Creating Transit Links in Canton, MA

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While the Greater Boston area enjoys the immense benefit of an extensive commuter rail system, the incorporation of alternate modes of transit is a very different task for the region’s peripheral towns than it is for the central cities of Boston, Cambridge and Somerville. First and last mile connections with the commuter rail are a challenge for the less dense Boston suburbs. The Town of Canton is one of these suburbs.

With two commuter rail stations at Canton Junction and Canton Center, there is no doubt that the town is well served by commuter transit. Canton surpasses neighboring towns in commuter ridership, with 14.2% of residents using public transit to get to work. However, connecting to that transit and to destinations within the town is difficult to do without a car. Over half of Canton residents have two or more cars available to them, while only 2.4% of residents have no vehicle available, according to 2010-2014 census estimates. To determine how Canton can reduce this heavy dependence on personal vehicles, this report analyzes three options for the city to improve first and last mile connectivity to the commuter rail stations: an on-demand shuttle, a local bus, and a public-private partnership with a ride-hailing app like Uber or Lyft, concluding that the public-private partnership would be the best option for a pilot program for Canton.
Maximizing Canton’s Potential for Suburban Sustainability

The vast majority of Canton’s housing stock consists of single family homes (68%) (“Canton Housing Action Plan” 2015, 9) and the town has roughly 1,163 residents per square mile (using the town borders as the baseline), compared to Boston’s roughly 13,812 people per square mile (Figure 3). Despite this low density, which is largely due to the fact that 2,700 acres, or 20% of the town is devoted to parkland and open space (Figure 4), Canton has the potential to become more connected by transit. The town is home to several large employers, and is seeing an increasing amount of multifamily development, creating concentrated demand for new transit services. Implementing new transit programs could help Canton take full advantage of its commuter transit assets by extending transit service into the town itself, and not letting it end at the two commuter rail stations.

With new connections to the commuter rail, a Canton resident could get from their home to their job in downtown Boston without getting into their car. Eliminating this need for a car would help reduce vehicle miles traveled (VMT) and help the town both reduce carbon emissions and become more accessible for lower income populations that can’t afford to own a car. A solution often referenced to help the carbon emission problem, which notably does not impact the equity issue, is the use of more energy efficient cars. In Compactness Versus Sprawl, A Review of Recent Evidence from the United States, Ewing and Hamidi find that while better technology mitigates energy and climate concerns, “growth of VMT associated with urban development can undo much of the good brought about by technology.”(Ewing and Hamidi 2015, 421). As towns like Canton grow in population and personal cars remain the most practical and convenient option for travel, using fuel efficient cars will not be enough to significantly reduce the environmental impact of car use. New transit systems that can operate in a less dense environment are needed to provide alternatives to personal cars and help mitigate the environmental effects of suburban development.
In addition to reducing carbon emissions, a successful system of transit links would also help Canton achieve a balance between the “ecocity” and the “ecoburb” that Crewe and Forsyth discuss in *Compactness and Connection to Environmental Design*. While “ecocities” focus on density and infrastructure, “ecoburbs” bring nature into development for a more value-based, connective approach at a more local scale (Crewe and Forsyth 2011). Boson falls closer to the “ecocity” definition with its density and multi-modal transit infrastructure, while Canton is more of an “ecoburb” with its extensive conservation land. While combining the two forms of development has inherent tensions, improving Canton’s transit connection to the commuter rail would be a step towards achieving this balance as it would extend the “ecocity’s” infrastructure to operate in the “ecoburb’s” urban fabric. If successful, a Canton resident could maintain their connection to nature that is a key asset of the “ecoburb,” while having direct, car-free access to the “ecocity,” balancing energy reduction and ecology.

