

README for Seattle SMART Grant Digital Commercial Vehicle Permit Project

Strengthening Mobility and Revolutionizing Transportation (SMART) Program, U.S. Department of Transportation (USDOT)

Insert Today's Date: 2024-11-24

Links to Dataset

Repository for Dataset DOI: 10.5281/zenodo.17081751

Data Management Plan DOI: 10.48321/D1A0BA7DC7

Summary of Dataset

The Seattle SMART Grant Digital Commercial Vehicle Permit Project advanced work to provide reliable, modern curb access for commercial delivery vehicles using a collaborative, data driven approach. Short-term goals were to engage with local businesses and commercial delivery users with a Seattle Department of Transportation (SDOT) issued decal to prototype a new digital permit to make more efficient use of commercial vehicle load zones, automate payment for users, and provide usage data at the zones for City and public use.

The project collected baseline data, interacted with various stakeholders, prototyped a technology-driven curb management system with two vehicle detection sensors, and evaluated a digital permit in North Downtown. SDOT is also converting the areas curb data to the Curb Data Specification set by the Open Mobility Foundation. The University of Washington's Urban Freight Lab led the project's research by developing a technology assessment and existing commercial vehicle curbside utilization data collection plans, parking and pricing policy scenarios assessment, analysis of project results, and recommendations for building a digital permit on a scale citywide.

Tables of Contents

- A. General Information
- B. Sharing/Access & Policies Information
- C. Data and Related Files Overview
- D. Methodological Information
- E. Data-Specific Information for: Insert Title Here
- F. Update Log

A. General Information

Title of Dataset: Seattle SMART Grant Digital Commercial Vehicle Permit Project

Description of the Dataset: <https://zenodo.org/records/17081752>

The Seattle SMART Grant Digital Commercial Vehicle Permit Project advanced work to provide reliable, modern curb access for commercial delivery vehicles using a collaborative, data driven approach. Short-term goals were to engage with local businesses and commercial delivery users with a Seattle Department of Transportation (SDOT) issued decal to prototype a new digital permit to make more efficient use of commercial vehicle load zones, automate payment for users, and provide usage data at the zones for City and public use.

The project collected baseline data, interacted with various stakeholders, prototyped a technology-driven curb management system with two vehicle detection sensors, and evaluated a digital permit in North Downtown. SDOT is also converting the areas curb data to the Curb Data Specification set by the Open Mobility Foundation. The University of Washington's Urban Freight Lab led the project's research by developing a technology assessment and existing commercial vehicle curbside utilization data collection plans, parking and pricing policy scenarios assessment, analysis of project results, and recommendations for building a digital permit on a scale citywide.

Dataset Archive Link:

N/A

Authorship Information:

Principal Leader

Name: Sarah Gallagher – ORCID: <https://orcid.org/0009-0003-6401-6570>

Institution: City of Seattle, Department of Transportation

Address: 700 5th Ave, Seattle, WA 98104

Email: sarah.gallagher@seattle.gov

Principal Investigator

Name: Brian Hamlin – ORCID: <https://orcid.org/0009-0007-8040-6439>

Institution: City of Seattle, Department of Transportation

Address: 700 5th Ave, Seattle, WA 98104

Email: brian.hamlin@seattle.gov

Project Member

Name: Manu Agnihotri – ORCID: <https://orcid.org/0009-0003-1424-8381>

Institution: City of Seattle, Department of Transportation

Address: 700 5th Ave, Seattle, WA 98104

Email: manu.agnihotri@seattle.gov

Project Member

Name: MaryCatherine Snyder – ORCID: <https://orcid.org/0009-0003-2639-2110>

Institution: City of Seattle, Department of Transportation

Address: 700 5th Ave, Seattle, WA 98104

Email: marycatherine.snyder@seattle.gov

Project Administrator

Name: Katie Lyle-Beshai – ORCID: N/A

Institution: City of Seattle, Department of Transportation

Address: 700 5th Ave, Seattle, WA 98104

Email: katie.lyle-beshai@seattle.gov

Researcher

Name: Giacomo Dalla Chiara – ORCID: <https://orcid.org/0000-0003-0243-4147>

Institution: University of Washington, Urban Freight Lab

Address: Wilson Ceramic Laboratory (WCL), Seattle, WA 98195

Email: giacomod@uw.edu

Data Collector

Name: Maura Stefanny Perez Galarza – ORCID: N/A

Institution: CurbIQ - A Product of Arcadis

Address: 55 St Clair Ave W, Toronto, ON M4V 1N5

Email: stefanny.perez@arcadis.com

Data Collector

Name: Sage Franco – ORCID: N/A

Institution: CurbIQ - A Product of Arcadis

Address: 55 St Clair Ave West, Toronto, ON Canada M4V 2Y7

Email: sage.franco@arcadis.com

Data Collector

Name: Rick Neubauer – ORCID: N/A

Institution: Umojo, Inc.

Address: 40 Shuman Blvd. Suite 200 Naperville, IL 60563

Email: rneubauer@umojo.com

Date of data collection and update interval

September 2024 – August 2025

Geographic location of data collection

Seattle, Washington, United States of America

Information about funding sources that supported the collection of the data

This dataset package was funded through the USDOT Strengthening Mobility and Revolutionizing Transportation (SMART) Program.

