Minnesota Council on
Transportation Access

Calculating Benefits of Transit Coordination: Minnesota Case Studies

February 2013

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2013-01
February 2013

Published by the Minnesota Council on Transportation Access
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Calculating Benefits of Transit Coordination:

Overview

The purpose of this study is to identify actual cost reductions and other benefits attributable to transit coordination strategies in Minnesota. The Minnesota Council on Transportation Access selected case studies that demonstrate specific efforts to coordinate and calculated the cost savings associated with those activities. In addition to cost savings, other benefits of coordination can include generating revenue, increasing productivity, producing community benefits, increasing riders' access to transportation services, and improving service quality. When agencies adopt methods to coordinate, this creates potential for reinvesting dollars or resources into other parts of a transportation service, thus improving the overall transportation system available to the public.

The case studies discussed in this report were selected and analyzed primarily for evidence of cost reductions. In addition, the coordination activities in these case studies demonstrate other societal benefits, including increased passenger safety, greater productivity, expanded service coverage, growth in transit ridership, and improved service quality.

For additional examples of local transit coordination in Minnesota, see "Successful Local Transportation Coordination Case Studies" at www.CoordinateMNTransit.org.

Table 1: Cost savings and benefits for Minnesota transit coordination case studies

Program	Location	Annual Cost Savings	Other Benefits
Hubbard County Heartland Express Contracts with Paul Bunyan Transit for Dispatch Services	Park Rapids	$22,300	• More efficient dispatching • Hubbard County received state of the art dispatch equipment • Additional revenue for Paul Bunyan Transit • Increased efficiency allowing expanded coverage within service area • Reduced driver distraction during dispatching
MNET's "On the Move!" Travel Training Shifts Riders from Paratransit to Metro Transit's Fixed Route System	Anoka, Chisago, Dakota, Hennepin, Isanti, Ramsey, Sherburne, and Washington counties	$11,910 (first year) $67,680 (subsequent years)	• Greater independence, mobility, and engagement for persons who traditionally only rode paratransit service and can now ride Metro Transit's fixed-route system with more options and frequencies
SmartLink Transit Coordinates Medical Assistance Travel	Scott and Carver counties	$139,740 (Savings split equally between state and federal governments.)	• Improved efficiency in vehicle use

Calculating Benefits of Transit Coordination:

Hubbard County Heartland Express Contracts with Paul Bunyan Transit for Dispatch Services

Program Description

The Hubbard County Heartland Express offers on-demand public transit service within the city of Park Rapids. Until 2004, Heartland Express operated one bus. Riders called the bus driver's cell phone to schedule a ride. When Heartland Express added a second bus in 2004, dispatching buses became more complex. One bus driver operated a bus, answering all incoming calls and dispatching the other bus by calling the other driver via cell phone. This compromised the efficiency of the dispatching service.

In February 2011, Hubbard County contracted with Paul Bunyan Transit (PBT), located in neighboring Beltrami County, to provide dispatch service for the Heartland Express. PBT used dispatch software, automatic vehicle locators (AVLs), and mobile data terminals to make a direct connection with the Heartland Express vehicles. Residents of Park Rapids call the same phone number for service, but calls are transferred to PBT for dispatching.

Economic Benefits

Increased call volume necessitated that Heartland Express adopt a new dispatching system. Without the partnership with PBT, Hubbard County would have hired a dispatcher and adopted a radio dispatch system. Hiring a dispatcher dedicated to the city service would have cost Hubbard County an estimated $38,000 per year, with an estimated annual facility cost (office space, telecommunications service, heating/cooling, etc.) of about $2,600, for a total annual cost of $40,600. This is the baseline scenario against which economic benefits of the partnership are assessed.

Hubbard County paid PBT $15,000 for dispatch services in 2011. In addition, the Heartland Express spent $33,000 in initial capital expenditures to install dispatch equipment in its buses. Assuming that the equipment has a 10-year life cycle, the straight-line annual depreciation is $3,300. Therefore, the an-

Service Area
- Park Rapids, Minnesota

Problem
- Increased call volume to Heartland Express services created the need for more efficient vehicle dispatch.

Solution
- In February 2011, Hubbard County contracted with Paul Bunyan Transit to provide dispatch service for its Heartland Express.

