Appendix

In this appendix, we provide additional data on the performance of the Twin Cities region and its peer regions and present more analysis from our comparisons of bus providers in the Twin Cities region.

PEER REGIONS

As described in Chapter 5, we compared the performance of the Twin Cities region's transit system with the transit systems of peer regions around the country. For this analysis, we selected 11 peer regions with similar characteristics, such as population and density, to the Twin Cities region: Baltimore, Cleveland, Dallas-Fort Worth, Denver, Phoenix, Pittsburgh, Portland, St. Louis, San Diego, Seattle, and Tampa.

In this section, we discuss the transit agencies providing services within each peer region. We then define the performance measures and provide the results of each region on measures of efficiency, effectiveness, and impact.

Peer Regions' Transit Agencies

Most peer regions have more than one transit agency providing transit services. To compare the performance of the transit services in each peer region, we combined the data in the National Transit Database reported by each transit agency offering regular-route transit in each peer region.[1] Table A.1 lists the agencies identified by the National Transit Database for each region that we included in our analysis.

For comparisons by mode, we examined data for all bus service in the peer regions but focused our analysis on a subset of peers that were most similar to the Twin Cities region's bus service in ridership or operating costs. The subset included: Baltimore, Dallas-Fort Worth, Denver, Phoenix, Pittsburgh, and Portland. For the light rail analysis, we compared the Twin Cities region to only peer regions offering light rail service in 2008, thereby excluding Phoenix and Tampa from our list of light rail peers.[2]

Efficiency Measures

To assess the efficiency of the transit system in the Twin Cities region, we examined a number of different measures. We calculated operating cost per

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[1] The National Transit Database is a database administered by the Federal Transit Administration. See http://www.ntdprogram.gov/ntdprogram, accessed June 9, 2010.

[2] Phoenix began offering light rail in December 2008. Tampa does not have light rail services.

vehicle revenue hour and revenue mile of service.[3] Revenue hour and revenue mile include the time or miles when a vehicle is expected to carry passengers and in between the end of a trip and the departure of the next trip. For light rail service, we calculated measures using the hours and miles traveled by each light rail vehicle (or car) rather than trains as a whole.

Additional measures of efficiency we examined included operating costs per passenger and per passenger mile. As explained in Chapter 5, the number of passengers represents the number of passenger boardings, which counts passengers each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Passenger miles are the total miles passengers travel on transit.

Among the efficiency measures we examined were measures that included fare revenue, which is the amount transit riders pay for services. We calculated the fare-recovery percentage, which is the fare revenue divided by the operating expenses. We also examined several measures of the operating subsidy (or net operating expense), which is calculated by subtracting fare revenue from operating expenses. Such measures included subsidy per passenger, subsidy per revenue mile, and subsidy per passenger mile. To assess overall transit system performance, we also calculated the subsidy per capita, which identifies the net operating expense while adjusting for population. As discussed in Chapter 5, each measure has drawbacks and many factors affect a region's performance on individual measures; we encourage readers to keep these limitations in mind when viewing these results.

Table A.2 displays the performance on these efficiency measures for the transit systems in the Twin Cities region and its peer regions. In 2008, the Twin Cities region's transit system ranked among the top half of its peers on all efficiency measures and performed among the top third of its peer regions on several of these measures. Tables A.3 and A.4 present the performance of bus and light rail services in each peer region. In 2008, the Twin Cities region's bus system required fewer subsidies than most of its peer regions' bus systems and performed better than many of its peers on costs per passenger and per passenger mile. Light rail service in the Twin Cities region ranked third or fourth among its peer regions' light rail services on all measures of efficiency in 2008.

Effectiveness Measures

To assess the effectiveness of transit systems we examined a number of measures, including service-use and safety measures. Service-use measures are effectiveness measures that examine the extent to which a region's transit services are utilized. We compared the performance of the transit systems as a

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[3] Researchers have noted that measures with miles may be affected by vehicle speed when comparing bus performance. Because vehicle speed can be impacted by factors beyond the control of providers, such as congestion, comparisons of bus services on measures with hours are generally more useful than those with miles. See John Gleason and Darold Barnum, "Caveats Concerning Efficiency/Effectiveness Measures of Mass Transit Performance," *Management Science* 24, no. 16 (1978): 1777-1778.

whole and by mode on passengers per revenue hour and revenue mile of service and passenger miles per revenue hour and mile of service.

