MAT v1.1

Task 6 Multimodal and Accessible Travel (MAT) White Paper

Multimodal and Accessible White Paper on Eligibility

Multimodal and Accessible Travel Standards and Vulnerable Road User Cybersecurity Support Project

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1 Introduction

1.1 Problem Statement

The purpose of this white paper is to research and document previous work associated with automated eligibility as it relates to the development of multimodal and accessible travel standards for vulnerable road users. This white paper is supplemented with four additional white papers discussing (1) Reservations, Scheduling, and Dispatching (RSD); (2) Vulnerable Road Users (VRUs), (3) Public-Right-of-Way (PROW), and (4) Cybersecurity for Vulnerable Road Users. These white papers describe downstream applications, standards, gaps in the standards and stakeholder groups who may contribute to the development or extension of existing standards.

The topic of automated eligibility emerged as a major gap in data collection and modeling based on the Multimodal and Accessible Travel Standards Assessment (MATSA) and subsequent project review and use case development in this ITE Cybersecurity and VRU Project (Task 3.1 Multimodal and Accessible Travel Use Case Review Gaps and Task 3.2 Multimodal and Accessible Travel Use Cases Use Cases). With automated and electronic validation of eligibility processes gaining recognition as a critical function among technology-enabled mobility projects, and the fact that there are various ways each state and jurisdiction provides and stores credentials (e.g., driver's licenses) that can be used to validate a person's eligibility, this category may need additional research to identify a generic method that can cover a variety of credential types and implementations. Automated eligibility data is missing from national data repositories, and inconsistent and incomplete if available at all.

1.2 Scope

The scope of this white paper is to identify the gaps in research related to data standards, specifications, and Application Programming Interfaces (APIs) focused on automated eligibility. The paper includes a list of gaps in standards, key stakeholders and organizations developing related standards, stakeholders who are generating data, using the data, and developing tools that support eligibility data.

1.3 Audience

The eligibility white paper is intended to inform key stakeholders contributing to the development of multimodal accessible travel (MAT) for vulnerable road users (VRU).

VRUs may consist of pedestrians, cyclists, or micro-mobility device users, such as individuals riding scooters.

1.4 Document Organization

This white paper is organized into four sections:

- Section 1: Introduction
- Section 2: Eligibility Research and Existing Standards and Specifications Summary of literature
 related to eligibility standards, specifications, and research activities related to eligibility
 standards and its uses. The literature search was not comprehensive; rather a selection of
 papers that were published in the most recent past that demonstrates the type of ongoing
 research and specification development currently underway. In addition, several researchers

and specification developers were interviewed to understand current efforts.

- Section 3: Current Projects and Systems that use Automated Eligibility Processes identifies existing systems and projects that have automated eligibility processes.
- Section 4: Stakeholders Stakeholders who inform standard development including the following:
 - o Researchers
 - Applications developers needing the standard
 - o Standard developers
 - Organizations collecting data
- Section 5: Issues and Standards Gaps issues associated with eligibility data standards and specifications, and gaps in the existing standards and specifications
- Section 6: Conclusions

2 Eligibility Research and Existing Standards and Specifications

Based on the results of Task 3.1, use cases related to gaps in Multimodal and Accessible Travel (MAT) standards were described in Task 3.2, including those associated with eligibility to participate in specific mobility service programs. Further, in describing the use cases, standards related to the eligibility topic were identified.

The purpose of this white paper is to further describe the current research, standards, and specifications that cover the wide range of eligibility processes related to multimodal and accessible travel. Also, this white paper identifies the gaps associated with the standards and specifications described in this paper.

