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City of Seattle On-street Paid Parking - Metadata

Purpose

The City of Seattle has created an on-street paid parking occupancy data set and is providing access to this data set for public use for research and entrepreneurial purposes under the City's Open Data Program. In 2017-2018, the Seattle Information Technology (Seattle IT) and Seattle Department of Transportation (SDOT) worked collaboratively on a project to determine the rate of paid occupancy in the city's paid parking system. The City is providing data to researchers and programmers for analysis and to develop applications that might help improve parking management conditions. SDOT's interest is to make data-driven parking decisions and to help people access parking information so that they can find a space easier and spend less time circling, stuck in traffic.

Seattle's On-Street Parking System and Data Description

In 2010, the Seattle adopted a new policy in the Municipal Code to set on-street parking rates tied to the performance goal of one to two spaces being open and available throughout the day. Since then, SDOT has conducted an [Annual Paid Parking Study](#) (pdf link) and identified and implemented changes to parking rates, hours of operations, and time limits based on those data results. As part of the Performance Program, staff have actively built various parking data sets including the parking transactions at pay stations and pay by phone systems, and an inventory of paid spaces in service.

Paid parking transactions represent the purchased activity for vehicles in Seattle's public right of way where paid parking is required. For more information about Seattle's paid parking system, please see the Performance-Based Parking Pricing Program [link](#). Some critical components of Seattle's paid parking system:

- Annually about 11 million parking transactions, 12,000 paid spaces on 1,500 blockfaces
- Most areas operate Monday-Saturday between 8 am and 8 pm, some paid areas end at 6 pm (about 25%), 10 pm (10%), or 4 pm; there is no paid parking on Sundays
- Maximum time limits are 2-hour (65%), 10-hour (8%), 30 minutes (~2%), or 4-hour (25%)
- A variety of hourly rates set by paid parking area or sub area and by time of day (morning, afternoon, evening) between \$.50/hour and \$5.00/hour
- No demarcated spaces so parking is allowed anywhere along a blockface as signed; note that this often creates a situation with over 100% occupancy because cars have squeezed into spaces, parked illegally, and/or are many small cars on a block.
- Overnight payment is allowed – parkers can purchase time at any point during the night, for the next morning, on most blocks; this is critical to understand that transactions must be assigned to the next morning

- The number of paid spaces along a blockface changes over the course of the day where spaces might be restricted with no parking in the morning or evening peak travel time, or there are load zones during the day and general paid parking at those zones in the evening

Calculating Paid Occupancy

For SDOT, calculated paid occupancy is defined as the percent of transactions made on a blockface divided by the number of allocated paid parking spaces in service. A blockface is one side of the street segment. The calculation involves determining both the numerator and the denominator at any given time.

It is critical to understand that both the numerator and denominator vary over the day on a blockface. The numerator is the number of transactions that occur each minute that have been located to a specific blockface at the appropriate paid time. Parking time that is purchased the night before the next paid parking day, is assigned to the appropriate time in the morning (most likely 8 am – 10 am).

The denominator is the number of paid spaces along a blockface in service at that same time. The City maintains a database of paid spaces inventory for every thirty minutes of each paid day.

From the data set provided, the user might want to calculate an occupancy percentage using these columns:

PaidOccupancy

ParkingSpaceCount

The City is working to release the Parking Transactions and the Paid Spaces data also on Open Data, with an expectation in the first half of 2019. These files are quite large.

Datasets Available

- Last 48 hours
- Last 30 days
- Year to Date
- Historical data in 6-month bundles back to 2012

Please note that because of some delay in receiving transactions from our vendor, we have applied a 7-day delay in all data uploads. Consequently, 48 hours is actually the 8th and 9th day prior. The 30-day data set contains data within the previous 37 to 7 days.

Data Caveats

It is critical to understand several aspects to this data set:

- The City receives data feed from our pay station vendor on a nightly basis containing transactions from pay stations and PayByPhone (mobile payment vendor). However, at times, transactions records are lost somehow. SDOT works with our vendor to identify issues as quickly as we can, and to restore lost data if possible. Paid occupancy would be null for those times of missing transaction records.