Table A.5 presents the performance of the transit systems of the Twin Cities region and its peer regions on service-use measures. In 2008, the Twin Cities region's transit system ranked among the top third of its peer regions on all service-use measures. Tables A.6 and A.7 show the separate performance of bus and light rail services. As in Table A.3, Table A.6 highlights those regions with bus systems most similar to the Twin Cities region. On all service-use measures, the Twin Cities region's bus system ranked second among the subset of peer regions with the most similar bus systems in 2008. The region's light rail service performed in the top half of its peer regions' light rail services for all service-use measures and in the top third on several of these measures.

As another measure of effectiveness, we examined the performance of the Twin Cities region and its peer regions on several safety measures.[4] The safety measures included the number of safety incidents—collisions, derailments, fires, hazardous spills, and other occurrences—per 100,000 revenue miles. We also calculated the number of fatalities from transit services and the number of injuries per 100,000 revenue miles. As shown in Tables A.8, A.9, and A.10, the Twin Cities region's transit system as a whole, and the bus system specifically, had among the fewest injuries and incidents per 100,000 miles in 2009. However, in the same year, the Twin Cities region's fatality rate was higher than more than half of its peers.[5] From 2005 to 2009, the Twin Cities region's light rail had higher safety incidents, injuries, and fatalities per 100,000 miles of service than more than half of its peer regions' light rail services.

Impact Measures

As noted in Chapter 5, impact measures demonstrate the effect of transit services on social well being, such as improving environmental quality or people's mobility. In the chapter, we discussed several different types of impact measures: access, congestion mitigation, and energy consumption. In this section, we provide measures only where we were able to compare performance of the Twin Cities region to its peer regions.

We compared the Twin Cities region to a subset of its peer regions on the percentage of commuters traveling to work by transit from 2005 to 2007 using data from the U.S. Census Bureau. Because levels of congestion are related to population, we compared the Twin Cities region to eight peer regions most similar in terms of population. Figure A.1 shows that from 2005 to 2007, the Twin Cities region ranked near the middle of its peers in the percentage of commuters traveling to work by transit (5 percent).

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[4] We excluded commuter rail from this analysis because the National Transit Database does not require reporting of safety data for commuter rail.

[5] In 2009, there were three fatalities from light rail and one fatality from bus services in the Twin Cities region.

We also compared bus service operated directly by the largest bus agencies in each region on a number of measures related to fuel consumption.[6] The measures we examined include gallons of fuel consumed per revenue hour and per revenue mile and gallons of fuel consumed per passenger and per passenger mile, as shown in Table A.11. In 2008, Metro Transit performed better than half of its peer agencies in gallons of fuel consumed per revenue hour, per passenger, and per passenger mile but had higher fuel consumption per revenue mile than more than half of its peer agencies.

INTRA-REGIONAL COMPARISONS

In the following sections, we present the efficiency and effectiveness measures we examined by bus provider and service type within the Twin Cities region. The providers included in our analysis are Maple Grove Transit, Metro Transit, Metropolitan Transportation Services, the Minnesota Valley Transit Authority, Plymouth Metrolink, Prior Lake Transit, Shakopee Transit, and SouthWest Transit. Service types are express, suburban-local, and urban-local bus routes. Data limitations prevented us from comparing providers using all of the efficiency and effectiveness measures we used for the peer region comparisons; we were also unable to compare the performance of the Twin Cities region's bus providers on impact measures.

Efficiency Measures

We compared the Twin Cities region's bus providers on several efficiency measures. These included operating cost per in-service hour and per in-service mile. In-service refers to the time or miles traveled when the transit vehicle is available to transport passengers, but unlike revenue hour or revenue mile, it does not include the hours or miles traveled during a route layover. We also compared provider performance on operating cost per passenger, fare-recovery percentage, and subsidies per passenger and per in-service mile.

Table A.12 displays those efficiency measures by provider and by service type. As mentioned in Chapter 5, many factors can affect a transit provider's performance and comparisons based on service type are generally more useful than comparisons of a provider's overall performance or performance on a measure across service types.

