Parking Inventory for Seattle and Bellevue 1996

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Puget Sound Regional Council
PSRC

Puget Sound Regional Council Executive Board

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PARKING INVENTORY FOR SEATTLE AND BELLEVUE, 1996

EXECUTIVE SUMMARY

This study provides an important database of parking availability, utilization, and costs to support both regional and local planning needs. The Puget Sound Regional Council (PSRC) uses parking data as input to its regional travel demand forecasting models. These models provide estimates of the amount and types of travel we can expect in the years ahead, and allow policy makers to examine the impacts of alternative transportation policy decisions. Parking costs are a key factor in modeling mode choice for both work and non-work trips.

During April and May, 1996, the Puget Sound Regional Council inventoried all off-street parking in the Central Business Districts (CBDs) in Seattle and Bellevue, and in the Seattle First Hill and lower Queen Anne areas. The two CBDs were also surveyed in 1987 and 1989; First Hill and lower Queen Anne were first inventoried in 1989. In 1992 and 1994, all areas were inventoried by the PSRC. The study area for Seattle consists of 19 zones; there are 7 zones in Bellevue for data collection and analysis. Denny Regrade, Pioneer Square, and the International District are considered part of the Seattle CBD for this study.

The parking inventory contains information on the number of stalls, occupancy, and parking costs. The types of parking inventoried included:

- off-street parking, both public and private;
- free and pay parking;
- carpool and vanpool lots;
- motor pool parking, both private and government;
- hotels and motels;
- short-term customer parking such as convenience stores and restaurants; and
- residential parking (in Seattle CBD only).

Findings

Availability

In Seattle, 53,235 parking stalls were counted in the CBD; 10,328 in First Hill; and 16,949 in lower Queen Anne. This count reflected an increase of 639 spaces in the Seattle CBD since 1992 and 13,140 since 1987. Nearly 90 percent of the growth since the first inventory occurred before 1992. Several large construction projects completed during that time, either stand-alone parking facilities or garages within new office buildings, account for most of the 1987-1992 growth.

The increase since 1994 is largely attributable to the completion of new parking garages for Swedish Hospital on First Hill and the Seattle Center in lower Queen Anne, as well as several residential buildings in the Seattle CBD, primarily in the Denny Regrade.

In Bellevue, 31,093 stalls were counted. This is an increase of more than 1100 spaces since 1994; much of the increase is due to major additions at Bellevue Square.

Occupancy

In the Seattle CBD, occupancy rates rose significantly, from 74 percent to 80 percent, a 3.7 percent change. This rate is close to that in 1987 after hovering between 73 and 75 percent from 1989 to 1994. The economic downturn during these first years of the 1990s may have contributed to a decrease in parking occupancy.

Occupancy rates outside the Seattle CBD have varied between 1989 and 1996. Rates on First Hill range from 80.6 to 76.2 percent, and in lower Queen Anne from 53 to 58 percent.

Occupancy rates in the Bellevue CBD were at around 55 percent in the late 1980s, then increased to 61 percent in 1992, where it has remained.

Cost

The average costs of two-hour, daily, and monthly parking in downtown Seattle and Bellevue are:

	Two-Hour	Daily	Monthly
Seattle CBD	$4.99	$9.83	$129.14
First Hill	2.46	6.48	66.96
Lower Queen Anne	4.46	6.16	54.06
Bellevue CBD	2.46	6.90	74.78

Increases in parking costs occurred in every area with the exception of Pioneer Square. Some increases were significant, especially in Denny Regrade, First Hill and Queen Anne.

In Bellevue, rates have increased slightly since 1994, with monthly rates seeing the largest increase, from $67.47 to $74.78. Overall, parking rates in the Bellevue CBD are similar to rates outside the downtown Seattle core.

Uses of Parking Data

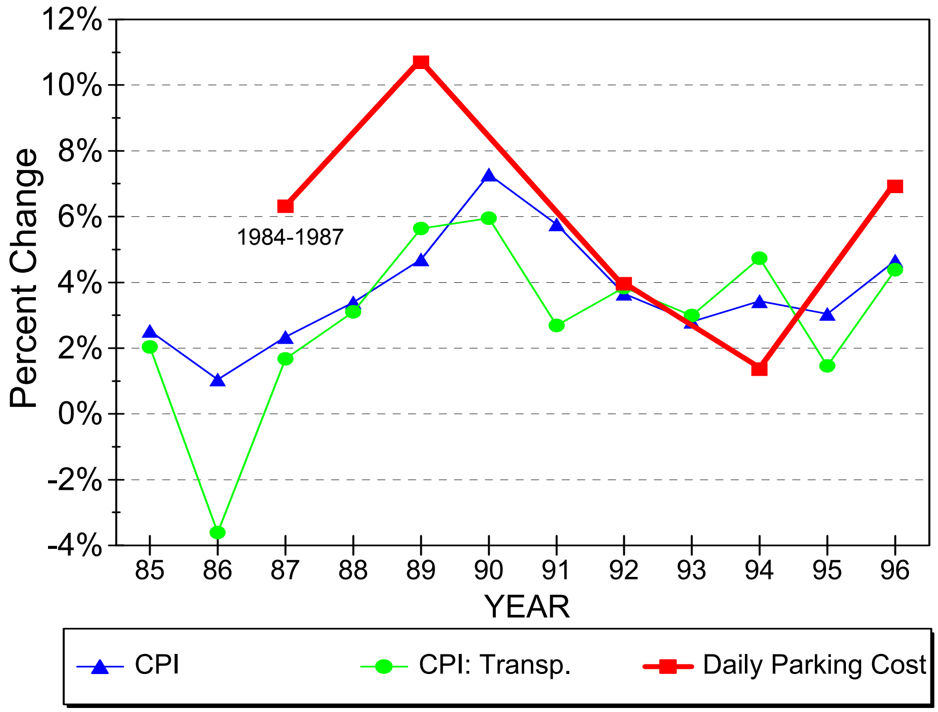
This report is intended to support the needs of people interested in parking policies. The federal Clean Air Act and state Commute Trip Reduction Act require that local governments and large employers take a closer look at commuter travel to and from our central business districts and formulate policies to reduce the environmental impacts of commuting.

More than half of the air pollution in the central Puget Sound region comes from motor vehicles. With federal and state mandates to reduce air pollution, the region is seeking ways to discourage people from driving alone and to encourage them to use transit, carpools or some other mode of travel. One of the more effective ways to influence people's travel behavior is to increase the cost and/or decrease the supply of parking. The state's Commute Trip Reduction Law requires certain jurisdictions in the region to review their parking policies and, where appropriate, revise them to support commute trip reduction. For these reasons, planners and policy makers can benefit from the information provided by this survey.

Figure 1 offers a comparison of the average daily cost to park in the Seattle CBD since 1984 with the consumer price indices of all goods and services and of private transportation costs. Changes in parking costs in the past decade have closely followed the trends in the CPI, responding to specific and local factors such as office vacancy rates and parking availability in the CBD. The rate of increase has generally been higher during that time, increasing 94 percent, from $5.06 to $9.83, while the overall CPI increased 54.8 percent and the transportation component only rose 40.6 percent. The transportation component includes the cost of new and used vehicles, fuel, maintenance and repair, and insurance.

Figure 1
Daily Parking Costs and CPI, Annual Percent Change, 1984-1996

Note: Daily parking cost is for the Seattle CBD only.
The 1984 parking costs obtained from a Seattle Engineering Department survey.



The Consumer Price Index (1982-84=100) is for the Seattle-Tacoma metropolitan area.

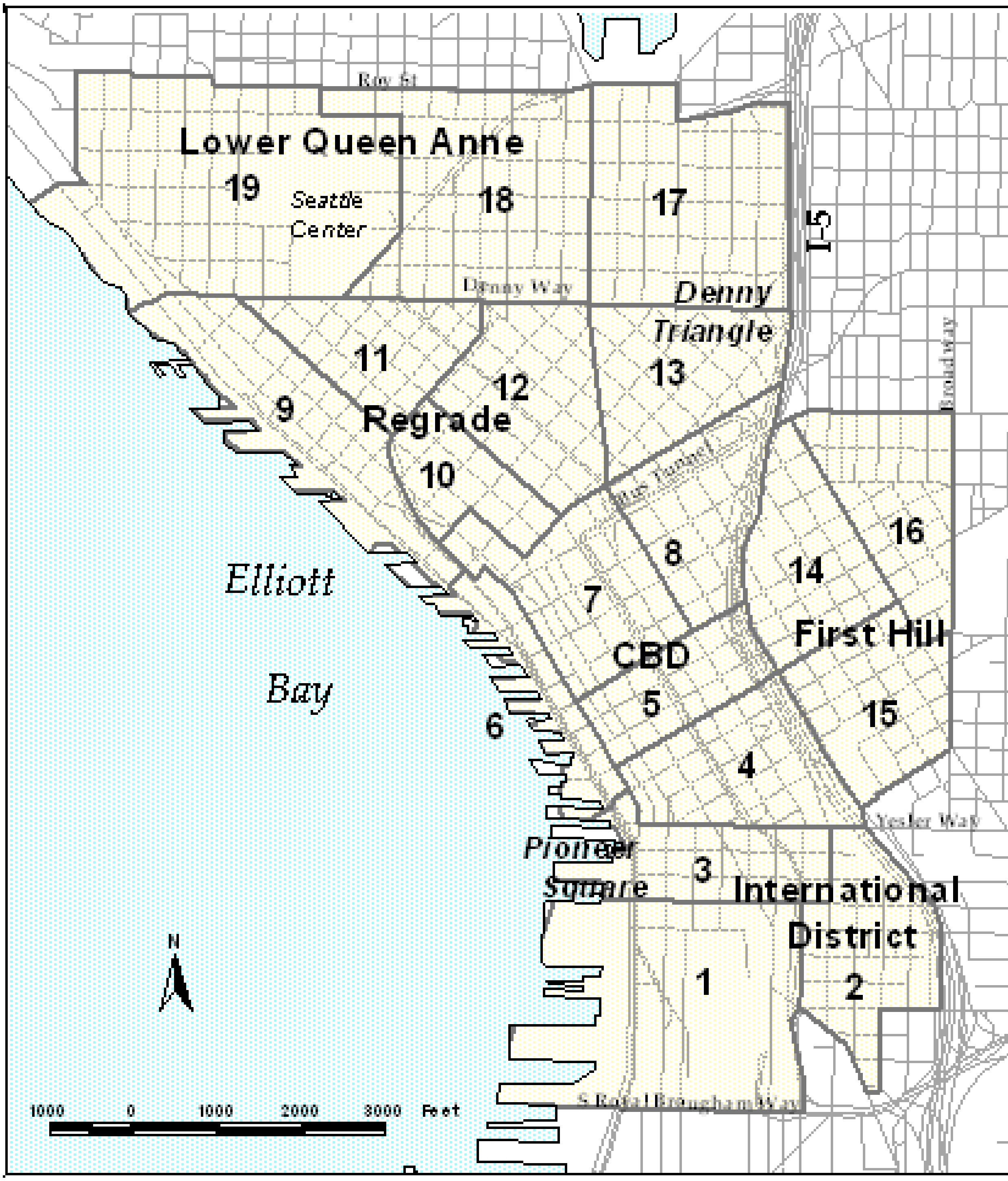
I. INTRODUCTION

This is the fifth regional inventory of off-street parking in Seattle and Bellevue conducted by the Puget Sound Regional Council (PSRC) and its predecessor, the Puget Sound Council of Governments. The Seattle inventory in 1987 covered only the Central Business District (CBD). Beginning in 1989, the study was expanded to include portions of both First Hill and lower Queen Anne. The Bellevue study area remained the same. The Seattle Engineering Department's Transportation Division maintains an inventory of all metered, on-street parking within the City of Seattle, so on-street parking is not included in this inventory.

