Chapter 6

INCREASING TRANSPORTATION SYSTEM PRODUCTIVITY

Community-wide coordinated dispatching systems and vehicle sharing arrangements allow for all vehicles in use to accommodate all types of passengers at all times. Often referred to as "ridesharing," which means that clients of different agencies are on one vehicle at the same time, this technique ensures a highly cost-effective application of driver and vehicle resources. When properly applied, it can solve a number of the problems associated with noncoordinated transportation systems, such as overlapping routes, duplication of service, inefficient route design, and poorly timed schedules. In particular, the benefits of providing trips for ADA paratransit clients at the same time and on the same vehicle as other human service clients creates much lower per trip costs, thus generating real savings for public transit operators. The primary benefit to transportation providers is increased productivity, which may lead to cost savings. The primary benefit to local communities is better service. Note that this strategy may require increased quality control and monitoring by the lead agency.

Examples of coordinated dispatching and ridesharing can be found in the two People for People operations and in King County, Washington. A number of the sites described in other chapters also used coordinated dispatching and ridesharing strategies (for example, see Martin County, North Carolina). Computer-aided dispatching should be a powerful technique for increasing productivity, and it is a key factor at the People for People Yakima site.

INCREASED VEHICLE UTILIZATION THROUGH RIDESHARING

PEOPLE FOR PEOPLE — YAKIMA, WASHINGTON

People for People (PfP), in Yakima and Moses Lake, Washington, provides an outstanding example of how coordination and ridesharing can provide substantial economic benefits. Founded in 1965 as an employment and training agency, PfP offers a variety of service programs to its communities. Employment services remained the agency's sole mission until the 1980s, when it started a transportation program. Today, these two programs have both flourished and remain the focus of PfP's efforts to build a collaborative network of services and improve the lives of disadvantaged people in central and eastern Washington. (One of the center's more innovative new programs provides goal setting and training for out-of-work citizens who have lost their drivers' licenses. The program has been very successful at getting low-income residents back to work).

PfP's Transportation Program alone now employs over 190 people and has an annual operating budget of approximately $9 million. PfP operates several transportation programs, including Medicaid brokering services, elderly and disabled transportation, Medicaid transportation service, rural intercity bus service, public transit services, private employment transportation services, job access and reverse commute transportation, and collaborative transportation planning. PfP operates a nine-county Medicaid brokerage, providing non-emergency medical services to all people certified under the Washington State Department of Social and Health Services (DSHS). PfP's program operations are broken into two subregions: (1) a six-county region served by the Yakima headquarters office and (2) a three-county region served by a Moses Lake office. The program provides gas vouchers or mileage reimbursements to clients with transportation. Those without their own transportation are provided rides on one of the several area providers to whom PfP brokers rides. These include public transit, private providers, volunteers, and nonprofit agencies. In FY 2000–01, PfP's Medicaid Brokering Division brokered 126,008 rides, an average of more than 500 trips per day.

The state contracts with PfP under a purchase of service agreement to provide senior and disabled transportation in Yakima County, using FTA Section 5311 rural transportation dollars. PfP provides senior and disabled transportation in all of Yakima County except the three urbanized areas, a total area of 4,200 square miles. Past attempts to raise taxes to institute public transit in these rural areas of the county have been turned down by the citizens. PfP is the only agency coordinating transportation in the county.

PfP runs the Community Connector as a deviated fixed route in the lower part of Yakima County. The route begins in Grandview and works its way up to Yakima. Because the Connector is funded with State Rural Mobility funds, the bus is

free to riders. The bus will deviate up to 1 mile off the route. Riders who live more than 1 mile from the route are scheduled onto the Medicaid dial-a-ride buses. Except for the Connector, most service provided by PfP is demand response.

PfP Yakima has several small coordination projects involving shared vehicles. The three following programs have quantifiable economic benefits:

- Goodwill Industries,

- Hospital transportation, and

- The Mabden School to Work program (as discussed in Chapter 4).