2.1 Eligibility Research

In terms of automated eligibility processes related to multimodal and accessible travel, several pieces of research describe existing processes, as follows:

According to Darling et al. (2021)¹, the Denver Regional Transportation District (RTD) may be the only transit provider to have online enrollment as the only option for applying for transit benefits. RTD's LiVE Program is the income-based fare discount program for RTD riders serving the RTD service areas. Upon further research and an interview with RTD program representatives, it was determined that the City and County of Denver's Department of Human Services has applicants to the LiVE program apply on the State of Colorado's Program Eligibility and Application Kit (PEAK)² website. The state conducts an automated eligibility verification process to provide public transit benefits or discounts to youth ages 19 and under, seniors 65+, individuals with disabilities, and Medicare members (fare discounts for these populations offer even higher savings).³, ⁴

LiVE uses the state's PEAK system and Denver Human Services to evaluate eligibility and process applications, which allows applicants to apply for other benefits at the same time, including food, cash, medical, and childcare assistance. Approved applicants receive the LiVE Discount proof of eligibility card by mail. With this card, riders have the flexibility to use a MyRide (RTD's account-based fare payment system) smart card or a mobile 3-hour pass or a day pass on the RTD Mobile Tickets app. LiVE MyRide smart cards can be purchased and reloaded online, at RTD sales outlets, and at local King Soopers and Safeway stores. The LiVE Program was launched in July 2019 and adds to the other discount programs offered by RTD. The program is being used by over 5,000 enrolled riders as of April 2020.⁵

While there is no application programming interface (API), there is a nightly data transfer between PEAK and Salesforce in which Salesforce receives a file with the first and last name, a photo that will be imprinted on a LiVE card and data of birth. RTD will not see any of this information if the application is approved. If approved, RTD sends information to a print vendor and the LiVE card is mailed.

• Abiaad, V. H. et al. (2019) describes the eligibility criteria associated with the current Department of Federal Benefits verification methods for potential automated eligibility. Table 1 outlines the potential

Federal data sources that can be integrated for automated verification certification for transit benefits targeting persons with disabilities, veterans, and low-income individuals.⁶

Eligibility Criteria	Current Verification Methods
Income level – Household income may not exceed twice the poverty level to receive benefit	 Automated matching with: Data available through the Social Security Administration (SSA) income verification portal uses Public Assistance Reporting Information System (PARIS) data, which includes Department of Defense and Office of Personnel Management income information for current/retired federal employees Data from other programs, for example, Medicaid, child support enforcement, workers compensation, or unemployment insurance Data from commercial sources, e.g., financial institutions' direct deposit data, credit reporting agencies' income information Use of complex scoring algorithms to screen for potential fraud Detailed post-payment audits
Household size/structure – Number of adults and children in the household; more members of the household equates to more benefits	 Automated matching with data from commercial sources, e.g., providers of data and analytics In some instances, interviews/home visits by a state or local social services case worker Detailed post-payment audits
Work status – Whether any adults in the household are actively searching for gainful employment, performing community or volunteer service activities, or attending an educational or training institution; at least one working age adult must qualify as "getting back to work" to receive benefits	 Automated matching with: National Directory of New Hires data Data available through the Department of Health and Human Services, Administration for Children and Families' portal for employment verification Data from commercial sources, e.g., providers of data and analytics including detailed post-payment audits
Residency – Whether the household occupies the residence as their main residence; beneficiaries must reside in the U.S. to receive benefits	 Automated matching with: State motor vehicles data Data from commercial sources, e.g., providers of data and analytics, utility companies, credit card companies, employers including detailed post-payment audits

Table 1. Federal Data Sources that can be Integrated for Automated Verification

Eligibility Criteria	Current Verification Methods	
Health status (specifically related to disability) – Whether any children or adults of working age are disabled; at least one child or adult of working age must be at least partially disabled to receive benefits	 Automated matching with: Federal or state workers compensation data of Medicare, Medicaid data SSA Disability Insurance program and Supplemental Security Income program data including: Supporting documents from physicians and medical tests or documented exposure to certain specified hazards during military service Detailed post-payment audits 	
Receipt of comparable assistance – Whether the household receives similar assistance from another federal or state government program or private source (e.g., insurance)	 Automated matching with PARIS data, such as matches with information on recipients of numerous kinds of public assistance including: Manual check against selected state data, when available Detailed post-payment audits 	

2.2 Standards

While not yet identified as a standard, California Integrated Travel Project (Cal-ITP) Benefits may become an open-source standard as it expands beyond identifying individuals as seniors. See Section 3.2 for a description of Cal-ITP Benefits.