This report summarizes data by parking zone in four study areas: the Seattle CBD, First Hill and lower Queen Anne within Seattle, and the Bellevue CBD. The 1996 results are compared with results from the previous inventories. (For First Hill and lower Queen Anne, comparisons go back only to 1989, the first year those two areas were inventoried.) The PSRC plans to continue updating the inventory database on a two-year cycle. The data are used in the PSRC's travel forecasting models, particularly in estimating choice of travel mode.

The report is divided into two chapters: A chapter describing the inventory in the Seattle CBD, in First Hill and in lower Queen Anne, and a chapter describing the inventory in downtown Bellevue. Each chapter includes a description of the study area, the methods used for conducting the inventory, and the findings. The findings include data from the 1987, 1989, 1992, and 1994 inventories. An appendix describes the methodology in more detail.

Figure 2
Seattle Study Area, 1996 Parking Inventory



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II. SEATTLE INVENTORY

A. STUDY AREA

The Seattle study area is shown in Figure 2. Zones 1 through 13 comprise the Seattle Central Business District (CBD), bounded by Elliott Bay to the west, Denny Way to the north, Interstate 5 to the east, and Royal Brougham Way to the south. This, in turn, is divided into three subareas: Pioneer Square/International District (zones 1-3), Downtown Core (zones 4-8), and Denny Regrade (zones 9-13).

Zones 14 through 16 are located east of the CBD and comprise the First Hill area. The area is bounded by Interstate 5 to the west, Pine Street to the north, Broadway to the east, and Alder Street to the south.

Zones 17 through 19 comprise lower Queen Anne, which is bounded by Elliott Bay to the west, Denny Way to the south, Interstate 5 to the east, and Roy, Valley and Mercer streets to the north.

In the 1987 study, only zones 1 through 13 were inventoried. This area had historically been considered the "Central Business District", the primary area for studying economic and commuting activities. In 1989, it was decided to add First Hill and lower Queen Anne because these areas are providing parking to persons using the CBD.

B. METHODOLOGY

Data were collected in April and May of 1996, using both permanent and temporary PSRC staff. The inventory was conducted Monday through Friday between 9:30 a.m. and 11:30 a.m., and between 1:30 p.m. and 3:30 p.m.

Data collected for each parking lot include census tract and block number, owner or tenant, address, total stalls, morning and afternoon occupancy, cost for two hours, daily and monthly parking, and type of parking.

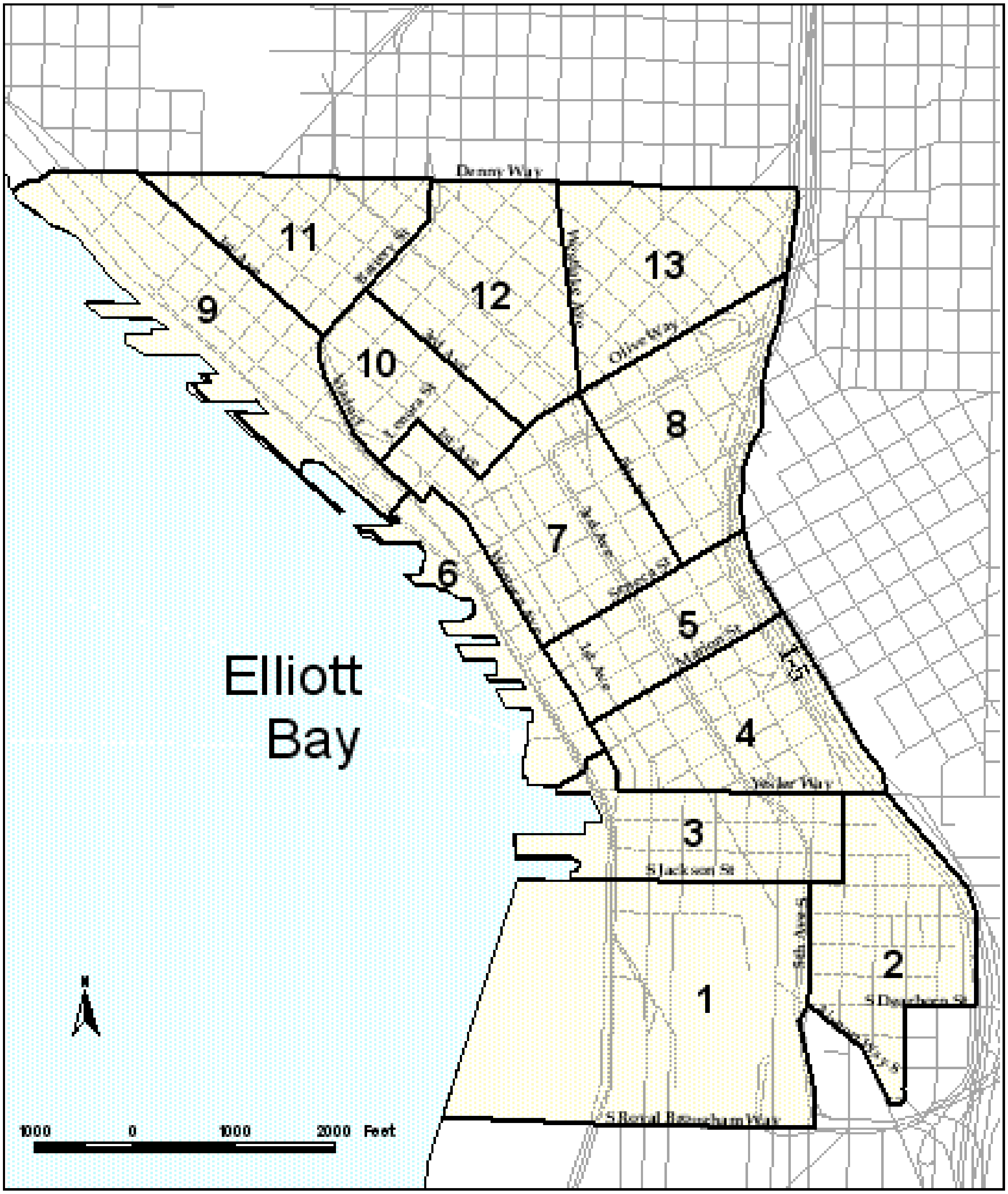
Parking type was used to analyze free parking and was coded as

- C -- free, short-term customer;
- E -- employee;
- R -- residential; or
- O -- all other.

“Other” includes public pay lots and garages and parking of unknown type. For most analyses, “Employee” parking is combined with “Other”.

Residential parking was inventoried only in the Seattle CBD (zones 1-13). All data were entered into a database that included the 1994 parking inventory data for comparison. A more detailed methodology is included as an Appendix to this report.

Figure 3
Seattle CBD Study Area, 1996 Parking Inventory



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C. FINDINGS

This section is divided by geography into three parts: Seattle CBD, First Hill, and lower Queen Anne. Each part is further divided into separate discussions of total stalls, occupancy, costs, and parking type.

SEATTLE CBD

Total Stalls

Figure 3 shows the CBD study area, comprised of zones 1-13, as well as the total parking stalls and average daily parking costs in each zone. Zones 1-3 include Pioneer Square and the International District. Zones 9-13 include Denny Regrade and the northern waterfront. Zones 4-8 comprise the downtown core, what is commonly referred to as the "CBD".

A total of 53,235 parking stalls were counted in the Seattle CBD (Table 1). This represents an increase of 13,140 parking stalls since 1987. However, the annual increase has not been uniform during this time. The average yearly increase has declined from a high of 2,647 between 1987 and 1989 to 320 between 1994 and 1996. On a percentage basis, the average annual increase went from a high of 6.4% between 1987 and 1989 to a low of 0.6% between 1994 and 1996.

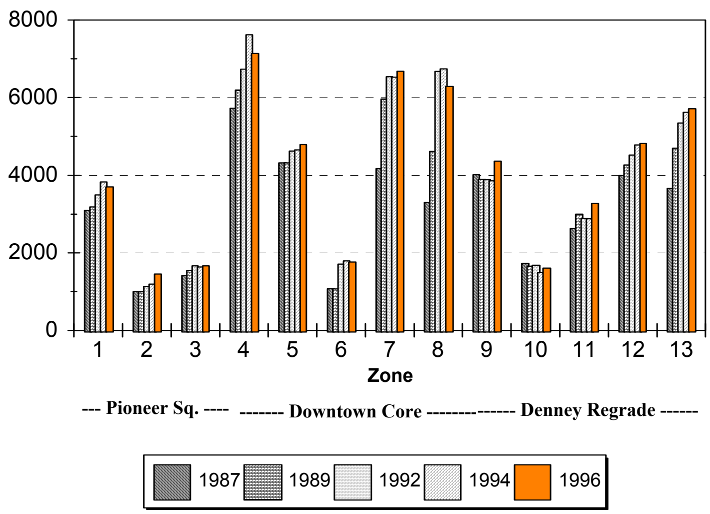
Table 1
Seattle CBD Study Area, 1996 Parking Inventory

Zone	1987 Total Stalls	1989 Total Stalls	1992 Total Stalls	1994 Total Stalls	1996 Total Stalls	94-96 Annual % Change	87-96 Annual % Change
1	3,095	3,184	3,489	3,822	3,700	-1.6	2.0
2	999	992	1,131	1,190	1,452	10.5	4.2
3	1,410	1,547	1,664	1,635	1,663	0.9	1.9
4	5,729	6,195	6,731	7,623	7,136	-3.2	2.5
5	4,320	4,317	4,621	4,653	4,790	1.5	1.2
6	1,070	1,067	1,704	1,791	1,763	-0.8	5.7
7	4,166	5,964	6,537	6,527	6,682	1.2	5.4
8	3,298	4,613	6,674	6,739	6,283	-3.4	7.4
9	4,011	3,894	3,881	3,857	4,359	6.3	0.9
10	1,731	1,658	1,680	1,488	1,600	3.7	-0.9
11	2,621	2,994	2,887	2,876	3,276	6.7	2.5
12	3,986	4,267	4,518	4,777	4,817	0.4	2.1
13	3,659	4,697	5,346	5,618	5,714	0.9	5.1
TOTAL	40,095	45,389	50,863	52,596	53,235	0.6	3.2

The growth in parking availability corresponded to increases in office and commercial space in the late 1980s. Between 1987 and 1994, major office buildings and parking structures, including the Washington State Convention Center, Two Union Square, Gateway Tower, Pacific First Center, Washington Mutual Tower, and the Pike Place Market Garage, contributed several thousand new spaces to the downtown inventory.

Between 1994 and 1996, only zones 2, 9 and 11 experienced significant increases in the number of stalls. New residential development in the Denny Regrade accounted for most of the increase.

Figure 4
Seattle CBD: Parking Availability by Zone 1987-96



In the other CBD zones, parking availability remained essentially unchanged. The one exception was in zone 4, where available parking decreased 6.4 percent since 1994, from 7,623 to 7,136. This decrease came not from deletions of parking facilities but from adjustments to 1994 counts, when six lots showed more spaces (anywhere from 20 to 213 more) than could be accounted for in the 1996 count.

Figure 4 shows the number of stalls in each zone for each of the five inventories between 1987 and 1996.

