

White Paper

**SMART Travel Program:
Using Smart phones and WayFinder
to
Increase Independent Mobility of
Adults with Developmental Disabilities**

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The Problem: With recent budget constraints and shortfalls due to funding cuts since the economic downturn, ARCA, a private New Mexico non-profit organization providing comprehensive life-long services to individuals with developmental disabilities is innovating efficiencies that increase each individual's independence and community inclusion and decreasing organizational transportation costs. The primary problem is how does an organization providing Independent Living (IL) services maintain or increase an individual's skills, self-sufficiency, and self-advocacy with less than 24-hour staff support?¹ The scope of IL services includes assistance with money management, household maintenance, activities of daily living and **assistance with mobility and orientation and community integration, including access and utilization of natural supports.**

Too frequently, persons receiving services rely on staff for all, or most, transportation needs when, with relatively few customized supports, those same persons can learn to use public transportation, increase self-reliance and their accountability for managing their appointments, daily living needs, and cultural preferences. Individual Service Plan budget constraints that limit trained staff hours reduces the opportunities to fully teach individuals receiving IL services how to utilize public transit to an extent necessary to ensure safe integrated use of public mass transit. Teaching bus and pedestrian navigation skills requires staff intensive support strategies and attention to key competencies in travel, money management, social skills, safety skills, and basic knowledge domains like letter, number, color and word recognition. For instance, can an individual safely navigate an intersection, know how to pay for a bus ride, interact appropriately with the driver and riders, step up into the bus safely and take their seat, be safe with strangers, and identify the number of the right bus.

¹ New Mexico Department of Health, Developmental Disability Waiver Service Standards, (2007), Developmental Disabilities Supports Division.

Community organizations serving people with developmental disabilities are under-resourced and often use staff hours to “taxi” persons from place to place to meet programmatic requirements and personal needs because of a lack of alternative models and in part due to the costs of change.

Available smart technology is often unknown to and/or cost prohibitive for individuals and organizations and bus training requires extensive dedicated hours dependent upon each individual’s needs.

Under federal regulations for municipal transportation supports, local governments provide supplemental paratransit services to accommodate individuals with disabilities with the intent of providing a “separate but equal service”²; however, these services are under severe municipal budget constraints, are expensive for riders living at poverty level (\$1.80 per one-way ride for example), and have restrictive capacities. In the Albuquerque metro area, paratransit services have temporal gaps, strict scheduling requirements, and fairly long waits for scheduled rides and pick-ups with limited flexibility built into what is an overtaxed service system.³ The ARCA SMART Travel Program demonstrates that adults with developmental disabilities receiving IL services are capable of taking fixed- route public bus rides with technologically advanced supports and skills training.

Solution: ARCA’s SMART Travel Program has a multiplied impact. Individuals receiving services who learn to use the Smart Travel tools become empowered and able to navigate public transportation and the community independently. The organization frees up paid staff hours that can

² Separate but Equal, *relating to or affected by a policy whereby two groups may be segregated if they are given equal facilities and opportunities, for example, public transportation* (available online):

<http://dictionary.reference.com/browse/separate+but+equal>

³ ATR Institute, Developmental Disability Transit Report (no date given)

be allocated to helping each individual with other life skills training and the organization reduces fleet and travel costs.

Through an innovative vision that identifies best practices, US FTA New Freedom grant funding,⁴ and municipal partnerships ARCA segregated resources to teach and support independent mobility strategies for a targeted population most likely to succeed, individuals receiving IL services. Paid staffs are still deployed as scheduled or on demand to meet critical needs like emergent or urgent care.

Through utilization of new Smartphone applications designed by *AbleLink Technologies*⁵, SMART Travel training leads to independent mobility, increased community integration, independence, skills, and self-advocacy of each individual with developmental disabilities. SMART Travel also introduces persons receiving IL services to Smartphone technology, Internet, and computers; opportunities generally neglected in a population tied almost exclusively to poverty. The Smart Phone accommodates suites of applications for scheduling and tasking using picture, voice, or word prompts.

