Enhanced Role of Activity Center Transportation Organizations in Regional Mobility – Do Not Block the Box Campaign

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Activity Center Transportation Organizations

- Business Improvement Districts (BIDs)
- Community Improvement Districts (CIDs)
- Transportation Management Associations (TMAs)

- Services Offered
  - Capital Improvements
  - Consumer Marketing
  - Economic Development
  - Maintenance
  - Parking and Transportation
  - Policy Advocacy
  - Public Space Regulation
  - Security
  - Social Services

TMA Surveys

- 1989: Association for Commuter Transportation (ACT) Survey: TMA characteristics
- 1990: The Urban Land Institute (ULI): Transportation management through partnerships survey, with a particular focus on TMAs
- 1991: Georgia Tech / Urban Mass Transportation Administration: national TMA survey on how private sector participation affected and was affected by key TMA characteristics
- 1993: Commuter Transportation Services, Inc. (CTS): national TMA survey focusing on policies and procedures, especially management and personnel issues
- 1995: ACT: compiled a new national TMA directory
- 1998: UrbanTrans Consultants, Inc.: national TMA survey (revised version of 1993 survey)
- 2002: ETF Associates: national TMA internet search to identify the survival characteristics of TMAs
- 2003: The Center for Urban Transportation Research (CUTR) at the University of South Florida: update of 1993 and 1998 survey
- 2009: UrbanTrans Consultants, Inc.: update of 1993, 1998, and 2003 survey

Comparison of services provided to TMO members

(Killen, Luten, and Owen, 2010)

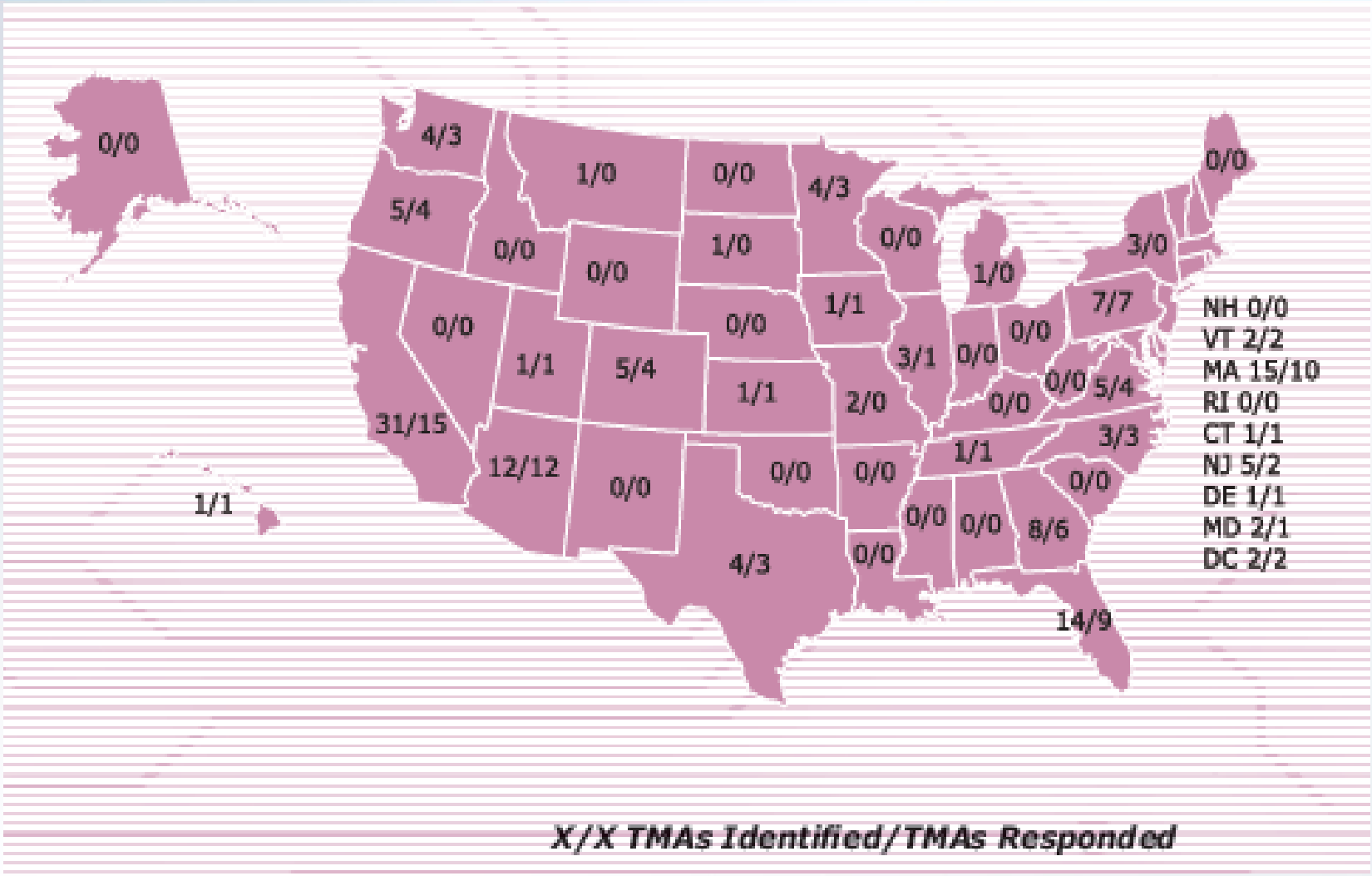
Service Provided to TMA Members	1993	1998	2003	2009
Relocation services	--	--	--	28%
Tax benefit program assistance	--	--	38%	28%
Direct ridesharing incentives	--	--	39%	26%
Personalized journey planning, individual marketing	--	--	--	25%
Telework program assistance	--	--	31%	25%
Subsidized transit passes	--	18%	35%	24%
Vanpool services	78%	33%	35%	24%
Real-time travel alerts (email, SMS)	--	--	--	21%
Shuttle / transit provision	31%	16%	27%	21%
Social media communications (Facebook, Twitter)	--	--	--	18%
Vanpool subsidies	24%	26%	36%	18%
Web-based mapping or journey planner	--	--	--	17%
Sample workplace policies	--	--	--	13%
Carshare program (e.g., Zipcar)	--	--	13%	11%
Freight delivery plans	--	--	--	4%

Comparison of services provided to TMO members

(Killen, Luten, and Owen, 2010)