Table 2
Seattle CBD: Occupancy Rates and Annual Percent Change, 1987-1996

Zone	1987 Occupancy Rate (%)	1989 Occupancy Rate (%)	1992 Occupancy Rate (%)	1994 Occupancy Rate (%)	1996 Occupancy Rate (%)	94-96 Annual % Change	87-96* Annual % Change
1	48.1	41.9	50.7	53.0	57.6	4.3	2.0
2	62.1	60.4	57.5	55.5	62.7	6.2	0.1
3	87.6	79.7	84.2	81.2	72.2	-5.7	-2.1
4	91.0	82.1	76.5	79.6	86.6	4.3	-0.5
5	94.9	82.3	74.4	75.2	85.5	6.6	-1.2
6	87.3	80.3	67.1	72.5	77.2	3.2	-1.4
7	81.8	84.8	79.2	83.8	88.9	3.0	0.9
8	93.8	72.9	71.1	80.7	90.4	5.9	-0.4
9	67.3	79.0	62.4	65.7	74.2	6.3	1.1
10	79.2	71.8	70.5	66.9	67.9	0.7	-1.7
11	76.0	64.1	72.9	67.4	84.4	11.9	1.2
12	86.7	73.1	74.5	71.1	74.5	2.3	-1.7
13	85.7	81.1	88.0	81.9	80.0	-1.2	-0.8
AVG	81.5	75.4	73.3	74.6	80.3	3.7	-0.2

Occupancy

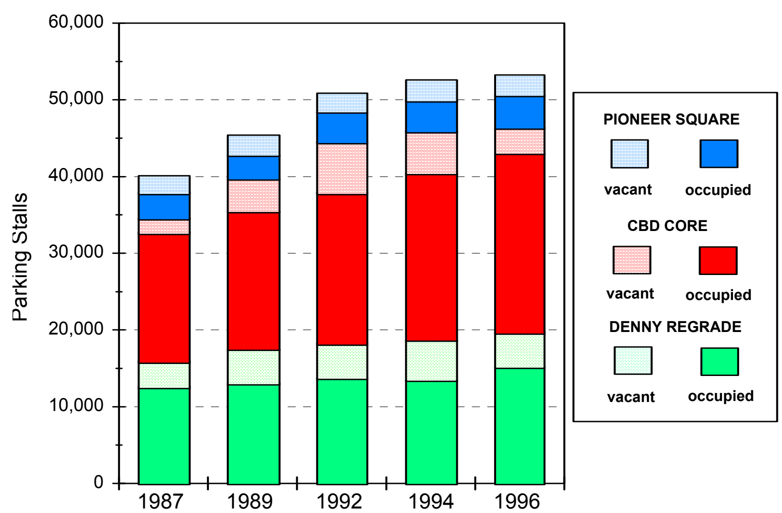
Parking in the CBD had an overall occupancy rate of 80.3 percent, which approaches the 81.5 percent occupancy in 1987 after hovering between 73 and 75 percent in the intervening years (Table 2). During those years a lot of new parking was added downtown at the same time that occupancy rates of downtown office buildings and the level of retail activity decreased.

Five zones had annual percentage increases of 6 percent or more since 1994. The greatest increase was in zone 11 with 11.9 percent. Zone 11 also had one of the largest increases in available stalls.

The greatest decrease in occupancy rates, 5.7 percent, occurred in zone 3 (Pioneer Square). Part of that zone was inventoried on Good Friday and that may have had some depressive effect on the occupancy counts. No other known reason was found to account for the decrease.

Figure 5 shows the change in total stalls and occupancy from 1987 to 1996 for the three subareas in the CBD.

Figure 5
Seattle CBD: Total Capacity and Occupancy, 1987-96



Parking Cost

Parking costs in this report do not reflect "early bird" special rates, employee subsidies (including free parking), or special rates (i.e., carpools). Parking costs were treated in the same manner in previous inventories. Three rates were recorded: 2-hour, daily, and monthly (for a definition of two-hour parking rates, see the Appendix.) All costs are weighted by total stalls.

Two-Hour. Average costs for parking 2 hours are shown in Table 3. Averages ranged from $2.20 in zone 2 to $7.17 in zone 5; the CBD average was $4.99. The annual rate of increase since 1994 is 6.4 percent, reversing a downward trend since 1987 that reached a low of 1.5 percent annual change between 1992 and 1994.

Daily. Average daily costs are shown in Table 4. Averages ranged from $3.43 in zone 2 to $14.05 in zone 5; the CBD average was $9.83. Daily rates experienced a similar trend as two-hour costs: the average for the CBD went up 10.7 percent annually between 1987 and 1989, 4.0 percent between 1989 and 1994, 1.4 percent between 1994 and 1996, but 6.9

percent annually over the past two years. Figure 6 on page 10 shows the geographic distribution of average daily rates.

Table 3
Seattle CBD: Average 2-Hour Costs and Annual Percent Change,1987-1996

Zone	1987 Weighted	1989 Weighted	1992 Weighted	1994 Weighted	1996 Weighted	94-96 Annual % Change	87-96 Annual % Change
1	$2.14	$3.30	$3.21	$3.05	$3.24	3.1	4.7
2	$1.97	n.a.	$3.05	$2.42	$2.20	-4.7	1.2
3	$2.33	$2.47	$2.75	$3.08	$3.28	3.2	3.9
4	$3.58	$4.40	$4.76	$5.11	$5.38	2.6	4.6
5	$4.22	$4.99	$5.92	$6.03	$7.17	9.0	6.1
6	$3.20	$2.73	$4.85	$4.76	$5.17	4.2	5.5
7	$3.18	$3.70	$4.53	$4.77	$5.93	11.5	7.2
8	$3.79	$4.65	$4.41	$4.66	$5.18	5.4	3.5
9	$2.05	$2.46	$2.93	$3.26	$3.37	1.7	5.7
10	$2.37	$3.05	$3.81	$3.64	$4.94	16.5	8.5
11	$2.29	$2.42	$4.39	$3.17	$4.66	21.2	8.2
12	$2.50	$3.53	$3.70	$3.78	$4.22	5.7	6.0
13	$2.64	$3.01	$3.50	$3.42	$3.81	5.5	4.2
AVG	$3.02	$3.76	$4.28	$4.41	$4.99	6.4	5.7

"n.a." -- not applicable; fewer than 5 lots in zone with 2-hour rates.

Table 4
Seattle CBD: Average Daily Costs and Annual Percent Change,1987-1996

Zone	1987 Weighted	1989 Weighted	1992 Weighted	1994 Weighted	1996 Weighted	94-96 Annual % Change	87-96 Annual % Change
1	$2.14	$3.30	$3.21	$3.05	$3.24	3.1	4.7
2	$1.97	n.a.	$3.05	$2.42	$2.20	-4.7	1.2
3	$2.33	$2.47	$2.75	$3.08	$3.28	3.2	3.9
4	$3.58	$4.40	$4.76	$5.11	$5.38	2.6	4.6
5	$4.22	$4.99	$5.92	$6.03	$7.17	9.0	6.1
6	$3.20	$2.73	$4.85	$4.76	$5.17	4.2	5.5
7	$3.18	$3.70	$4.53	$4.77	$5.93	11.5	7.2
8	$3.79	$4.65	$4.41	$4.66	$5.18	5.4	3.5
9	$2.05	$2.46	$2.93	$3.26	$3.37	1.7	5.7
10	$2.37	$3.05	$3.81	$3.64	$4.94	16.5	8.5
11	$2.29	$2.42	$4.39	$3.17	$4.66	21.2	8.2
12	$2.50	$3.53	$3.70	$3.78	$4.22	5.7	6.0
13	$2.64	$3.01	$3.50	$3.42	$3.81	5.5	4.2
AVG	$3.02	$3.76	$4.28	$4.41	$4.99	6.4	5.7

"n.a." -- not applicable; fewer than 5 lots in zone with daily rates.

Figure 6
Seattle: Average Daily Parking Costs, 1996

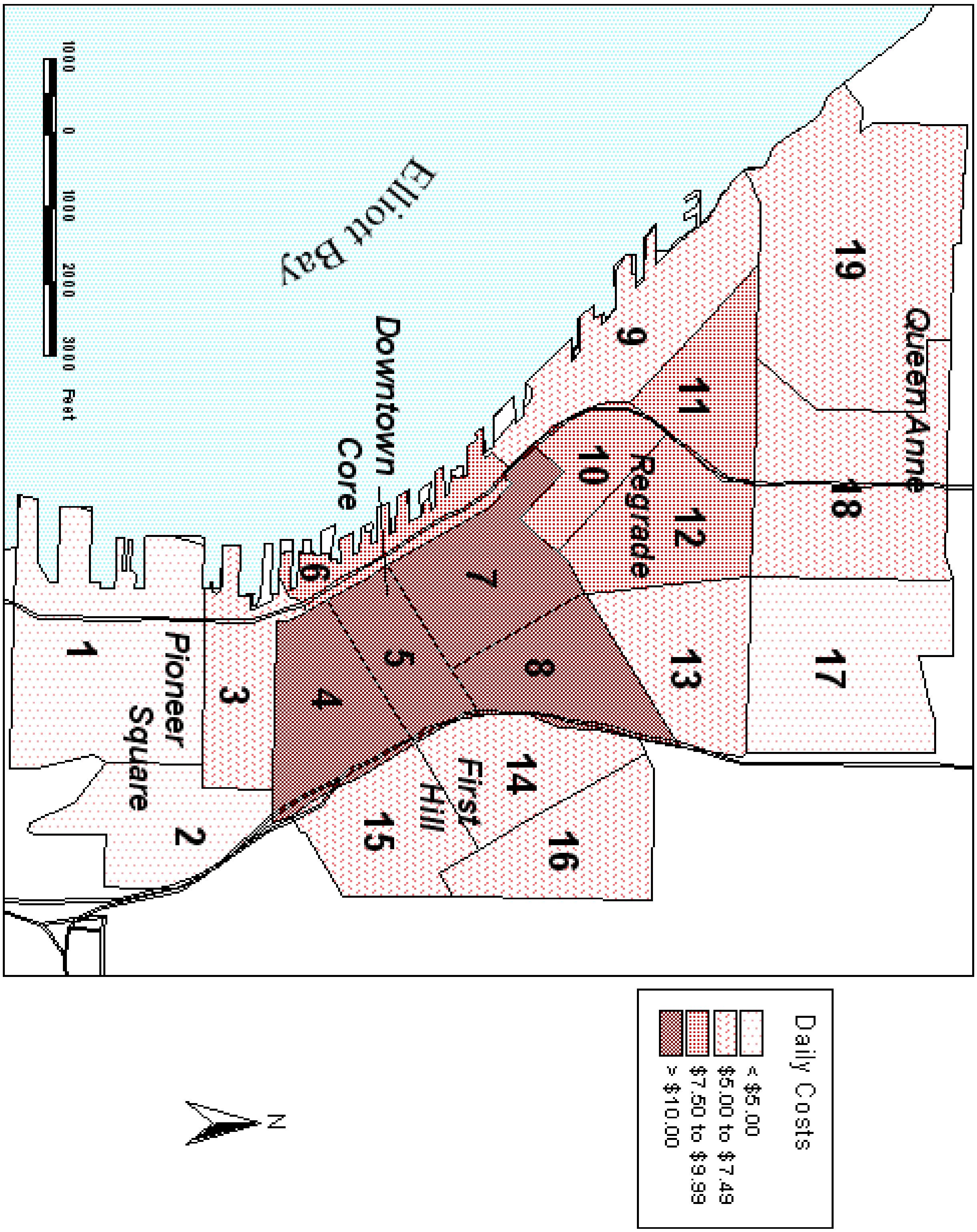


Table 5
Seattle CBD: Average Monthly Costs and Annual Percent Change,1987-1996

Zone	1987 Weighted	1989 Weighted	1992 Weighted	1994 Weighted	1996 Weighted	94-96 Annual % Change	87-96 Annual % Change
1	$82.89	$65.27	$68.17	$61.87	$65.50	2.9	-2.6
2	n.a.	$47.56	n.a.	n.a.	$50.87	n.a.	n.a.
3	$79.02	$83.13	$109.02	$93.52	$96.36	1.5	2.2
4	$88.47	$98.29	$123.51	$128.78	$138.89	3.9	5.1
5	$110.47	$119.88	$139.89	$149.74	$153.62	1.3	3.7
6	$101.41	$102.63	$106.76	$109.95	$121.09	4.9	2.0
7	$81.65	$104.72	$120.23	$123.79	$142.17	7.2	6.4
8	$107.81	$118.72	$128.80	$134.15	$152.27	6.5	3.9
9	$50.00	$45.64	$63.41	$60.14	$65.13	4.1	3.0
10	$70.00	$71.84	$96.92	$96.92	$95.97	-0.5	3.6
11	$74.55	$65.53	$77.81	$94.33	$89.43	-2.6	2.0
12	$81.32	$87.24	$108.43	$108.61	$119.79	5.0	4.4
13	$76.48	$77.35	$82.84	$84.44	$91.15	3.9	2.0
AVG	$91.32	$93.34	$111.43	$116.30	$129.14	5.4	3.9