Smart Travel Program: Focusing primarily on problems described above, ARCA's SMART Travel Program designates a "tech savvy" project coordinator to teach direct support staff how to assist individuals with cognitive learning challenges in the safe use of public transportation. The project coordinator also works directly with those individuals as necessary to ensure success in the

⁴ Available online (2012)

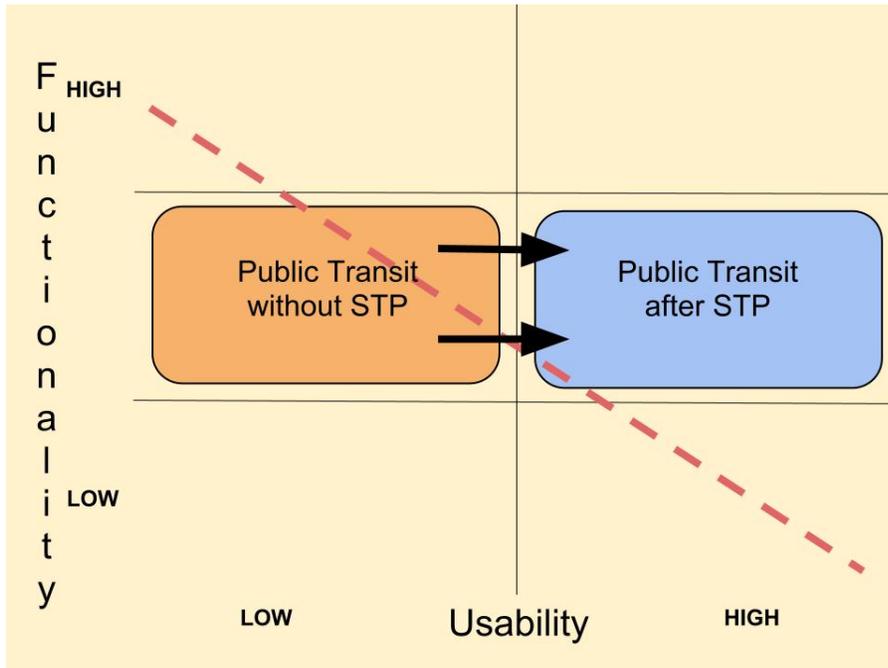
<https://www.cfda.gov/index?s=program&mode=form&tab=step1&id=e4dde5fa63a3754baf5d3ae28b9551e4>

⁵ Ablelink and WayFinder, Available online (2013): <http://www.ablelinktech.com/index.php?id=21>

accomplishment of their independent mobility. Other benefits described above (introduction to Smartphone technology, Internet, etc.) are achieved secondary to the primary goal of mobility assistance.

ARCA's SMART Travel Program aims to eliminate two separate but linked disadvantages experienced by higher functioning adults with developmental disabilities. First of these disadvantages is to have an option for independent mobility throughout the greater community. Second, SMART Travel enables access and usability of new technology including Smartphone technology, Internet, computers, and digital calendars much like the average population, putting an economically and socially disenfranchised population in touch with modern technology supports they learn to use effectively.

Mobility disadvantages are a function of each person's cognitive disability and, in many cases, a function of anxiety and other emotional reactions that any person experiences in new learning situations, particularly adult learners. Technological disadvantages can be a function of having a disability and of financial hardship. WayFinder and the related Community Integration Suite of *Ablelink Technologies* addresses the specific learning levels and adaptive needs of adults with developmental disabilities to improve their daily functioning.

Diagram 1: Technology Paradox in Public Transit Use

Similar to the Technology Paradox⁶, fixed route public transit is an extremely useful, but complex, web of bus routes. Individual training with specialized staff, use of Smartphone applications, and repetition makes this otherwise complicated bus system easier to maneuver and utilize.