Effectiveness Measures

Table A.13 displays the two service-use measures we used to compare the bus performance of the transit providers in the Twin Cities region—passengers per in-service hour and per in-service mile. The table also presents additional operating data for each provider we used to calculate these measures. As noted throughout Chapter 5, we urge readers to view the results in the context in which they were provided, because many factors can affect the performance of a particular provider.

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[6] Phoenix was not included in the energy consumption analysis because almost all of its bus service was provided through contract in 2008.

Table A.1: Transit Agencies Providing Regular-Route Transit Services, Twin Cities and Peer Regions, 2008

Baltimore, MD	• Annapolis Department of Transportation • Maryland Transit Administration
Cleveland, OH	• Brunswick Transit Alternative • Greater Cleveland Regional Transit Authority • Laketran
Dallas-Fort Worth, TX	• Dallas Area Rapid Transit • Fort Worth Transportation Authority
Denver, CO	• Denver Regional Transportation District
Phoenix, AZ	• City of Glendale Transit • City of Phoenix Public Transit Department (Valley Metro) • City of Scottsdale – Scottsdale Trolley • City of Tempe Transportation Planning and Transit Division (Valley Metro) • Regional Public Transportation Authority (Valley Metro)
Pittsburgh, PA	• Beaver County Transit Authority • City of Washington • Port Authority of Allegheny County • Westmoreland County Transit Authority
Portland, OR	• Clark County Public Transportation Benefit Area Authority (in Washington) • South Metro Area Regional Transit • Tri-County Metropolitan Transportation District of Oregon
San Diego, CA	• Chula Vista Transit • North County Transit District • San Diego Metropolitan Transit System
Seattle, WA	• Central Puget Sound Regional Transit Authority • City of Seattle – Seattle Center Monorail Transit • Everett Transit • King County Department of Transportation – Metro Transit Division • Pierce County Transportation Benefit Area Authority • Snohomish County Public Transportation Benefit Area Corporation
St. Louis, MO	• Bi-State Development Agency • Madison County Transit District (in Illinois)
Tampa, FL	• Hillsborough Area Regional Transit Authority • Pasco County Public Transportation • Pinellas Suncoast Transit Authority

Twin Cities, MN	• Metro Transit
	• Metropolitan Council reporting for:
	    City of Ramsey
	    Maple Grove Transit
	    Metropolitan Transportation Services
	    Minnesota Valley Transit Authority
	    Northstar Corridor Development Authority
	    Plymouth Metrolink
	    Prior Lake Transit
	    Shakopee Transit
	    SouthWest Transit
	    University of Minnesota

SOURCES: Metropolitan Council and National Transit Database.

Table A.2: Performance on Transit Efficiency Measures, Twin Cities Region and Peer Regions, 2008

	Cost per Revenue Hour[a]	Cost per Revenue Mile[a]	Cost per Pass-enger	Cost per Pass-enger Mile[b]	Fare-Re-covery Percent-age[c]	Subsidy per Pass-enger	Subsidy per Capita[d]	Subsidy per Revenue Mile[a]	Subsidy per Pass-enger Mile[b]
Tampa	$ 82.48	$ 6.09	$3.95	$0.79	22%	$3.08	$ 38.10	$4.75	$0.62
Phoenix	85.03	6.65	3.10	0.80	18	2.55	55.32	5.46	0.65
San Diego	95.85	7.34	2.59	0.54	35	1.68	63.05	4.77	0.35
Denver	100.77	6.95	3.37	0.63	26	2.49	118.86	5.15	0.47
St. Louis	111.40	7.15	3.55	0.66	23	2.72	71.39	5.49	0.51
Twin Cities	**118.79**	**9.18**	**3.24**	**0.65**	**31**	**2.24**	**84.98**	**6.34**	**0.45**
Cleveland	127.57	9.89	3.91	0.87	22	3.06	102.01	7.74	0.68
Portland	130.06	9.88	3.06	0.74	25	2.29	142.35	7.38	0.55
Dallas-Fort Worth	145.92	10.09	5.36	0.94	13	4.65	74.78	8.76	0.82
Seattle	147.21	11.24	4.34	0.74	22	3.38	192.89	8.75	0.58
Pittsburgh	159.32	11.57	4.68	1.04	23	3.59	143.51	8.88	0.80
Baltimore	200.25	12.52	4.07	0.64	26	3.01	165.94	9.26	0.47
Rank of Twin Cities	6	6	4	4	2	2	6	6	2

NOTES: Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Subsidy is the operating cost minus the fare revenue.

