

Port of Seattle Disparity Study 2019



Port of Seattle®

CH COLETTE
HOLT
& ASSOCIATES

PORT OF SEATTLE DISPARITY STUDY

2019

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Colette Holt & Associates (“CHA”) is a national law and consulting firm specializing in disparity studies, affirmative action contracting programs, expert witness services, compliance monitoring and strategic development related to inclusion, diversity and affirmative action. Founded in 1994, it is led by Colette Holt, J.D., a nationally recognized attorney and expert. In addition to Ms. Holt, the firm consists of Steven C. Pitts, Ph. D., who serves as the team's economist and statistician; Ilene Grossman, B.S., CHA Chief Operating Officer; Glenn Sullivan, B.S., CHA Director of Technology; Victoria Farrell, MBA, CHA Assistant Principal Researcher; and Joanne Lubert, J.D., Special Counsel. CHA is certified as a Disadvantaged Business Enterprise, Minority-Owned Business Enterprise and a Woman-Owned Business Enterprise by numerous agencies.

Blackstar Services, Inc. Daucey Brewington, owner of Blackstar Services, Inc. is an enrolled member of the Lumbee Tribe of North Carolina. Founded in 1998, Blackstar works directly with Native individuals and tribally owned businesses. Mr. Brewington works with public and private organizations to create business pathways into Indian Country, particularly by leveraging federal programs that offer advantages for tribally owned concerns.

Pacific Communications Consultants, Inc. Regina Glenn, MBA, President. PCC is an award-winning M/W/DBE-certified management consulting firm, specializing in diversity and inclusion compliance. The firm provides diversity and management training; community relations; public involvement; and M/WBE development. PCC specializes in enabling its clients to communicate in an effective manner with diverse communities and neighborhoods. For over 20 years PCC has provided a full range of communication-related services.

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I. EXECUTIVE SUMMARY

As a related analysis to the Washington State Airports Disparity Study 2019, Colette Holt & Associates (“CHA”) was retained by the Port of Seattle to examine its spending on non-FAA funded contracts to determine its utilization of Women and Minority-Owned Business Enterprises (collectively “WMBEs”); the availability of WMBEs in its market area; any disparities between its utilization and WMBE availability. We were also tasked with making recommendations for increasing the inclusion of WMBEs. We analyzed data for construction and construction-related services for fiscal years 2012 through 2016.

Our analyses and findings regarding the legal standards for contracting affirmative action programs; economy-wide disparities; and anecdotal data collection relevant to this report are contained in the Washington State Airports Disparity Study 2019. That Study also provides the analyses and findings for the Port’s FAA funded contracts for the study period.

A. Study Findings

1. Port of Seattle’s Diversity in Contracting Program

The Port of Seattle fully implemented a new Diversity in Contracting (“DCD”) program in 2019 to address historical disparities in Women and Minority Business Enterprise (“WMBE”) participation for its locally-funded contracts. The program is the result of the 2018 Diversity in Contracting Policy Resolution (“Directive”), which applies to all contracts and other activities at the Port, including construction, consulting contracts and purchased goods and services. The Directive sets forth a Port-wide goal of increasing the dollars spent on WMBE contracts within 5 years by 15 percent.

Prior to the Diversity in Contracting Policy Directive, the Port was utilizing the Small Contractor and Supplier (SCS) program, which focused primarily on small businesses and small businesses that were half the size standards of the federal SBA size limits. This program was in effect during the study’s time period.

The DCD program includes implementation of policies, practices and processes across departments and divisions that can enhance Port procurement and contracting activities to provide a “more receptive” environment for utilization of WMBEs. The Directive requires a designated WMBE liaison for each division and the development of clear lines of responsibility and accountability. Aspirational goal setting and implementation of the program elements are part of

the annual performance evaluation for all Port division directors and their staff. The Directive also requires a proposer or bidder to provide an inclusion plan that documents its affirmative efforts to meet the aspirational goal and commitment to use WMBE firms.

The Port currently engages in a number of outreach initiatives to enhance bidding expertise. These efforts include the Port's Small Business Generator Program ("PortGen"), providing targeted communications through email blasts and its external Small Business Website about potential bid opportunities; workshops and "Meet and Greet" sessions; and advanced training sessions to help WMBEs with the post award process. The Port also uses community organizations and government partnerships to disseminate information about WMBE opportunities. The OMWBE directory and the Port's Procurement Roster Management System Database (PRMS) are currently used to inform firms of events and contracting opportunities. A key part of the program is developing a supplier database to increase the visibility of WMBE firms, increase outreach capabilities and replace the current PRMS.

2. Utilization, Availability and Disparity Analyses of Port of Seattle Non-Federal Aviation Administration Funded Contracts

A central component of a legally defensible disparity study examines the contract data of an agency (its utilization) and compares that to the universe of firms that potentially could have received contracts (its availability). Strict constitutional scrutiny requires that a state government limit its race-based remedial program to firms doing business in its product and geographic markets. Put another way, the study looked at what the Port *achieved* relative to what it possibly *could have achieved*. This analysis involved several steps:

- The determination of the Port's "unconstrained product market" when its spending is financed by non-FAA dollars.
- The determination of the Port's "geographic market".
- The determination of the "constrained product market".
- The determination of the Port's utilization of firms in its constrained product market (i.e., how it spends its dollars across industries and the demographic profile of the ownership of firms that receive agency funds.)
- The determination of the set of firms that were available to receive contracts from the Port.
- The weighting of the resulting availability of WMBEs and non-WMBEs across industries that reflects how the Port spends its dollars.

- The determination of the disparity ratio of the utilization of a particular demographic group over that group's weighted availability.

We analyzed the Port's contract data for fiscal years 2012 through 2016. To conduct these analyses, we constructed all the fields necessary where they were missing in the Port's contract records for prime contractors and associated subcontractors (*e.g.*, industry type; zip codes; race and gender ownership, NAICS codes, and subcontractor information). The resulting Final Contract Data File for analysis contained 1,025 contracts, with a total paid amount of \$1,086,167,588. Of these contracts, 173 were prime contracts and subcontractors received 852 contracts. Prime contractors received \$354,092,332; subcontractors received \$732,075,256. Prime contractors received 32.6 percent of all paid dollars; subcontractors received 67.4 percent of all paid dollars. The Final Contract Data File was used to determine the geographic and product markets for the analyses, utilization and to estimate the availability of WMBEs by contract type.

The following tables present the NAICS codes, the label for each NAICS code, and the industry percentage distribution of spending across NAICS codes, by type of contract. Chapter III provides tables disaggregated by dollars paid to prime contractors as well as dollars paid to subcontractors on contracts with subcontracting opportunities.

Table 1-1: Industry Percentage Distribution of Contracts by Dollars

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
541330	Engineering Services	20.7%	20.7%
236220	Commercial and Institutional Building Construction	15.0%	35.7%
238210	Electrical Contractors and Other Wiring Installation Contractors	9.4%	45.1%
238120	Structural Steel and Precast Concrete Contractors	8.1%	53.2%
238220	Plumbing, Heating, and Air-Conditioning Contractors	7.3%	60.5%
238150	Glass and Glazing Contractors	5.9%	66.4%
238290	Other Building Equipment Contractors	4.5%	70.9%
238310	Drywall and Insulation Contractors	4.2%	75.1%
237310	Highway, Street, and Bridge Construction	3.9%	78.9%
238910	Site Preparation Contractors	2.5%	81.5%
238110	Poured Concrete Foundation and Structure Contractors	2.5%	84.0%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
488119	Other Airport Operations	2.2%	86.1%
541611	Administrative Management and General Management Consulting Services	1.5%	87.6%
238390	Other Building Finishing Contractors	1.4%	89.0%
238350	Finish Carpentry Contractors	1.2%	90.2%
TOTAL			100.0%^a

a. An additional 94 NAICS codes contained the balance of the Port's spending. The entire set of NAICS codes are presented in Appendix B.

Source: CHA analysis of Port of Seattle data

To determine the relevant geographic market area for each funding source, we applied the well accepted standard of identifying the locations of firms that account for at least 75 percent of contract and subcontract dollar payments in the contract data file.¹ Location was determined by ZIP code and aggregated into counties as the geographic unit. The State of Washington captured 87.4 percent of the unconstrained product market dollars and, therefore, the state of Washington constituted the geographic market.

When the unconstrained product market was limited to the state of Washington, that is, the contracts without regard to location, the result was the *constrained product market*. The next step was to develop the Final Utilization Data File for the constrained product market which contains the dollar value of the Port's utilization of WMBEs as measured by payments to prime firms and subcontractors and disaggregated by race and gender.

Table 1-2 presents the utilization data by all industry sectors. Chapter III provides detailed breakdowns of these results.

1. National Academies of Sciences, Engineering, and Medicine 2010, *Guidelines for Conducting a Disparity and Availability Study for the Federal DBE Program*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/14346>, p.49, ("National Disparity Study Guidelines").

