UNDERSTANDING CHARLES STREET

Surveys and studies completed to date

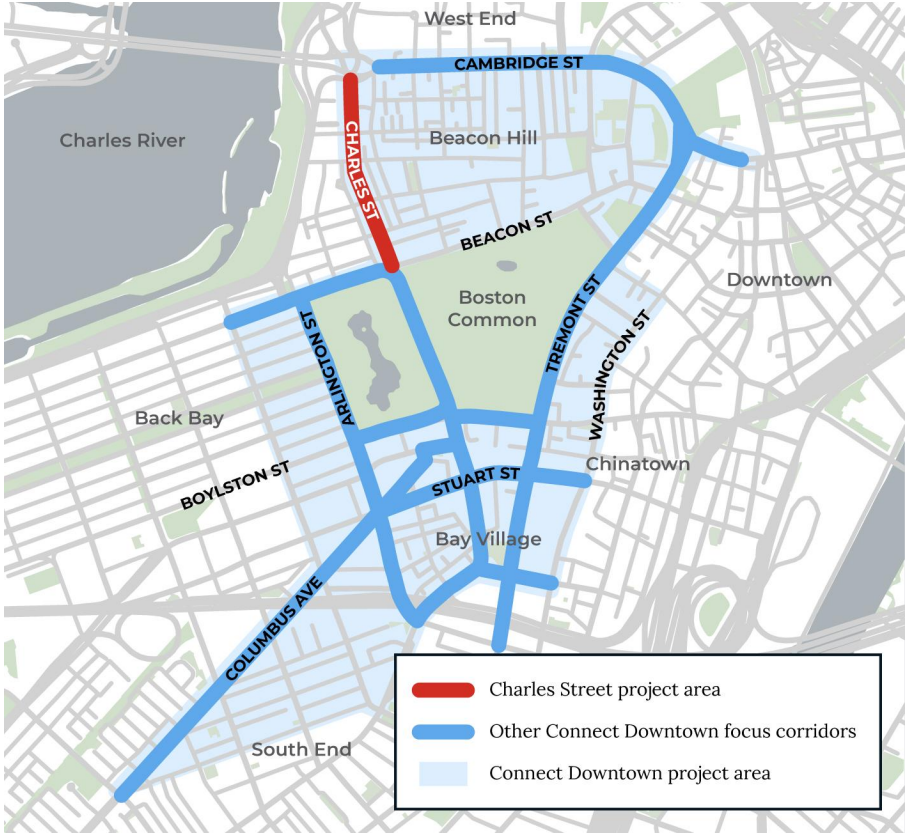
February 2023

Connect Downtown: Charles Street

Connect Downtown is a multi-phase project spanning several years.

We launched Connect Downtown in the fall of 2019 with Charles Street as one of the focus corridors.

We will make design changes on Charles Street.



Why make changes to Charles Street?

- Charles Street is an important destination for neighbors and tourists alike.
- People walking far outnumber the people traveling in a vehicle, but are afforded the least amount of space.
- Charles Street is a critical missing link in our regional bicycle network.

What we hope to accomplish

- Provide more space for people walking,
- Serve the operational needs of small businesses, and
- Create a legible link in the bike network

Our work on Charles Street so far

We began working on Charles Street in 2019. Our work included:

- Community walks in fall 2019
- Parking occupancy and turnover study
- Road user volumes and motor vehicle speeds data collection

In 2022, we re-launched work on Charles Street. This included the following activities:

- Business walk with City leadership
- Double parking and loading study
- Business surveys

Why did we do this work?

- The Beacon Hill community asked us to talk directly with each business.
- Conducting a robust data collection and analysis effort helps us understand Charles Street and what changes might work.

What's in this document

- Volume and speed data - 2019-2022
- Parking inventory and utilization study - *November* 2019
- Double parking and loading study - *Summer* 2022
- Business survey - *Summer* 2022

What's next for this project

- The work summarized in this document is informing potential changes to Charles Street.
- Conceptual plans will be developed and shared widely for feedback.
- We will host in-person and virtual opportunities to discuss the concepts.

Volume and Speed Data

2019 - 2022

What we've learned

- People walking were the majority of users on Charles Street, yet are allocated the least amount of space.
- People on bikes comprised about 10% - 15% of all daily traffic on Charles Street during warmer months. There was some seasonal variation.
- Daily motor vehicle volumes on Charles Street were around 4,000 - 5,000. This was a low volume for an arterial street.
- The average vehicle speed was 20 mph. 87% of drivers were going slower than 25 mph.

What types of data we use

Turning Movement Counts (TMC)

- Counts a specific intersection. We often get a series of TMCs at nearby intersections on the same dates.
- Includes pedestrians, bicyclists, and motor vehicles grouped into subcategories like cars, buses, trucks, etc.
- Records the number of road users at an intersection. Users are grouped by:
  - Which direction they are entering the intersection from
  - Whether they are going through or making a specific turning movement
  - For pedestrians, which crosswalk they are using
  - Volume data are tabulated into 15-minute intervals
- TMCs are typically taken for 12-hour periods from 7 a.m - 7 p.m. over several days. Data are typically collected on mid-week days.
- We use TMC data to time traffic signals and to understand pedestrian volumes.

Automated Traffic Recordings (ATR)

- Counts a location along a corridor between intersections (i.e., the number of users crossing an imaginary line).
- Includes bicyclists and motor vehicles grouped into subcategories like cars, buses, trucks, etc. Pedestrian data can also be included on request but is not typical.
- Activities recorded:
  - The total number of each specific road user category by 15-minute interval
  - The number of motor vehicles traveling in specific speed categories by 15-minute interval
- We can get only volume data, only speed data, or both. It depends on the location and concern we are investigating.
- ATRs are typically taken for 24-hour periods over one or more days. Data are typically collected on mid-week days.
- We use these data to understand street use, speeding, and capacity.

How we collect our data

- Always collected by a third party vendor.
- TMC and ATR *volume* data are collected using low-resolution video cameras. Depending on the vendor, a machine-learning script categorizes and counts road users OR the task is performed by a person watching the video.
- ATR *speed* data are collected using radar or tubes across the roadway.
- TMC data capture activity in the roadway and crosswalks at an intersection. ATR data capture the roadway only. On occasion we get ATR data for sidewalks or shared use paths. The ATR data in this report only include the roadway.
- Data are relatively accurate for motor vehicles. People walking and biking may be slightly undercounted at higher volume locations.
- We schedule data collection during “typical” traffic times. We tend to avoid Mondays, Fridays, Saturdays, and Sundays. Occasionally we do get weekend data. We check school calendars and avoid major holidays.

A traffic counter installed on Centre Street in Jamaica Plain.

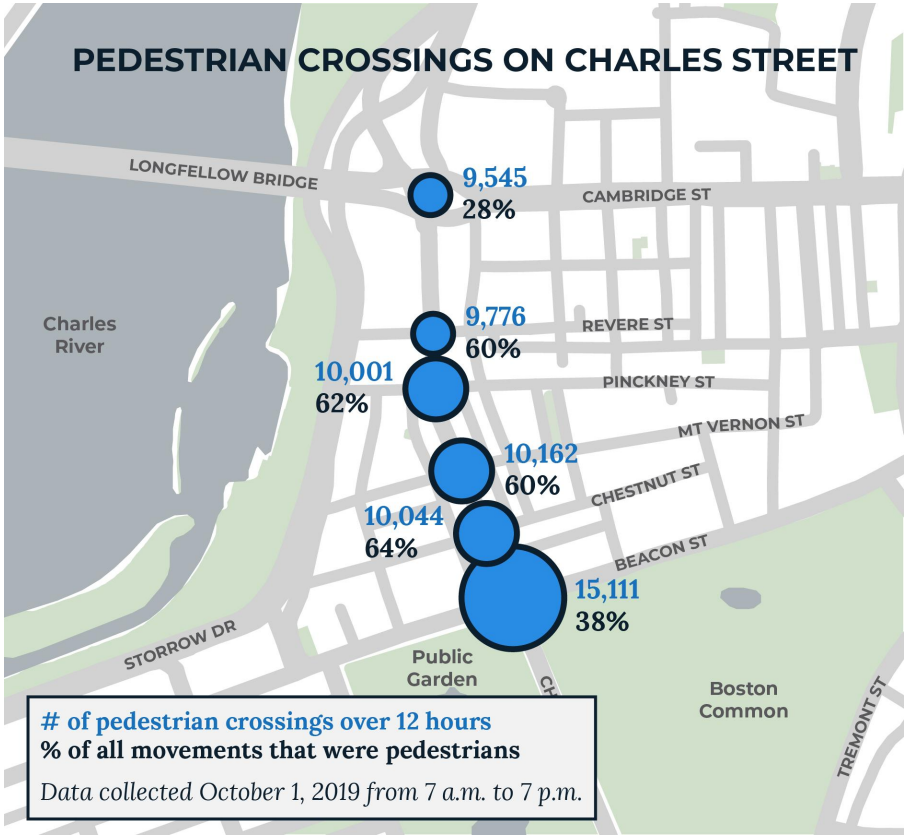
Where our Charles Street data come from

1. BTD annual bike count program
   - ATR volume counts that included bicyclists and motor vehicles
   - Locations throughout the city including at Charles Street north of Revere Street
   - Data collected over two consecutive mid-week days
   - In 2019, we counted on Charles Street in September. From 2020 onward, we counted quarterly in March, June, September, and December.
   - Charles Street is among a group of ~20 locations we count quarterly.

