BEYOND THE LOOP

2018 TEAM Conference

March 8, 2018

Broadway PEL Traffic Modeling

BURNS McDONNELL

Summary of Conclusions

BEYOND THE LOOP

- Access Consolidation (AC) appears to improve conditions all around, especially north/south across the river.
- Compressed Footprint (CF) appears to also improve conditions in many areas, especially north/south across the river, but does have some challenges.
- Redesignate and Reclassify (RR) appears to also improve conditions north/south across the river, but diverts traffic to I-670.
- Mitigations were analyzed and added to improve performance.
- Congested conditions and delays are limited to peak hours.
- Forecasts for the RR conditions within the Downtown Loop area are equivalent to the 2040 No Build conditions outside the Downtown Loop area.
- Traffic volume diversions and speed reductions due to congestion outside the Downtown Loop area significantly complicate the analysis.
- In year 2040, operation of Connected and Autonomous Vehicles (CV/AV) on the freeway system alone can potentially offset and reverse the resulting incremental traffic delays related to the strategies.

Agenda

BEYOND THE LOOP

- DTA Network Statistics
- ‘Delta’ Graphics for 3 Build Strategies
- 2040 Base Speed Matrix
- Gate to Gate Travel Times
- Mitigation Approach – Locations, Descriptions and Metrics
- 2040 No Build CV/AV Considerations
- Cordon Line – Description and Metrics

Full DTA Network Statistics
Existing 2016 vs No Build 2040 – AM Peak

BEYOND THE LOOP

AM Peak Period (6-9AM)	Vehicle Miles Travelled			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	1,381,960	128,822	574,171	2,084,952
No Build 2040	1,580,254	138,616	601,108	2,319,979
Change vs Existing Conditions				
No Build 2040	14.3%	7.6%	4.7%	11.3%

AM Peak Period (6-9AM)	Vehicle Hours Travelled			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	25,537	4,101	25,987	55,625
No Build 2040	30,042	4,424	30,387	64,853
Change vs Existing Conditions				
No Build 2040	17.6%	7.9%	16.9%	16.6%

AM Peak Period (6-9AM)	Vehicle Hours of Delay			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	1,867	567	7,838	10,273
No Build 2040	3,035	652	11,418	15,105
Change vs Existing Conditions				
No Build 2040	62.6%	15.0%	45.7%	47.0%

AM Peak Period (6-9AM)	Average Harmonic Speed			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	54	31	22	37
No Build 2040	53	31	20	36
Change vs Existing Conditions				
No Build 2040	-1.9%	0.0%	-9.1%	-2.7%

Full DTA Network Statistics
Existing 2016 vs No Build 2040 – PM Peak

BEYOND THE LOOP

PM Peak Period (3-7PM)	Vehicle Miles Travelled			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	1,950,179	190,480	983,511	3,124,170
No Build 2040	2,247,398	205,661	1,041,454	3,494,513
Change vs Existing Conditions				
No Build 2040	15.2%	8.0%	5.9%	11.9%

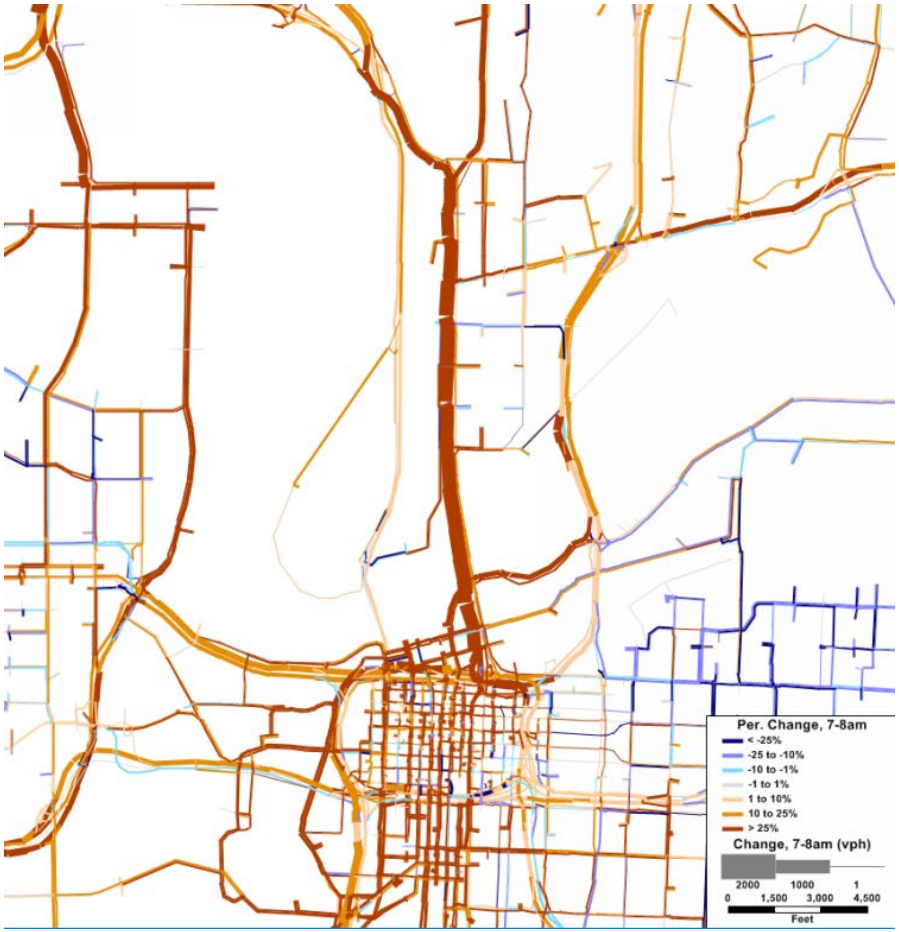
PM Peak Period (3-7PM)	Vehicle Hours Travelled			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	37,398	6,349	53,611	97,357
No Build 2040	45,429	7,160	63,342	115,931
Change vs Existing Conditions				
No Build 2040	21.5%	12.8%	18.2%	19.1%

PM Peak Period (3-7PM)	Vehicle Hours of Delay			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	3,993	1,099	22,223	27,314
No Build 2040	7,076	1,528	30,149	38,753
Change vs Existing Conditions				
No Build 2040	77.2%	39.0%	35.7%	41.9%

PM Peak Period (3-7PM)	Average Harmonic Speed			
	Freeway & Expressway	All Ramps	Arterials	System Total
Existing 2016	52	30	18	32
No Build 2040	49	29	16	30
Change vs Existing Conditions				
No Build 2040	-5.8%	-3.3%	-11.1%	-6.3%

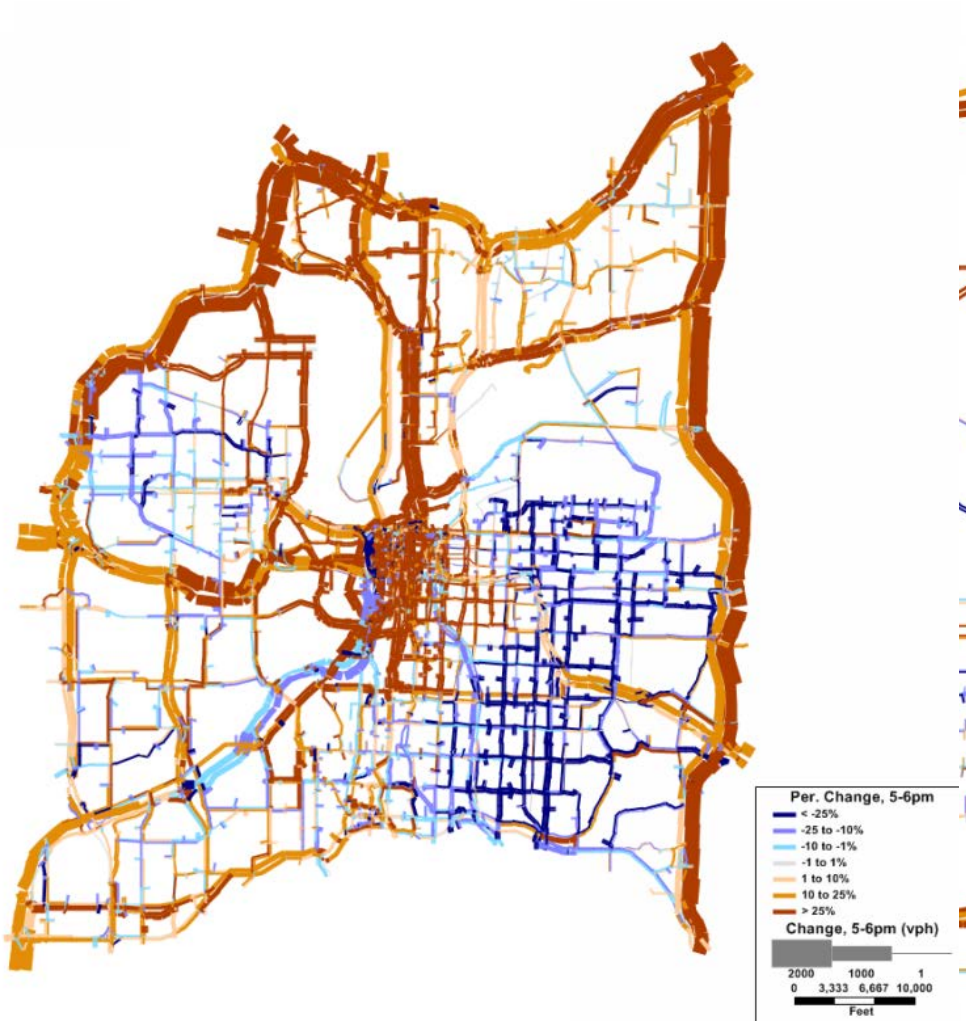
DTA Delta Volumes
NB 2040 vs 2016 Base AM Peak Hour