The grant number for this project is: 69A3552341020 / SMARTFY22N1P1G56.

Grant project title: Seattle SMART Grant Digital Commercial Vehicle Permit Project

Grant program URL: <https://www.transportation.gov/grants/smart/2022>

B. Sharing/Access and Policies Information**Recommended citation for the data**

Hamlin, B., Gallagher, S., Agnihotri, M., Snyder, M., & Lyle-Beshai, K. (2025). Seattle SMART Grant Digital Commercial Vehicle Permit Project [Data set]. Strengthening Mobility and Revolutionizing Transportation (SMART). <https://doi.org/10.48321/D1A0BA7DC7>.

Licenses/restrictions placed on the data

This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for the contents thereof. To protect the privacy of subject participants and conform to the restrictions of the Institutional Review Board, raw and individual-level data will not be made available.

Was data derived from another source?

No

This document was created to meet the requirements enumerated in the U.S. Department of Transportation's Plan to Increase Public Access to the Results of Federally-Funded Scientific Research Version 1.1(<https://doi.org/10.21949/1520559>) and guidelines suggested by the DOT Public Access website(<https://doi.org/10.21949/1503647>), in effect and current as of December 03, 2020.

C. Data and Related Files Overview

File List for the Full Dataset ZIP: Seattle SMART Grant Digital Commercial Vehicle Permit Project_FULL DATASET

1. Filename: Seattle SMART Grant Finalized DMP
Short Description: A complete document detailing the data structure, content, and the City's approach to data management.
2. Filename: Seattle SMART Grant Evaluation Plan
Short Description: A complete document detailing the evaluation criteria for the project.
3. Filename: Seattle SMART Grant Implementation Report
Short Description: Comprehensive document of Stage One pilot outcomes along with strategic objectives for at-scale implementation.
4. Filename: SMART - UFL Full Technical Report
Short Description: A technical report that describes the research study, data collected, and findings from analysis of data conducted by the University of Washington's Urban Freight Lab.
5. Filename: UFL CVLZ Survey Data
Short Description: Responses to UFL's survey. Questions with personally identifiable information (PII) have been removed to protect participant privacy.
6. Filename: Communication and Outreach Plan
Short Description: A comprehensive plan of outreach activities and engagement activities conducted during the project.
7. Filename: Interview Guide
Short Description: An interview guide for our in-depth interviews with local businesses. The goal was to learn more about how local businesses and building managers receive deliveries and use (or don't use) commercial vehicle loading zones.
8. Filename: Interview Flyers
Short Description: Flyer used by outreach consultant as they went door-to-door to local businesses, asking if they would be willing to participate in an interview about commercial vehicle loading zones. Translated into 9 different languages.
9. Filename: Interview Summary
Short Description: Comprehensive record of outreach activities and engagement outcomes conducted during the project. All personally identifiable information (PII) has been removed to protect participant privacy.
10. Filename: Curbside Data Assessment Report
Short Description: An assessment on SDOT's digital curb sign and curb space data. The assessment examined how curb sign and curb space data is created, updated, and

maintained, as well as identifying technical and system-level constraints. Gave actionable recommendations for improving data quality, consistency, and operational alignment as part of a broader enterprise asset management system.

11. Filename: IDAX Round 1 Data Collection

Short Description: Dataset documenting the CVLZ baseline data collection effort that took place between May 15 and June 12, 2024.

12. Filename: IDAX Round 2 Data Collection

Short Description: Dataset documenting the CVLZ baseline data collection effort that took place between May 15 and June 12, 2024.

13. Filename: IDAX Round 3 Data Collection

Short Description: Dataset documenting data collection efforts on July 1 and July 2, 2025, for the technology assessment.

14. Filename: SDOT GIS Open Data Feedback

Short Description: A memo which includes recommendations for how to improve Seattle's GIS open data. This data, provided by SDOT, served as the base data for the curb inventory (curb zones) created by CurblQ.

15. Filename: Seattle Zones

Short Description: A dataset of Seattle's curb spaces derived from Seattle's Curb Space Categories data records. Curb Space Categories data is publicly available on the Seattle Open Data Portal.

16. Filename: Seattle Policies

Short Description: A dataset of Seattle's curb policies derived from Seattle's SDOT Street Sign data records. SDOT Street Sign data is publicly available on the Seattle Open Data. Portal.

17. Filename: Umojo Event Data

Short Description: Dataset documenting curb parking events based on Umojo camera sensor data collected between January 2025 and August 2025.

18. Filename: IPS Event Data

Short Description: Dataset documenting curb parking events based on IPS sensor data collected between September 2024 and August 2025.

19. Filename: IPS Battery Voltage Data

Short Description: Dataset documenting the battery status of the IPS sensor and meter between September 2024 and August 2025.

20. Filename: README

Short Description: Overview document that explains the contents, structure, and use of the project's data package.

