



Connected Colorado Phase II - Digital Mobility Hub Survey Report Executive Summary

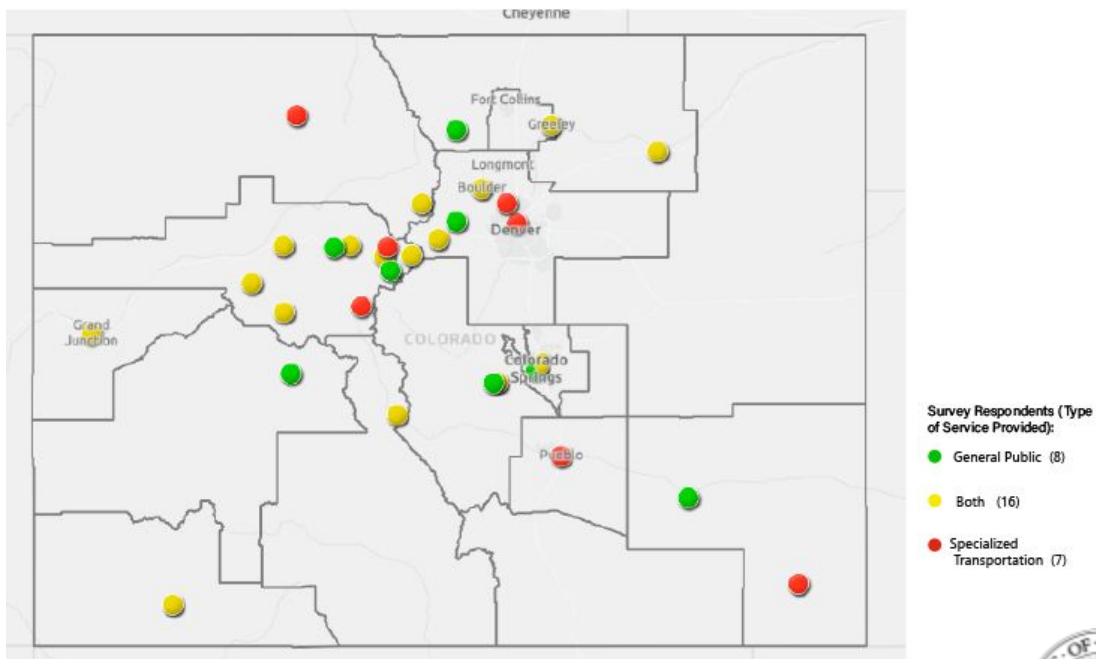
The CDOT Connected Colorado team conducted a survey from November 30 to December 11, 2020 of transit providers across the state focused on aspects of the Phase II - Digital Mobility Hub. The feedback collected in the survey will help guide the CDOT project team determine the scope and next steps of the Connected Colorado effort.

The following sections provide an overview and summary of data collected in the survey. The report includes information about respondents, reactions to an initial digital mobility hub, trip planning, coordinated dispatch, and universal ticketing.

Survey Respondent Information

A total of 39 agencies responded to the survey. The locations of the responding transit agencies are depicted in Figure 1 below. Please note, the map depicts the transit service type (general service, specialized transport, or both) for the responding agencies.

Figure 1: Map of Transit Service Providers





Service Provided

A total of 39 agencies responded offering varying types of service. Table 1 features the type of service by the responding agencies. A total of eight agencies provide general service to the public (with route schedules that any member of the public can board the vehicle). A total of seven agencies provide specialized transportation services (may include on-demand response or other specialized services), while 16 of the responding agencies provide both general and specialized transit services.

Table 1: Type of Service Provided

Type of Service	Count	Percentage
General Public	8	26%
Specialized Transportation Services	7	23%
Both	16	52%
Total Responses	31	100%*

*Percentages have been rounded.

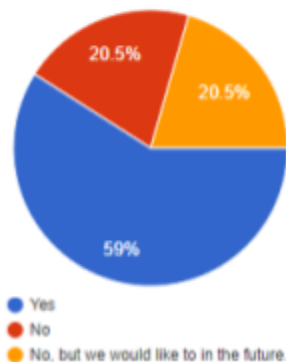
A total of seven of the agencies serve populations with a significant minority population percentage, while 23 agencies do not serve a significant minority percentage, and seven agencies had no information available regarding minority populations served.

Service Providers' Feedback on Connected Colorado Project

The survey asked a number of questions regarding the transit agencies feedback and thoughts regarding the proposed approach of the Connected Colorado project.

