

Integrating Livability Into Transit Planning: An Assessment of BRT Opportunities in Chicago

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What is BRT?

BRT is a flexible, rubber-tired rapid-transit mode that combines stations, vehicles, services, running ways, and Intelligent Transportation System (ITS) elements into an integrated system with a strong positive identity that evokes a unique image.

-Transportation Research Board



Curitiba, Brazil

Key Features of Bus Rapid Transit (BRT)

1. Pay-before-you-board stations 3. Dedicated bus lanes



Mexico City



Bogota, Colombia: Transmilenio

2. At-grade boarding



Rouen, France

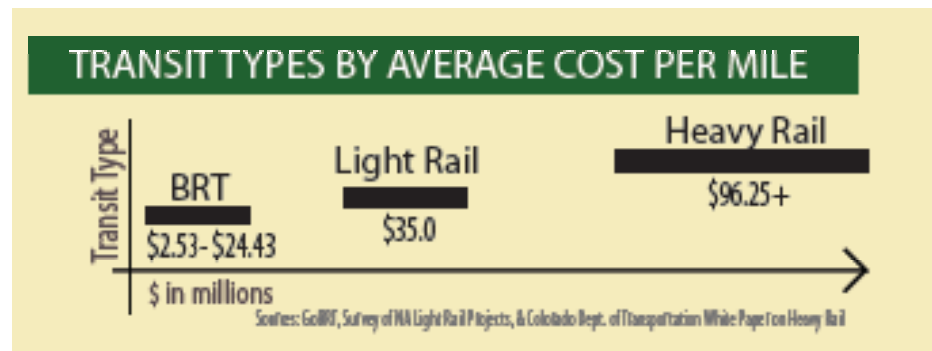
4. Affordable infrastructure



Vancouver, Canada

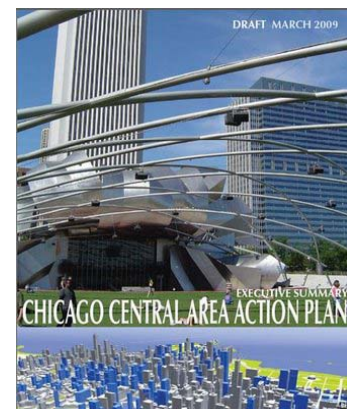
Why Bus Rapid Transit (BRT)?

- Chicago's Cost of Congestion = \$7.3 billion/yr
 - 95% is cost of wasted travel time
 - BRT offers considerable travel time savings
- Cost effective and catalytic capital investment
 - Cheaper than rail, but spurs more community (re)development than bus.



Livability Principles

- Provide more transportation choices
- Promote equitable, affordable housing
- Enhance economic competitiveness
- Support existing communities
- Coordinate policies and leverage investment
- Value communities and neighborhoods



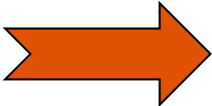
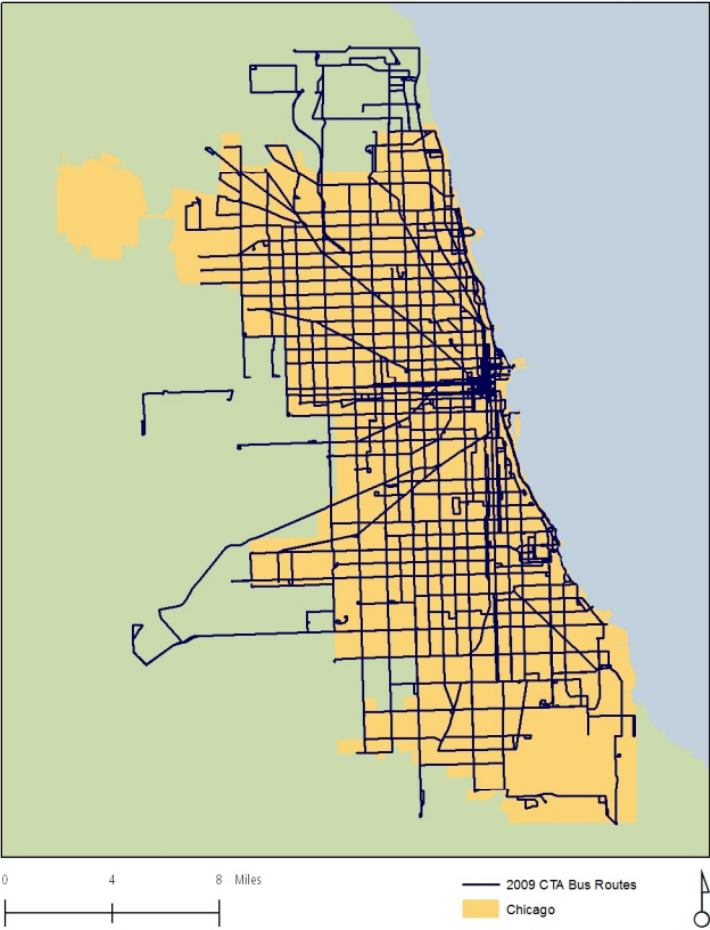
Our methodology