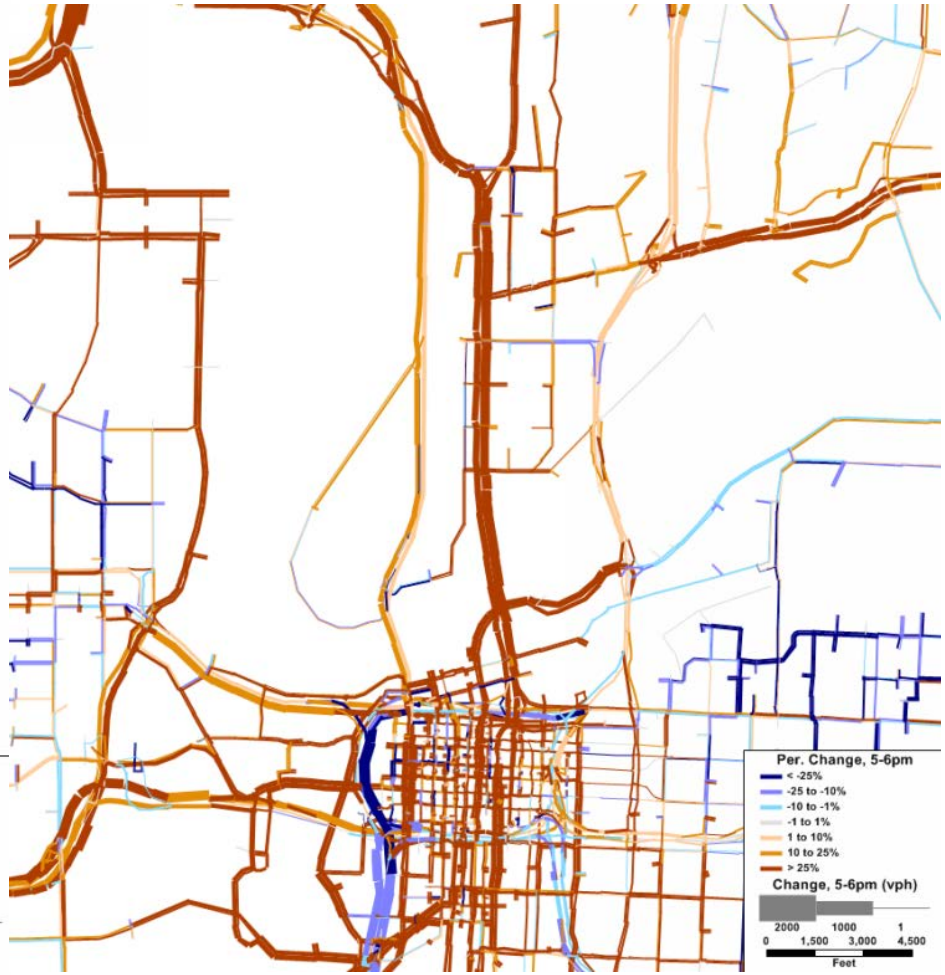
BEYOND THE LOOP



DTA Delta Volumes
NB 2040 vs 2016 Base PM Peak Hour

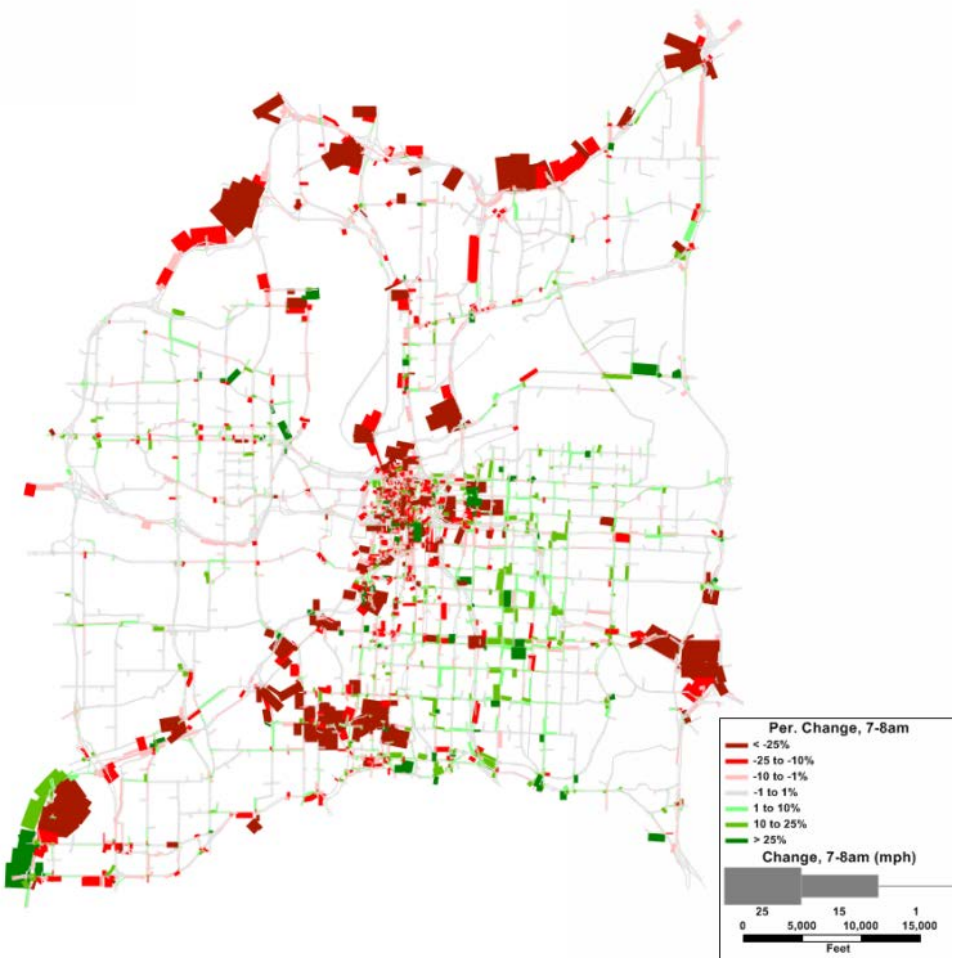
BEYOND THE LOOP

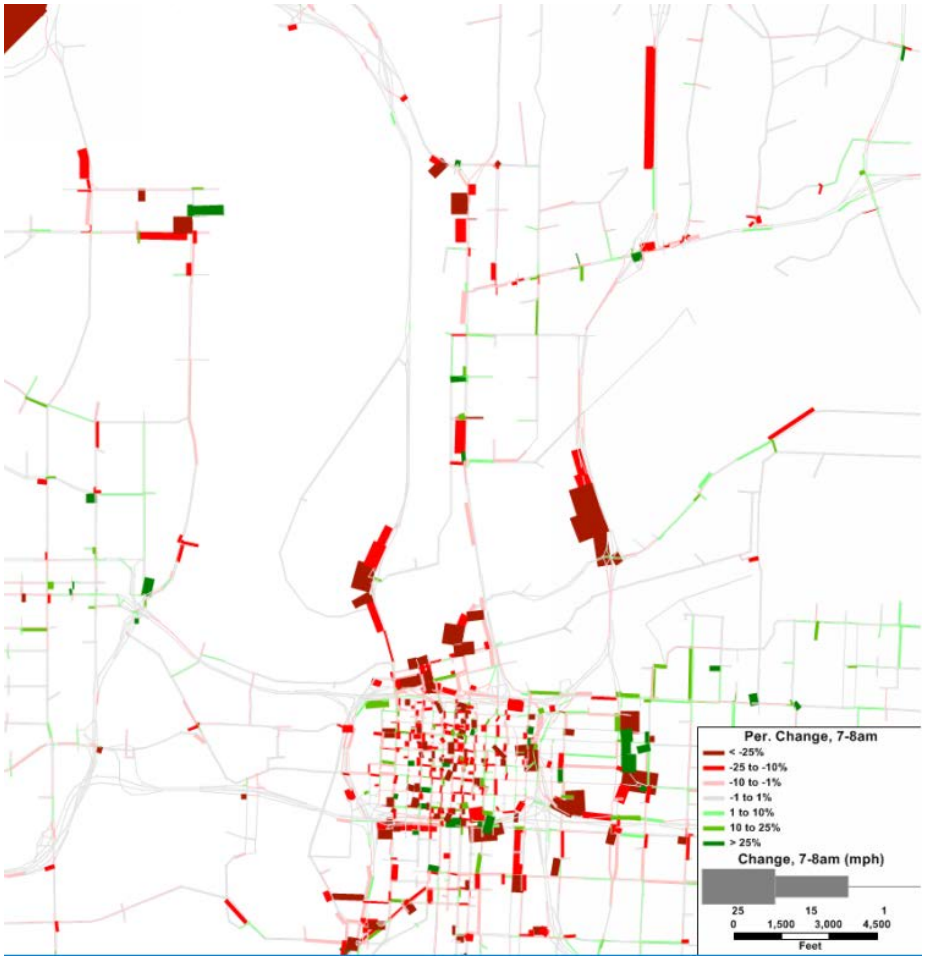




DTA Delta Speed
NB 2040 vs 2016 Base AM Peak Hour

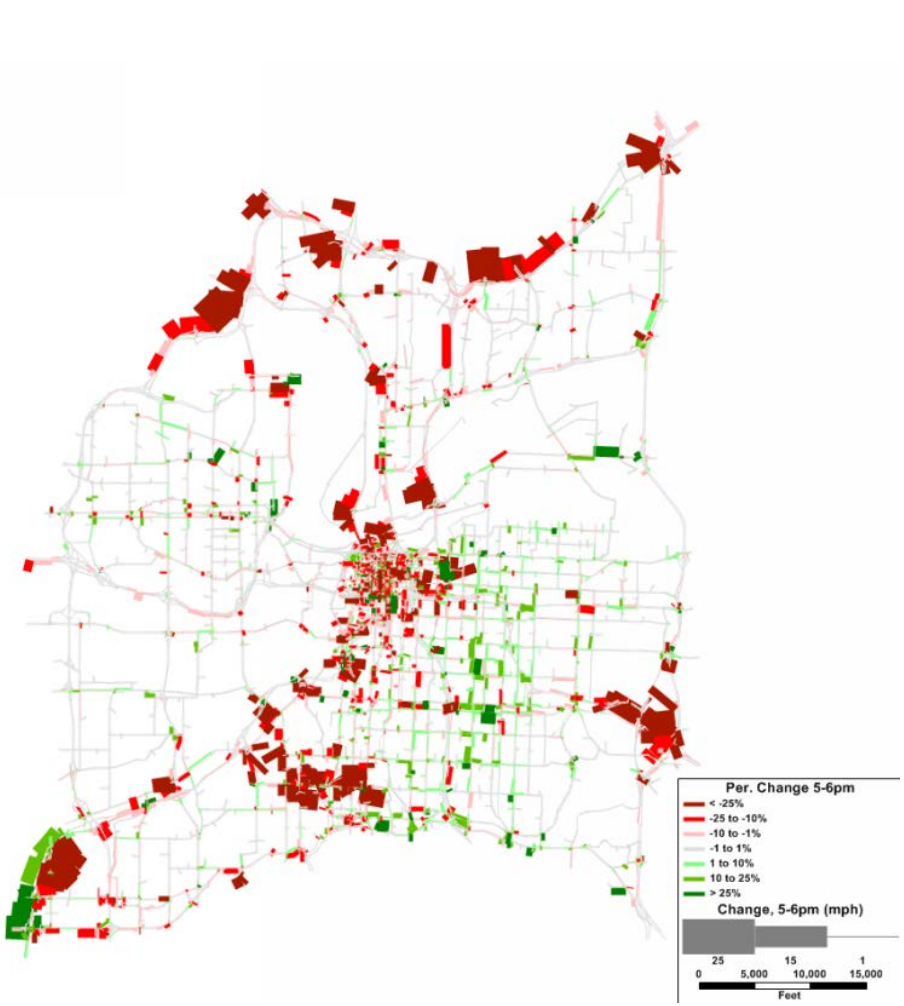
BEYOND THE LOOP

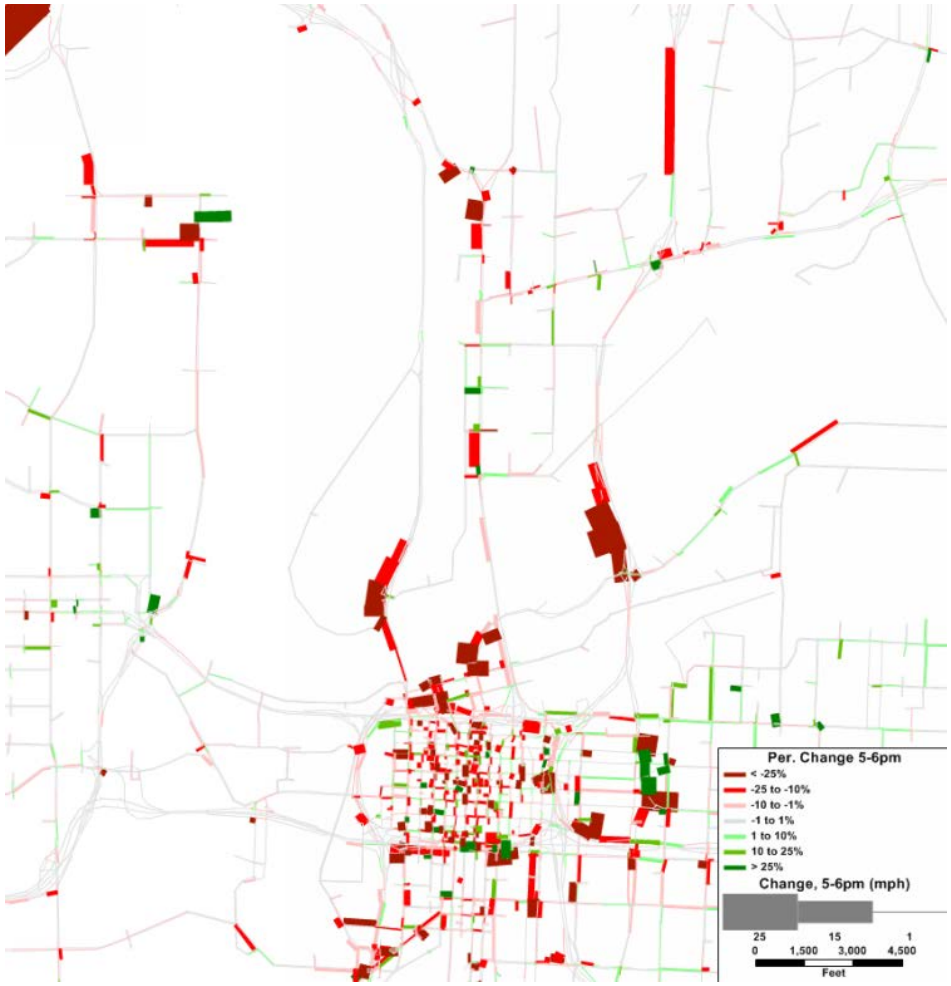




DTA Delta Speed
NB 2040 vs 2016 Base PM Peak Hour

