

## Vancouver's Transient Parking Supply and Demand

Francis Navin, PhD, D.Sc.(Hon), P.Eng.  
Professor Emeritus UBC Civil Engineering  
Director, EasyPark, Vancouver BC

Peter Joyce, P.Eng.,  
President, Bunt & Associates  
Vancouver BC

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### **ABSTRACT**

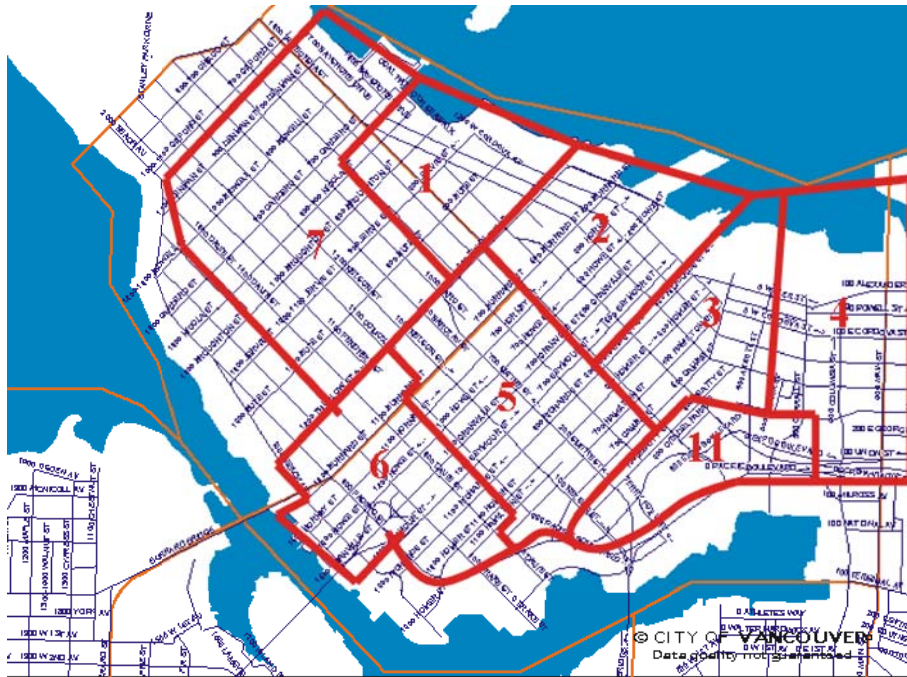
EasyPark is the off-street parking operator for the City of Vancouver. The corporation reports to the city but also represents the parking interests of the downtown business community. The directors of EasyPark commissioned three studies of transient parking. The first report traces parking development in Downtown Vancouver from the 1960s. The second study by Bunt & Associates measured the current supply and demand for transient parking and forecasted the 2031 demand. The Mustel Group Market Research did a market survey of transient parking attitudes.

The question of the definition of transient parking, the demand of such parking and its supply were the focus of the studies. Forecasting the required supply proved to be an interesting task given the need to comply with the city's sustainable parking policies and the opinions of the downtown business community.

This paper will explain the growth of parking in Vancouver over the last half century and how that is divided into various uses. The main discussion will deal with the question of estimating the demand for transient parking and how much should be supplied to provide some acceptable level of service for both parking customers and downtown business .

## Introduction

The Downtown Parking Corporation (DPC) was started in 1948 by downtown businesses in response to the highly successful shopping mall at Park Royal in suburban West Vancouver. The DPC was given to the City of Vancouver by the merchants as a tax avoidance scheme. Now known as EasyPark (the Parking Corporation of Vancouver) it is jointly owned by the City of Vancouver and the Downtown Vancouver Association (DVA). EasyPark's mandate is to manage off-street and transient parking for the City of Vancouver and the DVA. EasyPark presently manages approximately 8,760 off-street parking spaces or about 15% of the overall total of about 60,500 commercial parking spaces on the Vancouver downtown peninsula, Chinatown and the West End. See Figure 1 for the City of Vancouver's parking zones.