Methodology: Previously, when direct support staff trained individuals in independent mobility, the training relied on pictures in handmade flipbooks and the utilization of extensive staff hours to teach the individuals to use the flip books. This system relied on the individual to flip through their picture

⁶ Technology Paradox is a concept by Donald A. Norman suggesting technology simplifies life but is complicated to learn and utilize.

book at appropriate intervals. Without additional supports like a phone to use to call for help, anxiety levels of both the individual and their staff were likely high, decreasing the probability of success. Smart Travel alleviates these problems and creates new opportunities by providing the prompts each individual needs to be successful.

Smart Travel began in October of 2010. Ten individuals received one on one training pertaining to public safety and public transit usage. The training is specific to the use of Windows-based PDA Smartphones equipped with an *AbleLink Technologies* suite of applications designed to assist individuals with cognitive impairments like Intellectual Disabilities and Developmental Disabilities (I/DD), Traumatic Brain Injuries (TBI). Primarily, SMART Travel utilizes one particular app, WayFinder.⁷

Each individual completed a literacy assessment with a professional tutor certified by Pro-Literacy. Each assessment included a review of vocabulary level and word and number recognition, auditory comprehension, memory, and the ability to follow directions. Each travel assessment was completed in the field during transit use to baseline six transportation skills, nine social skills, twelve safety skills, three money management skills, and six knowledge skills. The transportation assessments are used as a pre-test and annual post-test to assess increased competency in travel skills domains⁸.

WayFinder is a travel support application that integrates a Smartphone device, GPS, and prompting technology in a simplified multimedia application to provide individually specific audio and visual

⁷ Other applications in the suite are utilized as the individual seamlessly integrates their PDA into their lives.

⁸ Adapted from the Easter Seals, Project Action, *Competencies for the Practice of Travel Training and Instruction* (2010)

cues to facilitate independent navigation of public transit by individuals with intellectual disabilities. WayFinder is different from commercial GPS navigation systems. Commercial navigation systems rely on the user's ability to recall exact or approximate addresses; ability to navigate complex menus and options; work with, and understand, complex maps; and traverse routes with few, and often complex, prompted instructions. Once programmed by a trained staff, WayFinder simplifies the navigation interface to as few as a single local route which is programmed to meet the needs of the individual utilizing it. These routes include customized prompts that can include landmark reminders, simplified prompts, repeated prompts, and verbal and visual prompts as needed. The second major component to SMART Travel is the extensive support system surrounding Smart Travel's primary tool, WayFinder.

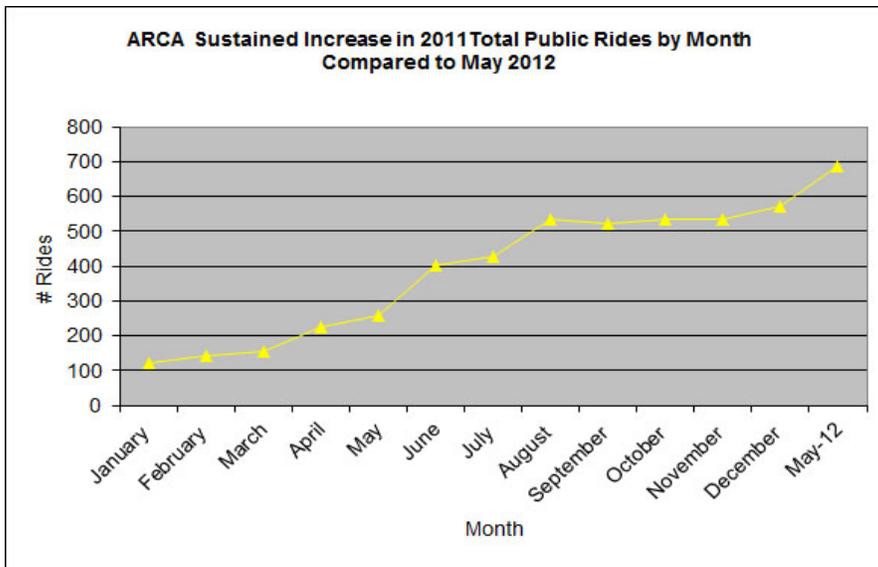
No component of an individual's support system is complete without proper teaching strategies and safety nets. The same is true for SMART Travel. The Project Coordinator trains direct support staff and individuals that they assist to ride the bus and traverse New Mexico's only metropolitan area as an independent pedestrian and rider of public transit. Direct staff are also trained to perceive difficulties experienced by individuals that may hinder successful independent mobility. These complications can include recognizing anxiety and causes of that anxiety when in public. Examples include recognizing whether a person tends to forget their belongings, has difficulty with social cues, and ensuring that the individual is fully capable of traveling independently before fading supports.