This report analyzes the currently available transit services in Canton, the parts of town that they serve and areas that are currently not served that would greatly benefit from transit connections. Strategies that other neighboring towns and US cities have implemented to address the first and last mile connectivity issue like on-demand shuttles and public-private partnerships with ride-hailing apps are discussed. A public-private partnership strategy to for Canton is proposed. The goal of this paper is to propose a model for Canton that implements suburban sustainability through creatively expanded transit access.
FIGURE 4
Canton’s Open Space
Source: MassGIS

FIGURE 5
Reservoir Pond
Source: www.redfin.com
CANTON DEMOGRAPHICS

Canton is located 15 miles south of Boston on the Stoughton Line of the MBTA commuter rail system. The area of the town is 19.58 square miles (metrosouthchamber.com). Canton is part of the Three Rivers Interlocal Council sub-region of Metropolitan Area Planning Council (MAPC). It is categorized as a maturing suburb with limited vacant land that is developable.

Population Characteristics

The population of Canton is 21,561 according to 2010 census figures, and its 2017 population estimate is 22,774 (metrosouthchamber.com). The average size of a Canton household is 2.54, and the median age is 42. Canton’s population is growing moderately and new housing is being built including multifamily, small scale development and larger scale development. Canton’s racial composition is 84.8% white, 6.3% African American, 2.8% Hispanic or Latino, 6.1% Asian. Canton's population is projected to increase by 1,412 (6.5% of 2010 statistics) over the next 20 years, with the largest increase in people age 65 and older, which is expected to grow by 66% or 2,381 (“Canton Housing Action Plan” 2015).

Income and Employers

Canton has an affluent population with a median income of $96,698. (metrosouthchamber.com). This number, however, does not reflect the fact that one in three Canton households is at or below the area median income (town.ma.canton.us). Despite its very high median income, Canton has a substantial lower income population.

The town is home to major employers like Computershare and Meditech. Reebok currently has its headquarters in Canton, but will be relocating to Boston’s Seaport district. No tenant is currently set to take the company’s place in the Canton offices.
Housing

Canton’s housing characteristics are well in line with a largely family-oriented suburban community. The majority of Canton’s housing stock is single family, 73.8% of Canton’s housing is owner-occupied, and 32% of households have children under 18 residing at home. Housing prices are fairly high, with a median home price at $486,623 (metrosouthchamber.com). Canton has the second highest number of total building permits from 2003 to 2013 in the MAPC subregion, and will see 600 new dwelling units developed over the next fifteen years (“Canton Housing Action Plan” 2015, 20).
TRANSPORTATION IN CANTON

Car Use

Canton residents are largely dependent on their personal vehicles for transportation, despite the presence of two commuter rail stations. As a suburban, low-density town, this is not surprising given the limited options available for most trips within the town and the surrounding area. Canton is served well by Route 128/I-93, I-95, and 24 (metrosouthchamber.com). Most of Canton’s residents (54%) have two vehicles available, and only 2.4% have no vehicle available, according to 2010-2014 census estimates. When looking at just commuting characteristics, Canton’s rate of carpool use and other modes of transit (walk, cycle, taxi, worked at home) is 4.9%, which is lower than the average of the surrounding seven towns (7.5%), and is the second lowest, above Randolph (“Town of Canton Transportation Memo” 2016).

Use of the Commuter Rail

While very few Canton residents use alternative modes of transit in their commutes, many of them do use the train. 14.2% of residents use public transportation to get to work, which is higher than the average of the surrounding seven towns (10.7%) (“Town of Canton Transportation Memo” 2016). In 2013, there were 1,008 daily boardings at Canton center and 1,113 daily boardings at Canton Junction (“MBTA Ridership and Service Statistics” 2014). While Canton residents are used to using public transportation, there is a clear gap in the town’s ability to provide more transit options for its residents to get to and from its train stations.

Canton city officials recognize the need to improve transportation in their town. The Canton Master Plan’s main transportation goal is as follows: “The town will work – both locally and regionally – toward improving traffic flow, including providing alternatives to automobile travel” (“Canton Master Plan” 2004). There are existing concerns about parking availability, and...
commitments to develop a new parking plan for more parking in the town center, as well as consider priority parking for Canton residents at train stations. Providing more alternatives to private vehicles could be an important part of the strategy to alleviate traffic congestion, both on the streets and at the commuter rail stations.