Goodwill Industries

PfP coordinates with Goodwill Industries to help the organization transport people with developmental disabilities from their homes in Yakima to a Goodwill job-site in Selah. PfP leases a vehicle to Goodwill for $1 a month; Goodwill provides a driver and fuels and maintains the vehicle. In return for leasing Goodwill a vehicle at essentially no cost, PfP is able to broker trips for others who need to go to Selah by paying to place riders in empty seats on the Goodwill vehicle. This shared vehicle arrangement saves money because PfP does not have to incur the operational costs of providing intercity service between Selah and Yakima. The number of rides that PfP brokers to the service varies significantly from month to month, so it is difficult to estimate a monthly or annual cost savings. However, it is possible to estimate an average operating cost savings per trip

versus directly operated service, based on a 10-mile round trip between Selma and Yakima:

PfP's average cost per service mile is $1.80 x 10 miles = $18.00 savings per round trip.

Assuming that PfP would need to make two round trips to Selma on weekdays in the absence of the Goodwill Industries arrangement, the coordination with Goodwill Industries is saving PfP approximately

$18 per trip x 10 weekly trips x 52 weeks = $9,360 per year.

The program has also benefited Goodwill clients who previously paid $8 per round trip for transportation to the Selah job site. Under the new arrangement, monthly operating costs are totaled and divided among the riders. The average cost per round trip is now approximately $4, a 50 percent cost savings for Goodwill clients.

Hospital Transportation

In 2001, PfP instituted another shared vehicle arrangement with a local hospital. PfP assisted the hospital in preparing a successful grant for the acquisition of a federally funded vehicle. PfP now leases the vehicle from the hospital at a nominal cost; in return it provides patient transportation to cancer treatments. Through the agreement, PfP is not required to use the hospital's vehicle to provide these medical trips. PfP simply dispatches these trips to the most readily accessible vehicle in its fleet.

The hospital provides vehicle maintenance and $9,000 in matching grants for this transportation service. PfP insures the vehicle and uses it to provide other types of trips in addition to those for cancer patients. PfP estimates that, based on a typical 5-year payment plan to cover the 20 percent match on the $65,000 vehicle ($13,000 paid by the hospital), the vehicle-sharing program will save them approximately $257 per month in vehicle payments and $50 per month in maintenance costs. This amounts to an annual benefit of

$$(\$257 \text{ per month} + \$50 \text{ per month}) \times 12 = \$3,684$$

for the vehicle sharing arrangement with the hospital.

Cost Savings from Volunteer Driver Program

A key element of PfP's Medicaid brokerage service is its large volunteer program. PfP has 36 trained volunteer drivers that provide Medicaid trips in the nine-county area and beyond to Seattle and Spokane. PfP has determined that volunteer drivers are often the most cost-effective way to provide transportation for long-distance medical trips, especially those trips that originate in rural areas. Volunteers are reimbursed for mileage traveled at the state mileage reimbursement rate (currently $0.35 per mile). Volunteer drivers are screened for vehicle driving safety and history and undergo a thorough training program.

Based on actual figures from the first three quarters of FY 2001–02, PfP projects that

volunteer drivers will provide approximately 7,000 passenger trips during FY 2001–2002. Projected year-end service hours are 14,000, and service miles are projected to total more than 531,000. This means the average volunteer-provided trip is over 75 miles long. The total projected cost through volunteer reimbursements to provide these trips is $194,000 or just slightly over $0.35 per service mile.

The average cost per service mile for PfP provided services is $1.80. Were PfP to have provided these services itself, costs would have been significantly higher. Due to the rural nature and distance of these trips, there is little opportunity for ride grouping. Table 13 provides a range of estimated cost savings based on the number of passengers PfP could have carried per trip.

It is very difficult to group rides on long distance rural medical trips. Most medical trips end up being brokered to volunteers because they are extremely long or originate in out-of-the-way locations. PfP estimates that, were it to provide these rides itself, it would not be able to achieve more than 1.5 passengers per vehicle trip. Therefore, we can assume that the PfP volunteer driver program saves PfP close to $500,000 per year in operational costs over PfP provided services.