- **Calculated Paid Occupancy is not the same as parking availability.** It would be inappropriate to use calculated paid occupancy data to represent where people might be able to find parking. There is a wide variation of payment compliance, meaning that at any given time, the number of un-paid parked vehicles could be significant. Non-payment occurs for both legal and non-legal reasons. In the downtown and First Hill paid areas, there is a significant number of vehicles with disabled parking permits that are allowed to park for free for unlimited time.

Users may want to examine **SDOT’s Annual Paid Parking Study**, a manual parking study, which can be used to understand differences between paid parking occupancy and actual street parking conditions. More info is [here](#). Data sets are posted [here](#).

- The number of paid parking spaces on each blockface varies by time of day. Peak period commute times (no parking allowed during morning and evening key arterial streets) are accounted for in the paid spaces inventory. As are the spaces that are no parking reserved during construction (meter hooding reservation permit). The City doesn’t currently account for all paid spaces out of service. A few examples:
 - o Food truck zones operate between 10 am to 2 pm Monday-Friday but the time of the zones are counted as paid spaces
 - o Bus layover spaces where the spaces are used for bus use, but are counted as paid spaces
- Lat/long – About 5% of the paid occupancy records are missing lat/long because the City does not have a realistic way to identify the location of these transactions
- Westlake Avenue North paid parking area is currently not included in the paid occupancy data as the City is working to improve data calculations; expected by early 2019.
- The paid rate column is missing data after 2015. If data users are interested in the parking rate charged at the time of the paid occupancy, please contact SDOT. We can help figure this out as it is a complicated calculation because rates change over the course of the day.

Update Frequency

The data set refreshes overnight but as mentioned there is a 7-day delay.

Privacy and Surveillance Policy

This data set has been reviewed with the City’s Privacy Program. It does not contain any personally identifiable information. There is no vehicle license plates or vehicle registration data.

Attributes

Below are the data columns of the paid parking occupancy data set

Column	Datatype	Description
OccupancyDateTime	Datetime, null	The date and time (minute) of the transaction as recorded
Paid Occupancy	Int, not null	The numerator of the paid occupancy percentage calculation. Number of transactions that have paid at this date/time on this blockface. This is the number of vehicles

Column	Datatype	Description
		paid for parking at this time. It is not necessarily the number of vehicles along the blockface since there are most likely vehicles that haven't paid.
Blockface Name	Nvarchar (300), null	Street segment, name of street with the "from street" and "to street;" Example is "1ST AVE BETWEEN BELL ST AND BATTERY ST" Combined with Side of Street for Blockface -- 1ST AVE BETWEEN BELL ST AND BATTERY ST SW Side. Also referred to as UnitDesc (description)
Side of Street	Varchar (3), null	Options are: E, S, N, W, NE, SW, SE, NW. The two digits are because many Seattle streets are at an angle. Avenues run north-south, Streets run east-west. 1 st Ave on the SW side is the west side of the street
SourceElementKey	Int, not null	Unique identifier for the city street segment where the pay station is located; Use this column to match with SDOT's Pay Station data and other curbspace asset data
ParkingTimeLimitCategory	Varchar (50), null	In minutes. Options are 120 (2-hour parking), 240 (4-hour parking), 30, or 600 (10-hour parking)
ParkingSpaceCount	Int, null	Number of paid spaces on the blockface at the given date and time. This does <u>not</u> include any loading zones (even if payment is required at the loading zones). While SDOT does not delineate individual spaces, we maintain a record of legal parking supply if spaces were marked. Average parallel parking paid space length is 18 feet. Any summary of parking space counts needs to account for the amount of time covered as the data will count all spaces as discrete items over a time period.
PaidParkingArea	Varchar (40), null	Primary name of a paid parking neighborhood. Example is Commercial Core.
PaidParkingSubArea	Varchar (500), null	Subset of a paid parking area—not all paid parking areas have subareas. Example is Financial, so would be Commercial Core Financial.
PaidParkingRate	Decimal (10,2), null	Parking rate charged at date and time. Data set is available for the parking rate when SDOT used to have one rate across the entire day, roughly 2012-2015. If column blank, the rates were/are set by time of day. Rates vary by area or subarea and by morning, afternoon and evening (8-11 am, 11 am-5 or 6 pm, and 5 pm to 8 pm or 10 pm)
ParkingCategory	Varchar (50), null	An overall description of the type of parking allowed on a blockface. Examples could be Paid or RPZ (restricted parking zone)
Latitude	Decimal (20,16), null	Calculated based on the known location of a pay station along the same blockface. See Issues section for more info.
Longitude	Decimal (20,16), null	Calculated based on the known location of a pay station along the same blockface. See Issues section for more info.