**Existing Transit Options**

While there is a clear need for more transit options for Canton residents, there are a few existing options in the town. Canton is served by the Route 716 bus, which operates from Cobbs Corner, through Canton and to Mattapan (Figure 14). Canton is also a part of the Neoponset Valley Transportation Management Association (NV TMA), which provides three shuttle services that run in Canton to and from employers to train stations (neoponsetvalleytma.org)

- The **Railink shuttle** connects the Computershare and Reebok campuses to the Route 128 commuter rail station, as well as Mattapan, Ashmont and Quincy Adams. The service had an average monthly ridership of about 1,142 between January and August 2016 (NV TMA 2016). It is not clear how many of these riders are Canton residents.

- The **Reebok Express Shuttle** connects Reebok employees directly to the Route 128 commuter rail station. The service had an average monthly ridership of about 430 between March and August 2016, and peaked in August (NV TMA 2016). With the move of the Reebok headquarters to Boston, this service is likely to no longer be available, at least until a new tenant moves into the Reebok site.

- The **University Avenue Shuttle** connects Eversource employees, tenants of 690 Canton Street, and tenants of 101 Station Drive to the Route 128 commuter rail station. It also provides a lunch shuttle to Shops at University Station.
The Council on Aging also operates an on-demand shuttle that goes to grocery stores, doctor appointments, some restaurants, and the Dollar Store. It has weekly scheduled routes available to elderly residents.

Conclusions about existing transit options

While some transit options exist in Canton, they are insufficient and do not provide a viable alternative to automobiles for most Canton residents. The main purpose of the Neoponset Valley Transit Management Association shuttles is to serve employees in the University Avenue office parks. All three shuttles serve the Route 128 station which is in Westwood, and only operate on the fringes of Canton. (see Figure 13) The Route 716 bus does run through town, but is limited to Washington Street, and does not pass most of the high density residential development and employers in the town (see Figure 16). Even for those who can use the bus, its ability to create a useful connection to the commuter rail is limited, as it only stops at Canton Center, where trains come less frequently. While Canton Junction is a walkable distance away from Canton Center, the area around Canton Junction is very car-oriented and is dangerous for pedestrians (see Figure 16). Canton lacks a service that is more dispersed throughout the town and that creates good connections to the commuter rail. Because of the limited reach of shuttle services and the bus system, most Canton residents are dependent on their cars, even though a relatively large portion of them take advantage of the commuter rail.

FIGURE 13
NV TMA Shuttle Service Area
Source: NV TMA
To reduce car dependence, Canton needs to expand its transit options. Because of the existing commuter rail stations, a new strategy should maximize on this asset and focus on creating public transit links for commuting trips to work or school. While it is not feasible to eliminate all car trips in a suburban setting, creating first and last mile connectivity for the 14% of residents who use the commuter rail would have a significant impact on VMT’s in Canton. Additionally, if taking the commuter rail became an easier option than commuting fully by car, more people who currently drive but could take the commuter rail may switch.

Reducing the need for a car in Canton is also an important step towards the perception of the town as a shared space, embodying the “just sustainabilities” discussed in *Trends and Directions in Environmental Justice*. Improving access to Canton’s commuter rail can open up the town’s assets to all of its residents, whether or not they can afford a personal vehicle. This would help Canton move towards “both understanding whole cities as shared spaces, and acting to share them fairly,” (Ageyman, Schlosberg, Craven, Matthews 2016, 333) allowing Canton to become more equitable and inclusive, and therefore more environmentally efficient.
NEW TRANSIT PROGRAM OBJECTIVES

Create a more even distribution of transit availability. Existing shuttles are for highly specific groups on the edge of the town. They strictly transport employees to the commuter rail and do not serve Canton residents using the Canton commuter rail stops. The 716 bus misses many clusters of higher density multifamily housing and employment (see Figure 17). There are many areas of concentrated need dispersed throughout the town that are not served by existing systems. A new service should be able to reach more parts of the town and be available to as many residents as possible.