2.3 Specifications7

The two most applicable eligibility specifications are extensions of the General Transit Feed Specification (GTFS) – GTFS-Eligibilities and GTFS-Capabilities and are under development. These GTFS extensions will describe the parameters associated with determining access to transit services, particularly specialized transportation services. GTFS-eligibilities will describe an individual's characteristics (e.g., age, disability status, residence, employment, or registration in a program) that may affect their access to public transportation services. GTFS-capabilities will describe a transportation provider's ability to meet a rider's needs (e.g., whether the provider offers services such as door-to-door service, door-through-door service, stretcher service, mobility device accommodation, and bariatric capability).

These GTFS extensions are summarized as follows:

- GTFS-Eligibilities contains parameters that help to determine if a specific trip is eligible based on the rider's account information. The fields proposed to be included in this extension include the following:
 - Common attributes associated with user accounts such as age, gender, company affiliation, trip purposes, and assistance levels provided.
 - Customizable authentications of locally-defined attributes and statuses. Custom eligibilities are provided, as well as a way to understand how the custom eligibility can be authenticated.

- GTFS-Capabilities describes the additional capabilities that a transportation service may be able to provide to serve persons with disabilities and those who have mobility devices. Fields in this extension include the following:
 - Information about services available to a rider from a person, such as a driver or other agencyprovided human resource.
 - Vehicle information, described by the (further extended) <u>GTFS-VehicleCategories</u> specification.
 See also the <u>GTFS-seats</u> draft extension.
 - A focus on describing vehicle amenities related to mobility devices, and how boarding with those devices affects capacity for other riders and devices.

3 Current Projects and Systems that use Automated Eligibility Processes

3.1 Denver RTD/DHS

As mentioned earlier, Denver RTD determines eligibility for transit benefits through PEAK, where Coloradans screen and apply for assistance online. On a nightly basis, there is a data transfer between PEAK and Salesforce resulting in a file that contains the names and other attributes of individuals who are deemed eligible for transit benefits. Beside RTD LiVE, some of the assistance programs for which Coloradans can apply through PEAK are as follows⁸:

- Low Income Energy Assistance Program (LEAP)
- Colorado Child Care Assistance Program (CCCAP)
- Supplemental Nutrition Assistance Program (SNAP)
- Health First Colorado (Colorado Medicaid)

3.2 Cal-ITP

Cal-ITP Benefits⁹ is an application that enables an automated eligibility verification and enrollment process to identify individuals who are eligible for transit benefits/discounts and moves those benefits onto customers' existing contactless bank (credit/debit) cards. The California Department of Technology (CDT), in partnership with Cal-ITP, developed a process to use specific attributes of the driver's license database from the Department of Motor Vehicles (DMV) to determine an individual's eligibility for travel benefits/discounts with the exception of identifying who is eligible for a senior discount. Cal-ITP wants to expand this process beyond California where Login.gov is used instead of the DMV to identify individuals who are eligible for all types of travel discounts, including senior discounts. In the future and already being piloted, the State of California and Login.gov, which have an agreement in place, will pass a tokenized version of identify that a transit agency wishes to use for eligibility. The use of Login.gov means that once you are identified as being eligible, your eligibility could be portable anywhere else in the United States.

