



# Bike Corrals

Local Business Impacts, Benefits, and Attitudes



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# ABSTRACT

Portland's Bicycle Corral Program began with a single location in 2004. The exclusive on-street bicycle parking facility was successful and led to the installation of 40 additional corrals city-wide by 2010. The purpose of this preliminary study was to research and closely examine the perceived benefits and impacts of bike corrals on local businesses proximate to a corral. Prior to this report, only a small amount of anecdotal evidence had been collected regarding business owner attitudes—mostly from businesses that had requested a corral. This study administered a web-based survey to local businesses and conducted a basic land use inventory to gather empirical information. Data were collected on all businesses within one half-block of a bike corral. The results of the survey indicate widespread local business support for the corrals with few exceptions. In addition, the businesses in the sample perceived that bicyclists, on average, account for one-quarter (24.8 percent) of their total customer base. More than two-thirds responded that they have seen the demand for bike parking rise over time, along with the rate of bicyclists as customers. Key findings from this study demonstrate that business owners commonly view the bike corrals as exemplars of sustainable transportation, which enhance the street and neighborhood identity, and increase foot and bike traffic. Using these responses as a guide, it can be determined that businesses recognize that the investment in quality short-term bicycle corral facilities has been an asset for both bicyclists and their commercial establishment.

The first Portland Bike Corral installed at Fresh Pot Coffee shop

## Top five perceived bike corral benefits :

**86%** Help to promote sustainability

**84%** Enhance the street and neighborhood identity

**77%** Increase transportation options for employees and patrons

**67%** Increase foot and bike traffic

**53%** Increase the visibility of businesses from the street



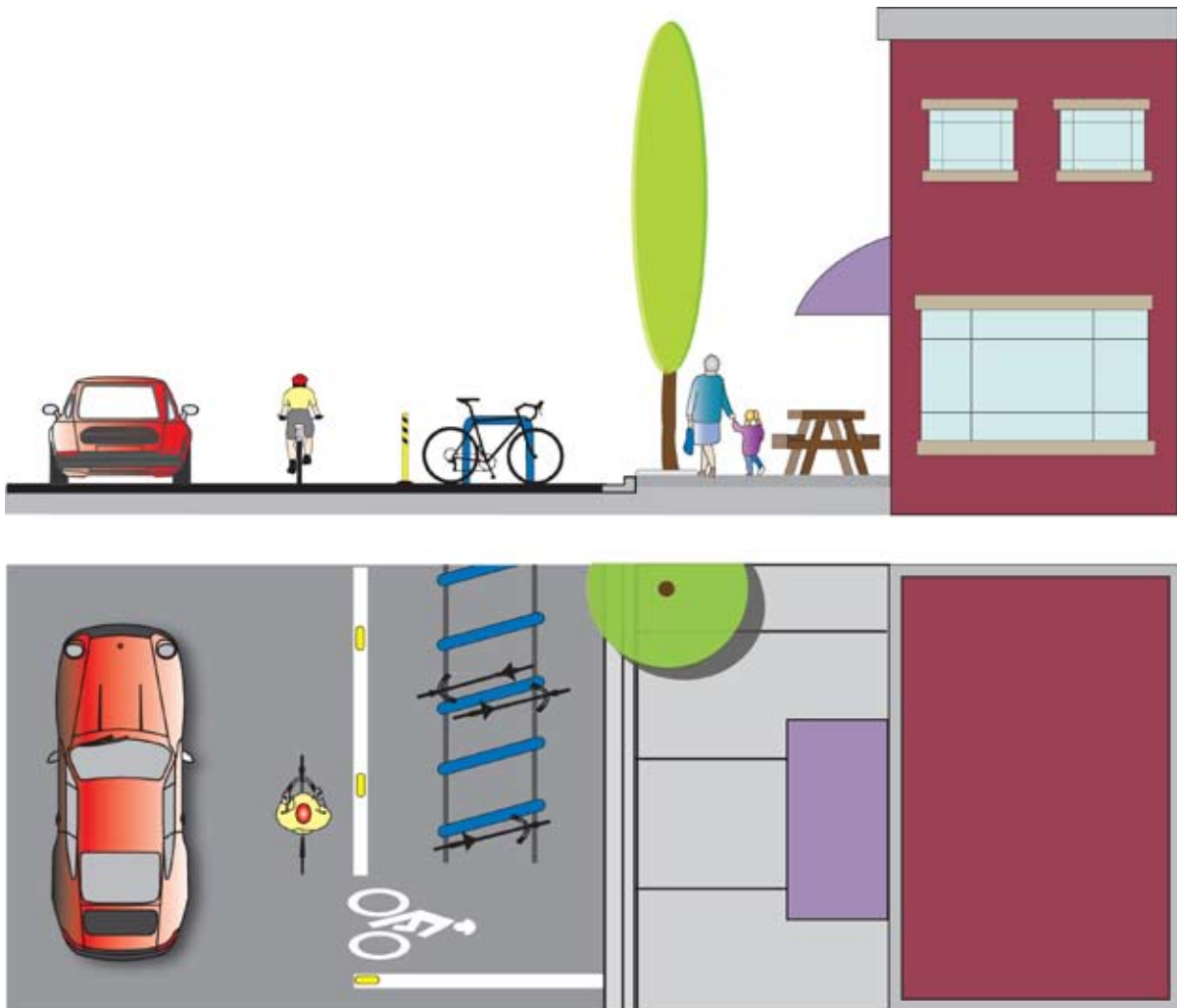
Source: Alta Planning + Design



# INTRODUCTION

Beginning in 2004, the City of Portland began an ambitious program designed to increase bicycle parking capacity. The program involved the reallocation of on-street auto parking space in dense commercial corridors. In the acquired space exclusive bicycle parking facilities were created, capable of accommodating 10 to 20 parked bikes. The first of these so-called ‘bike corrals’ was installed at the Fresh Pot coffee shop in 2004. Building upon the success of this first corral, additional facilities were introduced over time at key commercial locations. By 2009, the requests from local business owners for new bike corrals reached new heights and the City responded by installing facilities in commercial areas in every quadrant of the city—reaching a total of 40 by early 2010.

A bicycle corral is clearly differentiated from the roadway through the use of paint, small buffer, flexible bollards, or a combination of elements. It generally consists of 6-12 bicycle staple racks (inverted U-shaped racks) that lie either



**Figure 1**

diagonal or perpendicular to the roadway. The corral is the same width as the parking lane and 1 to 2 parking spaces long (See Fig. 1). The corral does not extend into the pedestrian zone, or frontage area, and is not elevated above the existing roadway grade.