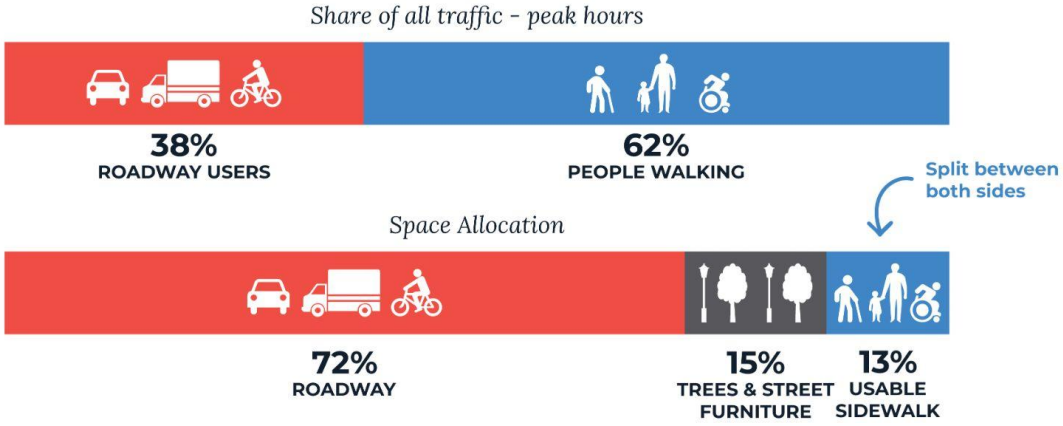
2. **Counts ordered specifically for Connect Downtown.**
   - We started collecting count data for Connect Downtown when we launched the project in 2019
   - Since then, we have ordered periodic counts for specific phases of the project and to update our data following the onset of the COVID-19 pandemic
   - Data included TMC, ATR speed, and ATR volume data
   - Various locations including on Charles Street and nearby

Most people on Charles Street are walking

- We collected TMCs at signalized intersections on Charles Street on October 1, 2019 from 7 a.m. to 7 p.m.
- Most of the intersections saw around 10,000 pedestrian crossings over 12 hours—an average of around 830 per hour.
- Pedestrians crossing were about 60% of all intersection movements at Revere Street, Pinckney Street, Mt. Vernon Street, and Chestnut Street.



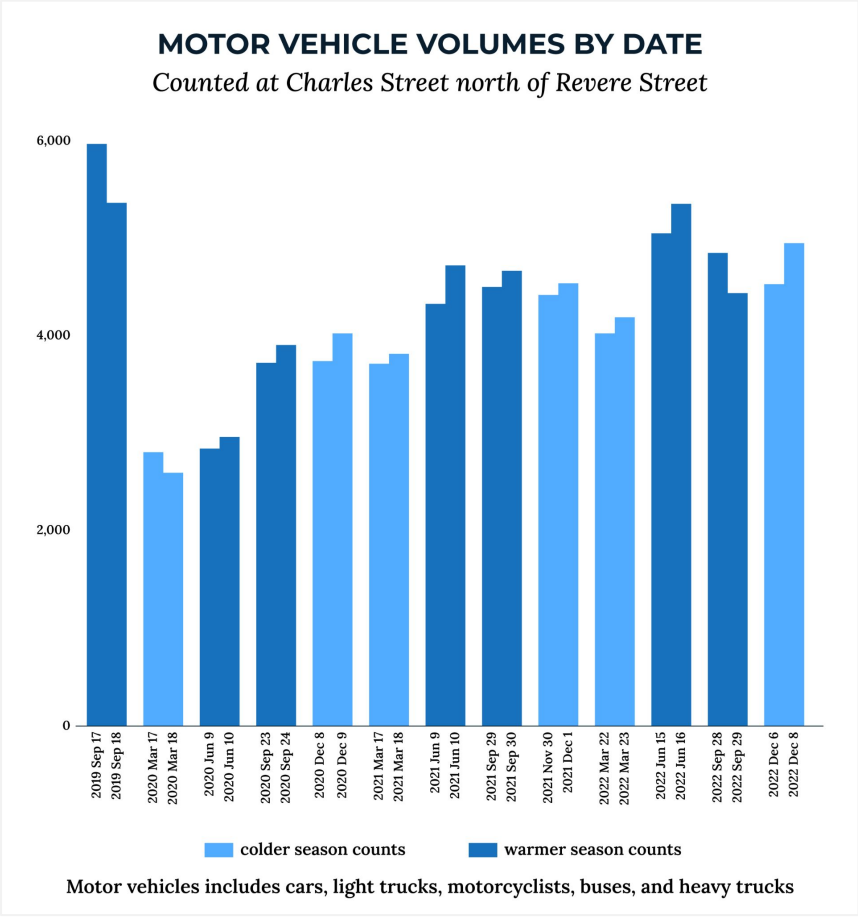
Yet very little space is dedicated to pedestrians



Based on data collected at Charles Street and Revere Street on October 1 - 2, 2019 from 8 - 10 a.m. and 5 - 7 p.m.

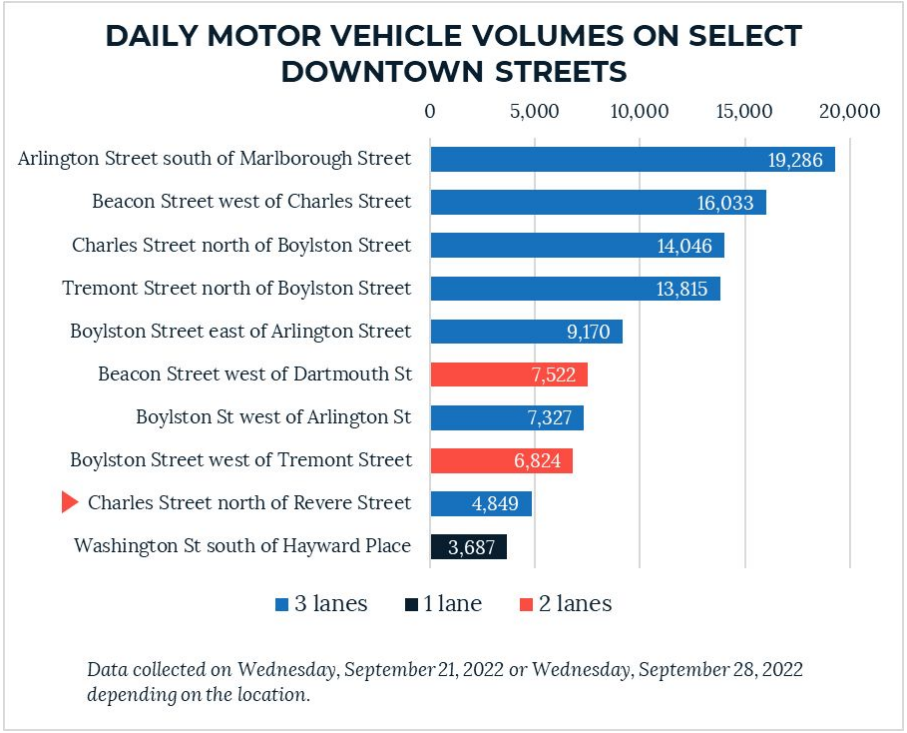
Charles Street doesn't have that much traffic

- We looked at daily motor vehicle volumes over the past four years.
- The total number of vehicles on Charles Street is between 4,000 - 5,000 on any given weekday.
- That is a low volume for an arterial street.
- Traffic volumes dropped in early 2020 and have remained steady since fall 2021.



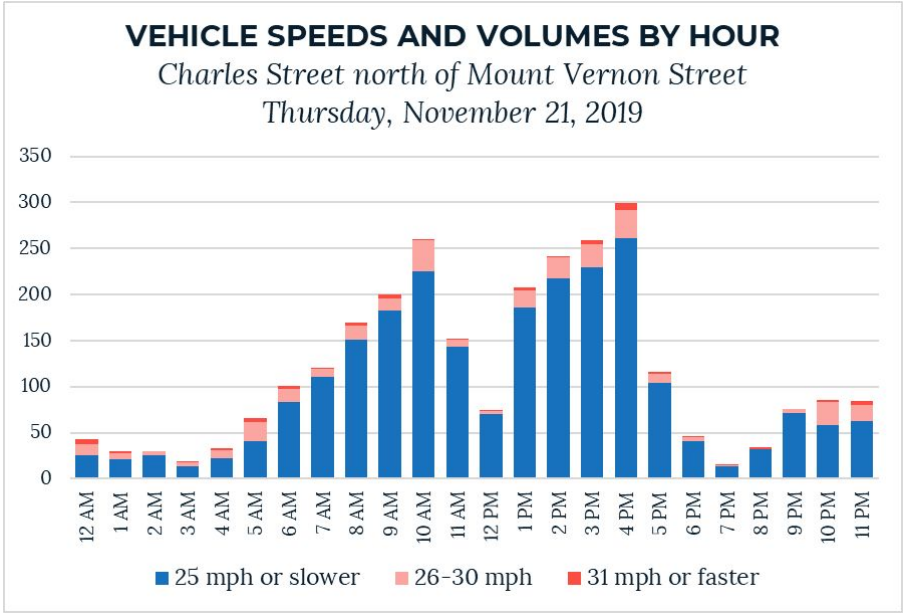
Especially compared to nearby arterial streets

- We compared daily traffic volumes for Charles Street north of Revere Street and a sample of other one-way arterial streets in the Connect Downtown study area.
- With three lanes, Charles Street carried less traffic than some two-lane streets.
- Data were collected in late September 2022.