In September 2022, Cal-ITP Benefits was introduced as a new web application that allows transit riders to securely verify their eligibility online for discounted fares and link that discount benefit to a contactless debit or credit card to automatically receive reduced fares whenever they pay using the card. Initially, Cal-ITP Benefits are available for people 65 and older who ride Monterey-Salinas Transit (MST) buses. Older adults (65+) who are able to electronically verify their identity are able to access MST's reduced fares (half-price Senior Fare) without needing to fill out and submit paperwork. There are plans to expand this eligibility service to other California transit agencies and possibly those outside of California. Further expansion is being considered to other traveler groups (e.g., youth, lower-income riders, veterans, persons with disabilities) for accessing free or reduced fares without having to prove eligibility to each agency. An application is available on the Internet in multiple languages and uses Login.gov as a secure sign-in service to verify a transit customer's age for a "senior fare" discount. This online process removes the need for a manual and in-person process to apply for the discount-fare benefit—saving time, money, and paper.¹⁰

The application is accessible to the public at <u>benefits.calitp.org</u>.

The Cal-ITP Eligibility Application Programming Interface (API) "encapsulates the data exchange needed to verify one or more eligibility criteria for transit benefits. The API is designed for privacy and security of user information: the API communicates with signed and encrypted JavaScript Object Notation (JSON) Web Tokens containing only the most necessary of user data for the purpose of eligibility verification.¹¹

3.3 Other Projects/Systems

3.3.1 Public Transit Automated Reimbursement (PTAR) System in NY State

PTAR is a system used by medical practitioner staff to request reimbursement when they distribute [Metropolitan Transportation Authority (MTA)] Metrocards to Medicaid enrollees, and to reimburse those Medicaid enrollees attending New York City-based methadone maintenance treatment programs who receive "carfare" rather than a Metrocard from the facility. Potential users must submit a completed application to obtain a user profile. The application is available by emailing the Medicaid Transportation Unit at medtrans@health.ny.gov. Once the application is accepted and processed, a PTAR Administrator ID and a temporary password will be sent via email to the requesting PTAR Facility Administrator listed on the application.¹²

3.3.2 MTM Transit's Mobility Direct

MTM Transit, a transit and paratransit scheduling and management software vendor, has a product that automates the eligibility certification process.¹³ This product, called Mobility Direct, is a platform that manages ADA eligibility certifications. This web-based program, which is customizable to an agency's needs in terms of data collection as well as producing reports and dashboards, allows individuals to apply online for certification as well as create an account, schedule an appointment for an eligibility interview and request a ride to the appointment. The application evaluator is able to manage the tasks and monitor the stage in which the application resides. Once the process is complete, the evaluator can generate an eligibility determination letter outlining the applicant's eligibility status and expiration date. ¹⁴

3.3.3 Eligibility for Non-Emergency Ambulance Transportation Services

In Kentucky (KY), non-emergency medical transportation (NEMT) services are available through the Human Service Transportation Delivery (HSTD) program, which is a regional brokerage system. Depending on an individual's medical needs, transportation is provided by taxi, van, bus, or public transit. Eligibility is verified either by contacting an automated voice response system or using the web-based KYHealth-Net System.¹⁵ KYHealth Net is a web-based system that gives Medicaid providers instant access to pertinent member information, claims inquiries, prior authorization inquiries, remittance advice viewer and claims submission.¹⁶

3.3.4 King County Metro Subsidized Annual Pass

Residents of Washington State's King, Pierce, and Snohomish Counties who are at or below 80% of the Federal poverty level and are enrolled in one of six state benefit programs can obtain a subsidized annual pass valid for travel on King County Metro and Sound Transit services.¹⁷ Individuals can apply in person, by phone, or online using the Reduced Fare Portal (<u>https://reducedfare.kingcounty.gov/en-US/annual-pass/</u>).

3.3.5 Spare Labs

Spare Labs is a vendor of scheduling and dispatching software for advanced reservation paratransit and mobility on demand services. One of its modules, called Spare Engage, provides an automated eligibility management system.¹⁸ It is a cloud-based tool that monitors the application process from an individual applying through eligibility determination. The customer's identity resides in the cloud, meaning that the customer's information does not live on an application, but it actually is on their profile and goes with them no matter how they interact with services. Further, eligibility can be shared across agencies as all of the information regarding a rider's eligibility is centrally located.