Economic Benefits
- Annual cost savings: $22,300 for Hubbard County

Other Benefits
- More efficient dispatching
- Hubbard County received state of the art dispatch equipment
- Additional revenue for Paul Bunyan Transit
- Increased efficiency allowing expanded coverage within service area
- Reduced driver distraction during dispatching

Challenges
- Bus drivers and passengers needed to make adjustments in the transition from a local to a remote dispatching system. The dispatchers at PBT were flexible about adapting their procedures for the drivers and riders in Park Rapids.

More Information
- See MCOTA Successful Local Coordination Case Studies, June 2011, online at www.coordinatemntransit.org/MCOTA/documents/LocalCoordCaseStudies_MCOTA_Jun2011.pdf.

nual cost with the partnership is $15,000 + $3,300 = $18,300. The direct annual cost savings is about $22,300:

$$\$40,600 - (\$15,000 + \$3,300) = \$22,300$$

Other Benefits

The partnership between PBT and Hubbard County has provided Heartland Express with inexpensive access to dispatch software and AVL technology, which is much more advanced than the radio dispatch system Hubbard County would have otherwise afforded. The new dispatch method improves safety in operation, as each Heartland Express bus driver receives dispatch instructions on a screen rather than via a cell phone or a radio transmitter. It also allows the Heartland Express to track its buses at all times and create reports of each bus's activities.

Because of the improved efficiency in dispatch services, ridership on Heartland Express increased by 15 percent in the first year of the dispatch. Heartland Express has been able to expand the service area by about two miles and offers more access to daycare providers and community education.

PBT is able to provide dispatch services for Heartland Express without adding personnel or capital costs. The annual contract of $15,000 provides additional revenues to support the public transit system.

Challenges

According to Heartland Express, an early challenge was the initial adjustment for bus drivers and passengers in moving from a local to a remote dispatching system (such as dispatchers who had less familiarity with riders and local landmarks and the need for 30-minute scheduling windows). The dispatchers at PBT were flexible about adapting their procedures for the drivers and riders in Park Rapids.

Calculating Benefits of Transit Coordination:

MNET's "On the Move!" Travel Training Shifts Riders from Paratransit to Metro Transit's Fixed Route System

Program Description

Minnesota Non-Emergency Transportation (MNET) is a program of Medical Transportation Management, Inc. (MTM), a national company specializing in non-emergency medical transportation coordination. MNET schedules and coordinates non-emergency transportation for eligible riders in eight counties[1] in and around the Twin Cities metropolitan area. The program is available for people who receive Medical Assistance (MA) or associated programs and for some individuals on MinnesotaCare.[2]

Since early 2012, MNET has conducted travel training through a program called "On the Move!" The program assesses and teaches individuals, including those with disabilities, how to travel safely and independently using the Metro Transit fixed-route system. The program encourages more individuals to use these community resources instead of relying on more expensive paratransit and on-demand transportation.

Individuals referred to the program undergo the "On the Move!" assessment process. The travel trainer visits each person individually and conducts an interview, physical assessment, and cognitive assessment to see whether he or she has the potential to successfully use fixed route transit after the travel training. Participants who are not ready for travel training continue using their current mode of transportation and are eligible for a review assessment one year later.

If a client's assessment indicates the need for travel training, MNET's travel trainer schedules free, personalized, one-on-one training in the client's community. Training includes lessons, tools, and hands-on experience riding Metro Transit's fixed-route system. The trainer assists individuals in evaluating possible routes based on their skills and abilities and helps develop trip plans to meet their needs.

Service Area
- Anoka, Chisago, Dakota, Hennepin, Isanti, Ramsey, Sherburne, and Washington counties

Problem
- Paratransit is an expensive form of transit and not as frequently available as fixed-route transit. Many individuals with disabilities are able to travel safely and independently on the less expensive fixed-route buses and trains, but they may not feel comfortable switching.

Solution
- MNET developed a travel training program to assess and teach individuals, including those with disabilities, how to travel safely and independently using Metro Transit's fixed-route system instead of relying on paratransit and on-demand transportation services.