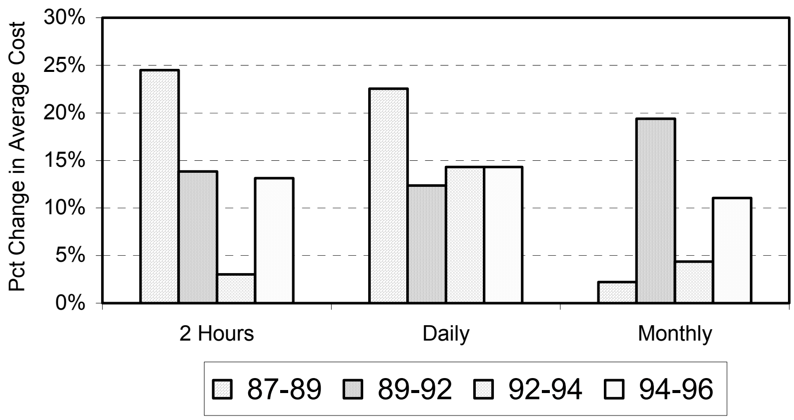
n.a." -- not applicable; fewer than 5 lots in zone with monthly rates.

Monthly. Average monthly parking costs are shown in Table 5. Averages ranged from $50.87 in zone 9 to $153.62 in zone 5; the CBD average was $129.14. The annual rate of increase between 1994 and 1996, 5.4 percent, is similar to that for two-hour and daily rates, is significantly more than the rate of growth between 1992 and 1994. It is also similar to the rate of increase between 1989 and 1992 (table 5). A 1.1 percent annual increase between 1987 and 1989 stands out as the exception to the trend in parking costs. However, the 1987 CBD average of $91.32 is probably an overestimate; fewer monthly rates were obtained than in later inventories and thus the weighted averages were less representative of the area. This was particularly true in Pioneer Square.

The zones with the highest average daily and monthly parking costs are in the office and retail core (zones 4, 5, 7 and 8). These zones have consistently contained the highest posted rates
since 1987. This area includes large new office towers with higher-priced parking garages that have a marked influence on the average cost figures. For example, the average parking costs in zone 5 are influenced by large office towers such as the First Interstate, Bank of California, Second & Seneca, and 1001 4th Avenue buildings. In zone 4, the Columbia Center and Seafirst Fifth Avenue Plaza have higher-than-average costs, while the Washington Mutual Tower and Westlake Center do so in zone 7. Overall, parking costs have increased in the CBD at a faster rate than any time since 1989 (Figure 7).

Table 6 details, for each parking rate, the percent of all pay lots that raised or lowered prices since 1994, as well as the average decrease or increase in dollars, and the percent that kept prices the same.

Figure 7
Seattle CBD: Change in Average Parking Costs, 1987-96



Very few lots lowered rates, in contrast to the 1992-1994 period, when the percent of lots lowering rates ranged from 9 to 22 percent. The great majority of lots since 1994 have raised long-term rates (daily and monthly) while an equal number either raised two-hour rates or kept them the same.

Table 6
Seattle CBD: Percent of Pay Lots that Raised or Lowered Prices, and Average Price Change in Dollars, 1994-1996

	1994-1996					
	Two-hour		Daily		Monthly	
Up	48.3%	$1.28	64.0%	$1.82	70.8%	$15.57
Down	6.3%	-$1.20	9.5%	-$1.30	8.3%	-$11.28
No change	45.4%		26.5%		20.8%	

Parking Type

Table 7 lists, by zone, the number of pay and free stalls, and the percent of free stalls by type. “Other” free parking is primarily employee parking. "Pay" parking includes any lot that imposes any type of short-term or long-term fee for parking and may include some stalls that are free to use at certain times of the day, or for certain people or purposes. “Stalls w/ Missing Rates” include lots where no determination about cost can be made. The percentage of lots with missing cost information is highest in those zones with numerous small lots. In zone 11, based on past inventories, we assume that about half of the stalls missing cost information are free. The missing cost information in zone 4 is probably employee or reserved parking, based on the overall mix of parking type in that part of the CBD.

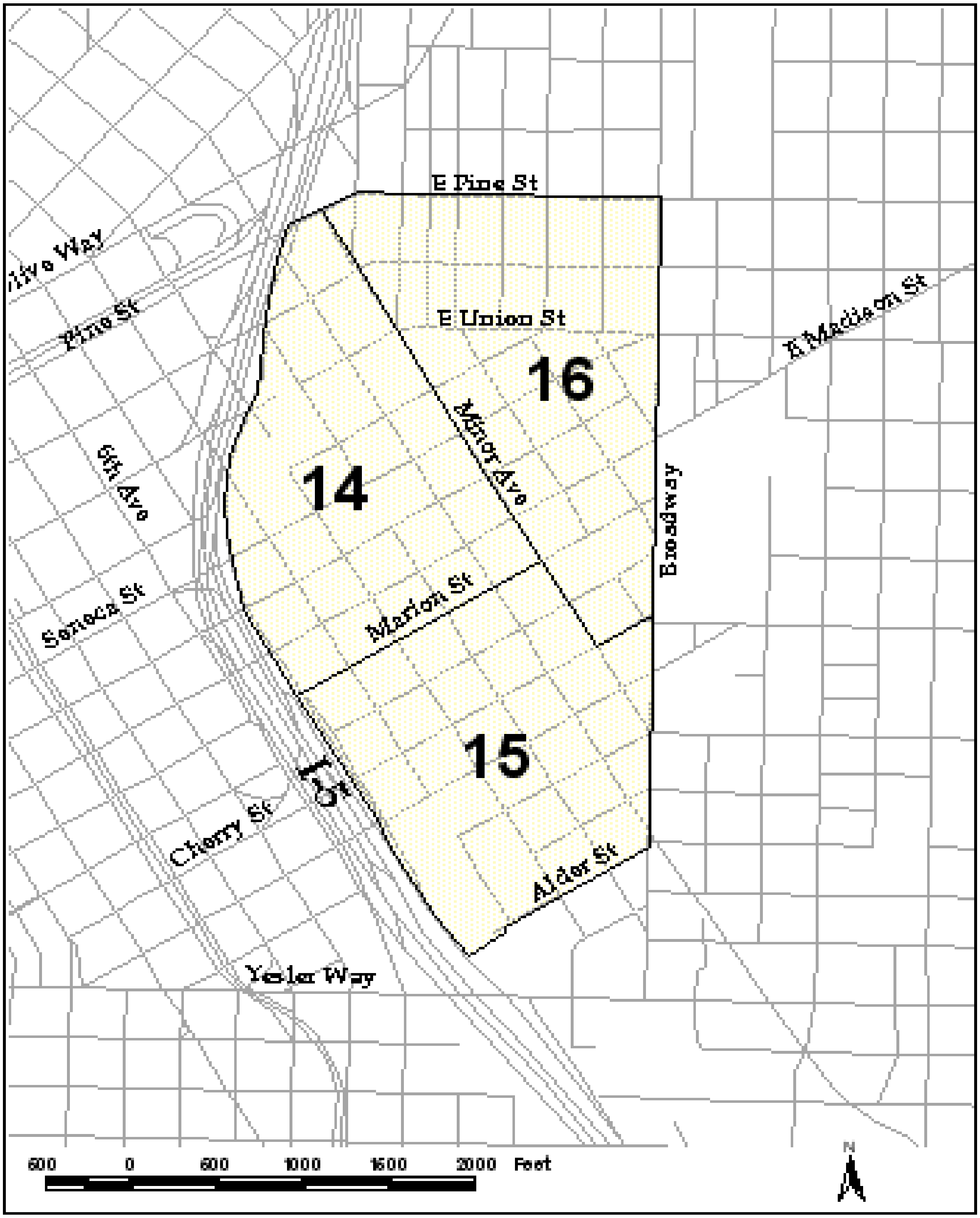
The proportion of free stalls is highest in the International District (zone 2) with 45.5 percent free, followed by Denny Regrade (zones 11 to 13), with between 7.6 and 11.4 percent free. In the entire CBD, 5.3 percent of the 53,235 total stalls were free.

Table 7
Seattle CBD: Pay and Free Parking Stalls, 1996

Zone	Total Stalls	Pay Stalls	Free Stalls: Total	% Free Stalls by Type: *Customer*	*Residential*	*Other*	Missing Stalls
1	3,700	3,304	277	*20.6%*	*79.4%*	*n.a.*	119
2	1,452	630	660	*58.9%*	*36.5%*	*4.5%*	162
3	1,663	1,485	124	*19.4%*	*71.0%*	*9.7%*	54
4	7,136	6,057	58	*100.0%*	*n.a.*	*n.a.*	1,021
5	4,790	4,765	0	*n.a.*	*n.a.*	*n.a.*	25
6	1,763	1,615	70	*40.0%*	*60.0%*	*n.a.*	78
7	6,682	6,174	33	*72.7%*	*n.a.*	*27.3%*	475
8	6,283	6,180	34	*82.4%*	*17.6%*	*n.a.*	69
9	4,359	3,422	228	*52.6%*	*42.1%*	*5.3%*	709
10	1,600	1,194	106	*42.5%*	*50.9%*	*6.6%*	300
11	3,276	1,736	264	*53.4%*	*43.6%*	*3.0%*	1,276
12	4,817	3,819	547	*84.5%*	*15.5%*	*n.a.*	451
13	5,714	4,486	437	*57.9%*	*42.1%*	*n.a.*	791
Total	53,235	44,867	2,838	*57.4%*	*39.9%*	*2.7%*	5,530

n.a." -- not applicable; fewer than 5 lots in zone with monthly rates.

Figure 8
First Hill Study Area, 1996 Parking Inventory



Puget Sound Regional Council
PSRC

FIRST HILL

Total Stalls

Only that portion of First Hill that provides parking for the CBD or includes the major medical complexes is included in the First Hill study area (Figure 8). The study area includes the following major medical facilities: Swedish Hospital, Virginia Mason Hospital, Harborview Medical Center, and the Fred Hutchinson Cancer Research Center. It also has several large apartment buildings, and its eastern edge borders on Seattle University. This area was not surveyed in 1987.

Table 8
First Hill: Total Stalls and Percent Change, 1989-1996

Zone	1989 Total Stalls	1992 Total Stalls	1994 Total Stalls	1996 Total Stalls	94-96 Annual % Change	89-96 Annual % Change
14	2,657	2,738	2,846	3,742	14.7	5.0
15	3,232	3,360	3,786	3,577	-2.8	1.5
16	2,350	2,462	2,979	3,009	0.5	3.6
TOTAL	8,239	8,560	9,611	10,328	3.7	3.3

There were 10,328 parking stalls counted on First Hill (Table 8). This is 717 more stalls than in 1994, an annual increase of 6 percent. This increase is due to the construction of a 1000-stall parking garage by Swedish Hospital in zone 14. Parking availability remained virtually unchanged in the other two zones.