Service Provided to TMA Members	1993	1998	2003	2009
Promotional / marketing materials	84%	43%	47%	47%
Employer travel surveys	67%	--	--	45%
Promotional events	90%	55%	44%	44%
Trip reduction plan / travel plan development	69%	41%	38%	44%
Rideshare matching	73%	33%	37%	40%
Email newsletters	--	--	--	38%
Guaranteed Ride Home	67%	56%	51%	38%
Advocacy	96%	57%	41%	35%
Employer travel coordinator training	61%	49%	34%	35%
Cycling program assistance	--	--	32%	34%
Transit pass sales	39%	--	--	31%
Employer networking events	--	--	--	30%
Parking management planning	41%	22%	15%	29%
Web-based travel information	--	--	--	29%

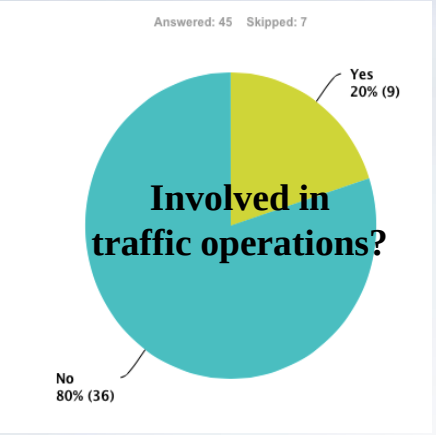
GEORGIA TECH TMA Survey

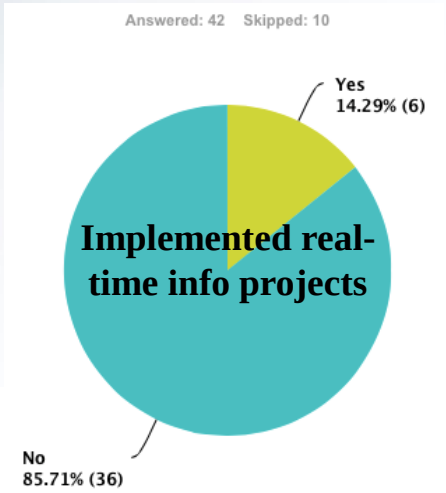


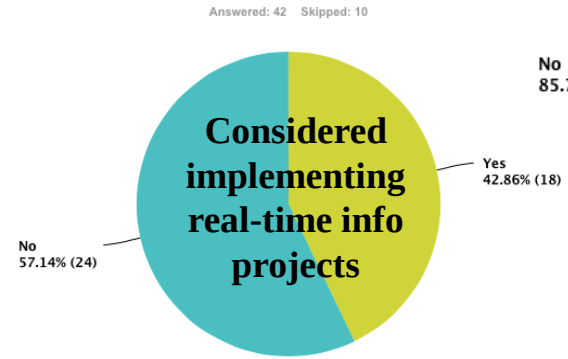
TDM services offered by organizations

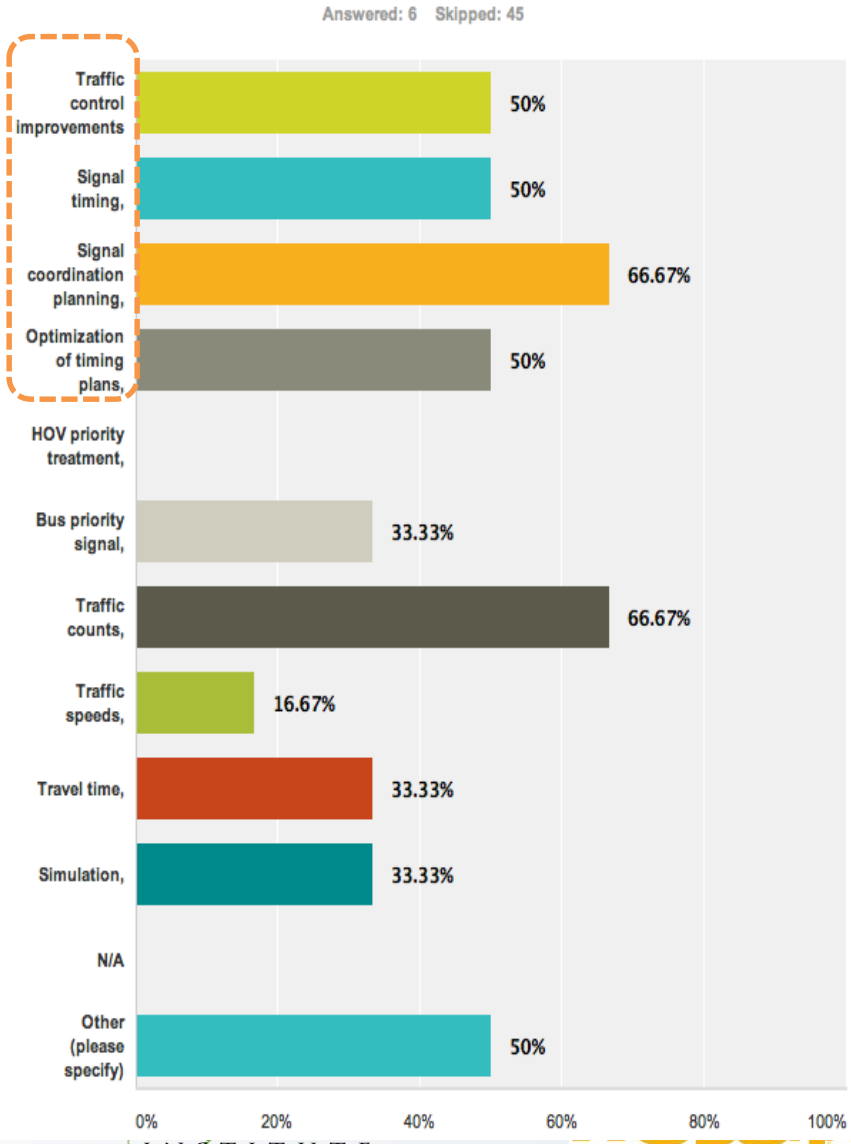
Answer Options	Response Percent (based on 42 responses)	Response Percent (in context to all 51 respondents)	Response Count
Rideshare matching	60.5%	50.0%	26
Guaranteed ride home	58.1%	48.1%	25
Trip reduction plan preparation	51.2%	42.3%	22
Bicycle program	39.5%	32.7%	17
Vanpool services	39.5%	32.7%	17
Shuttle/Local transit	37.2%	30.8%	16
Telecommuting program	34.9%	28.8%	15
Direct rideshare incentives	30.2%	25.0%	13
Coordinated travel plan	27.9%	23.1%	12
Subsidized transit passes	25.6%	21.2%	11
Transit pass sales	18.6%	15.4%	8
Carshare program	18.6%	15.4%	8
Parking services provision	9.3%	7.7%	4
Parking pricing or management	9.3%	7.7%	4
N/A	23.3%	19.2%	10
		Answered question:	**43 (82.6%)**
		Skipped question:	**9 (17.6%)**