4 Stakeholders

The following stakeholder groups can play a critical role in addressing standards and specifications gaps in the eligibility area.

4.1 Advocacy Groups

The following end-use stakeholder groups would be most helpful in addressing the gaps in eligibility standards and specifications.

- American Council of the Blind (ACB)
- American Foundation for the Blind (AFB)
- Easter Seals Project ACTION
- Hearing Loss Association of America (HLAA)
- National Association of the Deaf (NAD)
- National Council on Aging (NCOA)
- National Council on Independent Living (NCIL)
- National Federation of the Blind (NFB)
- Paralyzed Veterans of America
- The Arc (national community-based organization advocating for and with people with intellectual and developmental disabilities)
- United Cerebral Palsy Associations
- United Spinal Association

4.2 Transportation Organizations and Trade Associations

- American Association of Retired Persons (AARP)
- American Association of State Highway and Transportation Officials (AASHTO)
- American Public Transportation Association (APTA)
- Association of Commuter Transportation (ACT)
- Community Transportation Association of America (CTAA)
- Disability Rights Education & Defense Fund (DREDF)
- National Aging and Disability Transportation Center (NADTC)
- National Association of Area Agencies on Aging (n4a)
- National Association of City Transportation Officials (NACTO)
- National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR)
- National Rural Transit Assistance Program (RTAP)
- North American Bikeshare Association (NABSA)
- Partners for Livable Communities
- Rehabilitation Engineering and Assistive Technology Society of North America (RESNA)
- Rehabilitation Engineering Research Center on Accessible Public Transportation (RERCAPT)
- Secure Technology Alliance (STA) Transportation Group
- Shared-Use Mobility Center (SUMC)
- Transportation Research Board (TRB)
- U.S. Access Board

- World Wide Web Consortium (W3C)
- 4.3 Community, Consortium, Nonprofit, and Trade Associations
- California Integrated Travel Project (Cal-ITP)
- ITS America / Mobility on Demand (MOD) Committee
- Mobility as a Service (MaaS) Alliance
- Mobility Data Collaborative (SAE Industry Technologies Consortia)

4.4 Standards Organizations

- International SDOs:
 - o ISO TC 204
 - European Committee for Standardisation (CEN)
 - o European Committee for Electrotechnical Standardisation (CENELEC)
 - SAE International
- National SDOs:
 - Institute of Transportation Engineers (ITE)
 - National Electrical Manufacturers Association (NEMA)
 - o Rehabilitation Engineering and Assistive Technology Society of North America (RESNA)
- Consensus-based Community-Based Development Organizations:
 - MobilityData (nonprofit that facilitates development and stakeholder engagement on several mobility data standards)
 - Open Mobility Foundation

4.5 USDOT Programs

- Coordinating Council on Access and Mobility (CCAM)
- Federal Transit Administration (FTA), Office of Civil Rights and Office of Research, Demonstration, and Innovation
- U.S. Access Board (www.access.board.gov)

4.6 Commercial Product Developers/Vendors

- MTM Transit
- Spare Labs
- Other selected scheduling and dispatching software vendors (a lengthy list of these vendors can be found in Section 6)

5 Issues and Standards Gaps

The key issue with automated eligibility determination is that there is a wide variety of eligibility types within the mobility area. For example, determining eligibility for an Americans with Disabilities Act (ADA) paratransit service is much different than determining the eligibility for a senior discount on a fixed-route transit service. Further, determining ADA eligibility, for example, can involve a doctor's assessment or examination, meaning that the whole eligibility process cannot be fully automated. Finally, there are no standardized eligibility processes because of the wide variety of mobility services that require eligibility.

Another issue is with related specifications development being led by member-based organizations such as MobilityData that may not incorporate non-members in their processes to develop and screen specifications. Fortunately, in this case "a membership to MobilityData is not a mandate to vote for specifications work"¹⁹ but that may not be the case with other organizations.

