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More Mobility, Stronger Connections: It's Time to Modernize Demand-Responsive Transportation Using the Transactional Data Specification

Demand-Responsive Transportation: A Mobility Lifeline

Having safe, affordable access to the places we need and want to go is essential. Without good mobility options, people who don't drive, don't have access to a vehicle, or can't use public transit are isolated and disadvantaged. This is particularly serious for older nondrivers (including the estimated one in three Black, Hispanic, and Asian older people who do not drive), people with disabilities, people undergoing medical treatment, and people in rural areas. Demand-responsive transportation exists to fill these access and equity gaps.

Photo credit: Capacity Builders, Farmington, NM

Unlike public transit buses and trains, demand-responsive rides don't follow fixed routes or schedules. Instead, the rider requests a trip for a certain date and time to a certain place, often door to door, from services such as Dial-a-Ride, Americans with Disabilities Act (ADA) complementary paratransit, taxis, volunteer driver programs, or flex-route public transit in suburban and rural communities. Demand-responsive services also now include app-based ride-hailing like Uber and Lyft, as well as ride-, car-, and bike-sharing programs.

For human services agencies and their clients, demand-responsive rides are indispensable yet imperfect. They are customized to the traveler's needs, providing precious mobility for people who may have no other options. But scheduling is often

labor-intensive, individual transportation providers' capacity is limited, and supply rarely equals demand.

Say 'Yes' More Often: How the Transactional Data Specification Can Build Capacity

The approach known as Mobility as a Service (MaaS) is widely considered the future of transportation. MaaS aspires to allow the traveling public to set up trips by accessing many different forms of transportation—from a rented scooter to an Uber to a local bus—using a smartphone or computer. One app, one payment, one seamless trip may soon become the norm in many places. It is now time to start offering human services transportation this way.

The challenge: In the United States, demand-responsive service is fragmented, options vary from region to region, and many providers work alone. If they do try to coordinate with another provider, it is generally with low-tech (and sometimes high-stress) methods like phone calls and e-mails. Human services agencies and their clients struggle to find rides, and transportation providers are in a double bind: excess capacity goes unused, but at busier times, providers are forced to deny ride requests.

Demand-responsive providers need to work together, form local transportation networks, plan, and deliver trips for one another, and make online access user-friendly for riders and other agencies.

Until now, inadequate technology has frustrated such coordination, but a new tool—the transactional data specification for demand-responsive transportation (TDS)—puts collaboration among all demand-responsive providers within reach, whether they are public transit agencies or the smallest nonprofit using volunteer services.

Published in 2020 by the Transportation Research Board, the TDS provides a way to format data about individual trips (such as pickup address, trip purpose, mileage, and billing) that makes data sharing easy. Providers that adopt this common data format can exchange trip requests with partners online, automate trip assignments, and perform as one integrated network, even if they use different scheduling software. All can be done without needing to pick up the phone or send an email.

The payoff: lower costs, greater efficiency, and, most importantly, more rides available for the people who need them most.

Proof of Concept: An Early Success on the Frontier

Lake County, Oregon is larger than Massachusetts and has more cows than people. This frontier county has no Uber, Lyft, or cab service. The only demand-responsive transportation is provided by two local nonprofits—Inner Court Family Center (ICFC) and Lake County Senior Center Association—which have overlapping territories and many of the same clients. In 2020, they became the first two providers anywhere in the United States to commit to a collaboration that relies on the TDS.

AARP funded Full Path Transit Technology to build a scheduling platform the two nonprofits can use to coordinate their services. Called RideSheet, the new tool uses the TDS to format their trip data, then exchanges it online using Google Sheets (a free cloud-based spreadsheet) to maximize the number and convenience of the rides the two nonprofits can offer.