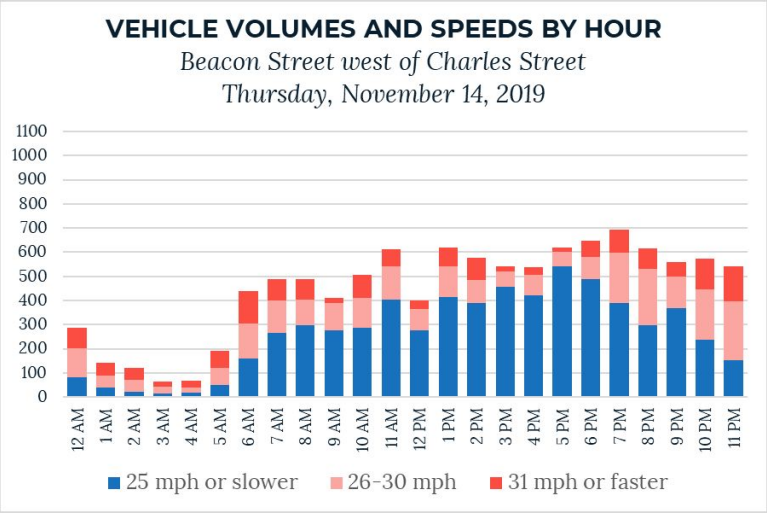
Drivers mostly travel at safe speeds

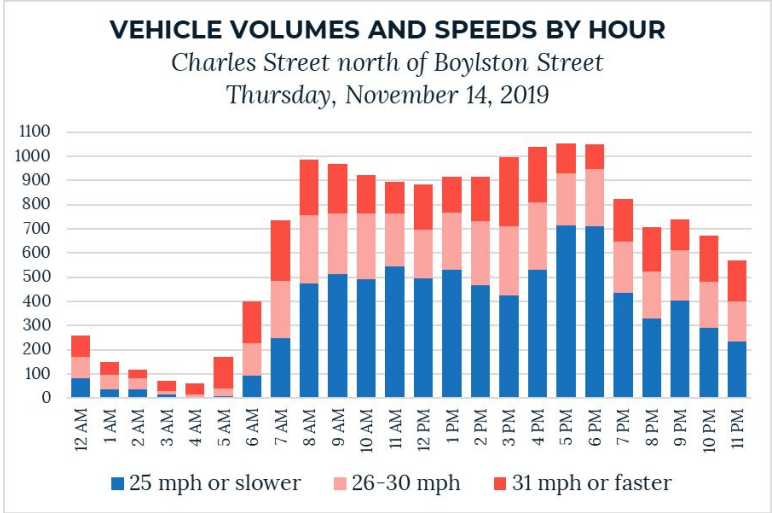
- We collected vehicle speed data in November 2019 on Charles Street north of Mount Vernon Street.
- 87% of vehicles were going at or slower than the 25 mph speed limit over the course of the day.
- The lower speeds on the Beacon Hill section of Charles Street are likely caused by:
  - Drivers pulling in and out of parking spaces
  - Double parking in outer lanes



Vehicle speeds on nearby streets

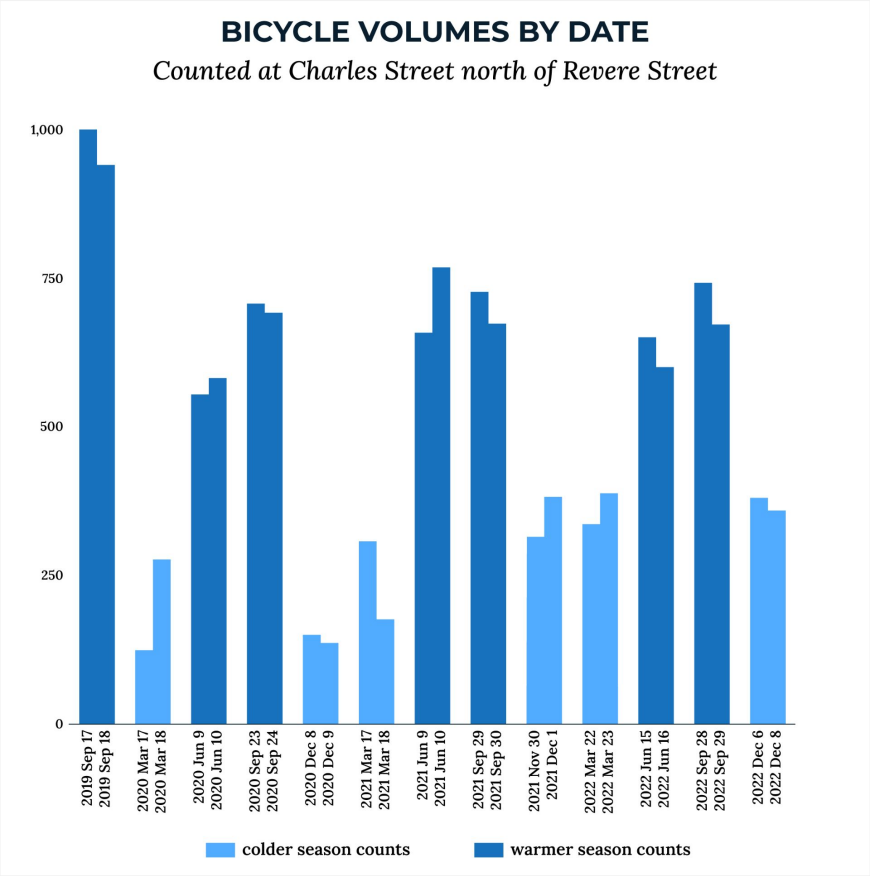
- For comparison, other locations nearby saw much higher rates of speeding.
  - On Charles Street just north of Boylston Street, 50% of drivers were exceeding the speed limit of 25 mph.
  - On Beacon Street west of Charles Street, 41% of drivers were going faster than 25 mph.





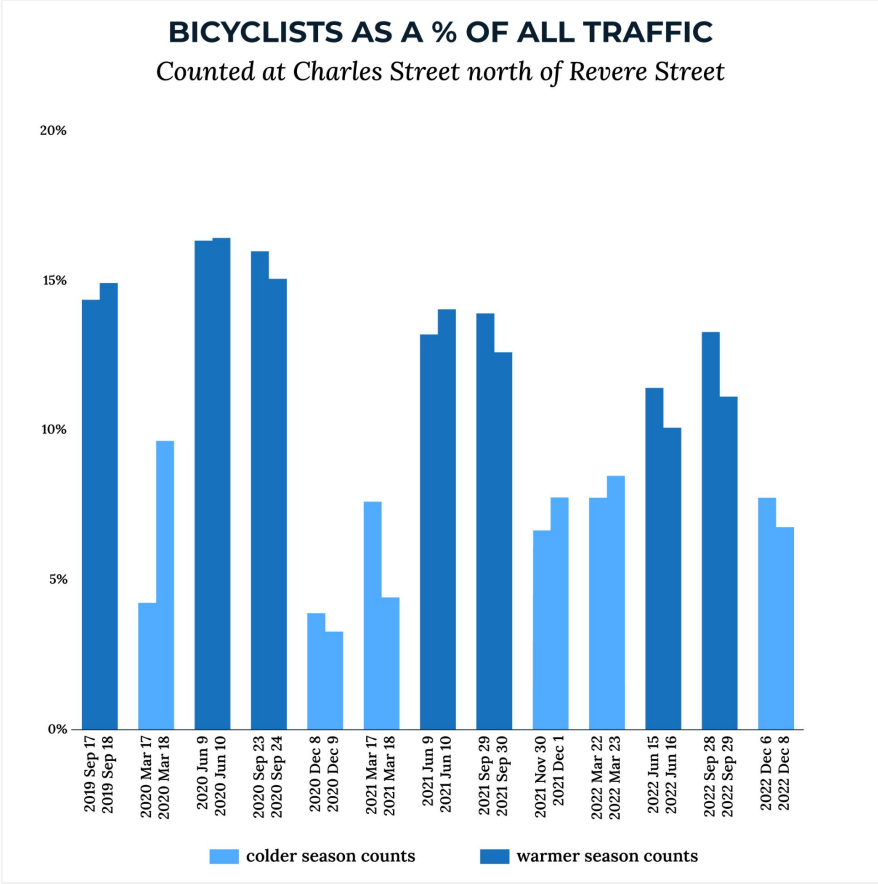
Hundreds of people bike on Charles every day

- In warmer months, we counted around 600 to 750 people biking on Charles Street on any given weekday.
- The total number of people riding bikes has stayed relatively stable over the course of our project.
- Bicycle volumes can vary from one day to the next, especially during colder months. We've found that precipitation may have a bigger impact on cycling rates than temperature alone.
- These data include people biking in both directions.



