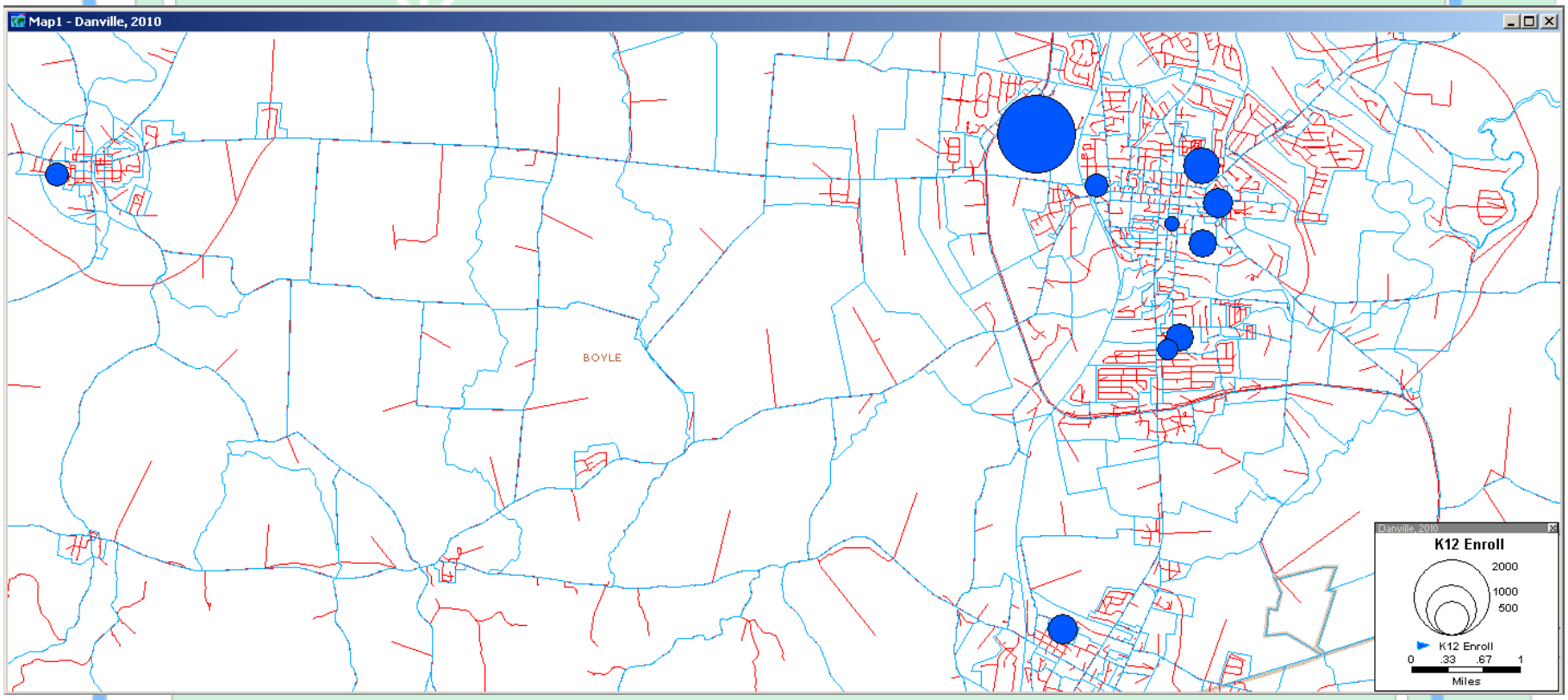
Transparency

Document, document, document

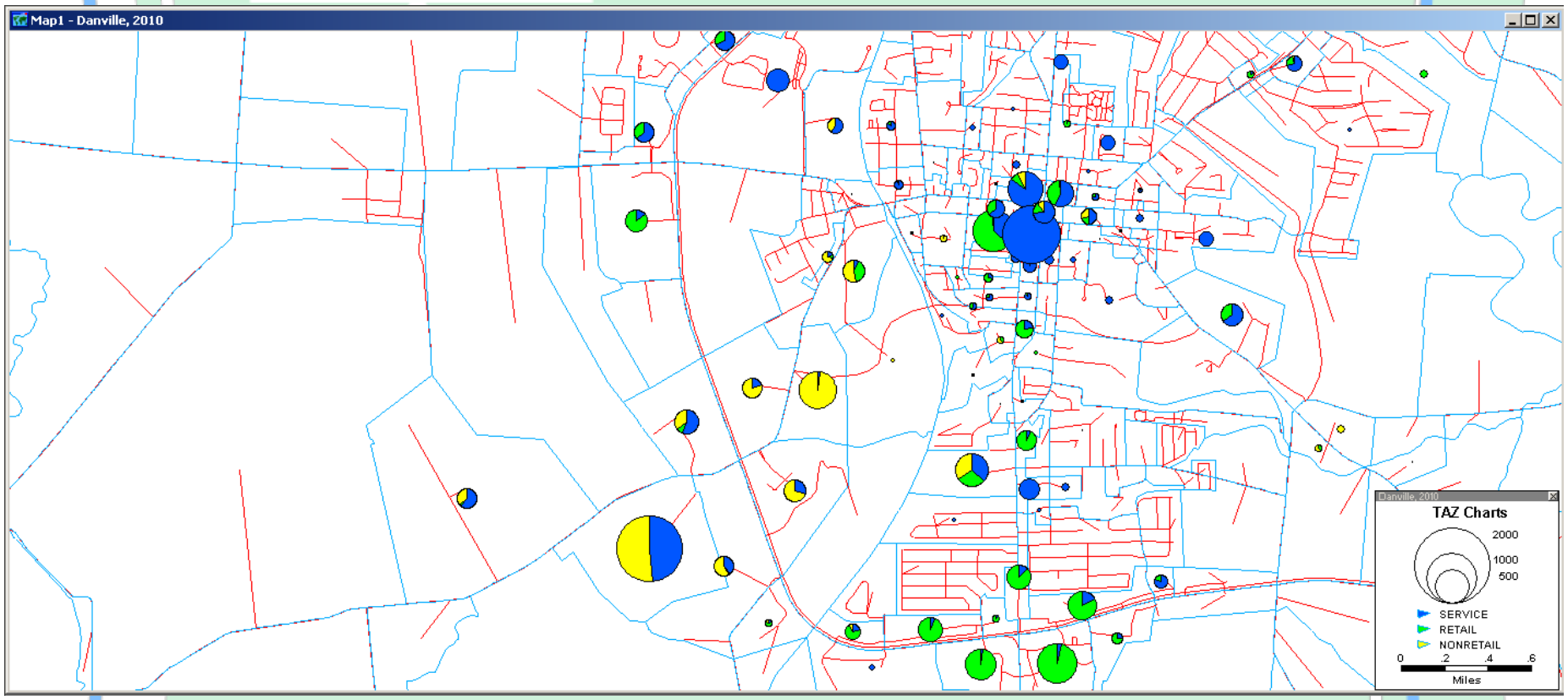
Data is our engine

Of course the Ferrari, but we might be OK with a Chevy…

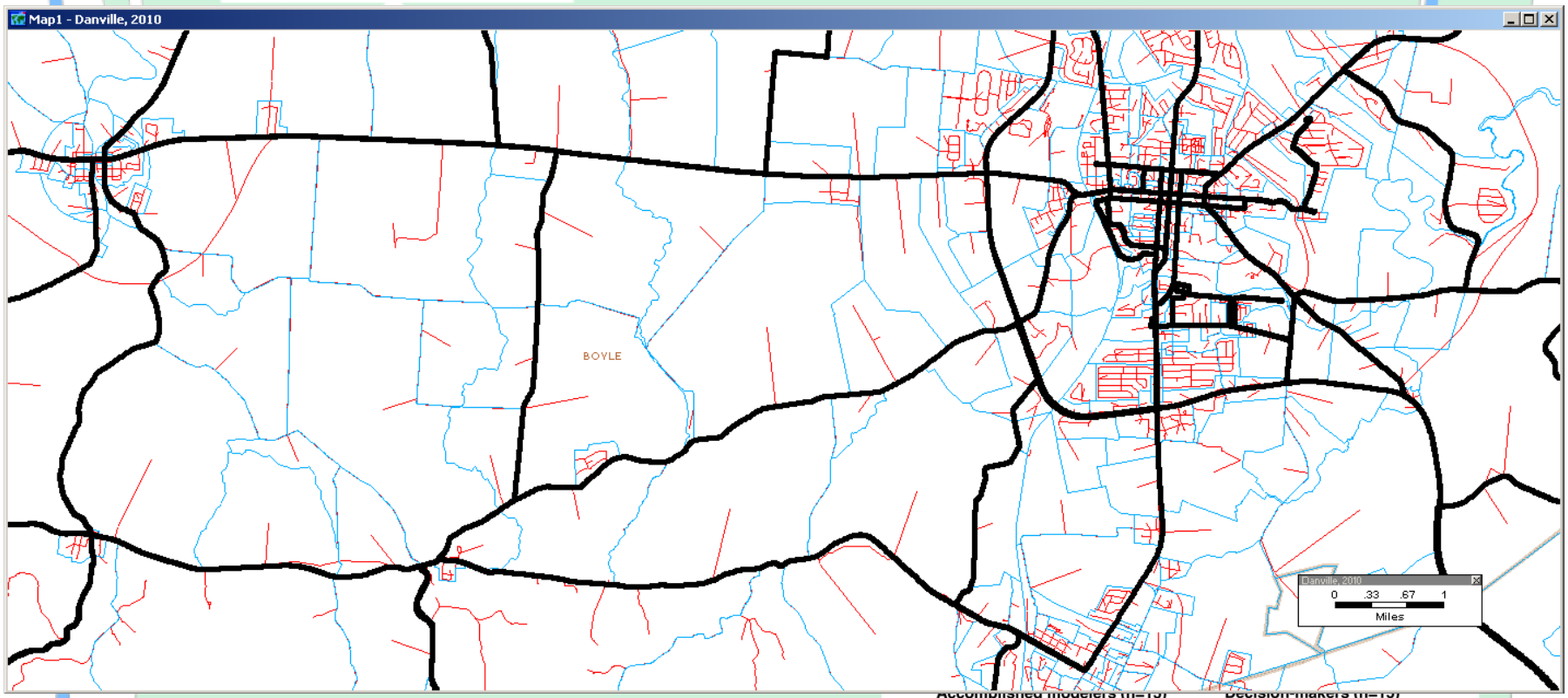
Boyle County Schools



Businesses


Map1 - Danville, 2010
Danville 2010
TAZ Charts
2000
1000
500
SERVICE
RETAIL
NONRETAIL
0
.2
.4
.6
Miles

Speed Data



Criteria	# mentions
Replicates traffic counts	9
Theoretically plausible	5
Established practice	5
Matches calibration targets	5
Software verification	4
Sensitivity testing	2
Market understanding	2
Parallel studies	2
Peer review panel	2

Criteria	# mentions
Independent review	11
Confidence in analyst	11
Comparable to counts	10
Squares with intuition	8
Free from obvious flaws	8
Agency/investor buy-in	6
Effective presentation	6
Established practice	3
Aligns with theory	2

So Scott, what models should we use to Identify Needs & Solutions?

It depends on:

- What is most important issues to address
- The budget
- The time deadline.

Static Models

- Route Selection-Travel time sensitive models
- Tolling – Cost sensitive models
- Road Closure- Regional area models
- Projects where congestion is not an issue

Micro-Simulation

- One-way to Two-way conversions
- Interchange Designs
- Intersection Designs
- Testing operational changes
- Congested Corridors

Lastly, a story….

I hope you have

a new

appreciation for Dilbert.