**FIGURE 1. VANCOUVER PARKING ZONES**

The City of Vancouver's parking definitions are as follows: **Transient parking** is defined as "Parking that is typically rented on an hourly basis at a relatively high price". **Contract parking** is: "Parking that is typically leased on a monthly basis, and may be marked specifically for the use of one particular user or set aside in a block of space for the use of any and all lessees". **Ancillary parking** is defined as: "Off-street parking that is enclosed in a structure and is part of a development". **Parkades** are free standing parking structures that may be part of ancillary parking.

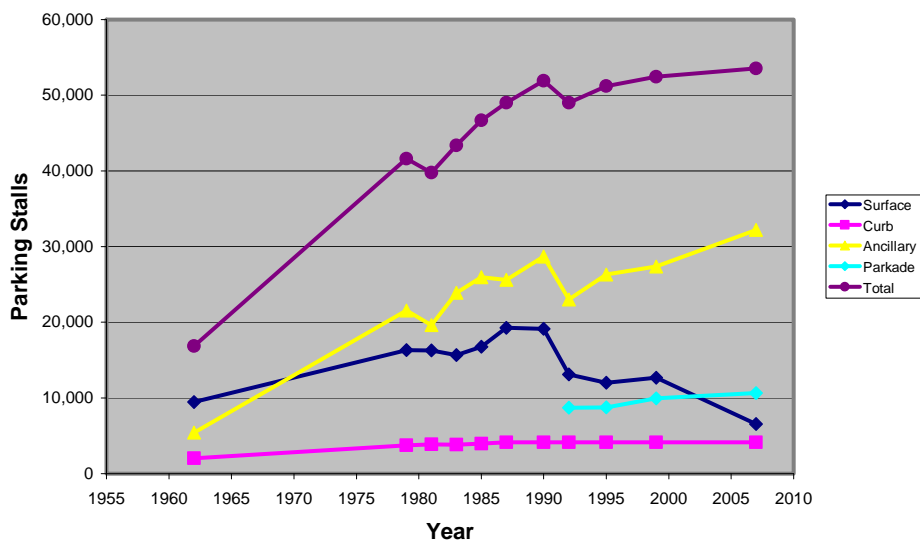
## Evolution of Parking in Downtown Vancouver

A study by Navin and Sebastian (2007) examined the changing supply of parking on the Vancouver downtown peninsula over the past 45 years, see Figure 2. The study showed that the downtown non-residential parking supply has flattened out over the past 20 years even as downtown commercial floor space has increased. As expected, surface parking lots started disappearing in the late 1980s while on-street parking has remained constant. Parkade spaces have remained constant due in part to unfavourable taxing rules by the City of Vancouver and are expected to decrease in the future. Ancillary parking spaces have increases as the downtown has developed.

The total parking stalls reported in the Navin-Sebastian study is 53,547. This is less than the Bunt & Assoc study because the West End, a small area adjacent to the north side of False Creek, and an extension to Chinatown were not included in the Navin-Sebastian study. Changing zonal boundaries is just a fact of life in transportation studies and leads to difficulties in time series data summaries. This paper uses the Navin-Sebastian zonal system.

**FIGURE 2**

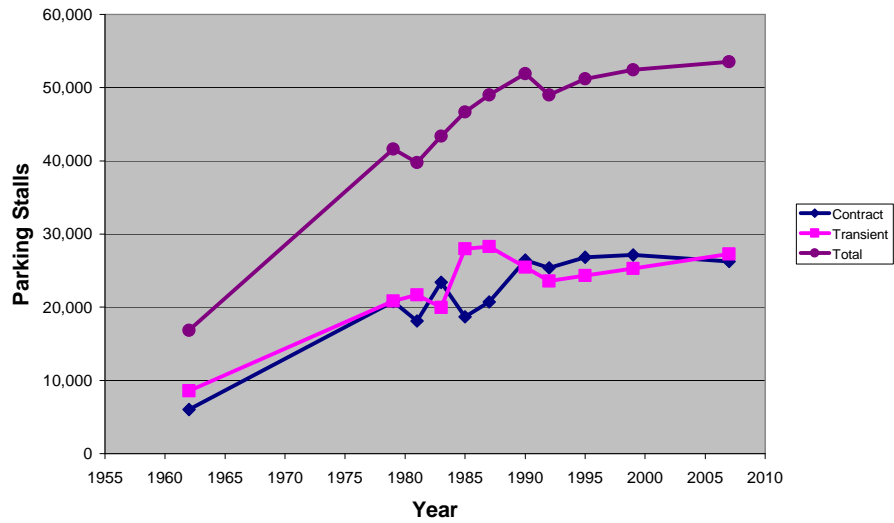
**PARKING IN VANCOUVER'S CBD**



Transient Parking as a fraction of total parking has remained quite constant on the downtown peninsula at roughly 50 percent over the last fifteen years as shown in Figure 3.