The application process for a business requesting a bike corral has changed little since 2004, except they are now planned at the corridor level instead of at the individual business level. The procedure is treated in a similar manner to requests for commercial loading zones. Business owners submit an application for a bike corral and the City responds by arranging a meeting with the applicant and land owner to discuss the treatment. Pending the availability of funds and suitability of the location, a bike corral is later installed. An observation study of automobile parking capacity on the existing roadway is not conducted. It should also be noted that no other businesses in the area are contacted regarding the decision to remove 1 to 2 auto parking spaces for the installation of a new bike parking facility.

There is very little research on bicycle parking and even less on the impacts of specific bicycle parking facilities. This study collected empirical data to examine local business attitudes and opinions regarding Portland's bike corrals. It examines the perceived benefits that local businesses associate with corrals. Also documented, is the extent to which some businesses feel they have been impacted as a result of removing in-demand on-street auto parking.

Historically, the removal of on-street car parking in dense commercial areas has been met with skepticism from business communities. This is due in large part to a commonly held belief that the majority of customers prefer to use private motor vehicles to reach commercial destinations. This argument states that any decrease in parking capacity increases the cost of driving. As a result, businesses will lose out as customers choose to shop at locations where parking is free and readily available. However despite this commonly held belief, there is increasing evidence that, at least in dense urban areas, a significant portion of customers arrive by active transportation modes like walking and biking. A recent UK study from Bristol, demonstrated that people who use active transportation modes to reach commercial areas shop there more often, and frequent more shops per trip.<sup>1</sup> By developing infrastructure, such as end of trip bicycle facilities to support these modes, the ability of individuals to walk and bike to commercial areas is strengthened. This in turn creates conditions for individuals to frequent commercial corridors more often, and can lead to increased sales at commercial establishments.

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<sup>1</sup> Sustrans "Shoppers and How They Travel". Web. 28 Feb. 2006.

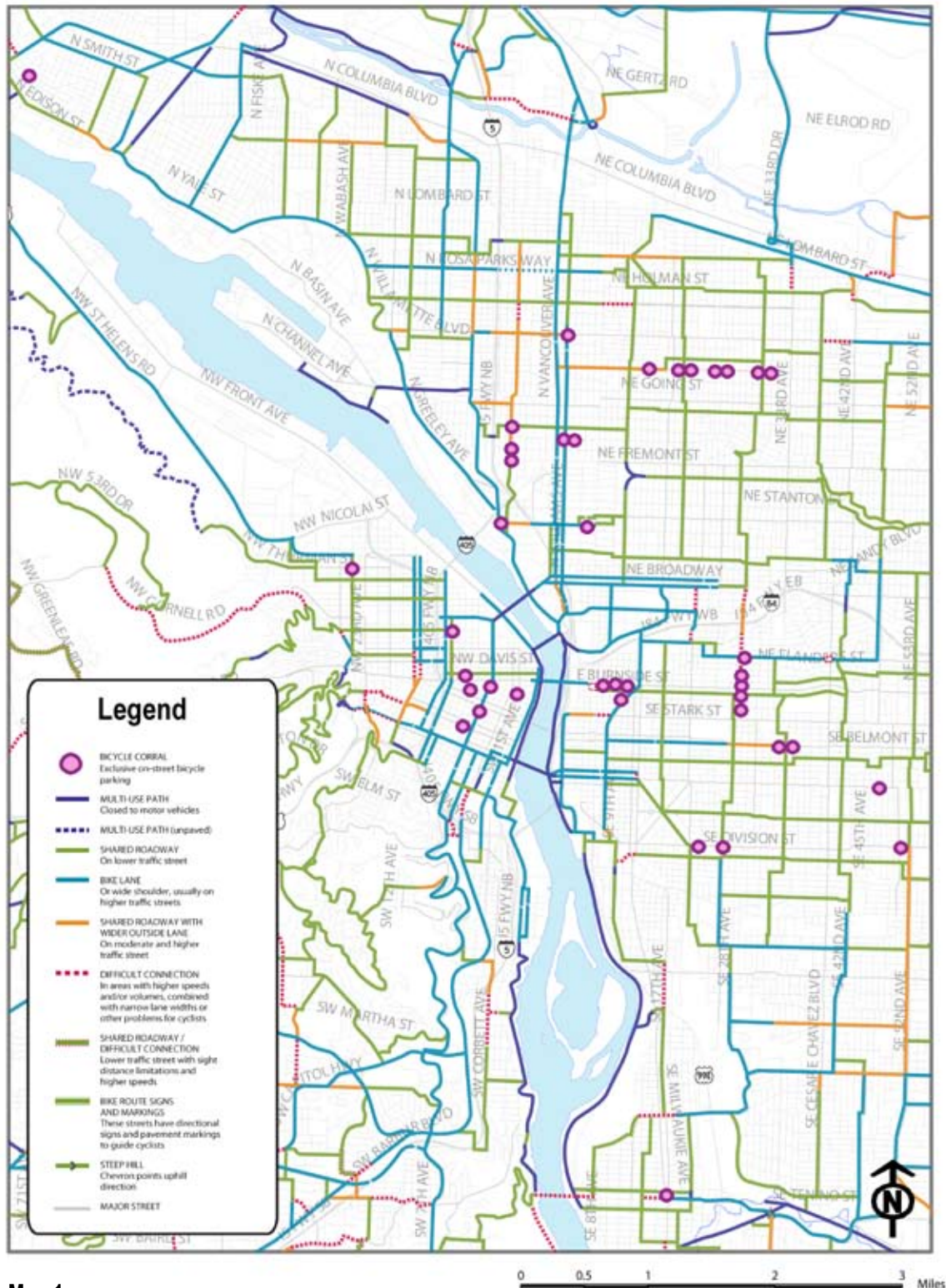
Creating such an environment, one that is more conducive to walking and bicycling, is part of the City of Portland's mission to help promote healthier lives and communities. This effort benefits local businesses as well. At the time this study was conducted, there was only anecdotal supporting evidence for the corrals available. However, even that small amount of evidence, provided mostly by businesses that had requested bike corrals, indicated that the improved bicycling environment was having positive impacts for businesses. The three key benefits that business owners associated with the placement of corrals adjacent to their establishment included:

- **Increased numbers of customers**
- **Improved sidewalk/cafe seating environment for customers**
- **Improved visibility of the business from the street.**

Now in its fifth year, the Bicycle Corral program is thriving, with 40 corrals installed throughout the city (See Map 1) and 50+ more on request. Anecdotal evidence aside, the sheer volume of applications for bike corrals indicates that business owners have been supporting the corrals by “voting with their feet” and requesting their installation. The bike corrals are so popular with business owners in fact, that the Portland Bureau of Transportation cannot install at the pace they are requested. Despite their popularity, there has been no comprehensive study of the perceived effects of these facilities on the local businesses adjacent to them. This preliminary study provides the first substantial set of data regarding the benefits, impacts, and attitudes of businesses within one half-block of a bike corral. The key questions that are addressed in this study include:

- **What are the perceived benefits of being located near a bike corral?**
- **What types of businesses perceive the most benefits from bike corrals?**
- **Does the commercial mix of business types affect perceived benefits and impacts?**
- **Do perceived benefits of the bike corrals differ between commercial corridors?**
- **Does the corrals) proximity to other bicycle facilities affect the perceived level of benefits?**

# On-street Bike Corrals and Portland's Bicycle Network



Map 1



# METHODOLOGY

The amount of scholarly research on bicycle parking is marginal, and a focus exclusively on bicycle corrals narrows the subject considerably. Operating under these conditions required a reliance on mostly empirical data. Data were collected via an online survey instrument that was administered to local business owners. The location of the 40 installed bike corrals was used to determine which businesses would be targeted in the survey. According to a previous study of cyclist behavior concerning bike corrals, cyclists are unwilling to park a block or more away from their intended destination.<sup>2</sup> Even when no quality bicycling facilities exist adjacent to their destination, a bicyclist will seldom park in a corral and complete the journey by foot if the destination is more than a block away. Using this previous study as a guide, it was determined that the effective range of a bike corral is one half-block. For this project, all businesses within one half-block of a bicycle corral were targeted. In total, 248 businesses were cataloged within range of one of the 40 bike corrals. Following a site visit, businesses within an estimated half-block radius were recorded along with the business type, dominant land use, and proximity to other bike facilities, such as bike lanes or bike boulevards.

Given the limited resources and time restraints during this preliminary study, the researcher was forced to rely solely on online contact information and an electronic survey instrument. Of the 248 businesses that were cataloged, more than half (53 percent) had active websites with email contact information. Each of these businesses was sent an email with a link to the survey instrument. The email letter explained the purpose of the study and requested their participation (sample letter and survey instrument can be found in the Appendix). The survey was administered from February 26 to March 8, 2010. Of the 132 businesses that were surveyed, one-third responded (33 percent), capturing 17 percent of all businesses within a half-block of a corral.

<sup>2</sup> Nathan McNeil, "Portland's Bicycle Corrals: A Case Study of East 28th Avenue". Unpublished student work (Fall, 2009).

N Mississippi and Skidmore St



Source: Bikeportland.org

NE 28th and Glisan St



Source: Bikeportland.org



# STUDY LIMITATIONS

- The sample size was too small to measure statistical significance when comparing different business types and geographic locations
- Businesses without a web address and active email contact were excluded from this survey, introducing bias
- The survey was administered during the winter when bike commuting and use of the bike corrals is arguably at its lowest. The prolonged period of decreased use of the corrals could have adversely affected the responses of some local businesses
- No businesses further than a half-block away from a corral were surveyed. Generalizing the results of this survey for all Portland businesses may be inaccurate
- There was an inability to determine if business owners were underestimating/overestimating the number of customers arriving by bike.
- Question 3 of the survey asked respondents for their level of agreement on a series of statements. One of these statements was not written clearly. As written, the statement said, “Bike corrals reduce the auto parking spaces needed for my customers”. The problem with this statement was that it is not arguable that the bike corrals reduce auto parking spaces. The point of the question was to identify whether removing parking spaces was a problem. A better statement would have been written, “Bike corrals are a problem for my business because they remove valuable on-street parking”.

# RESPONDENTS

The businesses most likely to respond to this survey were restaurants and retail or shopping establishments. The higher response rates from these two categories can be partially explained by the prominence of these business types in the study area: 46 percent food and beverage, 31 percent shopping and retail, and 23 percent other business type. Of the sample that responded to the survey, a similar distribution was found (See Table 1). The similar distribution of businesses between participants and the sample increases the likelihood that the results of the survey more accurately reflect the attitudes and opinions of other businesses of a similar type.

| Categories          | Survey Count | Survey Percentage | Sample Business Distribution | Sample Business Distribution |
|---------------------|--------------|-------------------|------------------------------|------------------------------|
| Shopping/Retail     | 19           | 44.2%             | 46.0%                        | 115                          |
| Food and Beverage   | 14           | 32.6%             | 31.0%                        | 78                           |
| Other Business type | 10           | 23.3%             | 23.0%                        | 55                           |
| Total               | 43           | 100.0%            | 100.0%                       | 248                          |

**Table 1**

For the purposes of this analysis the ‘Food and Beverage’ category includes: restaurants, bars, breweries, pubs, bakeries, grocery stores, and coffee shops. These types of businesses all share similar characteristics and were aggregated into a single category for analysis purposes. Similarly, the ‘Retail/Shopping’ category includes businesses that categorized themselves as clothing and accessories or home and garden. The ‘Other business type’ category included business and professional services, hotels and lodging, health services, and personal care services, to name just a few. These business types do not share similar characteristics and could not be combined in any statistically meaningful way.