[a] Revenue hour and revenue mile include the time or miles traveled while transit vehicles are available to carry passengers and in between the end of a trip and departure of the next trip.

[b] Passenger mile is the cumulative sum of the distances ridden by each passenger.

[c] The fare-recovery percentage is the fare revenue divided by the operating cost.

[d] The subsidy per capita is the net operating cost (operating cost after subtracting fare revenues) divided by the population of the urbanized area.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2008 data.

Table A.3: Bus Performance on Transit Efficiency Measures, Twin Cities Region and Peer Regions, 2008

	Cost per Revenue Hour[a]	Cost per Revenue Mile[a]	Cost per Passenger	Cost per Passenger Mile[b]	Fare-Recovery Percentage[c]	Subsidy per Passenger	Subsidy per Revenue Mile[a]	Subsidy per Passenger Mile[b]
San Diego	$ 80.44	$ 6.90	$2.96	$0.79	29%	$2.09	$4.88	$0.56
Tampa	81.90	6.00	3.95	0.78	22	3.08	4.69	0.61
Phoenix	85.03	6.65	3.10	0.80	18	2.55	5.46	0.65
St. Louis	94.62	6.76	3.94	0.93	20	3.14	5.38	0.74
Denver	103.45	7.57	3.72	0.74	22	2.89	5.89	0.58
Dallas-Fort Worth	112.74	8.40	5.27	1.18	13	4.59	7.32	1.03
Cleveland	113.70	9.33	3.98	1.00	21	3.13	7.32	0.79
Twin Cities	**115.58**	**9.00**	**3.35**	**0.69**	**30**	**2.33**	**6.27**	**0.48**
Portland	118.41	9.28	3.56	0.97	24	2.80	7.31	0.76
Seattle	142.28	10.46	4.50	0.72	21	3.55	8.25	0.57
Pittsburgh	145.84	10.65	4.57	1.00	21	3.47	8.10	0.76
Baltimore	153.19	11.66	3.33	0.75	25	2.50	8.75	0.56
Rank of Twin Cities among Subset of Peers[d]	4	4	3	1	1	1	3	1

NOTES: Shading indicates regions with bus systems most similar to the Twin Cities region. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Subsidy is the operating cost minus the fare revenue.

[a] Revenue hour and revenue mile include the time or miles traveled while buses are available to carry passengers and in between the end of a trip and departure of the next trip.

[b] Passenger mile is the cumulative sum of the distances ridden by each passenger.

[c] The fare-recovery percentage is the fare revenue divided by the operating cost.

[d] Rank is among the subset of peers that are most similar in ridership or operating expenses.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2008 data.

Table A.4: Light Rail Performance on Transit Efficiency Measures, Twin Cities Region and Peer Regions, 2008

	Cost per Revenue Hour[a]	Cost per Revenue Mile[a]	Cost per Pass-enger	Cost per Passenger Mile[b]	Fare-Recovery Percent-age[c]	Subsidy per Passenger	Subsidy per Revenue Mile[a]	Subsidy per Pass-enger Mile[b]
Denver	$ 85.28	$ 4.43	$2.02	$0.31	53%	$0.96	$ 2.10	$0.15
San Diego	141.57	7.75	1.65	0.29	50	0.82	3.85	0.15
Twin Cities	**175.80**	**12.03**	**2.32**	**0.39**	**38**	**1.44**	**7.47**	**0.24**
Portland	185.04	12.24	2.16	0.43	37	1.35	7.65	0.27
St. Louis	199.46	8.34	2.85	0.39	30	1.98	5.82	0.27
Cleveland	244.82	17.12	4.20	0.71	20	3.37	13.76	0.57
Seattle	260.96	36.54	4.11	4.24	5	3.91	34.71	4.03
Baltimore	272.18	13.42	4.73	0.70	19	3.85	10.92	0.57
Dallas-Fort Worth	365.65	16.99	4.59	0.59	15	3.88	14.36	0.50
Pittsburgh	391.74	24.01	6.21	1.33	16	5.22	20.19	1.12
Rank of Twin Cities	3	4	4	3	3	4	4	3

NOTES: Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Subsidy is the operating cost minus the fare revenue. Tampa and Phoenix are not included.