Traffic Operations Services by TMOs









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Potential Implementation Strategies

- Long Term measure
  - Leverage Connected Vehicle Initiative
- Medium Term measure
  - Congestion predictive analytics
- Short Term measure
  - Do not Block the Box Campaign

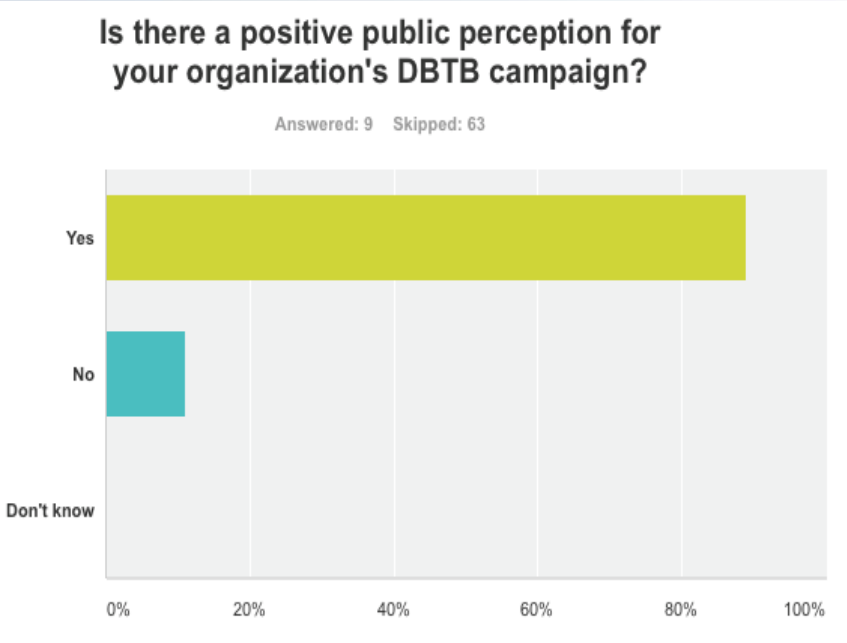
Do Not Block the Box Campaign

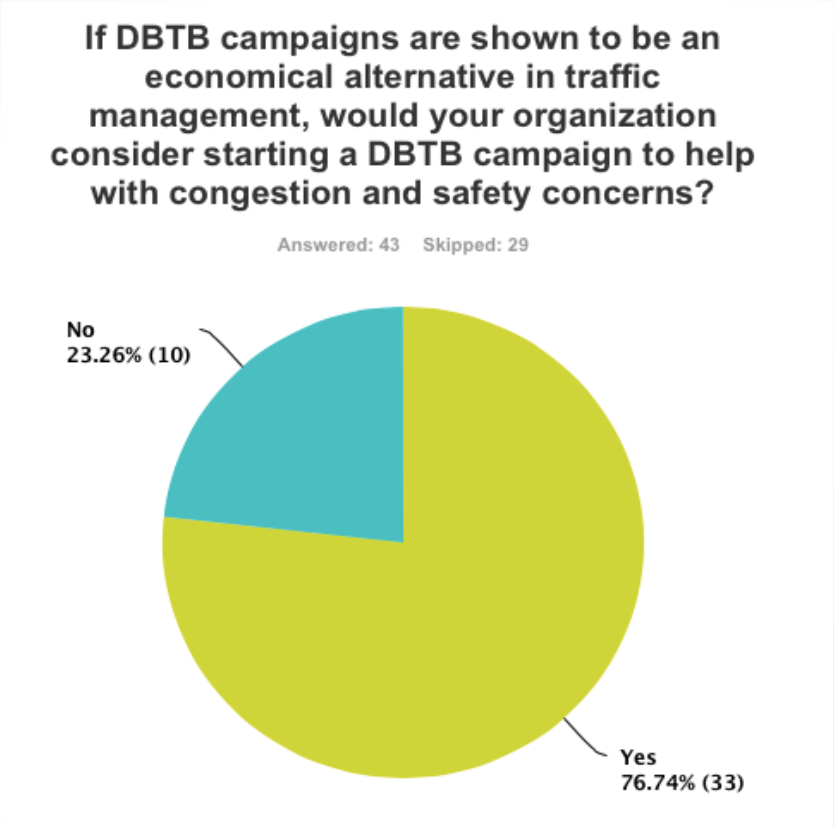
- Problems with blocking the box
  - Operations
    - Congestion (possible gridlock)
    - Emission
    - Impact on local businesses
  - Safety
    - Pedestrian safety issues due to vehicles stopped on crosswalk

Do Not Block the Box Survey

- Survey sent to 415 organizations
- 75 responded (13 partial responses)
  - 29 Local jurisdictions
  - 11 police departments
  - 8 BIDs
  - 4 TMAs
  - 1 State DOT
  - 1 University
  - 1 CID