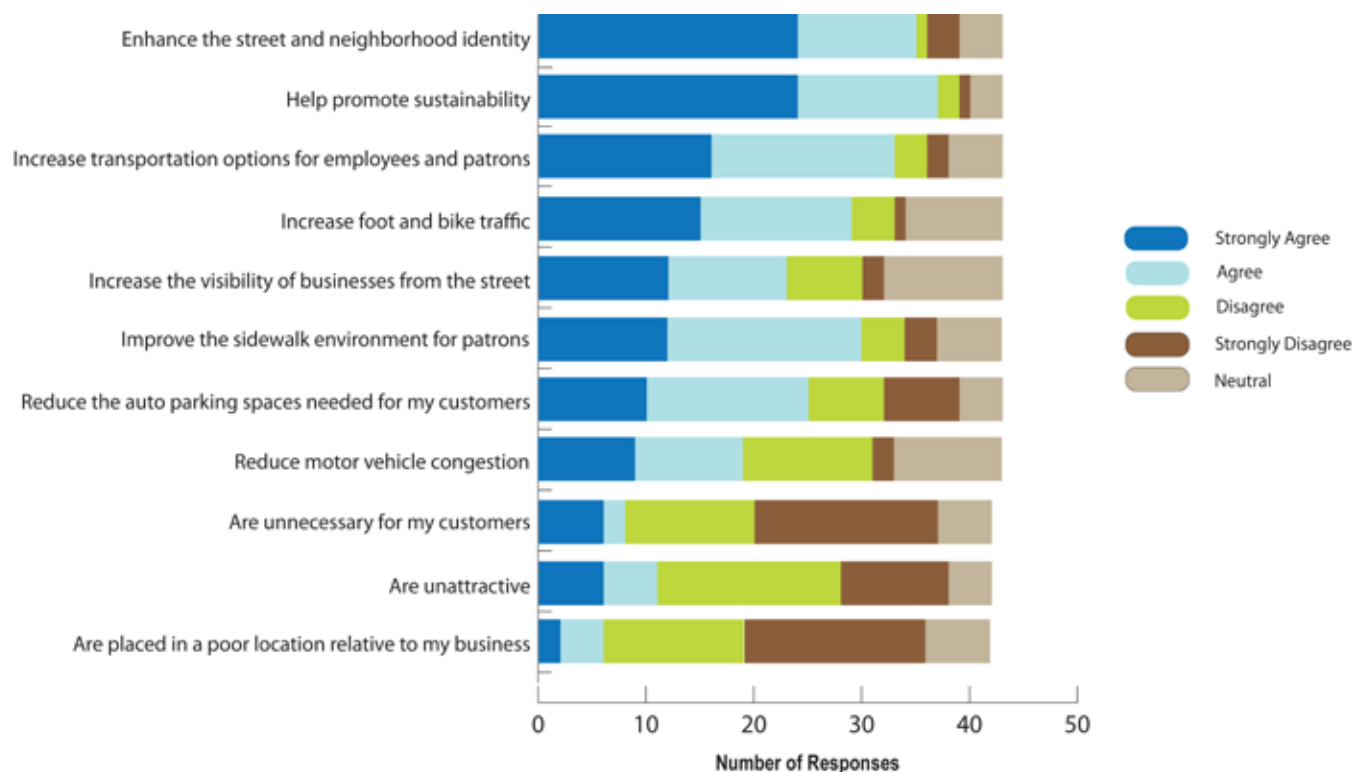
## ANALYSIS

An invaluable question in the survey asked respondents to select their level of agreement or disagreement with a series of statements. The question provided general information about respondent’s attitudes toward the bike corrals (See Fig. 2). One such statement was concerned with the perceived effects of bike corrals on neighborhood and street identity. Responses from this question showed that a majority of business owners feel there is a strong relationship between street identity and bike corrals. Eighty-four percent strongly agreed or agreed that bike corrals enhance the street and neighborhood for residents and patrons. This perception of an enhanced street identity is very important because many local businesses rely on a dynamic shopping environment to attract customers—that the bike corrals play a part in creating this atmosphere is seen as a significant benefit.

Basic street design elements such as shade trees, street furniture, sidewalks, pedestrian-scale lighting, and other amenities provide bicyclists and pedestrians with an improved built environment making them want to visit the area more frequently. It is commonly recognized that dynamic streets where active travel is enjoyable benefits businesses in part because these spaces draw pedestrians and bicyclists to them and encourage higher levels of shopping and

dining.<sup>3</sup> This translates into higher numbers of customers for shops, boutiques, restaurants, bars, and other service oriented businesses. Portland’s bike corrals are an important element in this mix, adding interesting and unique details to the neighborhood and street, while functioning as a high-capacity bike parking facility. Many local business owners recognize and appreciate this distinct function of the corrals. Of the businesses surveyed, two thirds (67 percent) responded that the bike corrals increase foot and bike traffic in the area.

**Figure 2: Business responses regarding bike corrals**



## ***Bicyclists as Customers***

A concern of businesses, specifically regarding the loss of valuable on-street auto parking, is that they will lose customers who drive without gaining customers who travel by other modes. Despite this commonly held logic, 40 percent of all businesses estimate that they have seen an increase or strong increase in customers who are bicyclists. Furthermore, businesses in this study, on average, perceive that one out of every four (24.8 percent) of their customers are bicyclists. One other interesting detail that emerged from the survey was that every single business responded that bicyclists as customers are increasing, or have remained steady over time (See Fig. 3). Not a single business responded that fewer bicyclists are frequenting their shops, restaurants, or other commercial enterprise. This perception aligns

<sup>3</sup> Frank, Engelke, Schmid, *Health and Community Design: The Impact of the Built Environment on Physical Activity*. (Island Press, 2003).

well with what the City of Portland has discovered about providing bicycle infrastructure—if you build it they will come. While it is beyond the scope of this study to draw direct causal linkage between the bike corrals and higher rates of bicyclists as customers, it is highly relevant that businesses proximate to corrals perceive that they are increasingly attracting bicyclists as customers.

### ***Demand for Parking***

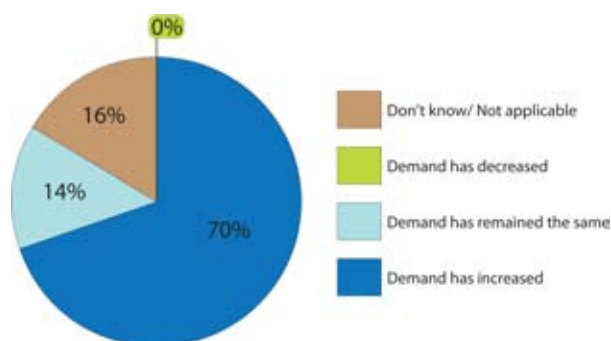
Managing parking capacity and demand in dense urban and commercial areas is a common concern for cities of all sizes.

As the City of Portland continues to invest in strategies that increase the density of the built area, the demand for automobile parking is likely to continue to rise. Increasing the amount of on-street parking available to motor vehicles is extremely difficult and prohibitively expensive. Many cities

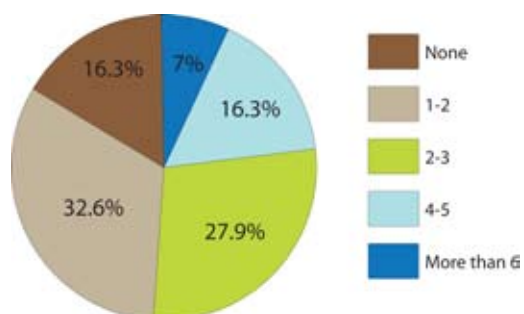
are only able to ensure parking capacity through cost intensive regulation or pricing strategies.<sup>4</sup> Comparatively, bicycle parking is relatively inexpensive; approximately \$2,200 for 18 spaces, and offers an excellent return on its initial investment. Portland’s development of quality short term bicycle parking, such as bike corrals, is a different response to the parking congestion problem faced by growing urban areas. The bike corrals increase the parking capacity of the street by 400 to 800 percent, per corral, by removing 1 to 2 auto parking spaces and replacing them with room for 10 to 20 bicycles. With average persons per vehicle steadily declining, reaching a low of 1.08 in 2000<sup>5</sup>, the bike corrals are often meeting the same or similar demand as the auto parking it replaced. This is true even when current existing conditions at some corrals average just one or two parked bikes at a time. The 400 to 800 percent increase in parking capacity benefits business by allowing more potential customers to park adjacent to their establishment.

