Parking Trends in the Central Puget Sound Region, 2013–2018

Puget Sound Regional Council

The number of parking stalls in the region increased about 13% from 2013 to 2018, according to PSRC's latest parking inventory. PSRC's parking inventory collects data on parking facilities in the region's central business districts (CBDs), ferry terminals, and some urban neighborhoods. The inventory tracks the number of stalls, capacity, and parking costs at each parking facility. The type of parking facility is also tracked. In 2018, there were 2,372 parking facilities, and 203,784 parking stalls inventoried in the region (Table 1).

Primary Findings
Amount of Parking & Capacity

- There was a 3% decrease in the number of off-street parking facilities and 13% increase in parking stalls from 2013 to 2018 (Table 1).

- The Bainbridge, Southworth, and Kingston (three ferry terminals) had the most substantial percent increase in parking facilities in the CBD study areas, 517%, 33%, and 82% respectively (Table 1). This is due to changes in survey method, which were introduced in 2018. In addition to counting public ferry parking, nearby available off-street parking facilities were also counted, which was not included in PSRC's previous studies.

- Following the trends from previous years, Bellevue and Seattle showed more significant decreases in the number of parking facilities. Both cities' parking facilities decreased by 13% during this time period (Table 1).

Costs

- All off-street parking costs increased since the 2013 parking inventory, adjusting for inflation, except for Bainbridge and Southworth's daily parking, and Bremerton and Everett's monthly parking.

- On average, hourly, daily, and monthly costs for off-street parking increased 22%, 12%, and 16%, respectively, throughout the region between 2013 to 2018.

- Seattle continues to be the city with the highest off-street parking costs in the region. Seattle's average two-hour, daily, and monthly costs are $10.30, $23.14, and $275.74, respectively. Along with these high costs, Seattle has seen the most dramatic increases in parking cost out of the other areas surveyed (Table 2).

Table 1: 2013–2018 Parking Facilities Summary

Study Area	Parking Facilities				Parking Stalls			
	2013	2018	2013 – 2018 Change		2013	2018	2013 – 2018 Change	
			Number	Percent			Number	Percent
Bainbridge	6	37	31	517%	968	1,985	1,017	105%
Bellevue	279	242	-37	-13%	42,750	45,678	2,928	7%
Bremerton	285	288	3	1%	10,916	14,075	3,159	29%
Everett	429	420	-9	-2%	14,003	14,459	456	3%
Kingston	28	51	23	82%	773	1,472	699	90%
Seattle	816	711	-105	-13%	78,129	85,239	7,110	9%
Southworth	3	4	1	33%	381	385	4	1%
Tacoma	378	373	-5	-1%	21,255	21,727	472	2%
University District	219	246	27	12%	11,501	18,764	7,263	63%
Regional Total	**2,443**	**2,372**	**-71**	**-3%**	**180,676**	**203,784**	**23,108**	**13%**

Table 2: 2013–2018 Parking Rate Summary*

Study Area	2-Hour			Daily			Monthly		
	2013**	2018	2013 – 2018 Change	2013**	2018	2013 – 2018 Change	2013**	2018	2013 – 2018 Change
Bainbridge	-	$9.68	-	$10.69	$9.68	$(1.01)	$183.70	$204.67	$20.97
Bellevue	$8.41	$9.44	$1.03	$15.79	$19.35	$3.56	$186.45	$200.26	$13.80
Bremerton	$2.99	$6.13	$3.14	$6.62	$7.19	$0.57	$96.13	$93.99	$(2.14)
Everett	$2.79	$3.53	$0.74	$8.75	$9.05	$0.30	$75.02	$63.85	$(11.17)
Kingston	-	$5.00	-	$4.31	$5.78	$1.47	$66.02	$77.50	$11.48
Seattle	$8.57	$10.30	$1.73	$18.90	$23.14	$4.24	$231.73	$275.74	$44.01
Southworth	-	$5.00	-	$5.39	$5.00	$(0.39)	$67.37	-	-
Tacoma	$4.80	$5.19	$0.39	$9.87	$10.09	$0.22	$79.60	$95.86	$16.26
University District	$5.30	$5.74	$0.44	$11.98	$14.10	$2.12	$139.70	$149.10	$9.40
Regional Avg.	**$5.48**	**$6.67**	**$1.25**	**$10.26**	**$11.49**	**$1.23**	**$125.08**	**$145.12**	**$12.83**

*Average parking rates reflect a simple average of all of the parking lots.
**2013 costs are adjusted for inflation to reflect 2018 prices, based on the Consumer Price Index (CPI).