**FIGURE 3**

**TRANSIENT PARKING IN VANCOUVER**



**Existing Transient Parking**

Bunt & Associates were commissioned to study existing transient parking supply and demand. The following summarizes their observations.

**Transient Parking Supply**

A comprehensive “block by block” inventory of parking found that there are presently about 60,500 (the study area is different from Navin-Sebastian) parking spaces in the study area available for primarily commercial or “non-residential” parking purposes, see Table 1. Approximately one half of this downtown parking supply is provided for short-term (hourly/daily) transient parking use, the rest being in the form of contracted monthly parking. The transient parking definition used by Bunt & Assoc also included monthly non-reserved parking.

TABLE 1. Transient Parking Supply 2008  
(The Off-Street includes non-reserved Monthly Parkers)

| Zone         | Location          | Curb | Off-street | Total       |                  |                 |                  |
|--------------|-------------------|------|------------|-------------|------------------|-----------------|------------------|
|              |                   |      |            | Transient * | Weekday Mid-day* | Weekday Evening | Saturday Mid-day |
| 1            | Coal Harbour      | 867  | 3671       | 4538        | 3834             | 2764            | 3092             |
| 2            | Downtown          | 1202 | 5110       | 6312        | 5412             | 4722            | 4989             |
| 3            | Gastown           | 663  | 4236       | 4899        | 4375             | 4052            | 3879             |
| 4            | Chinatown         | 1416 | 1428       | 2844        | 2642             | 2350            | 2679             |
| 5            | Downtown Core     | 385  | 12596      | 12981       | 10507            | 7297            | 6022             |
| 6            | South Downtown    | 1033 | 1413       | 2446        | 2207             | 1959            | 2067             |
| 7            | West End          | 563  | 1053       | 1616        | 1484             | 1478            | 1506             |
| 10           | NE False Creek    | 317  | 2082       | 2399        | 1653             | 1643            | 1364             |
| 11           | False Creek North | 279  | 263        | 542         | 498              | 339             | 397              |
| <b>TOTAL</b> |                   | 6725 | 31853      | 38577       | 32612            | 26604           | 25995            |

The supply of transient parking varies by “time of day” and “day of week”, both for the curbside street parking and off-street parking facilities. The supply of on-street parking increases in the evening period as weekday daytime period traffic lanes and curbside loading zones become available for parking use. The supply of off-street parking decreases as some sites are closed after 6pm (1800h). There is another decrease in transient parking supply due to safety and security concerns of transient parkers using parking facilities in the evening. Many transient parking stalls are either up or down a couple of floors with difficult access and/or poor lighting. The quality of this parking is seen as inferior by users and is avoided. This concern actually reduces the number of “suitable” transient parking stalls.

The majority of downtown transient parking is located in a number of large parkade structures. Other significant concentrations are located around the GM Place and BC Place Stadium sites, along the Burrard Street and Hornby Street corridors extending from the core south toward St. Paul Hospital, and on Seymour Street in the vicinity of the Georgia Street/Seymour Street intersection.

On-street parking accounts for approximately 20% of weekday supply and about 25% of weekend evening and Saturday midday supply.

### ***Observed Transient Parking Demand***

Existing transient parking demand patterns were observed in November 2007 and again in January 2008 and summarized in Table 2. Table 2 also has the estimated transient only parking supply from Navin-Sebastian. The utilization of the transient parking supply downtown varies considerably depending on the time of day, day of the week and location within the downtown.

Maximum transient plus non-reserved monthly parker demand is during the weekday daytime period with approximately 23,350 parked vehicles recorded, and about 67% overall utilization of the downtown transient parking supply. Certain areas of the downtown, notably the downtown core and Coal Harbour areas, are more fully utilized. Street parking is heavily utilized, about 70 to 75% across most of the downtown area during the weekday daytime period.