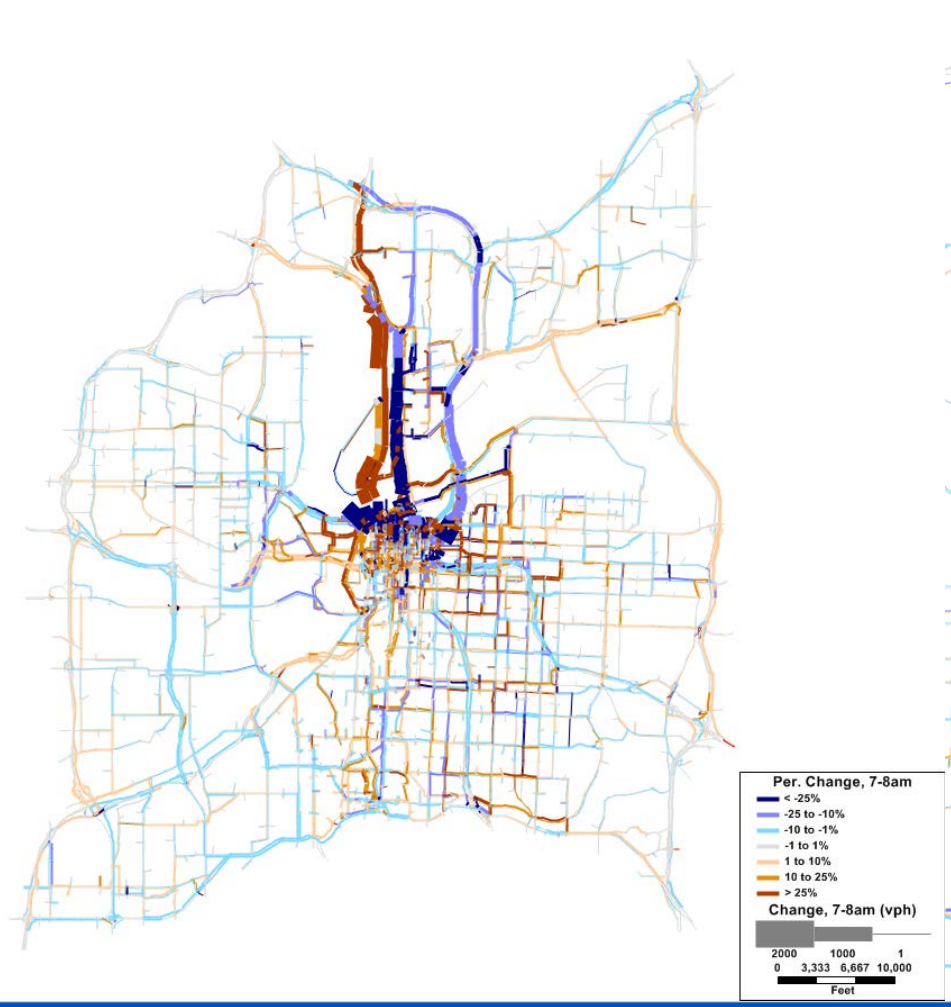
BEYOND THE LOOP

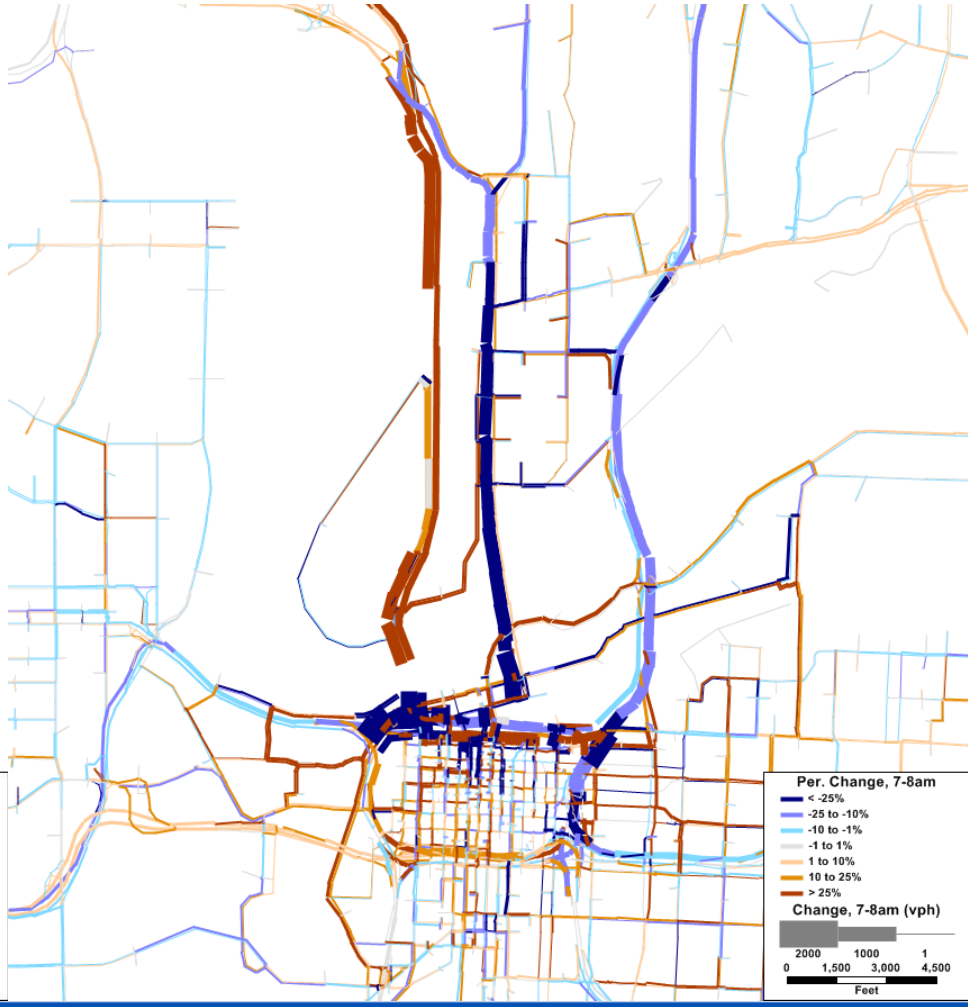




DTA Delta Volumes NB 2040 vs AC AM Peak Hour

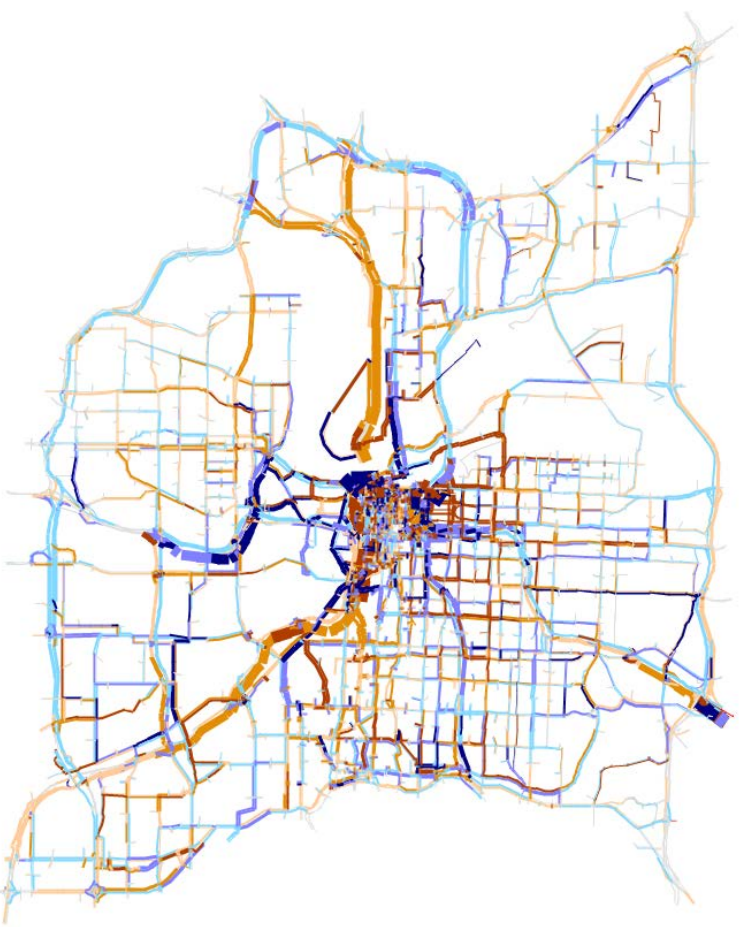
BEYOND THE LOOP

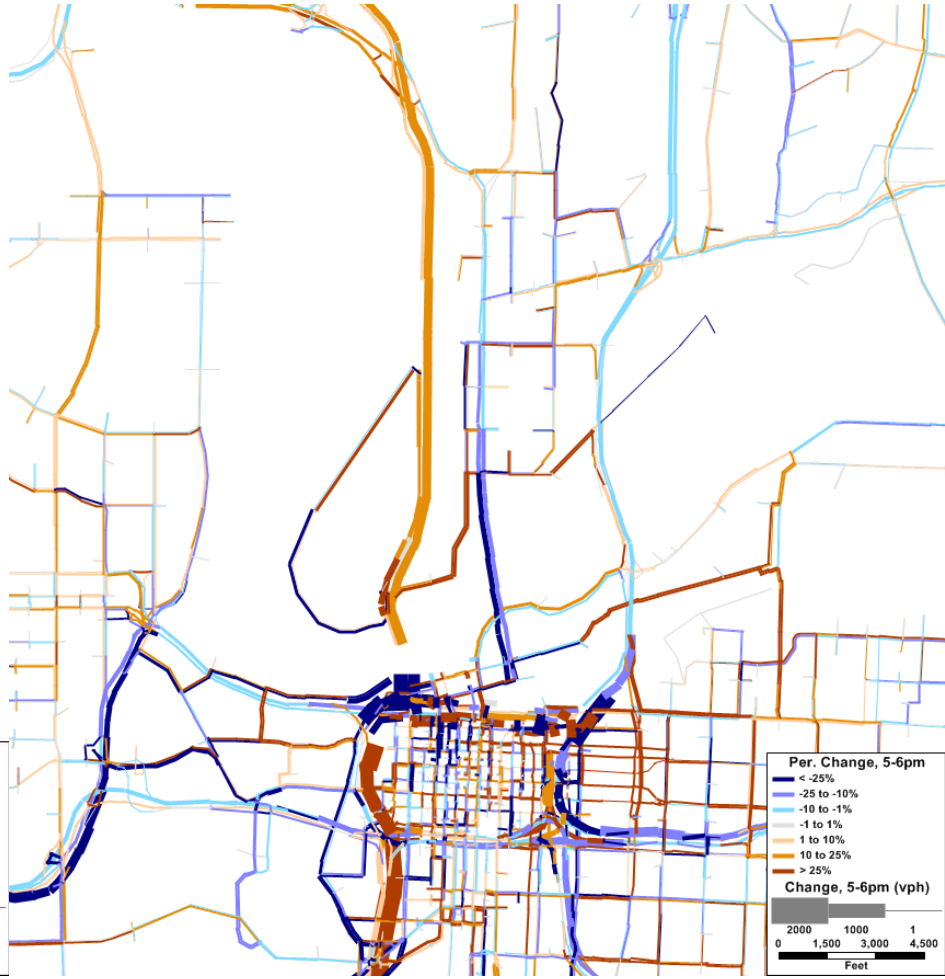




DTA Delta Volumes NB 2040 vs AC PM Peak Hour

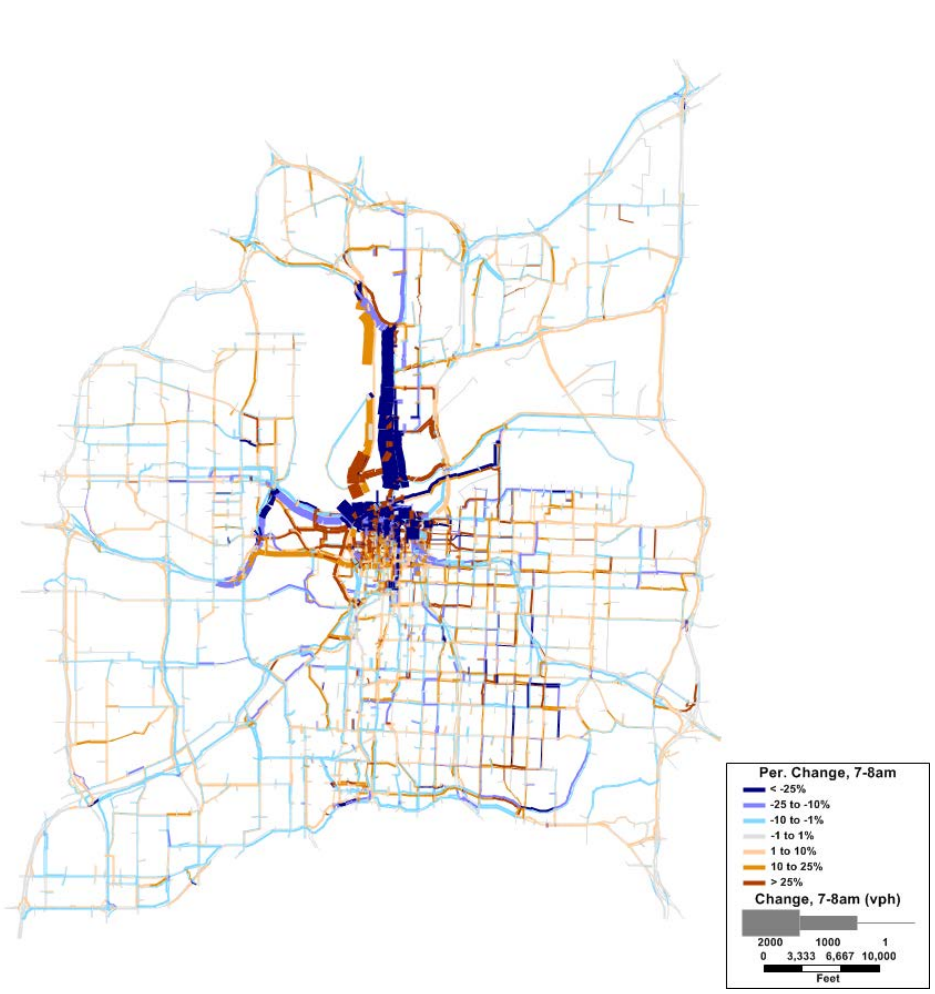
BEYOND THE LOOP

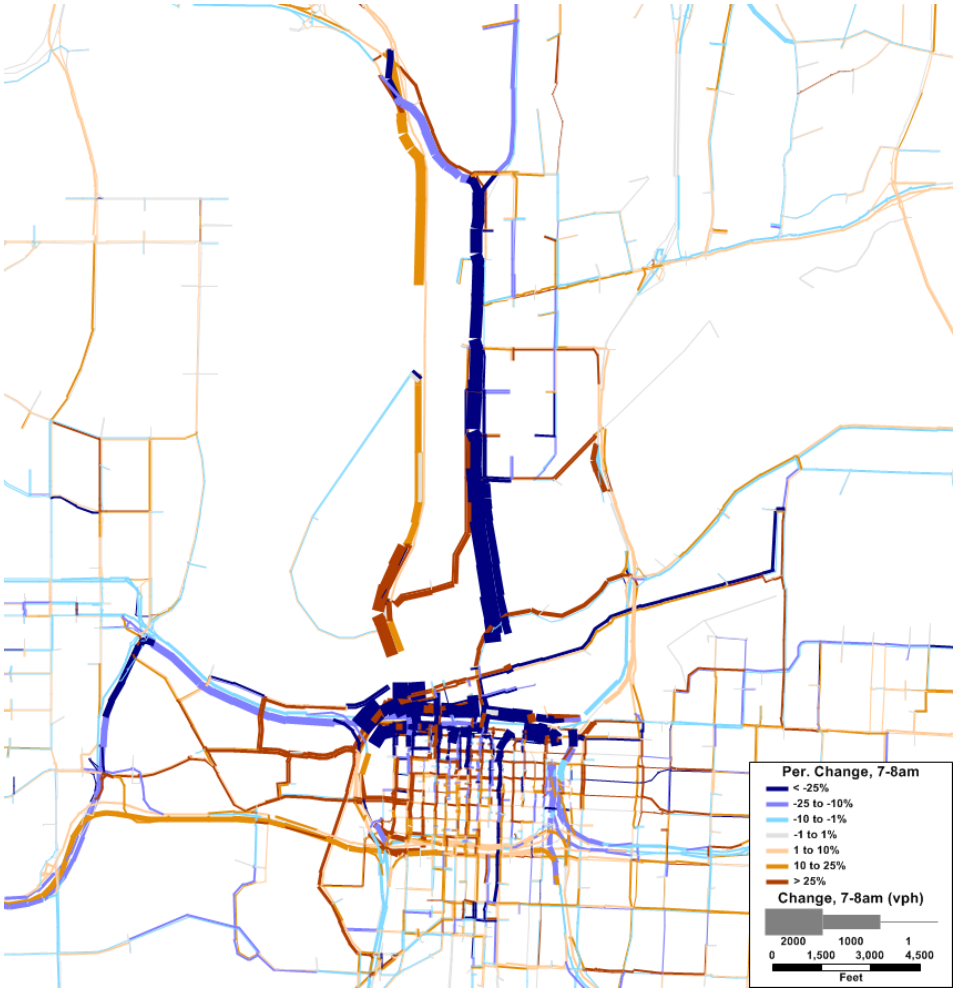




DTA Delta Volumes NB 2040 vs CF AM Peak Hour