Economic Benefits
- Annual cost savings for travel training due to transitioning riders from more expensive paratransit service to less expensive fixed-route transit:
  - $11,910 (first year)
  - $67,680 (subsequent years)

Other Benefits
- Greater independence, mobility, and engagement for persons and traditionally only rode paratransit service who can now ride Metro Transit's fixed-route system with more options and frequencies

Challenges
- Some individuals have expressed uncertainty about encouraging those with disabilities to ride the bus independently. These concerns are addressed in the training and follow-up calls.

1 The eight counties are Anoka, Chisago, Dakota, Hennepin, Isanti, Ramsey, Sherburne, and Washington.

2 These individuals include pregnant women and children.

The program helps participants overcome fears and build confidence so they can use the least expensive form of public transportation to the fullest extent possible. The length of the training varies according to individuals' needs, ranging from one day to three weeks. After the training, the travel trainer conducts routine follow-up sessions with trainees to ensure their continued success.

In the six months after the program's launch in April 2012, 237 individuals were referred to the program and 49 received travel assessments.[3] After 13 travel-training sessions, 31 individuals converted to using Metro Transit's fixed-route system instead of more expensive paratransit or on-demand transportation. The average monthly conversion rate is about five individuals.

Economic Benefits

The most important economic benefit is the cost savings that comes from reducing the demand for expensive paratransit or on-demand transportation. According to data provided by MTM, a typical client makes three one-way MNET trips per week. The cost of operating paratransit ranges from $10 to $42 per one-way trip; the average cost was $15 per one-way trip (see original data in Table 2). On fixed-route vehicles, the per-one-way trip rate decreased to $2.[4] Thus, the weekly savings of an MNET client's conversion to fixed route is about $39, with monthly savings at about $169:

$$(\$15 - \$2) * 3 = \$39$$

$$\$39 * (52/12) = \$169$$

If the travel training program leads to five individual conversions per month, savings for that particular month is $845. Assuming that each converted individual continues to ride fixed route transportation for 12 months without further assistance from MNET, the total savings associated with these individuals is $10,140 annually. Therefore, we estimate that every additional month MNET operates produces a total savings of $10,140 (accrued throughout the year). If the travel-training program continues its current operation, each year of training would lead to cost savings of $121, 680.

$$\$169 * 5 = \$845$$

$$\$845 * 12 = \$10,140$$

For the travel-training program, the monthly operational cost (primarily educational materials) is about $1,000; the monthly personnel cost (with one travel trainer) is about $3,500. Thus the total monthly program cost is about $4,500. Currently, MTM absorbs the cost of the program with a hope to develop a formal contract with MNET to expand the travel-training program. However, the program cost should be factored in when calculating the true societal cost savings, which is about $5,640 per month:

$$\$10,140 - \$4,500 = \$5,640$$

If the travel-training program continues its current operation, each year of training would lead to cost savings of $121,680 for MNET without paying the program cost, or $67,680 for society after taking into consideration the program cost:

$$\$10,140 * 12 = \$121,680$$

$$\$5,640 * 12 = \$67,680$$

Note that the cost savings would be smaller for the program's first year, as the benefits for each individual conversion are gradually realized over a 12-month period. Actual benefits for the first 12 months of the program are shown in Table 3.

Other Benefits

The travel-training program improves the quality of life of program participants because it encourages their community engagement, their participation in recreational and employment activities, and their overall independence. The program also provides a benefit to the public transit system by increasing its

3 The program received a significant increase in the number of referrals in August and September. MTM is planning to hire an additional travel trainer to address the increased service needs.

4 This estimate is based on Metro Transit fixed-route fares. In rare instances, some trainees might transition to other transportation modes, such as a personal vehicle.

ridership, although the change has been small.

Trainees have given positive feedback about their experience with the program. According to the satisfaction survey filled in after each training section, 100 percent of the respondents reported feeling more comfortable riding public transit after their training and 100 percent would recommend the travel-training program to others.

Challenges

Some individuals have expressed uncertainty about encouraging those with disabilities to use fixed-route transit independently. MNET addresses these concerns by explaining that the travel trainer will go with the individuals on a training session to make an educated decision. After a client has converted his or her trips to a Metro Transit fixed-route bus, the travel trainer makes several follow-up calls (at the one-week, one-month, three-month, and six-month points) to answer questions and address any concerns.