Create reliable first and last mile connections to Canton’s commuter rail stations. The 716 bus only serves Canton Center, and Canton Junction is extremely inaccessible for pedestrians. More formal, safe and reliable alternatives to private cars are needed to transport riders to and from both of Canton’s commuter rail stations.

Meet the needs of Canton’s vulnerable populations. Canton residents who are not able to drive cars are left with limited options. The Council on Aging shuttle service is a good resource to help elderly residents run errands and get to doctor’s appointments, but given the projected growth in the population of residents above 65, this service may need to be expanded. Canton’s low income residents who cannot afford cars have even fewer options. A new transit program should be accessible to these populations.
FIGURE 17
Areas of Concentrated Need
Source: Census Data, real estate listings, Mass.gov, MassGIS Assessor’s Level 3 Data, Town of Canton Zoning and Building Permit data

Multifamily Developments
“Multifamily” Parcels
Zoned for Multifamily
Permitted Multifamily Developments
Major Employers
Schools
Public Housing Developments

1.5 miles
MODELS IN OTHER TOWNS

Surrounding towns that are very similar to Canton face similar transit challenges, and have come up with some solutions. The Town of Dedham operates a local bus system, and the Town of Bedford has implemented a pilot on-demand shuttle program.

Dedham on the Move

Dedham’s local bus service, Dedham on the Move, is operated by a private company, Transaction Corporate Shuttles, which is a women-owned business that works with non-profits, municipalities and companies. The service does a loop through the town, makes fifteen stops, and includes a Ride Systems App, which allows riders to track the shuttle. The Adult fare price is $1.50, and the senior, student and disabled fare price is $1.00. The route serves commercial centers like the Dedham Mall and Legacy Place, the Dedham Corporate Center commuter rail station, and goes through various residential areas (neoponsetvalleyma.org).

Bedford Dash

The Bedford Dash is Bedford’s on-demand transportation service. It operates in cooperation with Middlesex 3 Transportation Management Association. The service is part of a two year pilot program, and was funded by a federal grant of $47,000 through the Massachusetts Department of Transportation’s Community Transit Program. The goal of the program is to “increase the use of public transportation in the town.” (bedforddash.com) Dispatchers are available Monday through Friday, 8:30 am to 4:30 pm. Rides can be ordered online on the Bedford Dash website, or by calling. The service travels to Billerica, Burlington, Concord, and Lexington, but may vary based on availability. Fares are $2.00 each way in Bedford for ages 18 to 64, and $4.00 each way outside of Bedford. For youth under 18, seniors, Medicare card holders, and Veterans, the cost is $1.00 each way in Bedford and $2.00 each way outside of Bedford. There is also an option to buy a $24.00 fare card for $20.00 for more frequent riders. Children above the age of 12 can ride alone if the parents have filled out a permission form, provided on the website. Bedford Dash also operates a lunchtime shuttle that runs between two employment centers and three restaurant clusters. The lunch service runs on Fridays only for a $1.00 fare each way. There are shuttle trackers for both the on-demand Bedford DASH and the lunchtime shuttle through the Ridesystems app.
A third model that Canton could pursue is a public-private partnership with a ride-hailing app like Uber or Lyft, which enable users to request and pay for rides from their apps. This model is a way for Canton to use existing technology-enabled services to connect their residents to transit. This model would expand the reach of transit in Canton without investing in and operating a service like a local bus or on-demand shuttle. Cities in the United States have begun to explore the idea of incorporating ride-hailing apps into their systems to improve first and last mile connectivity for residents who do not live within walking distance of their systems. This could be an interesting model for Boston area towns like Canton that enjoy the benefit of commuter rail access, but do not have the local public transit infrastructure to connect their residents to these services.