DBTB Survey





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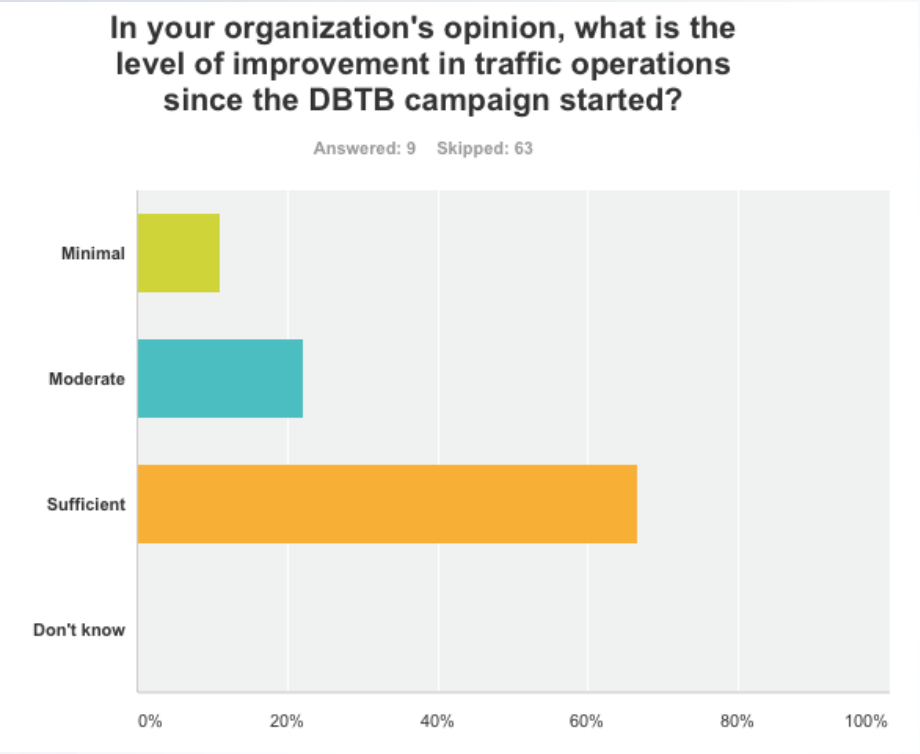
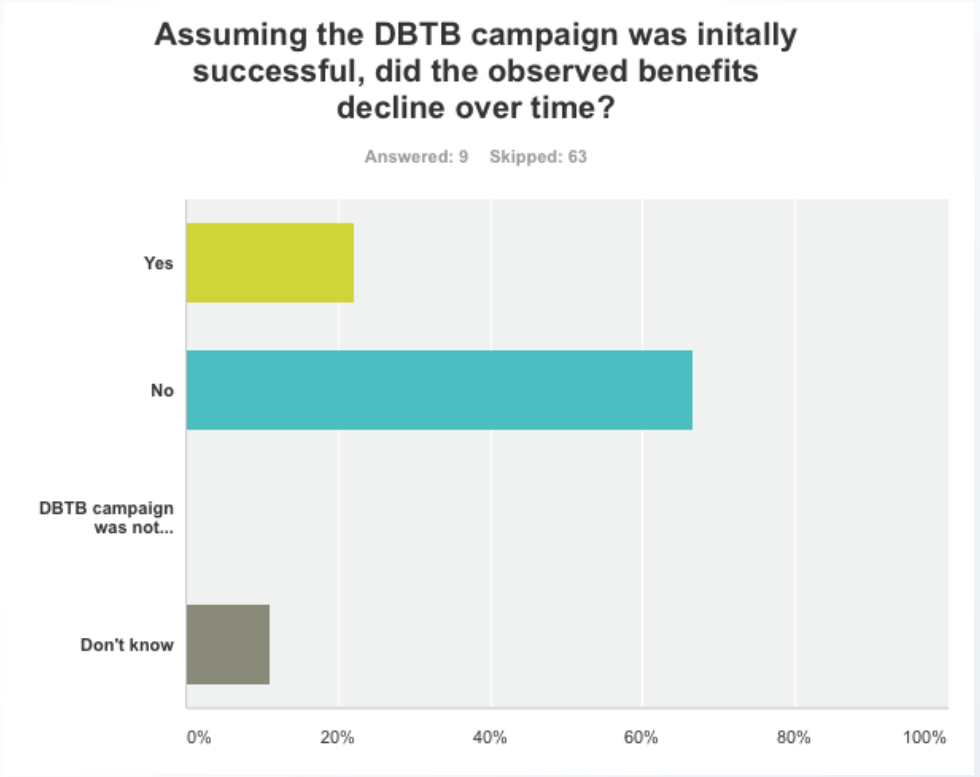
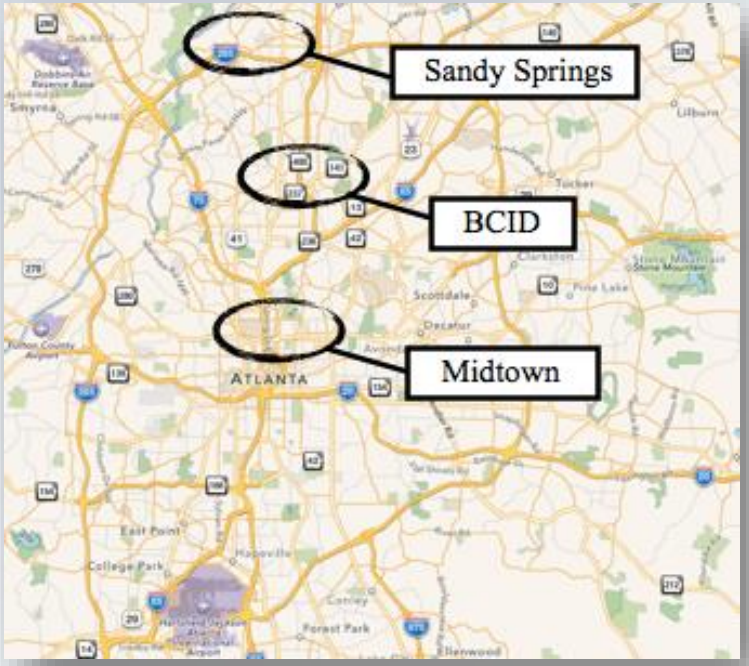
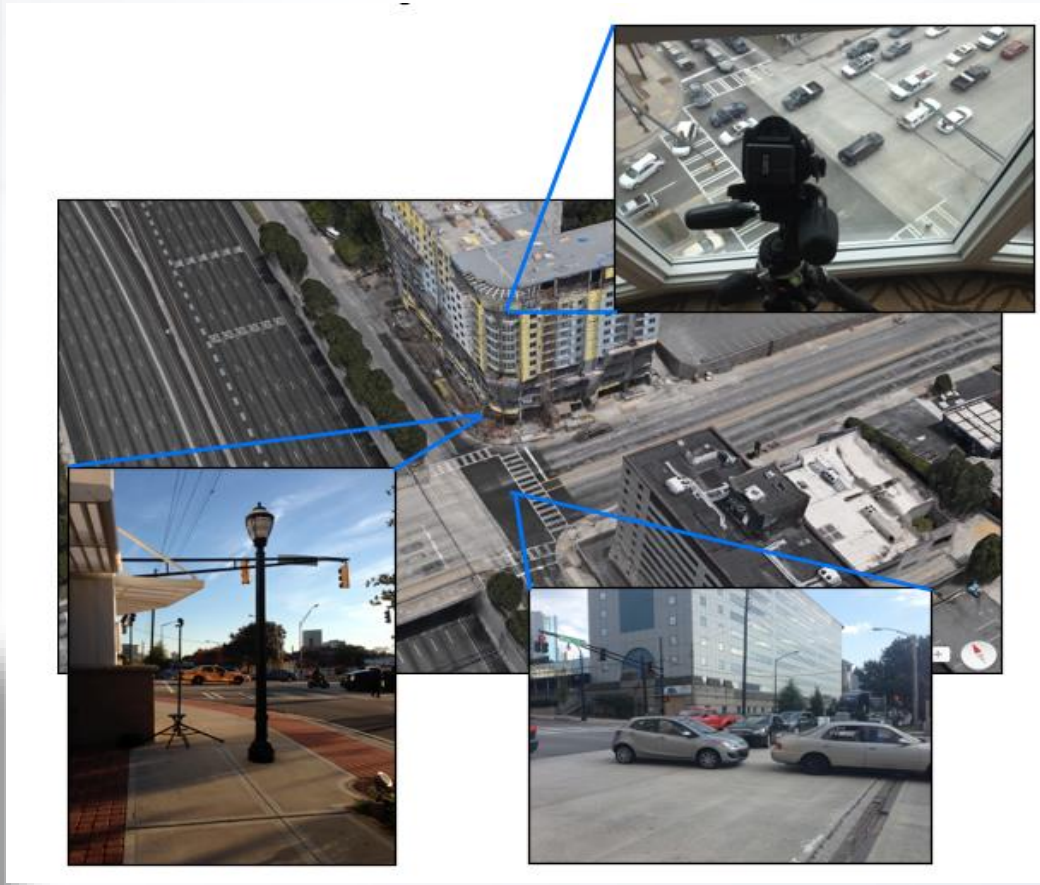
DBTB Survey


