3 METHOD OVERVIEW AND STEP-BY-STEP PROCESS TO CONDUCT AN ALLEY OCCUPANCY STUDY

A team of 25 trained data collectors worked in pairs to document use of each of the seven selected alleys for one to four days during two weeks in February and March 2018. Data collectors worked in three-to-five-hour shifts so that each alley would be continuously observed from 8am to 5pm.

Using human data collectors (rather than video or other technology) to track alley usage allowed for the reliable capture of significant details, such as windshield permit stickers and company names on vehicles. The study documents the parking behavior of delivery, service, and other commercial and passenger vehicles in representative alleys.

Each data collector was stationed at one of two positions in the alley. Each alley was essentially divided in half, with each data collector covering four zones that met roughly in the middle of the alley. These zones allowed the data collector to easily determine and record where in the alley a vehicle was parked. Each alley had a data-collection sheet for each position. Any vehicle parked in the alley for one minute or more was recorded. The data-collection sheet was divided by zone, with space for the data collector to record:

- The start/end time a vehicle spent parked in the alley (recorded to the minute)
- The type of vehicle parked in the alley
- If visible, the company name for commercial vehicles parked in the alley
- If visible, the presence of a commercial permit on a passenger vehicle parked in the alley

Step 1. Determine study parameters

Based on project scope and budget, determine at the outset the:

1. Scope/size of study area
2. Number and types of representative alleys to be observed
3. Specific location of each alley to be observed
4. Data-collection/observation hours for study alleys (unlike an alley inventory, periods of low activity should be avoided if the project seeks to document "typical" usage)
5. Use of human data collectors versus video/other technology to capture vehicle occupancy (enabling capture of salient details such as windshield permit stickers or company names on vehicles that would otherwise be challenging to capture accurately).

Step 2. Use UFL's detailed vehicle typology to accurately track vehicle categories

The UFL typology covers 14 separate vehicle categories, based on prior field work and knowledge of Center City area alley operations.

Several passenger vehicle types are included to account for individuals using their own vehicles for commercial activities, such as to deliver packages through services such as Amazon's "Prime Now" or food through services such as "Amazon Fresh."

UFL Vehicle Typology

NAME	EXAMPLES AND DATA-COLLECTION NOTES
TRUCK OR VAN TYPES Truck (T)	 *Truck with trailer, 3 or more axles*
Box Truck (B)	 *Single-unit trucks, fewer than 3 axles*
Garbage Truck (G)	 
Cargo Van (CV)	 
Service Van (SV)	  
Van (V)	 *A cargo or service van usually displays a business logo. If there was not enough information visible, data collectors marked the vehicle as a van.*

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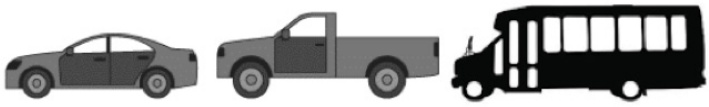
PASSENGER VEHICLE TYPES:

For each passenger vehicle type, data collectors were instructed to look for a commercial permit and mark P (permit), NP (no permit), or U (unknown) for the vehicle type.

Service Passenger Vehicle (SP)	*A personal vehicle being used for provision of a service, such as a cleaning company. Often a logo or commercial permit is visible.*
Vehicle Making a Package or Food Delivery (D)	*A personal vehicle being used to deliver packages (such as Amazon Prime Now) or food (such as Amazon Fresh).* 
Vehicle Making a Passenger Drop-off (e.g. Uber / Lyft) (U)	
Passenger Vehicle (P)	

OTHER VEHICLE TYPES:

Taxi (X)

Motorcycle (M)

Cargo-bike (C)

Construction Vehicles

Step 3. Assess each alley's safety/security and design features/facilities

Identifying and assessing alley design features and facilities accessed through the alley will:

- aid in ensuring data collectors have clear sight lines when using the data-collection method, which assigns collectors fixed positions within an alley.
- allow researchers and transportation professionals to understand occupancy in context of alley design features and the facilities accessed through an alley and discern patterns in occupancy relative to these components, if any.

