The data-collection and analytic methods represented here are:

- Replicable;
- Available at reasonable cost;
- Ground-truthed;
- Governed by quality-control measures in each step.

The following section details the step-by-step procedure to replicate the alley observation method developed and implemented by the UFL research team.

STEP 1: DETERMINE STUDY PARAMETERS

The first step should define these key parameters at the study's outset based on the project scope and budget:

- Scope/size of study area
- Number of alleys to be observed
- Specific location of each alley to be observed
- 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)

In selecting sites for data collection, alleys should be assessed to ensure both the safety of the data-collection team and to ensure the alleys offer clear visibility for the data-collection method. (See Step 2).

STEP 2: ASSESS EACH ALLEY

For each alley, it is important to identify the following alley design features and facilities.

1. Alley design features:

Note: There is no need to collect these features if this information is already available in an existing alley inventory. Below are the needed features to document in each study alley. Please see page 27 in the Alley Inventory for a detailed explanation of alley typology/design features referenced below.

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

2. <u>Facilities accessed through the alley:</u>

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

Assessing these features and facilities will help with identifying the proper position locations for data collectors to stand. Position locations should assure data collectors are out of the alley's regular traffic flow. They should also grant an unencumbered view of vehicles in the alley so data collectors can accurately gather data on who is parking where, when, and for how long.

STEP 3: PREPARE MAPS AND OCCUPANCY DATA-COLLECTION FORMS

Position maps and data-collection forms should be prepared for each position within each alley.

1. Position map:

Each data collector is responsible for observing and collecting information for a particular section of the alley, called a position. Each position is divided into zones. The limits of each zone should be easily ikey dentifiable in-field, using alley features, landmarks and/or facilities. Below are outlined key alley facility terms. Figures E1 and E2 map the positions, zones, and key facilities in an alley.

Table E-1. Key alley features and codes

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

Figure E-1. Map of position A's responsible territory divided into zones

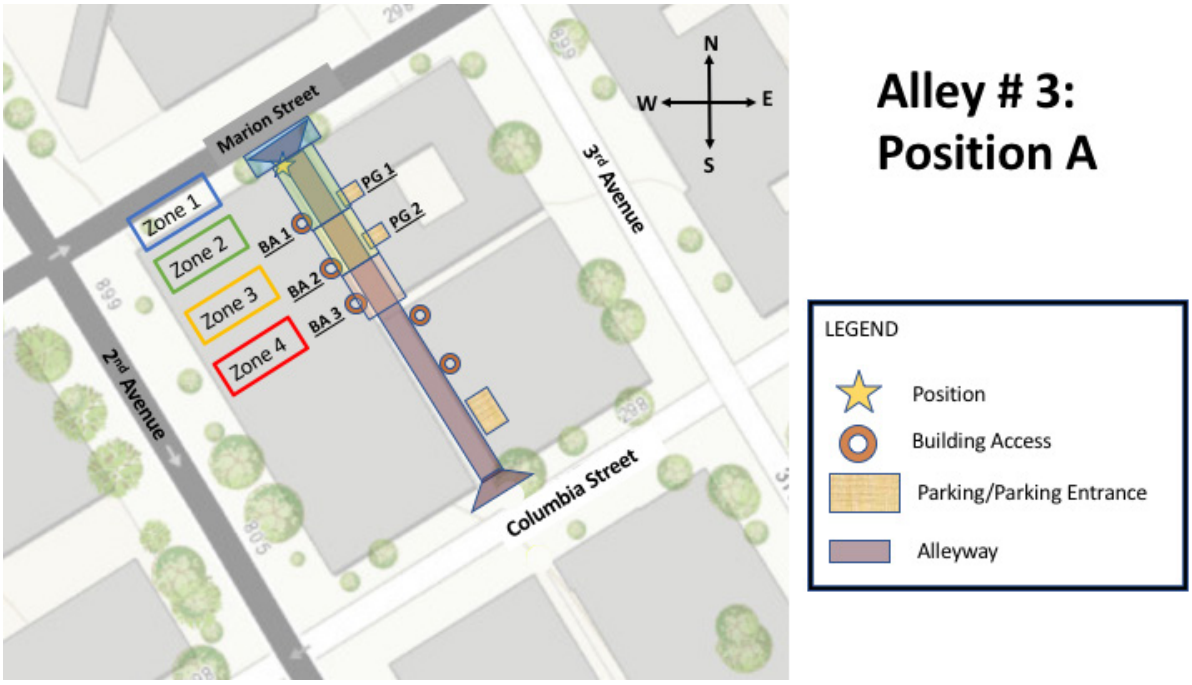
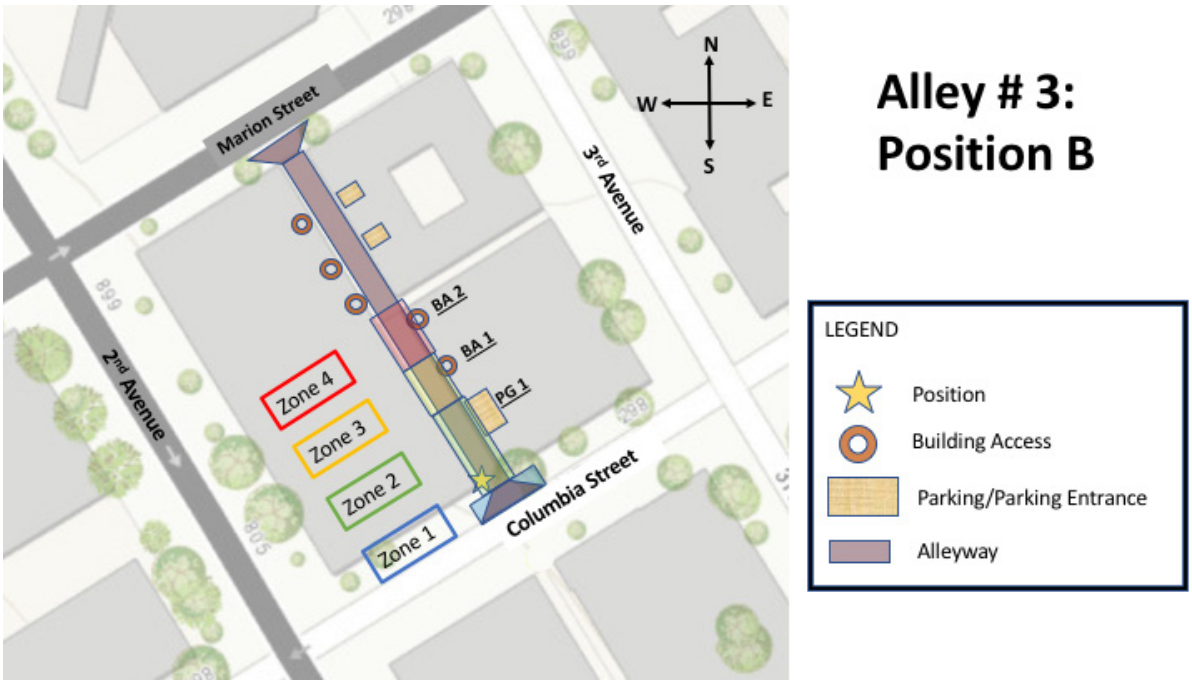