Providing ample and secure bike parking facilities throughout Portland is also part of a much larger effort to influence

**Figure 3: Demand for Bike Parking Over Time**



**Figure 4: Number of Bicyclists Out of Every 10 Customers**



<sup>4</sup> Donald Shoup, “The High Cost of Free Parking” Journal of Planning, Education, and Research. Vol. 17, pp. 3-20, (1997).

<sup>5</sup> FHWA National Summary (2000) average occupancy for private vehicle modes to work is 1.08 persons per vehicle



mode choice toward more active transportation modes. By offering incentives that make the private automobile less attractive, the City is attempting to encourage greater use of the bicycle. Removing auto parking for some types of businesses however can still be frustrating, especially for businesses that do not have a high rate of bicyclists due to constraints. For example, some businesses simply do not support and attract bike trips (i.e. a large appliance store). However, as individuals increasingly replace car trips with bike trips, and choose to park at a corral, the facility will alleviate total on-street auto parking congestion. As more auto trips are replaced, the decrease in demand for on-street auto parking will allow more auto parking spaces to become available more frequently. This circumstance will benefit businesses that rely on accessible automobile parking. Offering safe and convenient amenities for bicyclists increases the likelihood that individuals will choose to bike to a restaurant, bar, or boutique—saving driving for the trips that require it.

The responses from this survey demonstrate that this mode choice decision may already be taking place. More than two-thirds (70 percent) of the businesses estimated that the demand for bike parking has increased over time. Given Portland’s overall increase in bicycle mode share over the past two decades, it can be assumed that this trend will continue. In addition, more than a quarter (26 percent) of the businesses estimated that bicyclists sometimes or always have trouble finding parking near their business. Of this group, 70 percent reported that demand for bike corrals is high enough to support additional facilities on their commercial corridor and indicated that if more corrals were provided near their business, they would expect to see increased numbers of cyclists as customers. This evidence demonstrates that the demand for bike parking may actually exceed capacity in some commercial areas. It also signifies that local businesses believe the bike corrals have, at some level, met a latent demand for bike parking, and are increasingly attracting bike trips to their commercial area.

## ***Sustainability***

More than three quarters of business owners (86 percent) felt that the bike corrals help to promote sustainability. Sustainable streetscapes and infrastructure is at the core of Portland’s current effort to develop and plan the city in “a manner that meets our needs today while not hindering the ability of future generations to meet their economic, social, and environmental resource needs”<sup>6</sup>. Decreased city-wide vehicle miles traveled (VMT) and an increased mode share for active transportation modes is viewed as an effective strategy to combat global climate change by reducing

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<sup>6</sup> City of Portland. “Sustainable Infrastructure Report”. Dec. 2001. Web. 28 Feb. 2010.

automobile green house gas (GHG) emissions. Nearly half (44 percent) of businesses perceive that the bike corrals actually work to reduce motor vehicle congestion through their support of non-motorized transportation. Making bicycling more attractive also serves a second function for businesses by increasing the transportation options for their customers and employees (See Table 2), which 77 percent of respondents felt the bike corrals accomplished. Business owners' acknowledgement of the bike corrals' integral role in the transportation mix is an important step toward developing more complete streets that meet the needs of all roadway users.

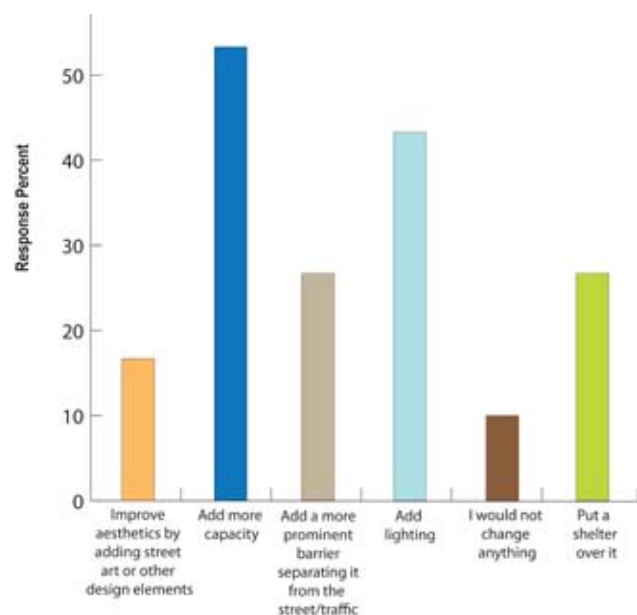
| Percentage of Responses                                   |       |          |         |
|---|-------|----------|---------|
| Bike corrals...   | Agree | Disagree | Neutral |
| Help promote sustainability                               | 86%   | 7%       | 7%      |
| Increase transportation options for employees and patrons | 77%   | 12%      | 12%     |
| Reduce motor vehicle congestion                           | 44%   | 33%      | 23%     |

Table 2

## Bike Corral Design Elements

The majority of business owners (62 percent) did not feel that the bike corrals are unattractive, but they did have some recommendations for how they might be improved. More than half (53 percent) of respondents felt that street art or similar design elements would help to improve their aesthetic quality (See Fig. 5). Indeed, such changes might serve a dual purpose by further benefitting the neighborhood and street identity. The use of local artists and designers may also improve community 'buy-in' of the corrals and help to develop partnerships between the City and local artists. This style coordination between the City and local artists was included in the recently adopted Portland Bicycle Plan for 2030. Business owners also stated that the addition of lighting (43 percent) and a shelter (27 percent) would enhance the form and function of the corrals.

Figure 5: Responses concerning physical changes to bike corrals



# PERCEIVED BENEFITS BY BUSINESS TYPE

Shopping/retail and food/beverage businesses accounted for more than three quarters (76 percent) of all the responses in this survey. Businesses that were not in these categories: art galleries, personal services, medical offices, and others were not compared in this study due to the limited sample size. However, the 14 food/beverage businesses and 19 shopping/retail establishments provided a reasonable sample for comparison of the impacts, benefits, and attitudes between these business types.