[a] Revenue hour and revenue mile include the time or miles traveled while light rail transit vehicles (cars) are available to carry passengers and in between the end of a trip and departure of the next trip.

[b] Passenger mile is the cumulative sum of the distances ridden by each passenger.

[c] The fare-recovery percentage is the fare revenue divided by the operating cost.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2008 data.

Table A.5: Performance on Transit Service-Use Effectiveness Measures, Twin Cites Region and Peer Regions, 2008

	Passengers per Revenue Hour	Passengers per Revenue Mile	Passenger Miles per Revenue Hour[a]	Passenger Miles per Revenue Mile[a]
Baltimore	49	3.1	315	19.7
Portland	42	3.2	175	13.3
San Diego	37	2.8	179	13.7
Twin Cities	**37**	**2.8**	**183**	**14.2**
Seattle	34	2.6	199	15.2
Pittsburgh	34	2.5	154	11.2
Cleveland	33	2.5	147	11.4
St. Louis	31	2.0	168	10.8
Denver	30	2.1	159	11.0
Phoenix	27	2.1	107	8.3
Dallas-Fort Worth	27	1.9	155	10.7
Tampa	21	1.5	104	7.7
Rank of Twin Cities	4	3	3	3

NOTES: Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Revenue hour and revenue mile include the time or miles traveled while transit vehicles are available to carry passengers and in between the end of a trip and departure of the next trip. Rank of Twin Cities is based on results before rounding.

[a] Passenger miles are the cumulative sum of the distances ridden by each passenger.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2008 data.

Table A.6: Bus Performance on Transit Service-Use Effectiveness Measures, Twin Cities Region and Peer Regions, 2008

	Passengers per Revenue Hour	Passengers per Revenue Mile	Passenger Miles per Revenue Hour[a]	Passenger Miles per Revenue Mile[a]
Baltimore	46	3.5	204	15.5
Twin Cities	**35**	**2.7**	**168**	**13.1**
Portland	33	2.6	122	9.6
Pittsburgh	32	2.3	146	10.7
Seattle	32	2.3	198	14.5
Cleveland	29	2.3	114	9.3
Denver	28	2.0	139	10.2
Phoenix	27	2.1	107	8.3
San Diego	27	2.3	102	8.7
Dallas-Fort Worth	21	1.6	96	7.1
Tampa	21	1.5	105	7.7
St. Louis	24	1.7	102	7.3
Rank of Twin Cities among Subset of Peers[b]	2	2	2	2

NOTES: Shading indicates peer regions that were most similar to the Twin Cities in the size of their bus operations. Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Revenue hour and revenue mile include the time or miles traveled while buses are available to carry passengers and in between the end of a trip and departure of the next trip. Tampa and Phoenix are not included.

[a] Passenger miles are the cumulative sum of the distances ridden by each passenger.

[b] Rank is among the subset of peers that are most similar in ridership or operating expenses.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2008 data.

Table A.7: Light Rail Performance on Transit Service-Use Effectiveness Measures, Twin Cities Region and Peer Regions, 2008

	Passengers per Revenue Hour	Passengers per Revenue Mile	Passenger Miles per Revenue Hour[a]	Passenger Miles per Revenue Mile[a]
San Diego	86	4.7	480	26.3
Portland	86	5.7	426	28.2
Dallas-Fort Worth	80	3.7	622	28.9
Twin Cities	**76**	**5.2**	**453**	**31.0**
St. Louis	70	2.9	512	21.4
Seattle	63	8.9	61	8.6
Pittsburgh	63	3.9	294	18.0
Cleveland	58	4.1	345	24.1
Baltimore	58	2.8	391	19.3
Denver	42	2.2	274	14.3
Rank of Twin Cities	4	3	4	1

NOTES: Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination. Revenue hour and revenue mile include the time or miles traveled while light rail vehicles (cars) are available to carry passengers and in between the end of a trip and departure of the next trip. Tampa and Phoenix are not included.

[a] Passenger miles are the cumulative sum of the distances ridden by each passenger.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2008 data.