Complementary for public transit

Given the nature of companies like Uber and Lyft as profit-maximizing private enterprises, it is reasonable to question whether a successful partnership between these companies and public transit agencies or municipalities is feasible. Recent reports have looked into the potential for collaboration between these companies and transit agencies, including a report by the American Public Transportation Association (APTA). The report seeks to identify the opportunities and challenges that technology-enabled services offer public transit and suggests “ways that public transit can learn from, build upon, and interface with these new modes.” (APTA 2016, 3) Using participants from Austin, Boston, Chicago, Los Angeles, San Francisco, Seattle, and Washington, DC, the report finds that shared modes of transit complement public transit and enhance urban mobility. Rather than replace public transit, as many have speculated they would, shared modes substitute for more private car trips than public transit. According to the report, people use ride-hailing modes to fill gaps in public transit where they occur, and public transit agencies largely view ridesharing as complementary. The report also found that the more people use shared modes of transit, the more likely they are to use public transit, own
fewer cars and spend less on public transit overall. The report recommends that transit agencies engage with these apps to maximize on their utility and ensure that their benefits are “widely and equitable shared.” (APTA 2016, 17)

While the findings of this report are from the context of urban transit systems in large, mostly dense cities, the findings indicate that these apps are useful for filling gaps in transit services, which is certainly what exists in Canton. Ride-hailing apps do not threaten to replace public transit, which is especially true in Canton since no significant transit connections to the commuter rail exist in Canton. Creating this connection with public transit could even be beneficial for companies like Uber. The Five-Thirty-Eight article *Public Transit Should be Uber’s New Best Friend* points out that Uber’s biggest untapped market is people who own their cars (fivethirtyeight.com), not people who take public transit. Since the combination of public transit and Ubbers can be more affordable than Uber alone, it is in Uber’s best interest to perfect the relationship between the two. While the article uses New York City as a case study, which is of course very different context than Canton, overall, it would benefit these companies to enter into these partnerships to actively help transit agencies expand their reach. The apps are unlikely to replace public transit, but the two can enhance each other.

Positive environmental impacts of ride-hailing apps

In addition to the ability of technology-enabled transit services like Uber to complement public transit, they can also reduce congestion and carbon dioxide emissions. A 2016 Arizona State University study found that the use of Uber has led to “a significant decrease in traffic congestion and carbon dioxide emission in the urban areas of the United States.” (seattlepi.com) Researchers link this outcome to the benefits of the sharing economy. Factors contributing to this outcome include a higher passenger count (1.1 for private cars vs 1.8 for Uber) and lower car ownership as people choose to use Uber. While Canton residents are not likely to get rid of their cars and shift to Uber for all of their trips, enabling this transition for commuting trips and reducing the passenger count should yield positive environmental impacts.

Precedents

A few cities have created these partnerships with ridesharing apps to improve the reach of their transit systems. Atlanta and Dallas have both streamlined the connection between public transit services and ridesourcing apps, and St. Petersburg has begun to actually subsidize rides. These cities are all characterized by a “combination of urban density and sparser peripheries,” (Spector 2016) which also characterizes Boston’s system if one includes the towns on the commuter line, like Canton, as a part of the broader regional transit system.

Dallas

The Dallas Area Rapid Transit (DART) rolled out its GoPass Mobile Ticketing Application in 2015, which allows users to click through Lyft, Uber or Zipcar when checking train schedules to find ways to get to the station. The app is not tied to any specific service, and lets the user choose. This service is a response to the lack of services connecting park-and-ride users to their suburban homes, which is similar to the challenge that faces Canton. Regarding the lack of public services to make these connections, DART spokeswoman told CityLab that if services like Uber and Lyft “can compete so effectively, maybe that’s an area that we don’t have to be in… I move people, they move people…but we don’t all have to go to the same place.” (citylab.com)
Atlanta
The Metropolitan Atlanta Rapid Transit Authority (MARTA) rolled out a similar program to the DART program in 2015. Unlike the DART program, MARTA has an exclusive partnership with Uber. The aim, however, is similarly to encourage riders to use Uber for first and last mile connectivity between transit nodes and their homes or work. MARTA CEO Keith Parker explained that “There are places that don’t make sense for us to add new bus or train service. This Uber partnership is to take care of that last mile of service.” (ajc.com)

