

Economic Analysis of Reinventing Metro *Revised Funding Scenario*

November 7, 2018

Agenda

Task C: Measuring the Job Access Gap

Task D: Characterization of Commuter Patterns

Task E: Measure the Economic Value of Metro's Operations and Capital Spending

Task F: Regionalization

Task G: Update to Peer City Analysis

Task C:

Measuring the Job Access Gap

Purpose:

To determine how route improvements can provide more people with usable access to jobs under the proposed funding scenario.

Task C:

Measuring the Job Access Gap

- Expansion of Current Routes
- Additional Routes
- Bus Rapid Transit
- Shorter Headways
- Estimated **30-50%** increase in household-job access for 30-60 minute commuters

Task D:

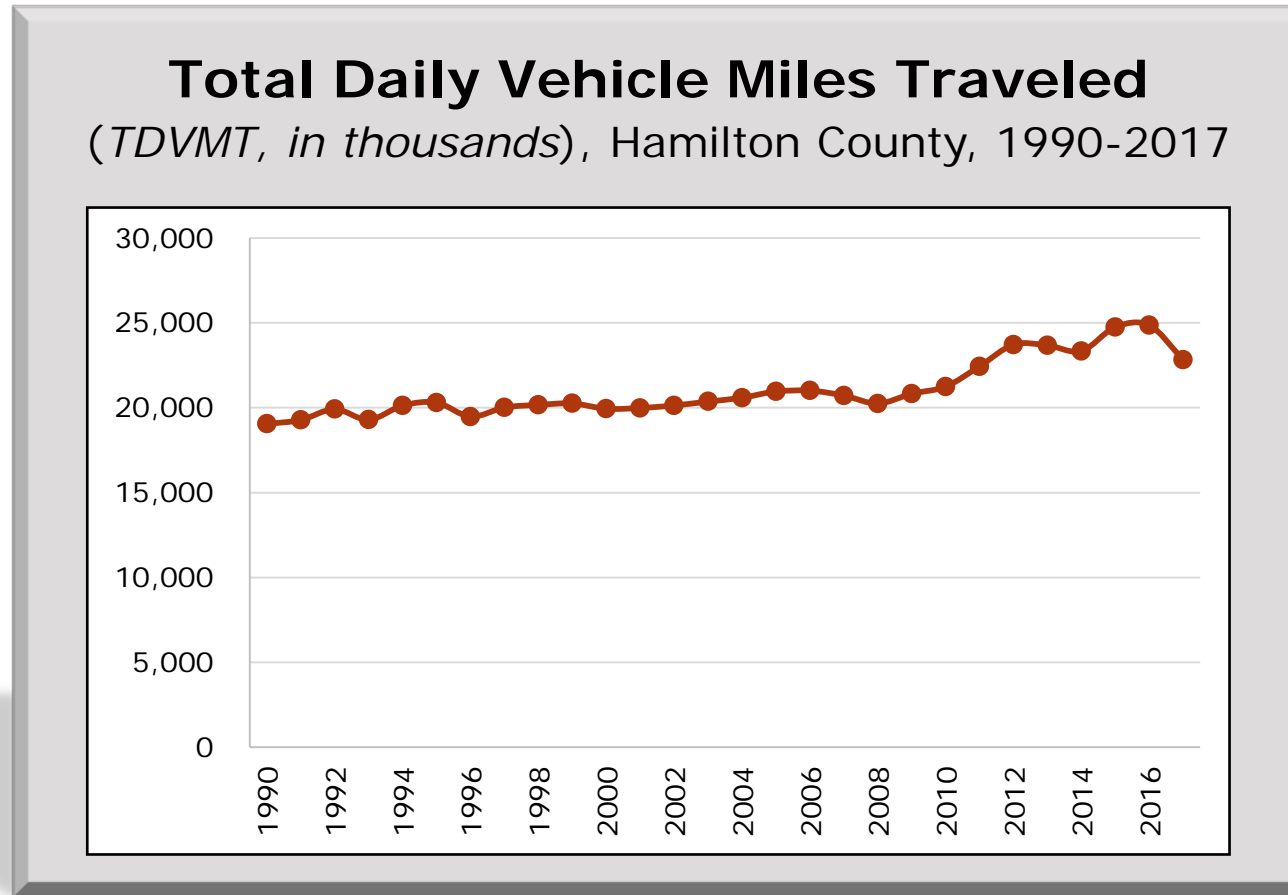
Characterization of Commuter Patterns

Purpose:

Characterizing how expanded service for Metro may improve commuter access and reduce vehicle miles traveled.