21. Filename: DCAT-US METADATA

Short Description: Machine-readable metadata file that describes the project's datasets for compliance, discoverability, and publication on open data portals.

D. Methodological Information

Description of methods used for collection/generation of data:

The Seattle SMART Grant Digital Commercial Vehicle Permit Project has generated a diverse collection of data including baseline data collection, sensor data collection, interviews with local businesses and freight carriers, commercial driver survey data, curb space and sign data translations into the Curb Data Specification, and technical reports. This collection of data played a key role in understanding activity at our commercial vehicle load zones, fostering relationships with local businesses and delivery drivers, and informing our data-driven improvement recommendations to our commercial vehicle load zone permit program.

Instrument or software-specific information needed to interpret the data:

- **.csv:** The .csv, Comma Separated Value, file is a simple format that is designed for a database table and supported by many applications. The .csv file is often used for moving tabular data between two different computer programs, due to its open format. The most common software used to open .csv files are Microsoft Excel and RecordEditor, (for more information on .csv files and software, please visit <https://www.file-extensions.org/csv-file-extension>).
- **.json:** File extension .json is associated to JavaScript Object Notation file format, a lightweight, text-based, language-independent data interchange format. JSON defines a small set of formatting rules for the portable representation of structured data. It is used by various applications as alternative option to XML file format. The data in a json file are stored in simple text file format and the content is viewable in any simple text editor (for more information on .json files and software, please visit <https://www.file-extensions.org/json-file-extension>).
- **.pdf:** The Portable Document Format (PDF) file format was developed by Adobe Systems and represents two-dimensional documents in a device-independent and resolution-independent format. There are PDF readers available on many platforms, such as Xpdf, Foxit, and Adobe's own Adobe Acrobat Reader. PDF readers/viewers

or online services for basic functions are generally free (for more information on .pdf files and software, please visit <https://www.file-extensions.org/pdf-file-extension>).

- **.zip:** The .zip file is a compressed archive created with the various programs supporting ZIP compression. Microsoft Windows supports creating compressed zip files by default. You can create ZIP archives in Windows Explorer by using file context menu and send to → Compressed folder (zip method). This will create .zip file of any selected folder or files in your computer (for more information on .zip files and software, please visit <https://www.file-extensions.org/zip-file-extension>).

E. Data-Specific Information

1. File Name: UFL CVLZ Survey Data

Number of variables (columns): Thirty-two (32)

Number of cases/rows: One hundred fifteen (115)

Each row represents: 1 survey response

Data Dictionary/Variable List: UFL CVLZ Survey Data_Data Dictionary

Missing data codes: Null values are represented by "<null>". Blank cells are represented by a dash "-".

2. File Name: IDAX Round 1 Data Collection

Number of variables (columns): Twenty-seven (27)

Number of cases/rows: Eight thousand one hundred eighty-two (8182)

Each row represents: 1 parking event (data point)

Data Dictionary/Variable List: IDAX Round 1 Data Collection_Data Dictionary

Missing data codes: Null values are represented by "<null>".

3. File Name: IDAX Round 2 Data Collection

Number of variables (columns): Nineteen (19)

Number of cases/rows: Three hundred eighty-four (384)

Each row represents: 1 parking event (data point)

Data Dictionary/Variable List: IDAX Round 2 Data Collection_Data Dictionary

Missing data codes: Null values are represented by "<null>".

4. File Name: IDAX Round 3 Data Collection

Number of variables (columns): Fifteen (15)

Number of cases/rows: Two hundred sixty-three (263)

Each row represents: 1 parking event (data point)

Data Dictionary/Variable List: IDAX Round 3 Data Collection_Data Dictionary

Missing data codes: Null values are represented by "<null>".

5. File Name: IPS Event Data
Number of variables (columns): Four (4)
Number of cases/rows: Three to two thousand nine hundred seventy-four (3 – 2259)
Each row represents: 1 data point
Data Dictionary/Variable List: IPS Battery Voltage Data_Data Dictionary
Missing data codes: Null values are represented by “<null>”.
6. File Name: IPS Battery Voltage
Number of variables (columns): Ten to thirty-five (10 – 35)
Number of cases/rows: Twenty-five to twenty-eight (25 – 28)
Each row represents: 1 data point
Data Dictionary/Variable List: IPS Battery Voltage Data_Data Dictionary
Missing data codes: Null values are represented by “<null>”.
7. File Name: Seattle Zones
Data Dictionary/Variable List: Seattle Zones_Data Dictionary
Missing data codes: Null values are represented by “<null>”.
8. File Name: Seattle Policies
Data Dictionary/Variable List: Seattle Policies_Data Dictionary
Missing data codes: Null values are represented by “<null>”.
9. File Name: Umojo Event Data
Data Dictionary/Variable List: Umojo Event Data_Data Dictionary
Missing data codes: Null values are represented by “<null>”.

F. Update Log

This README.txt file was originally created on 2024-11-24 by Sarah Gallagher (<https://orcid.org/0009-0003-6401-6570>), Associate Transportation Planner, (sarah.gallagher@seattle.gov)

Insert Today's Date: 2024-11-24

Original file created: 2024-11-24