The results from this survey indicate that the perceived number of bicyclists as customers is higher for food/beverage businesses compared to shopping/retail (See Table 3). Shopping/retail businesses estimated a 42 percent increase in bicyclists as customers compared to 29 percent of respondents

in the food/beverage category. When comparing the perceived increase in customers over time however, the roles are reversed. Shopping/retail businesses estimate that they have seen a higher increase in bicycle customers over time. While interesting, exploring the reasons for this discrepancy would require a larger sample and a more thorough study. The difference in the overall perceived number of bicyclists as customers is more easily hypothesized. Transportation to a restaurant or bar by bike does not require effort beyond mounting a bicycle and pedaling. Shopping trips require preparation. When individuals go on shopping trips the goods that are purchased command additional storage space. The more common types of recreational bicycles that are ridden in the US are less suited for utilitarian trips—making shopping by bike all the more challenging. Though locally utilitarian bicycle trips are increasing, the fact remains that the ease with which individuals can conduct bike trips to food/beverage businesses is likely a factor. Its effect cannot be accurately measured in this study, but may partially explain the 27 percent difference in bicyclists as customers for food/beverage establishments and shopping/retail businesses.

| Mean number of customers that are bicyclists out of every 10 customers |      |            |
|--|------|------------|
| Business Type  | Mean | Percentage |
| Food and Beverage  | 3.13 | 31.3%      |
| Shopping/Retail  | 2.45 | 24.5%      |
| All businesses   | 2.48 | 24.8%      |

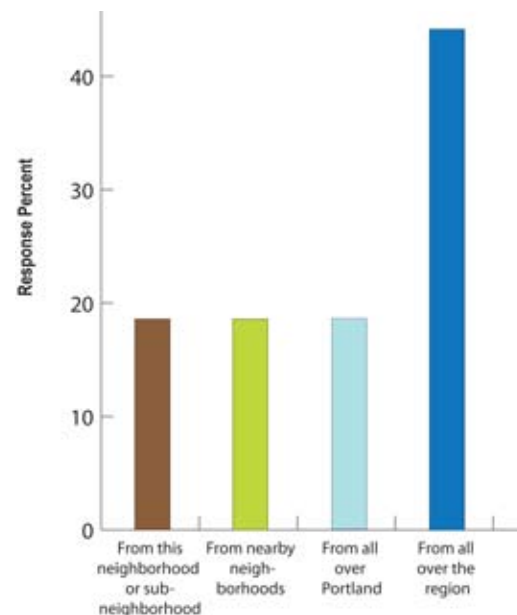
Table 3

# OPPORTUNITIES FOR FUTURE RESEARCH

Two hypotheses that were posed in this initial study were not able to be analyzed accurately. One hypothesis stated that the perceived benefits of bike corrals would be higher in areas where the corral was in close proximity to other bicycle facilities (i.e. bike lanes, bicycle boulevards, and shared lane markings). The second hypothesis stated that perceived benefits would be higher amongst businesses that resided within a commercial corridor with higher ratios of food/beverage and shopping/retail establishments. However, given the small sample size in this study, no accurate analysis could be accomplished to test these hypotheses. An analysis with the limited sample data that was conducted did indicate some differences in perceived benefits and impacts by business type and proximity to other bike facilities, but these conclusions are not included in this report. Instead it is recommended that a more comprehensive study, including personal interviews with business owners, a larger sample of business owners, and the surveying of businesses not proximate to a corral be conducted. This would allow for a better understanding of the impact of business type ratios and proximity to bicycle facilities on the perceived benefits of bike corrals.

The City of Portland is attempting to make the bicycle the preferred mode for trips under 3 miles—the distance that an individual can generally travel at a relaxed pace in 20 minutes. A second item of study that could assist in answering questions about the benefits of bike corrals would involve the use of a customer intercept survey. Use of this tool would provide valuable information concerning customer origins, destinations, preferred mode, and shopping habits. Most of the businesses in this survey estimated that the majority of their customers traveled from all over the region (See Fig. 6), which would indicate higher levels of driving trips. However, the location of the corridors in mostly dense urban areas and the existing conditions of the roadways studied—mostly two-lane corridors with limited on-street and very little off-street parking—makes this travel behavior less likely. More probable is that the majority customer base is located within the surrounding neighborhoods and

**Figure 6: Business perception of distances customers travel**





inner Portland with traveling distance commonly under 3 miles. A study of trip origins and mode preferences could demonstrate that the majority of trips to commercial areas are indeed below 3 miles, and that individuals frequently use active transportation modes to arrive at commercial destinations. These would be positive indicators that continued investment in end-of-trip bicycle parking facilities makes sense.

## CONCLUSION

The results of this study demonstrate significant local business support for Portland's bicycle corrals. Businesses recognize the value of the bike corrals for their improvement to the street and neighborhood identity, the benefits that improved bike amenities provide for patrons and employees, and the potential for increasing their customer base. While the benefit of adding parking capacity to the street that is not for automobiles may be less understood, the perceived trend is that of an increasing demand for bicycle parking and growing number customers who are bicyclists. With a estimated 1 out of every 4 customers to be bicyclists, the continued investment in quality bicycle parking facilities that can accommodate current demand and attract new customers is an asset for both bicyclists and businesses.

# REFERENCES

Alta Planning + Design “Bicycle Design Guidelines/Best Practices Manual”. Web. 10 Mar. 2010.

Bent, Elizabeth M. and Singa, Krute “Modal Choices and Spending Patterns of Travelers to Downtown San Francisco: Impacts of Congestion Pricing on Retail Trade”. (Aug 2008). Web. 11 Feb. 2010

Bicycle Coalition of Greater Philadelphia. “Bicycle Parking: Key to a Green Philadelphia”. (May 2008). Web. 11 Feb. 2010.

de Cerreno, Allison L.C.. Ph.D. “The Dynamics of On-street Parking in Large Central Cities”. Rudin Center for Transportation Policy & Management NYU, Dec 2002.

The Clean Air Partnership. “Bike Lanes, On-street Parking, and Business: A Study of Bloor Street in Toronto’s Annex Neighborhood”. (2009). Web. 11 Feb. 2010.

City of Portland. “Sustainable Infrastructure Report”. Dec. 2001. Web. 28 Feb. 2010.

Frank, Lawrence D., Engelke, Peter O., Schmid, Thomas L. *Health and Community Design: The Impact of the Built Environment on Physical Activity*. Island Press, 2003.

Krizek, Kevin J. “Estimating the Economic Benefits of Bicycling and Bicycle Facilities: An Interpretive Review and Proposed Methods”. in *Essays on Transportation Economics*. Ed. Vicente Inglada. Brookings Institution Press, 1999.

Krizek, Kevin J. “Two Approaches to Valuing Some Bicycle Facilities’ Presumed Benefits”. *JAPA*, Vol 72, No. 3, Summer 2006.

McNeil, Nathan. “Portland’s Bicycle Corrals: A Case Study of East 28th Avenue”. Unpublished student work Fall, 2009.

Portland Bureau of Transportation “Portland Bicycle Counts 2007”. (Sept. 2007 ) Web. 28 Feb. 2010.

Portland Bureau of Transportation “Portland Bicycle Plan for 2030” Jan. 2010.

Shoup, Donald “The High Cost of Free Parking” *Journal of Planning, Education, and Research*. Vol. 17, pp. 3-20, 1997.

Sustrans “Shoppers and How They Travel”. Web. 28 Feb. 2006.

Correspondence with Sarah Figliozi (PBOT). January 2010.