PEOPLE FOR PEOPLE — MOSES LAKE, WASHINGTON

PfP's Moses Lake operation serves three eastern Washington counties: Lincoln, Adams, and Grant. It has about 35

Table 13

Range of Possible Cost Savings to PfP from Volunteer Services

Average Persons Carried Per Trip	Annual Service Miles	Hypothetical Annual Trip Cost for PfP (Service Miles X $1.80)	Actual Annual Trip Cost for Volunteers	Total Cost Savings from Volunteer Program
1	531,000	$956,000	$194,000	$762,000
1.5	398,250	$716,850	$194,000	$522,850
2	256,500	$478,000	$194,000	$284,000
3	128,250	$318,000	$194,000	$124,000

Calculations assume that all volunteer trips carry only one passenger. Although volunteer rides are occasionally grouped, the average number of passengers carried per trip is just marginally higher than 1.0.

paratransit mini-buses and vans and 35 full-time and part-time paratransit drivers. It is the contract service provider for the Grant Transit Authority (GTA), providing its fixed route and ADA paratransit services. Grant Transit Authority owns about 40 vehicles, and PfP provides the drivers, dispatching, etc., to operate the system. In addition, it has contracts with the Area Agency on Aging (AAA), Medicaid, and Work First (welfare-to-work) and has state Rural Mobility grants and Federal Section 5310 and 5311 funds to provide service for the elderly, people with disabilities, and the general public. PfP also receives Job Access and Reverse Commute (JARC) funding to provide transportation to recipients of TANF and their children. PfP's annual contract with Grant Transit Authority is $1.2 million. The Medicaid contract is $540,000, and an additional $250,000 is from grants.

With the exception of the Grant Transit Authority (GTA) fixed route service, PfP mixes all its clients on shared vehicles.

Client trip costs are billed to specific programs or funding sources according to a time-based cost allocation formula. For example, if a Medicaid client trip overlaps with a JARC trip or a GTA paratransit trip on the same vehicle (shared ride), the cost for the shared portion of the trip is divided by the number of clients on board. PfP's billing software calculates cost allocations by matching each client trip to a program-funding source. Drivers track trip length (minutes) for each trip, which is entered later to complete the calculation.

This cost allocation method provides an excellent means for quantifying the overall economic benefit of coordinating rural human service transportation programs and public transit services through shared rides. PfP does not track the actual cost savings it achieves by combining multiple program clients trips, but it can be calculated on a daily basis using the agency's cost allocation formula. Using this procedure, the operations manager calculated the cost savings of providing shared rides for 5

sample days throughout the year. The calculation derives the cost saved by combining program client trips versus providing exclusive program specific trips. In other words, the calculation shows the average daily economic benefit of coordination as a relationship of service hours required under shared services (actual) to nonshared service hours (hypothetical).

For 5 sample days, the PfP operations manager calculated the hours that would have been dedicated to each client's riders under an exclusive contract or if that agency provided its own transportation. She did this by looking at the dispatch schedule where each client's riders had been scheduled in a number of PfP vehicles. She then made up hypothetical schedules that placed the same riders in vehicles dedicated exclusively to a single client. The result was that an exclusive contract would have charged clients for an average of 39 percent more total daily service hours than the actual shared ride arrangement.

PfP's cost to provide service in Lincoln, Grant, and Adams Counties is approximately $40 per vehicle service hour. Based on year-to-date figures for FY 2001–02, PfP projects that it will provide 13,600 trips. These trips will total 17,100 hours of service operated by PfP vehicles (excluding other providers where ride sharing is less prevalent) at an approximate cost of $685,000. Without coordinated service provision, the same 13,600 trips provided exclusively would have required 23,700 vehicle service hours and cost approximately $949,000. PfP estimates that coordinated service provision in the three

county area will save almost $265,000 in FY 2001–02 alone.