Table A.8: Performance on Transit Safety Measures, Twin Cities Region and Peer Regions, 2009

	Incidents per 100,000 Revenue Miles[a]	Injuries per 100,000 Revenue Miles	Fatalities per 100,000 Revenue Miles
Phoenix	.22	0.25	.009
Twin Cities	**.31**	**0.40**	**.013**
Portland	.46	0.45	.016
Denver	.52	0.57	.007
Pittsburgh	.53	0.72	.007
Seattle	.55	0.60	.006
St. Louis	.74	1.09	.008
Tampa	.86	1.16	.023
Baltimore	.87	1.60	.011
San Diego	.94	0.96	.031
Dallas-Fort Worth	.94	1.04	.006
Cleveland	.98	1.51	.005
Rank of Twin Cities	2	2	9

NOTES: Revenue miles include miles traveled while transit vehicles are available to carry passengers and in between the end of a trip and departure of the next trip. Data exclude commuter rail.

[a] Safety incidents include collisions; derailments; fires; hazardous spills; and other occurrences, such as theft or vandalism, suicides, and other security events.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2009 data.

Table A.9: Bus Performance on Transit Safety Measures, Twin Cities Region and Peer Regions, 2009

	Incidents per 100,000 Revenue Miles[a]	Injuries per 100,000 Revenue Miles	Fatalities per 100,000 Revenue Miles
Phoenix	0.22	0.25	.009
Twin Cities	**0.26**	**0.35**	**.003**
Portland	0.32	0.32	.004
Seattle	0.48	0.52	.003
Pittsburgh	0.54	0.74	.008
Denver	0.54	0.61	.008
St. Louis	0.65	1.06	.005
Tampa	0.86	1.16	.023
Dallas-Fort Worth	0.86	0.99	.003
Baltimore	0.87	1.63	.000
Cleveland	0.90	1.49	.006
San Diego	1.02	1.08	.016
Rank of Twin Cities	2	3	4

NOTE: Revenue miles include miles traveled while buses are available to carry passengers and in between the end of a trip and departure of the next trip. Rank of Twin Cities is based on results before rounding.

[a] Safety incidents include collisions; derailments; fires; hazardous spills; and other occurrences, such as theft or vandalism, suicides, and other security events.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2009 data.

Table A.10: Light Rail Performance on Transit Safety Measures, Twin Cities Region and Peer Regions, 2005 to 2009

	Incidents per 100,000 Revenue Miles[a]	Injuries per 100,000 Revenue Miles	Fatalities per 100,000 Revenue Miles
Denver	0.28	0.26	.014
Pittsburgh	0.40	0.19	.015
San Diego	0.47	0.33	.117
Baltimore	0.56	0.89	.046
Portland	0.95	0.87	.031
Dallas-Fort Worth	1.05	0.91	.045
St. Louis	1.26	1.26	.014
Twin Cities	**1.29**	**1.02**	**.135**
Cleveland	1.57	1.07	.024
Seattle	4.89	5.23	.169
Rank of Twin Cities	8	7	9

NOTES: Measures are calculated based on the totals from 2005 to 2009. Revenue miles include miles traveled while light rail vehicles (cars) are available to carry passengers and in between the end of a trip and departure of the next trip. Tampa and Phoenix are not included.
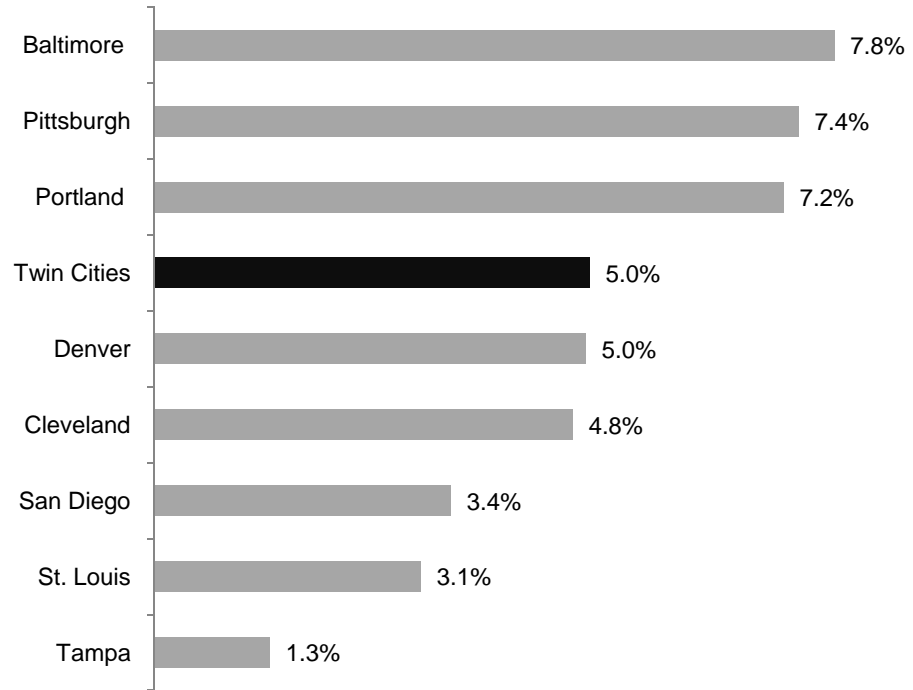
[a] Safety incidents include collisions; derailments; fires; hazardous spills; and other occurrences, such as theft or vandalism, suicides, and other security events.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2005 to 2009 data.