# APPENDIX

## Business Survey Instrument and Responses, 2010

| What was the month and year that your business was established at its current location? Example: March 2008 |                |
|---|----------------|
| Answer Options  | Response Count |
|   | 40             |
| <b>answered question</b>  | <b>40</b>      |
| <b>skipped question</b>   | <b>3</b>       |

| Is there a bicycle corral near your business? |                  |                |
|---|------------------|----------------|
| Answer Options                                | Response Percent | Response Count |
| Yes   | 100.0%           | 40             |
| No  | 0.0%             | 0              |
| <b>answered question</b>                      |                  | <b>40</b>      |
| <b>skipped question</b>                       |                  | <b>3</b>       |

| Please select your level of agreement or disagreement with the following statements. Bike corrals... |                |       |          |                   |         |                |
|--|----------------|-------|----------|-------------------|---------|----------------|
| Answer Options   | Strongly Agree | Agree | Disagree | Strongly Disagree | Neutral | Response Count |
| Increase foot and bike traffic   | 15             | 14    | 4        | 1                 | 9       | 43             |
| Reduce the auto parking spaces needed for my customers   | 10             | 15    | 7        | 7                 | 4       | 43             |
| Improve the sidewalk environment for patrons   | 12             | 18    | 4        | 3                 | 6       | 43             |
| Are placed in a poor location relative to my business  | 2              | 4     | 13       | 17                | 6       | 42             |
| Increase the visibility of businesses from the street  | 12             | 11    | 7        | 2                 | 11      | 43             |
| Enhance the street and neighborhood identity   | 24             | 11    | 1        | 3                 | 4       | 43             |
| Are unnecessary for my customers   | 6              | 2     | 12       | 17                | 5       | 42             |
| Increase transportation options for employees and patrons  | 16             | 17    | 3        | 2                 | 5       | 43             |
| Are unattractive   | 6              | 5     | 17       | 10                | 4       | 42             |
| Help promote sustainability  | 24             | 13    | 2        | 1                 | 3       | 43             |
| Reduce motor vehicle congestion  | 9              | 10    | 12       | 2                 | 10      | 43             |
| Other (please specify)   |                |       |          |                   |         | 5              |
| <b>answered question</b>   |                |       |          |                   |         | <b>43</b>      |
| <b>skipped question</b>  |                |       |          |                   |         | <b>0</b>       |

| What would you change about the bike corral? Select all that apply. |                  |                |
|---|------------------|----------------|
| Answer Options  | Response Percent | Response Count |
| Put a shelter over it   | 26.7%            | 8              |
| Add more capacity   | 16.7%            | 5              |
| Improve aesthetics by adding "street art" or other design           | 53.3%            | 16             |
| Add a more prominent barrier separating it from the street/traffic  | 26.7%            | 8              |
| Add lighting  | 43.3%            | 13             |
| I would not change anything   | 10.0%            | 3              |
| Other (please specify)  |                  | 12             |
| <b>answered question</b>  |                  | <b>30</b>      |
| <b>skipped question</b>   |                  | <b>13</b>      |

| Out of every 10 customers that enter your business, how many would you estimate are cyclists? |                  |                |
|---|------------------|----------------|
| Answer Options  | Response Percent | Response Count |
| More than 6   | 7.0%             | 3              |
| 4-5   | 16.3%            | 7              |
| 2-3   | 27.9%            | 12             |
| 1-2   | 32.6%            | 14             |
| None  | 16.3%            | 7              |
| <b>answered question</b>  |                  | <b>43</b>      |
| <b>skipped question</b>   |                  | <b>0</b>       |

| How has the number of cyclists entering your business changed over time? |                  |                |
|--|------------------|----------------|
| Answer Options   | Response Percent | Response Count |
| Strongly increased   | 4.7%             | 2              |
| Increased  | 34.9%            | 15             |
| Remained the same  | 41.9%            | 18             |
| Decreased  | 0.0%             | 0              |
| Strongly decreased   | 0.0%             | 0              |
| I don't know   | 18.6%            | 8              |
| <b>answered question</b>   |                  | <b>43</b>      |
| <b>skipped question</b>  |                  | <b>0</b>       |

| If additional bike corrals were installed near your business, what outcome would you most expect? |                  |                |
|---|------------------|----------------|
| Answer Options  | Response Percent | Response Count |
| Increased numbers of cyclists as customers  | 37.8%            | 14             |
| The same amount of cyclists as customers  | 59.5%            | 22             |
| Fewer numbers of cyclists as customers  | 2.7%             | 1              |
| Other (please specify)  |                  | 8              |
| <b>answered question</b>  |                  | <b>37</b>      |
| <b>skipped question</b>   |                  | <b>6</b>       |

| In general, do customers commuting by bike have difficulty finding parking near your business? |                  |                |
|--|------------------|----------------|
| Answer Options   | Response Percent | Response Count |
| Always   | 2.4%             | 1              |
| Sometimes  | 23.8%            | 10             |
| Not at all   | 73.8%            | 31             |
| No customers arrive by bike  | 0.0%             | 0              |
| I don't know   | 0.0%             | 0              |
| <b>answered question</b>   |                  | <b>42</b>      |
| <b>skipped question</b>  |                  | <b>1</b>       |

| How has the demand for bike parking changed over time? |                  |                |
|--|------------------|----------------|
| Answer Options   | Response Percent | Response Count |
| Demand has increased                                   | 69.8%            | 30             |
| Demand has remained the same                           | 14.0%            | 6              |
| Demand has decreased                                   | 0.0%             | 0              |
| Don't know/ Not applicable                             | 16.3%            | 7              |
| <b>answered question</b>                               |                  | <b>43</b>      |
| <b>skipped question</b>                                |                  | <b>0</b>       |



| In general, do your customers find it difficult to find auto parking? |                  |                |
|---|------------------|----------------|
| Answer Options  | Response Percent | Response Count |
| Always  | 23.3%            | 10             |
| Sometimes   | 60.5%            | 26             |
| Not at all  | 11.6%            | 5              |
| I don't know  | 4.7%             | 2              |
| <b>answered question</b>  |                  | <b>43</b>      |
| <b>skipped question</b>   |                  | <b>0</b>       |

| How has the demand for auto parking changed over time? |                  |                |
|--|------------------|----------------|
| Answer Options   | Response Percent | Response Count |
| Demand has increased                                   | 72.1%            | 31             |
| Demand has remained the same                           | 18.6%            | 8              |
| Demand has decreased                                   | 0.0%             | 0              |
| Don't know/ Not applicable                             | 9.3%             | 4              |
| <b>answered question</b>                               |                  | <b>43</b>      |
| <b>skipped question</b>                                |                  | <b>0</b>       |