ARCA's SMART Travel program started with ten individuals each receiving support and their own Smartphone with the *AbleLink Technologies* suite of Applications. As a quantifiable measure of the increased independent mobility, we focused attention on ridership numbers. Ridership numbers are

recorded as one ride for every one-way bus ride from point of origin to destination irrespective of number of transfers from one bus to another. For example, if an individual rode the bus from their home to Wal-Mart but had to transfer from one bus to another, that trip is counted as one ride. The ride back home from Wal-Mart is also counted as one for a total ridership of two; however, if said individual stops mid-route to go to the bank or lunch, that stop counts as one ride. If they continued to Wal-Mart, then home from Wal-Mart, that individual's total ridership for the day is counted as three.

The original ten PDA recipients were chosen because they have the time and skills to navigate in the community and some limited experience with public transit use. However, their prior understanding of Albuquerque's bus system usually included limited use of public rides on a single two way route (usually to/from work). One individual had utilized public transportation until a pedestrian/vehicle accident made her too anxious for independent city-wide mobility.

Diagram 2: ARCA Sustained Increase in Public (Fixed-Route) Rides



Data: We started with a pilot group of ten individuals who collectively had a baseline of 160 one-way bus rides per month. By increasing the number of city bus routes these individuals knew, understood, and demonstrated competency with ridership numbers increased to a current total of 320 one-way rides per month in one year. Ridership increased 110% from the baseline, exceeding our original goal to increase collective rides by 35%. Almost exclusively, increases are due to New Opportunity routes or rides above the 160 baseline that are routes individuals learned as a result of Smart Travel routes programmed into an individual PDAs.

New Opportunity routes are routes project staff taught individuals based on their requests for access to personal appointments, cultural events, and activities of daily living like banking and grocery shopping, and visiting friends and families. Over the first year of operation of Smart Travel, 73 distinct routes that individuals did not know were taught; 10 individuals gained a collective of 73 separate, previously unknown destinations that they now navigate independently.

New Opportunities in Mobility: While the quantitative data evidences the success of the project understanding the faces and stories behind these 73 New Opportunity routes and what each individual gained from having new mobility opportunities is of equal importance.



Kendrick had just moved from a rural community to the city of Albuquerque. He never lived alone before, never used mass transit, and knew nothing about pedestrian safety in a congested city environment. After working closely with staff, he now independently uses public transit to/from his new job, the grocery store, and several leisure destinations for which he previously relied on staff for transportation.



William: When he started a Day Hab program, William wanted to learn the bus system rather than rely on staff or paratransit. Thanks to SMART Travel, he knows how to get to/from work and is so excited that he shows up on his days off.

Laura: A vehicle/pedestrian accident left Laura too scared to take the bus independently. After a few weeks of pedestrian safety training and re-acclimation to independent travel, she now takes the bus to/from work three times a week.



Conclusion: In one pilot study at ARCA in Albuquerque, NM, and a second ARCA pilot study group, both public/private partnerships under federal New Freedom funding, resulted in a highly successful SMART Travel Program that increased the public rides of individuals receiving

Independent Living Services by 110% within the first year of the program. More importantly, the use of the Smartphone and applications empowered the individuals to manage their own needs and be more fully included in community. Our project included discussion that the use of these tools may generalize to other vulnerable populations like seniors and youth who need independent public travel assistance. Contact Rene Mullen (rmullen@arcaspirit.org) or Leslie Hoelzel (lhoelzel@arcaspirit.org) for additional information.

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