Table 1-2: Distribution of Contract Dollars by Race and Gender
(share of total dollars)

NAICS	Black	Hispanic	Asian	Native American	White Women	WMBE	Non-WMBE	Total
236220	3.10%	0.10%	0.10%	0.40%	0.30%	4.00%	96.00%	100.00%
237310	0.00%	0.00%	0.00%	0.20%	4.60%	4.80%	95.20%	100.00%
237990	0.00%	0.00%	0.00%	0.00%	3.90%	3.90%	96.10%	100.00%
238110	0.00%	5.60%	0.00%	0.00%	0.30%	5.90%	94.10%	100.00%
238120	0.00%	0.00%	1.30%	0.30%	0.00%	1.60%	98.40%	100.00%
238150	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
238210	5.60%	1.20%	0.00%	0.80%	3.30%	10.90%	89.10%	100.00%
238220	0.00%	0.00%	0.00%	0.00%	0.10%	0.10%	99.90%	100.00%
238290	0.00%	0.00%	0.00%	5.50%	0.10%	5.60%	94.40%	100.00%
238310	0.00%	0.00%	0.10%	0.00%	0.20%	0.30%	99.70%	100.00%
238350	0.00%	0.00%	0.00%	0.00%	0.80%	0.80%	99.20%	100.00%
238390	0.00%	0.00%	0.80%	0.00%	0.80%	1.60%	98.40%	100.00%
238910	0.30%	0.00%	0.00%	0.00%	0.80%	1.20%	98.80%	100.00%
332323	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
541330	0.10%	0.00%	0.40%	0.10%	0.20%	0.80%	99.20%	100.00%
541611	0.30%	0.00%	2.30%	0.00%	1.90%	4.50%	95.50%	100.00%
561990	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
562910	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Total	1.20%	0.30%	0.20%	0.50%	0.80%	3.00%	97.00%	100.00%

Source: CHA analysis of Port of Seattle data

Using the “custom census” approach to estimating availability (described in detail in Chapter III), and the further assignment of race and gender (using the Master Directory and other sources), we determined the aggregated availability of WMBEs when weighted by the Port’s spending in its geographic and industry markets, to be 11.1 percent. Table 1-3 presents the weighted availability data for all product sectors combined for the racial and gender categories.

Table 1-3: Aggregated Weighted Availability

Black	Hispanic	Asian	Native American	White Women	WMBE	Non-WMBE	Total
0.8%	1.3%	1.6%	1.6%	5.8%	11.1%	88.9%	100.0%

Source: CHA analysis of Port of Seattle data; Hoovers; CHA Master Directory

To meet the constitutional test that all groups must have suffered discrimination in the Port of Seattle’s market in order to be eligible for the benefits of the program, we next calculated disparity ratios comparing the Port’s utilization of WMBEs as prime contractors and subcontractors measured in dollars paid to the availability of these firms in its market areas. The disparity ratio is calculated by dividing the weighted availability into the utilization rate. If the utilization rate (*i.e.*, the disparity ratio) for a group is less than the availability for that group, we would conclude that the group is underutilized. Table 1-4 presents these results.

The courts have held that disparity results must be analyzed to determine whether the results are “significant”. There are two distinct methods to measure a result’s significance. First, a “large” or “substantively significant” disparity is commonly defined by courts as utilization that is equal to or less than 80 percent of the availability measure. A substantively significant disparity supports the inference that the result may be caused by the disparate impacts of discrimination.² Second, a statistically significant disparity means that an outcome is unlikely to have occurred as the result of random chance alone. The greater the statistical significance, the smaller the probability that it

2. See U.S. Equal Employment Opportunity Commission regulation, 29 C.F.R. § 1607.4(D) (“A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact.”).

resulted from random chance alone³. A more in-depth discussion of statistical significance is provided in Appendix A.

Substantive and Statistical Significance

- ‡ Connotes these values are substantively significant. Courts have ruled the disparity ratio less or equal to 80 percent represent disparities that are substantively significant. (See Footnote 2 for more information.)
- * Connotes these values are statistically significant at the 0.05 level. (See Appendix A for more information.)
- ** Connotes these values are statistically significant at the 0.01 level. (See Appendix A for more information.)
- *** Connotes these values are statistically significant at the 0.001 level (See Appendix A for more information.)

Table 1-4: Table 1-4 Disparity Ratios by Demographic Group, All Industries Combined

	Black	Hispanic	Asian	Native American	White Women	WMBE	Non-WMBE
Disparity Ratio	149.2%	24.1%‡	13.1%‡	29.3%‡	14.3%‡	27.3%‡***	109.1%***

Source: CHA analysis of Port of Seattle data

*** Indicates statistical significance at the 0.001 level

‡ Indicates substantive significance

Our previous experience suggests that unusually high disparity ratios might be the result of a variety of factors unique to a set of firms in a particular group and a particular NAICS code. The result of this nexus of factors should not be taken to be representative of the experiences of most firms within that group. We therefore explored if some anomalies did exist and would explain the Black disparity ratio of 149.2 percent. What we found was that one firm received 84.6 percent of all contract dollars received by Black firms. This activity occurred in two NAICS codes: 236220 and 238210. This concentration of an ethnic group dollars in one firm is extremely unusual and we believe accounts for the disparity ratio for Blacks presented in Table 1-4.

3. A chi-square test – examining if the utilization rate was different from the weighted availability - was used to determine the statistical significance of the disparity ratio. A t-test was performed on the regression coefficients to examine the probability the coefficients were not equal to zero.

B. Recommendations

In addition to providing a review of the Port of Seattle's current contracting equity activities and a statistical analysis of the Port's utilization of Women and Minority Business Enterprises ("WMBEs"), the availability of such firms in the Port's market area, and whether there are any disparities between utilization and availability, Colette Holt & Associates ("CHA") was asked to provide recommendations for possible enhancements to the Port's current program for WMBEs. We also reviewed the results of our Washington State Airports Disparity Study 2019, which included additional economy-wide data on disparities on the basis of race and gender in the Port's market area, as well as qualitative evidence from minority and women business owners about barriers to obtaining contracts in the public and private sectors. Based upon these findings and national best practices for contracting equity programs, we make the following recommendations.

Increase Program Resources: Evaluate resources committed to new initiatives to determine whether additional funds and/or staff are required to ensure their success. The Port is embarking on several important initiatives to increase access to information and provide resources for WMBEs and other small firms. These include enhanced outreach capabilities, more attendance at vendor events, and increased accountability for program results by Port divisions. These worthy efforts will require adequate resources, both staffing and financial to be fully successful.

Implement an Electronic Contracting Data Collection and Monitoring System: Procure and implement an electronic data collection system for all of the Port's contracting diversity programs (i.e., the WMBE, Disadvantaged Business Enterprise and Airport Concessions Disadvantaged Business Enterprise programs). As is very common, the Port did not have all the information needed for the inclusion of subcontractor payments in the analysis. Functionality of the system should include full contact information for all firms, NAICS codes, race and gender ownership and small business certification status; contract/project-specific goal setting using the data from this study; utilization plan capture of the prime contractor's submission of subcontractor utilization plans; contract compliance for certified and non-certified prime contract and subcontract payments for all formally procured contracts for all tiers of all subcontractors and verification of prompt payments to subcontractors; spend analysis of informal expenditures; program report generation, including required FAA reports, that provide data on utilization by industries, race, gender, dollar amount, procurement method, agencies, etc.; an integrated email and fax notification and reminder engine to notify users of required actions; outreach tools for eBlasts and related communications and event management for tracking registration and attendance; import/export integration with existing systems to exchange contract, payment, and vendor data; access by authorized Port staff, prime contractors and subcontractors to perform all necessary activities.

Review Contract sizes and Scopes: Smaller contracts can provide longer lead times and simplify requirements to assist WMBE and small businesses to take on Port work. In conjunction with reduced insurance and bonding requirements, where possible, smaller contracts should permit smaller firms to move from quoting solely as subcontractors to bidding as prime contractors. It will also enhance their subcontracting opportunities. While the Port is aware of the benefits to the program in reduced contract size, user divisions should be made explicitly aware of the need to look at projects through this lens. Unbundling contracts must be conducted, however, within the constraints of the need, to ensure efficiency and limit the costs to taxpayers.

Adopt a Small Business Enterprise Mentor-Protégé Program for the Aviation Industry: Airport work can be complex, with regulatory standards and project implementation demands that are unfamiliar and thus daunting to firms without that specific experience. We therefore suggest pairing experienced aviation firms with small businesses to increase opportunities for the protégé to develop new skills and expand their markets. This initiative can include construction and design firms. An excellent national model is provided in the DBE program regulations at 49 C.F.R. § 26.35 and the Guidelines of Appendix D to Part 26. In addition to the standards provided in Part 26, the USDOT's General Counsel's Office has provided some additional guidance, and the USDOT's Office of Small Disadvantaged Business Utilization has created a pilot program and sample documents. Close monitoring of the program will be critical, but other entities have reported success with such an approved approach. The Washington State department of Transportation ("WSDOT") is currently implementing a new program, and the Port might be able to profit from WSDOT's experience.

Use the Study to Set the Aspirational WMBE Annual and Contract Goals: We suggest the Port use the weighted availability estimate in Chapter III as the basis for its overall, target. This will relieve the divisions of the burden of trying to estimate their own goals, since the goal will reflect the detailed data in this report. With respect to aspirational contract specific goal setting, the highly detailed unweighted availability estimates in Chapter II can serve as the starting point for narrowly tailored contract goal setting that reflects the percentage of available WMBEs as a percentage of the total pool of available firms. The Port should weigh the estimated scopes of the contract by the availability of WMBEs in those scopes, and then adjust the result based on current market conditions (for example, the volume of work currently underway in the market, the entrance of newly certified firms, specialized nature of the project, etc.). Written procedures detailing the contract goal setting methodology should be developed and disseminated so that all contracting actors understand the policy and procedures.