Task D:

Characterization of Commuter Patterns



- **TDVMT** grew **19.8%** from 1990-2017 in Hamilton County
- **59.2%** of Hamilton County commuters using public transportation have access to at least one personal vehicle
- **50.5%** of Hamilton County residents also commute to work within the county
 - **34.6%** of commuters residing in the remainder of the Cincinnati MSA commute to Hamilton County for work

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

Purpose:

Calculating Metro's economic impact of operations and capital improvements under the proposed funding scenario.

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

Summary of Impacts 2020-2028, Hamilton County

Hamilton County Impacts	
Direct	\$1,327,400,000
Indirect	\$851,600,000
Total	\$2,179,000,000

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

Summary of Jobs & Wages 2020-2028, Hamilton County

Hamilton County Impacts

Total Jobs	14,680
Total Wages	\$801,100,000

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

Summary of Impacts 2020-2028, Cincinnati MSA

Cincinnati MSA Impacts	
Direct	\$1,264,100,000
Indirect	\$1,420,800,000
Total	\$2,684,900,000

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

Summary of Jobs & Wages 2020-2028, Cincinnati MSA

Cincinnati MSA Impacts

Total Jobs	19,745
Total Wages	\$1,026,600,000

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

OPERATIONS EXPENDITURES – HAMILTON COUNTY

Economic Output (000s)											
O.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 71.6	\$ 79.9	\$ 89.4	\$ 96.2	\$ 98.5	\$ 101.0	\$ 104.7	\$ 108.6	\$ 111.5	\$ 114.6	\$ 975.9
Indirect	\$ 47.0	\$ 52.6	\$ 59.1	\$ 63.7	\$ 65.3	\$ 66.9	\$ 69.4	\$ 72.0	\$ 74.0	\$ 76.0	\$ 646.1
Total	\$ 118.7	\$ 132.5	\$ 148.5	\$ 159.9	\$ 163.8	\$ 167.9	\$ 174.1	\$ 180.6	\$ 185.4	\$ 190.6	\$ 1,621.9

Employment											
O.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	874	886	918	918	947	968	980	993	993	993	9,470
Indirect	347	343	348	343	354	361	365	368	367	367	3,563
Total	1,221	1,229	1,266	1,261	1,301	1,329	1,345	1,361	1,360	1,360	13,033

Earnings (000s)											
O.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 46.7	\$ 47.1	\$ 47.6	\$ 48.1	\$ 48.6	\$ 49.1	\$ 49.6	\$ 50.0	\$ 50.5	\$ 51.1	\$ 488.4
Indirect	\$ 23.9	\$ 24.5	\$ 25.2	\$ 25.6	\$ 25.9	\$ 26.1	\$ 26.5	\$ 26.8	\$ 27.1	\$ 27.4	\$ 258.9
Total	\$ 70.6	\$ 71.7	\$ 72.8	\$ 73.7	\$ 74.4	\$ 75.2	\$ 76.0	\$ 76.8	\$ 77.6	\$ 78.4	\$ 747.3

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

CAPITAL EXPENDITURES – HAMILTON COUNTY

Economic Output (000s)											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 29.9	\$ 71.7	\$ 53.0	\$ 12.6	\$ 124.8	\$ 86.4	\$ 17.5	\$ 31.6	\$ 15.9	\$ 9.5	\$ 453.0
Indirect	\$ 19.0	\$ 46.0	\$ 35.5	\$ 7.6	\$ 72.5	\$ 46.7	\$ 9.5	\$ 18.6	\$ 10.7	\$ 5.2	\$ 271.5
Total	\$ 48.9	\$ 117.7	\$ 88.5	\$ 20.3	\$ 197.4	\$ 133.2	\$ 27.0	\$ 50.2	\$ 26.7	\$ 14.6	\$ 724.4

Employment											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	122	291	212	52	524	370	75	132	64	41	1,884
Indirect	88	215	169	35	321	197	40	83	51	22	1,221
Total	210	506	382	87	845	568	115	215	115	62	3,105