When asked the level of understanding of the overall project, there was mixed response. Nine agencies noted they understood a “good amount about the project,” 12 know a “fair” amount, while the remaining 17 agencies noted they knew “little” about the project.

Figure 2:
 Software Platform Utilization



The majority of the 26 respondents to this question stated they would like to remain informed about the Connected Colorado effort via email, then through webinars, and the Connected Colorado Advisory Committee.

As noted in Figure 2, a total of 22 agencies responded they currently do utilize software platform improvements for trip planning. Of these respondents, many noted they use software for trip planning, while others use software for data collection in conjunction with trip planning to better improve dispatching and scheduling. A total of 15 agencies





noted they do not currently utilize software platform improvements for trip planning, but would be interested in doing so in the future.

When asked about agencies' preference to purchase and operate their own software versus a statewide organization purchasing and developing a software that they are then a party to, the answers were mixed. A total of 13 respondents do not know yet, 10 would like to purchase and operate their own software (some of which already exist), and nine would like for a statewide body to purchase and operate the software. Seven respondents had other suggestions including using existing transit platforms (like Google Maps or TransitApp), or they noted they, "have free or minimal service and do not view software necessary."

Connected Colorado will not be a mandatory system and local agencies will have the option to opt into the effort if they choose to do so. Over half of the respondents stated that they would elect to opt in at this point. The remaining respondents stated they need additional information to make a decision on if they would opt in or not. One agency would choose to opt out if Connected Colorado is a centralized solution with global parameters, configuration, and control. This agency wants to avoid a loosely coordinated, central system not managed by local staff that could impact local performance and outcomes.

The survey collected information on potential barriers to opting into an effort such as Connected Colorado; responses are shown in Table 2. The transit agency respondents noted potential barriers related to finance, operations and maintenance, and technology that would need to be overcome or addressed. The respondents expressed fewer concerns about local politics, legal barriers, and service agency buy-in.

Table 2: Barriers to Opting In

Barrier Type	Count	Percentage
Legal	0	0%
Financial	7	18%
Political	1	3%
Operational	15	40%
Technological	12	32%
Other	3	8%
Total Responses	38	100%*

*Percentages have been rounded.

Connected Colorado intends to address gaps for transit services across the state. The respondents brought up gaps in their service areas mostly focused on regional connectivity (connection from one transit service to the next within the regional area). Respondents were less concerned with gaps in real-time information and trip planning.





Many service providers expressed interest in continuation of coordination with CASTA, conducting surveys and interviews, FAQ, and webinars from the Connected Colorado team, as well as individual outreach and training as the project moves forward.

Initial Digital Mobility Hub

CDOT is proposing the Connected Colorado Digital Mobility Hub development to begin with the transit services along the I-70 Mountain Corridor and the Bustang West Line. CDOT proposes to initiate the software development with one to three agencies and then incorporate lessons learned before working with other agencies. All 36 respondents of this question noted CDOT is on the right track with the initial phase.

Of the 39 respondents, 24 currently provide service on or along the I-70 Mountain Corridor. Of these, four expressed interest in serving as an initial prototype agency, while 12 agencies would need additional information to make a decision, and four agencies would not like to serve at this time, as exhibited in Table 3. It was observed that the four agencies that are not interested in serving as a prototype at this time are: not on the I-70 Corridor, have already made substantial investment similar to Connected Colorado, or see a barrier with efficiency and cost.

Table 3: Interest in Serving as a Prototype

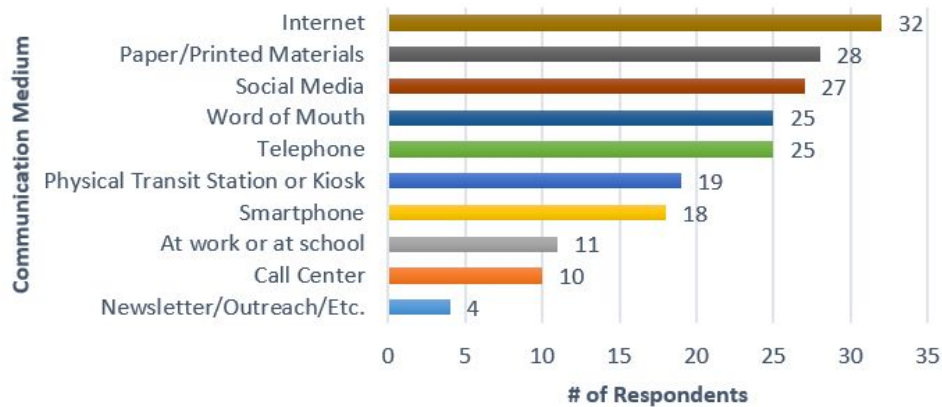
Level of Interest	Count	Percentage
Interested	4	20%
Need More Information	12	60%
Not Interested	4	20%
Total Responses	20	100%