Develop Performance Measures for Success: The Port should develop quantitative performance measures for certified firms and the overall success of its program to evaluate their effectiveness in reducing the systemic barriers identified by this

study. The availability estimates in this study can serve as aspirational targets for overall Port contracting. Additional benchmarks might include: increased bidding by certified firms; increased prime contract awards to certified firms; increased diversity of the types of industries in which WMBEs receive dollars (i.e., reduced market segregation); increased utilization by individual contract awarding authorities; increased “capacity” of certified firms as measured by bonding limits, size of jobs, profitability, etc.; utilization of WMBEs.

II. PORT OF SEATTLE'S DIVERSITY IN CONTRACTING PROGRAM

The Port of Seattle fully implemented a new Diversity in Contracting (“DCD”) program in 2019 to address historical disparities in Women and Minority Business Enterprise (“WMBE”) participation for its locally-funded contracts. The program is the result of the 2018 Diversity in Contracting Policy Resolution (“Directive”), which applies to all contracts and other activities at the Port, including construction, consulting contracts and purchased goods and services. The Directive sets forth a Port-wide goal of increasing the dollars spent on WMBE contracts within 5 years by 15 percent.

Prior to the Diversity in Contracting Policy Directive, the Port was utilizing the Small Contractor and Supplier (SCS) program, which focused primarily on small businesses and small businesses that were half the size standards of the federal SBA size limits. This program was in effect during the study’s time period.

The new DCD program, discussed below, includes implementation of policies, practices and processes across departments and divisions that can enhance Port procurement and contracting activities to provide a “more receptive” environment for utilization of WMBEs. The Diversity in Contracting Department (DCD) is responsible for supporting implementation of the WMBE program.

A. MWBE Program Eligibility Requirements and Goals

The Port defines a WMBE as a business that is at least 51 percent owned and controlled by a women and/or minority group member. Minorities include, but are not limited to, African Americans, Native Americans, Asians, and Hispanics. Certification is through the Washington State Office of Minority & Women’s Business Enterprises (“OMWBE”). The business must further meet the size standards set by the U.S. Small Business administration (“SBA”).⁴ OMWBE maintains a current directory of certified firms, and bidders can use the directory to locate qualifying firms for Port contracts.

The Directive requires a designated WMBE liaison for each division and the development of clear lines of responsibility and accountability. Goal setting and implementation of the program elements are part of the annual performance evaluation for all Port division directors and their staff.

4. 13 C.F.R. Part 121.

For each fiscal year, all Port divisions are required to set WMBE aspirational goals that are then used to calculate one Port-wide aspirational goal. Division goals are set based on available firms and future procurements for non-construction contracts. Construction goals are based on the Port's disparity study data or other valid internal data, and absent a disparity study, are based on historic utilization plus two percent. A Port-wide goal and division goals for veteran-owned businesses based on development of baseline utilization are also required.

Aspirational goals for women and minority businesses can be set for particular Port contracts on an individual basis. The Port unbundles contracts on a case by case basis to support small businesses.

B. Program Requirements and Evaluation

The proposer or bidder must provide an inclusion plan that documents its affirmative efforts to meet the aspirational goal and commitment to use WMBE firms. The plan is included in the contract once awarded and provides guidance for attainment for the contract period. A contractor must furnish documentation of good faith efforts ("GFEs") to subcontract with certified businesses on Port contracts. All contractors, including WMBEs, are required to actively solicit bids for subcontracts to qualified, available and capable WMBEs to perform commercially useful functions ("CUF"). A firm performs a CUF when it is responsible for a discrete task or sequence of tasks using its own forces or by proactively supervising on-site execution of tasks.

C. Training, Outreach Activities and Technical Assistance

To support the goals and to expand WMBE participation, the Port is in the process of developing outreach initiatives and training to enhance bidding expertise. These efforts include the Port's Small Business Generator Program ("PortGen"), that offers targeted communications about potential bid opportunities; workshops on "How to do business with the Port"; "Meet and Greet" sessions; and advanced training sessions to help WMBEs with the post award process. The Port communicates upcoming opportunities monthly to WMBE and small firms through email blasts and posts relevant events to the Port's external Small Business Website. The Port also uses community organizations and government partnerships to disseminate information about WMBE opportunities. The OMWBE directory and the Port's Procurement Roster Management System Database (PRMS) are currently used to inform firms of events and contracting opportunities. A key part of the program is developing a supplier database to increase the visibility of WMBE firms, increase outreach capabilities and replace the current PRMS.

While the Port does not have formal technical assistance programs, it leverages support provided by the Procurement Technical Resource Center, SBA and the U.S. Department of Commerce's Minority Business Development Agency. In addition, WMBEs have access to the Small Business Linked Deposit financing program through OMWBE.

III. UTILIZATION, AVAILABILITY AND DISPARITY ANALYSES OF PORT OF SEATTLE NON-FEDERAL AVIATION ADMINISTRATION FUNDED CONTRACTS

A. Introduction and Overview

As a related analysis of the Washington State Airports Disparity Study 2019, we were retained by the Port of Seattle (“Port”) to examine its spending on non-FAA funded contracts. As with the FAA report, a central component of a legally defensible disparity study examines the contract data of an agency (utilization) and compares that to the universe of firms that potentially could have received contracts (availability). In effect, the study looks at what the agency *did* relative to what it *could have done*. To conduct this analysis, we undertook several steps:

1. The determination of the Port’s “unconstrained product market” when its spending is financed by non-FAA dollars.⁵ This market is defined by the set of North American Industry Classification Systems (“NAICS”) codes representing industries or product markets where a significant portion of the Port’s spending occurs (*i.e.*, what goods and services does the Port purchase). It is important to note that this unconstrained product market is determined irrespective of where the firms are located.
2. The determination of Port’s “geographic market”. This represents the territory that covers the area where most firms that win contracts from the Port are located (*i.e.*, the geographic area where the Port spends most of its dollars).
3. The determination of the “constrained product market”. Since the unconstrained product market does not take into account where a firm is

5. This Report is based upon Port of Seattle spending of non-federal dollars. To avoid the cumbersome repetition of this fact, it will not be repeated again except in the title of each table.

located, we next limit the unconstrained product market by the geographic boundaries determined in the second step. This results in the constrained product market. (Sometimes the imposition of this geographic constraint reduces the number of NAICS codes compared to the results in the first step).

4. The determination of the Port's utilization of firms in its constrained product market (*i.e.*, how it spends its dollars across industries and the demographic profile of the ownership of firms that receive agency funds.)
5. The determination of the set of firms that were available to receive contracts from the Port. This set of firms is defined by the set of NAICS codes in the constrained product market and in the spatial boundaries set by the geographic market.
6. The weighting of the resulting availability of WMBEs and non-WMBEs across industries that reflects how the Port spends its dollars. Without this weighting, the result might be a cluster of certain WMBEs in industries where few funds are spent, thereby presenting a misleading picture of robust WMBE opportunities while in reality those firms have limited opportunities to receive more than negligible funds from the Port.
7. The determination of the disparity ratio of the utilization of a particular demographic group over that group's weighted availability.

The subsequent sections of this Chapter present the empirical results of CHA's examination of the Port's non-federally funded contracting activity.

B. Contract Data Overview

We analyzed the Port's contract data for fiscal years 2012 through 2016. To conduct these analyses, we constructed all the fields necessary where they were missing in the Port's contract records for prime contractors and associated subcontractors (*e.g.*, industry type; zip codes; race and gender ownership, NAICS codes, and subcontractor information). The resulting Final Contract Data File for analysis contained 1,025 contracts with a total paid amount of \$1,086,167,588. Of these contracts, 173 were prime contracts and subcontractors received 852 contracts. Prime contractors received \$354,092,332; subcontractors received \$732,075,256. Prime contractors received 32.6 percent of all paid dollars; subcontractors received 67.4 percent of all paid dollars. The Final Contract Data File was used to determine the geographic and product markets for the analyses, utilization and to estimate the availability of WMBEs by contract type.

C. The Port of Seattle’s Product and Geographic Markets

Markets have two dimensions: geography and industry. A defensible disparity study must determine empirically both the industries that comprise the Port’s product or industry market and the spatial location of its vendors. This requirement ensures that the evidence focuses on the Port’s actual activities and that any remedies adopted are narrowly tailored.

The accepted approach is to analyze those detailed industries, as defined by 6-digit North American Industry, Classification System (“NAICS”) codes⁶ that make up at least 75 percent of the prime contract and subcontract payments for the study period.⁷ However, for this study, we went further, and applied a “1 percent” rule, whereby we analyzed NAICS codes for the Port’s contracts where the share of the total contract dollars was at least 1 percent; where the share of the prime contract dollars was at least 1 percent; and where the share of subcontract dollars was at least 1 percent. We took this approach to assure a comprehensive analysis of the Port’s activities.

1. The Port of Seattle’s Unconstrained Product Markets

Tables 3-1 through 3-3 present the NAICS codes used to define the unconstrained product market for the Port’s contracts, that is, contracts without regard to the geographic location of the vendors.