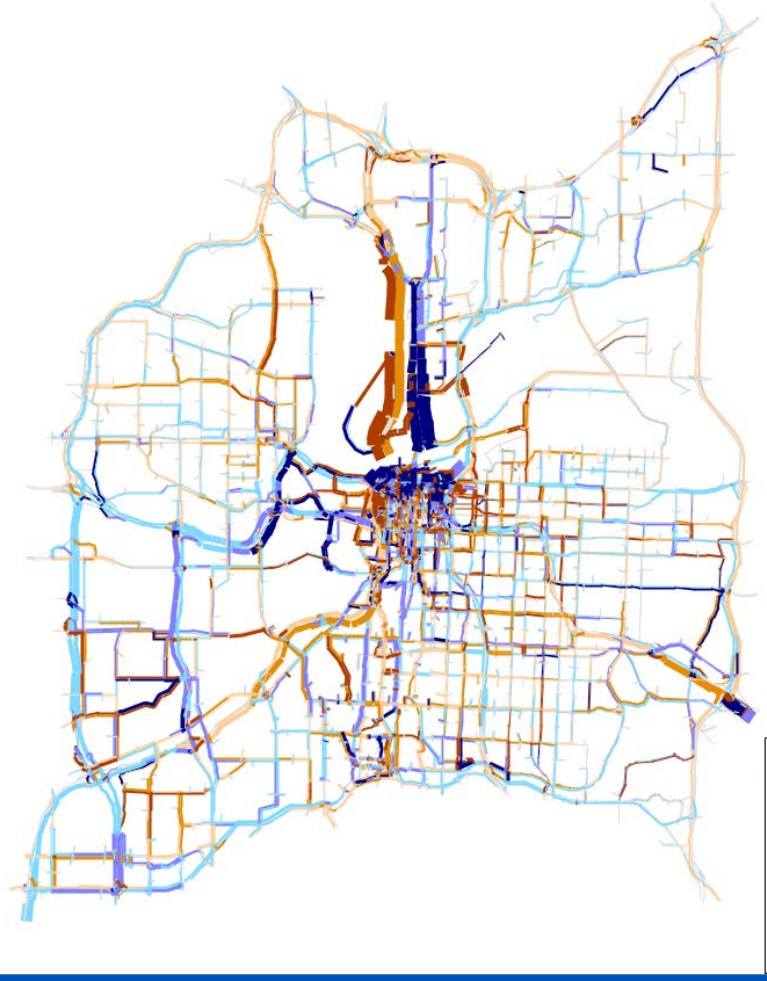
BEYOND THE LOOP

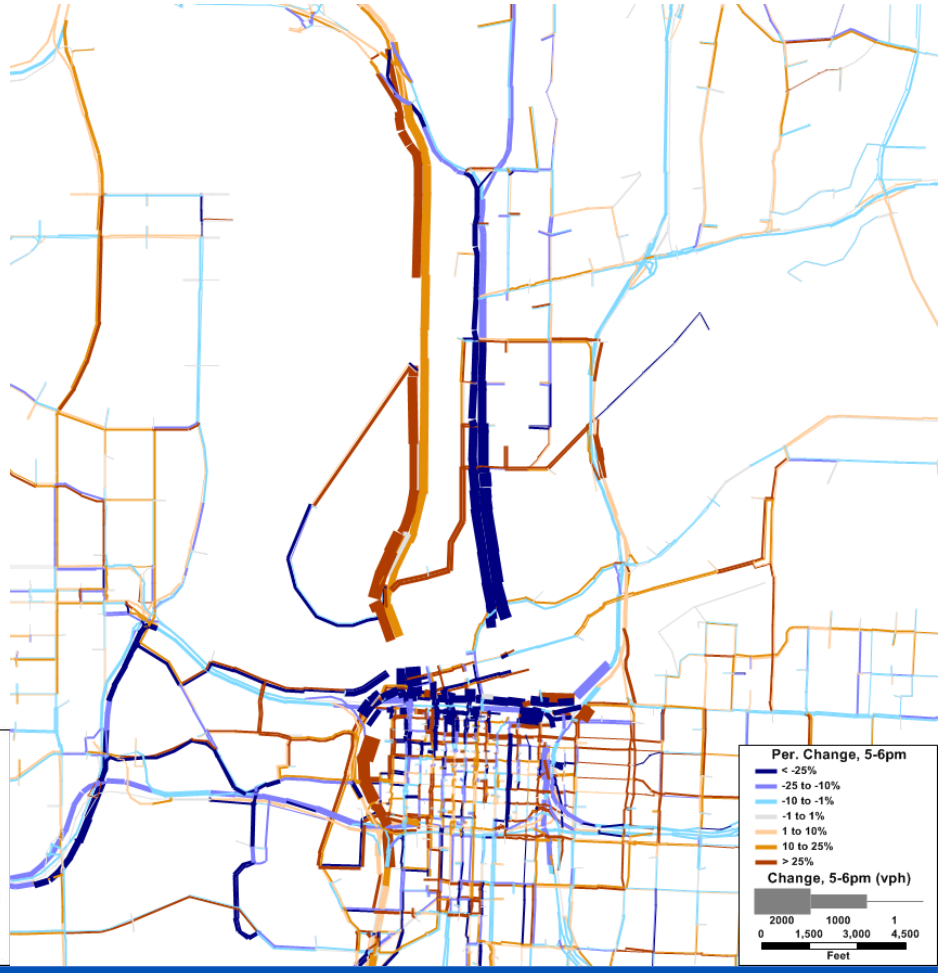




DTA Delta Volumes NB 2040 vs CF PM Peak Hour

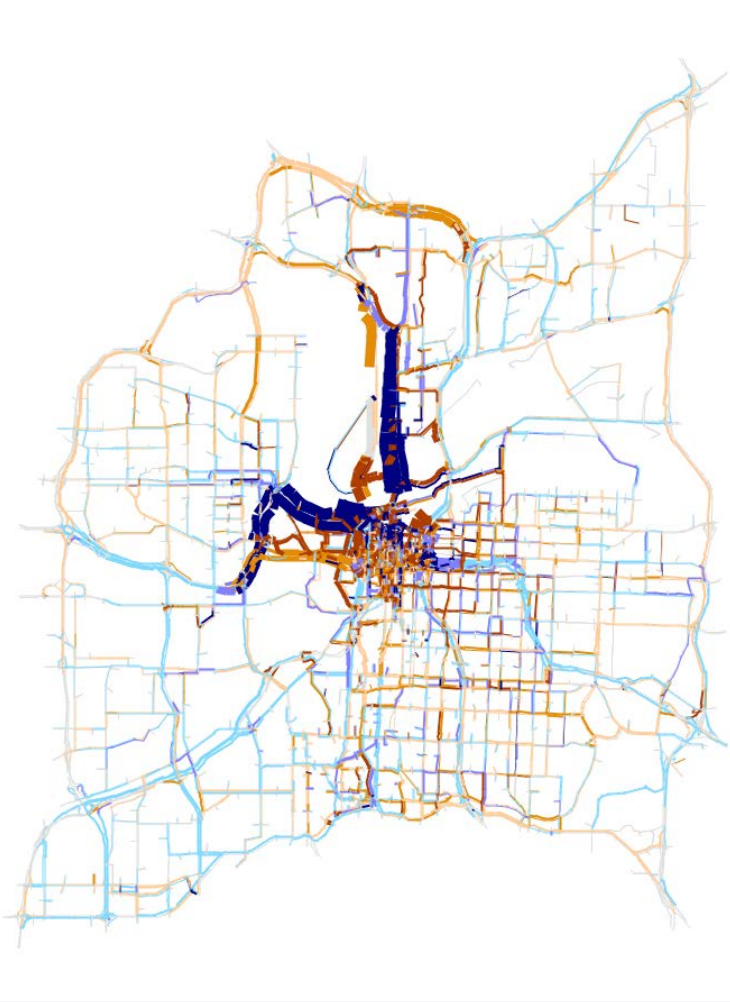
BEYOND THE LOOP

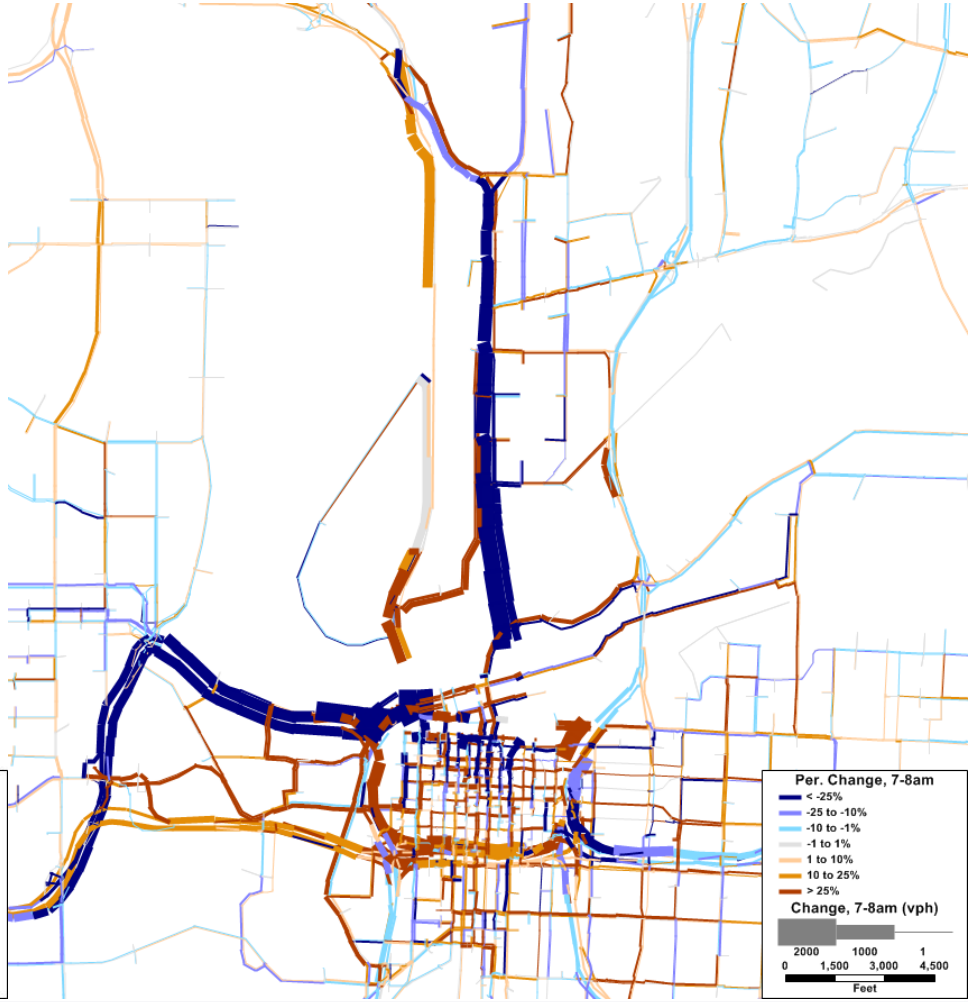




DTA Delta Volumes NB 2040 vs RR AM Peak Hour

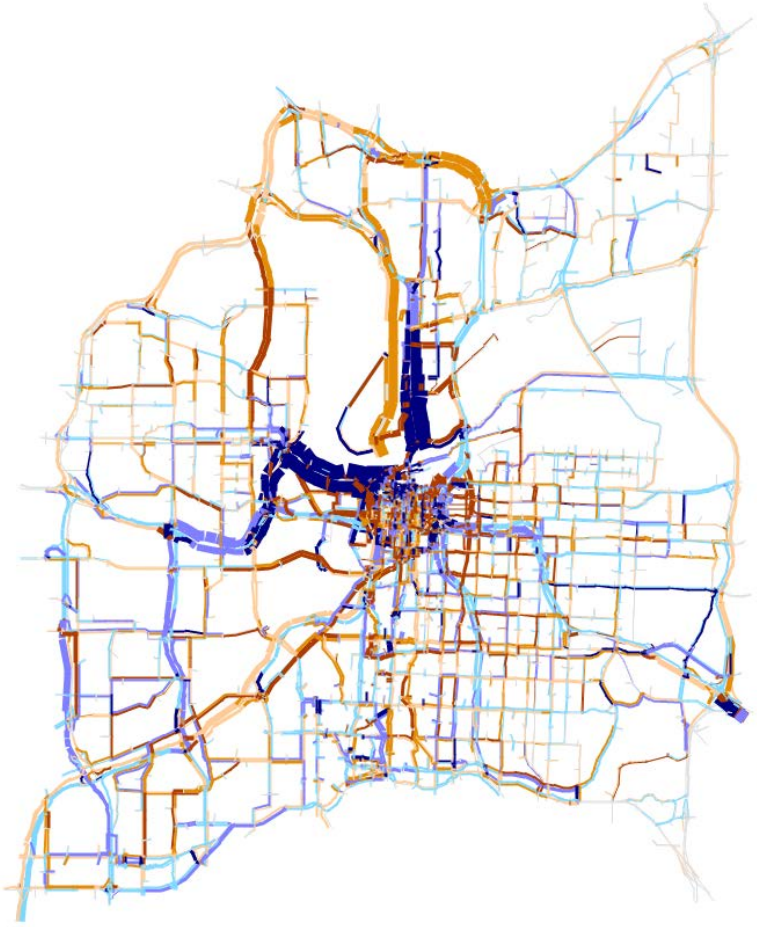
BEYOND THE LOOP

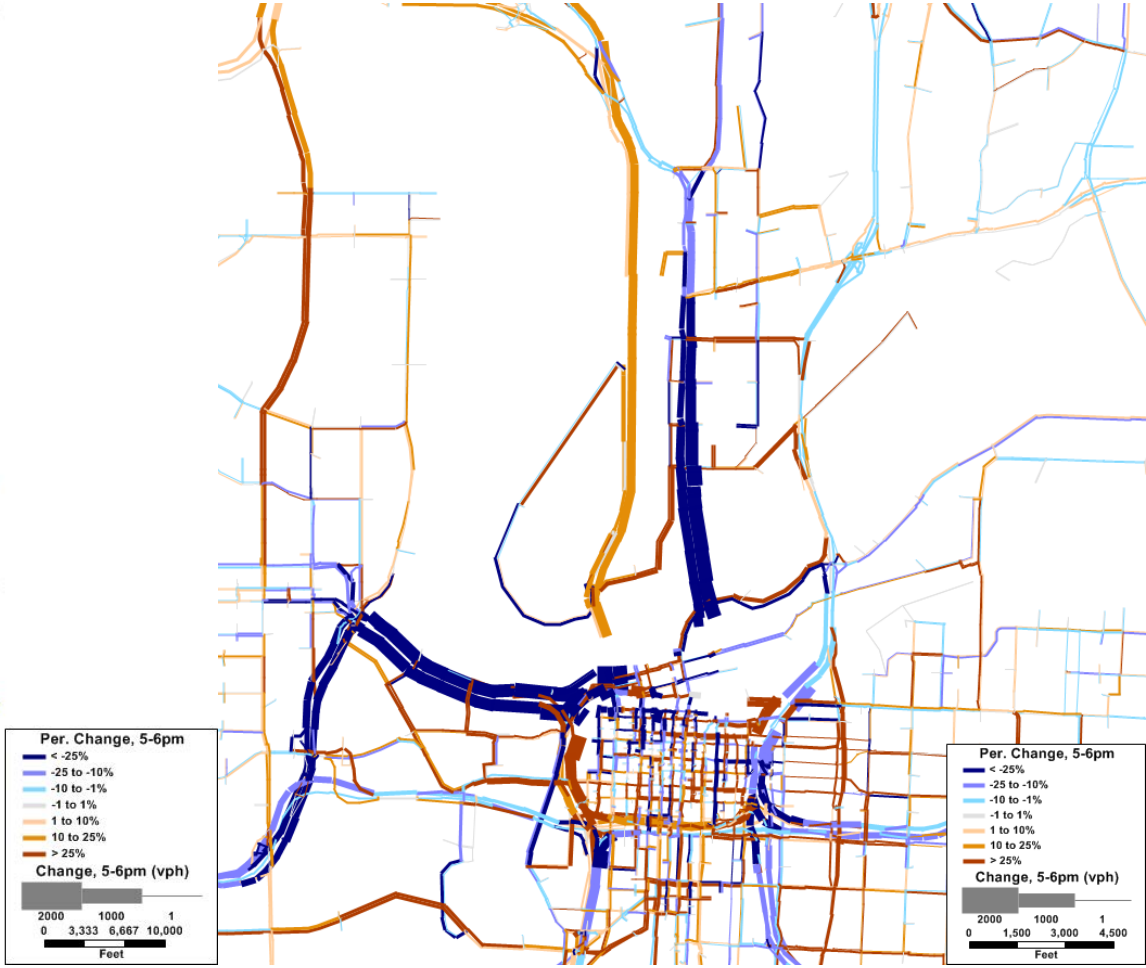




DTA Delta Volumes NB 2040 vs RR PM Peak Hour