In your organization's opinion, what is the level of improvement in traffic operations since the DBTB campaign started?
Answered: 9 Skipped: 63
Minimal
Moderate
Sufficient
Don't know
0%
20%
40%
60%
80%
100%


Assuming the DBTB campaign was initally successful, did the observed benefits decline over time?
Answered: 9 Skipped: 63
Yes
No
DBTB campaign was not...
Don't know
0%
20%
40%
60%
80%
100%

DBTB Data Collection





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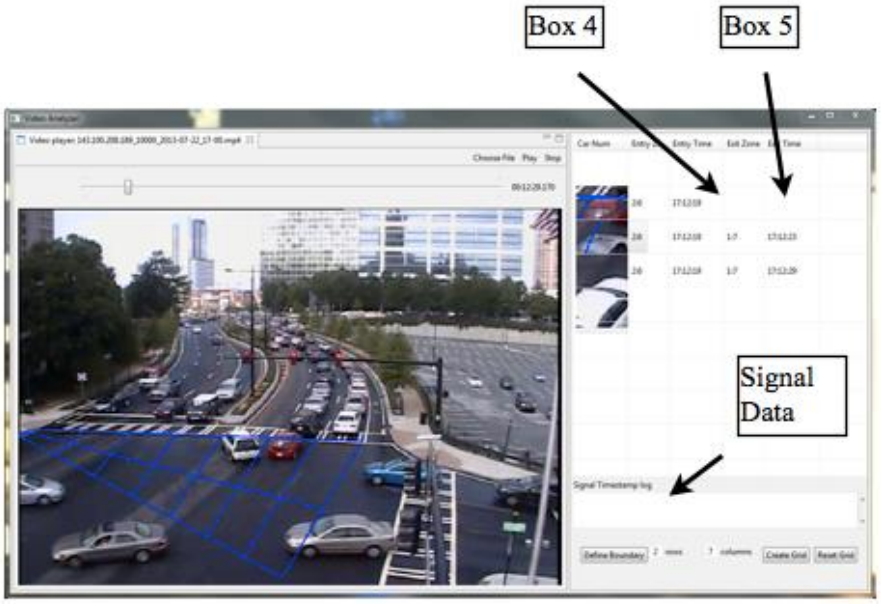
Data Processing Methodology

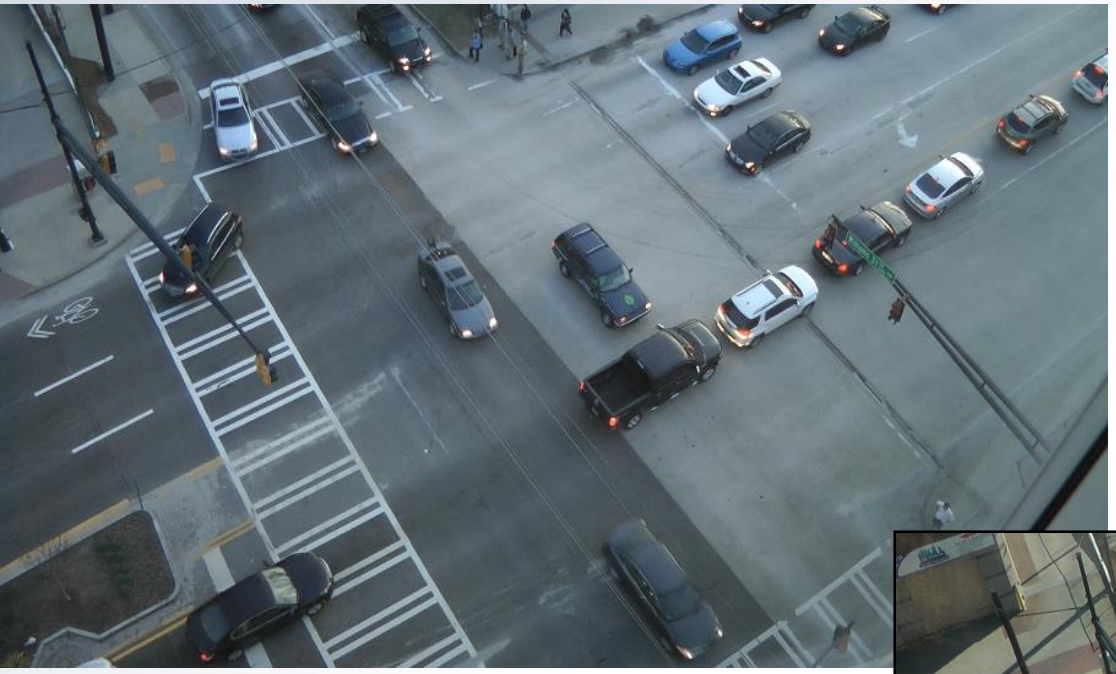
- Data extraction using Video Analyzer
  - Entry Point
  - Exit Point
  - Start Time of Blocking
  - End Time of Blocking
  - Signal Indication timestamps