- Eliminate “special” routes
- Assess segments by right-of-way for BRT feasibility
- Assess segments for livability
- Build potential routes out of strong segments
- Fill in gaps to integrate with existing rail and provide connectivity
- Assess ridership demand and traffic impacts along routes
- Run livability scenarios
- Issue report

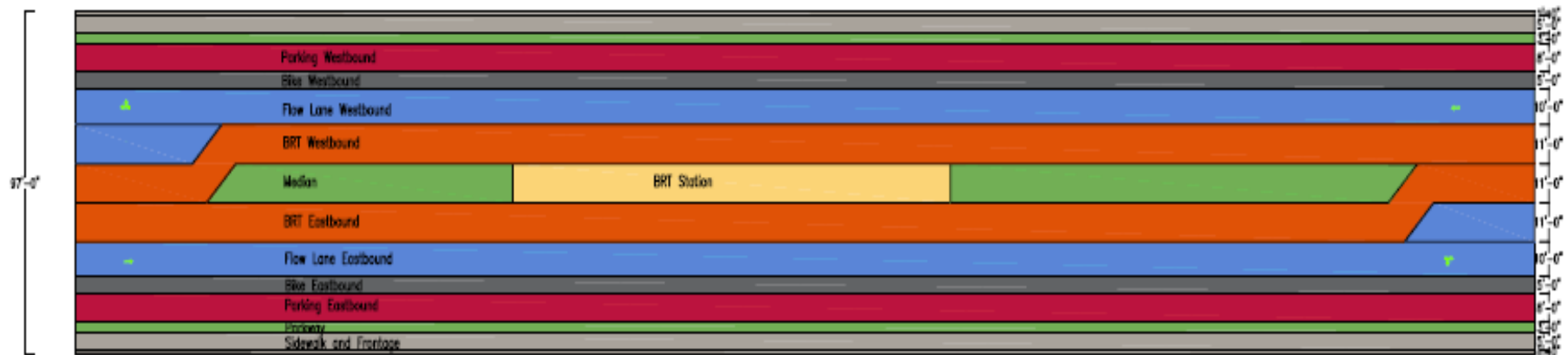
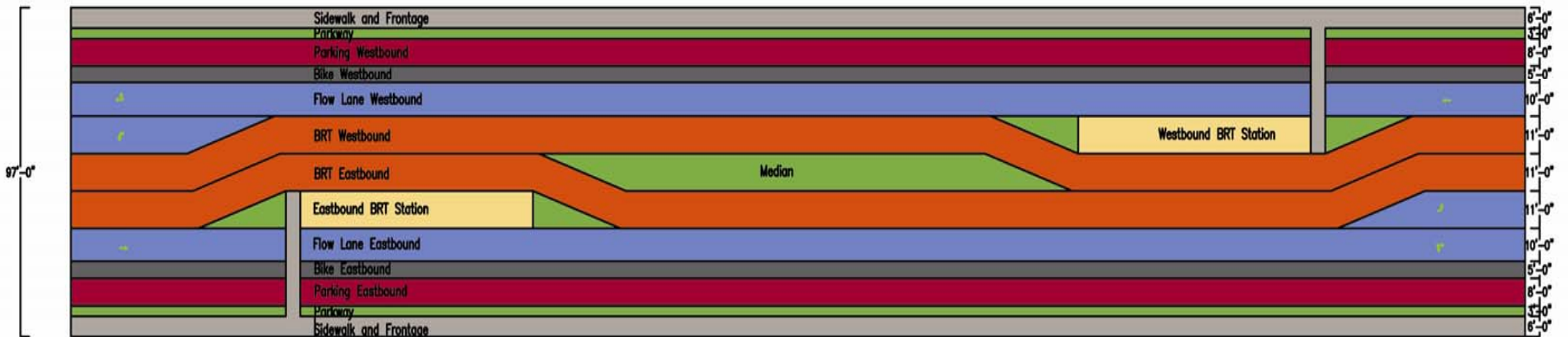
Why this methodology?