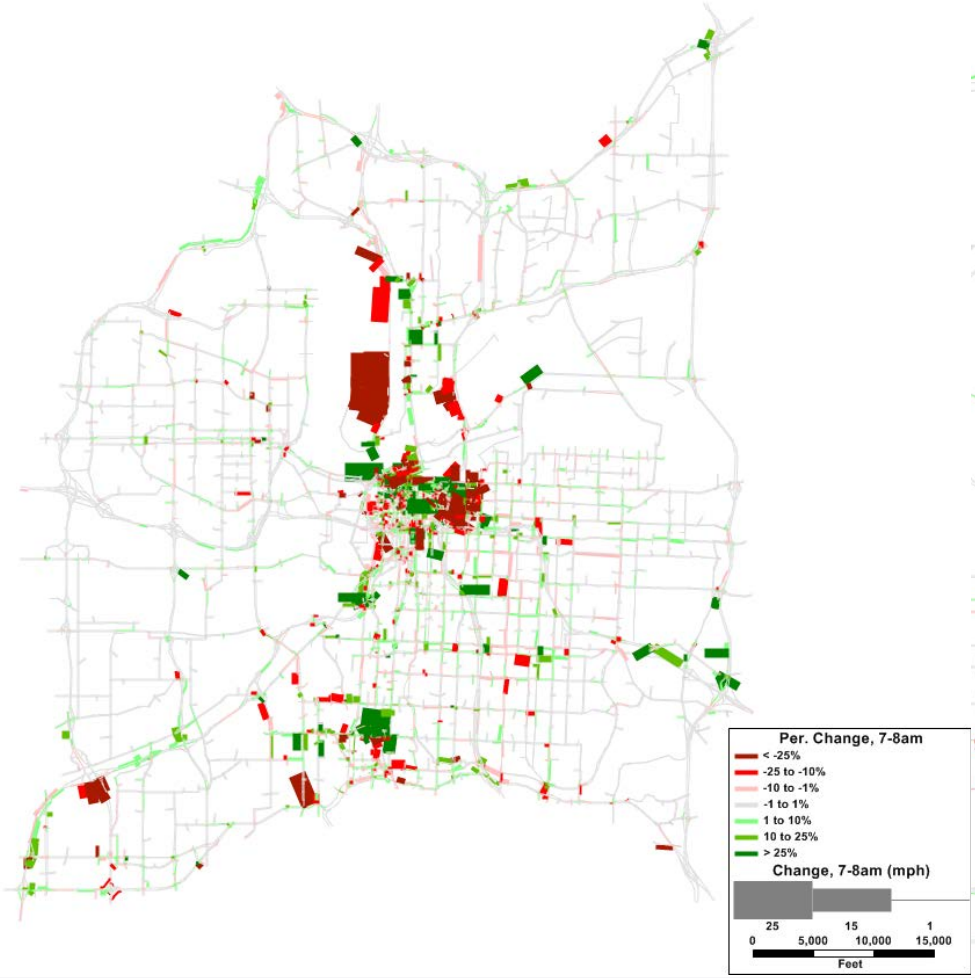
BEYOND THE LOOP

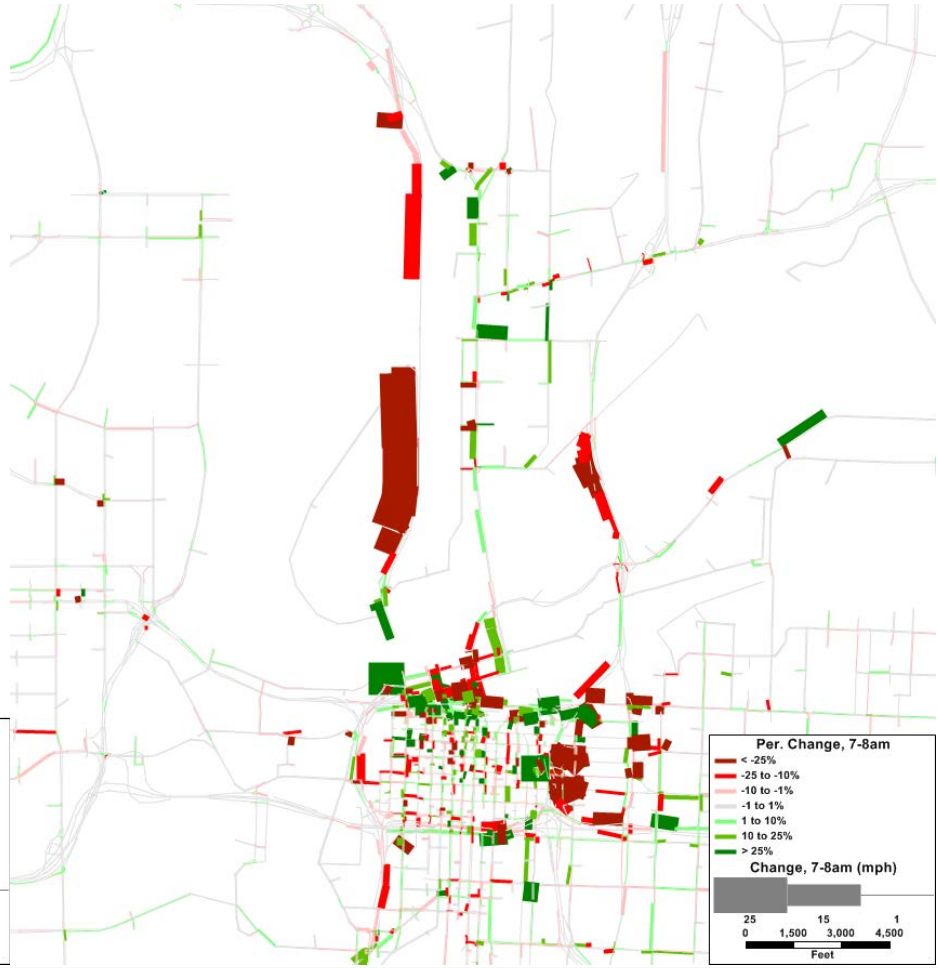




DTA Delta Speed NB 2040 vs AC AM Peak Hour

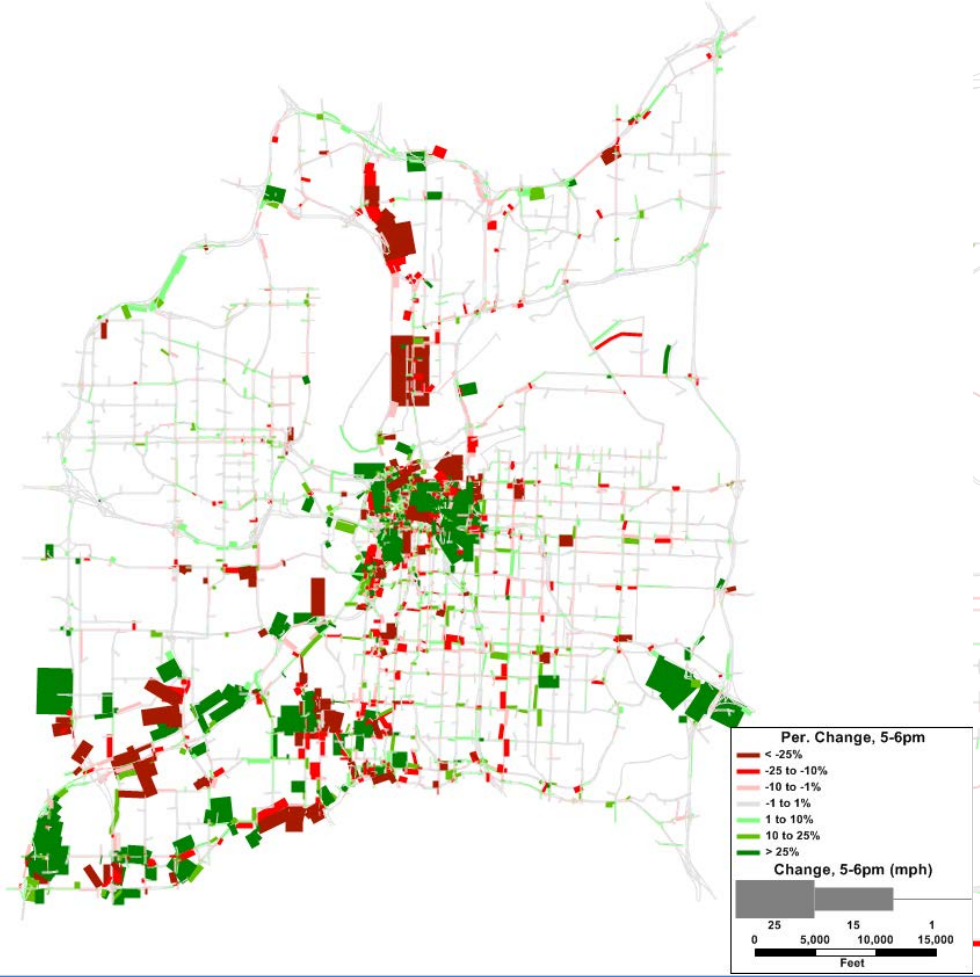
BEYOND THE LOOP

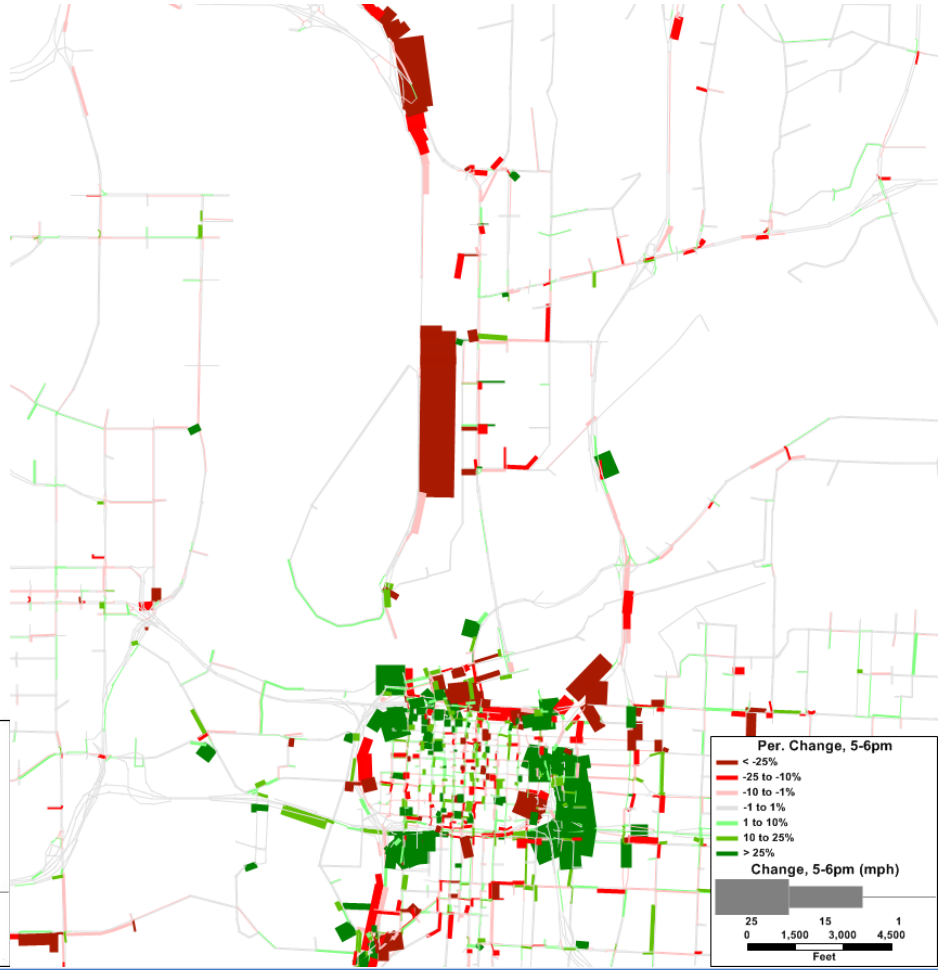




DTA Delta Speed NB 2040 vs AC PM Peak Hour

BEYOND THE LOOP



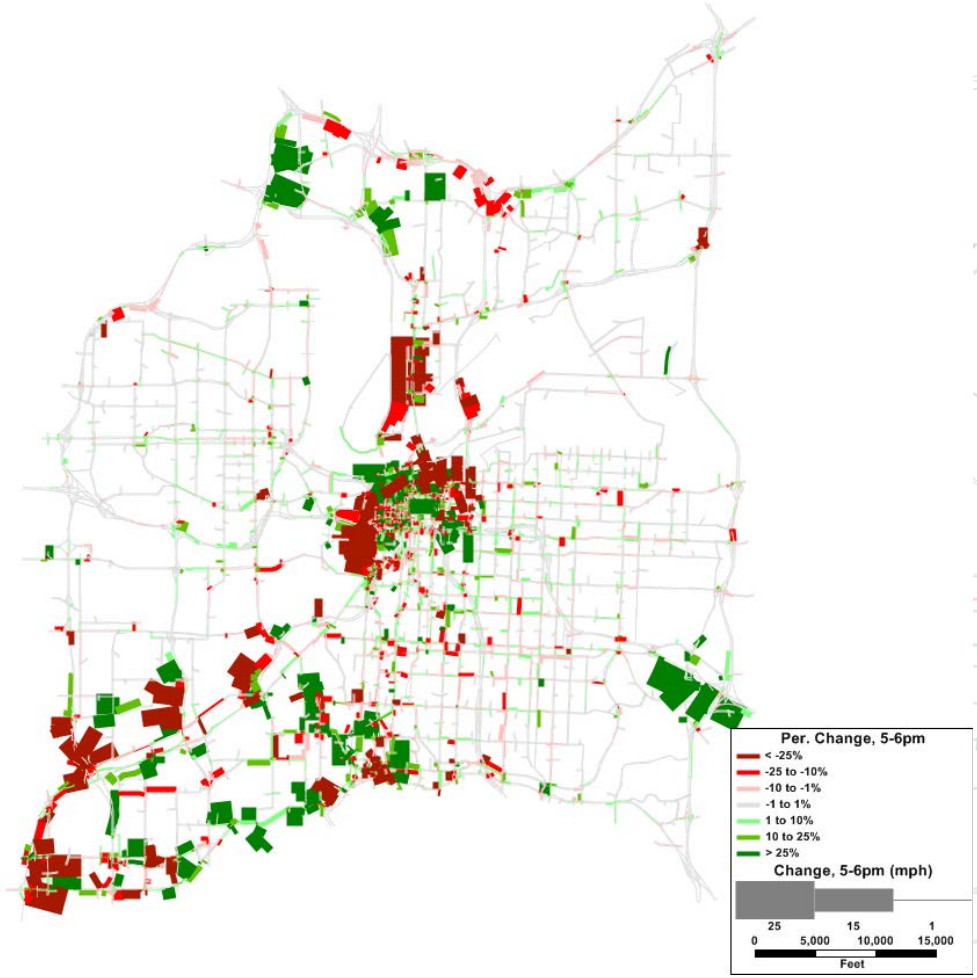


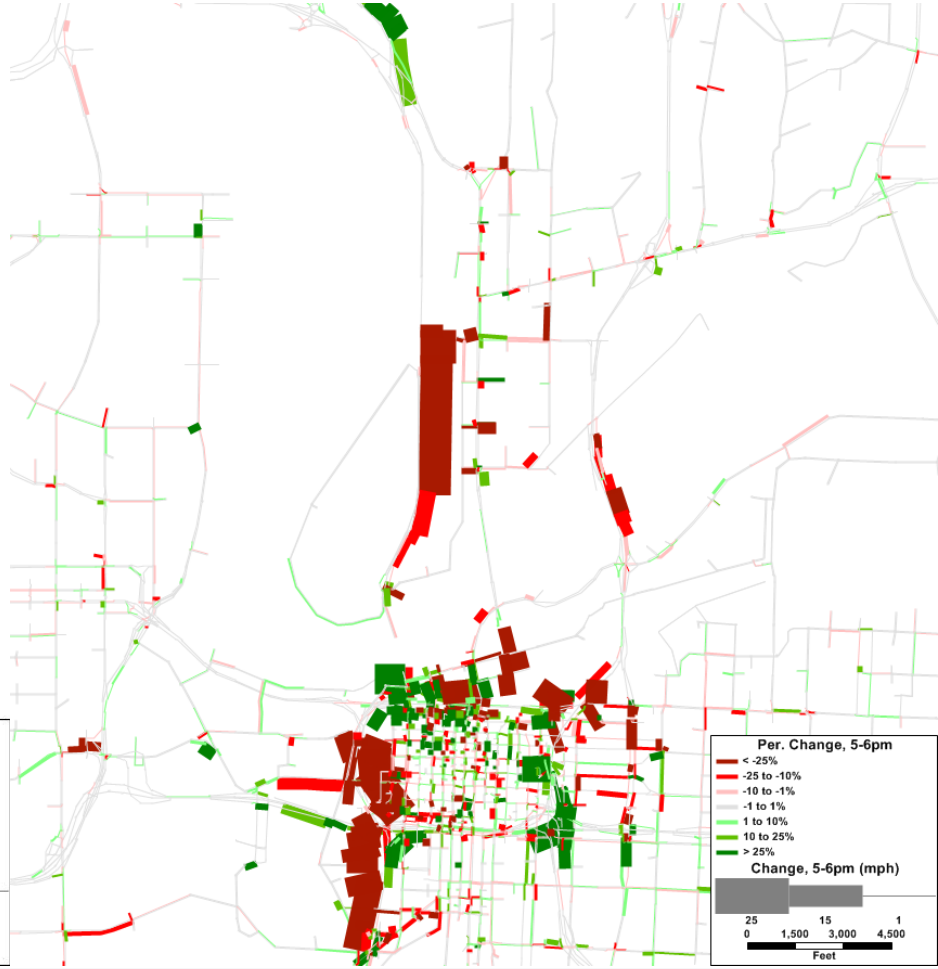
DTA Delta Speed NB 2040 vs CF AM Peak Hour