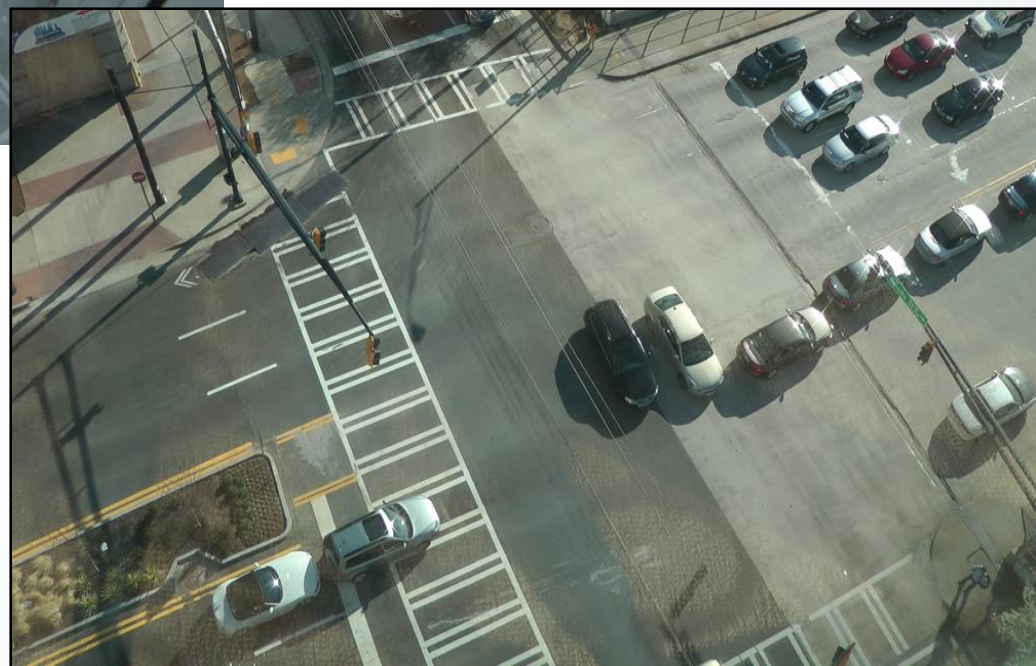


- Data collection manually
  - Assign block ID
  - Determine which approach was blocked
  - Degree of each block
  - Calculate duration of each blocking session
  - Fill in any missing information

Degree of Blockage and Capacity Reduction

- Full Blocking: Vehicle on the conflicting approach cannot pass the vehicle that is blocking their approach (Full capacity loss)
- Partial Blocking: Vehicle on the conflicting approach can bypass the blocking vehicle by entering another lane to go around the blocking vehicle.
  - *Type 1:* Conflicting approach vehicles could easily go around the blocking vehicle (no capacity loss)
  - *Type 2:* Conflicting approach vehicles bypass blocking vehicle in slower and non-safe way (capacity loss)
  - *Type 3:* Conflicting approach vehicles choose to not to bypass the blocking vehicle (full capacity loss)





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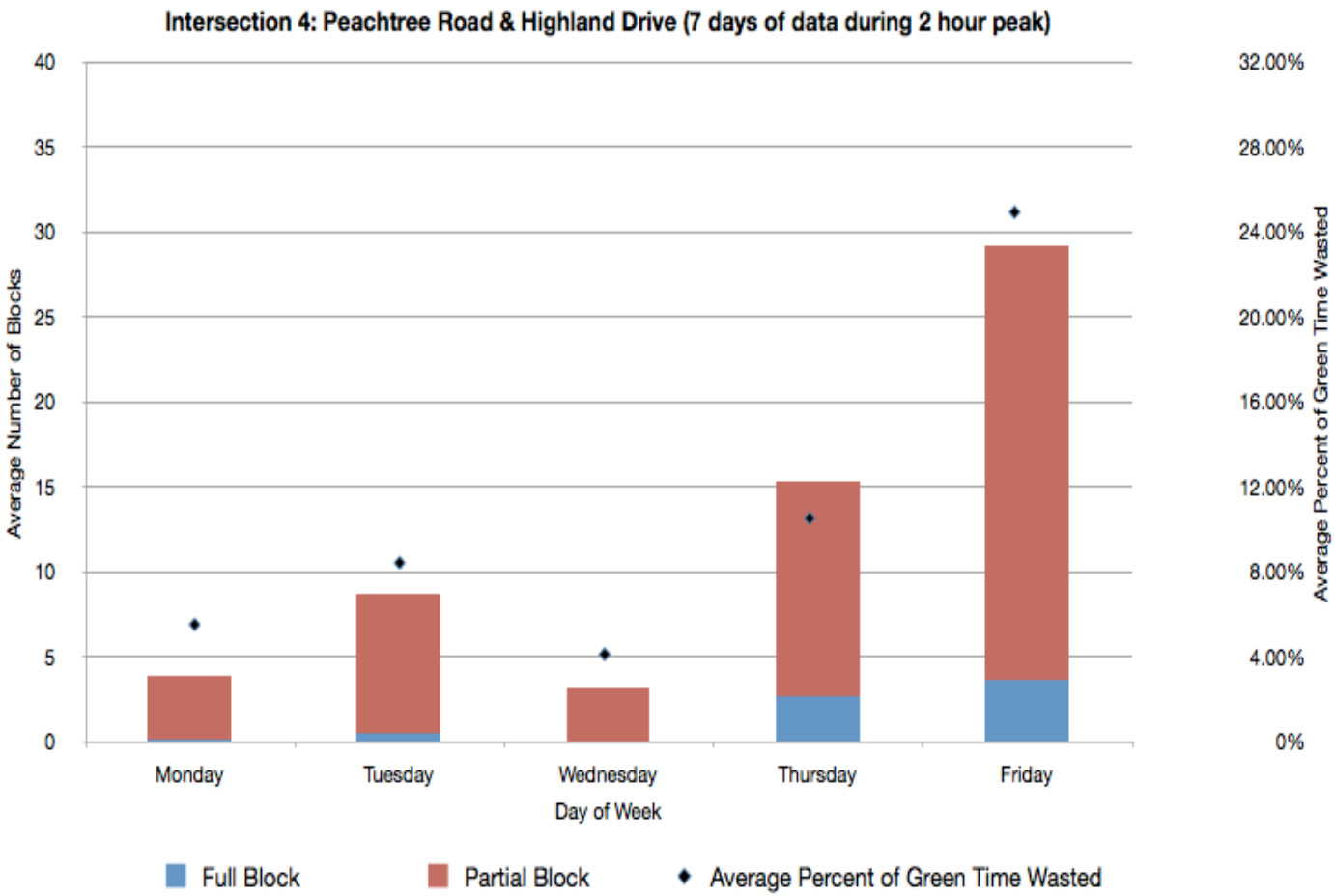
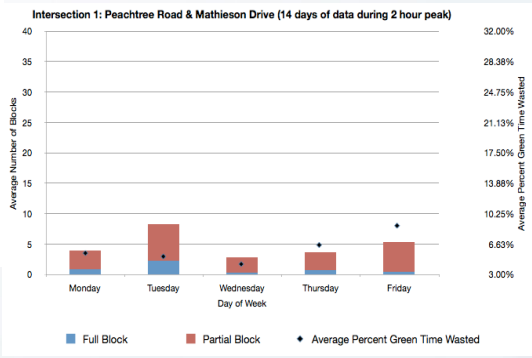
143.100.208.188_1_2014-01-23_16-30
ATL-CAM-021 P'tree Rd / Highland Dr