Earnings (000s)											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 6.0	\$ 14.2	\$ 10.4	\$ 2.6	\$ 25.4	\$ 17.9	\$ 3.6	\$ 6.4	\$ 3.1	\$ 2.0	\$ 91.6
Indirect	\$ 3.0	\$ 7.2	\$ 5.6	\$ 1.2	\$ 11.1	\$ 7.0	\$ 1.4	\$ 2.9	\$ 1.7	\$ 0.8	\$ 41.8
Total	\$ 8.9	\$ 21.4	\$ 16.0	\$ 3.7	\$ 36.5	\$ 24.9	\$ 5.0	\$ 9.3	\$ 4.8	\$ 2.7	\$ 133.3

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

0.2-CENT CAPITAL EXPENDITURES – HAMILTON COUNTY

Economic Output (000s)										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 24.1	\$ 24.2	\$ 24.3	\$ 24.4	\$ 24.5	\$ 24.6	\$ 24.6	\$ 24.7	\$ 24.8	\$ 220.1
Indirect	\$ 12.3	\$ 12.4	\$ 12.4	\$ 12.5	\$ 12.5	\$ 12.6	\$ 12.6	\$ 12.7	\$ 12.7	\$ 112.7
Total	\$ 36.4	\$ 36.5	\$ 36.7	\$ 36.9	\$ 37.0	\$ 37.1	\$ 37.3	\$ 37.4	\$ 37.5	\$ 332.8

Employment										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	84	84	84	85	85	85	86	86	86	764
Indirect	50	50	51	51	51	51	51	52	52	459
Total	134	134	135	135	136	136	137	137	138	1,223

Earnings (000s)										
0.2 -Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 4.1	\$ 4.1	\$ 4.1	\$ 4.1	\$ 4.1	\$ 4.1	\$ 4.2	\$ 4.2	\$ 4.2	\$ 37.2
Indirect	\$ 1.9	\$ 1.9	\$ 1.9	\$ 1.9	\$ 1.9	\$ 1.9	\$ 1.9	\$ 2.0	\$ 2.0	\$ 17.4
Total	\$ 6.0	\$ 6.0	\$ 6.0	\$ 6.0	\$ 6.1	\$ 6.1	\$ 6.1	\$ 6.1	\$ 6.2	\$ 54.6

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

0.2-CENT CAPITAL EXPENDITURES (x3 Funding Match) – HAMILTON COUNTY

Economic Output (000s)										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 72.2	\$ 72.5	\$ 72.8	\$ 73.1	\$ 73.4	\$ 73.7	\$ 73.9	\$ 74.2	\$ 74.4	\$ 660.2
Indirect	\$ 37.0	\$ 37.1	\$ 37.3	\$ 37.5	\$ 37.6	\$ 37.7	\$ 37.9	\$ 38.0	\$ 38.1	\$ 338.2
Total	\$ 109.1	\$ 109.6	\$ 110.1	\$ 110.6	\$ 111.0	\$ 111.4	\$ 111.8	\$ 112.2	\$ 112.5	\$ 998.4

Employment										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	251	252	253	254	255	256	257	257	258	2,292
Indirect	151	151	152	153	153	154	154	155	155	1,377
Total	401	403	405	406	408	409	411	412	413	3,669

Earnings (000s)										
0.2 -Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 12.2	\$ 12.3	\$ 12.3	\$ 12.4	\$ 12.4	\$ 12.4	\$ 12.5	\$ 12.5	\$ 12.6	\$ 111.6
Indirect	\$ 5.7	\$ 5.7	\$ 5.8	\$ 5.8	\$ 5.8	\$ 5.8	\$ 5.8	\$ 5.9	\$ 5.9	\$ 52.2
Total	\$ 17.9	\$ 18.0	\$ 18.1	\$ 18.1	\$ 18.2	\$ 18.3	\$ 18.3	\$ 18.4	\$ 18.5	\$ 163.8

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

OPERATIONS EXPENDITURES – Cincinnati MSA

Economic Output (000s)											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 69.8	\$ 77.8	\$ 87.1	\$ 93.7	\$ 96.0	\$ 98.4	\$ 102.0	\$ 105.8	\$ 108.7	\$ 111.7	\$ 951.1
Indirect	\$ 78.3	\$ 87.5	\$ 98.2	\$ 105.8	\$ 108.4	\$ 111.1	\$ 115.2	\$ 119.6	\$ 122.8	\$ 126.2	\$ 1,073.1
Total	\$ 148.0	\$ 165.3	\$ 185.3	\$ 199.5	\$ 204.4	\$ 209.6	\$ 217.3	\$ 225.4	\$ 231.5	\$ 237.9	\$2,024.2