DESIGN FEATURES	
Feature	**Under what conditions do these require documenting?**
Type of end points	Required
Width of end points	Required
Narrowest point(s) inside the alley	If interior width is at least 1 foot less than the narrowest end point
Length of the alley	Required
Height restriction	If vehicle clearance in alley is less than 14 feet and narrows down the alley by 1ft or more
Apron width for each end point connected to the street	Required
Apron length for each end point connected to the street	Required

FACILITIES ACCESSED THROUGH THE ALLEY
Location of freight parking infrastructure (such as loading bays/docks)
Location of passenger parking facilities
Location of building doors with pedestrian access

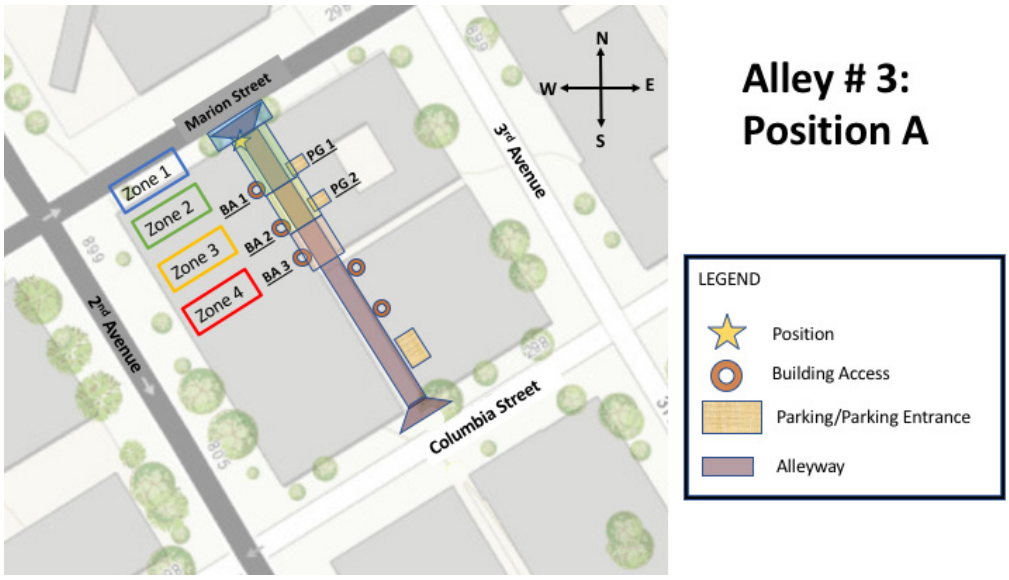
Based on alley features and facilities, data-collector position locations should:

- assure data collectors are out of the alley's regular traffic flow
- grant data collectors an unencumbered view of vehicles in the alley to enable accurate data on who is parking where, when, and for how long

Step 4. Prepare data-collection forms and data-collector position maps

For each position in each alley, collectors need:

Position map. Divide each data-collector position into zones, with limits easily identifiable in-field using alley features, landmarks and/or facilities, as shown below.



Alley # 3: Position A

Alley # 3: Position B

FACILITY NAME	CODE USED
Building Access	BA
Freight parking facility	LB
Passenger Parking Facility	PG
Driveway	DR

Data-collection form. Create a paper form in Microsoft Excel as shown below for data collectors to record observations.

Surveyed Alley : Alley 3 - Columbia St & Marion St - Position B

Collector name		Date:	Shift: Morning or Afternoon

VEHICLE TYPE CODE

Truck or Vans Types: Truck (T) | Box truck (B) | Garbage Truck (G) | Cargo Van (CV) | Service Van (SV) | Van (V) |

Passenger Vehicle Type: Service Passenger Vehicle (SP)| Making a package or food delivery (D) | Making a passenger drop-off - e.g. Uber / Lyft - (U) | Passenger (P) |

For passenger vehicles only. Indicate if the vehicle has a commercial permit or not by adding P (permit), NP (not permit), U (Unknown) to the code.