Occupancy

The average occupancy ranged from 74.4 percent in zone 16 to 77 percent in zone 14. Occupancy for the entire First Hill area was 76.2 percent, the same as in 1994 (Table 9). Occupancy rates have remained stable in First Hill, decreasing by less than 1 percent annually since 1989.

Table 9
First Hill: Occupancy Rates and Annual Percent Change, 1989-1996

Zone	1989 Occ. Rate (%)	1992 Occ. Rate (%)	1994 Occ. Rate (%)	1996 Occ. Rate (%)	94-96 Annual % Change	89-96 Annual % Change
14	88.0	81.2	82.3	77.0	-3.3	-1.9
15	77.6	79.0	78.3	76.9	-0.9	-0.1
16	76.4	74.7	68.1	74.4	4.5	-0.4
AVG	80.6	78.4	76.3	76.2	-0.1	-0.8

First Hill's occupancy rates are similar to those in the downtown core and regrade (70-90 percent.) This may be due to First Hill's employment density and its proximity to the CBD. That is, some downtown workers take advantage of lower parking costs, park on First Hill, and walk to their downtown work sites.

Table 10
First Hill: Average Two-Hour Cost and Annual Pct Change, 1989-1996

Zone	1989 Weighted Avg	1992 Weighted Avg	1994 Weighted Avg	1996 Weighted Avg	94-96 Annual Change	89-96 Annual Change
14	$1.93	$1.97	$2.36	$2.63	5.6	4.5
15	$1.77	$2.19	$1.49	$2.30	24.2	3.8
16	$1.35	$1.42	$1.34	$2.35	32.4	8.2
AVG	$1.73	$1.94	$1.65	$2.46	22.1	5.2

Parking Costs

Average parking costs on First Hill are listed in Tables 10-12. The average cost for two-hour parking was $2.46, a jump of more than 22 percent annually since 1994 and one-half the average for the Seattle CBD ($4.99). The average daily parking cost was $6.48, an increase of 17 percent annually since 1994. The trend since 1989, however, has been more gradual; 5.2 percent and 2.3 percent respectively. This is in line with the long-term annual rates of increase for the CBD (7.4 and 7.1 percent.)

Table 11
First Hill: Average Daily Cost and Annual Pct Change, 1989-1996

Zone	1989 Weighted Avg	1992 Weighted Avg	1994 Weighted Avg	1996 Weighted Avg	94-96 Annual Change	89-96 Annual Change
14	$4.86	$4.57	$4.82	$6.59	16.9	4.4
15	$5.59	$7.08	$5.55	$6.59	9.0	2.4
16	$6.75	$9.10	$6.13	$6.24	0.9	-1.1
AVG	$5.54	$6.55	$5.50	$6.48	8.5	2.3

Table 12
First Hill: Average Monthly Cost and Annual Pct Change, 1989-1996

Zone	1989 Weighted Avg	1992 Weighted Avg	1994 Weighted Avg	1996 Weighted Avg	94-96 Annual Change	89-96 Annual Change
14	$68.76	$76.41	$76.55	$75.75	-0.5	1.4
15	$39.77	$52.96	$60.10	$60.32	0.2	6.1
16	$42.64	$52.25	$60.48	$65.28	3.9	6.3
AVG	$46.86	$59.49	$64.19	$66.96	2.1	5.2

The period 1992-1994 was unusual because Swedish Hospital, which dominates the area (one-third of all stalls in First Hill are associated with Swedish), had lower short-term rates in 1994 than in 1992 for much of its parking. Table 13 shows the percent of lots that raised or lowered rates and the average increase or decrease.

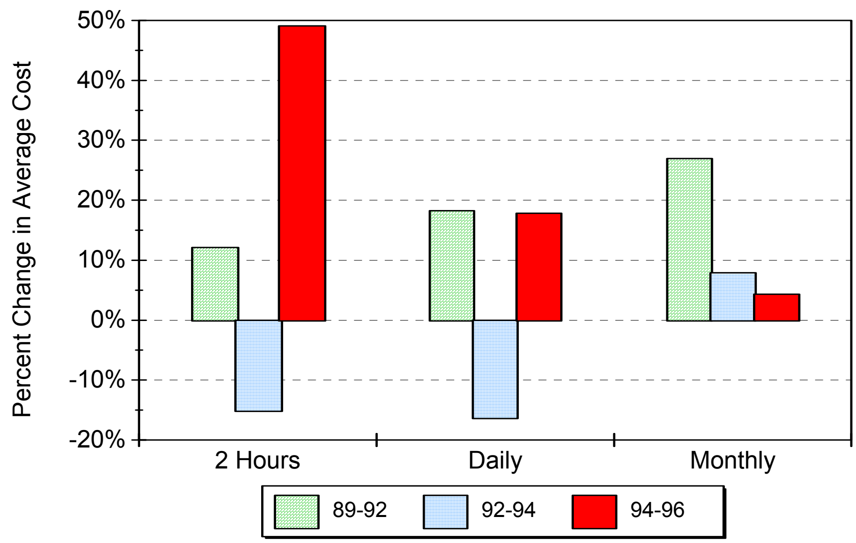
The monthly average cost was $66.96; but, unlike short-term costs, it has increased only slightly since 1994 (2.1 percent annually). Half of all lots raised monthly rates in the area. These lots raised rates an average of $10.67 (Table 13). Only one small lot had a lower monthly rate than in 1994.

Figure 9 illustrates changes in average parking costs on First Hill.

Table 13
First Hill: Percent of Pay Lots that Raised or Lowered Prices and Average Price Change in Dollars, 1994-1996

	1994-1996					
	Two-Hour		Daily		Monthly	
Up	47.5%	$1.07	60.0%	$1.13	50.0%	$10.67
Down	12.5%	-$0.70	17.5%	-$2.32	4.2%	-$8.00
No change	40.0%		22.5%		45.8%	

Figure 9
First Hill: Change in Average Parking Costs, 1989-1996



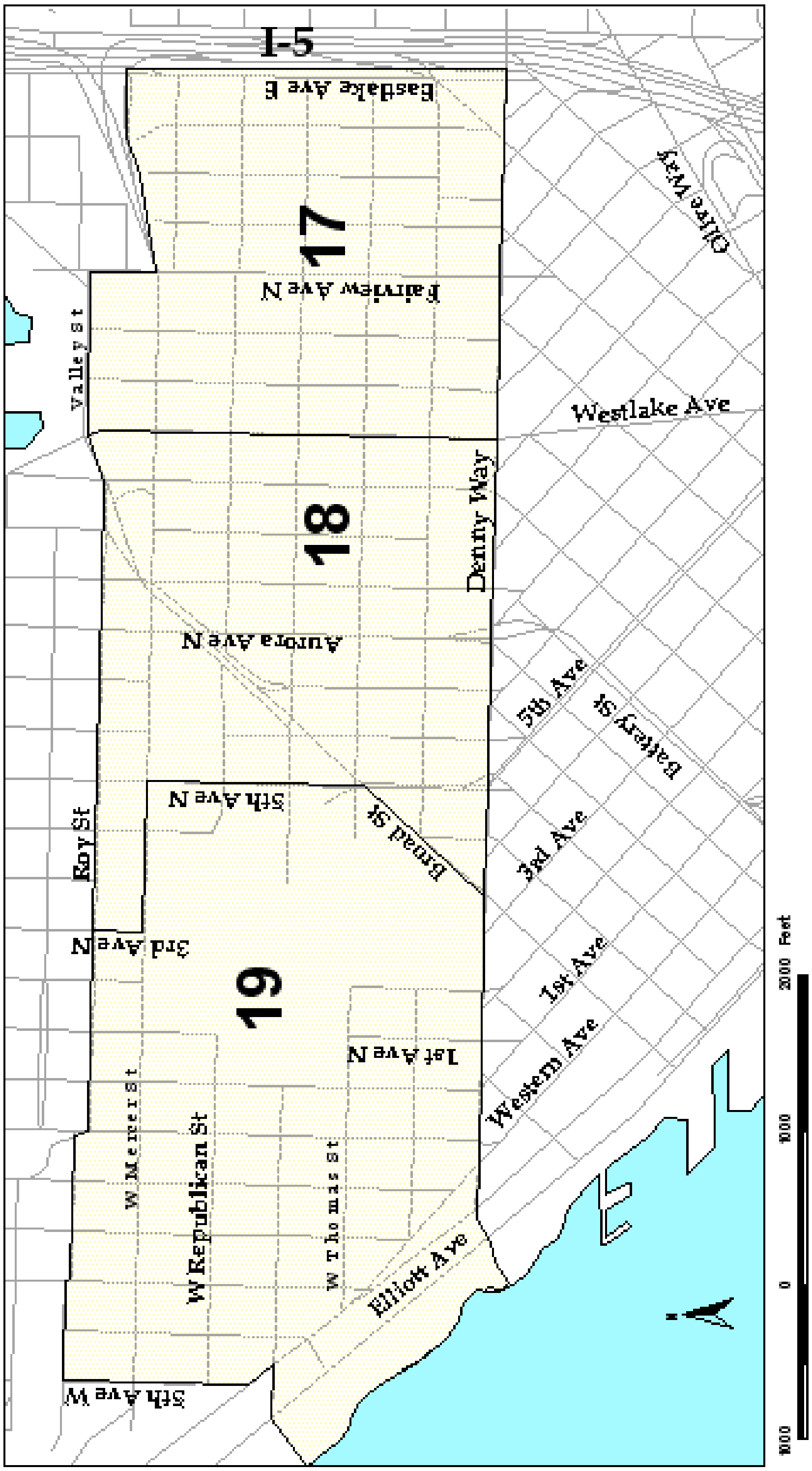
Parking Type

The number of stalls by parking type is displayed in Table 14. "Other" free parking is primarily employee parking. "Stalls w/ Missing Rates" are stalls where no determination can be made whether or not they are free. Free parking is available in a little more than 8 percent of parking stalls, not too different from the 5.8 percent in the CBD. Most of the free parking is for customers. There is not much variation in the proportion of free parking among the three zones.

Table 14
First Hill: Pay and Free Parking Stalls, 1996

Zone	Total Stalls	Pay Stalls	Free Stalls Total	% Free Stalls by Type: *Customer*	% Free Stalls by Type: *Other*	Stalls w/ Missing Rates
14	3,742	3,264	367	*33.2%*	*66.8%*	111
15	3,577	3,033	206	*25.2%*	*74.8%*	338
16	3,009	2,348	295	*52.9%*	*47.1%*	366
Total	10,328	8,645	868	*38.0%*	*62.0%*	815

Figure 10
Queen Anne Study Area, 1996 Parking Inventory



LOWER QUEEN ANNE

Total Stalls

The lower Queen Anne area extends from I-5 on the east to Elliott Bay on the west, and from Denny Way on the south to Roy, Valley, and Mercer streets on the north (Figure 10). Seattle Center dominates the western portion, with several mid-rise office buildings in the southern end toward Denny Way. Zones 17 and 18 have a mix of residential, commercial, and some industrial uses. Aurora Avenue (State Highway 99) runs through zone 18.

Table 15
Queen Anne: Total Stalls and Percent Change, 1989-1996

Zone	1989 Total Stalls	1992 Total Stalls	1994 Total Stalls	1996 Total Stalls	94-96 Annual % Change	89-96 Annual % Change
17	3,336	3,796	4,081	4,289	2.5	3.7
18	5,225	5,624	5,807	5,830	0.2	1.6
19	5,738	6,239	6,208	6,810	4.7	2.5
TOTAL	14,299	15,659	16,096	16,949	2.6	2.5

There were 16,949 parking stalls counted in lower Queen Anne (Table 15). This is a 2.6 percent annual increase since 1994, a jump from the 1.4 percent annual increase between 1992 and 1994 The only major addition was a 600-stall parking Seattle Center garage just south of the new Key Arena. There were no major deletions to the inventory.