BEYOND THE LOOP

DTA Delta Speed NB 2040 vs CF PM Peak Hour

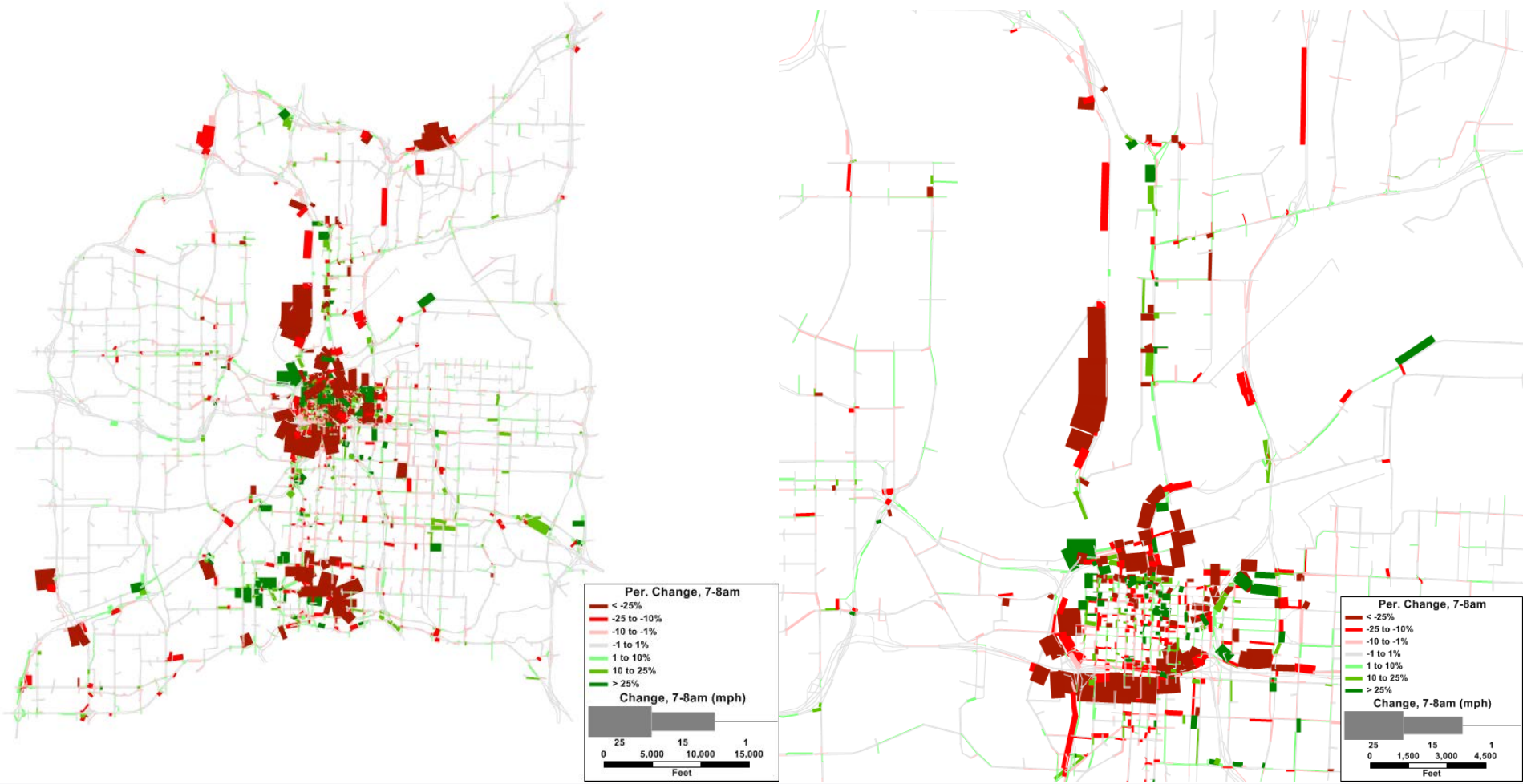
BEYOND THE LOOP





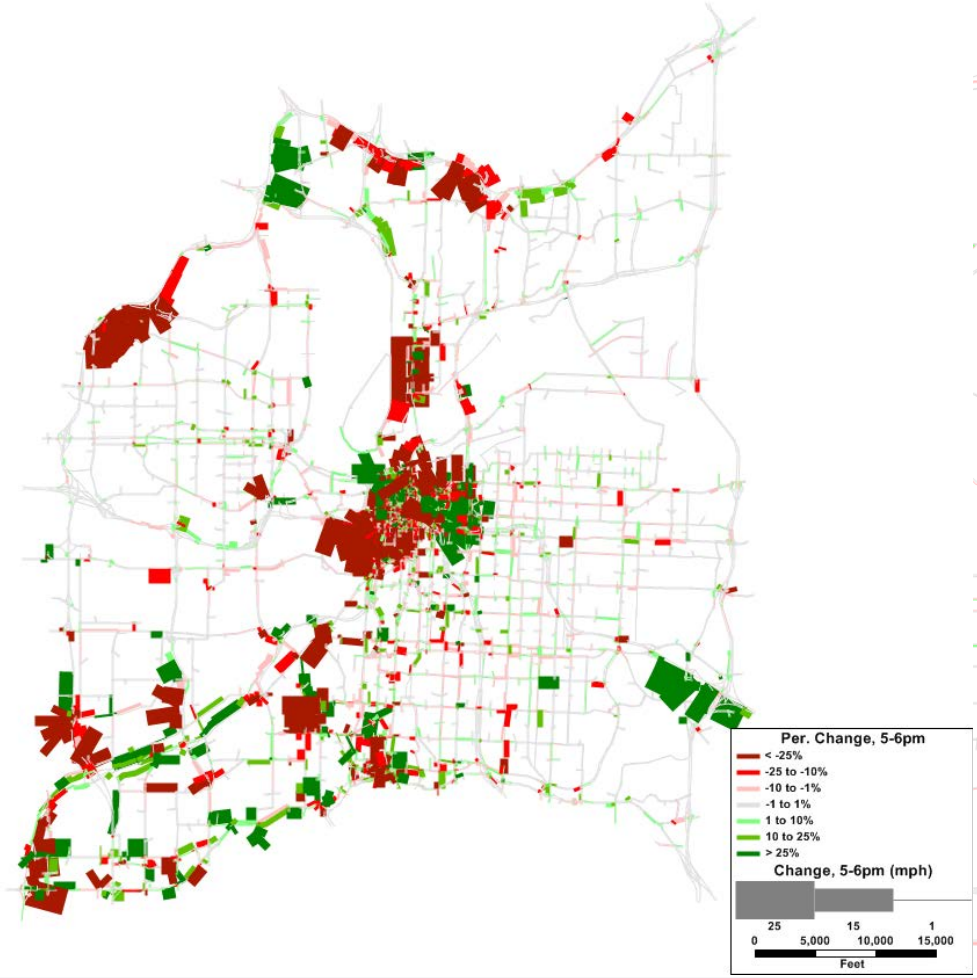
DTA Delta Speed NB 2040 vs RR AM Peak Hour

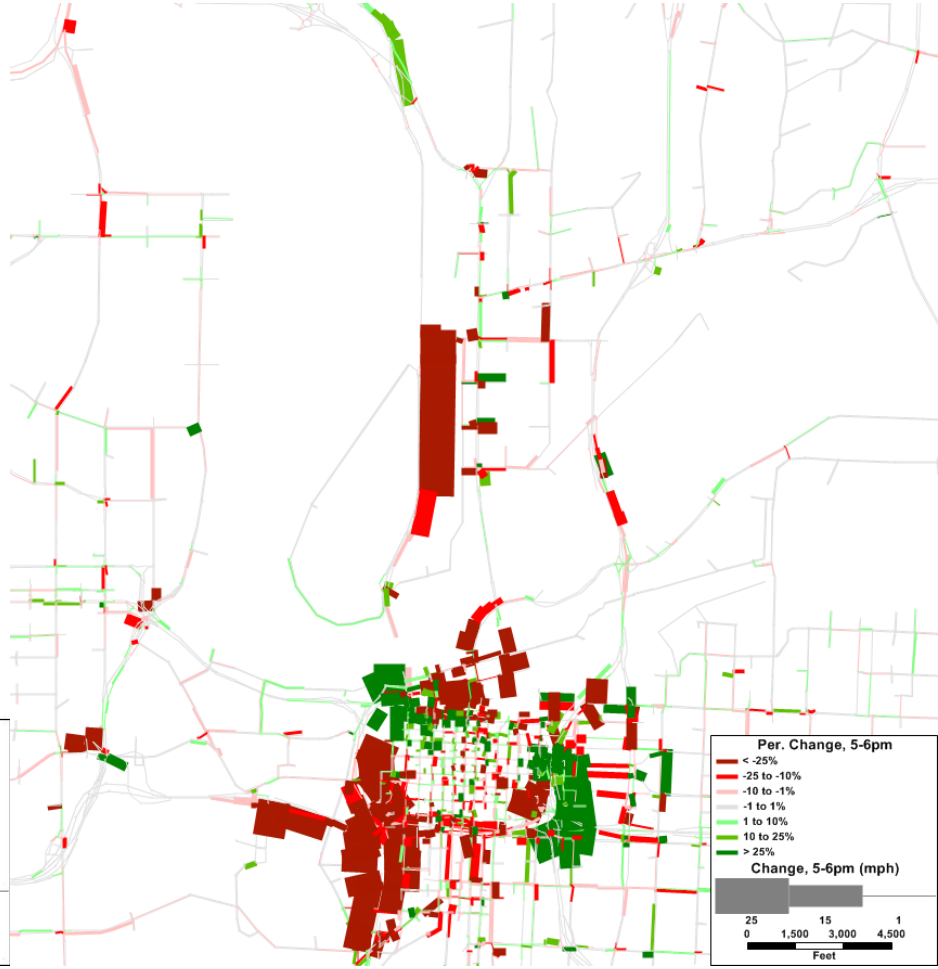
BEYOND THE LOOP



DTA Delta Speed NB 2040 vs RR PM Peak Hour

BEYOND THE LOOP



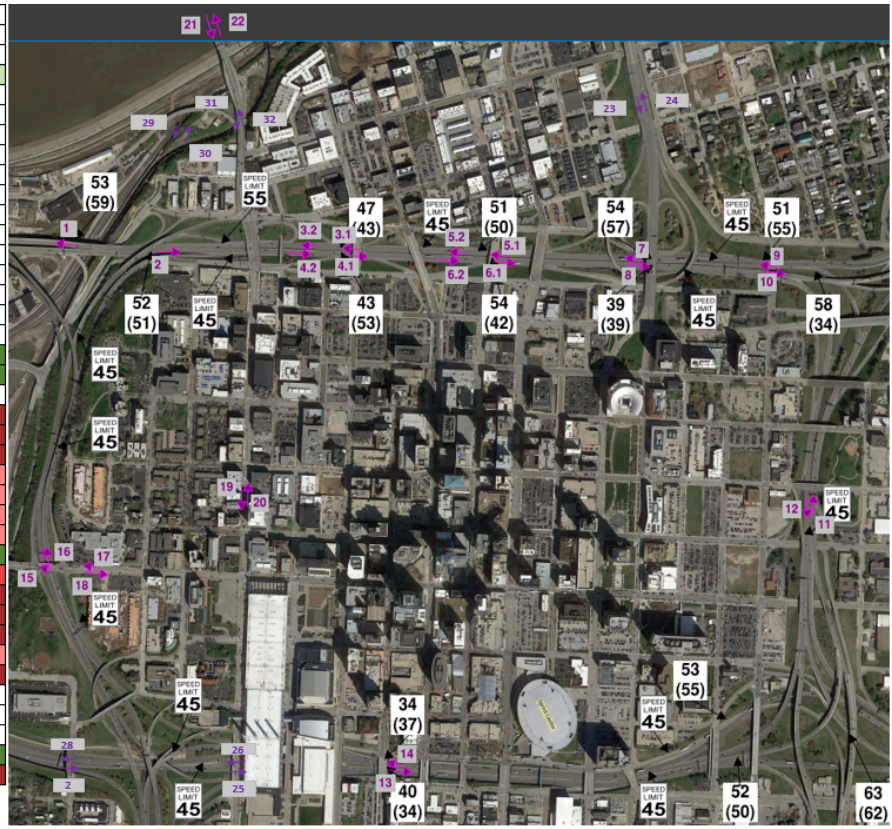


2040 Base Speed Matrix

BEYOND THE LOOP

Location	Direction		Posted Speed	Speed (MPH) Existing 2016 AM	Existing 2016 PM	DTA - 2040 Base AM	DTA - 2040 Base PM	DTA - 2040 AC AM	DTA - 2040 AC PM	DTA - 2040 CF AM	DTA - 2040 CF PM	DTA - 2040 RR AM	DTA - 2040 RR PM
Location 1	WB	L&C	55	53.0	***59.0***	54.4	54.3	53.6	53.7	53.4	53.4	55.0	55.0
Location 2	EB		45	***52.0***	***51.0***	44.8	44.5	44.9	44.6	***55.0***	***54.9***	NA	NA
Location 3.1	WB (btwn merge and diverge)	North Loop	45	***47.0***	43.0	40.2	36.2	***49.5***	38.4	***50.0***	***50.0***	NA	NA
Location 3.2	WB W of diverge		45	***47.0***	43.0	***48.2***	***48.6***	***49.1***	***49.8***	***49.5***	***49.9***	NA	NA
Location 4.1	EB (btwn merge and diverge)		45	43.0	***53.0***	41.1	44.4	43.8	43.3	***50.0***	***50.0***	NA	NA
Location 4.2	EB W of Merge		45	43.0	***53.0***	***46.4***	***49.3***	***49.5***	***49.3***	***49.7***	***49.6***	NA	NA
Location 5.1	WB (btwn merge and diverge)		45	***51.0***	***50.0***	41.6	***45.5***	***50.0***	***48.0***	***50.0***	***50.0***	NA	NA
Location 5.2	WB W of diverge		45	***51.0***	***50.0***	***47.5***	***49.7***	***49.9***	42.5	***50.0***	***50.0***	NA	NA
Location 6.1	EB (btwn merge and diverge)		45	***54.0***	42.0	44.1	42.7	***50.0***	***46.4***	***50.0***	***50.0***	NA	NA
Location 6.2	EB W of Merge		45	***54.0***	42.0	***48.7***	***48.1***	***49.7***	***49.3***	***49.8***	***49.9***	NA	NA
Location 7	WB		45	***54.0***	***57.0***	44.9	***49.1***	***49.3***	***49.7***	***49.7***	***50.0***	NA	NA
Location 8	EB		45	39.0	39.0	***49.4***	***48.5***	***48.5***	38.9	***49.2***	***49.0***	NA	NA
Location 9	WB		45	***51.0***	***55.0***	45.0	45.0	45.0	45.0	45.0	45.0	NA	NA
Location 10	EB		45			44.1	43.5	45.0	45.0	43.4	43.2	NA	NA
Location 11	NB (north of merge)	East Loop	45			43.9	17.6	19.2	43.3	42.6	18.3	***46.7***	***45.5***
Location 12	SB (north of merge)		45			13.6	29.3	33.0	44.0	42.8	***48.7***	11.7	***48.3***
Location 13	EB	South Loop	45	40.0	34.0	42.4	10.6	44.3	10.2	39.3	10.0	19.3	10.5
Location 14	WB		45	34.0	37.0	41.5	40.2	39.2	41.2	40.6	42.3	33.3	27.3
Location 15	SB	West Loop	45			***49.0***	***49.8***	***49.2***	***49.9***	***49.4***	***49.7***	44.3	40.7
Location 16	NB		45			***47.4***	***49.2***	41.6	39.3	36.0	13.0	36.9	10.7
Location 17	WB	Arterial	25			18.9	17.0	19.0	17.1	19.0	16.5	18.4	16.1
Location 18	EB		25			11.9	5.4	9.4	5.1	10.8	5.3	8.5	4.3
Location 19	SB		35			12.1	13.0	12.7	12.5	11.9	11.8	13.0	12.3
Location 20	NB		35			27.2	27.2	23.6	28.0	25.8	25.9	25.2	25.8
Location 21	SB Broadway Bridge	Broadway Blvd	45			13.7	23.5	38.1	41.1	38.1	39.8	37.6	40.9
Location 22	NB Broadway Bridge		45			44.7	44.9	44.2	43.3	44.4	43.3	44.2	41.3
Location 23	SB Hwy 9	Hwy 9	45			33.79	42.93	40.6	43.7	6.2	7.8	6.4	8.1
Location 24	NB Hwy 9		45			44.659	40.567	44.5	36.8	30.0	29.2	30.0	30.0
Location 25	EB I-670 (under Broadway)	South Loop	45			43.47	12.13	***45.6***	15.2	44.1	13.6	9.8	3.5
Location 26	WB I-670 (under Broadway)		45			44.9	44.919	44.6	44.6	44.7	44.6	44.5	44.3
Location 27	EB I-670 (under Summit St)		45			38.22	16.1166	36.5	17.3	38.9	19.2	44.0	5.4
Location 28	WB I-670 (under Summit St)		45			***54.769***	***54.7959***	***54.8***	***54.8***	***54.8***	***54.9***	***54.6***	***54.6***
Location 29	SB Hwy 169 to SB I-35	Broadway Blvd/I-35 Connection	45			NA	NA	15.2	44.4	17.1	44.0	31.9	44.1
Location 30	NB I-35 to NB Hwy 169		45			NA	NA	44.3	32.8	44.7	25.8	44.5	21.5
Location 31	SB Hwy 169 to SB Broadway		45			13.675	23.489	43.4	44.0	44.6	44.2	44.8	44.8
Location 32	NB Broadway to NB Hwy 169		45			44.7226	44.8633	44.2	39.9	44.3	39.3	44.6	39.2