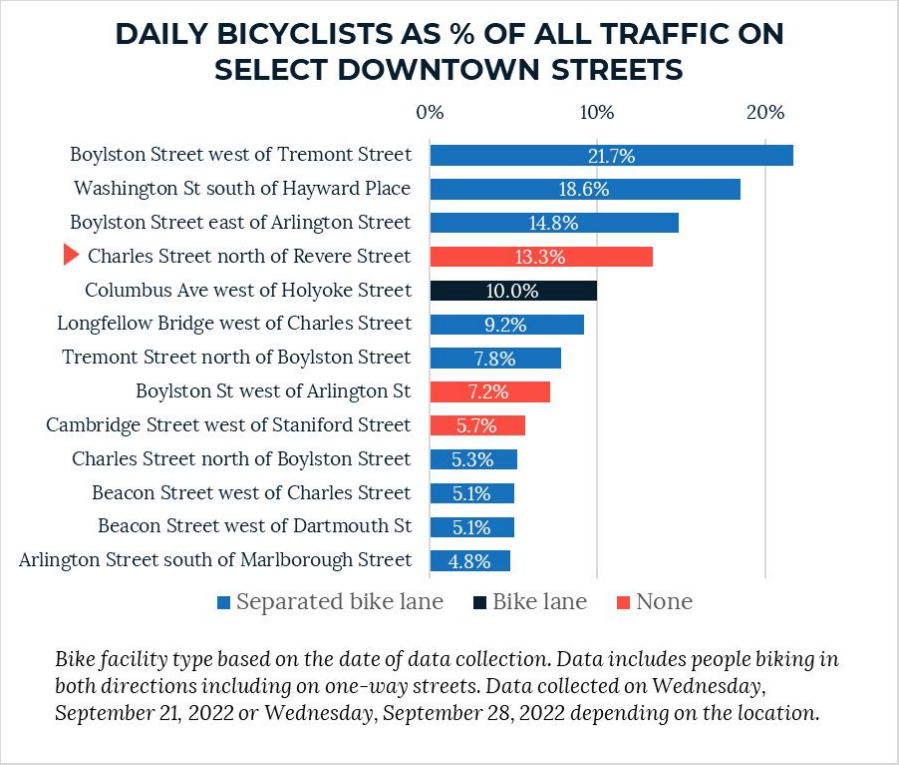
Bicyclists represent a sizable share of traffic

- On warmer days, people biking represented around 10% - 15% of all traffic in Charles Street.
- Even on cooler days, people biking were between about 5% and 10% of all traffic.
- Although bicycle volumes have remained stable since early 2020, the share has declined somewhat over time. That's because vehicle traffic has gradually increased since early 2020.
- These data include people biking in both directions.



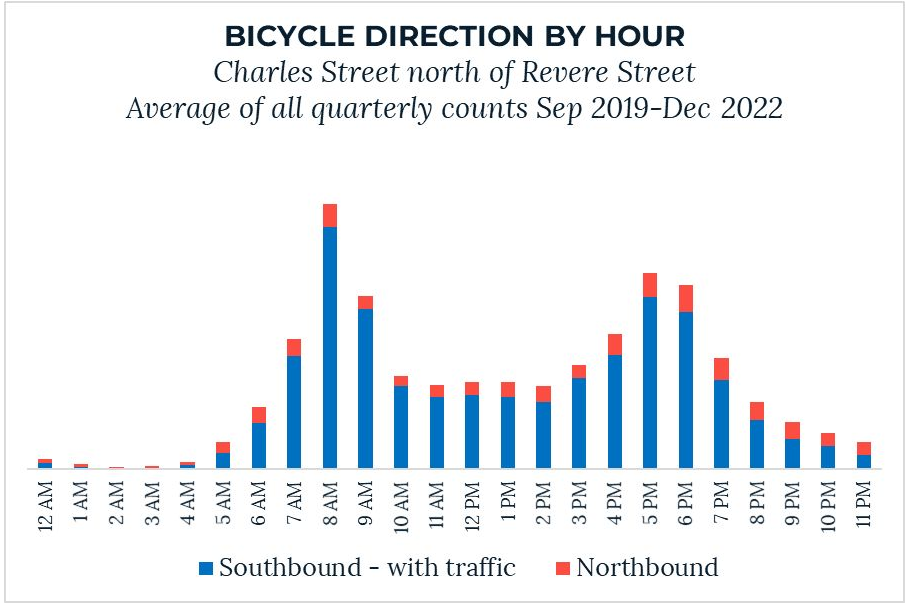
Charles Street is one of the busier streets for biking

- We compared daily bicyclists as a percent of all traffic at Charles Street north of Revere Street and a sample of other arterial streets in or near the Connect Downtown study area.
- Of the sampled locations, Charles Street had a high share of cyclists as compared to all vehicle traffic.
- This tells us that Charles Street is an important, existing route for people biking.



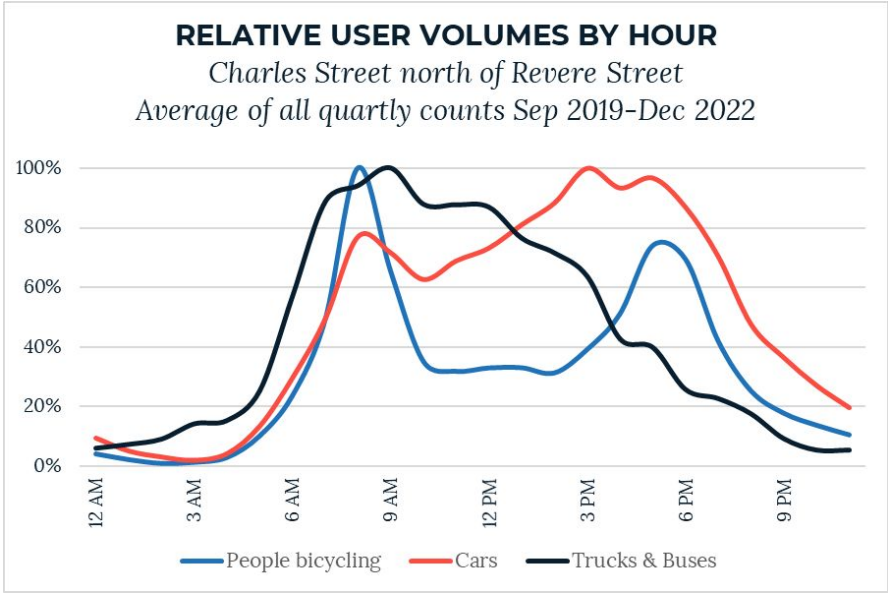
Cyclists travel in both directions on Charles Street

- Most people biking on Charles Street were going southbound with traffic. Their travel corresponded to typical peak-hour travel patterns.
- A smaller but consistent stream of people biked northbound on Charles Street. This confirmed anecdotal accounts we've heard about people biking against traffic on Charles Street.



User volumes peak at different hours

- Bicycle volumes showed two distinct peaks: in the morning around 8 a.m. and in the afternoon around 5:30 p.m. These peaks align with commuting patterns.
- Car traffic on Charles Street was highest in the afternoon between 3 and 6 p.m. There was a morning peak around 8 a.m, and volumes started to rise again around noon. This also follows commuting patterns.
- Truck and bus traffic peaked in the morning between 6 and 9 a.m. Then, it tapered off steadily throughout the day. Truck and bus traffic is not necessarily serving businesses on Charles Street.



Each line is relative to its respective mode, not all other modes. (For example, the highest volume of trucks and buses is at 9 a.m., so the chart shows 100% to reflect that.)

Interested in a deeper data dive?

- Database of user volume data at Charles Street north of Revere Street from the BTD bicycle count program
- Vehicle speed data at Charles Street north of Mt. Vernon Street, Charles Street north of Boylston Street, and Beacon Street west of Charles Street
- Turning movement count data for intersections on Charles Street between Charles Circle and Beacon Street (includes pedestrian volume data)

Parking Inventory and Utilization Study

November 2019

What we've learned

- Most blocks on Charles Street have no space designated for loading.
- Parking spaces were well-utilized, making it difficult to find an available space at the curb to park or make deliveries.

Note: The data in this parking study were collected in November 2019. While there have been some changes to the parking inventory and regulations on Charles Street since then, the data are still valuable in providing a baseline understanding of inventory and utilization on the corridor.

How we collected the data

- Conducted a field inventory of each available space within the study area
- Collected turnover data on one weekday and one Saturday in the fall of 2019
  - Wednesday, November 13
  - Saturday, November 16
- Collected data in 30-minute intervals from 7:00 a.m. to 12:00 a.m.

Most parking spaces are metered

- There were 129 legal spaces on Charles Street.
  - 95% of spaces are metered for some hours of the day
  - Just 6% of spaces are designated for loading at any point in the day
  - There are also a few valet, taxi, and sight-seeing vehicle spaces. 9% of spaces are regulated for these uses for some hours of the day.

Parking inventory and regulations

Regulation Type	Restriction	Total Spaces
Meter	Monday - Saturday 8AM - 8PM (2 hr limit; $2/hr)	109
Commercial Vehicle/Meter	Commercial Vehicle only 7AM - 4PM; Except Sunday	6
Tow Zone/Meter	Temporary Construction Zone (1 space); City Licensed Sightseeing Bus 8AM-6PM (10 min limit) (3 spaces)	4
Valet/Meter	Valet Only Thursday - Saturday 5PM - 12AM (10 min limit)	3
Valet/Commercial Vehicle	Commercial Vehicle only 7AM - 4PM; Except Sunday (30 min limit); Valet Only 4PM - 12AM (15 min limit)	2
Valet		2
Resident Parking		0
Visitor	8AM - 6PM (2 hr limit)	0
Taxi		1
Other	Unofficial Space (vehicle observed in inventory)	2
Total		**129**

As of November 2019

Parking was well-utilized

- Overall, parking was well-utilized on Charles Street and throughout the day
  - Parking was most utilized (above 95% occupied) around 7 p.m. on weekdays and weekends
  - Parking was the least occupied (below 80%) around 8 a.m. and again from about 2 - 6 p.m. on both weekdays and weekends
- Metered parking was most occupied midday and in the evenings, likely driven by shops, restaurants, and cafes on Charles Street

On average, drivers parked in metered spots for almost 2 hours

- The average length of stay per vehicle at metered parking spaces was nearly 2 hours.
  - Some metered spaces were occupied by the same vehicle for 12+ hours.
- Commercial Vehicle (CV)/Meter spaces were generally used for less than the 2-hour limit.