Occupancy

Occupancy for the entire lower Queen Anne area was 58.0 percent (Table 16), up from the 1994 occupancy rate of 53.3 and slightly more than the rates in 1989 and 1992 but much less than the rate for the Seattle CBD and First Hill. The low occupancy rates may be attributed to the presence of many parking facilities that cater to events at the Seattle Center. Because most major events occur on evenings and weekends, occupancy was lower on weekdays when the study was conducted.

Table 16
Queen Anne: Occupancy Rates and Annual Percent Change, 1989-1996

Zone	1989 Occ. Rate (%)	1992 Occ. Rate (%)	1994 Occ. Rate (%)	1996 Occ. Rate (%)	94-96 Annual % Change	89-96 Annual % Change
17	63.6	69.1	63.8	61.1	-2.2	-0.6
18	45.2	47.2	41.9	55.8	15.4	3.0
19	64.4	56.1	57.0	57.8	0.7	-1.5
AVG	57.2	57.5	53.3	58.0	4.3	0.2

Table 17
Queen Anne: Average Two-Hour Cost and Annual Pct Change, 1989-1996

Zone	1989 Weighted Avg	1992 Weighted Avg	1994 Weighted Avg	1996 Weighted Avg	94-96 Annual Change	89-96 Annual Change
17	$1.43	$1.62	$1.61	$1.93	9.5	4.4
18	$2.68	$2.79	$2.99	$5.56	36.4	11.0
19	$1.95	$2.85	$3.02	$3.83	12.6	10.1
AVG	$2.06	$2.64	$2.87	$4.46	24.7	11.7

Parking Costs

As shown in Tables 17 and 18, average two-hour parking costs have gone up an average of $1.59 to $4.46, a 24.7 percent annual increase, while average daily costs have increased $1.80 to $6.16, a 18.9 percent annual increase. Lots around the Seattle Center have accounted for most of the increase. Many of them raised both hourly and daily rates from $2 to $4. Of those lots that raised rates, the average increase for two hours was $1.79 and for daily parking, $1.88 (Table 20).

Table 18
Queen Anne: Average Daily Cost and Annual Pct Change, 1989-1996

Zone	1989 Weighted Avg	1992 Weighted Avg	1994 Weighted Avg	1996 Weighted Avg	94-96 Annual Change	89-96 Percent Change
17	$2.18	$2.51	$2.47	$2.58	2.2	2.4
18	$3.52	$4.73	$4.21	$6.35	22.8	8.8
19	$3.89	$5.40	$5.03	$6.65	15.0	8.0
AVG	$3.54	$4.77	$4.36	$6.16	18.9	8.2

Table 19
Queen Anne: Average Monthly Cost and Annual Pct Change, 1989-1996

Zone	1989 Weighted Avg	1992 Weighted Avg	1994 Weighted Avg	1996 Weighted Avg	94-96 Annual Change	89-96 Annual Change
17	$26.87	$29.09	$25.67	$34.64	16.2	3.7
18	$34.67	$37.11	$40.02	$46.35	7.6	4.2
19	$41.68	$54.84	$53.35	$62.82	8.5	6.0
AVG	$35.79	$42.30	$40.95	$54.06	14.9	6.1

After seeing average monthly rates drop between 1992 and 1994, Queen Anne experienced an annual increase of 14.9 percent between 1994 and 1996, from $40.95 to $54.06 (Table 19).

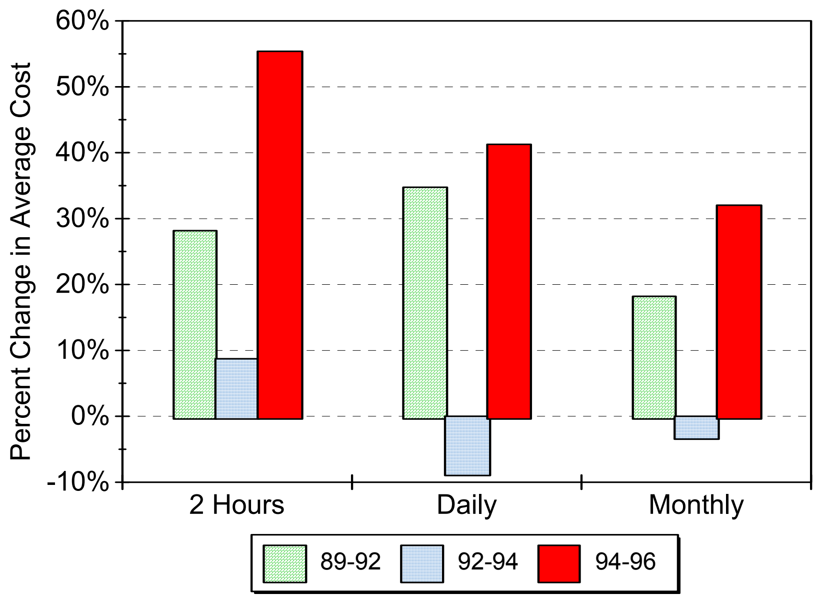
Despite these increases, daily and monthly averages for all of lower Queen Anne remain the lowest in the survey area. Zone 17, between Lake Union and Denny Way, which has the highest concentration of industrial and manufacturing land uses, has the lowest daily rate ($2.58) and the lowest monthly rate ($34.64) of any zone.

Figure 11 shows the percent change in average parking costs from 1987 to 1996.

Table 20
Queen Anne: Percent of Pay Lots that Raised or Lowered Prices, and Average Price Change in Dollars, 1994-199

	1994-1996					
	Two-Hour		Daily		Monthly	
Up	49.1%	$1.79	57.8%	$1.88	80.0%	$8.68
Down	0.0%	$0.00	3.1%	-$2.00	10.0%	-$4.51
No change	50.9%		39.1%		10.0%	

Figure 11
Queen Anne: Change in Average Parking Costs, 1989-96



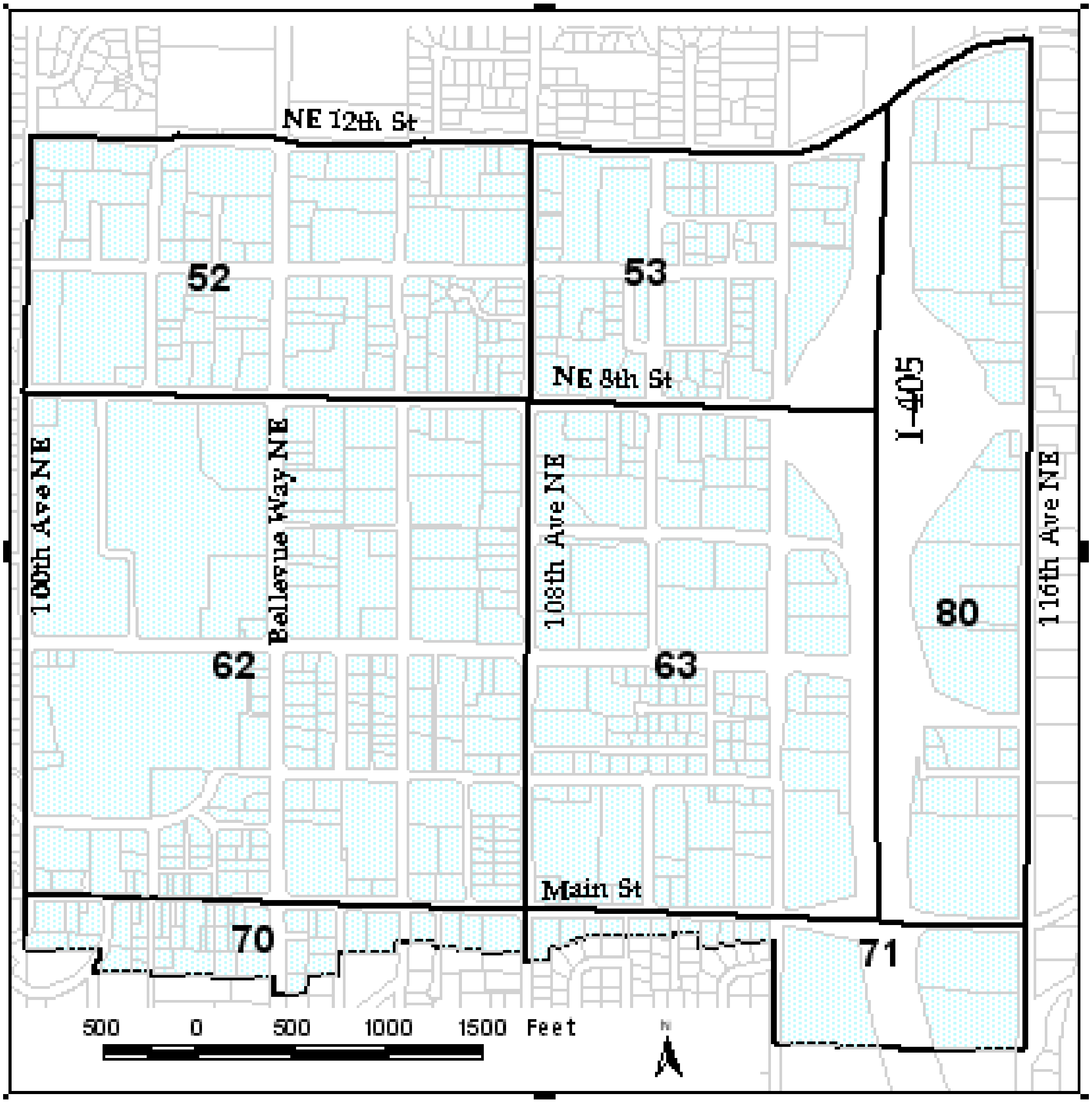
Parking Type

Table 21 shows by zone the number of pay stalls and free stalls, and percent of free stalls by type; "Other" free parking is primarily employee parking. We do not know whether “Stalls w/ Missing Rates” are primarily pay or free parking. Of the 16,051 stalls inventoried, at least 19.6 percent are free. More than one-third of all stalls (39.2 percent) were missing cost information, three times as much as in the CBD or First Hill. The percentage is high in these zones because there are numerous small lots for which no ownership or any cost information could be determined. This is particularly true in zone 17 south of Lake Union, an area dominated by small businesses and light manufacturing. The Regional Council estimates that in zone 17, most stalls with missing information are free. In zone 19, around the Seattle Center, about half of such stalls are free. As with First Hill, most of the free parking is for customers.

Table 21
Queen Anne: Pay and Free Parking Stalls, 1996

			Free Stalls			Stalls
	Total	Pay		% Free Stalls by Type		w/ Missing
Zone	Stalls	Stalls	Total	*Customer*	*Other*	Rates
17	4,289	777	1,128	*54.4%*	*45.6%*	2,384
18	5,773	2,759	1,382	*62.7%*	*37.3%*	1,632
19	6,810	3,853	992	*49.1%*	*50.9%*	1,965
Total	16,872	7,389	3,502	*56.2%*	*43.8%*	5,981

Figure 12
Bellevue CBD Study Area, 1996 Parking Inventory



III. BELLEVUE INVENTORY

A. STUDY AREA

The Bellevue study area is bounded on the west by 100th Ave NE; on the north by NE 12th; on the east by 116th Ave NE; and on the south by Main Street (Figure 12). The survey included all businesses on the south side of Main Street that have access to that street and are an integral part of the downtown business district.