TL-CAM-021 P'tree Rd / Highland Dr

Observed Frequency and Impact of Blocking





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Observed Frequency of Blocking and Green Time Loss

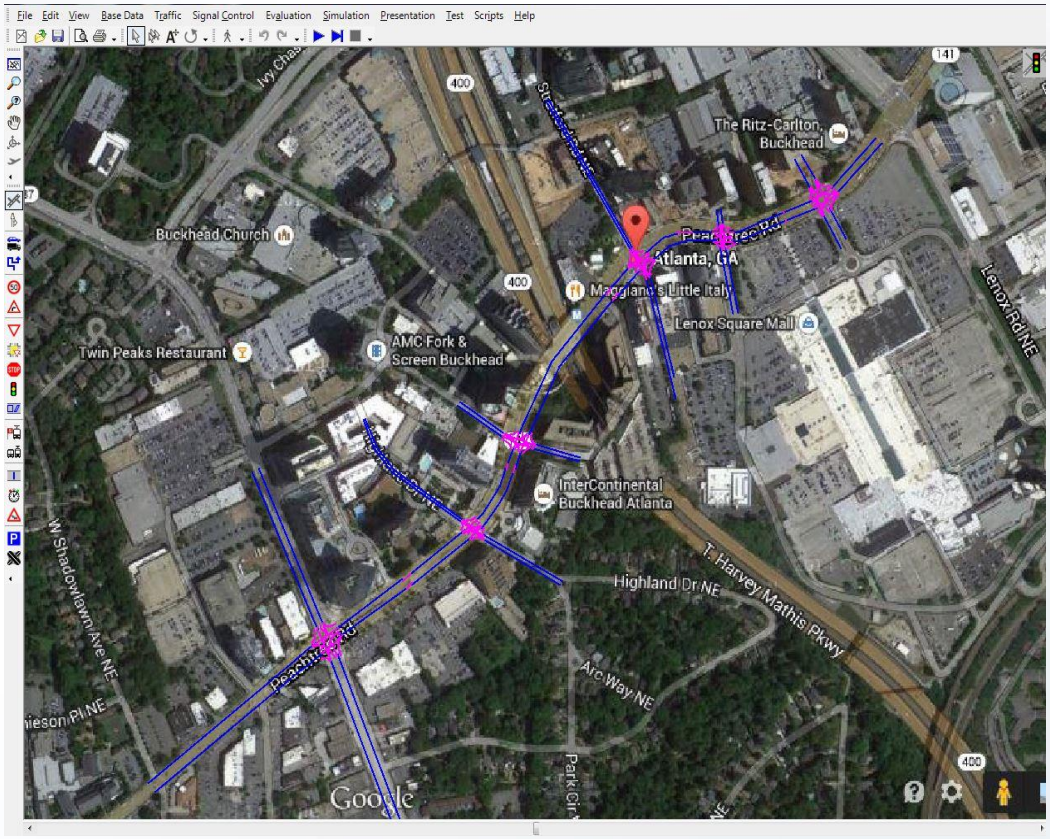
Intersection	Total Analysis Period (days/ minutes)	Total Green Time	Total Green Time that Experienced Blocking	Overall Percent of Green Time that Experienced Blocking	Total Partial Blocking Time	Total Full Blocking Time	Average Green time lost due to Partial Blocking Each 2 hr Period	Average Green time lost due to Full Blocking Each 2 hr Period
Peachtree Rd. & Mathieson Dr.	(14/ 20,160)	1468 minutes and 50 seconds	82 minutes and 48 seconds	5.6%	69 minutes and 1 second	13 minutes and 48 seconds	4 minutes and 56 seconds	0 minutes and 59 seconds
Peachtree Rd. & Piedmont Rd.	(11/ 15,840)	881 minutes and 24 seconds	22 minutes and 34 seconds	2.5 %	17 minutes and 41 seconds	4 minutes and 53 seconds	1 minute and 58 seconds	0 minutes and 33 seconds
Peachtree Rd. & Highland Dr.	(7/ 10,080)	671 minutes and 5 seconds	73 minutes and 14 seconds	10.9 %	67 minutes and 29 seconds	5 minutes and 45 seconds	9 minutes and 38 seconds	0 minutes and 49 seconds
Peachtree Rd. & Stratford Rd.	(7/ 10,080)	698 minutes and 57 seconds	120 minutes and 34 seconds	17.2 %	80 minutes and 15 seconds	40 minutes and 19 seconds	11 minutes and 28 seconds	5 minutes and 46 seconds
Peachtree Rd. & Lenox Mall entrance	(31/ 44,640)	3492 minutes and 34 seconds	360 minutes and 32 seconds	10.3 %	240 minutes and 55 seconds	109 minutes and 32 seconds	8 minutes and 13 seconds	3 minutes and 32 seconds
10th Street & Williams Street	(3/ 4,320)	319 minutes and 6 seconds	139 minutes and 9 seconds	43.6%	105 minutes	34 minutes and 9 seconds	35 minutes	11 minutes and 23 seconds