Trip Planning

How Agencies Inform Riders of Transit Services



Agencies inform riders of the various transit services, routes, stops and schedules in a variety of ways. The greatest number of responding agencies (84.2%) utilize the Internet as an essential communication medium, followed by paper/printed materials and social media. Word of mouth and telephone were equally selected as prominent communication mediums, followed by physical transit station, smartphone, and work/school. Ten agencies provide transit information from a call center, while four responded stating they have a specific newsletter or other niche forms of outreach to inform their customers.

Space Reservations

Of the 39 responding agencies, only 10.5% (or 4 respondents) stated they allow for seat reservations. With respect to wheelchair space reservation, 31% (or 12 respondents) of agencies offer this service. No agencies currently offer bike rack space reservations.

Regional Trip Planning

Agencies that cater to specific populations (e.g. seniors) do not tend to plan trips outside of the bounds of their communities, apart from specific trips to Denver. This factors into a lot of the special requests received by agencies, especially in rural regions of Colorado. According to respondents, it is common for people to use a combination of Google transit services as well as trip planning via each agency's





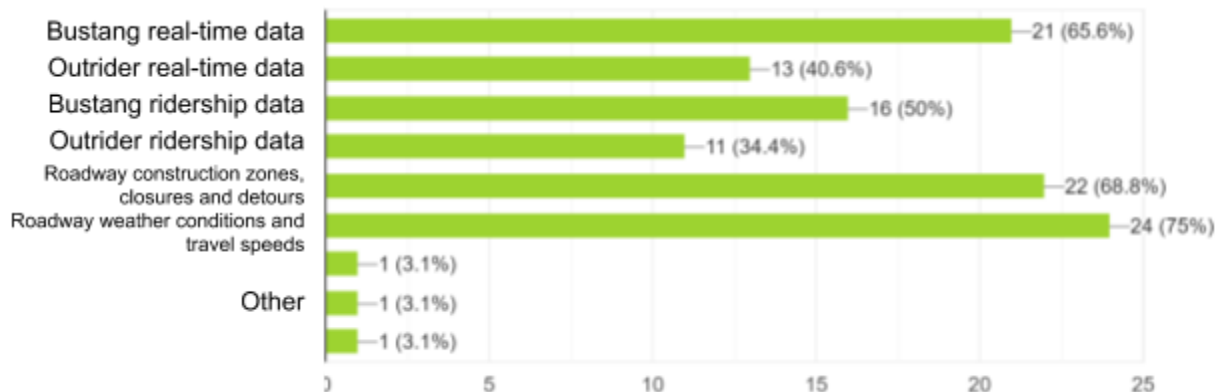
website in the intermountain region/ski towns. In relation to CDOT, most transit riders (if available) will utilize Bustang and Bustang Outrider services to travel between major cities. It also appears that many agencies do not provide trips or make arrangements for people to take trips outside of their boundaries, so this would be a major consideration for agencies involved with Connected Colorado.

Overall, intermountain communities, especially those close to ski resorts have the facilities and capacity to make arrangements for people to take trips outside of their immediate boundaries. On the other hand, rural agencies and agencies with specialized provisions tend to not make any specific arrangements, but would if they had the capacity to do so.

Agencies are struggling with coordination and communication, especially digitally as far as real-time information dissemination is concerned. Gaps in service areas and lack of integration would likely be the greatest needs that Connected Colorado can tangibly address. In addition, interagency planning is integral to the service needs of quite a few agencies.

CDOT Operational Data Needs

Service agencies were asked about what type of CDOT operational data would be of value to their organizations.



The option receiving the highest response was, “*Roadway weather conditions and travel speeds*” with 24 responses. Followed by, “*Roadway construction zone, closures and detours*” with 22 responses. An important fact to consider is the availability of this information via CDOT’s [CoTrip website](#). A key takeaway from these responses is the need to increase ease of access to said data points by leveraging the already existing COtrip website. Another option would be to push these key operational





pieces of data to the various dispatching centers of the local transit agencies. Then the dispatch can inform their respective drivers.