Background and Context

This is the 12th regional inventory of off-street parking conducted by PSRC. The Parking Inventory began in 1987 with the City of Seattle's central business district (CBD) as the initial study area. Since then, PSRC has conducted this survey on a semi-regular basis, every 2-5 years. In 1989, the study expanded to include portions of First Hill and Lower Queen Anne. In 1992, the study area expanded to Bellevue's CBD and included Seattle's International District, Regrade, and Waterfront neighborhoods. In 2002, the study area expanded to the CBDs of Bremerton, Everett, and Tacoma, as well as Seattle's University District neighborhood and three ferry terminals — Bainbridge, Kingston, and Southworth.

PSRC collects information on the number of stalls, facility type, and parking costs at each parking facility. The types of parking surveyed include off-street parking, public and private, free, and pay-to-park facilities.

The 2018 Parking Inventory was conducted from May to September, to parallel the 2013 Parking Inventory, which PSRC conducted from March to July. The data collection period was Monday through Thursday between 8:30 a.m. and 11:30 a.m. and between 1:00 p.m. and 3:30 p.m.

The primary attributes for data collection in 2018 are consistent with previous years: two-hour and four-hour period rates, daily and monthly rates, the number of stalls, and disaggregation of parking facility type.

Parking Inventory	2018	2013	2010	2006	2004	2002	1999	1996	1994	1992	1989	1987
CBDs												
Seattle	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bellevue	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Tacoma	✓	✓	✓	✓	✓	✓						
Everett	✓	✓	✓	✓	✓	✓						
Bremerton	✓	✓	✓	✓	✓	✓						
Neighborhoods												
First Hill	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Lower Queen Anne	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
International District	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Regrade	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Waterfront	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
University District	✓	✓	✓	✓	✓	✓						
Ferry Terminals												
Bainbridge Island	✓	✓	✓	✓	✓	✓						
Kingston	✓	✓	✓	✓	✓	✓						
Southworth	✓	✓	✓	✓	✓	✓						

Updated Methodology

In 2018 PSRC revised the inventory process. This transition in survey methodology between 2013 and 2018 could have been a factor in some of the observed changes related to increasing parking costs and number of stalls. The data collection changes are explained in greater detail below.

Data Collection

Prior to 2018, PSRC collected parking facility information every two to five years exclusively through fieldwork conducted by a group of five to 10 interns over the course of three to four months. This task required extensive coordination, management, and an involved manual data input process.
PSRC revised the data collection process in 2018 by designing a new multi-phase approach. The changes include an online research procedure that collects data ahead of fieldwork, the use of Survey123 (ArcGIS) to replace the papers and pens that had previously been used to record the data, and the establishment of an ETL (Extract, Transfer, Load) process to structure 2018 inventory within PSRC's central database. In addition to designing a more efficient, automated data pipeline for quality assurance and control, PSRC used Tableau to monitor data integrity and visualize regional parking trends.

The availability of constantly evolving and improving technology has aided in the 2018 data collection improvements. For example, many major cities have adopted the use of apps, such as those that assist customers in finding and reserving parking spots in advance. PSRC leveraged the availability of the large amounts of easily accessible data to help collect parking information online. This includes information such as parking capacities, rates, locations, and management company information.
The revised methodology for data collection can be divided into the following steps:

- The first step involves comparing Google Earth satellite imagery from 2013 and 2018 to detect the landscape changes on parking properties. The changes identified between the two survey years were categorized into three groups: demolished, maintained, and changed. New parking properties appearing in the 2018 inventory were cross-validated with Google Street View and then geocoded into a GIS database. To inventory 2018 parking, PSRC modified the data by adding new fields to record rates, capacity, management company contact, address, and facility type.

- The second step involves using the available data to search property addresses and names through various online platforms including apps, commercial websites, company websites, and government open data sources. The primary data sources include SportHero, ParkMe, Parking Panda, Parkopedia, BestParking.com, and Seattle.gov. Outreach to parking management or fieldwork helped to resolve conflicting information from different data sources and validate findings.

- The addition of the online research process greatly expedites data collection. The application of these methods are able to capture 80% of parking facilities and spaces within three weeks (without requiring field work).