- Test whether livability and operational demands (width, ridership) could co-exist
- Use BRT network as a frame for future public and private investment
- Make Chicago more competitive for federal funding
- Better understand community redevelopment opportunities

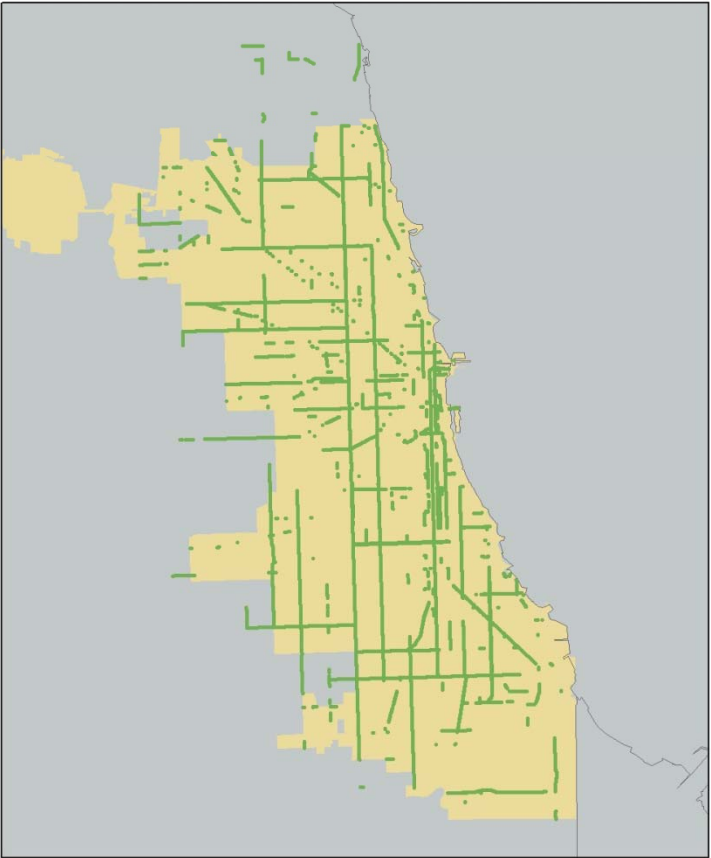
Phase I – Initial screening and segments