** Does Not Include SE Interchange*



LEGEND

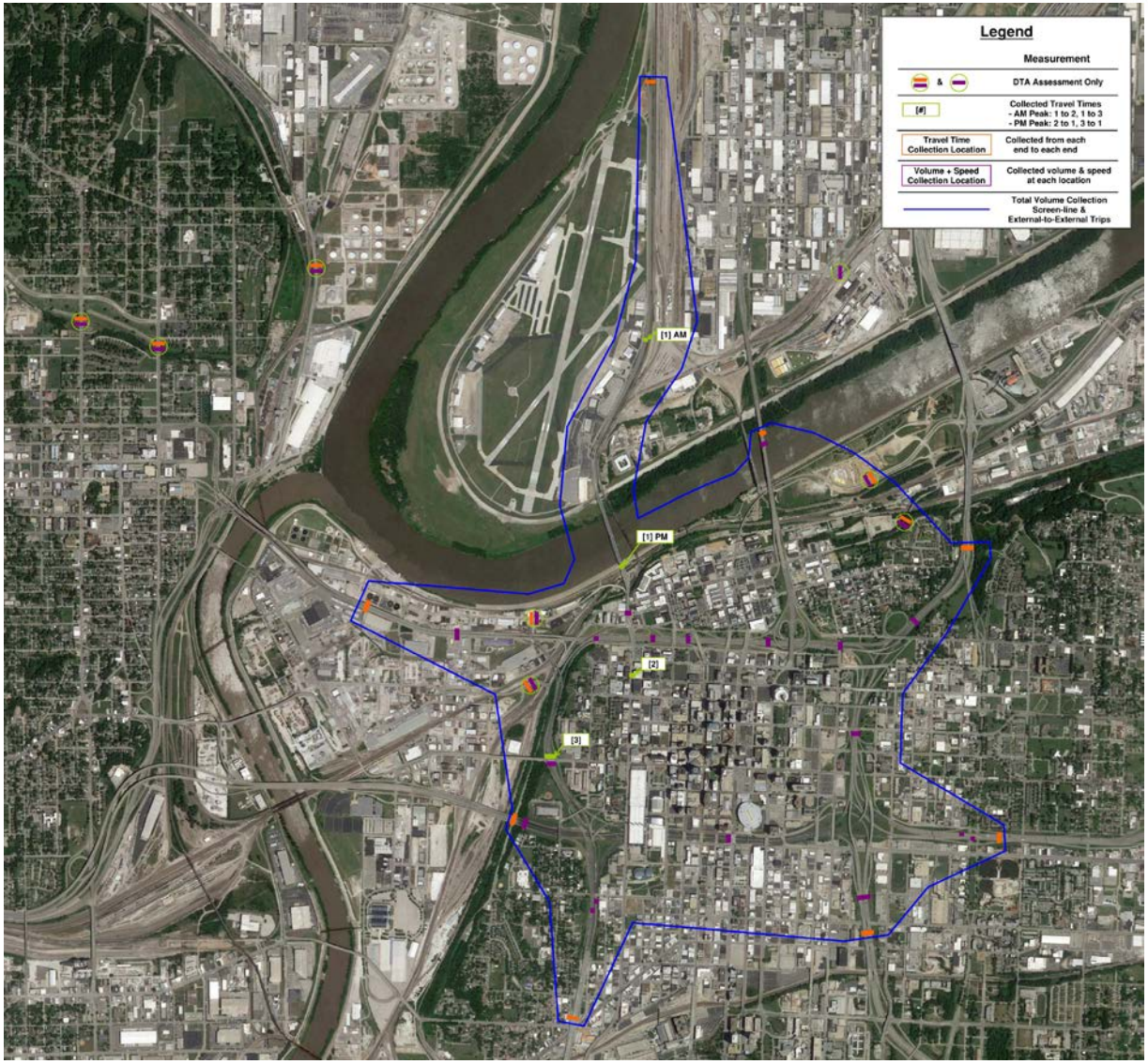
- DTA Build model speed increase (> 5.0mph) versus DTA Base model
- DTA Build model speed increase (2.0mph to 5.0mph) versus DTA Base model
- DTA Build model speed increase (0.5mph to 2.0mph) versus DTA Base model
- DTA Build model speed increase/decrease (< 0.5mph) versus DTA Base model
- DTA Build model speed decrease (-0.5 to -2.0mph) versus DTA Base model
- DTA Build model speed decrease (-2.0mph to -5.0mph) versus DTA Base model
- DTA Build model speed decrease (> -5.0mph) versus DTA Base model
- Existing Speed Information Not Available

Note: No color for Build model speed indicates that the Build versus Base speeds were basically the same (less than a 0.5 mph change).

Italics and Bold Indicates that Resulting DTA Speed is Greater than Posted Speed

Gate-to-Gate Figure

BEYOND THE LOOP



2040 Gate-to-Gate Travel Times Matrix

BEYOND THE LOOP

Movement	2040 Base		Access Consolidated		Compressed Footprint		Redesignated Reclassified		Redesignated Reclassified - Mitigated	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
SB I35_North to SB I35_South	04:58	05:02	05:07	06:14	05:11	08:06	06:12	08:32		
NB I35_South to NB I35_North	04:25	09:41	04:45	06:54	04:32	08:11	05:12	13:29		
WB I70_East to WB LCViaduct	04:35	04:12	05:42	04:10	04:22	04:09	06:22	07:04		7:03 ***
EB LCViaduct to EB I70_East	04:22	05:14	04:12	04:14	04:06	04:56	05:20	09:06		7:04 **
EB I670_West to EB I70_East	02:49	08:05	02:43	08:17	02:56	07:29	04:52	09:20	4:24 *	6:31 **
WB I70_East to WB I670_West	03:20	02:37	03:41	02:35	03:43	02:34	04:30	02:44		
NB I35_South to EB I70_East	03:20	07:02	03:29	06:04	03:25	06:16	03:32	12:25		9:41 **

* Mitigation for EB I-670 (Under Bartle Hall)

** Mitigation for EB I-670 (SE Corner)

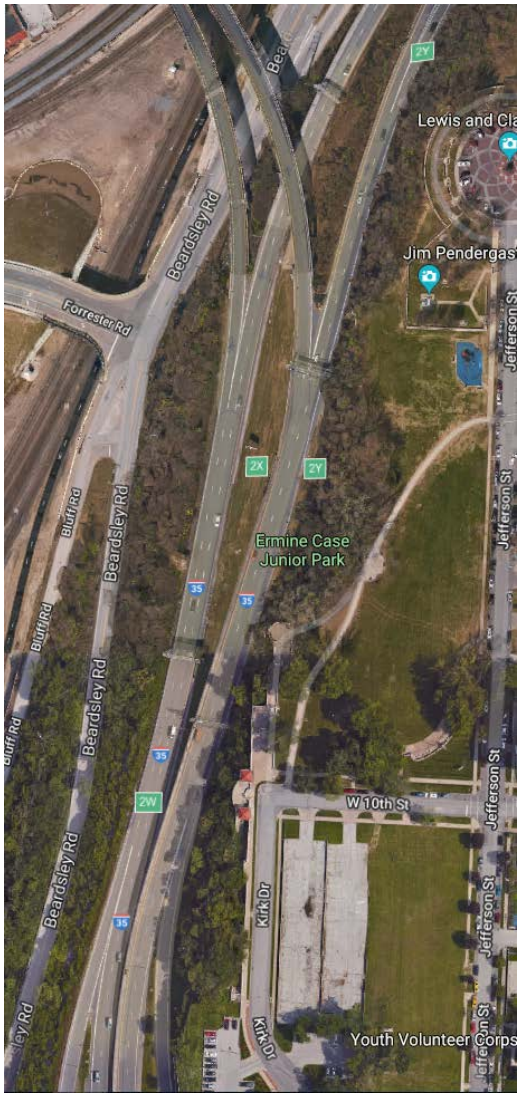
*** Mitigation for NB I-35 (NW Corner)

Spot VISSIM Analysis

BEYOND THE LOOP

Mitigation – Northbound I-35, West Loop

BEYOND THE LOOP

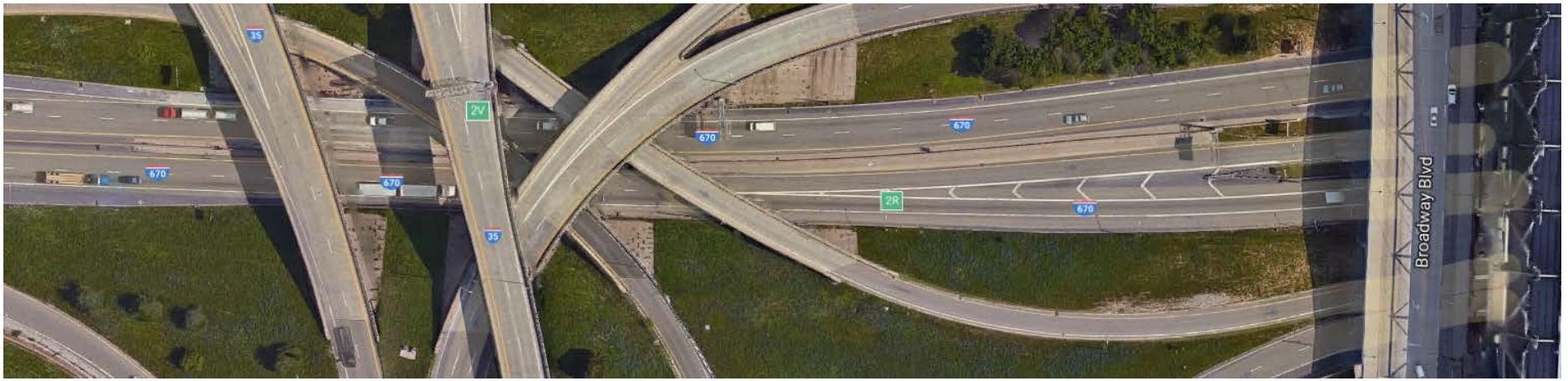


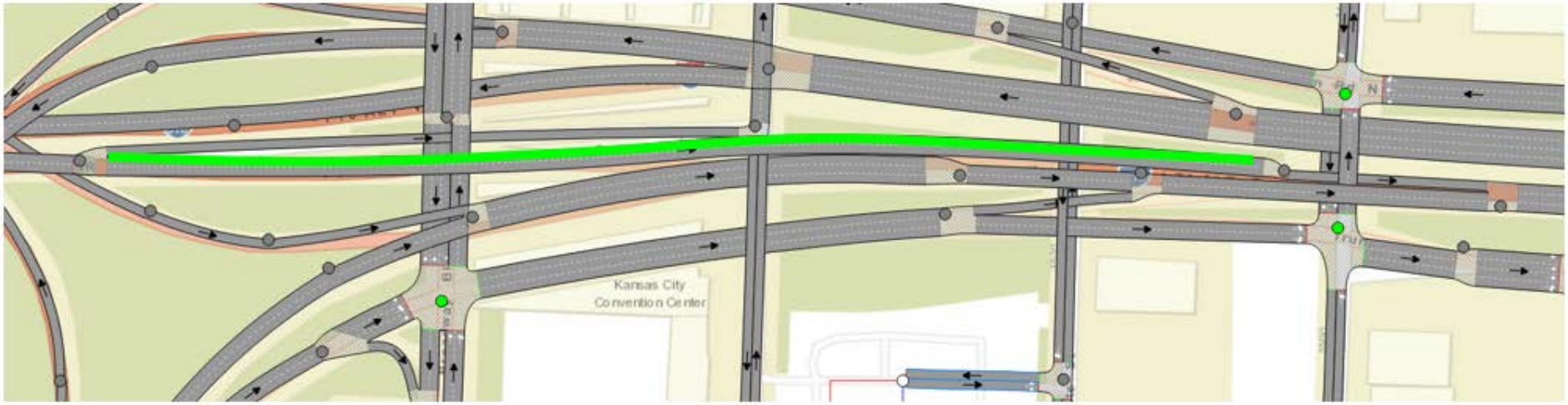
Simulation Video

BEYOND THE LOOP

Mitigation – Eastbound I-670 Under Bartle Hall

BEYOND THE LOOP





Simulation Video

BEYOND THE LOOP

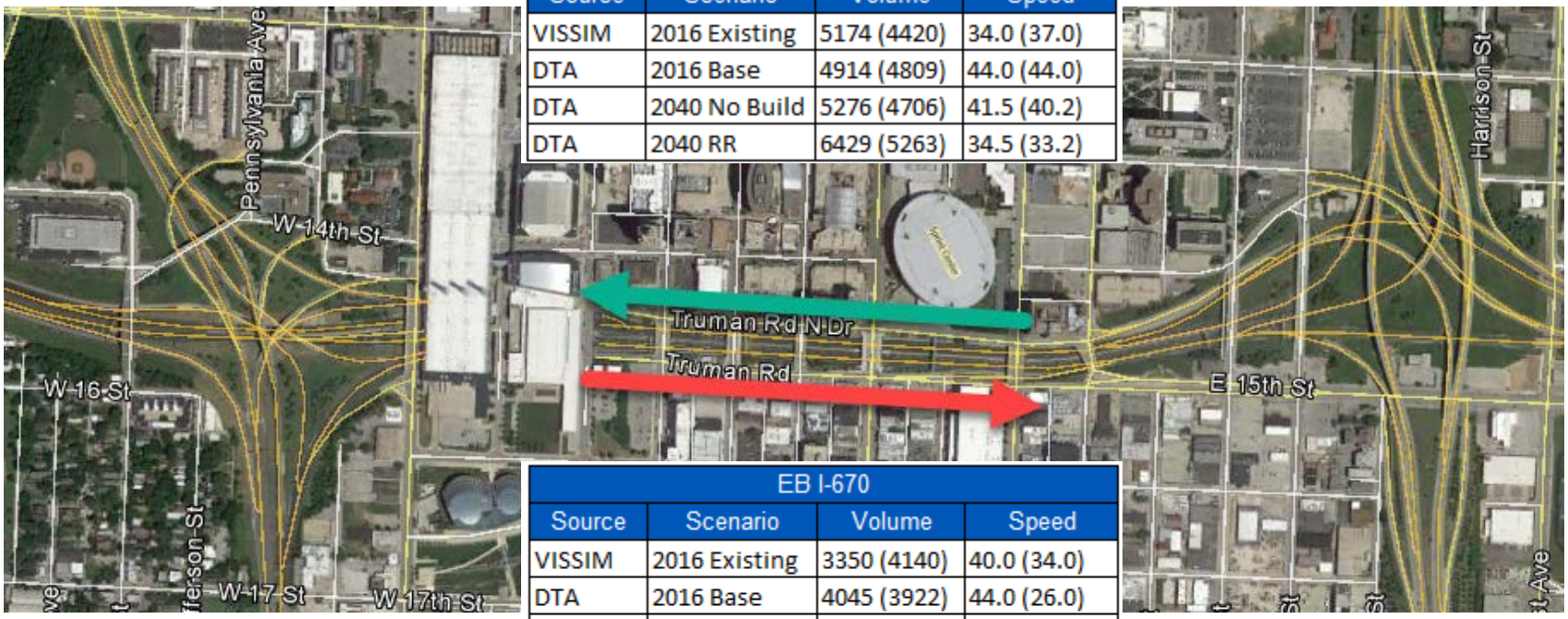
Mitigation – South East Interchange

BEYOND THE LOOP

Southeast Interchange - Traffic Forecasts

BEYOND THE LOOP

WB I-670			
Source	Scenario	Volume	Speed
VISSIM	2016 Existing	5174 (4420)	34.0 (37.0)
DTA	2016 Base	4914 (4809)	44.0 (44.0)
DTA	2040 No Build	5276 (4706)	41.5 (40.2)
DTA	2040 RR	6429 (5263)	34.5 (33.2)