Another issue is specifically with GTFS-Eligibilities and GTFS-Capabilities defined earlier. According to Oregon DOT, the information to be addressed by these two GTFS extensions is currently available in analog or one-off digital formats only. The absence of a standard specification creates the following challenges:

- Discovering services is labor-intensive, often with the burden falling on riders themselves to figure out what exists, whether they qualify for a specific type of transportation, and whether a provider can meet their service needs;
- It is difficult for transit agencies to communicate to the public about their services, especially specialized services; and
- It adds barriers to planners, policymakers, and researchers understanding how eligibility factors and agencies' ability to provide specialized services affect different populations' mobility.²⁰

An advisory group made up of experts in the fields of human services transportation, disability advocacy, public transit, data standards development, and transit-related software development was established to provide input and guidance to the development of these GTFS extensions. Once complete, the draft extensions will be made available for continued refinement and ultimately adoption by implementers and ongoing oversight by the appropriate standards body.

The scope of these extensions is limited to the discovery stage of the trip lifecycle, despite early discussions within this advisory group of possibly including registration/booking stages. Another key decision was emphasizing the ease of creating a data feed over completeness and exactness of data. For example, the group determined that it was more important for an early version of GTFS-capabilities to provide service-level information about capabilities, rather than requiring service providers to supply detailed information about every vehicle in their fleet. Further, the advisory group chose to emphasize flexibility in describing eligibility categories rather than imposition of definitions. The resulting proposal for GTFS-eligibilities uses Universal Resource Names (URNs) as a way of developing unique identifiers for eligibility categories.

Several next steps and opportunities were identified by this group:

- Supporting cross-institutional conversations to develop agreement on common goals and processes;
- Engaging with riders during the development of applications that use the proposed standards;
- Inclusive governance for the specifications;
- Engaging people and agencies beyond the United States to identify sustained funding for data production and consumption;
- Developing and supporting URNs as a concept that is new to the transit world;
- Developing the ability to track real-time information about seating area configuration changes through GTFS-capabilities; and
- Supporting multiple languages under all scenarios.²¹

The effort to extend the GTFS is a continuation of Oregon DOT's ongoing work to support the accessibility and usefulness of transit services through open data and address equity goals.

6 Conclusions

Eligibility for mobility services varies widely and is defined differently for different services. For example, eligibility for ADA paratransit services requires a specific process that is governed by the ADA. Even eligibility for paratransit / on-demand service varies by public transportation provider. Some services have eligibility standards that strictly follow ADA requirements, while other agencies add specific senior status to the ADA requirements and expand the potential eligible criteria. Another example is eligibility for reduced fare services on public transit – in this case, it varies by the public transit agency that is offering the service. Yet another example is providing access to priority parking spaces to only those who are eligible based on their disability.

Because of the wide variety of eligibility processes that cover different mobility services, it will be very challenging to address the gaps that exist in eligibility standards and specifications. There is no "one size fits all" standard or specification that will cover all of the eligibility use cases. For this reason, it is suggested that the work being conducted by Oregon DOT on GTFS-Eligibilities and GTFS-Capabilities be supported by USDOT so that, at least, these specifications are developed for mobility services that are well established and understood. Beyond these specifications, other eligibility use cases can be considered for further standards / specifications development in the future.