The Bunt & Assoc estimates of transient stall utilization included the non-reserved monthly parkers. A reasonable approximation of the true transient parking utilization during the weekday mid-day period is given by the following equation.

$$\text{Let } A = NMs + TS \text{ and } B = NMd + TD$$

where TD = Transient parking demand excluding non-reserved monthly parkers,  
TS = Transient parking supply excluding non-reserved monthly parkers,  
A = Total transient parking supply by time as reported by Bunt & Assoc.,  
B = Total weekday, mid-day transient parking demand by Bunt & Assoc.,

NMs = Non-reserved monthly parking supply, and  
 NMd = Non-reserved monthly parking demand.

let  $NMs = NMd$

then  $B - TD = A - TS$

and rearranging the equation gives the utilization as;

$$\text{Utilization} = (TD/TS) = 1 - [(A-B)/TS]$$

The relationship assumes that the supply of stalls for non-reserved monthly parkers is equal to the demand by such parkers. The utilization values are given in Table 3.

TABLE 2. Transient Demand 2008  
 (Weekday mid-day includes non-reserved monthly parkers)

| Zone  | Location          | Transient Supply<br>Navin-Seb | Weekday<br>Mid-day | Weekday<br>Evening | Saturday<br>Mid-day |
|-------|-------------------|-------------------------------|--------------------|--------------------|---------------------|
| 1     | Coal Harbour      | 1844                          | 2953               | 876                | 1117                |
| 2     | Downtown          | 8156                          | 3615               | 2230               | 1994                |
| 3     | Gastown           | 3915                          | 2865               | 1448               | 1026                |
| 4     | Chinatown         | 2726                          | 1666               | 658                | 1567                |
| 5     | Downtown Core     | 4146                          | 8020               | 1288               | 2386                |
| 6     | South Downtown    | 2915                          | 1598               | 1166               | 1226                |
| 7     | West End          | na                            | 636                | 671                | 894                 |
| 10    | NE False Creek    | na                            | 772                | 523                | 300                 |
| 11    | False Creek North | 2936                          | 394                | 269                | 239                 |
| TOTAL |                   | 26638                         | 22519              | 9129               | 10749               |

TABLE 3. Transient Parking Stall Utilization  
 (Weekday mid-day excludes non-reserved monthly parkers)

| Zone    | Location          | Weekday<br>Mid-day | Weekday<br>Evening | Saturday<br>Mid-day |
|---------|-------------------|--------------------|--------------------|---------------------|
| 1       | Coal Harbour      | 0.52               | 0.32               | 0.36                |
| 2       | Downtown          | 0.78               | 0.47               | 0.40                |
| 3       | Gastown           | 0.61               | 0.36               | 0.26                |
| 4       | Chinatown         | 0.64               | 0.28               | 0.58                |
| 5       | Downtown Core     | 0.40               | 0.18               | 0.40                |
| 6       | South Downtown    | 0.79               | 0.60               | 0.59                |
| 7       | West End          |                    |                    |                     |
| 10      | NE False Creek    |                    |                    |                     |
| 11      | False Creek North | 0.92               | 0.79               | 0.60                |
| TOTAL   |                   | 0.62               | 0.37               | 0.43                |
| St. Dev |                   | 0.19               | 0.21               | 0.13                |

The utilization rates in Table 3 also have a variation (measured by the standard deviation) across the downtown.

The weekday evening transient parking demand is approximately 10,250 parked vehicles or about 45% of the daytime amount. Major events at GM Place and BC Place Stadiums, with upwards of 18,000 to 35,000 persons generates additional demands of approximately 3,500 vehicles and 7,000 vehicles respectively. The more congested parking for the evening is away from the downtown core. There is generally more street parking available in the evening period, however evening street parking remains heavily pressured in neighbourhoods associated with the higher concentration residential use.

Across the downtown area as a whole, the utilization of on-street parking ranges between 70-75%. This is adequate to accommodate existing transient demand levels. However, there is considerable variation in the street parking utilization across the downtown and in some corridors exceeds 85% in the evening period. Most parkers perceive this level of utilization to represent congested conditions.

Much of the surplus available transient parking supply, particularly for the weekday evening and weekend daytime periods is not well suited to persons visiting the downtown for purposes other than daytime work related trips.