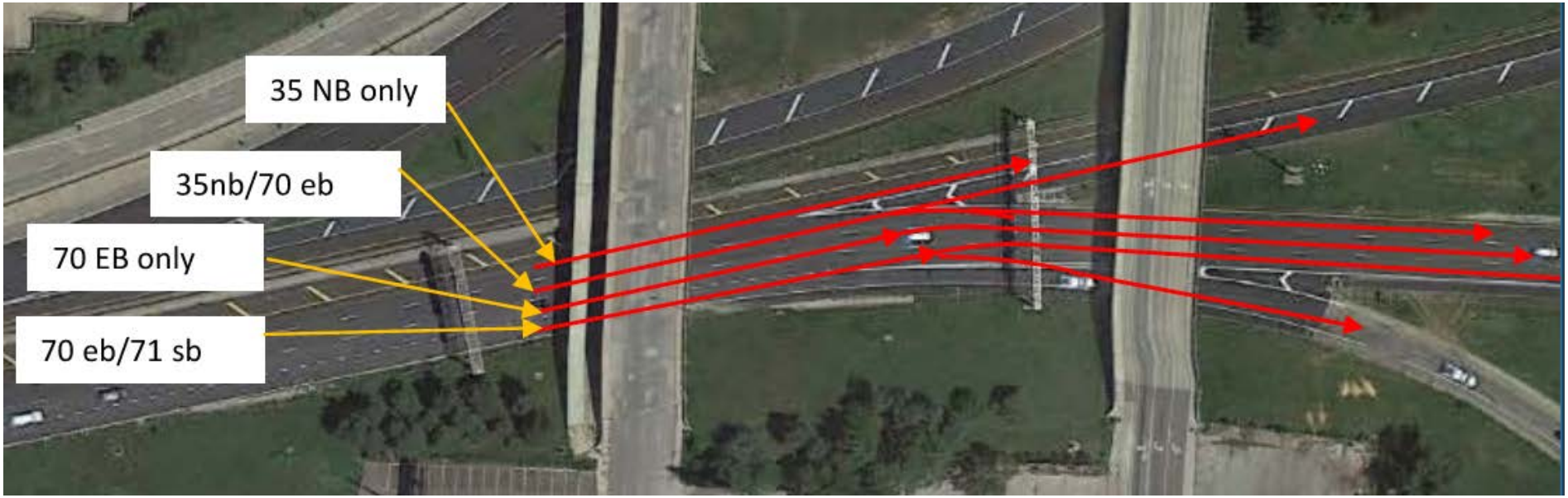


EB I-670			
Source	Scenario	Volume	Speed
VISSIM	2016 Existing	3350 (4140)	40.0 (34.0)
DTA	2016 Base	4045 (3922)	44.0 (26.0)
DTA	2040 No Build	4127 (3695)	42.4 (10.6)
DTA	2040 RR	4466 (3536)	19.9 (9.5)

AM (PM)

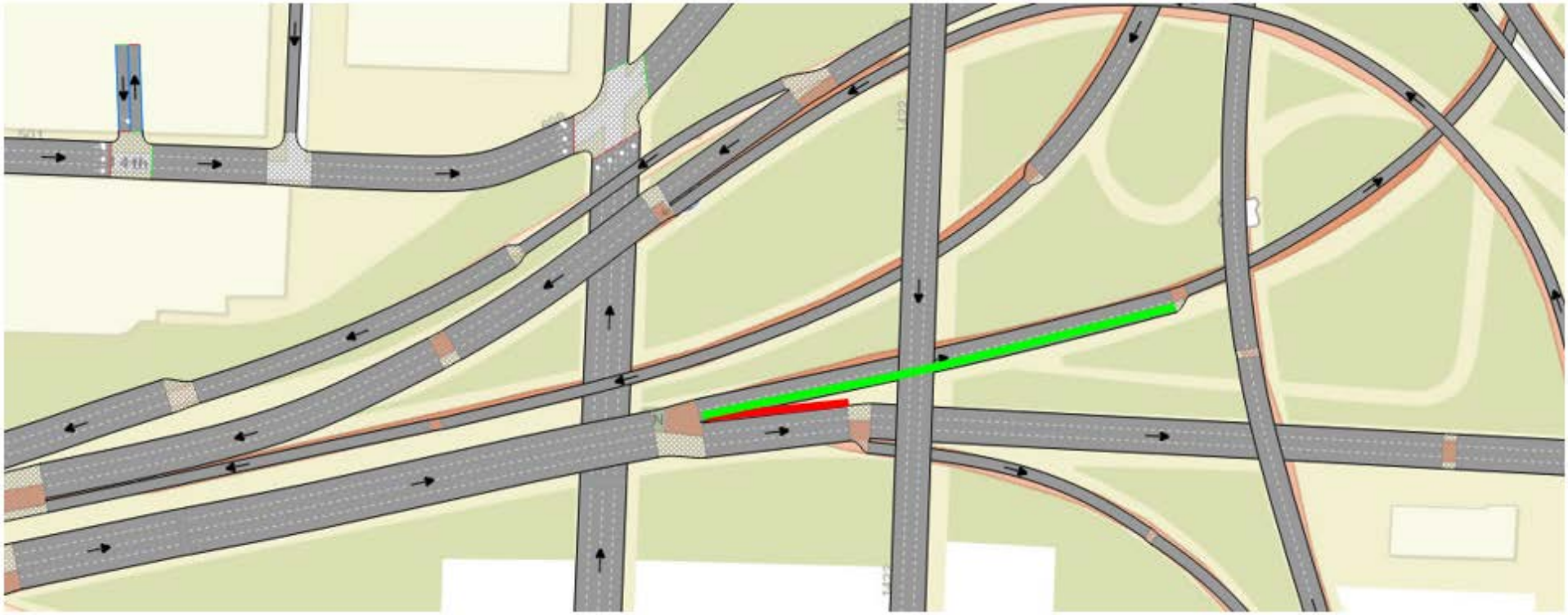
Mitigation – Southeast Interchange

BEYOND THE LOOP



Mitigation – Southeast Interchange

BEYOND THE LOOP



Simulation Video

BEYOND THE LOOP

CV/AV Considerations

BEYOND THE LOOP

- 20% Increase in Saturation Flow Rate
- Increase Only Applied to Freeways and Freeway-Freeway Connectors
- Matches Approach Used on Los Angeles Study

CV/AV Analysis
Existing 2016 vs No Build 2040 – AM Peak

BEYOND THE LOOP

AM PEAK PERIOD (6-9AM)	Freeway & Expressway	All Ramps	Arterials	System Total
		Vehicle Miles Travelled		
Existing 2016	1,381,960	128,822	574,171	2,084,952
No Build 2040	1,580,254	138,616	601,108	2,319,979
No Build 2040 wAV/CV	1,597,264	139,686	588,375	2,325,326
Change vs Existing Conditions				
No Build 2040	14.3%	7.6%	4.7%	11.3%
No Build 2040 wAV/CV	15.6%	8.4%	2.5%	11.5%
		Vehicle Hours Travelled		
Existing 2016	25,537	4,101	25,987	55,625
No Build 2040	30,042	4,424	30,387	64,853
No Build 2040 wAV/CV	28,618	4,404	28,056	61,079
Change vs Existing Conditions				
No Build 2040	17.6%	7.9%	16.9%	16.6%
No Build 2040 wAV/CV	12.1%	7.4%	8.0%	9.8%
		Vehicle Hours of Delay		
Existing 2016	1,867	567	7,838	10,273
No Build 2040	3,035	652	11,418	15,105
No Build 2040 wAV/CV	1,316	603	9,449	11,368
Change vs Existing Conditions				
No Build 2040	62.5%	15.0%	45.7%	47.0%
No Build 2040 wAV/CV	-29.5%	6.3%	20.5%	10.7%
		Average Harmonic Speed		
Existing 2016	54	31	22	37
No Build 2040	53	31	20	36
No Build 2040 wAV/CV	56	32	21	38
Change vs Existing Conditions				
No Build 2040	-2.8%	-0.2%	-10.5%	-4.6%
No Build 2040 wAV/CV	3.1%	1.0%	-5.1%	1.6%

CV/AV Analysis
Existing 2016 vs No Build 2040 – PM Peak

BEYOND THE LOOP

PM PEAK PERIOD (3-7PM)	Freeway & Expressway	All Ramps	Arterials	System Total
		Vehicle Miles Travelled		
Existing 2016	1,950,179	190,480	983,511	3,124,170
No Build 2040	2,247,398	205,661	1,041,454	3,494,513
No Build 2040 wAV/CV	2,291,318	209,415	1,000,371	3,501,104
Change vs Existing Conditions	0	0	0	0
No Build 2040	15.2%	8.0%	5.9%	11.9%
No Build 2040 wAV/CV	17.5%	9.9%	1.7%	12.1%
		Vehicle Hours Travelled		
Existing 2016	37,398	6,349	53,611	97,357
No Build 2040	45,429	7,160	63,342	115,931
No Build 2040 wAV/CV	40,958	6,817	60,332	108,107
Change vs Existing Conditions	0	0	0	0
No Build 2040	21.5%	12.8%	18.2%	19.1%
No Build 2040 wAV/CV	9.5%	7.4%	12.5%	11.0%
		Vehicle Hours of Delay		
Existing 2016	3,993	1,099	22,223	27,314
No Build 2040	7,076	1,528	30,149	38,753
No Build 2040 wAV/CV	1,809	1,086	28,400	31,294
Change vs Existing Conditions				
No Build 2040	77.2%	39.1%	35.7%	41.9%
No Build 2040 wAV/CV	-54.7%	-1.2%	27.8%	14.6%
		Average Harmonic Speed		
Existing 2016	52	30	18	32
No Build 2040	49	29	16	30
No Build 2040 wAV/CV	56	31	17	32
Change vs Existing Conditions				
No Build 2040	-5.1%	-4.3%	-10.4%	-6.1%
No Build 2040 wAV/CV	7.3%	2.4%	-9.6%	0.9%

Cordon Line Analysis – Focus Area

BEYOND THE LOOP

Cordon Line Analysis
Existing 2016 vs No Build 2040 – AM Peak

BEYOND THE LOOP

AM PEAK PERIOD (6-9AM)	Freeway & Expressway	All Ramps	Arterials	System Total
Vehicle Miles Travelled - Focus Area Only				
Existing 2016	196,779	28,763	49,691	275,233
No Build 2040	219,657	30,846	62,639	313,142
No Build 2040 wAV/CV	223,219	31,874	59,203	314,296
Change vs Existing Conditions				
No Build 2040	11.6%	7.2%	26.1%	13.8%
No Build 2040 wAV/CV	13.4%	10.8%	19.1%	14.2%
Vehicle Hours Travelled - Focus Area Only				
Existing 2016	4,301	900	2,535	7,736
No Build 2040	5,150	971	3,930	10,051
No Build 2040 wAV/CV	4,870	996	3,295	9,161
Change vs Existing Conditions				
No Build 2040	19.7%	7.9%	55.0%	29.9%
No Build 2040 wAV/CV	13.2%	10.7%	29.9%	18.4%
Vehicle Hours of Delay - Focus Area Only				
Existing 2016	431	90	714	1,235
No Build 2040	816	99	1,661	2,575
No Build 2040 wAV/CV	477	98	1,120	1,696
Change vs Existing Conditions				
No Build 2040	89.2%	9.6%	132.7%	108.5%
No Build 2040 wAV/CV	10.7%	9.3%	57.0%	37.3%
Average Harmonic Speed - Focus Area Only				
Existing 2016	46	32	20	36
No Build 2040	43	32	16	31
No Build 2040 wAV/CV	46	32	18	34
Change vs Existing Conditions				
No Build 2040	-6.8%	-0.6%	-18.7%	-12.4%
No Build 2040 wAV/CV	0.2%	0.1%	-8.3%	-3.6%

Cordon Line Analysis
Existing 2016 vs No Build 2040 – PM Peak

BEYOND THE LOOP

PM PEAK PERIOD (3-7PM)	Freeway & Expressway	All Ramps	Arterials	System Total
Vehicle Miles Travelled - Focus Area Only				
Existing 2016	268,077	38,025	69,938	376,039
No Build 2040	302,005	41,250	101,582	444,837
No Build 2040 wAV/CV	309,477	43,107	94,071	446,656
Change vs Existing Conditions	0	0	0	0
No Build 2040	12.7%	8.5%	45.2%	18.3%
No Build 2040 wAV/CV	15.4%	13.4%	34.5%	18.8%
Vehicle Hours Travelled - Focus Area Only				
Existing 2016	5,700	1,170	3,790	10,660
No Build 2040	7,075	1,544	7,848	16,467
No Build 2040 wAV/CV	6,517	1,382	7,991	15,891
Change vs Existing Conditions	0	0	0	0
No Build 2040	24.1%	32.0%	107.1%	54.5%
No Build 2040 wAV/CV	14.3%	18.1%	110.9%	49.1%
Vehicle Hours of Delay - Focus Area Only				
Existing 2016	426	101	1,231	1,758
No Build 2040	1,129	370	4,189	5,689
No Build 2040 wAV/CV	424	166	4,567	5,156
Change vs Existing Conditions				
No Build 2040	165.1%	267.0%	240.4%	223.7%
No Build 2040 wAV/CV	-0.5%	64.3%	271.1%	193.4%
Average Harmonic Speed - Focus Area Only				
Existing 2016	47	32	18	35
No Build 2040	43	27	13	27
No Build 2040 wAV/CV	47	31	12	28
Change vs Existing Conditions				
No Build 2040	-9.2%	-17.8%	-29.9%	-23.4%
No Build 2040 wAV/CV	1.0%	-4.0%	-36.2%	-20.3%

No Build 2040 vs RR 2040 Scenarios – PM Peak

BEYOND THE LOOP

PM PEAK PERIOD (3-7PM)	Freeway & Expressway	All Ramps	Arterials	System Total
Vehicle Miles Travelled - Focus Area Only				
No Build 2040	302,005	41,250	101,582	444,837
RR2v2b 2040	269,481	41,189	107,965	418,635
RR2v2d 2040 wAVCV	284,213	45,074	103,038	432,326
Change vs No Build				
RR2v2b 2040	-10.8%	-0.1%	6.3%	-5.9%
RR2v2d 2040 wAVCV	-5.9%	9.3%	1.4%	-2.8%
Vehicle Hours Travelled - Focus Area Only				
No Build 2040	7,075	1,544	7,848	16,467
RR2v2b 2040	7,240	1,947	10,676	19,863
RR2v2d 2040 wAVCV	6,537	1,758	8,518	16,814
Change vs No Build				
RR2v2b 2040	2.3%	26.1%	36.0%	20.6%
RR2v2d 2040 wAVCV	-7.6%	13.9%	8.5%	2.1%
Vehicle Hours of Delay - Focus Area Only				
No Build 2040	1,129	370	4,189	5,689
RR2v2b 2040	1,949	805	6,767	9,521
RR2v2d 2040 wAVCV	989	526	4,787	6,302
Change vs No Build				
RR2v2b 2040	72.6%	117.4%	61.5%	67.4%
RR2v2d 2040 wAVCV	-12.4%	42.0%	14.3%	10.8%
Average Harmonic Speed - Focus Area Only				
No Build 2040	43	27	13	27
RR2v2b 2040	37	21	10	21
RR2v2d 2040 wAVCV	43	26	12	26
Change vs No Build				
RR2v2b 2040	-12.8%	-20.8%	-21.9%	-22.0%
RR2v2d 2040 wAVCV	1.8%	-4.1%	-6.5%	-4.8%

BEYOND THE LOOP

Discussion