| How would you categorize your business? |                  |                |
|---|------------------|----------------|
| Answer Options                          | Response Percent | Response Count |
| Restaurant or Eatery                    | 20.9%            | 9              |
| Brewery, Bar, or Pub                    | 4.7%             | 2              |
| Bakery                                  | 2.3%             | 1              |
| Coffee shop                             | 7.0%             | 3              |
| Clothing and Accessories                | 14.0%            | 6              |
| Home and Garden                         | 2.3%             | 1              |
| Shopping                                | 25.6%            | 11             |
| Education                               | 2.3%             | 1              |
| Personal care and Services              | 2.3%             | 1              |
| Business and Professional Services      | 7.0%             | 3              |
| Health and Medicine                     | 2.3%             | 1              |
| Repair Service                          | 7.0%             | 3              |
| Hotel or Lodging                        | 2.3%             | 1              |
| Automotive                              | 0.0%             | 0              |
| Other (please specify)                  |                  | 1              |
| <b>answered question</b>                |                  | <b>43</b>      |
| <b>skipped question</b>                 |                  | <b>0</b>       |

| What are your peak business hours? |                  |                |
|------------------------------------|------------------|----------------|
| Answer Options                     | Response Percent | Response Count |
| 7:00 AM - 12:00 PM                 | 10.0%            | 4              |
| 12:00 PM - 4:00 PM                 | 35.0%            | 14             |
| 4:00 PM - 9:00 PM                  | 30.0%            | 12             |
| After 9 PM                         | 2.5%             | 1              |
| Steady throughout the day          | 22.5%            | 9              |
| Other (please specify)             |                  | 5              |
| <b>answered question</b>           |                  | <b>40</b>      |
| <b>skipped question</b>            |                  | <b>3</b>       |

| Where do the majority of your customers travel from? |                  |                |
|--|------------------|----------------|
| Answer Options                                       | Response Percent | Response Count |
| From this neighborhood or sub-neighborhood           | 18.6%            | 8              |
| From nearby neighborhoods                            | 18.6%            | 8              |
| From all over Portland                               | 44.2%            | 19             |
| From all over the region                             | 18.6%            | 8              |
| <b>answered question</b>                             |                  | <b>43</b>      |
| <b>skipped question</b>                              |                  | <b>0</b>       |

| What is your business role? |                  |                |
|-----------------------------|------------------|----------------|
| Answer Options              | Response Percent | Response Count |
| Business owner              | 67.4%            | 29             |
| Manager                     | 32.6%            | 14             |
| Employee                    | 0.0%             | 0              |
| Other (please specify)      |                  | 0              |
| <b>answered question</b>    |                  | <b>43</b>      |
| <b>skipped question</b>     |                  | <b>0</b>       |

| What are the nearest cross streets to your business? Example: NE 17th Ave and Halsey St. |                |
|--|----------------|
| Answer Options   | Response Count |
|  | 43             |
| <b>answered question</b>   | <b>43</b>      |
| <b>skipped question</b>  | <b>0</b>       |

| If you are interested in being contacted regarding bicycle parking and corrals please fill out the following. |                  |                |
|---|------------------|----------------|
| Answer Options  | Response Percent | Response Count |
| Name  | 100.0%           | 7              |
| Phone   | 71.4%            | 5              |
| Email   | 100.0%           | 7              |
| <b>answered question</b>  |                  | <b>7</b>       |
| <b>skipped question</b>   |                  | <b>36</b>      |

| Your input has been very helpful. If you have any other concerns or comments regarding bike corrals, please share them in the space below. All comments are anonymous and confidential. |                |
|---|----------------|
| Answer Options  | Response Count |
|   | 11             |
| <b>answered question</b>  | <b>11</b>      |
| <b>skipped question</b>   | <b>32</b>      |

| Number | Response Text   |
|--------|---|
| 1      | I don't think that there is a need to have parking corrals on every block.  |
| 2      | The more bike corrals the better.   |
| 3      | I feel bike corrals are a positive addition to the neighborhood identity and promote bike use, but NW Portland has a shortage of parking for both residents and business customers, and that hasn't changed.  |
| 4      | Ours is ugly in comparison to others I've seen in town. Also, it gathers rain water and garbage and I would like help in maintaining its cleanliness.   |
| 5      | The best question on this survey is about how the corrals could be improved. I requested a corral by my business, and was excited to get it. Unfortunately, the corral had to be placed on a sides street with poor lighting. Adding lighting would make people feel a lot safer about parking bikes there. Also, when it's raining, few cyclists opt to use the corral, and instead lock bikes up in front of my business, which is covered and keeps their seats dry. Covered corrals would promote corral use in rainy weather.          |
| 6      | WE NEED MORE STREET PARKING, NOT LESS.  |
| 7      | If bike racks are going to be installed at local businesses then it should be the job of the intalling group to be in charge of maintaining and cleaning the area regularly - not of the business closest in proximity. We love bikes and we love bicyclists, but the filth and gunk that gathers in the corrals is absolutely disgusting.  |
| 8      | I found question #5 to be a bit lacking. I would think you would want to have a less than 1 in 10 category. We probably have a 5% or less patronage by bicyclists.<br>Also....I would have preferred a dialog bos on Question #14. We have many customers visiting us from other countries. Many of our customers are certainly out of the region....but, your options don't offer that distinction..   |
| 9      | We are grateful for the bike corral we have, and worked hard to get it. We feel it is a badge of honor to have a corral in front of our business, and are lucky to be a part of the sustainability process of SE Division.  |
| 10     | I think the bike corrals are great, the one near us is across the street from us on Williams. Because it is a light you have to wait for I think many of our customers opt to bring their bikes in or lock them to a sign pole directly in front of our store just to avoid waiting to cross the street. But they are helpful when we have events in which a lot of people are coming and bringing a lot of bikes in is not an option. I also think they are a great visual to see around town that promotes the 'bikeability' of portland. |
| 11     | I seriously hope the city imposes limits on how many corrals can be put on any one street. I believe Alberta already has 4 or 5 of these and they are empty 90% of the time. In fact, I have yet to see one that was fully occupied, yet street parking is always an issue and pushing cars into the side streets in front of residential homes isn't really fair to neighbors who live in the community. change this policy before it gets out of hand.  |

*Sample Letter Sent to Businesses*

Dear [Business Name Here]

What do you think of Portland's on-street bike corrals?

I am a graduate student in the PSU School of Urban Planning program and I am studying the impacts of bike corrals on local businesses. Your opinion is valuable whether you requested a bike corral or whether you're just located near a facility. Please fill out the following survey and share how the bike corrals affect your business.

<http://www.surveymonkey.com/s/pdxbikecorralstudy>

Bike corrals are exclusive on-street bike parking areas with 6 to 12 racks capable of parking 10 to 20 bicycles. For more information on the City of Portland bike corral program, click [here](#).

Thank you for your time,

-Drew Meisel

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Portland State University

Nohad Toulon School of Urban Studies & Planning