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Interested in a deeper data dive?

- Summary of Key Findings from the Charles Street Parking Study
- Full Report of the Charles Street Parking Study, including tables and maps

Double Parking and Loading Study

June - July 2022

What we've learned

- Most double parking and loading activities:
  - Lasted less than 15 minutes
  - Happened in the roadway rather than at the curb
  - Used personal vehicles rather than vans or trucks

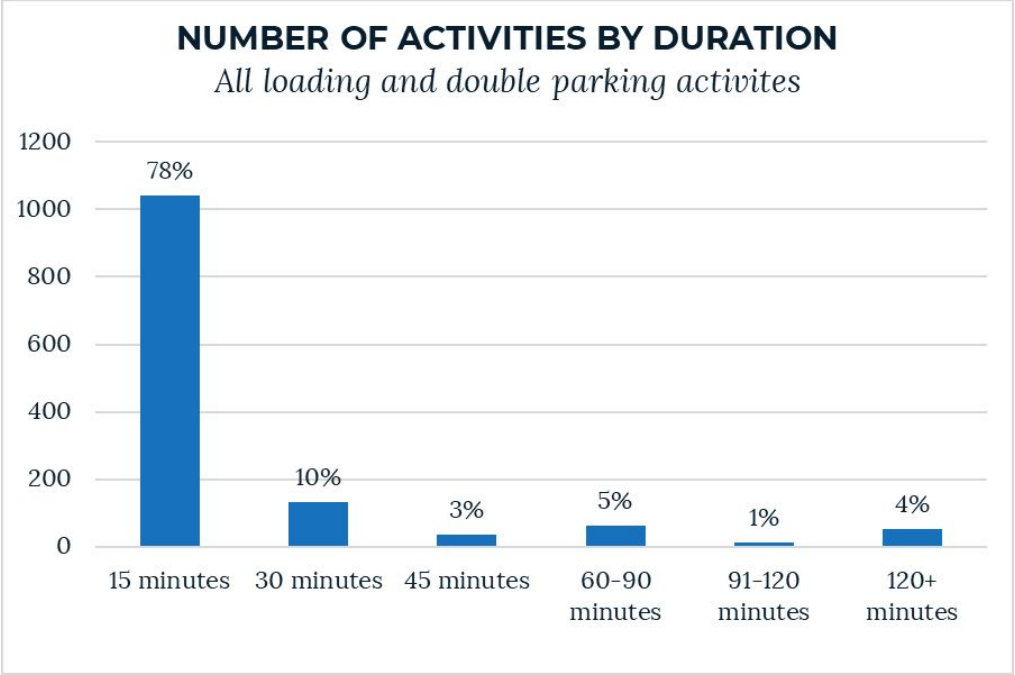
How we collected the data

- Staff walked in 15-minute loops on Charles Street between 8:00 a.m. to 6:30 p.m.
- They observed loading and double parking activity and recorded the following attributes for each activity:
  - Arrival time
  - Length of stay
  - Location (aggregated to block)
  - Vehicle length
  - Roadway versus curb
  - Activity type
- We broke the two longest blocks into two segments for better precision:
  - Charles Circle to Revere Street
  - Pinckney Street to Mt. Vernon Street
- We collected data over five weekdays in June and July 2022
  - Wednesday, June 22
  - Thursday, June 23
  - Friday, June 24
  - Tuesday, June 28
  - Monday, July 11

Most activity was quick

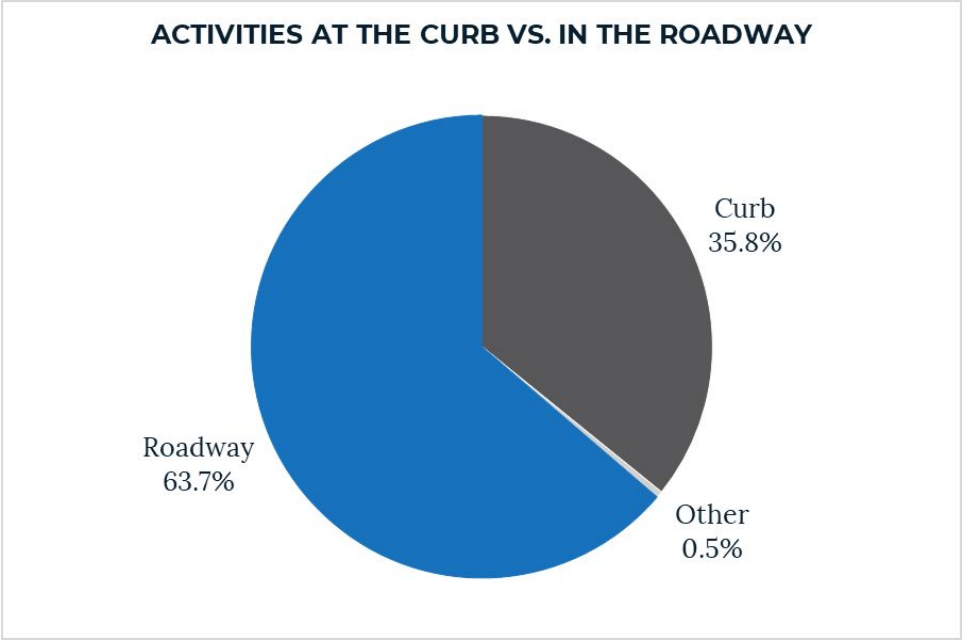
Most loading and double parking activity lasted for for 15 minutes or less.

Note that we know from the 2019 parking study that on average, vehicles parked at meters stayed up to the 2-hour time limit.



Most activity was in the roadway

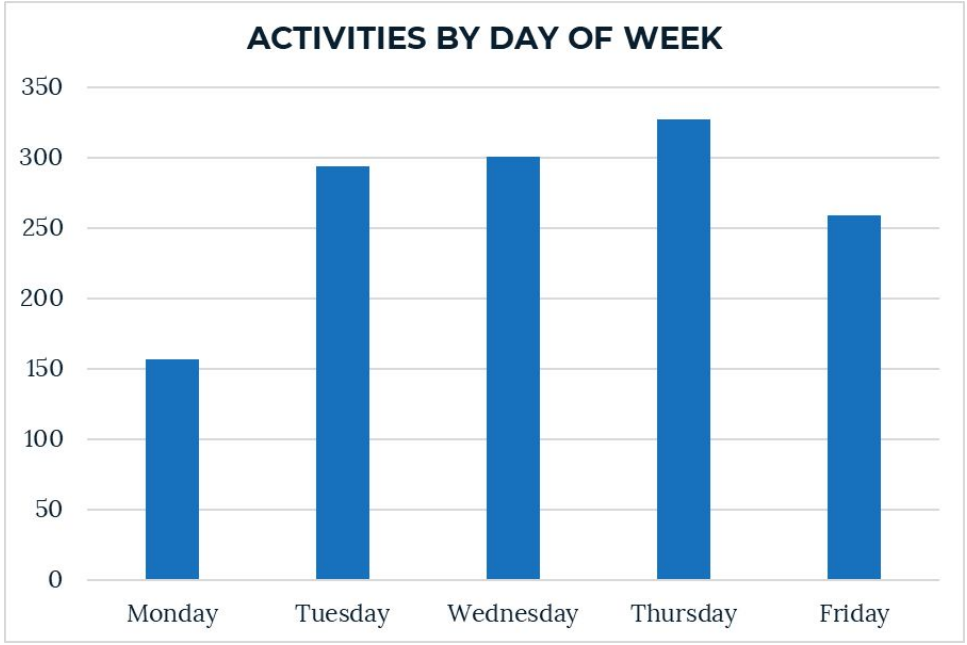
Most loading activities involved vehicles that were double parked or obstructing the roadway to some extent.



Other: vehicles that were parked in illegal spaces such as in front of a hydrant or in a crosswalk

Mid-week days were the busiest

Most activities took place mid-week, with fewest on Mondays.

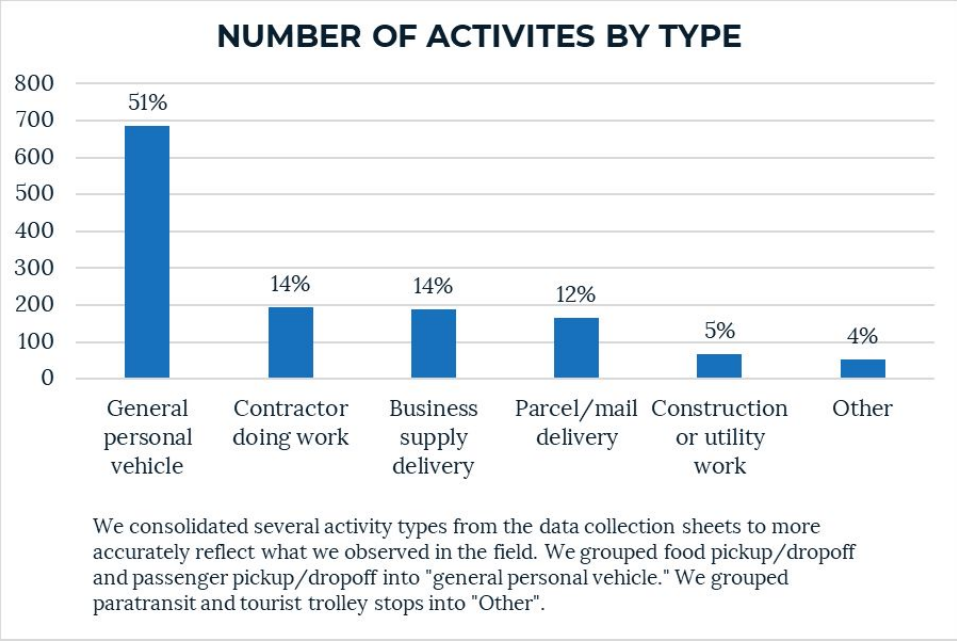


Most activity involved a personal vehicle

The most common activity we observed was ‘general personal vehicle’. This includes, but is not limited to:

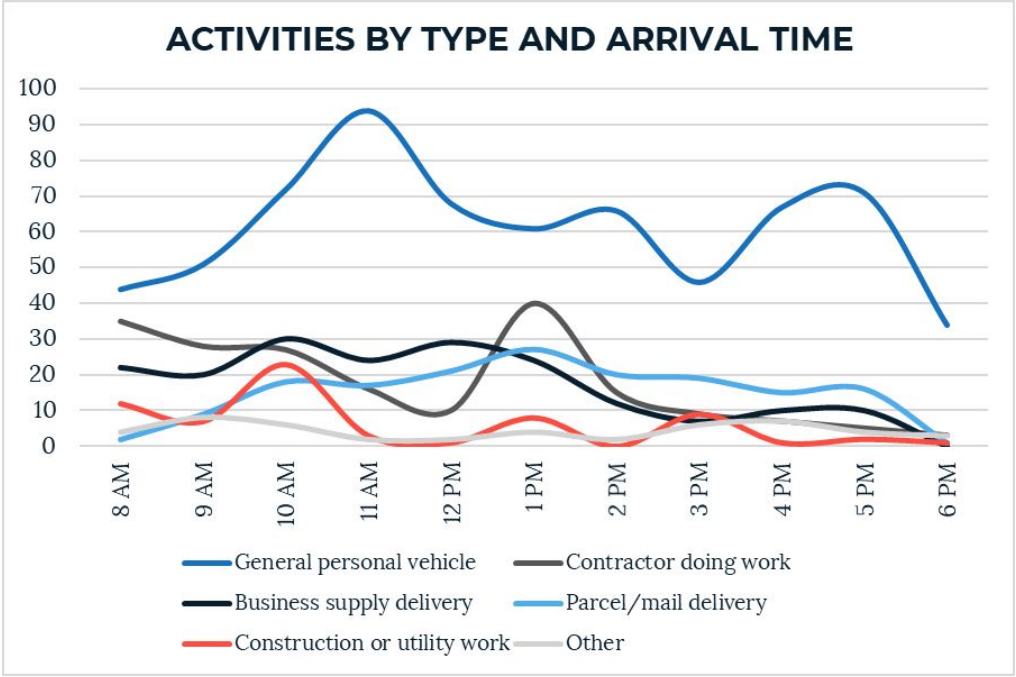
- Passenger pickup/dropoff
- Food pickup/dropoff
- Personal errands

There is very limited designated curb space for this type of activity. Existing commercial spaces don’t accommodate personal vehicles.



Activity happened throughout the day

- Loading activities were already underway by the time we started at 8 a.m.
- Activity tended to be high throughout the day with a noticeable tapering off starting around 4 p.m.

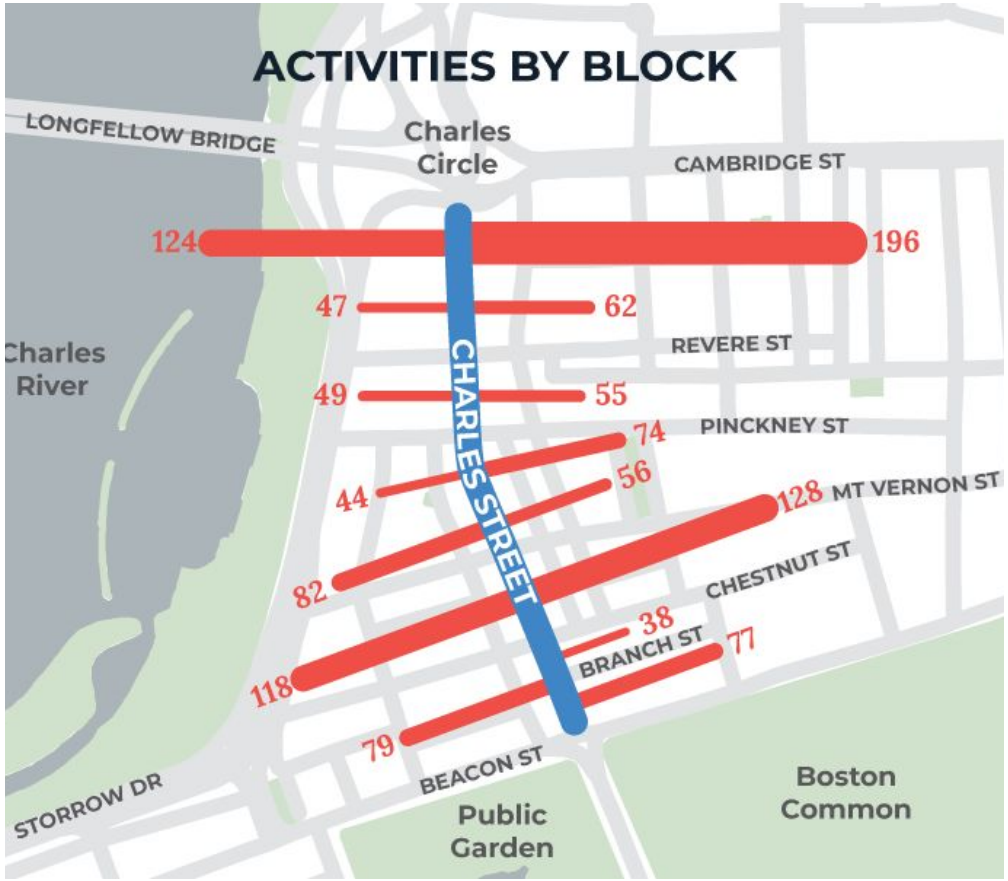


The ends of Charles Street were the busiest

The busiest blocks were towards the ends of Charles Street:

- The block adjacent to Charles Circle
- The block between Mt. Vernon St and Chestnut St

This includes all activity types and vehicle sizes.



Interested in a deeper data dive?

- View the data collected in the study

Business Survey

August - November 2022

What we've learned

- Deliveries were frequent: most businesses got deliveries 3 or more days per week.
- Flexibility was key: many businesses reported little to no control over when their deliveries arrive.
- Curbside loading may be useful: some merchants were interested in expanding loading zones and other short-term parking.

We talked to businesses to

- Learn how they use Charles Street for their operational needs, such as:
  - Receiving inventory
  - Making local deliveries to customers
- Understand what types of vehicles make deliveries and what time of day they arrive.
- Gather ideas about how commercial loading could be improved.
- Answer questions about the project and listen to issues and concerns.

How we collected the data

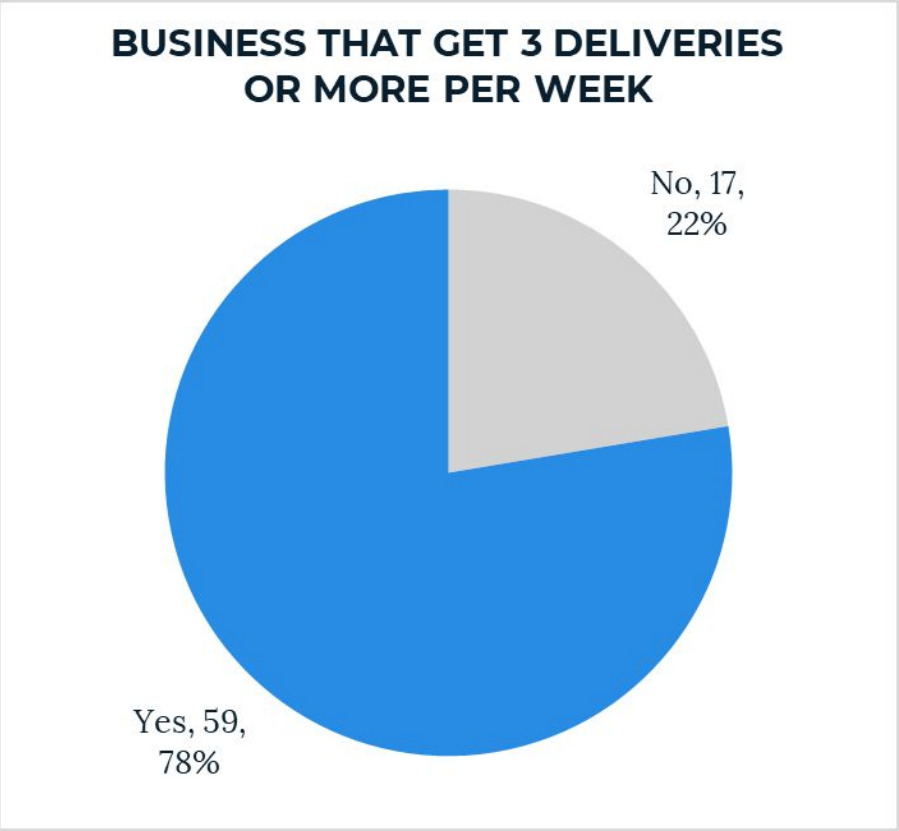
- We visited businesses in person during the summer and fall of 2022.
- Our survey was available in paper and electronic versions.
- We asked to speak with the owner, a manager, or an employee qualified to answer questions about deliveries and loading.
- We asked questions about the types of vehicles that make deliveries, the days of the week they get deliveries, and how long deliveries take.
- We also asked about how deliveries could be made easier and if the current meter times and locations work for their customers.
- There was an open ended question at the end of the survey for respondents to bring forward any other comments and questions.