Table 3-1: Industry Percentage Distribution of Contracts by Dollars
All Contracts

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
541330	Engineering Services	20.7%	20.7%
236220	Commercial and Institutional Building Construction	15.0%	35.7%
238210	Electrical Contractors and Other Wiring Installation Contractors	9.4%	45.1%
238120	Structural Steel and Precast Concrete Contractors	8.1%	53.2%
238220	Plumbing, Heating, and Air-Conditioning Contractors	7.3%	60.5%

6. www.census.gov/eos/www/naics.

7. National Academies of Sciences, Engineering, and Medicine 2010, *Guidelines for Conducting a Disparity and Availability Study for the Federal DBE Program*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/14346>. (“National Disparity Study Guidelines”).

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
238150	Glass and Glazing Contractors	5.9%	66.4%
238290	Other Building Equipment Contractors	4.5%	70.9%
238310	Drywall and Insulation Contractors	4.2%	75.1%
237310	Highway, Street, and Bridge Construction	3.9%	78.9%
238910	Site Preparation Contractors	2.5%	81.5%
238110	Poured Concrete Foundation and Structure Contractors	2.5%	84.0%
488119	Other Airport Operations	2.2%	86.1%
541611	Administrative Management and General Management Consulting Services	1.5%	87.6%
238390	Other Building Finishing Contractors	1.4%	89.0%
238350	Finish Carpentry Contractors	1.2%	90.2%
TOTAL			100.0%^a

a. An additional 94 NAICS codes contained the balance of the Port's spending. The entire set of NAICS codes are presented in Appendix B.

Source: CHA analysis of Port of Seattle data

Table 3-2: Industry Percentage Distribution of Contracts
Prime Contracts

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
236220	Commercial and Institutional Building Construction	43.6%	43.6%
541330	Engineering Services	42.6%	86.2%
541611	Administrative Management and General Management Consulting Services	3.3%	89.5%
561990	All Other Support Services	1.3%	90.8%
562910	Remediation Services	1.3%	92.0%
237990	Other Heavy and Civil Engineering Construction	1.1%	93.2%
TOTAL			100.0%^a

a. An additional 30 NAICS codes contained the balance of the Port's spending with prime contractors. The entire set of NAICS codes for prime contractors are presented in Appendix B.

Source: CHA analysis of Port of Seattle data

Table 3-3: Industry Percentage Distribution of Contracts by Dollars Paid
Subcontracts

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
238210	Electrical Contractors and Other Wiring Installation Contractors	14.0%	14.0%
238120	Structural Steel and Precast Concrete Contractors	12.0%	25.9%
238220	Plumbing, Heating, and Air-Conditioning Contractors	10.8%	36.8%
541330	Engineering Services	10.1%	46.8%
238150	Glass and Glazing Contractors	8.6%	55.5%
238290	Other Building Equipment Contractors	6.6%	62.1%
238310	Drywall and Insulation Contractors	6.2%	68.3%
237310	Highway, Street, and Bridge Construction	5.5%	73.8%
238910	Site Preparation Contractors	3.7%	77.5%
238110	Poured Concrete Foundation and Structure Contractors	3.7%	81.2%
488119	Other Airport Operations	3.2%	84.4%
238390	Other Building Finishing Contractors	2.1%	86.5%
238350	Finish Carpentry Contractors	1.8%	88.3%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
332323	Ornamental and Architectural Metal Work Manufacturing	1.2%	89.5%
236220	Commercial and Institutional Building Construction	1.2%	90.7%
TOTAL			100.0%^a

a. An additional 85 NAICS codes contained the balance of the Port's spending with subcontractors. The entire set of NAICS codes for subcontractors are presented in Appendix B.

Source: CHA analysis of Port of Seattle data

2. The Port of Seattle's Geographic Market

The State of Washington captured 87.4 percent of the unconstrained product market dollars and, therefore, constituted the Port's geographic market.

D. The Port of Seattle's Utilization of WMBEs

Limiting the contracts in the unconstrained product market to those firms located within the geographic market results in the constrained product market. Table 3-4 presents these data, which form the basis for the subsequent utilization analysis. Tables 3-5 and 3-6 present data on the utilization of total contract dollars. It is important to note that the contract dollar shares are equivalent to the weight of each NAICS code spending. These weights were used to transform data from unweighted availability to weighted availability, discussed below.

Table 3-4: NAICS Code Distribution of Contract

NAICS	NAICS Code Description	Total Contract Dollars	Pct Total Contract Dollars
541330	Engineering Services	\$221,003,696.00	25.1%
236220	Commercial and Institutional Building Construction	\$150,233,008.00	17.1%
238210	Electrical Contractors and Other Wiring Installation Contractors	\$101,709,648.00	11.6%
238220	Plumbing, Heating, and Air-Conditioning Contractors	\$79,088,376.00	9.0%
238150	Glass and Glazing Contractors	\$53,866,700.00	6.1%
238290	Other Building Equipment Contractors	\$41,871,372.00	4.8%

NAICS	NAICS Code Description	Total Contract Dollars	Pct Total Contract Dollars
237310	Highway, Street, and Bridge Construction	\$41,664,328.00	4.7%
238310	Drywall and Insulation Contractors	\$39,501,620.00	4.5%
238120	Structural Steel and Precast Concrete Contractors	\$32,300,072.00	3.7%
238910	Site Preparation Contractors	\$27,475,928.00	3.1%
238110	Poured Concrete Foundation and Structure Contractors	\$26,137,358.00	3.0%
238390	Other Building Finishing Contractors	\$15,099,829.00	1.7%
238350	Finish Carpentry Contractors	\$12,945,632.00	1.5%
541611	Administrative Management and General Management Consulting Services	\$10,405,596.00	1.2%
332323	Ornamental and Architectural Metal Work Manufacturing	\$8,887,081.00	1.0%
237990	Other Heavy and Civil Engineering Construction	\$7,688,919.00	0.9%
562910	Remediation Services	\$5,230,159.00	0.6%
561990	All Other Support Services	\$4,584,169.50	0.5%
TOTAL		\$879,693,491.50	100.00%

Source: CHA analysis of Port of Seattle data

Table 3-5: Distribution of Contract Dollars by Race and Gender
(total dollars)

NAICS	Black	Hispanic	Asian	Native American	White Women	WMBE	Non-WMBE	Total
236220	\$4,603,123	\$126,442	\$110,108	\$638,777	\$484,658	\$5,963,108	\$144,269,899	\$150,233,007
237310	\$0	\$0	\$0	\$82,477	\$1,902,891	\$1,985,368	\$39,678,959	\$41,664,327
237990	\$0	\$0	\$0	\$0	\$296,281	\$296,281	\$7,392,637	\$7,688,919
238110	\$0	\$1,468,139	\$0	\$0	\$68,341	\$1,536,480	\$24,600,878	\$26,137,357
238120	\$0	\$0	\$419,436	\$100,286	\$0	\$519,722	\$31,780,351	\$32,300,073
238150	\$0	\$0	\$0	\$0	\$0	\$0	\$53,866,698	\$53,866,698
238210	\$5,714,441	\$1,184,718	\$0	\$780,006	\$3,397,778	\$11,076,943	\$90,632,705	\$101,709,648
238220	\$0	\$0	\$0	\$0	\$54,175	\$54,175	\$79,034,202	\$79,088,377
238290	\$0	\$0	\$0	\$2,294,557	\$34,762	\$2,329,319	\$39,542,054	\$41,871,373
238310	\$0	\$0	\$23,631	\$0	\$88,386	\$112,017	\$39,389,602	\$39,501,619
238350	\$0	\$0	\$0	\$0	\$106,566	\$106,566	\$12,839,066	\$12,945,632
238390	\$0	\$5,928	\$121,252	\$0	\$117,609	\$244,789	\$14,855,040	\$15,099,829
238910	\$89,290	\$0	\$13,389	\$0	\$229,902	\$332,581	\$27,143,346	\$27,475,927
332323	\$0	\$0	\$0	\$0	\$0	\$0	\$8,887,081	\$8,887,081
541330	\$260,660	\$15,090	\$874,460	\$247,883	\$335,958	\$1,734,050	\$219,269,647	\$221,003,697
541611	\$28,208	\$0	\$239,628	\$0	\$199,498	\$467,333	\$9,938,262	\$10,405,596
561990	\$0	\$0	\$0	\$0	\$1,410	\$1,410	\$4,582,760	\$4,584,170
562910	\$0	\$0	\$0	\$0	\$550	\$550	\$5,229,609	\$5,230,159
Total	\$10,695,722	\$2,800,317	\$1,801,903	\$4,143,986	\$7,318,766	\$26,760,693	\$852,932,796	\$879,693,489

Source: CHA analysis of Port of Seattle data

Table 3-6: Distribution of Contract Dollars by Race and Gender
(share of total dollars)