The CBD is divided into seven zones. The streets dividing the zones are Main Street, NE 8th Street, 108th Ave NE, and Interstate 405. In the three inventories before 1994, there were six zones; zone 80 (between I-405 and 116th Avenue NE) was part of zones 62 and 63, with NE 8th being the dividing line. In order to allow the data to be grouped in a more logical way, the PSRC, at the suggestion of the Bellevue Engineering Department, decided that the area to the east should be a separate zone. Creating this new zone provides a more accurate picture of parking throughout the downtown area. Data from the previous inventories were adjusted to match the new zonal structure.

Figure 12 illustrates the boundaries of the seven zones as well as the average daily parking cost for each zone.

B. METHODOLOGY

Data collection was conducted between May 14 and May 23, 1996, with the same staff used to conduct the Seattle inventory. The inventory was conducted Monday through Friday between 9:30-11:30 AM and between 1:30-3:30 PM.

Where it was not possible to physically count the spaces and cars in a particular lot, information was obtained from parking attendants, if present, or from the owner of the lot. This was necessary only for a few pay parking garages, where operators would not allow entry to PSRC staff. Monthly rates for many of the large facilities were obtained from the monthly Downtown Bellevue Parking Survey conducted by TransManage. Because of the large size of the Bellevue Square parking facilities, the PSRC relied on statistics concerning capacity and usage that are maintained by Bellevue Square management.

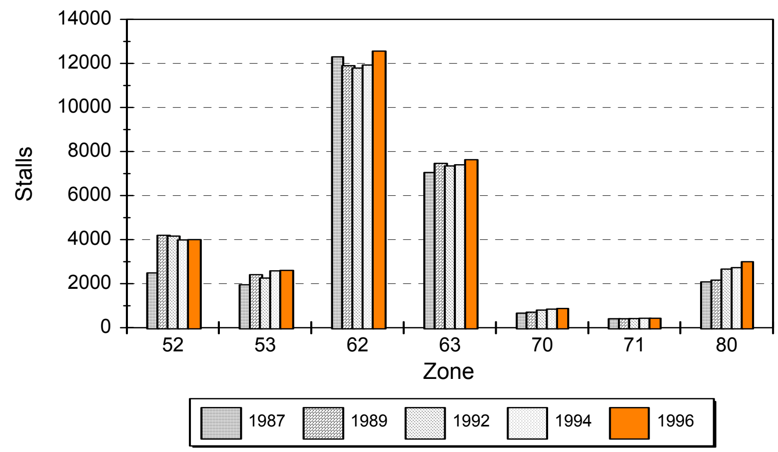
Data collected for each parking lot includes census tract and block number, parcel number[1], owner or manager, address, total stalls, morning and afternoon occupancy, cost for two-hour, daily, and monthly parking, and type of parking.

[1] Parcel maps for identifying the exact location and parcel number of each lot were supplied by the City of Bellevue.

Parking type was used to analyze free parking and classified as:

- C -- free customer;
- E -- employee;
- R -- reserved, often by permit; or
- O -- pay public parking.

Figure 13
Bellevue: Parking Availability by Zone, 1987-1996



C. FINDINGS

Total Stalls

Table 22 presents the total number of parking stalls by zone and shows the percent change between 1994 and 1996, and between the first inventory (1987) and the most recent (1996). The number of stalls by zone for each inventory is illustrated in Figure 13.

The total number of parking stalls counted was 31,093, slightly more than in 1994 (29,911 stalls). After a spurt of new office tower construction in the late 1980s, which provided a number of large parking facilities, the inventory of parking stalls in downtown Bellevue stabilized, with an annual growth rate between 1989 and 1994 of under one percent. The annual rate increased slightly the past two years, to two percent. In contrast, total parking capacity increased at an annual rate of 4.2 percent between 1987 and 1989, when the construction of Bellevue Place and Quadrant Plaza added hundreds of new parking spaces to the CBD. The only significant increase in parking availability between 1994 and 1996 was the addition of 600 new spaces at Bellevue Square.

Despite scores of small to medium-sized surface lots spread throughout the CBD, a few large parking structures account for approximately half of all parking. These include Bellevue Square (6,000 spaces in zone 62), Bellevue Place-Hyatt Regency (1,500 spaces, zone 52), and Plaza Center at NE 8th and 108th NE (1,100 spaces, zone 53) (Figure 12). Many of the large parking structures are office towers along 108th Avenue. East of I-405, Overlake Hospital on the north and the municipal complex (city hall, police department) on the south account for half of all parking in zone 80.

Table 22
Bellevue CBD: Total Stalls and Annual Percent Change, 1987-1996

Zone	1987 Total Stalls	1989 Total Stalls	1992 Total Stalls	1994 Total Stalls	1996 Total Stalls	94-96 Annual % Change	87-96 Annual % Change
52	2,489	4,201	4,168	3,991	3,999	0.1	5.4
53	1,959	2,409	2,254	2,583	2,607	0.5	3.2
62	12,298	11,901	11,789	11,933	12,558	2.6	0.2
63	7,048	7,470	7,350	7,392	7,627	1.6	0.9
70	657	706	808	852	872	1.2	3.2
71	406	405	416	429	426	-0.4	0.5
80	2,086	2,161	2,662	2,731	3,004	4.9	4.1
TOTAL	26,943	29,253	29,447	29,911	31,093	2.0	1.6

Occupancy

Occupancy rates increased at an annual rate of 1.3 percent since 1987 (Table 23). While yearly growth was small, the cumulative effect is that occupancy increased to 61.1 percent in 1996 from 54.3 percent in 1987. This is down slightly from the 1994 occupancy rate of 62.4 percent. The highest rate of growth in occupancy occurred between 1989 and 1994, with an annual rate of 3.2 percent.

Most of the parking in the CBD (70.5 percent, Table 25) is for short-term parking. Since short-term parking is influenced by the time of day, weather, and the day of the week, there may be more variability in the occupancy rate in the Bellevue CBD than in other areas. Thus, comparisons over time may not be as reliable as in areas with more long term-parking.

Table 23
Bellevue CBD: Occupancy Rates and Annual Percent Change, 1987-1996

Zone	1987 Occupancy Rate (%)	1989 Occupancy Rate (%)	1992 Occupancy Rate (%)	1994 Occupancy Rate (%)	1996 Occupancy Rate (%)	94-96 Annual % Change	87-96 Annual % Change
52	54.5	41.3	61.8	66.4	66.7	0.2	2.3
53	65.8	57.8	68.0	67.9	67.9	0.0	0.4
62	48.6	55.4	55.5	58.4	56.6	-1.6	1.7
63	58.9	59.2	65.2	66.5	63.2	-2.5	0.8
70	48.9	57.9	49.4	54.3	48.1	-6.0	-0.2
71	48.0	59.0	55.8	49.2	54.5	5.2	1.4
80	64.4	67.0	70.7	61.8	66.1	3.4	0.3
AVG	54.3	55.5	61.0	62.4	61.1	-1.0	1.3

The biggest changes in occupancy rates between 1994 and 1996 occurred south of Main Street. Occupancy rates in zone 71 (to the east) increased 10.4 percent, while rates in zone 70 (to the west) went down 12 percent. However, these are small zones, with 426 and 872 predominantly short-term spaces respectively, and wide variations in counts can be expected. More significantly, perhaps, is the drop in occupancy rates for zone 63 (down 5 percent). This zone contains much of the long-term parking in downtown Bellevue.

Figure 14
Bellevue CBD: Total Capacity and Occupancy, 1987-96

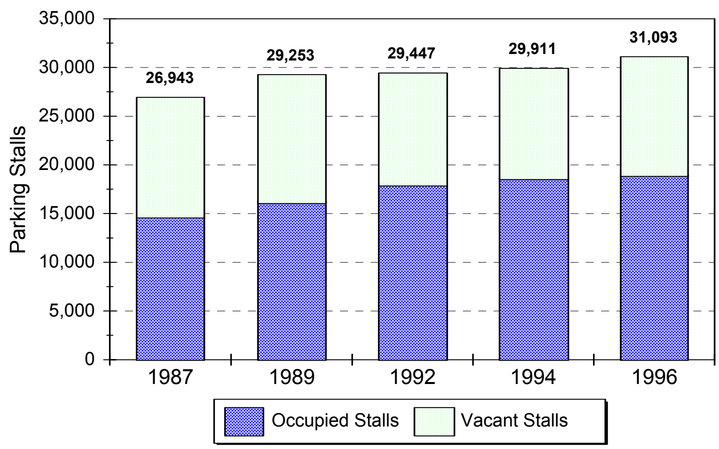


Figure 14 compares the total capacity with occupancy in the Bellevue CBD from 1987 to 1996.

Parking Cost

Average parking costs in Bellevue are shown in Table 24. The averages are based only on those lots with any type of known costs (7.5 percent of all lots.) Because of the small number of pay lots in the CBD, comparisons of average costs over time are only meaningful at the CBD level and not at the level of the individual parking zones. Even at that level, one or two large garages can have a significant effect on the downtown averages. Overall, parking rates in the Bellevue CBD are in line with similar rates outside the Seattle downtown core.

Table 24
Bellevue CBD: Average Parking Costs and Annual Pct Change, 1987-1996 (Pay Lots only)

Zone	1987 Weighted Avg	1989 Weighted Avg	1992 Weighted Avg	1994 Weighted Avg	1996 Weighted Avg	94-96 Annual % Change	87-96 Annual % Change
0-2 Hours	$2.10	$2.18	$2.14	$2.36	$2.46	2.1	2.3
Daily	$6.06	$6.01	$6.58	$6.55	$6.90	2.6	1.9
Monthly	$52.00	$54.28	$63.06	$67.47	$74.78	5.3	5.3

Average two-hour parking costs have gone up 10 cents since 1994, a two percent annual increase, and 32 cents since 1992, after experiencing little variation over the previous five years.

That statistic is misleading, however. Of the 18 facilities that offer hourly rates, two raised their rates for two-hour parking while one lowered it. Much of the difference between 1994 and 1996 is accounted for by the new Convention Center, which charges an hourly rate above the downtown average.

The situation is much the same for daily rates. The average rate remained virtually unchanged from 1994 and all but three of the pay lots charged the same daily rate as in 1994. Several lots and garages charge the same two-hour and daily rates as in 1987.

Monthly costs, however, have grown steadily since 1987 throughout the CBD. The monthly average rose 3.4 percent annually between 1994 and 1996, from $67.47 to $74.78. That rate is identical to the 5.3 annual growth rate since 1987.

Table 25 shows the percent of pay and free stalls by year, and the average occupancy for each. Because there are so few pay lots in individual zones, CBD totals are used. Pay stalls have gone from under 21 percent of all CBD parking in 1987 to more than 30 percent. The great majority of new parking added since 1987 has been pay stalls.

Table 25
Bellevue CBD: Pay and Free Parking Stalls, 1987-1996

		Pay Stalls			Free Stalls		
Year	Total Stalls	Number of Stalls	Percent of Total	Occupancy Rate (%)	Number of Stalls	Percent of Total	Occupancy Rate (%)
1987	26,943	5,569	20.7	68.3	21,374	79.3	50.7
1989	29,392	8,859	30.1	61.2	20,533	69.9	53.0
1992	29,447	8,952	30.4	75.2	20,495	69.6	54.8
1994	29,911	9,331	31.2	77.0	20,580	68.8	55.7
1996	31,093	9,160	30.8	76.6	21,933	70.5	54.6

APPENDIX

METHODOLOGY FOR THE 1996 PARKING INVENTORY

Scope of Study

Data for the study was collected between April 8, 1996, to May 31, 1996. Traditionally, travel and transportation data related to commuting behavior are collected in the spring or fall, when travel patterns are more stable. The four earlier surveys were conducted in April and May and a comparable period was desired.