We reached most businesses on Charles

- We aimed to reach all businesses and returned multiple times for follow up.
- We worked with a Vietnamese interpreter for several businesses after the need was identified.
- We identified about 100 businesses on Charles Street.
- **We received 77 responses to our survey, roughly a 77% response rate.**

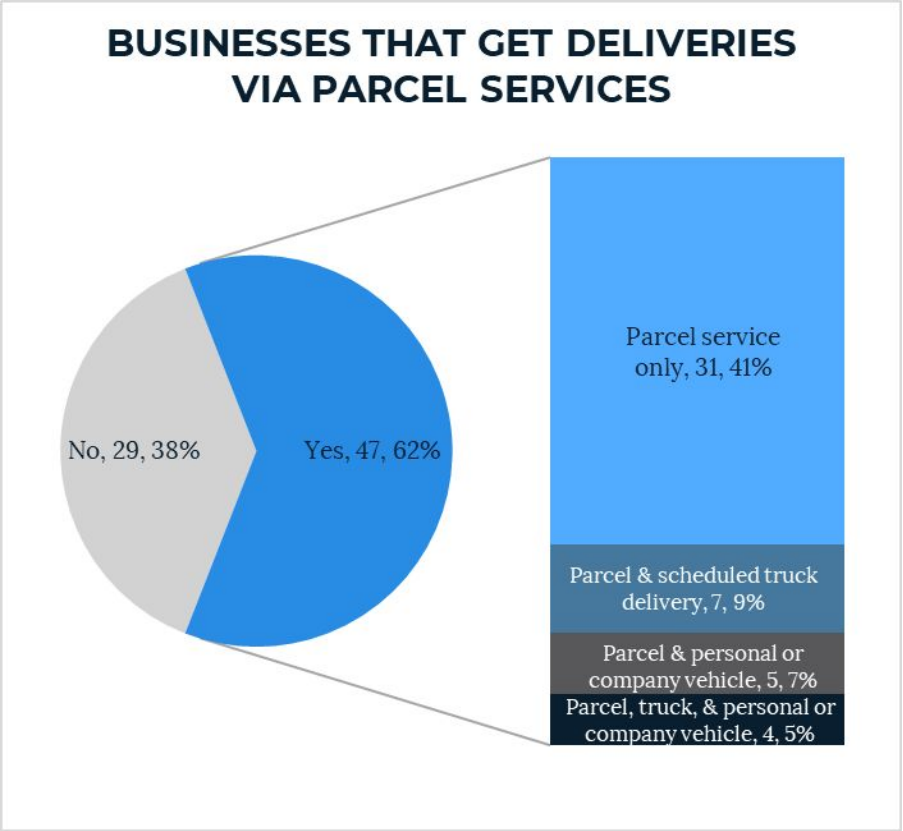
Deliveries were frequent

- 78% of businesses reported getting deliveries 3 or more days per week



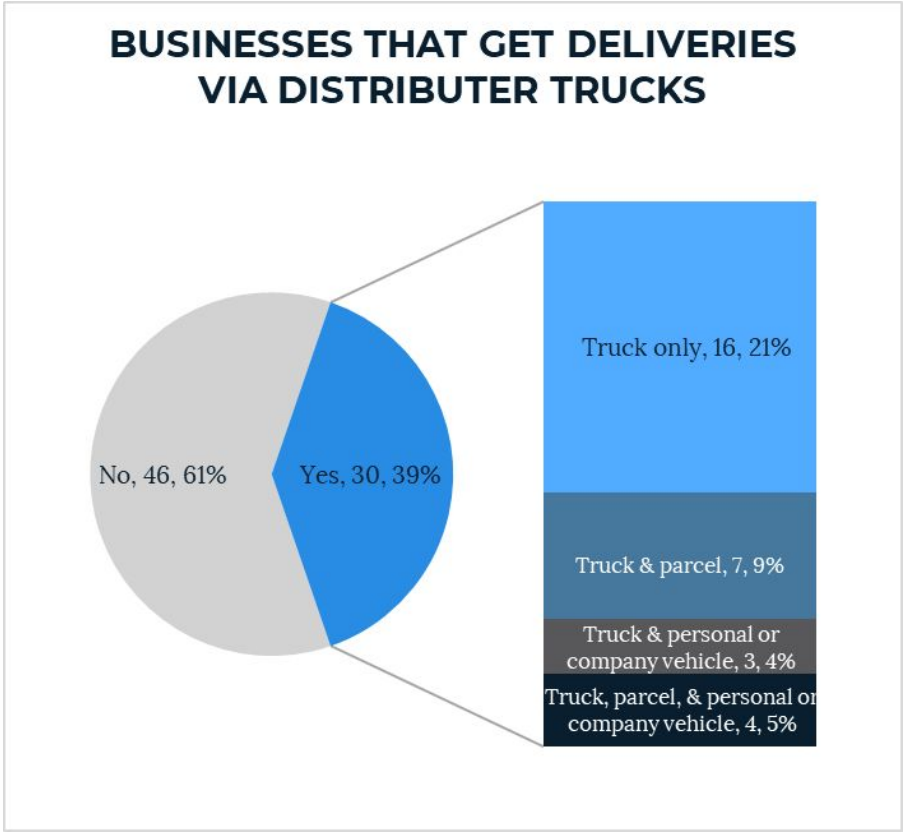
Most businesses got supplies from parcel services

- Delivery profile
  - Quick. Typically less than 5 minutes at a given business.
  - Frequent. As often as several times per day.
  - Any time of the day. Many businesses reported mid-morning or early afternoon.
- 47 businesses, or 62%, reported getting supplies via parcel delivery services.
- Of these, 31 businesses get supplies exclusively by parcel delivery services.
- The rest get supplies via parcel services and a mix of other types.
- Trucks can service multiple businesses during one stop.



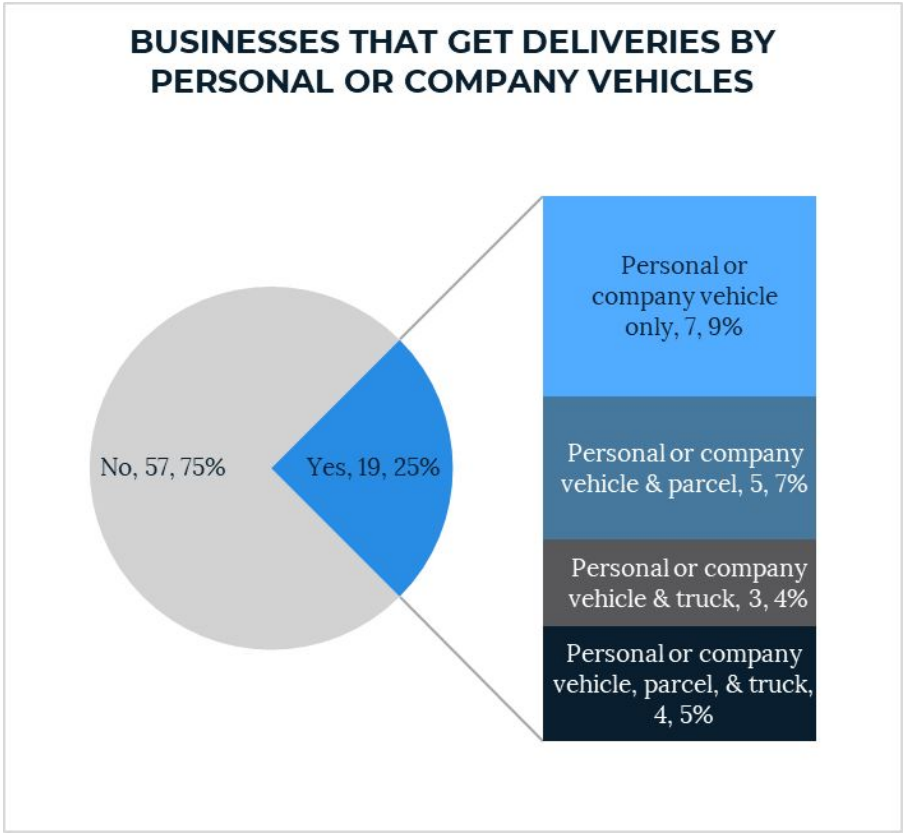
Truck deliveries were also common

- Delivery profile
  - 5 - 15 minutes, occasionally longer.
  - Usually on a schedule.
  - Trucks usually service only one business and double park in front.
  - Frequency ranges from multiple per day to sporadic depending on the business.
  - Harder to accommodate in curbside loading zones due to vehicle size and unreliable availability of loading zones.
- 30 businesses, or 39%, reported getting deliveries by suppliers using larger trucks. These include box trucks and larger.
- Of these, 16 businesses get supplies exclusively by trucks.
- The rest get supplies via trucks and a mix of other types.