Employment											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	874	886	918	918	947	968	980	993	993	993	9,470
Indirect	513	507	513	506	521	532	537	542	541	541	5,253
Total	1,387	1,393	1,431	1,424	1,468	1,500	1,517	1,535	1,534	1,534	14,723

Earnings (000s)											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 46.7	\$ 47.1	\$ 47.6	\$ 48.1	\$ 48.6	\$ 49.1	\$ 49.6	\$ 50.0	\$ 50.5	\$ 51.1	\$ 488.4
Indirect	\$ 34.1	\$ 34.8	\$ 35.5	\$ 36.0	\$ 36.4	\$ 36.8	\$ 37.2	\$ 37.6	\$ 38.0	\$ 38.4	\$ 364.7
Total	\$ 80.7	\$ 81.9	\$ 83.1	\$ 84.1	\$ 85.0	\$ 85.8	\$ 86.7	\$ 87.7	\$ 88.6	\$ 89.5	\$ 853.1

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

CAPITAL EXPENDITURES – Cincinnati MSA

Economic Output (000s)											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 26.7	\$ 63.8	\$ 46.7	\$ 11.4	\$ 113.6	\$ 79.7	\$ 16.1	\$ 28.7	\$ 14.0	\$ 8.7	\$ 409.5
Indirect	\$ 30.2	\$ 72.4	\$ 53.6	\$ 12.7	\$ 125.6	\$ 86.7	\$ 17.5	\$ 31.8	\$ 16.1	\$ 9.5	\$ 456.2
Total	\$ 56.9	\$ 136.2	\$ 100.3	\$ 24.1	\$ 239.2	\$ 166.4	\$ 33.6	\$ 60.5	\$ 30.2	\$ 18.2	\$ 865.7

Employment											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	215	510	362	95	966	704	142	242	108	77	3,421
Indirect	232	557	419	96	937	633	128	238	126	70	3,435
Total	447	1,068	781	191	1,902	1,337	270	480	235	146	6,856

Earnings (000s)											
0.8-Cent Scenario	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 9.9	\$ 23.4	\$ 16.7	\$ 4.3	\$ 44.1	\$ 32.0	\$ 6.5	\$ 11.1	\$ 5.0	\$ 3.5	\$ 156.5
Indirect	\$ 7.7	\$ 18.4	\$ 13.6	\$ 3.2	\$ 31.8	\$ 21.7	\$ 4.4	\$ 8.1	\$ 4.1	\$ 2.4	\$ 115.4
Total	\$ 17.5	\$ 41.9	\$ 30.3	\$ 7.6	\$ 75.9	\$ 53.8	\$ 10.9	\$ 19.1	\$ 9.1	\$ 5.9	\$ 271.9

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

0.2-CENT CAPITAL EXPENDITURES – Cincinnati MSA

Economic Output (000s)										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 22.8	\$ 22.9	\$ 23.0	\$ 23.1	\$ 23.2	\$ 23.3	\$ 23.4	\$ 23.5	\$ 23.5	\$ 208.8
Indirect	\$ 24.1	\$ 24.2	\$ 24.3	\$ 24.4	\$ 24.5	\$ 24.6	\$ 24.7	\$ 24.8	\$ 24.9	\$ 220.5
Total	\$ 46.9	\$ 47.2	\$ 47.4	\$ 47.6	\$ 47.7	\$ 47.9	\$ 48.1	\$ 48.2	\$ 48.4	\$ 429.4

Employment										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	165	166	167	168	168	169	169	170	170	1,513
Indirect	169	169	170	171	171	172	173	173	174	1,542
Total	334	335	337	338	340	341	342	343	344	3,055

Earnings (000s)										
0.2 -Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 7.6	\$ 7.6	\$ 7.6	\$ 7.7	\$ 7.7	\$ 7.7	\$ 7.8	\$ 7.8	\$ 7.8	\$ 69.2
Indirect	\$ 6.2	\$ 6.2	\$ 6.3	\$ 6.3	\$ 6.3	\$ 6.3	\$ 6.4	\$ 6.4	\$ 6.4	\$ 56.8
Total	\$ 13.8	\$ 13.8	\$ 13.9	\$ 14.0	\$ 14.0	\$ 14.1	\$ 14.1	\$ 14.2	\$ 14.2	\$ 126.1