VISSIM Analysis for Don’t Block the Box

- Building network model using VISSIM 5.20 to simulate the effect of Don’t Block the Box.
- Using GDOT RTOPs interface the signal phase data was extracted and incorporated in the VISSIM model

VISSIM model consists of following intersections:

- Peachtree-Piedmont
- Peachtree-Highland
- Peachtree-Tower Pl
- Peachtree-Stratford
- Peachtree-Lenox Pkwy
- Peachtree-Lenox Mall Entrance



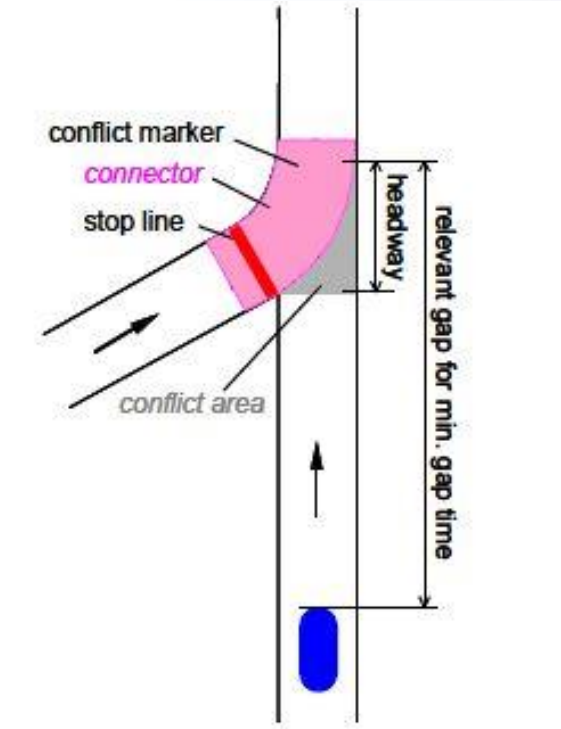
Using Priority Rule Tool for Simulating Blocking Scenario (in VISSIM)

Priority Rule in VISSIM consists of

- One stop line (red color)
- One or more conflict markers that are associated with the stop line (green color)

How does Priority Rule function?

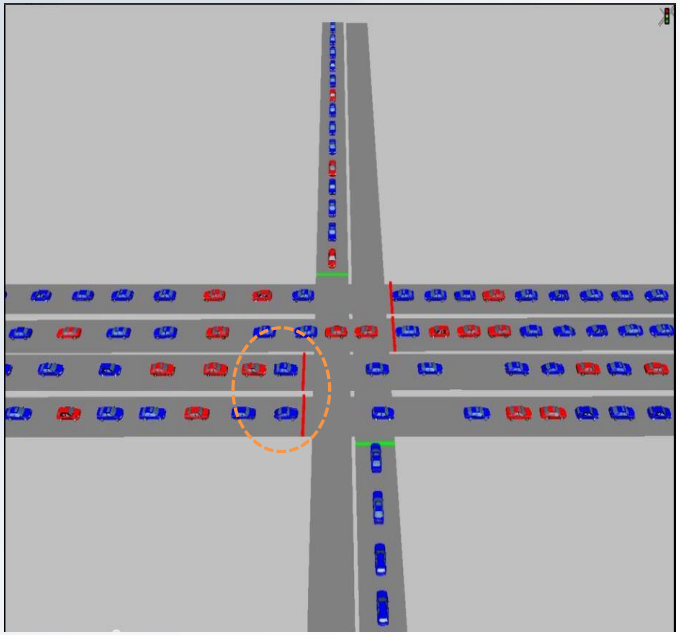
Depending on the current conditions at the conflict marker(s) the stop line allows vehicles to cross or not.



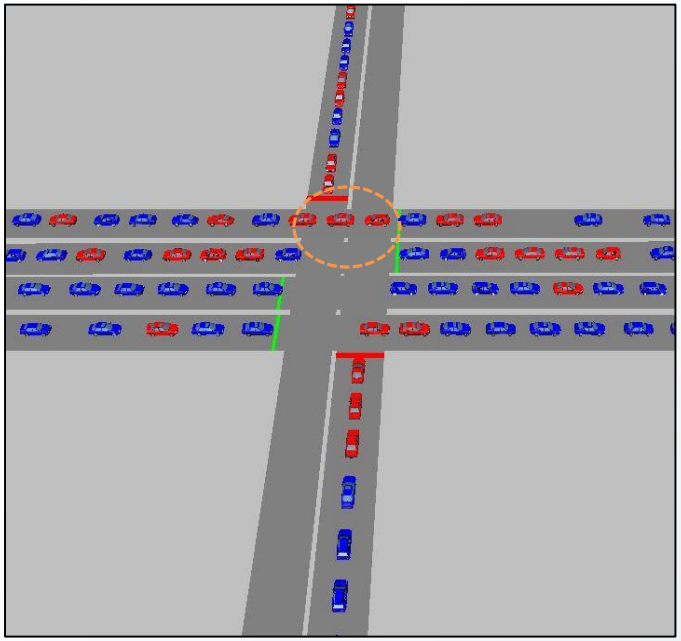
The two main conditions to check at the conflict marker(s) are:

- *Minimum headway* : Min distance between conflict marker and next approaching vehicle
- *Minimum gap time*: Min gap time between conflict marker and next vehicle upstream
- *Max speed*: vehicle approaching conflict marker will be taken in account for headway condition if its speed is same or lower as max. speed

Testing VISSIM sample network using Priority Rules to create blocking scenario



Red cars block the minor approach



Blue cars don't get in the box

- Blue: non-blocking cars
- Red: blocking cars

Lessons Learned

- Involvement of TMOs in traffic operations is currently limited
- TMOs typically operate on low budget
  - Prefer low cost high impact solutions (DBTB costs < $2000 per intersection)
  - TMOs are receptive to DBTB campaign if benefits can be documented
  - Existing DBTB implementations are perceived to have positive effects
- DBTB campaign does not work in isolation
  - Enforcement is essential
  - Require co-ordination with law enforcement and local jurisdictions
  - Continuation of driver education and enforcement
  - Address source of problem e.g. heavy turn volumes