Access to the “Bustang real-time data” was similarly rated high by 21 transit agencies. Additional Bustang and Bustang Outrider responses were selected but with not as high responses. These data points are still important as secondary needs.

Digital Mobility Hub - Trip Planning Needs

Transit service providers were asked if they were part of a statewide Digital Mobility Hub that featured trip planning, what function would they like the platform to assist their agency with. This question was open ended, the responses were categorized based on the themes shown in Table 4. The highest responses received were for “uncertain and/or not applicable” which could indicate a need for further explanation of either the function capabilities or the Connected Colorado project as a whole. Nevertheless, there was general consensus on the importance of *Linked Trip Planning*, *Coordination + Integration*, and *General Trip Planning* with each receiving 4 total responses from transit agencies, *Real-time Information* was secondary with 3 responses. An important note to consider is the interconnectedness of the functions and how the presence of all four of these functions will help ensure the Digital Mobility Hub’s success.

Table 4: Digital Mobility Hub - Trip Planning Needs

Category	Count	Percentage
Linked Trip Planning	4	15%
Coordination + Integration	4	15%
General Trip Planning	4	15%
Real-time Information	3	12%
Uncertain/Not Applicable	7	27%
Other	4	15%
Total Responses	26	100%

*Percentages have been rounded.





Coordinated Dispatch

CDOT's goal for coordinated dispatch is to allow for two-way communication between connected transit agencies for scheduled and real-time arrival and departure times.

Only 32% of respondents are currently utilizing any form of automated dispatch for riders. A variety of applications were mentioned, including Nextbus, Ride Free Lafayette, RideSystems, Trapeze-TransitMaster, InfoWeb, Google (Fixed), Trapeze-PASS (Para), and RouteMatch. RouteMatch was the application with highest reported usage, with three different transit agencies reporting use of this platform.

Similarly, a majority of transit agencies (81%) reported no current use of automated dispatch for drivers. As for the agencies that do use dispatch for drivers, four use software (like ParaPlan, Ride Free Lafayette, Trapeze-TransitMaster), three use traditional dispatch (VOIP/Radio and AVL/CAD location, texting, and calling), and two will be transitioning to automated dispatch software.

Respondents reported they would like the digital mobility hub to assist with coordinated dispatch through real-time communication, on-demand abilities, and prioritizing local dispatch. However, many responses to this question said they needed more information on coordinated dispatch.

If part of a statewide Digital Mobility Hub, agencies reported they would be almost equally interested in pushing information to other agencies about real-time transit routes, pushing information to riders who have booked a transit ride that day, and pulling information from other transit agencies to make decisions that may impact service or operation.

Almost half of the transit service agencies would not like to develop a set of coordinated trip types, dispatching rules/procedures with other agencies statewide. Of those who were interested in Coordinated Dispatch, 10 would like it for their entire transit system, 6 would like it for a handful of bus routes, and 5 would like it for a single bus route.





Universal Ticketing

A variety of methods are used to collect and manage fares across the state. As exhibited in Table 5, a lot of agencies are fare-free. For those that do collect fares, a combination of fareboxes and cell-phone apps are the most popular. Other methods of fare collection are online payment and/or cell-phone applications, ticket vending machines (TVMs), suggested donations, pass cards, or billing Medicaid.

Of the 36 responses, 22 do not use reduced or discount fare pricing for particular rider groups, while 14 do. This difference may also be influenced by the number of transit agencies that are fare-free. Of those transit agencies that do offer discounts, seniors, children, and riders who are disabled are the most common groups. Multi-ticket packs or punch cards and employer pass programs are also utilized.

In regard to current needs and/or concerns in relation to universal ticketing/ inter-agency ticketing, most responses focused around cost and financial coordination, training and administration, and compatibility with existing systems.

Other Questions

Data Management and Sharing

When asked about concerns around data management and data sharing between transit agencies, the bulk of responses were around consistency and accuracy of the data. Additional concerns noted by the transit agencies were staff capacity and training, as well as security and privacy (HIPAA {Health Insurance Portability and Accountability Act}/client confidentiality).

Table 5: Fare Collection Techniques

Category	Votes	Percentage
Fare Free	13	27%
Fareboxes/Collected by driver/Cash	13	27%
Online Payment and/or cell-phone app (Token Transit, GenFare Masabi)	10	20%
Ticket Vending Machine (TVM)	6	12%
Suggested Donations	3	6%
Pass Cards	2	4%
Other	2	4%
Total Responses	49	100%

*Percentages have been rounded.