Others: Motorcycle (M) | Cargo-bikes (C) | Taxi (X)

INSTRUCTIONS: Capture all vehicles and other obstructions that parks in the alley for one minute or more. If a vehicle is blocking several zones please capture it in both zones

Time precision (ST & ED): 1 min

Zone 1	Zone 2		Zone 3		Zone 4		Additional Notes
ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	
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Total of Handtrucks during the work shift:

Pilot-test maps and forms before official collection begins.

Step 5. Select data-collection tools

For each data-collection shift, collectors need:

- Position's map
- Clipboard
- Security vest
- Data-collection forms
- A watch or timekeeping device to record the start/end time of each vehicle's parking
- Official letter of permission from the city or relevant entity authorizing data collectors' work and providing contact information for project leads at the city or relevant authority.

Step 6. Recruit and train data collectors

Recruiting: Project budget; timeline; survey length/complexity; security concerns; time needed for in-field collection, including commute time to/within study area, and in-office quality-control determine number of data collectors and supervisors needed. The UFL research team used a team of 25 data collectors with two data collectors per shift, per alley; one for position A, one for position B.

Training: Two sessions recommended, with first done in classroom-type setting and second done in field.

First session**:** Covers study parameters, vehicle typology, data-collection method, key alley terms, position map and data-collection forms.

Second session: Covers using position map and pilot-testing data-collection form to record vehicles that park in the alley.

Step 7. Collect data

Develop check-out/check-in process for collectors' needed shift materials.

Ensure continuous observation of each alley. In the UFL project, data collector shifts ranged from 3-5 hours to ensure continuous observation of each alley from 8am to 5pm.

Provide regular breaks to collectors assigned to an alley position (who must not take their eyes off the alley while in position.) Such breaks can include rotating position collectors into the role of monitoring other collectors in nearby alleys.

Establish comprehensive security protocol and multilayer communications plan for all interested parties to avoid unsafe situations in field, including instructing data collectors to:

- not enter alley if uncomfortable, including due to vehicles obstructing alley access
- exit alley at any point if uncomfortable while collecting data
- carry official documents from sponsoring agency (including agency official contact information) explaining project and granting data-collection authorization.

Recruit and inform police and other relevant agencies to help communicate with all building managers in the survey area.

- In Seattle, police notified all survey area building managers in real time where/when collectors were working via pre-existing information exchange for building operators and the police.
- Seattle Department of Transportation webpage communicated to public and stakeholders where and when data collectors were working.

Step 8. Create data transcript

Establish a method for data collectors to transcribe recorded field observations no more than 24 hours after their shift ends, allowing them to double-check entries (first step in data cleaning). In the UFL project, data collectors received a Google Excel sheet for each alley, shown below.

DAY	ALLEY	POSITION	START TIME	END TIME	ZONE	VEHICLE TYPE	COMPANY	PASSENGER PERMIT	ADDITIONAL INFORMATION

Step 9. Clean data

A data-collection lead must review the data and check for data transcript errors and missing values.

Step 10. Assemble and summarize data

Assemble data in final format that best meets city and/or researcher needs, such as a final spreadsheet listing every vehicle, its details, the alley it was in, and the amount of time it was parked. This allows for a broad range of data analysis relevant to the study project goals.

Glossary

Alleys ^back
Cities' alley definitions may vary. Seattle "Streets Illustrated" manual definition reads: "Alley means a public right of way not designed for general travel and primarily used as a means of vehicular and pedestrian access to the rear of abutting properties. An alley may or may not be named."

End Points ^back
According to the alley typology the UFL team developed, every alley has two end points, which fit one of three types: access point, dead end or intersection.

Apron ^back
The alley apron is a driveway (an entranceway) that starts at the curb and continues until the start of the alley pavement. The apron edge uses a curb cut to provide vehicle access from the street. Alley width, length, and cross slope were recorded; slope can determine whether fully-loaded handcarts can maneuver.

Position ^back
Data-collector position refers to a clearly delineated section of the alley for which each data collector is responsible for observing and recording data.