Task E:

Measure the Economic Value of Metro's Operations and Capital Spending

0.2-CENT CAPITAL EXPENDITURES (x3 Funding Match) – Cincinnati MSA

Economic Output (000s)										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 68.5	\$ 68.8	\$ 69.1	\$ 69.4	\$ 69.7	\$ 69.9	\$ 70.1	\$ 70.4	\$ 70.6	\$ 626.4
Indirect	\$ 72.3	\$ 72.7	\$ 73.0	\$ 73.3	\$ 73.6	\$ 73.8	\$ 74.1	\$ 74.3	\$ 74.6	\$ 661.6
Total	\$ 140.8	\$ 141.5	\$ 142.1	\$ 142.7	\$ 143.2	\$ 143.7	\$ 144.2	\$ 144.7	\$ 145.1	\$1,288.1

Employment										
0.2-Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total*
Direct	496	498	501	503	505	507	508	510	511	4,539
Indirect	506	508	510	512	514	516	518	520	521	4,626
Total	1,002	1,006	1,011	1,015	1,019	1,023	1,026	1,030	1,033	9,165

Earnings (000s)										
0.2 -Cent Scenario	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Direct	\$ 22.7	\$ 22.8	\$ 22.9	\$ 23.0	\$ 23.1	\$ 23.2	\$ 23.3	\$ 23.3	\$ 23.4	\$ 207.7
Indirect	\$ 18.6	\$ 18.7	\$ 18.8	\$ 18.9	\$ 18.9	\$ 19.0	\$ 19.1	\$ 19.1	\$ 19.2	\$ 170.4
Total	\$ 41.3	\$ 41.5	\$ 41.7	\$ 41.9	\$ 42.0	\$ 42.2	\$ 42.3	\$ 42.5	\$ 42.6	\$ 378.2

Task F:

Regionalization

Purpose:

Quantifying the efficiency-oriented impacts of Metro's proposed route expansion on the Region.

Task F: Regionalization Results

Impact of Bus Transit on Employee Turnover
Hicks & Faulk, 2015

The expected **employer savings in year 2020** from **reduced turnover** as a result of **increased per capita investment in public transit** within **Hamilton County**:

Lower Bound
\$20.8 Million to *Upper Bound*
\$31.7 Million

Task F:
Regionalization
Results

Economic Impact of Public Transportation Investment

Weisbrod and Reno, 2009

Based on an estimated increase in public transportation's mode share productivity will be boosted by **\$40.8M** (2018\$) per year.

This results in annual economic impact of household spending of **\$25M** in the MSA.

Task F: Regionalization Results

The approximate **annual savings** for individuals **commuting to work to the Central Business District via public transit**, rather than utilizing a personal vehicle, **in Hamilton County**:

\$2,600

saved from the average **cost of vehicle operation** and downtown **parking fees**

Task G:

Update to Peer City Analysis

Purpose:

Comparing Metro's fare reliance, service capacity, and fiscal impacts to its peer cities for greater contextualization of where improvement is necessary to enhance service and operations.

Task G:

Update to Peer City Analysis

- **Fare Reliance: #2**
 - *#1 in Bus Only Peer City*
- **Service Capacity: #7**
 - *#1 in Bus Only Peer City*
- **State & Federal Funding: #12**
 - *#5 in Bus Only Peer City*

Additional Metrics:

- Fare Revenue Earned per Capital Expense (#1 in Reliance)
- Capital Expense per Capita within Service Area (#11)
- Monthly Pass Percentage Savings & Value Ranking (#10)

Task G: Update to Peer City Analysis Results

Location	State & Federal Funding		Fare Burden		Service Capacity	
	2015 Relative Ranking	2016 Relative Ranking	2015 Relative Ranking	2016 Relative Ranking	2015 Relative Ranking	2016 Relative Ranking
Austin	3	1	3	2	6	6
Cleveland	1	2	5	6	5	5
Columbus	1	3	8	5	9	10
St. Louis	4	4	8	4	4	4
Louisville	4	5	3	3	10	11
Pittsburgh	7	6	12	12	1	1
Denver	6	7	10	10	2	2
Indianapolis	8	7	8	7	12	12
Charlotte	8	9	5	8	7	8
Raleigh	10	10	2	1	11	9
Minneapolis	11	11	10	9	3	3
Cincinnati	12	12	11	11	8	7

Thank You

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Nora Vonder Meulen