7 List of Scheduling and Dispatching Software Vendors

- AlphaRoute
- Cambridge Systematics (software is Ride Pilot)
- Clever Devices (scheduling software is MAIOR)
- CTS Software (Tripmaster)
- DDS Wireless (Stratagen software)
- DemandTrans
- Downtowner
- Ecolane
- Enghouse
- Engraph Software (ParaPlan software)
- Full Path (RideSheet software)
- GIRO
- Innovations in Transportation (INIT)
- IT Curves
- Kevadiya
- Kinetik
- Liftango
- MediTrans
- MJM (EzTransport[®])
- Mobility Route
- Moovit
- MTM
- NEMT Cloud Dispatch
- NEMT Platform
- NEMT Pulse
- Passio Technologies
- QRyde (by HBSS)
- RideCo
- Route Genie
- Routing Box
- SAFR Care
- Schedule Viewer
- Shah Software
- Spare Labs
- Spedsta

- Syncromatics
- TaxiMobility
- The Routing Company
- TransitExec
- Transloc
- Trapeze / TripSpark
- TSS Paratransit
- Urban Mobility
- Via

8 Acronyms

ADA	Americans with Disabilities Act
API	Application programming interface
Cal-ITP	California Integrated Travel Project
CCCAP	Colorado Child Care Assistance Program
CDT	California Department of Technology
DMV	Department of Motor Vehicles
GTFS	General Transit Feed Specification
HSTD	Human Service Transportation Delivery
ITS	Intelligent Transportation Systems
JSON	JavaScript Object Notation
LEAP	Low Income Energy Assistance Program
MAT	Multimodal and Accessible Travel
MATSA	Multimodal and Accessible Travel Standards Assessment (project)
MST	Monterey-Salinas Transit
MTA	Metropolitan Transportation Authority
NEMT	Non-emergency medical transportation
PARIS	Public Assistance Reporting Information System
PEAK	Program Eligibility and Application Kit
PROW	Public Right of Way
PTAR	Public Transit Automated Reimbursement
RTD	Regional Transportation District
SNAP	Supplemental Nutrition Assistance Program
SSA	Social Security Administration
URN	Universal Resource Name
USDOT	United States Department of Transportation
VRU	Vulnerable Road User

9 References / Endnotes

- ² PEAK is the online service for all Coloradans to screen and apply for medical, food and cash assistance programs.
- ³ https://peak--coloradopeak.force.com/peak/s/benefit-information/benefitdetail?language=en_US&category=public-transit-assistance-programs
- ⁴ https://www.rtd-denver.com/LiVE
- ⁵ https://www.rtd-denver.com/news-stop/news/rtds-live-program-provides-income-based-fares-those-need-during-difficult-times
- ⁶ Abiaad, V. H., Bradshaw, J. R., Carlson, E. C., & Milbourn III, G. C. (2019). *MITRE Challenge-Strengthening Eligibility Verification for Federal Benefit Programs*. MITRE CORP MCLEAN VA. https://www.mitre.org/sites/default/files/2021-11/prs-19-02007-5-mitre-challenge-strengthening-eligibility-verification-for-federal-benefit-programs.pdf
- ⁷ https://gtfs.org/extensions/
- ⁸ <u>https://oit.colorado.gov/colorado-benefits-management-system</u>
- ⁹ https://docs.calitp.org/benefits/
- "State of California launches Cal-ITP Benefits, the first online tool for transit riders to verify their identity and benefit eligibility and link fare discounts to debit and credit cards," Press Release, September 21, 2022, https://www.calitp.org/assets/Cal-ITP.Benefits.PressRelease.220921.pdf
- ¹¹ https://docs.calitp.org/eligibility-api/
- ¹² <u>https://www.emedny.org/selfhelp/PTAR/PTAR_FAQS.pdf</u>
- ¹³ <u>https://mtmtransit.com/mobility-direct/</u>
- ¹⁴ https://www.youtube.com/watch?v=obPM3GQWHVA&t=180s
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- ²⁰ https://github.com/ODOT-PTS/gtfs-eligibilities/commit/f3f42a1d4e3a2e5e78e095aa8f3a99bbec989cf5
- ²¹ Ibid

¹ Darling, W., Carpenter, E., Johnson-Praino, T., Brakewood, C., & Voulgaris, C. T. (2021). Comparison of reduced-fare programs for low-income transit riders. *Transportation Research Record*, *2675*(7), 335-349.