St. Petersburg
The Pinellas Suncoast Transit Authority (PSTA) has a similar goal as the agencies in Atlanta and Dallas, but went further in its model by actually subsidizing Uber rides. The service subsidizes half of an Uber ride, up to $3.00 (citylab.com). The rides must be to or from a transit station. So that riders who don’t have smartphones are not excluded, the service also applies to rides with United Taxi. The program is targeted at both riders who don’t use transit because it is not convenient, and to riders who use transit but whose walks to their transit stops are unsafe or too long. While this program requires more investment than the others, the $40,000 price tag makes it a more efficient option than the poorly used neighborhood circulator bus that cost the agency $150,000 per year to operate.
Recommendations for partnership model

The cities discussed above provide models for a potential program in Canton. Additional recommendations for how a partnership could be structured include maintaining equity and accessibility as key goals, integrating fare payment systems, making use of pick-up and drop-off data.

**Maintain equity and accessibility as key goals.** The APTA report recommends that any partnership identify equity and accessibility as key goals. To this end, it would be best if a system actually subsidizes the rides, similar to the St. Petersburg model, at least for those who most need it. The rides can be priced so that they cost about what a ride on public transit would cost, and are therefore affordable to people of all incomes. A TransportEquity report suggests giving the subsidy to all recipients of public assistance income and/or individuals who don’t have access to a vehicle. People who are eligible for public transit assistance would also be eligible (TransportEquity 2016, 6).

A report from TransitCenter stresses that public agencies must ensure that their private partners are aligned with their public mission (TransitCenter 2016, 11). This report also points out the equity challenges related to accessibility to and awareness of mobile services. While partnerships with ride-hailing services could help transit reach places it is not currently reaching in Canton, it would not make this link for people who do not own smartphones or are not familiar with the technology, such as Canton’s low income or elderly residents.

Regarding the low income residents, a recent Pew Research Center study found that smartphones are already playing a central role in the lives of low income households (Smith 2015). This is because these households are dependent on the services that are accessible through smart phones such as healthcare services, job searching and personal banking. While this finding does not guarantee that every low income resident in Canton has or can afford a smartphone, it does indicate that a program that uses smartphones does not actively exclude the town’s low income population, as they are likely to benefit from many services available through smartphones. The APTA report also found that “increasing access to shared-use mobility has the potential to improve the transportation picture for people with the fewest options.” (APTA 2016, 20)

Elderly residents may need more outreach and education to fully be able to take advantage of the service, which would require dedicated funds and staff time. Public partners would also need to ensure that the cars used by elderly and disabled riders are accessible to these populations. However, with costs for community paratransit services rising from $14 to $33 per trip, faster than the cost of fixed route bus services, partnerships with ride-hailing services provide an opportunity to lower these costs and may be worth the logistical challenges. The APTA report found that these partnerships could be integrated into existing paratransit operations “as a part of the ongoing evolution of the sector” (APTA 2016, 25) by introducing interactive reservation and schedule adjustment systems, dispatch and routing of vehicles, route combination, app-based payment, and the ability to track vehicles.
Integrate fare payment systems. Another important element of a potential partnership is the integration of fare payment systems. This is important for streamlining the public transit service with the ride-hailing service and making it user-friendly. More residents are likely to use the service if paying for it is a natural extension of paying for the existing public transit service. There are, however, equity considerations in the integration of the fare payment that must be addressed. According to Title VI analyses, unbanked customers must have the ability to purchase fares with cash or other forms of payment that do not require a credit card or bank account (APTA 2016, 20). To address this, there could be multiple payment options, with at least one adhering to the Title VI requirement.