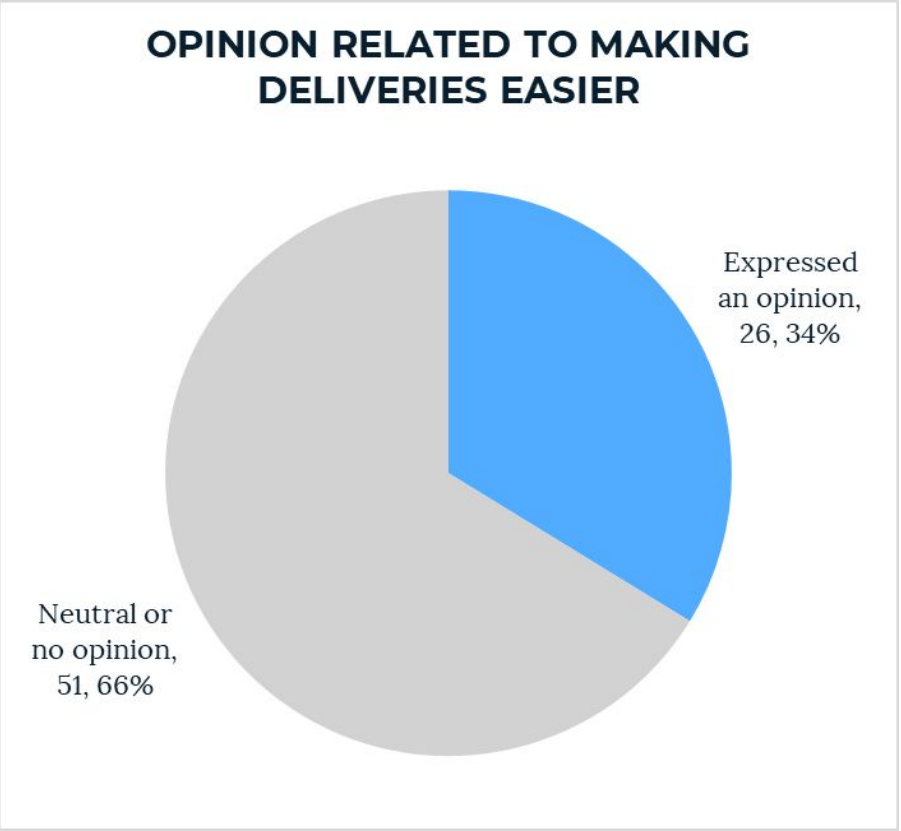
Some used personal or company vehicles

- Delivery profile
  - Typically short duration.
  - Either very frequent (e.g., dry cleaners making deliveries throughout the day) or sporadic (e.g., small specialty retailer resupplying).
  - Small vehicles either double park or use metered parking if available.
  - Could be accommodated in curbside loading zones.
- 19 businesses, or 25%, reported getting deliveries by personal or company vehicles.
- Of these, 7 businesses get supplies exclusively by personal or company vehicles.
- The rest get supplies via personal or company vehicles and a mix of other types.



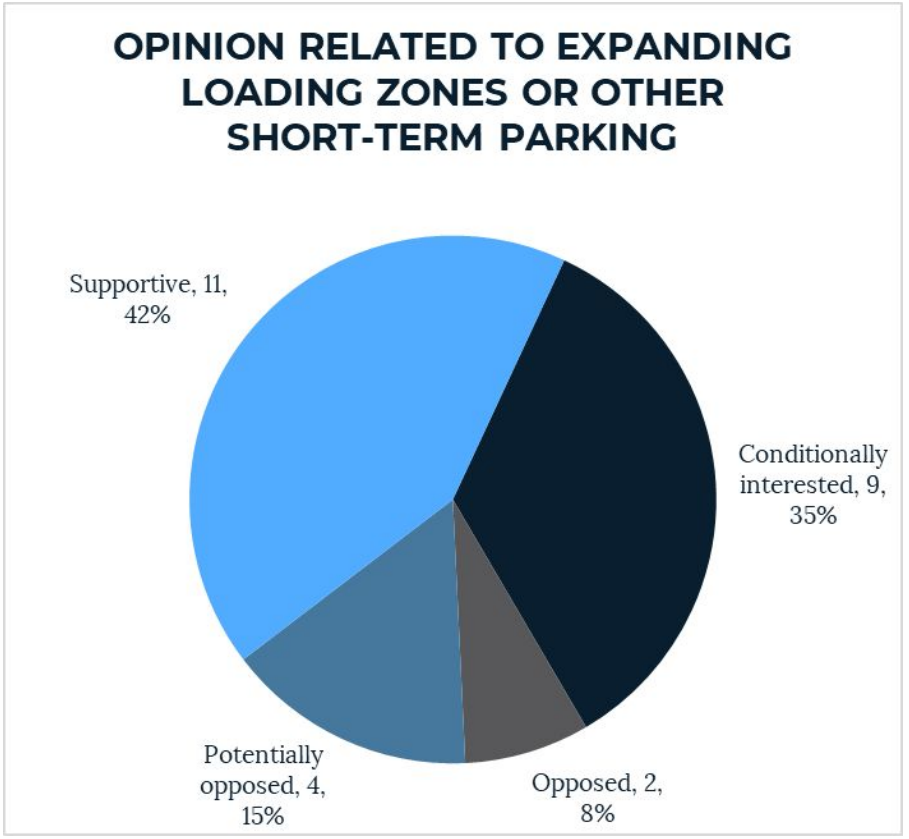
We asked about making deliveries easier

- We asked: What do you think would help make your deliveries easier, if anything?
- 51 businesses, or 66%, did not have ideas about how to make deliveries easier.
- We categorized these responses as “neutral or no opinion.” This includes respondents who said their deliveries work fine currently.
- 26 businesses, or 34%, had specific ideas or questions about how their deliveries could be made easier.



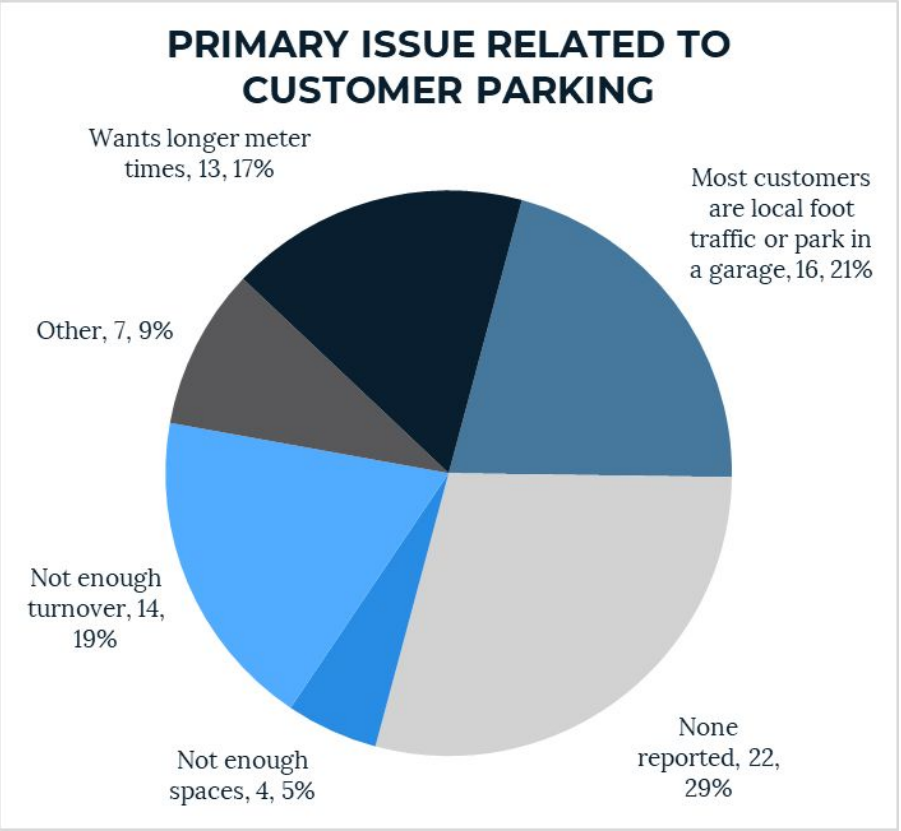
Some were interested in short-term parking options

- Of all the respondents who had ideas or questions about making their deliveries easier, all of them mentioned some kind of loading zone or short-term parking.
- We categorized these responses related to their level of interest in loading zones or other short-term parking options.
- The majority were either supportive or conditionally interested in expanded loading zones or other short-term parking.
  - Conditional interest included questions about how it could work
  - Desire for loading zones if they were better enforced for turnover.
- Potential opposition included those who felt metered parking was a priority over other regulations and those who felt loading zones wouldn't work because of misuse.



We asked about meter times and locations

- We asked: Do the meter times and locations meet the needs of your customers? If not, what do you think would make it better?
- We categorized responses by the most frequently heard themes.
- The largest share of respondents, 29%, reported no opinion or that things work fine as they are.
- 21% said that most of their customers are local foot traffic or park in a nearby garage.
- 18% expressed issues related to parking turnover. These included statements like "customers circle to find parking," which we can interpret as a turnover issue.
- 17% wanted longer meter times. Currently, drivers can stay a maximum of 2 hours at meters on Charles St.
- 10% had unique issues that did not fit the most frequently heard themes.
- 5% stated that there aren't enough metered spaces. We considered these different from people who described issues related to lack of turnover.



We heard about other topics, too

Some common themes emerged from the open-ended question at the end of the survey.

- Concern over the duration and frequency of utility projects on Charles Street.
  - Loss of parking due to utility work
  - Quality of life issues due to noise and disruptions related to utility work
- Concern about the condition of the sidewalks and roadway pavement on Charles Street and Beacon Hill in general.
- A few of the businesses that get truck deliveries are able to schedule them for early in the morning.
- Some had questions or shared an opinion about the possibility of bike facilities on Charles Street. We reiterated that we don't have a design proposal yet and that we were still gathering information. We documented their feedback.
- A few emphasized the importance of Charles Street as a pedestrian corridor. Some asked if there were options to increase the amount of space for people walking.