NAICS	Black	Hispanic	Asian	Native American	White Women	WMBE	Non-WMBE	Total
236220	3.10%	0.10%	0.10%	0.40%	0.30%	4.00%	96.00%	100.00%
237310	0.00%	0.00%	0.00%	0.20%	4.60%	4.80%	95.20%	100.00%
237990	0.00%	0.00%	0.00%	0.00%	3.90%	3.90%	96.10%	100.00%
238110	0.00%	5.60%	0.00%	0.00%	0.30%	5.90%	94.10%	100.00%
238120	0.00%	0.00%	1.30%	0.30%	0.00%	1.60%	98.40%	100.00%
238150	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
238210	5.60%	1.20%	0.00%	0.80%	3.30%	10.90%	89.10%	100.00%
238220	0.00%	0.00%	0.00%	0.00%	0.10%	0.10%	99.90%	100.00%
238290	0.00%	0.00%	0.00%	5.50%	0.10%	5.60%	94.40%	100.00%
238310	0.00%	0.00%	0.10%	0.00%	0.20%	0.30%	99.70%	100.00%
238350	0.00%	0.00%	0.00%	0.00%	0.80%	0.80%	99.20%	100.00%
238390	0.00%	0.00%	0.80%	0.00%	0.80%	1.60%	98.40%	100.00%
238910	0.30%	0.00%	0.00%	0.00%	0.80%	1.20%	98.80%	100.00%
332323	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
541330	0.10%	0.00%	0.40%	0.10%	0.20%	0.80%	99.20%	100.00%
541611	0.30%	0.00%	2.30%	0.00%	1.90%	4.50%	95.50%	100.00%
561990	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
562910	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%
Total	1.20%	0.30%	0.20%	0.50%	0.80%	3.00%	97.00%	100.00%

Source: CHA analysis of Port of Seattle data

E. Availability of WMBEs in the Port of Seattle's Contracting Markets

1. Methodological Framework

Estimates of the availability of WMBEs in the Port's market area are a critical component of the analysis of possible barriers to equal opportunities to participate in the agency's contracting activities. These availability estimates are compared to the utilization percentage of dollars received by WMBEs to exam-

ine whether women- and minority-owned firms receive parity.⁸ Availability estimates are also crucial for the Port of Seattle to set narrowly tailored annual and contract goals.

We applied the “custom census” approach with refinements to estimating availability. As recognized by the courts and the National Model Disparity Study Guidelines,⁹ this methodology in general is superior to the other methods for at least four reasons:

- First, it provides an internally consistent and rigorous “apples to apples” comparison between firms in the availability numerator and those in the denominator. Other approaches often have different definitions for the firms in the numerator (*e.g.*, certified WMBEs or firms that respond to a survey) and the denominator (*e.g.*, registered vendors or the Census Bureaus’ County Business Patterns data).
- Second, by examining a comprehensive group of firms, it “casts a broader net” beyond those known to the agency. As recognized by the courts, this comports with the remedial nature of contracting affirmative action programs by seeking to bring in businesses that have historically been excluded. A custom census is less likely to be tainted by the effects of past and present discrimination than other methods, such as bidders lists, because it seeks out firms in the agency’s market areas that have not been able to access its opportunities.
- Third, this approach is less impacted by variables affected by discrimination. Factors such as firm age, size, qualifications, and experience are all elements of business success where discrimination would be manifested. Most courts have held that the results of discrimination – which impact factors affecting capacity – should not be the benchmark for a program designed to ameliorate the effects of discrimination. They have acknowledged that women- and minority-owned firms may be smaller, newer, and otherwise less competitive than non-women- and minority-owned firms because of the very discrimination sought to be remedied by race-conscious contracting programs. Racial and gender differences in these “capacity” factors are the *outcomes* of discrimination and it is therefore inappropriate as a

8. For our analysis, the term “WMBE” includes firms that are certified by government agencies and women- and minority-owned firms that are not certified. The inclusion of all minority- and female-owned businesses in the pool casts the broad net approved by the courts and recommended by USDOT that supports the remedial nature of the programs. See *Northern Contracting, Inc. v. Illinois Department of Transportation*, 473 F.3d 715, 723 (7th Cir. 2007) (The “remedial nature of the federal scheme militates in favor of a method of DBE availability calculation that casts a broader net.”). See also https://www.transportation.gov/sites/dot.gov/files/docs/Tips_for_Goal-Setting_in_DBE_Program_20141106.pdf.

9. *National Disparity Study Guidelines*, pp.57-58.

matter of economics and statistics to use them as “control” variables in a disparity study.¹⁰

- Fourth, it has been upheld by every court that has reviewed it, including most recently in the successful defense of the Illinois State Toll Highway’s DBE program, for which we served as testifying experts.¹¹

Using this framework, CHA utilized three databases to estimate availability:

- The Final Contract Data File (described in Section A of this Chapter).
- A Master WMBE Directory compiled by CHA.
- Dun & Bradstreet/Hoovers Database downloaded from the companies’ website.

The Master WMBE Directory combined the results of an exhaustive search for directories and other lists containing information about women- and minority-owned businesses. The resulting list of women and minority businesses is comprehensive. After compiling the Master WMBE Directory, we limited the firms we used in our analysis to those operating within the Port’s constrained product market of the State of Washington.

We next developed a custom database from Hoovers, a Dun & Bradstreet company. Hoovers maintains a comprehensive, extensive and regularly updated listing of all firms conducting business. The database includes a vast amount of information on each firm, including location and detailed industry codes, and is the broadest publicly available data source for firm information. We purchased the information from Hoovers for the firms in the NAICS codes located in the Port’s market area in order to form our custom Dun & Bradstreet/Hoovers Database. In the initial download, the data from Hoovers simply identify a firm as being minority-owned.¹² However, the company does keep detailed information on ethnicity (*i.e.*, is the minority firm owner Black, Hispanic, Asian, or Native American). We obtained this additional information from Hoovers by special request

2. Analysis of WMBE Availability in the Port’s Market

We merged these three databases to form an accurate estimate of WMBE availability. Tables 3-7 through 3-10 present data on:

10. For a detailed discussion of the role of capacity in disparity studies, see the *National Disparity Study Guidelines*, Appendix B, “Understanding Capacity.”

11. *Midwest Fence, Corp. v. U.S. Department of Transportation et al*, 840 F.3d 932 (2016); *see also Northern Contracting, Inc. v. Illinois Department of Transportation*, 473 F.3d 715 (7th Cir. 2007), *cert. denied*, 137 S.Ct. 2292 (2017).

12. The variable is labeled: “Is Minority Owned” and values for the variable can be either “yes” or “no”.

- The unweighted availability percentages by race and gender and by NAICS codes for contracts in the Port’s constrained product market;
- The weights used to adjust the unweighted numbers;¹³ and
- The final estimates of the weighted averages of the individual 6-digit level availability estimates in Port’s market area. These weighted availability estimates can be used by the Port to set any aspirational WMBE goals for its projects.

Table 3-7: Unweighted Availability

NAICS	Black	Latino	Asian	Native American	White Women	WMBE	Non-WMBE	Total
236220	1.4%	1.8%	1.7%	3.0%	6.3%	14.2%	85.8%	100.0%
237310	1.4%	3.1%	1.8%	4.2%	7.2%	17.7%	82.3%	100.0%
237990	1.5%	4.8%	3.3%	3.9%	8.4%	21.9%	78.1%	100.0%
238110	0.1%	1.8%	0.4%	0.8%	4.0%	7.1%	92.9%	100.0%
238120	3.7%	4.6%	5.5%	3.7%	9.2%	26.6%	73.4%	100.0%
238150	0.5%	1.1%	0.0%	0.0%	9.3%	11.0%	89.0%	100.0%
238210	0.5%	0.5%	0.3%	0.5%	4.3%	6.0%	94.0%	100.0%
238220	0.3%	0.4%	0.2%	0.4%	3.1%	4.3%	95.7%	100.0%
238290	0.0%	1.5%	1.5%	6.2%	7.7%	16.9%	83.1%	100.0%
238310	0.3%	0.9%	0.1%	0.4%	2.9%	4.6%	95.4%	100.0%
238350	0.8%	1.1%	0.5%	0.3%	4.6%	7.3%	92.7%	100.0%
238390	0.5%	2.1%	0.8%	0.5%	5.7%	9.7%	90.3%	100.0%
238910	0.9%	1.5%	0.7%	1.6%	5.8%	10.5%	89.5%	100.0%
332323	0.0%	1.1%	0.0%	0.0%	9.0%	10.1%	89.9%	100.0%
541330	0.6%	0.8%	3.0%	0.8%	5.6%	10.7%	89.3%	100.0%
541611	1.7%	0.5%	1.2%	0.4%	11.5%	15.2%	84.8%	100.0%
561990	0.3%	0.2%	0.3%	0.1%	2.5%	3.3%	96.7%	100.0%
562910	2.2%	3.6%	2.9%	5.0%	6.5%	20.1%	79.9%	100.0%
Total	0.5%	0.6%	0.7%	0.5%	4.3%	6.7%	93.3%	100.0%

Source: CHA analysis of Port of Seattle data; Hoovers; CHA Master Directory

13. These weights are equivalent to the share of contract dollars presented in the previous section.

**Table 3-8: Share of The Port of Seattle's Spending
by NAICS Code**

NAICS	NAICS Code Description	WEIGHT (Pct Share of Total Sector Dollars)
236220	Commercial and Institutional Building Construction	17.1%
237310	Highway, Street, and Bridge Construction	4.7%
237990	Other Heavy and Civil Engineering Construction	0.9%
238110	Poured Concrete Foundation and Structure Contractors	3.0%
238120	Structural Steel and Precast Concrete Contractors	3.7%
238150	Glass and Glazing Contractors	6.1%
238210	Electrical Contractors and Other Wiring Installation Contractors	11.6%
238220	Plumbing, Heating, and Air-Conditioning Contractors	9.0%
238290	Other Building Equipment Contractors	4.8%
238310	Drywall and Insulation Contractors	4.5%
238350	Finish Carpentry Contractors	1.5%
238390	Other Building Finishing Contractors	1.7%
238910	Site Preparation Contractors	3.1%
332323	Ornamental and Architectural Metal Work Manufacturing	1.0%
541330	Engineering Services	25.1%
541611	Administrative Management and General Management Consulting Services	1.2%
561990	All Other Support Services	0.5%
562910	Remediation Services	0.6%
Total		100.0%