There are also some drawbacks to using a regular bus for MNET trips. Individuals may feel it is inconvenient to ride the bus, especially in the winter with the cold weather in Minnesota. They may prefer to ride in a paratransit vehicle, although it may take much longer to wait for the ride. Some have complained that people do not give up the front seats of the bus for the disabled or elderly. In response, the travel trainer has developed such scenarios in a training session on self-advocacy.

Table 2: Cost savings due to travel training (2012)

	Trips per Week (one-way)	Per-Trip: Old Trip Rate	Per-Trip: New Trip Rate	Per-Trip Savings	Weekly Savings	Annual Savings
April	2	$20.00	$2.00	$18.00	$36.00	$1,872.00
					$36.00	**$1,872.00**
May	6	$10.00	$2.00	$8.00	$48.00	$2,496.00
	4	$15.22	$2.00	$13.22	$52.88	$2,749.76
	2	$10.00	$2.00	$8.00	$16.00	$832.00
	2	$14.92	$2.00	$12.92	$25.84	$1,343.98
					$142.72	**$8,233.68**
June	2	$14.78	$2.00	$12.78	$25.56	$1,329.12
	10	$13.62	$2.00	$11.62	$116.30	$6,042.40
	2	$10.29	$2.00	$8.29	$16.58	$863.16
					$158.34	**$8,223.68**
July	2	$25.08	$2.00	$23.08	$46.16	$2,400.32
	2	$11.16	$2.00	$9.16	$18.32	$952.64
					$64.48	**$3,352.96**
August	4	$10.00	$2.00	$8.00	$32.00	$1,664.00
	2	$12.75	$2.00	$10.75	$21.50	$1,118.00
	4	$15.07	$2.00	$13.07	$52.28	$2,718.56
	10	$18.70	$2.00	$16.70	$167.00	$8,684.00
	2	$11.59	$2.00	$9.59	$19.18	$997.36
	3	$13.77	$2.00	$11.77	$35.31	$1,836.12
	2	$10.00	$2.00	$8.00	$16.00	$832.00
	1	$11.30	$2.00	$9.30	$9.30	$483.60
	2	$42.04	$2.00	$40.04	$80.08	$4,164.16
					$432.65	**$22,497.80**
September	4	$10.00	$1.20	$8.80	$35.20	$1,830.40
	2	$24.50	$2.00	$22.50	$45.00	$2,340.00
	4	$11.16	$2.00	$9.16	$36.64	$1,905.28
	2	$10.00	$2.00	$8.00	$16.00	$832.00
	2	$10.00	$2.00	$8.00	$16.00	$832.00
	2	$10.00	$2.00	$8.00	$16.00	$832.00
					$164.84	**$8,571.68**

Table 3: Estimated benefits for first year and all subsequent years

Period	MNET Savings	Program Cost	Societal Savings
Month 1	$845	$4,500	($3,655)
Month 2	$1,690	$4,500	($2,180)
Month 3	$2,535	$4,500	($1,965)
Month 4	$3,380	$4,500	($1,120)
Month 5	$4,225	$4,500	($275)
Month 6	$5,070	$4,500	$570
Month 7	$5,915	$4,500	$1,415
Month 8	$6,760	$4,500	$2,260
Month 9	$7,605	$4,500	$3,105
Month 10	$8,450	$4,500	$3,950
Month 11	$9,295	$4,500	$4,795
Month 12	$10,140	$4,500	$5,640
Total savings for year 1	**$65,910**	**$54,000**	**$11,910**
Annual savings for all subsequent years	**$121,680**	**$54,000**	**$67,680**

Calculating Benefits of Transit Coordination:

SmartLink Transit Coordinates Medical Assistance Travel

Program Description

Medical Assistance (MA) is a federal assistance program that helps pay for health care and nursing home care of people who meet specific income, asset, and property eligibility criteria. The state of Minnesota is required by federal law to provide medical non-emergency transportation assistance (e.g., rides to medical appointments) to MA recipients.

From 2004 to 2009, MA transportation services for 11 counties in the Twin Cities were coordinated by the Minnesota Non-Emergency Transportation (MNET) program.[1] When the state of Minnesota passed the brokering cost of MNET on to the counties, Scott and Carver counties discontinued their MNET brokerage. Since 2010, the two counties have relied on SmartLink Transit, the public transit provider in Scott and Carver counties, to coordinate their MA travel. SmartLink improves system efficiency by combining rides for all its programs, including MA travel, Dial-A-Ride, ADA, or fixed-route services, on all vehicles.