### ***Public Opinion Surveys***

The opinion of key stakeholders on the adequacy of parking downtown was studied by the Mustel Group Market Research (2008). Public opinion was sought from two specific groups (i) the general public who visit the downtown either for work or other purposes and (ii) a sample of downtown businesses whose commercial viability depends on the public such as shopping, dining, and entertainment. Key findings from the opinion survey are:

- A total of 65% of Metro Vancouver adults travel downtown at least once a month and on average about once a week. Most of these trips (4 out of 5) are for purposes other than work related, and more discretionary and influenced by convenience of access and adequacy of parking.
- Approximately one-half or more of downtown visitors, regardless of trip purpose, typically travel by private vehicle requiring parking.
- Approximately 70% of Metro Vancouver adults and 60% of downtown businesses report that the supply of short-term (transient) parking is inadequate and about half feel it is decreasing.
- Nearly one-half of the respondents are travelling downtown less often compared to five years ago. Traffic congestion, lack of need to travel downtown, and difficulty finding parking are among the reasons cited for the reduced number of trips.

- Two-thirds of Metro Vancouver adults report that the availability of parking has at least “moderate” impact on their decision of whether or not to visit the downtown core, while nearly 40% report that it has a “significant” impact.
- The availability of short-term parking has a “moderate” or “significant” impact on business decisions to locate downtown according to 70% of retailers, 64% of restaurants/bars, and 60% of other businesses.

The Mustel Group summarized the situation as, “Both the public and downtown businesses concur that the supply of short-term parking is insufficient for their needs and is a deterrent to travelling downtown. This situation is impacting the operations of businesses in several ways, primarily retailers and restaurants, bars and hospitality businesses. Furthermore, the situation appears to have deteriorated over the past five years. Combined with other factors such as traffic congestion and growth of mixed-use communities, Metro Vancouver residents are increasingly avoiding the downtown area rather than changing modes to travel downtown”.

### **Forecasting Transient Parking**

There is little doubt concerning the need for adequate parking for the success of any business. Recent Vancouver experience showed a small business failure rate of about 50% within a few months of the removal of parking during the building of the Canada Line along Cambie Street. This is just an extreme example but illustrates the importance of transient parking.

#### ***City of Vancouver’s Forecast to 2025***

Based on estimates from the City of Vancouver Department of Engineering, there will be a loss of 5,770 existing stalls by 2025, 3,250 of which are surface stalls. These stalls will be mostly replaced by 5,202 ancillary stalls which are expected to be created with the development of 7.2 million square feet of commercial floor space. Existing by-law requires one parking stall per 1,388 square feet of floor space (the current rule of thumb calculation based on city by-laws is one stall per 1,250 square feet). There will also be additional gains in parking stalls as users switch to transit.

#### ***Navin-Sebastian Forecast to 2025***

Using the Planning Department’s projections for high and low growth in demand for commercial space in the Metro Core Jobs Study and the existing rule of thumb of one space per 1,250 square feet, as well as an estimate of future by-law requirement of one space per 1,400 square feet, Navin-Sebastian made projections for high and low parking supply up to the year 2025. Table 2.1 summarizes these projections.



**TABLE 4: Estimates of New Parking Supply by 2025**

|  | High      | Medium    | Low       |
|--|-----------|-----------|-----------|
| New Commercial Floor space (Metro Core Jobs Study) | 6,997,019 | 5,167,835 | 3,338,652 |
| New Parking (1 stall/1,250 sq ft)                  | 5,598     | 4,134     | 2,671     |
| New Parking (1 stall/1,400 sq ft)                  | 4,998     | 3,691     | 2,385     |

The estimates range between 2,385 and 5,598 for new ancillary stalls. Based on the City's projections of 5,770 lost stalls, these estimates translate into a decrease of parking supply ranging from 172 to 3,385 stalls. Given that the Department of Engineering projections provide a 568 stall decrease, there is a *maximum* discrepancy between the two estimates of 2,817 stalls, representing 5% of the estimated total parking in 2025.

***Bunt & Assoc Estimated Transient Parking Demand for 2031***

Anywhere between 4 million square feet and 10 million square feet of additional commercial development is anticipated in the downtown area by 2031. Accounting for anticipated future modal shifts away from automobile trips to transit and other alternative travel modes, this additional commercial development could potentially increase weekday mid-day parking demand in the downtown by anywhere from 4,362 to 10,904 spaces.