Figure E-2. Map of position A's responsible territory divided into zones



Data-Collection Forms:

A paper form should be created for the data collector to record his/her observations. The form can be made in Microsoft Excel. As shown in Figure E-4, the form should include these components:

1. **<u>Part I - Header</u>**. The alley location, number, and position.
2. **<u>Part II - Shift information</u>**. Space to record the data collector's name, as well as data-collection date and shift.
3. **<u>Part III - Vehicle type code</u>**. A legend listing each vehicle type and its corresponding code, along with any notes.
4. **<u>Part IV - Instructions.</u>** Any instructions for the data collector from the project team.
5. **<u>Part V - Data-collection table</u>**. A table organized by zones in the same order established in the position's map. The table should have:
    a. At least one column for each zone
    b. Space to record information on a vehicle that parks in the assigned position (vehicle code and associated information—logo, company name, etc.)
    c. Space to record the parking start and end time.

Table E-2: Key alley features and codes

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 =	
ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	
ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	
ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	
ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	
ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	ST = ED =	

Total of Handtrucks during the work shift:

STEP 4: RECRUITING AND TRAINING OF DATA COLLECTORS

Recruiting

The workforce requirements (e.g. number of data collectors needed) will be determined by the project budget, timeline and survey length. Security concerns and survey complexity may also result in different workforce needs. The UFL research team used a team of 25 data collectors. Two data collectors per shift were designated for each alley; one for position A, one for position B.

Beyond the time required for data collection in-field, project organizers should also account for the time needed for data-collection staff to commute to/from the study area and conduct data quality-control tasks in office. These tasks will take a varying amount of time depending on the nature, size and location of the study area, and are important to consider when estimating workforce needs in relation to the desired project duration.

Training

Two training sessions are recommended before data collection starts. One can be in a classroom setting for theoretical training of data collectors; the other is designed as an in-field session for data collectors.

1. **Theoretical training session.** A presentation should cover the following aspects:

- The study parameters
- The typology of vehicles
- The data-collection method
- Important alley terms (such as apron, end point, etc.)
- Review of the data collector position's map and data-collection forms

2. **In-field training session.** While visiting an alley, data collectors will ensure they understand its representation on the map and the data-collection method. Data collectors will pilot the recording of vehicles that park in the alley.

STEP 5: DATA COLLECTION

For each data-collection shift, collectors will require a data-collection kit consisting of:

- 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.

For the UFL alley occupancy project, data collector shifts ranged from three to five hours each. Depending on the determined observation time and data collectors' availability, any number of shifts can be scheduled to cover each alley. That said, collectors must not take their eyes off the during the determined data-collection period. To give collectors breaks, data collectors can rotate from being on an assigned position in an alley to being in a role monitoring other collectors in nearby alleys.

STEP 6: DATA TRANSCRIPT

A method must be established for data collectors to transcribe their recorded field observations after their shift ends. For the UFL project, data collectors received a Google Excel sheet for each alley. The sheet was pre-formatted with columns based on data structure defined for this method, as shown in Table E-4. Data collectors should enter in their observations no more than 24 hours after their shift ends. Transcribing the data allows data collectors to double-check their entries for clarity and serves as a first step in data-cleaning.

Table E-4. Excel sheet for data transcript

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

STEP 7: DATA CLEANING

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

STEP 8: PUT TOGETHER AND SUMMARIZE THE DATA

The data can be packaged into a final spreadsheet that concisely lists every vehicle and its accompanying details, the alley it was in, and the amount of time it was parked. This allows for data analysis relevant to the study project's goals.