Make use of pick-up and drop-off data. To maximize the benefits of a public-private partnership with ride-hailing apps, the private service provider should agree to share some data on rides in the town. This data can help the public agency or municipality understand how riders are using the service and plan accordingly. The data would also be key in measuring the success of the program, and to see if an increase in rides is correlated with a decrease in parked cars at the stations. While many cities have been able to access data from services like Uber and Lyft, it would certainly require a fair amount of negotiation for Canton to do this.

FIGURE 25
MBTA Ticket App
Source: http://desalasworks.com
There are various pros and cons for each of the three potential models for improving first and last mile transit links. The public-private partnership model is more promising for Canton than the others for three key reasons:

**There is no efficient loop through Canton for a local bus.** To hit all of the important points on the transit access map in Figure 17, a bus would need to drive through a small part of Stoughton. There is no street linking Washington Street and Pleasant streets, the two streets that would most clearly benefit from local bus service, in the southern part of Canton. Running a bus through Stoughton for a significant portion of its loop without picking up or dropping off riders would be inefficient. The long ride could also deter potential users, further decreasing efficiency by running buses with few riders.

**An on-demand service is expensive and has limited operating capacity.** While there are many pros to an on-demand service like the Bedford DASH, that program is only possible with a $47,000 grant, and only runs between 8:30 am and 4:30 pm, and not on weekends. Meanwhile, the earliest train to Boston leaves Canton Junction at 5:45 am, and the last train from Boston arrives at Canton Junction at 12:28 am. The DASH can only run eight of the nineteen hours that the train is actually running on a weekday, less than half of the time. If the goal is to create first and last mile connections to the train, this model can only meet this goal for a very limited portion of the day. Additionally, it does not serve people coming back from an evening out in the city on the weeknights and weekends, who for the safety of themselves and others, should have more options than their personal car. To run an on-demand service enough to offer first and last mile connections for even a majority of the train’s operating time would likely be cost-prohibitive.

**Because there is no investment in infrastructure that may not be used, the public-private partnership is the best for a pilot program.** The public-private partnership model would demand administrative costs in line with the other program options. However, unlike the local bus, the model does not pay for trips that do not have riders. For subsidized rides, the town would only spend money on the rides themselves when they are used, as opposed to the local bus model, in which the money is spent for the rides if the bus is full or not. The town can then protect itself from spending too much on a program that isn’t used. There are, of course, significant start-up and administrative costs to the program that are fixed, but the cost of subsidizing rides only grows as riders eligible for the subsidy use the program.
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<th>PROS</th>
<th>CONS</th>
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<tr>
<td>**Public-Private</td>
<td>- Don’t need to pay for services that are not used</td>
<td>- Difficult to align social mission with company</td>
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<td>Partnership</td>
<td>- Flexible schedule</td>
<td>- Equity issues with access to technology</td>
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<td></td>
<td>- Broader service reach</td>
<td>- Difficult to ensure accessibility for elderly and disabled, potential issues with background checks and liability</td>
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<td>- Can use data to plan future routes</td>
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<td>- If successful, could enter into partnerships with other cities</td>
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<td>- Good first step for car-centered population</td>
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<td><strong>Local Bus</strong></td>
<td>- Direct control over service prices</td>
<td>- Difficult to determine route</td>
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<td></td>
<td>- Efficient if can fill shuttles</td>
<td>- Not efficient if cannot fill shuttles</td>
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<td></td>
<td>- Possibility to connect to regional network</td>
<td>- Expensive to implement</td>
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<td></td>
<td>- Can more easily accommodate elderly and disabled population</td>
<td>- Limited Hours</td>
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<td>- Less dependent on technology</td>
<td>- Need to internally manage</td>
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<tr>
<td><strong>On-Demand Shuttle</strong></td>
<td>- Works similar to ride-hailing models, but publicly controlled</td>
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Program Structure

A public-private partnership between the Town of Canton and ride-sourcing app should have the following characteristics:

1. Partnership with a specific service (i.e. Uber or Lyft)

2. Streamline the ride-hailing app with the MBTA app so that riders can go directly from their commuter rail ride screen to the app and order a car

3. Streamline the online payment system so that the cost for the ride is automatically deducted from the card connected to the MBTA app.