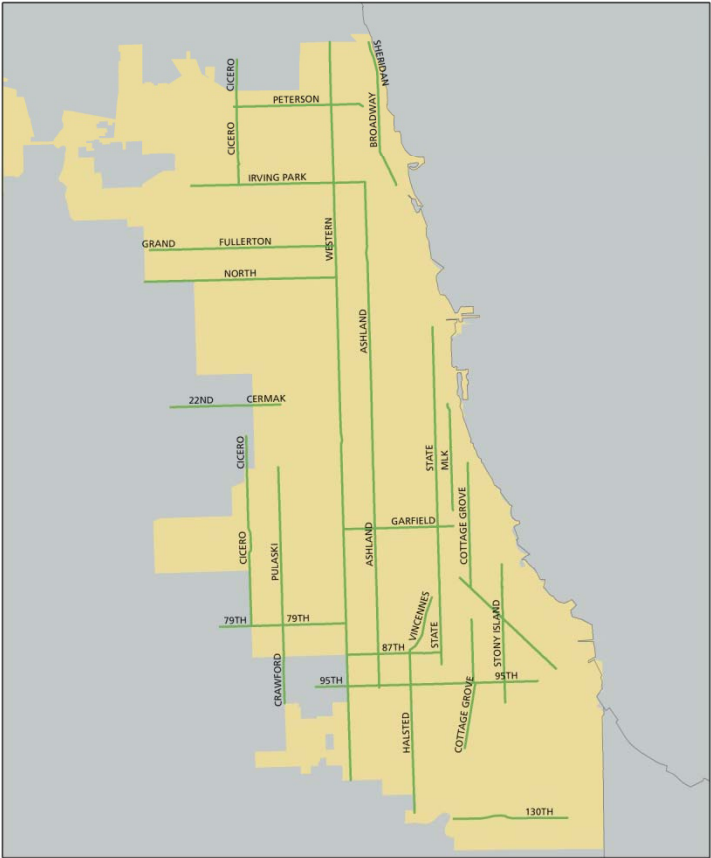
Phase II – R.O.W.



Phase II – R.O.W.