Occasionally, SmartLink may be unable to provide a ride to a medical appointment, usually because the destination is outside of Scott and Carver counties. On these occasions, SmartLink works with other carriers to provide these rides.

Economic Benefits

Two types of cost savings were achieved through the SmartLink MA program, including savings on brokerage and savings on service provision.

Between February 2010 and April 2012, SmartLink coordinated an average of 3,400 MA trips each

1 The 11 counties are Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.

Service Area

- Scott and Carver counties in Minnesota

Problem

- Scott and Carver counties discontinued their MNET brokerage in 2010, after the state of Minnesota decided to pass the brokering cost on to the counties.

Solution

- The two counties have relied on SmartLink Transit to coordinate their medical assistance (MA) travel. SmartLink improves efficiency by using one vehicle to provide rides for all transit programs, including MA travel and others, such as Dial-A-Ride, ADA, or fixed-route services.

Economic Benefits

Two types of cost savings were achieved through the SmartLink MA program, including savings on brokerage and savings on service provision.

- On brokerage: $134,460
- On service provision: $5,100
- Total: $139,740 in annual cost savings by SmartLink determining the most appropriate transit service for the client

Challenges

- SmartLink had to adapt to new regulations and take on new skills as an organization, such as training staff in MA rules and regulations and coordinating with the Minnesota Department of Human Services
- In order to provide rides to destinations outside of the counties, SmartLink must negotiate contracts with private transportation companies.
- SmartLink is not yet able to collect and track data about the types of riders and destinations across all types of vehicles.

month. The average administrative cost for SmartLink was $2, based on SmartLink's calculation with schedulers' timecards.[2] The brokerage cost would have been $5.30 if the trips were coordinated by the MNET program, based on data from MNET brokerage for other metro counties that have continued to use its services. [3]

Assuming that these costs stay constant, the average monthly savings on brokerage is:

$$(\$5.30 - \$2) * 3{,}400 = \$11{,}220$$

The average annual savings is about $134,460.

$$(\$5.30 - \$2.00) * 3{,}400 * 12 = \$134{,}640$$

SmartLink Transit not only coordinates MA trips, it also provides its own transit services for some of the trips. This costs less than if those trips were provided by other carriers. SmartLink's rate for each trip is $8 for the base and $1.25 per mile after the first five miles. For other carriers, the calculation is $9.55 for the base and $1.38 per mile after the first five miles.

Based on 2010 data, SmartLink Transit provided 1,700 rides for the two counties annually. The average cost per ride was $12.90. For other carriers, the average cost per ride was $15.90. The annual cost savings on service provision is about $5,100.

$$(\$15.90 - \$12.90) * 1{,}700 = \$5{,}100$$

Adding brokerage savings to service-provision savings, the total annual cost savings is $139,740.

$$\$134{,}640 + \$5{,}100 = \$139{,}740$$

Note that the total cost of MA program is split between the federal and state government. The coordination saves about $70,000 each for the federal and state government.

Challenges

SmartLink had minor challenges while getting the program up and running, including coordinating with the Minnesota Department of Human Services and training SmartLink staff in MA rules and regulations. They also did not anticipate the increased number of phone calls SmartLink would receive regarding MA rides. Additionally, SmartLink had to negotiate contracts with private transportation companies to provide rides to destinations outside of the two counties.

According to SmartLink, another challenge has been collecting data about the types of riders and their destinations. To increase efficiency, all riders from all programs ride any bus. However, SmartLink has not yet found a way to track which rider goes where, and which program provides the funding for individual trips.

2 According to SmartLink, one important part of providing efficient travel to all riders has been the installation of mobile data computers on each bus. Through a grant from the federal New Freedom program, SmartLink has installed these mobile data computers on its buses. These computers show real-time positioning, allow instant dispatching to each bus driver, and improve efficiency. This grant was provided to SmartLink independently of the MA travel program, so the amount is not included in this analysis.

3 For the purpose of comparison, the researcher also tried to gather information about other counties that run their own programs without brokers. However, it seems that the state and counties do not track administrative costs of MA travel outside of the Twin Cities metro area.

Council Members

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