The types of parking inventoried included:

- off-street parking, both public and private;
- free and pay parking;
- carpool and vanpool lots;
- motor pool parking, both private and government;
- hotels and motels;
- short-term customer parking such as convenience stores and restaurants; and
- residential parking in the Seattle CBD only.

Types of parking excluded from the study were:

- on-street parking;
- new and used auto and truck sales lots;
- parking occupied by police, fire, and emergency vehicles;
- car rental lots;
- Metro bus and van storage lots;
- parking associated with auto and truck repair shops; and
- residential parking in the First Hill, lower Queen Anne, and Bellevue CBD areas

Data Collection

The data collection team surveyed the Seattle zones on foot. The Bellevue zones were surveyed primarily by vehicle. Surveys were conducted Monday through Friday between the hours of 9:30 a.m. and 11:30 am, and 1:30 p.m. and 3:30 p.m. Each lot was surveyed during one morning and one afternoon period, on the same day, when possible. Each parking lot was coded to a 1990 census tract and block number in which it was located. The information collected included the lot address, owner/tenant, total number of stalls, morning and afternoon occupancy, type of parking, cost, and comments (Figures 15 and 16). In Bellevue, the parcel number was also recorded. We attempted to inventory the Kingdome, the Seattle Center, and the Washington State Convention and Trade Center during an "average weekday", when no special events were taking place.

Occupancy

Two occupancy counts were taken at each lot, one in the morning and one in the afternoon. The morning count took place between 9 and 11:30 am; the afternoon count could take place 1 and 3:30 pm. These times were chosen because they are the times when parking utilization is most stable during a weekday. By 9 am, the morning commuter rush hour has essentially ended and shoppers have begun to arrive. After 3:30 pm, commuters begin to leave downtown. No counts were taken during the lunch hour because of high turnover at that time.

The occupancy rate is the average of the morning and afternoon counts, divided by the total number of stalls. The more counts for each lot, the more accurate the occupancy measures. However, the cost of the survey also increases substantially. A single count for each lot could introduce bias because of a difference in parking activity between the morning and afternoon. The PSRC determined that making two counts, during different parts of the day, was a reasonble compromise between accuracy and cost. These figures should be evaluated with this limitation in mind.

Parking Cost

Three cost figures were sought at each lot: the two-hour cost, the daily cost, and the monthly cost. The PSRC collected costs for only the normal work week: Monday through Friday, 9:00 a.m. to 5:00 p.m.

Two hour rates were used as a way to standardize short-term parking rates. These can vary greatly, with a minimum time ranging from 1/2 hour to an hour and a half. Parking lots will also charge for additional time past the minimum at increments of 1/2 hour and 1 hour. Where there was no posted 2-hour rate, the data collectors computed a 2-hour equivalent based on the minimum time plus incremental times that add up to two hours.

If the minimum time was greater than two hours, then only a daily rate was recorded, using either the posted daily rate, if any, or an equivalent daily rate based on increments of the minimum rate that add up to six hours.

Many lots in outlying areas had only monthly rates, which were not posted, and a follow-up phone call was required. When more than one monthly rate was available, either an average rate, weighted by number of stalls, was recorded, or the most predominant rate was used. Alternative rates were recorded as comments.

Special discounted rates were not included in any of the studies. These include employer subsidies, group discounts, special coupons, and "early bird" rates. Special rates for carpools and vanpools were not used unless the lots were used exclusively by either carpools or vanpools.

The 1996 study differentiated between four types of parking in the Seattle CBD:

- pay parking;
- residential parking;
- free short-term customer parking, such as convenience stores and restaurants;
- other parking, primarily employee or tenant parking.

For analysis, parking was categorized as customer (C), residential (R), and other (O), the latter including public pay, employee, and tenant (non-residential) parking.

In the First Hill and lower Queen Anne areas, all residential parking, both free and pay, was excluded from the study. In these areas, three types of parking were differentiated:

- pay parking;
- free short-term customer parking;
- other parking, primarily employee or tenant parking.

As with the CBD, pay and other parking were combined for analysis.

Where monthly employee or tenant parking rates could be obtained, those were included in the analysis of pay parking. Otherwise, no separate analysis was done on parking specifically designated as "employee", either because it was not always possible to determine the exclusive purpose of a parking facility or because a facility may combine employee and other types of parking with no physical differentiation.

In the Bellevue CBD, parking was recorded as any of three types:

- pay parking;
- free short-term customer parking;
- reserved or exclusively employee or tenant parking.

"Free" parking was determined on the basis of cost to the user. The exception was free employee parking subsidized by an employer. In this case, an attempt was made to find out the price paid by the employer to the parking facility owner. Free parking included parking facilities that were clearly free-of-charge, as well as parking stalls included with the price of a condominium (zones 1-13 only), parking included at no extra cost with an apartment rental (zones 1-13 only), and parking included in a commercial lease and offered at no cost to employees or customers.

Parking Cost averages for the study area were computed for only those lots with some known cost, whether hourly, daily, or monthly. Costs were weighted by the number of stalls in a pay lot. In lots with mixed hourly, daily, and monthly leasing, separate weighting of costs was usually not possible. For lots with only monthly parking rates, no daily or 2-hourly cost was computed. All parking costs are reported in current dollars and have not been adjusted for inflation. These factors affect the average costs reported.

Figure 15
1996 Data Collection Form for Seattle

```
The SAS System                                                                                   08:04 Tuesday, April 2, 1996   1
         1996 PARKING INVENTORY:  SEATTLE CBD
         DATA COLLECTION FORM                 NAME: ____________________     DATE: __________     **** Z O N E: ____
==================================================================================================================================
                                                                      94       96
                                             COST     COST    COST    MAX      MAX      AM      PM     TYPE
TRACBLK  LOCATION                            0-2      DAY     MONTH   OCC      OCC      OCC     OCC  C/E/O/R  COMMENT
==================================================================================================================================
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
                                     |       |       |       |        |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
----------------------------------------------------------------------------------------------------------------------------------
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
                                     |       |       |       |        |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
----------------------------------------------------------------------------------------------------------------------------------
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
                                     |       |       |       |        |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
----------------------------------------------------------------------------------------------------------------------------------
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
                                     |       |       |       |        |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
----------------------------------------------------------------------------------------------------------------------------------
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
                                     |       |       |       |        |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
----------------------------------------------------------------------------------------------------------------------------------
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
                                     |       |       |       |        |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
----------------------------------------------------------------------------------------------------------------------------------
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
                                     |       |       |       |        |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
----------------------------------------------------------------------------------------------------------------------------------
                                     |   .   |   .   |   .   |    .   |       |       |       |       |     |
 ID=         Lot #:  .               |       |       |       |        |       |       |       |       |     |
 OWNER=                              |       |       |       |        |       |       |       |       |     |
```

Figure 16
1996 Data Collection Form for Bellevue

```
The SAS System                                                                                    10:21 Thursday, April 25, 1996  48
         1996 PARKING INVENTORY:  BELLEVUE CBD
         DATA COLLECTION FORM                          NAME                             DATE
=====================================================================================================================================
   * * *  M A P  # 52  * * *                                         94      96      AM      PM
                                          COST    COST    COST    MAX     MAX     OCC/    OCC/  TYPE
 ID #    TRACBLK      PARCEL #            0-2     DAY     MNTH    OCC     OCC     TIME    TIME  R/C/O   COMMENT
=====================================================================================================================================
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
-------------------------------------------------------------------------------------------------------------------------------------
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
-------------------------------------------------------------------------------------------------------------------------------------
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
-------------------------------------------------------------------------------------------------------------------------------------
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
-------------------------------------------------------------------------------------------------------------------------------------
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
-------------------------------------------------------------------------------------------------------------------------------------
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
-------------------------------------------------------------------------------------------------------------------------------------
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
-------------------------------------------------------------------------------------------------------------------------------------
#            -       parcel   .       |   .  |    .  |    .  |      . |       |       |       |      |(                              )
 MAP=52                               |      |       |       |        |       |       |       |      |(                              )
                                      |      |       |       |        |       |------ |------ |      |
 OWNER=                               |      |       |       |        |       |       |       |      |
```

Parking Database

Each parking lot was entered as a separate record into a SAS[1] dataset.

Some lots were divided into two separate records if the parking was segregated for two different price structures or uses. Each record was assigned a unique identifier, called PARKID. Figure 16 shows the file structure of the SAS dataset.

The parking database contains:

- 1996 parking inventory data;
- 1994 parking inventory data; and
- location and ownership of parking lot.

The 1996 parking inventory data is consistent with the 1994 parking inventory data in file structure, variables, and data collection method. No corrections were made to earlier surveys.

[1] SAS is a registered trademark of SAS Institute, Inc., Cary, NC.

Figure 17
1996 Parking Database - File Structure

```
PARK96.SEATTLE4: 1996 parking dataset, v. 4 - 11/05/96       12:41 Wednesday, November 6, 1996

CONTENTS PROCEDURE

Data Set Name: PARK96.SEATTLE4                          Observations:         1301
Member Type:   DATA                                     Variables:            29
Engine:        V611                                     Indexes:              0
Created:       12:41 Wednesday, November 6, 1996        Observation Length:   486
Last Modified: 12:41 Wednesday, November 6, 1996        Deleted Observations: 0
Protection:                                             Compressed:           NO
Data Set Type:                                          Sorted:               NO

-----Engine/Host Dependent Information-----

Data Set Page Size:       40960           File Name:   /sas/parking/park96/seattle4.ssd01
Number of Data Set Pages: 16              Inode Number:             960596
File Format:              607             Access Permission:        rw-rw-r--
First Data Page:          1               Owner Name:               nkilgren
Max Obs per Page:         84              File Size (bytes):        663552
Obs in First Data Page:   76


                -----Alphabetic List of Variables and Attributes-----

 #    Variable    Type    Len    Pos    Label
-------------------------------------------------------------------------------------------
24    AOCC94      Num       8    234    AM*Occupancy*1994
14    AOCCUPCY    Num       8    162    AM*Occupancy
21    CDLY94      Num       8    210    Cost*Daily*1994
22    CMTH94      Num       8    218    Cost*Month*1994
28    COMMENT     Char     84    265    Comment line
29    COMMNT94    Char    137    349    Comment line from 1994
10    COST02      Num       8    130    Cost *0-2 HRS
20    COST94      Num       8    202    Cost*0-2 hrs*1994
11    COSTDLY     Num       8    138    Cost*Daily
12    COSTMTH     Num       8    146    Cost *Month
27    EBCOST94    Num       8    257    1994 Cost of Early Bird Special
26    EBTIME94    Char      7    250    1994 Early Bird Special times
19    ERLYCOST    Num       8    194    Cost*Early Bird*Special
18    ERLYTIME    Char      7    187    Early Bird*Special*Time
16    HANDICAP    Num       8    178    Handicap parking spaces
 6    LOCATE      Char     42     27    Location
 4    LOT         Num       8     18    Parking lot number within block
23    MAX94       Num       8    226    Total*Stalls*1994
13    MAXCAPCT    Num       8    154    Total*Stalls
 7    OWNER       Char     37     69    Owner
 1    PARKID      Char      4      0    Survey ID
 8    PHONE       Char     15    106    Phone # for lot owner
25    POCC94      Num       8    242    PM*Occupancy*1994
15    POCCUPCY    Num       8    170    PM*Occupancy
 3    TRACBLK     Char      6     12    Track*Block
17    TYPE        Char      1    186    Type of*Parking
 9    UDATE       Char      9    121    Date of last update
 5    UPDATE      Char      1     26    Update code (U/N/D)
 2    ZONE        Num       8      4    Parking zone
```