0 2.5 5 Miles
 Chicago
 Street Segments Satisfying 86 foot Minimum or Exception



0 2 4 Miles
 Chicago
 Series of Street Segments Satisfying Station Requirements

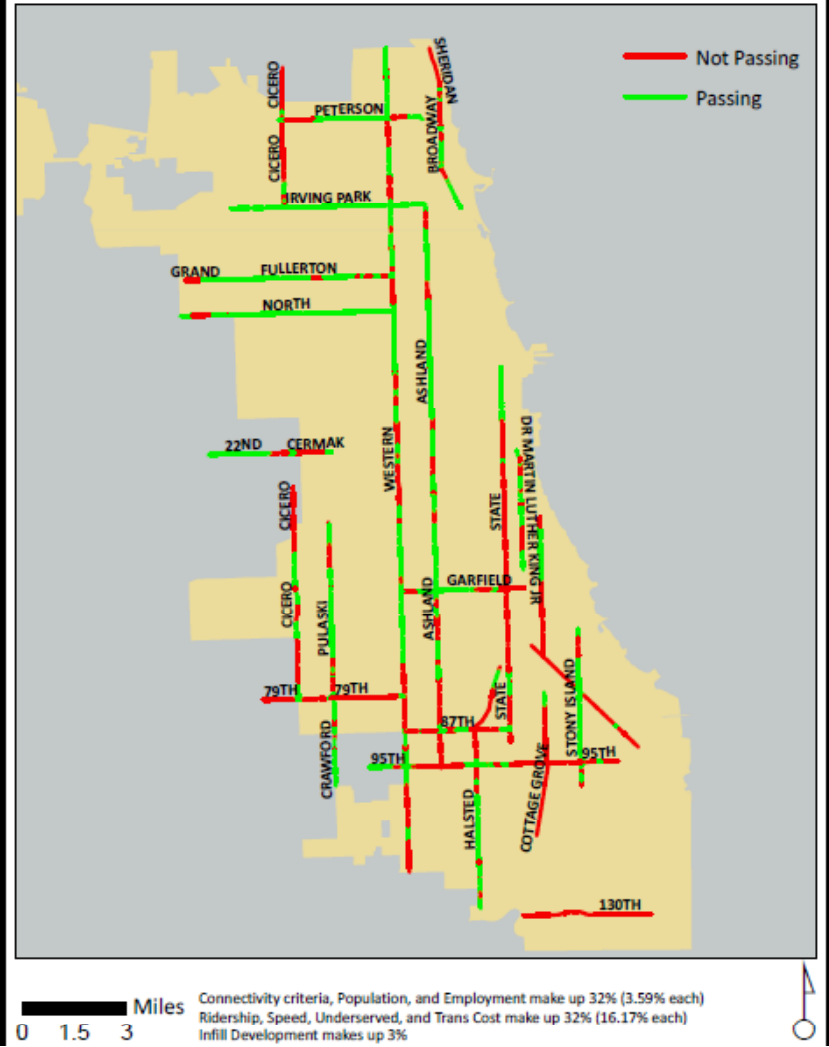
Phase II – Livability

Criterion	Rationale for Selection	Study Measure	Main Corresponding Livability Principles
1) Connectivity to Community Services	BRT has the potential to help facilitate the movement of residents to community service destinations.	Number of community destinations within a half-mile of street segments.	3) Enhance Economic Competitiveness 6) Value Communities and Neighborhoods
2) Connectivity to Educational Institutions	BRT has the potential to help facilitate the movement of residents, students, tourist, and employees to educational institutions.	Number of educational institutions within a half-mile of street segments.	3) Enhance Economic Competitiveness 6) Value Communities and Neighborhoods
3) Connectivity to Entertainment	BRT has the potential to help facilitate the movement of residents, students, tourist, and employees to major entertainment destinations.	Number of entertainment destinations within a half-mile of street segments.	6) Value Communities and Neighborhoods
4) Connectivity to Food Stores	BRT has the potential to help facilitate the movement of residents, students, tourist, and employees to grocery, produce, and other types of food stores.	Total annual sales of food stores within a half-mile of street segments.	6) Value Communities and Neighborhoods
5) Connectivity to Major Medical Care	BRT has the potential to help facilitate the movement of residents, students, tourist, and employees to medical destinations.	Number of hospitals within a half-mile of street segments.	3) Enhance Economic Competitiveness 6) Value Communities and Neighborhoods

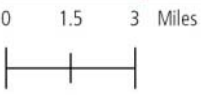
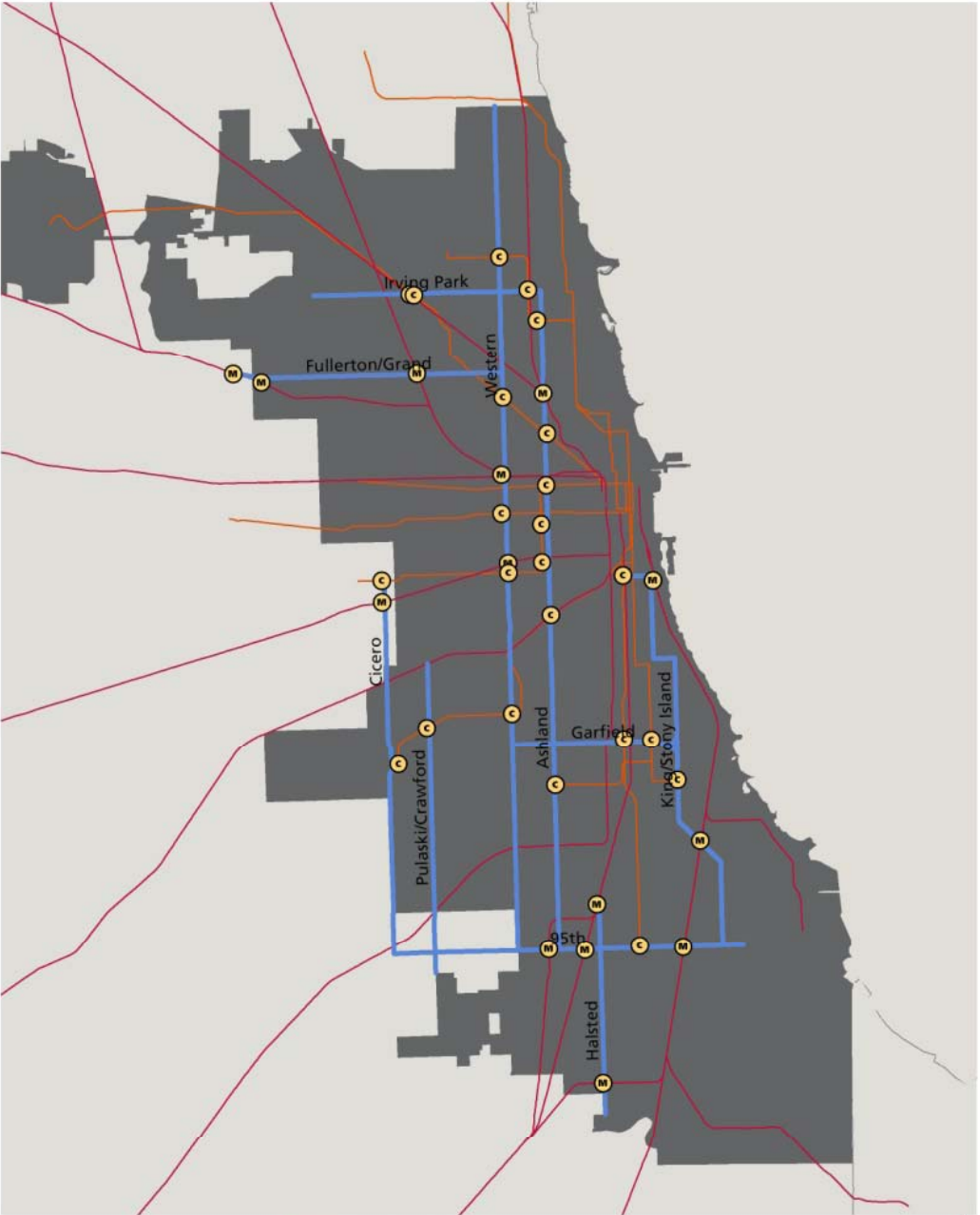
Phase II – Livability