Figure A.1: Percentage of Workers Using Transit to Travel to Work, Twin Cities Region and Peer Regions, 2005 to 2007

Region	Percentage
Baltimore	7.8%
Pittsburgh	7.4%
Portland	7.2%
Twin Cities	5.0%
Denver	5.0%
Cleveland	4.8%
San Diego	3.4%
St. Louis	3.1%
Tampa	1.3%

SOURCE: Office of the Legislative Auditor, analysis of U.S. Census Bureau 2005-2007 American Community Survey Three-Year Estimates data.

Table A.11: Bus Operator Performance on Fuel Consumption Measures, Twin Cities Region and Peer Regions, 2008

	Gallons of Fuel per Revenue Hour[a]	Gallons of Fuel per Revenue Mile[a]	Gallons of Fuel per Passen-ger[b]	Gallons of Fuel per Passenger Mile[c]
Portland	3.2	.26	.09	.027
Cleveland	3.6	.30	.12	.032
St. Louis	3.6	.27	.14	.035
Seattle	3.9	.33	.11	.020
Twin Cities	**3.9**	**.34**	**.11**	**.025**
Tampa	4.1	.29	.21	.044
Denver	4.2	.30	.12	.026
Pittsburgh	4.7	.35	.14	.032
Baltimore	5.0	.43	.10	.030
San Diego	5.7	.52	.18	.050
Dallas-Fort Worth	6.5	.47	.29	.071
Rank of Twin Cities	5	7	4	2

NOTES: Data include only services directly operated by the following transit agencies: Tri-County Metropolitan Transportation District of Oregon (Portland), Greater Cleveland Regional Transit Authority, Bi-State Development Agency (St. Louis), King County Department of Transportation – Metro Transit Division (Seattle), Metro Transit (Twin Cities), Pinellas Suncoast Transit Authority (Tampa), Denver Regional Transportation District, Port Authority of Allegheny County (Pittsburgh), Maryland Transit Administration (Baltimore), San Diego Metropolitan Transit System, and Dallas Area Rapid Transit. Phoenix is not included in the table because almost all of its bus service is provided through contract. Rank of Twin Cities is based on results before rounding.

[a] Revenue hour and revenue mile include the time or miles traveled while transit vehicles are available to carry passengers and in between the end of a trip and departure of the next trip.

[b] Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination.

[c] Passenger mile is the cumulative sum of the distances ridden by each passenger.

SOURCE: Office of the Legislative Auditor, analysis of National Transit Database 2008 data.