The information included in these parking datasets is based on accessible parking facilities and voluntary participation in the inventory. Based on the nature of survey work, several facilities were inaccessible, preventing data collection. If updated information was not available for this inventory and the parking facility was not under construction, demolished, or renovated between data collection years, the 2013 data for maximum parking stall capacity was carried to the 2018 dataset. Due to continually changing conditions, the parking rates and occupancy values for these records were not carried forward from the 2013 inventory.

START	ONLINE RESEARCH	QA/QC	FIELD WORK	FINAL PRODUCT	ADMIN
• Identify changes • Create shapefiles • Mark changes	Fill in type, rate, capacity via Acces	Cross examination	Tablet platform	Data cleaning QA/QC, information Survey, mapping, geo-coding, analysis	Document the product/procedure, deliver presentations

Data Comparison and Quality Control

To compare the 2013 and 2018 parking inventory data, PSRC tabulated and mapped the absolute and relative differences in the number of parking stalls between the two survey years. The tracts with percent increases or decreases in the number of parking stalls greater than 10% were identified as outliers and further examined at the block level.

Ten census tracts had parking growth or decline of more than 10%. After closer investigation, the majority of these changes were due to several reasons. First, in some instances, there were differences in the number of surveyed blocks within the same tracks between 2013 and 2018 data collection. Second, some tracks had new developments and added parking capacity. There was one census block [tract 23801, block 1002] identified as an outlier with 629 parking stalls omitted from the 2018 parking inventory.

It is important to note that there were survey collection changes between 2013 and 2018, as described above. This inventory took advantage of online data collection strategies. Although fieldwork remained a component, slightly different field collection methods were utilized.

Post-processing

When comparing the changes between 2013 and 2018 parking data, one census block in Bellevue [tract 23801, block 1002] was found to have a decrease of 629 parking stalls.

There are three potential explanations for this discrepancy: a mistake in counting in 2013, a change in status, or unintentional omission in 2018. PSRC conducted further research to determine the cause for this difference. Based on a search of the PSRC parcels database, the 629 spaces missing from the 2018 dataset were accounted for and assigned to this parcel in 2014. In addition, staff at the City of Bellevue confirmed that there were no changes in the parking (structures or number of spaces) between 2013 and 2018.

To correct the data that were excluded from the 2018 survey counts, 629 parking spots were manually added to this block in the inventory.[1]

SPOT A CHANGE	SPOT PARKING	GIS CODING	ACCESS: FILL IN DATA
• 2013/5 vs 2017/5 • Historical images • Status changes	• Demolished • New • MIxed	• Geocoding	• Rate • Capacity • Facility type

Pay attetion to the reliability of the data sources

Contact Us

Copies of this report are available from the **Information Center** at **206.464.7532**, **info@psrc.org**, or from the PSRC website, **psrc.org**. For questions regarding the 2018 Parking Inventory or historical data, please contact **Mary Richards** at **mrichards@psrc.org**.

[1] Manually correcting this error required editing multiple sheets within the data file. The following table lists the detailed revisions made to the dataset to account for the missing parking spaces in census tract 23801, block 1002.

Data Type (by data sheet)	Change and Notes
"Capacity Zones"	Tract 23801, block 1002 (row 55) – added 629 parking stalls to "Total Stalls" and hanged "number of lots" to 2, so the average number of stalls was changed to 459 (917/2)
"CapacityBlockGroups"	Added 1 additional lot to the "number of lots", added 629 parking stalls to "Total Stalls", and updated "average number of stalls"
"CostsHourlyZones"	No change, there was no hourly cost provided for tract 23801
"CostsHourlyBlockGroups"	No change, there was no hourly cost provided for tract 23801
"CostDailyZones"	No change, 2013 cost data for tract 23801, block 1002 available but not transferred to 2018*
"CostDailyBlockGroups"	No change
"CostsMonthlyZones"	No change
"CostsMonthlyBlockGroups"	No change
"LotTypesZones"	Added 1 parking lot to "Other" category for the tract 23801 block 1002; Total lots was updated to 2 lots
"LotTypesBlockGroups"	Added 1 parking lot to "Other" category for the tract 23801 block 1002; Total lots was updated to 10 lots

* As stated above, because parking rate costs vary between years, and likely changed between 2013 and 2018, the information regarding hourly, daily, and monthly costs was not updated for this added block.