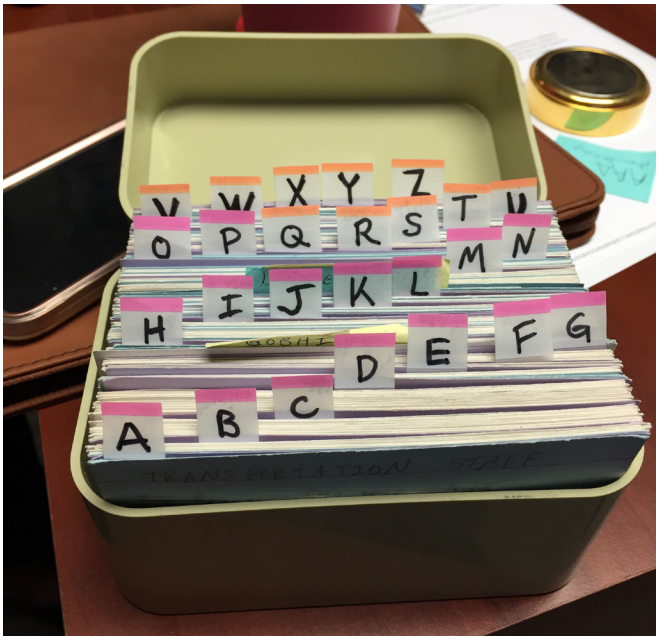

Photo credit: Kevin Chambers, Full Path

Despite the two organizations having no in-house IT support or previous experience working in the cloud, and even starting from a system that relied heavily on file cards, the system is now up and running. The Lake County agencies can assign and coordinate rides easily, without emails or phone calls. "It's helped all the way around, and I love that it'll give us the chance to work closer with the senior center," says Missy Walton of ICFC.

RideSheet: A Free and Open-Source Tool

Because RideSheet is based on the TDS and was designed to be easy to use, the Lake County example is highly replicable. RideSheet is simple scheduling software and is suitable for small providers. It can also be used by software developers to verify that they have successfully programmed more sophisticated scheduling software to adhere to RideSheet's uniform API [application programming interface] specifications, which are based on the TDS.

Some initial tech support is needed to launch a new TDS-based network, but both the code for RideSheet and the API created for Lake County are now being offered free, through open-source licenses, for any interested programmer or provider to use or customize.

Large-Scale Proof of Concept: FlexDanmark

The amazing range of demand-responsive services available in Denmark shows what optimal use of transactional data standard technology can look like. Services are offered by the IT company FlexDanmark, which integrates more than 550 private transportation providers into a single system that efficiently coordinates millions of rides every year. The FlexDanmark system was originally designed for medical and disability transportation but has since expanded to serve the general public as well.

Providers use different software (for functions like accepting trip requests and billing) but interoperate easily because they are required to use the same data standard, known as SUTI (a system similar to the TDS). Service is subsidized but free market competition helps keep costs down, and the shared technology levels the playing field, allowing small businesses to be competitive.

Progress Moves at the Speed of Trust

For nonprofits in the United States accustomed to high-touch transactions, automating their systems and watching other organizations serve their clients may be uncomfortable at first. This is natural, but technology does not work in a vacuum. People still come first and networks, particularly new ones, only succeed when the partners build strong, interpersonal relationships. Deliberate and early work to build trust needs to be a high priority.

Pilot programs are being launched by the Minnesota Department of Transportation, which is adding coordinated demand-responsive services to a new regional MaaS platform. The Atlanta Regional Commission, which received federal funding to offer on-demand mobility in the suburb of Clarkston, has two community nonprofits that will provide rides with trip data integrated through the TDS.

Demand-responsive transportation is a key building block of the emerging Mobility as a Service (MaaS) ecosystem. This is exciting, but if the people who depend on these services for their health and social inclusion are to share equitably in the tech-driven networks of the future, there must be broad adoption of the TDS by public, commercial, and nonprofit providers.

Get Involved: A Rare Opportunity for Impact

Human services transportation supporters can play an important role in driving demand for the TDS, by:

- Adopting the TDS in your program
- Requiring software and technology vendors to include the TDS in their deliverables
- Implementing pilots, documenting lessons learned, and sharing these experiences
- Educating foundations and funding agencies about the TDS and integrating it into grant-funded projects
- Championing the benefits of the TDS to professional peers, decisionmakers, and elected officials.

Find more information, case studies, and technical detail on the transactional data specification for demand-responsive transportation (TDS) in these publications:

Modernizing Demand-Responsive Transportation for the Age of New Mobility, an AARP Public Policy Institute Research Report.

RideSheet: New Technology for Rural Transportation, an AARP Public Policy Institute paper written by Full Path Transit Technology.

Development of Transactional Data Specification for Demand-Responsive Transportation, the Transportation Research Board Transit Cooperative Research Program's TCRP Research Report 210.

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