Criterion	Rationale for Selection	Study Measure	Main Corresponding Livability Principles
8) Employment/Job Access	Employees working in close proximity BRT lines are a major group of potential riders, and BRT would increase their ability to live near work or live and work near transit.	Total employment at all businesses within a half-mile of street segments.	1) Provide More Transportation Choices 3) Enhance Economic Competiveness
9) Existing Transit Ridership	Current bus ridership demonstrates existing demand for transit along the study routes.	Average passenger flow by street segment (controlling for direction) during the a.m. peak period.	1) Provide More Transportation Choices
10) Existing Transit Travel Time	Travel time reduction for passengers is a main function of BRT. It is important to identify routes where this benefit will be maximized.	Average passenger speed by street segment (controlling for direction) during the a.m. peak period.	1) Provide More Transportation Choices

Phase II - Livability



Phase III – Transit integration and connectivity



- Potential BRT Route
- Metra Rail Line
- CTA 'L' Line
- C BRT to CTA Connection
- M BRT to Metra Connection



Phase IV – Demand modeling



Service Factor	Assumptions
Headway	5 – 10 minutes (peak)
	12 – 15 minutes (off-peak)
Station Spacing	2 stations per mile
Speeds	20 mph for 20-second stop time
	15 mph for 30-second stop time
Dwell Time	20 Seconds
	30 Seconds

Phase IV – Demand modeling

- Conservative estimate of idealized scenario
 - A lane of traffic was removed in both directions on each of the 10 routes in the network
 - Three scenarios: no build, BRT plus .5 local service, BRT with no local service
 - Results include total trips and just transit trips, as well as impacts on traffic
 - The results do not tell us anything about property values or land use
 - The entire network was modeled as a whole, not each route separately.

Phase IV – Demand modeling

- Impact on **total** person trips:
 - Trips with both ends in the BRT network increase by 33,000 daily (1.3% bump)
 - Decreases in trips that begin in BRT and end outside it, and vice versa
- Impact on **transit** person trips:
 - Transit trips with both ends in the BRT network increase by 41,000 daily (14% bump)
 - Transit trips with either a beginning or end in BRT network increase 6.5%
 - Total regional transit trips increase 3%

Phase IV – Demand modeling

- 41,000 > 33,000
 - The modeled BRT network “converts” 8,000 drivers into transit riders
 - Transit mode share increases:
 - 12.0% to 13.5% within BRT network
 - 14.7% to 15.8% for trips with one end in BRT network
 - 9.7% to 10% regionally