City of Vancouver Parking Bylaw minimum supply standards, adjusted to reflect the changing travel patterns in the Metro Vancouver Region, would require that 2,882 spaces be provided as on-site ancillary parking for the low side development scenario and 7,205 spaces for the high side scenario. This on-site parking requirement would service most, but not all, of the anticipated future parking demand generated by the new development. As such, the portion of future parking demand not accommodated by the on-site parking requirement ranges from 1,480 to 3,699 spaces for the low side and high side development forecasts respectively.

Potentially up to 5,600 existing parking spaces in the downtown area could be eliminated to make way for future downtown development. Of this amount, based on current weekday daytime usage patterns, a minimum of 3,418 spaces should be replaced to provide continued reasonable parking access to the downtown, even with allowance for increasing future public transit use. Offsetting these requirements for increased future transient parking supply is the reduction in existing transient parking demand on account of anticipated travel mode shift changes away from automobile use to alternative travel modes including public transit. Based on the public opinion survey results, a travel mode split shift of up to 10% away from automobile to primarily public transit trips is assumed in the analysis. For existing downtown commercial development, this amounts to a potential parking reduction of 2,335 spaces. Taking into account all of these factors, the potential increased transient parking supply requirement for downtown Vancouver ranges from 2,565 to 4,785 spaces in 2031, for the 4 million to 10 million square foot future additional commercial development scenarios respectively.

## Conclusions

On average, for the entire downtown study area there is ample transient parking. This is misleading since the difficulties arise because of the availability across the downtown. The utilization of on-street parking during the weekday mid-day ranges from 70 to 75% depending on location. During the weekday evening this changes to as high as 80% depending on location. The areas of greatest utilization are those that have a mixture of entertainment and residential development.

All parking stalls are not equal. Inconvenience and security/safety concerns are prime factors as to why some available parking is of little consequence for evening and weekend transient parking. These stalls are adequate for weekday mid-day use. The consequence is stall utilization calculations for the evening and weekend are misleading. The utilization of "suitable" parking stalls is higher.

The stall utilization reported by the studies represents averages and do not represent peak demand. The design of a service system such as parking must account for some variation in demand. The design demand should be set at some fraction of the total available stalls, usually at about 80 to 85 %.

A transient parking market survey of Metro Vancouver residents supported the engineering observations. Roughly two thirds of Metro Vancouver adults and downtown businesses report that the supply of short-term (transient) parking is inadequate and about half felt it decreased over the last five years. Nearly one-half of the respondents are travelling downtown less often compared to five years ago. Traffic congestion, lack of need to travel downtown, and difficulty finding parking are among the reasons cited for the reduced number of trips. Two-thirds of Metro Vancouver adults report that the availability of parking has at least "moderate" impact on their decision of whether or not to visit the downtown core, while nearly 40% report that it has a "significant" impact. The availability of short-term parking has a "moderate" or "significant" impact on business decisions to locate downtown according to 70% of retailers, 64% of restaurants/bars, and 60% of other businesses.

The forecasts of the required transient parking spaces range from 0 to 4998 stalls. The City of Vancouver's Engineering Department forecasts that no new transient parking is required. Navin-Sebastian estimate (using a simple set of calculations) between 2385 and 4998 transient stalls are required by 2025. Bunt & Assoc, using a more thorough analysis estimate the requirement for additional transient stalls between 2,565 to 4,785 by 2031. The actual allocation of transient parking within the downtown may find that additional transient parking is required to maintain a vibrant retail and entertainment business within the local areas.

If the expectation for downtown Vancouver is to maintain its current leadership roll in business, retail and entertainment then transient parking must be an integral part of the transportation debate. The technical analysis can not be left to simply area wide

averages. The City of Vancouver must establish suitable analysis criteria and service standards for transient parking.

## References

Navin F., Sebastian, A., Parking Supply on Vancouver's Downtown Peninsula, 1962 to 2025. Easy Park Vancouver, October 2007.

Bunt & Associates, Downtown Vancouver Transient Parking Study, Easy Park Vancouver, September 29, 2008.

The Mustel Group Market Research, Usage and Opinions of Downtown Short-term Parking Facilities, February 2008