Seattle’s Open Data Policy User Policy

By using City data made available through this site, the user agrees to all the conditions stated in the following paragraphs as well as the terms and conditions described under the [City of Seattle data.seattle.gov data policy](http://data.seattle.gov/data-policy). The City of Seattle makes no claims as to the completeness, accuracy, timeliness, or content of any data contained in this application; makes any representation of any kind, including, but not limited to, warranty of the accuracy or fitness for a particular use; nor are any such warranties to be implied or inferred with respect to the information or data furnished herein. The data set provided is subject to change as modifications and updates are complete. It is understood that the information contained in the site is being used at one's own risk.

Data Example

Below is an example of data set.

OccupancyDateTime	PaidOccupancy	BlockfaceName	SideOfStreet
6/21/2018 12:13	3	STEWART ST BETWEEN 4TH AVE AND 5TH AVE	SE
6/21/2018 19:32	3	8TH AVE BETWEEN MARION ST AND MADISON ST	NE
6/21/2018 14:55	9	MERCER ST BETWEEN 3RD AVE N AND 4TH AVE N	N
6/21/2018 9:39	4	TERRY AVE BETWEEN LENORA ST AND DENNY WAY	NE
6/21/2018 19:45	1	TERRY AVE BETWEEN TERRACE ST AND JEFFERSON ST	NE
6/21/2018 9:40	9	NW MARKET ST BETWEEN 17TH AVE NW AND BARNES AVE NW	S
6/21/2018 17:11	1	MERCER NR ST BETWEEN TERRY AVE N AND BOREN AVE N	N
6/21/2018 12:34	8	MADISON ST BETWEEN TERRY AVE AND BOREN AVE	SE
6/21/2018 17:14	3	VINE ST BETWEEN 5TH AVE AND DENNY WAY	SE
6/21/2018 17:37	2	7TH AVE S BETWEEN S MAIN ST AND S JACKSON ST	E

SourceElementKey	ParkingTimeLimitCategory	ParkingSpaceCount	PaidParkingArea	PaidParkingSubArea
80882	120	8	Belltown	South
8382	120	4	First Hill	
57077	240	14	Uptown	Edge
81114	240	4	Denny Triangle	North
58402	120	8	First Hill	
64318	240	9	Ballard	Edge
130802	600	6	South Lake Union	South
79578	120	9	First Hill	
13298	240	6	Belltown	North
76102	120	8	Chinatown/ID	Edge

PaidParkingRate	ParkingCategory	Latitude	Longitude
	Paid Parking	47.61261205	-122.3381595
	Paid Parking	47.60765783	-122.3281038
	Paid Parking	47.62466974	-122.350726
	Paid Parking	47.61811312	-122.3365323

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	Restricted Parking Zone	47.60496966	-122.3225879
	Paid Parking	47.66857847	-122.3793215
	Paid Parking	47.62474934	-122.3364839
	Paid Parking	47.60902817	-122.3256639
	Paid Parking	47.61820226	-122.3456859
	Paid Parking	47.59958335	-122.3236188