PfP Methodology to Determine Shared Ride Costs

This section describes the methodology that PfP uses to calculate shared ride costs savings. Vehicle service hours were defined using the following parameters.

1. Driver report time to first pickup is billed to first client's contract.

2. Any gaps in service are billed to next client's contract except for "off the clock" hours, which are not billed to any contract.

3. End of day after last dropoff to final checkout (fueling and paperwork) is billed to last client's contract.

4. Deadhead miles and hours are prior to first pickup and after last dropoff. Time before first pickup is charged to first rider; after the last dropoff it is charged to last rider.

Using the service hour allocation described above the following shared rides algorithm was applied:

1. Day is broken into allocation periods.

2. Allocation periods are between the times the bus is empty (empty to empty).

3. Contract minutes are determined by calculating total length of time during each allocation period that a rider for that specific contract is on board. (Further clarification: If two AAA clients are on board for 10 minutes each, regardless of whether

they overlap or not, the total for that contract is 20 minutes.)

4. A total number of minutes for each contract is derived according to "3" above. This total number of minutes for each contract is added to the total number of minutes for all other contracts during that allocation period to arrive at a grand total number of minutes on-board for all riders.

5. The total number of minutes for each contract is then divided by the total number of minutes for that allocation period (all contracts) and then multiplied by the *actual* number of minutes for that allocation period (time elapsed).

The relationship between the total service minutes for a specific program to the total minutes for all programs in an allocation period is the most accurate measure of cost savings because it accounts for geographic variability. In other words, using single vehicle allocation periods allows PfP to make accurate assumptions about the feasibility of shared rides if each program was providing its own transportation.

Table 14 provides a sample of how each allocation period is calculated.

Barriers to Coordination

Even a well-established coordinated lead agency like PfP with a multimillion dollar transportation budget faces barriers to improving coordination in its service area.

These issues include the following:

*   **Turf issues have prevented full coordination.** Other agencies that provide transportation include a fleet operated by the Washoe Migrant Council for migrant workers; the school districts; Epic, which provides transportation for Head Start; and the Department of Social Health Resources, which operates two vans transporting the developmentally disabled.

*   **Unreliable funding from the state is a hindrance to coordination.** The budget for the Rural Mobility Program is unreliable in that it changes from year to year. PfP anticipates that its grant funds from the legislature will decrease next fiscal year (FY 2002–03). PfP's director says that riders give up on the transportation system when they are denied rides because of a decline in funds.

*   **A continuing challenge is finding local match funds for state and Federal funding sources.** Most Federal grant funds require a 20 percent local match, which is often a challenge to raise. The State of Washington Agency Council on Coordinated Transportation (ACCT) is pushing lead agencies on coordination to work toward increasing local transportation funding. This is very difficult, especially due to the slumping economy and the decline of the fruit growers market in central Washington.

*   **A comprehensive inventory of service providers is needed in the PfP service area.** PfP staff stressed that one of the major challenges of improving coordination efforts in such a large region is to fully understand what agencies and organizations are providing service and what types and levels of service area being provided.

Table 14

PfP Allocation Procedures

Example

Sequence of Events:
   a. Vehicle empty
   b. AAA client on board from 8:00 am to 8:25 am = 25 minutes
   c. Another AAA client on board from 8:05 am to 8:20 am = 15 minutes
   d. Medicaid client on board from 8:15 am to 8:30 am = 15 minutes
   e. 8:30 am: Vehicle empty

Calculation Of Total Passenger Minutes = 25 + 15 + 15 = 55 Minutes:
   Total vehicle time = 30 minutes

Allocations:
   AAA share of passenger minutes = (25+15) / (55) = 72.7%
   Vehicle time charged to AAA = 72.7% x 30 minutes = 21.8 minutes

   Medicaid share of passenger minutes = 15 / 55 = 27.3%
   Vehicle time charged to Medicaid = 27.3% x 30 minutes = 8.2 minutes

State Incentives for Coordination

PfP is one of 17 agencies that receive state funding from ACCT to coordinate transportation services with other agencies. The Local Area Planning Group has reformulated itself into the Special Needs Transportation Coalition. Members include school districts, the Department of Human Services, Campfire Girls, the Red Cross, Boys and Girls Club, job corps, churches, retirement homes, mental health agencies, and transit agencies. The coalition is conducting surveys and holding monthly meetings to assess available resources, including agencies' vans, taxis, and fire and police vans. Insurance agencies are emerging as a large hurdle to sharing vehicles.