   Require that ride-haling service allows riders to pay with cash upon request

4. Default ride type is the pool option (Uber Pool or Lyft Line). Rider may choose the private car option, but the subsidy would not apply. This is to maximize each trip to serves as many people as possible, minimizing VMT’s.

5. Eligible riders are subsidized at the the following amount:

   The difference between the cost of the ride and $1.50 (the $1.50 would be paid by the user)*

6. Subsidy applies to all rides from a transit station to somewhere in Canton

7. Rides at any time are eligible for the subsidy

8. Subsidy eligibility is determined by whether or not the resident is receiving income assistance and/or is living in Section 8 or public housing. The town conducts a process to reach out to eligible populations, and register residents and their phones

9. Conduct outreach to elderly populations through the Council on Aging and work with the Council on Aging on ways to use the partnership to improve existing paratransit services

Note: Bridj could have been a potential partner with a different service model from Uber or Lyft, however Bridj recently was sold and is no longer in business.

*$1.50 is a suggested amount to be adjusted based on funding availability

FIGURE 26 (left)
Canton Center Station
Source:chrapartments.com

FIGURE 27 (right)
Source: citylab.com
A public-private partnership with a ride-hailing app, if properly designed and implemented with the above recommendations, could help improve public transit in Canton by creating a more even distribution of transit availability, creating reliable connections to Canton’s commuter rail stations, and meeting the needs of Canton’s vulnerable populations. This public-private partnership could meet the two goals of equity and energy reduction by reducing dependence on personal vehicles through providing more public transit options, and expanding service to a broader group of people.

The strength of this project proposal is, however, linked to its feasibility. There are several barriers to the successful implementation of this partnership. First, it will likely be difficult for Canton alone to develop a partnership with a big corporation like Uber or Lyft that is fair and benefits the town. As a solution, the town could look to its neighboring towns and approach the companies as a region, however this would introduce new complexities into an agreement. A second challenge will be incentivizing Canton residents to change the way they are used to commuting. Even if the program presents a cheaper and more convenient option for getting to the train than driving, it may take more for residents to switch from what is familiar. To address this, the town can use a promotional strategy like offering the first three rides for free. Finally, a program like this could be expensive. Even with the limited population that is eligible for the subsidy, paying around $3.00 per ride (a rough estimate) adds up quickly. If one hundred people use the subsidy twice a day, three times a week, the subsidy portion alone would cost roughly $93,000 in a year. However, working with MassDOT to charge for parking at Canton Junction could be a way to both help pay for the program, internalize the externalities of driving, and disincentivize driving.

How well the program performs in terms of reducing carbon dioxide emissions would also depend on whether or not the Ubers or Lyfts will be coming from far away to transport residents short distances. This could be an area of study during the pilot period.

Areas of future study for a program like this include how it will be affected by the rise of autonomous vehicles. The Litman and Burwell article, *Autonomous Vehicle Implementation Predictions*, points out that some claim that the rise in self-driving vehicles will result in more private vehicle sharing (Litman and Burwell 2017, 5). If this is the case, people who do not drive enough to own a personal vehicle could have an easier and more comfortable alternative to personal vehicles than Ubers or Lyfts. Additionally, once the Ubers or Lyfts themselves are self-driving, this could introduce complications for the disabled and elderly riders who need assistance.

Overall, a public-private partnership is a promising model for a pilot program to create first and last mile transit links in Canton.
REFERENCES


Smead, Laura. Laura Smead to Blue Ribbon Traffic Committee, Canton, MA, August 18, 2016.