Source: CHA analysis of Port of Seattle data

For purposes of goal setting, the availability estimates should be weighted by the Port's actual spending patterns, as determined by the NAICS codes it utilized. Weighting availability results is a more accurate picture of what firms are available to participate in the agency's opportunities. For example, high availability in a code in which minimal dollars are spent would give the impression that there are more WMBEs that can perform work on agency contracts than are actually ready, willing and able. Conversely, a low availability in a high dollar scope would understate the potential dollars that could be spent with WMBEs.¹⁴

Table 3-9: Aggregated Weighted Availability

Black	Hispanic	Asian	Native American	White Women	WMBE	Non-WMBE	Total
0.8%	1.3%	1.6%	1.6%	5.8%	11.1%	88.9%	100.0%

Source: CHA analysis of Port of Seattle data; Hoovers; CHA Master Directory

3. Analysis of Disparity Ratios Between WMBE Utilization and Availability

To meet the strict scrutiny requirement that a local government must establish that discrimination operates in its market area, we next calculated disparity ratios for total WMBE utilization compared to the total weighted availability of WMBEs, measured in dollars paid, on non-FAA-funded contracts. The disparity ratio is calculated by dividing the weighted availability into the utilization rate. If the utilization rate (*i.e.*, the disparity ratio) for a group is less than the availability for that group, we would conclude that the group is underutilized. It is important to note that sometimes unique features of the data (e.g. an unusually high concentration of a group in a very narrow range of NAICS codes; particularly strong performance of one or two firms within a group which is at odds with the performance of most firms in that group; very limited number of observations) might generate disparity ratios that require closer examination.

The courts have held that disparity results must be analyzed to determine whether the results are “significant”. There are two distinct methods to measure a results’ significance. First, a “large” or “substantively significant” disparity is commonly defined by courts as utilization that is equal to or less than 80 percent of the availability measure. A substantively significant disparity supports the inference that the result may be caused by the disparate impacts of discrimination.¹⁵ Second, statistically significant disparity means that an outcome is unlikely to have occurred as the result of random chance alone. The greater the statistical significance, the smaller the probability that it resulted

14. This is why the USDOT “Tips for Goal Setting” urge recipients to weight their headcount of firms by dollar spent. See <https://www.transportation.gov/osdbu/disadvantaged-business-enterprise/tips-goal-setting-disadvantaged-business-enterprise>.

15. See U.S. Equal Employment Opportunity Commission regulation, 29 C.F.R. § 1607.4(D) (“A selection rate for any race, sex, or ethnic group which is less than four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact.”).

from random chance alone¹⁶. A more in-depth discussion of statistical significance is provided in Appendix A.

Substantive and Statistical Significance

- ‡ Connotes these values are substantively significant. Courts have ruled the disparity ratio less or equal to 80 percent represent disparities that are substantively significant. (See Footnote 11 for more information.)
- * Connotes these values are statistically significant at the 0.05 level. (See Appendix A for more information.)
- ** Connotes these values are statistically significant at the 0.01 level. (See Appendix A for more information.)
- *** Connotes these values are statistically significant at the 0.001 level. (See Appendix A for more information.)

Table 3-10 presents the calculated disparity ratios.

Table 3-10: Disparity Ratios by Demographic Group

	Black	Hispanic	Asian	Native American	White Women	WMBE	Non-WMBE
Disparity Ratio	149.2%	24.1%‡	13.1%‡	29.3%‡	14.3%‡	27.3%‡***	109.1%***

Source: CHA analysis of Port of Seattle data

*** Indicates statistical significance at the 0.001 level

‡ Indicates substantive significance

Our previous experience suggests that unusually high disparity ratios might be the result of a variety of factors unique to a set of firms in a particular group and a particular NAICS code. The result of this nexus of factors should not be taken to be representative of the experiences of most firms within that group. We therefore explored if some anomalies did exist. What we found was that one black firm received 84.6 percent of all contract dollars. This activity occurred in two NAICS codes: 236220 and 238210. This concentration of an ethnic group's dollars in one firm is extremely unusual and accounts for the 149.2 percent disparity ratio for Blacks presented in Table 3-10.

16. A chi-square test – examining if the utilization rate was different from the weighted availability - was used to determine the statistical significance of the disparity ratio.

F. Conclusion

We determined that the Port of Seattle's geographic market is the boundaries of the state of Washington; that its product market consist of many industries; and that there are disparities of various magnitudes in opportunities for Port contracts and subcontracts. Outside the industries with high concentrations of WMBEs, women and minority entrepreneurs still face challenges in contracting opportunities. That one firm has overcome systemic barriers to achieve Port contracts does not mean that the playing field is level for all firms. If permitted under state law, this is the type of evidence courts have found to meet the strict scrutiny requirements for race- and gender-conscious remedial measures.¹⁷

17. For an in-depth analysis of the legal standards governing contracting affirmative action programs, please see Chapter II of the Washington State Airports Disparity Study 2019.

IV. RECOMMENDATIONS FOR THE PORT OF SEATTLE'S WOMEN AND MINORITY BUSINESS PROGRAM

In addition to providing a review of the Port of Seattle's current contracting equity activities and a statistical analysis of the Port's utilization of Women and Minority Business Enterprises ("WMBEs"), the availability of such firms in the Port's market area, and whether there are any disparities between utilization and availability, Colette Holt & Associates ("CHA") was asked to provide recommendations for possible enhancements to the Port's current program for WMBEs. We also reviewed the results of our 2019 study for Washington State Airports, which included additional economy-wide data on disparities on the basis of race and gender in the Port's market area, as well as qualitative evidence from minority and women business owners about barriers to obtaining contracts in the public and private sectors. Based upon these findings and national best practices for contracting equity programs, we make the following recommendations.

A. Increase Program Resources

The Port is embarking on several important initiatives to increase access to information and provide resources for WMBEs and other small firms. These include enhanced outreach capabilities, more attendance at vendor events, and increased accountability for program results by Port divisions. Initiatives include; the Port's Small Business Generator Program ("PortGen"), that offers targeted communications about potential bid opportunities; workshops on "How to do business with the Port"; "Meet and Greet" sessions; and advanced training sessions to help WMBEs with the post-award process. These worthy efforts will require adequate resources, both staffing and financial to be fully successful. We suggest that the Port evaluate precisely what new funds and/or staff will be required and commit to provide these resources.

B. Implement an Electronic Contracting Data Collection and Monitoring System

A critical element of this Study, and a major challenge, was data collection of full and complete prime contract and associated subcontractor records. As is very common, the Port did not have all the information needed for the inclusion of subcontractor payments in the analysis. We therefore recommend the Port procure and implement an electronic data collection system for all of its contracting diversity programs (*i.e.*, the WMBE, Disadvantaged Business Enterprise and Airport Concessions Disadvantaged Business Enterprise programs). The system should have at least the following functionality:

- Full contact information for all firms, including email addresses, NAICS codes, race and gender ownership, and small business certification status.
- Contract/project-specific goal setting, using the data from this study.
- Utilization plan capture for prime contractor's submission of subcontractor utilization plans, including real-time verification of DBE certification status and NAICS codes, and proposed utilization/goal validation.
- Contract compliance for certified and non-certified prime contract and subcontract payments for all formally procured contracts for all tiers of all subcontractors, verification of prompt payments to subcontractors, and information sharing between the Port, prime vendors, and subcontractors about the status of pay applications.
- Spend analysis of informal expenditures, such as those made with agency credit cards or on purchase orders, to determine the utilization of certified firms.
- Program report generation, including required FAA reports, that provide data on utilization by industries, race, gender, dollar amount, procurement method, agencies, etc.
- An integrated email and fax notification and reminder engine to notify users of required actions, including reporting mandates and dates.
- Outreach tools for eBlasts and related communications and event management for tracking registration and attendance.
- Import/export integration with existing systems to exchange contract, payment, and vendor data.
- Access by authorized Port staff, prime contractors and subcontractors to perform all necessary activities.

In addition to supporting a future study, the ability to monitor, near to real time, all elements of the contracting process is critical to enforcing the Port's objectives and firms' contractual commitments.

C. Review Contract Sizes and Scopes

"Unbundling" contracts into smaller segments by dollars, scopes or locations was endorsed by many firm owners during then anecdotal data collection we performed for the Washington State Airports as one method to provide fair access to Port projects. In conjunction with reduced insurance and bonding requirements, where possible, smaller contracts should permit smaller firms to move from quoting solely as subcontractors to bidding as prime contractors. It will also enhance their subcontracting opportunities. While the Port is aware of the benefits to the program in reduced contract size, user divisions should be made explicitly aware of the need to look at projects through this lens. Unbundling contracts must be conducted, however, within the constraints of the need, to ensure efficiency and limit the costs to taxpayers.

D. Adopt a Small Business Enterprise Mentor-Protégé Program for the Aviation Industry

The Port should consider adopting a Mentor-Protégé Program for WMBEs and Small Business Enterprises ("SBE") that focuses specifically on increasing WMSBEs' capabilities in the aviation industry. Airport work can be complex, with regulatory standards and project implementation demands that are unfamiliar and thus daunting to firms without that specific experience. We therefore suggest pairing experienced aviation firms with small businesses to increase opportunities for the protégé to develop new skills and expand their markets. This initiative can include construction and design firms.