Phase IV – Demand modeling

Table 2: Roadway Impacts

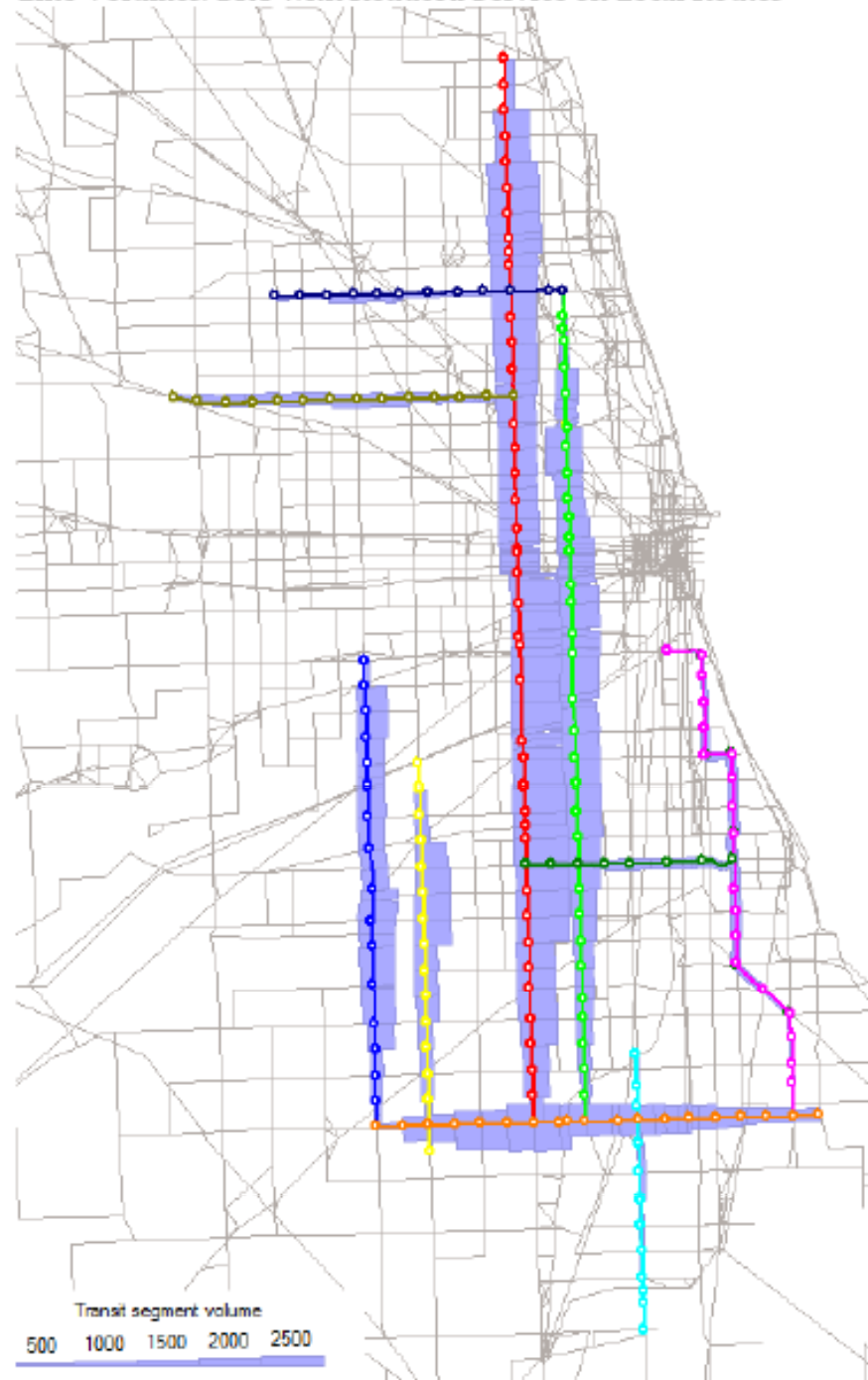
Corridor	VMT (000's)	C-VMT (000's)	%CVMT	VHT (000's)	Speed
No-Build	26,891	5,924	22%	1,575	17
BRT	26,432	6,931	26%	1,635	16
Change	(459)	1,007		60	-1
% Change	-2%	17%		4%	

Rest of Region	VMT	C-VMT	%CVMT	VHT	Speed
No-Build	242,145	16,797	7%	7,749	31
BRT	243,178	16,961	7%	7,785	31
Change	1,032	164		36	0
% Change	0%	1%		0%	