Table A.12: Bus Performance on Transit Efficiency Measures by Transit Service Type and Provider, Twin Cities Region, 2009

	Cost per In-Service Hour	Cost per In-Service Mile	Cost per Passen-ger[a]	Fare-Recovery Percent-age[b]	Subsidy per Passen-ger[c]	Subsidy per In-Service Mile[c]
Express Bus						
Maple Grove (operated by Metro Transit)	$168.24	$ 6.40	$3.95	64%	$1.41	$2.29
Metro Transit	179.35	8.48	4.94	47	2.61	4.49
Metropolitan Transportation Services	175.10	6.96	7.22	34	4.75	4.58
Minnesota Valley Transit Authority	175.71	7.15	5.20	45	2.84	3.90
Plymouth Metrolink	133.15	6.44	6.33	39	3.83	3.90
Prior Lake Transit	243.93	9.32	10.76	28	7.77	6.73
Shakopee Transit	195.86	13.12	7.42	32	5.04	8.91
SouthWest Transit	229.32	8.86	7.46	34	4.96	5.89
Express Bus Average	$180.75	$8.06	$5.26	45%	$2.89	$4.43
Suburban-Local Bus						
Maple Grove	$ 88.67	$ 8.39	$ 6.97	0%[d]	$ 6.97	$ 8.39
Metro Transit	158.61	9.38	4.74	20	3.81	7.53
Metropolitan Transportation Services	58.09	4.06	4.99	19	4.03	3.28
Minnesota Valley Transit Authority	110.30	5.87	9.03	11	8.04	5.23
Plymouth Metrolink	155.63	7.94	14.92	0[d]	14.92	7.94
Prior Lake Transit	35.89	3.57	21.07	4	20.22	3.42
Shakopee Transit	55.72	3.39	13.71	6	12.93	3.19
SouthWest Transit	169.75	12.28	12.37	14	10.65	10.57
Suburban-Local Bus Average	$89.75	$ 5.68	$5.90	16%	$4.95	$4.77
Urban-Local Bus						
Metro Transit	$143.35	$10.93	$3.37	28%	$ 2.42	$7.84
Metropolitan Transportation Services	86.62	6.68	4.57	23	3.51	5.13
Urban-Local Bus Average	$142.26	$10.85	$3.38	28%	$2.43	$7.79

NOTES: Data do not include bus service for special events, such as the Minnesota State Fair. In-service hour and mile include the hours or miles traveled while buses are available to carry passengers.

[a] Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination.

[b] The fare-recovery percentage is the fare revenue divided by the operating cost.

[c] Subsidy is the operating cost minus the passenger fare revenue.

[d] Passenger fares were not collected for the providers' routes.

SOURCE: Office of the Legislative Auditor, analysis of data provided by Metropolitan Council.

Table A.13: Bus Performance on Transit Service-Use Effectiveness Measures by Transit Service Type and Provider, Twin Cities Region, 2009

	In-Service Hours	In-Service Miles	Passengers per In-Service Hour[a]	Passengers per In-Service Mile[a]
Express Bus				
Maple Grove (operated by Metro Transit)	16,638	437,600	43	1.62
Metro Transit	205,610	4,347,956	36	1.72
Metropolitan Transportation Services	11,915	299,651	24	0.96
Minnesota Valley Transit Authority	50,858	1,249,732	34	1.38
Plymouth Metrolink	16,562	342,680	21	1.02
Prior Lake Transit	2,138	55,958	23	0.87
Shakopee Transit	3,501	52,247	26	1.77
SouthWest Transit	29,228	756,266	31	1.19
Express Bus Total/Average	336,450	7,542,091	34	1.53
Suburban-Local Bus				
Maple Grove	1,590	16,803	13	1.20
Metro Transit	43,196	730,615	33	1.98
Metropolitan Transportation Services	142,882	2,044,911	12	0.81
Minnesota Valley Transit Authority	54,806	1,029,101	12	0.65
Plymouth Metrolink	5,491	107,608	10	0.53
Prior Lake Transit	831	8,364	2	0.17
Shakopee Transit	5,723	94,114	4	0.25
SouthWest Transit	3,799	52,513	14	0.99
Suburban-Local Bus Total/Average	258,319	4,084,030	15	0.96
Urban-Local Bus				
Metro Transit	1,300,063	17,051,510	42	3.24
Metropolitan Transportation Services	25,469	330,225	19	1.46
Urban-Local Bus Total/Average	1,325,532	17,381,735	42	3.21

NOTES: Data do not include bus service for special events, such as the Minnesota State Fair. In-service hour and mile include the hours or miles traveled while buses are available to carry passengers.

[a] Passengers are counted each time they board vehicles no matter how many vehicles they use to travel from their origin to their destination.

SOURCE: Office of the Legislative Auditor, analysis of data provided by Metropolitan Council.