An excellent national model is provided in the DBE program regulations at 49 C.F.R. § 26.35 and the Guidelines of Appendix D to Part 26. In addition to the standards provided in Part 26, the USDOT's General Counsel's Office has provided some additional guidance¹⁸, and the USDOT's Office of Small Disadvantaged Business Utilization has created a pilot program¹⁹ and sample documents.²⁰

The following elements reflect best practices for a program for the Port:

-
18. <https://www.transportation.gov/civil-rights/disadvantaged-business-enterprise/official-questions-and-answers-qas-disadvantaged>.
 19. <https://www.transportation.gov/osdbu/procurement-assistance/mentor-protege-pilot-program>.
 20. <https://www.transportation.gov/small-business/procurement-assistance/mentor-protege-program-sample-agreement-1>.

- A description of the qualifications of the mentor, including the firm's number of years of experience as a construction contractor or consultant; the agreement to devote a specified number of hours per month to working with the protégé; and the qualifications of the lead individual responsible for implementing the development plan.
- A description of the qualifications of the protégé, including the firm's number of years of experience as a construction contractor or consultant; the agreement to devote a specified number of hours per month to working with the mentor; and the qualifications of the WMBE or SBE owner(s).
- A Port-approved written development plan, which clearly sets forth the objectives of the parties and their respective roles, the duration of the arrangement, a schedule for meetings and development of action plans, and the services and resources to be provided by the mentor to the protégé. The assistance provided by the mentor must be detailed and directly relevant to Port work. The development targets should be quantifiable and verifiable—such as increased bonding capacity, increased sales, increased areas of work specialty or prequalification, etc.—and reflect objectives that increase the protégé's capacities and expand its business areas and expertise.
- A long term and specific commitment between the parties, *e.g.*, 12 to 36 months.
- The use of any equipment or equipment rental must be detailed in the plan, and should be further covered by bills of sale, lease agreements, etc., and require prior written approval by the Port.
- Any financial assistance by the mentor to the protégé must be subject to prior written approval by the Port and must not permit the mentor to assume control of the protégé.
- A fee schedule to cover the direct and indirect cost for services provided by the mentor for specific training and assistance to the protégé.
- The development plan must contain a provision that it may be terminated by mutual consent or by the Port if the protégé no longer meets the eligibility standards for SBE certification; either party desires to be removed from the relationship; either party has failed or is unable to meet its obligations under the plan; the protégé is not progressing or is not likely to progress in accordance with the plan; the protégé has reached a satisfactory level of self-sufficiency to compete without resort to the plan; or the plan or its provisions are contrary to legal requirements.
- Submission of quarterly reports by the parties indicating their progress toward each of the plan's goals.

- Regular review by the Port of the compliance with the plan and progress towards meeting its objectives. Failure to adhere to the terms of the plan or to make satisfactory progress would be grounds for termination from the Program.

Close monitoring of the program will be critical, but other entities have reported success with such an approved approach. The Washington State department of Transportation (“WSDOT”) is currently implementing a new program, and the Port might be able to profit from WSDOT’s experience.

E. Use the Study to Set the Aspirational WMBE Annual and Contract Goals

The Port has set an overall, aspirational goal for its non-FAA funded construction and design contracts that is the sum of goals set by the divisions. We suggest the Port use the weighted availability estimate in Chapter III as the basis for an overall, agency target for construction and construction-related professional services. This will relieve the divisions of the burden of trying to estimate their own goals, since the goal will reflect the detailed data in this report.

With respect to aspirational contract specific goal setting, the highly detailed unweighted availability estimates in Chapter III can serve as the starting point for narrowly tailored contract goal setting that reflects the percentage of available WMBEs as a percentage of the total pool of available firms. The Port should weigh the estimated scopes of the contract by the availability of WMBEs in those scopes, and then adjust the result based on current market conditions (for example, the volume of work currently underway in the market, the entrance of newly certified firms, specialized nature of the project, etc.). As described above, the recommended electronic data collection and monitoring system should contain a contract goal setting module developed to utilize the study’s unweighted availability data as the starting point. Written procedures detailing the contract goal setting methodology should be developed and disseminated so that all contracting actors understand the policy and procedures.

F. Develop Performance Measures for Success

The Port should develop quantitative performance measures for certified firms and the overall success of its program to evaluate their effectiveness in reducing the systemic barriers identified by this study. The availability estimates in this study can serve as aspirational targets for overall Port contracting. Additional benchmarks might be:

- Increased bidding by certified firms.

- Increased prime contract awards to certified firms.
- Increased diversity of the types of industries in which WMBEs receive dollars (*i.e.*, reduced market segregation).
- Increased utilization by individual contract awarding authorities.
- Increased “capacity” of certified firms as measured by bonding limits, size of jobs, profitability, etc.
- Utilization of WMBEs.

APPENDIX A:

SIGNIFICANCE LEVELS

Many tables in this report contain asterisks indicating a number has statistical significance at 0.001 or 0.01 levels and the body of the report repeats these descriptions. While the use of the term seems important, it is not self-evident what the term means. This Appendix provides a general explanation of significance levels.

This report seeks to address the question whether non-Whites and White women received disparate treatment in the economy relative to White males. From a statistical viewpoint, this primary question has two sub-questions:

- What is the relationship between the independent variable and the dependent variable?
- What is the probability that the relationship between the independent variable and the dependent variable is equal to zero?

For example, an important question facing the Port of Seattle as they explore whether each racial and ethnic group and White women continues to experience discrimination in its markets is do non-Whites and White women receive lower wages than White men? As discussed in Appendix A of the Washington Airports Disparity Study 2019, one way to uncover the relationship between the dependent variable (*e.g.*, wages) and the independent variable (*e.g.* non-Whites) is through multiple regression analysis. An example helps to explain this concept.

Let us say this analysis determines that non-Whites receive wages that are 35 percent less than White men after controlling for other factors, such as education and industry, which might account for the differences in wages. However, this finding is only an estimate of the relationship between the independent variable (*e.g.*, non-Whites) and the dependent variable (*e.g.*, wages) – the first sub-question. It is still important to determine how accurate is that estimation, that is, what is the probability the estimated relationship is equal to zero – the second sub-question.

To resolve the second sub-question, statistical hypothesis tests are utilized. Hypothesis testing assumes that there is no relationship between belonging to a particular demographic group and the level of economic utilization relative to White men (*e.g.*, non-Whites earn identical wages compared to White men or non-Whites earn 0 percent less than White men). This is sometimes called

the null hypothesis. We then calculate a confidence interval to explore the probability that the observed relationship (*e.g.*, - 35 percent) is between 0 and minus that confidence interval.²¹ The confidence interval will vary depending upon the level of confidence (statistical significance) we wish to have in our conclusion. Hence, a statistical significance of 99 percent would have a broader confidence interval than statistical significance of 95 percent. Once a confidence interval is established, if -35 percent lies outside of that interval, we can assert that the observed relationship (*e.g.*, 35 percent) is accurate at the appropriate level of statistical significance.

21. Because 0 can only be greater than -35 percent, we only speak of “minus the confidence level”. This is a one-tailed hypothesis test. If, in another example, the observed relationship could be above or below the hypothesized value, then we would say “plus or minus the confidence level” and this would be a two-tailed test.

APPENDIX B:

ADDITIONAL DATA FROM THE UTILIZATION ANALYSES FOR THE PORT OF SEATTLE

Table B-1: Industry Percentage Distribution of Contracts by Dollars Paid
All Contracts