The goal of the project is to compile a complete picture of transportation for special needs populations, which includes people who cannot access transportation because of age, income, or disability. As resources are identified, the Coalition is working to draw up a plan to increase coordination, such as combining dispatching or pooling insurance or fueling. ACCT is pushing for every county to have one point of contact that people could call for information, eligibility screening, etc. PfP feels that the State of Washington (ACCT) has been very supportive of coordination, as evidenced by the state grants funded by the legislature. It is not clear if the state will also help fund the coordination plans that the coalition produces.

THE KING COUNTY METRO AND DSHS DEMONSTRATION PROJECT — KING COUNTY, WASHINGTON

King County Metro (headquartered in Seattle, Washington) and **DSHS** conducted a demonstration of sharing vehicles to save money on ADA and Medicaid transportation. Metro and DSHS both contract separately with the Multi-Service Center (MSC, recently renamed "Hope Link") to broker transportation services. For DSHS, MSC arranges Medicaid related transportation for all of King County. Trips include medical appointments, dialysis, and workshops for people with developmental disabilities. For Metro, MSC arranges ADA paratransit trips in a portion of Metro's service area, which includes the urban and some close-in rural portions of the county. (At the time of the demonstration, ADA service in a second portion of Metro's service area within King County was served under a separate turnkey service contract.) MSC schedules eligible trips on a variety of private providers who participate in the two different programs under different service and compensation arrangements. Metro and DSHS each download eligibility files to the broker for their separate programs. Separate MSC staff use similar but different software to broker the trips for Metro and DSHS.

The demonstration funds were used to support a staff position at the MSC call center who would identify overlapping demand and arrange for shared use of the providers under contract for each program. When this arrangement resulted in placing both ADA and Medicaid clients on the same vehicle, the cost of paying the provider was divided between Metro and DSHS. After an initial period devoted to resolving technical and institutional issues, actual trip sharing was in place between April 1998 and June 1999. The report *ACCT 1:Report on 1997-1999 Demonstration Projects* (Agency Council on Coordinated Transportation, 2000) provided the results shown in Table 15.

A total of $87,372 in grant funds was spent. In addition, Metro and DSHS pledged $93,875 in local match. Thus, the demonstration project costs of $181,247 generated benefits of $307,460, creating cost savings of $126,213 over the 15-month demonstration period (assumed to be equivalent to $100,970 on an annual basis).

CONCLUSION

Coordinated dispatching systems and vehicle sharing arrangements ensure a highly cost-effective application of driver and vehicle resources. Ridesharing can solve a number of the problems associated with noncoordinated transportation systems, such as overlapping routes, duplication of service, inefficient route design, and poorly timed schedules. In particular, the benefits of providing trips for ADA paratransit clients at the same time and on the same vehicle as other human service clients creates much lower per trip costs, thus generating real savings for public transit operators. Although ridesharing did not generate savings as large as some other coordination strategies, it has obvious applications to a wide variety of communities.

Table 15

Trips Brokered in the King County Metro / DSHS Demonstration Project

Factor	Value
METRO ADA TRIPS BROKERED BY DSHS	
Number of trips	35,181
Cost if Metro ACCESS had provided the trip	$21.37
Cost when provided by DSHS broker	$14.24
Savings to Metro ACCESS	$250,679
MEDICAID TRIPS BROKERED BY METRO ACCESS	
Number of trips	5,076
Cost if DSHS Medicaid provider had provided the trip	$20.22
Cost when provided by Metro ACCESS	$9.04
Savings to DSHS Medicaid Program	$56,781