Phase IV – Demand modeling

- AM demand
 - Width indicates volume of rides traveling in a given direction

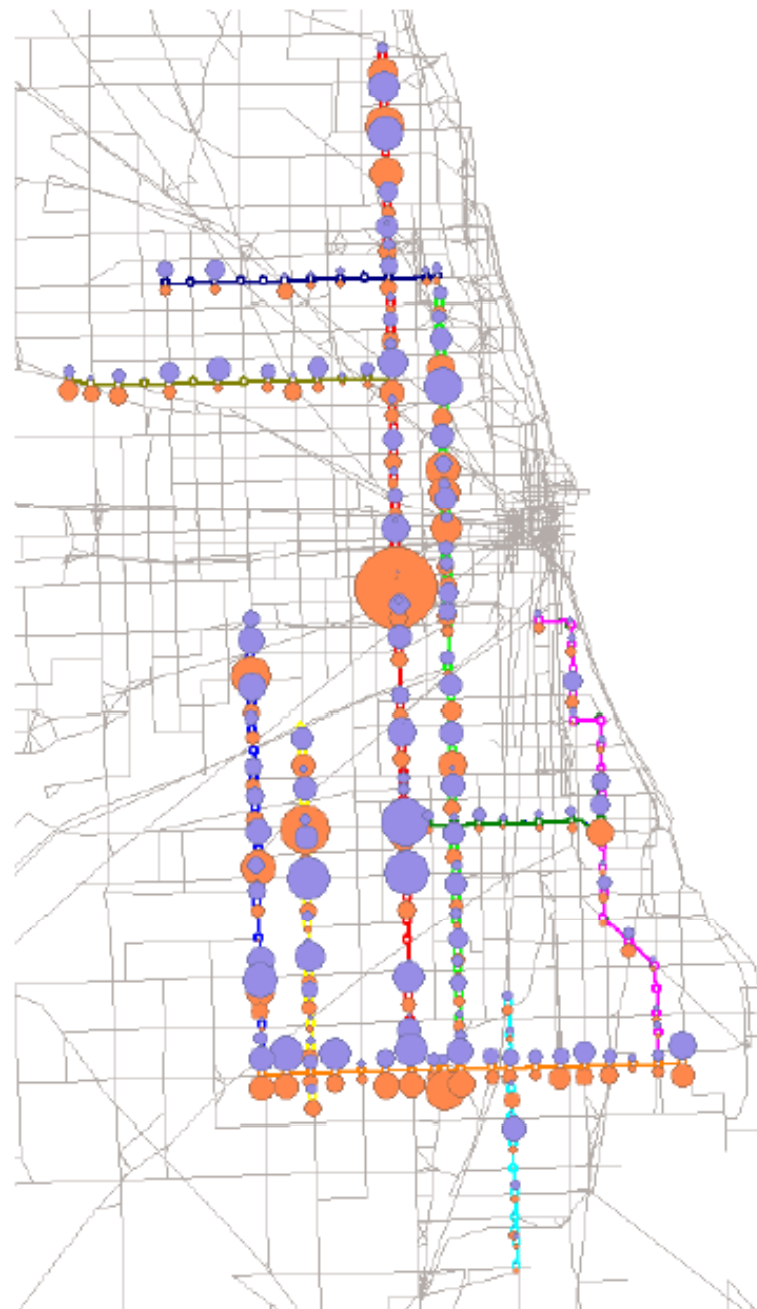
Line Volumes: BRT with Reduced Service on Local Routes



Phase IV – Demand modeling

- AM demand
 - purple = boarding
 - orange = alighting

Boarding and Alighting Activity along the BRT Routes
BRT with Reduced Local Bus Service



BRT Report and Next Steps

- Issue report
- Integrate livability scoring method into FTA New Starts process
- Western Corridor
 - Opportunity for community engagement in station area
Placemaking and Corridor Development Initiative
 - Assess opportunities for public investment (CHA, CPS, Dept. of Water Management, CDOT, PBC, etc.)
 - Assess opportunities for private investment (zoning, infill development, stations, BRT itself, etc.)
 - Evaluate additional sources for funding operations

Thank You

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