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
541330	Engineering Services	20.67039%	20.67039%
236220	Commercial and Institutional Building Construction	15.02198%	35.69237%
238210	Electrical Contractors and Other Wiring Installation Contractors	9.41290%	45.10527%
238120	Structural Steel and Precast Concrete Contractors	8.07449%	53.17976%
238220	Plumbing, Heating, and Air-Conditioning Contractors	7.30851%	60.48826%
238150	Glass and Glazing Contractors	5.92437%	66.41263%
238290	Other Building Equipment Contractors	4.46835%	70.88098%
238310	Drywall and Insulation Contractors	4.19542%	75.07640%
237310	Highway, Street, and Bridge Construction	3.86702%	78.94343%
238910	Site Preparation Contractors	2.54522%	81.48865%
238110	Poured Concrete Foundation and Structure Contractors	2.46452%	83.95316%
488119	Other Airport Operations	2.17512%	86.12828%
541611	Administrative Management and General Management Consulting Services	1.50452%	87.63280%
238390	Other Building Finishing Contractors	1.39139%	89.02419%
238350	Finish Carpentry Contractors	1.20558%	90.22977%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
332323	Ornamental and Architectural Metal Work Manufacturing	0.81821%	91.04798%
237990	Other Heavy and Civil Engineering Construction	0.70789%	91.75587%
541310	Architectural Services	0.55307%	92.30894%
238140	Masonry Contractors	0.53331%	92.84225%
562910	Remediation Services	0.48187%	93.32411%
327390	Other Concrete Product Manufacturing	0.47414%	93.79826%
238990	All Other Specialty Trade Contractors	0.46657%	94.26483%
561990	All Other Support Services	0.42205%	94.68688%
236210	Industrial Building Construction	0.41135%	95.09823%
541380	Testing Laboratories	0.37834%	95.47657%
238160	Roofing Contractors	0.34781%	95.82438%
238330	Flooring Contractors	0.34514%	96.16952%
237130	Power and Communication Line and Related Structures Construction	0.30854%	96.47806%
541511	Custom Computer Programming Services	0.28022%	96.75827%
541690	Other Scientific and Technical Consulting Services	0.27184%	97.03011%
541370	Surveying and Mapping (except Geophysical) Services	0.25987%	97.28998%
238130	Framing Contractors	0.20205%	97.49203%
524114	Direct Health and Medical Insurance Carriers	0.19872%	97.69075%
541620	Environmental Consulting Services	0.18831%	97.87906%
541320	Landscape Architectural Services	0.17773%	98.05679%
238190	Other Foundation, Structure, and Building Exterior Contractors	0.17148%	98.22827%
334519	Other Measuring and Controlling Device Manufacturing	0.16202%	98.39029%
541990	All Other Professional, Scientific, and Technical Services	0.15302%	98.54331%
541110	Offices of Lawyers	0.14815%	98.69146%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
484220	Specialized Freight (except Used Goods) Trucking, Local	0.11240%	98.80386%
331110	Iron and Steel Mills and Ferroalloy Manufacturing	0.10716%	98.91102%
332312	Fabricated Structural Metal Manufacturing	0.10088%	99.01190%
541512	Computer Systems Design Services	0.09938%	99.11129%
334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	0.07599%	99.18728%
541820	Public Relations Agencies	0.07027%	99.25754%
238340	Tile and Terrazzo Contractors	0.06423%	99.32178%
561621	Security Systems Services (except Locksmiths)	0.04552%	99.36730%
485999	All Other Transit and Ground Passenger Transportation	0.03789%	99.40519%
541430	Graphic Design Services	0.03569%	99.44088%
541613	Marketing Consulting Services	0.03432%	99.47520%
524210	Insurance Agencies and Brokerages	0.03215%	99.50735%
541410	Interior Design Services	0.03208%	99.53944%
238320	Painting and Wall Covering Contractors	0.02847%	99.56791%
561730	Landscaping Services	0.02712%	99.59503%
531312	Nonresidential Property Managers	0.02565%	99.62068%
531320	Offices of Real Estate Appraisers	0.02554%	99.64622%
423320	Brick, Stone, and Related Construction Material Merchant Wholesalers	0.02067%	99.66689%
524292	Third Party Administration of Insurance and Pension Funds	0.02039%	99.68728%
511210	Software Publishers	0.01882%	99.70610%
423990	Other Miscellaneous Durable Goods Merchant Wholesalers	0.01719%	99.72329%
561312	Executive Search Services	0.01614%	99.73944%
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing	0.01555%	99.75499%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
562998	All Other Miscellaneous Waste Management Services	0.01513%	99.77012%
336411	Aircraft Manufacturing	0.01385%	99.78396%
541910	Marketing Research and Public Opinion Polling	0.01356%	99.79753%
926150	Regulation, Licensing, and Inspection of Miscellaneous Commercial Sectors	0.01120%	99.80873%
813920	Professional Organizations	0.01109%	99.81981%
541614	Process, Physical Distribution, and Logistics Consulting Services	0.01039%	99.83020%
488310	Port and Harbor Operations	0.00982%	99.84003%
541618	Other Management Consulting Services	0.00952%	99.84955%
562991	Septic Tank and Related Services	0.00930%	99.85885%
424710	Petroleum Bulk Stations and Terminals	0.00921%	99.86806%
541211	Offices of Certified Public Accountants	0.00919%	99.87725%
561311	Employment Placement Agencies	0.00918%	99.88642%
323111	Commercial Printing (except Screen and Books)	0.00821%	99.89464%
523930	Investment Advice	0.00818%	99.90281%
541360	Geophysical Surveying and Mapping Services	0.00804%	99.91086%
423210	Furniture Merchant Wholesalers	0.00778%	99.91863%
424120	Stationery and Office Supplies Merchant Wholesalers	0.00767%	99.92630%
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	0.00745%	99.93376%
561790	Other Services to Buildings and Dwellings	0.00743%	99.94119%
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	0.00699%	99.94817%
621910	Ambulance Services	0.00663%	99.95480%
213111	Drilling Oil and Gas Wells	0.00627%	99.96107%
237120	Oil and Gas Pipeline and Related Structures Construction	0.00581%	99.96688%
423710	Hardware Merchant Wholesalers	0.00487%	99.97176%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
722320	Caterers	0.00408%	99.97584%
541191	Title Abstract and Settlement Offices	0.00406%	99.97990%
454390	Other Direct Selling Establishments	0.00348%	99.98338%
237110	Water and Sewer Line and Related Structures Construction	0.00317%	99.98654%
423440	Other Commercial Equipment Merchant Wholesalers	0.00266%	99.98921%
321912	Cut Stock, Resawing Lumber, and Planing	0.00253%	99.99174%
238170	Siding Contractors	0.00186%	99.99359%
327320	Ready-Mix Concrete Manufacturing	0.00096%	99.99456%
327215	Glass Product Manufacturing Made of Purchased Glass	0.00081%	99.99537%
484110	General Freight Trucking, Local	0.00070%	99.99607%
531120	Lessors of Nonresidential Buildings (except Miniwarehouses)	0.00069%	99.99676%
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	0.00063%	99.99739%
424310	Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers	0.00053%	99.99792%
532289	All Other Consumer Goods Rental	0.00049%	99.99840%
213112	Support Activities for Oil and Gas Operations	0.00043%	99.99884%
713950	Bowling Centers	0.00036%	99.99920%
541720	Research and Development in the Social Sciences and Humanities	0.00022%	99.99942%
541420	Industrial Design Services	0.00020%	99.99962%
333997	Scale and Balance Manufacturing	0.00012%	99.99974%
722310	Food Service Contractors	0.00011%	99.99985%
541922	Commercial Photography	0.00007%	99.99992%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
926130	Regulation and Administration of Communications, Electric, Gas, and Other Utilities	0.00006%	99.99998%
561920	Convention and Trade Show Organizers	0.00002%	100.00000%
TOTAL			100.0%

Source: CHA analysis of WSDOT data

Table B-2: Industry Percentage Distribution of Contracts by Dollars Paid
Prime Contracts

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
236220	Commercial and Institutional Building Construction	43.5769%	43.5769%
541330	Engineering Services	42.6089%	86.1858%
541611	Administrative Management and General Management Consulting Services	3.2817%	89.4675%
561990	All Other Support Services	1.2895%	90.7569%
562910	Remediation Services	1.2600%	92.0169%
237990	Other Heavy and Civil Engineering Construction	1.1452%	93.1621%
237130	Power and Communication Line and Related Structures Construction	0.7398%	93.9019%
541511	Custom Computer Programming Services	0.7226%	94.6246%
524114	Direct Health and Medical Insurance Carriers	0.6096%	95.2341%
238130	Framing Contractors	0.5977%	95.8319%
237310	Highway, Street, and Bridge Construction	0.5069%	96.3388%
541310	Architectural Services	0.4827%	96.8215%
541620	Environmental Consulting Services	0.4718%	97.2933%
541110	Offices of Lawyers	0.4545%	97.7477%
541370	Surveying and Mapping (except Geophysical) Services	0.4209%	98.1686%
238150	Glass and Glazing Contractors	0.3482%	98.5168%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
541512	Computer Systems Design Services	0.2644%	98.7811%
236210	Industrial Building Construction	0.1868%	98.9679%
541820	Public Relations Agencies	0.1771%	99.1450%
541690	Other Scientific and Technical Consulting Services	0.1651%	99.3101%
524210	Insurance Agencies and Brokerages	0.0955%	99.4056%
238910	Site Preparation Contractors	0.0862%	99.4918%
531312	Nonresidential Property Managers	0.0787%	99.5705%
524292	Third Party Administration of Insurance and Pension Funds	0.0625%	99.6331%
511210	Software Publishers	0.0577%	99.6908%
561730	Landscaping Services	0.0577%	99.7485%
541430	Graphic Design Services	0.0540%	99.8025%
561312	Executive Search Services	0.0495%	99.8520%
561311	Employment Placement Agencies	0.0281%	99.8802%
813920	Professional Organizations	0.0257%	99.9059%
523930	Investment Advice	0.0251%	99.9310%
238220	Plumbing, Heating, and Air-Conditioning Contractors	0.0241%	99.9551%
541211	Offices of Certified Public Accountants	0.0235%	99.9787%
621910	Ambulance Services	0.0203%	99.9990%
541614	Process, Physical Distribution, and Logistics Consulting Services	0.0008%	99.9998%
541990	All Other Professional, Scientific, and Technical Services	0.0002%	100.0000%
TOTAL			100.0%

Source: CHA analysis of WSDOT data

**Table B-3: Industry Percentage Distribution of Contracts by Dollars Paid
Subcontracts**

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
238210	Electrical Contractors and Other Wiring Installation Contractors	13.96576%	13.96576%
238120	Structural Steel and Precast Concrete Contractors	11.97998%	25.94574%
238220	Plumbing, Heating, and Air-Conditioning Contractors	10.83183%	36.77757%
541330	Engineering Services	10.05910%	46.83668%
238150	Glass and Glazing Contractors	8.62148%	55.45816%
238290	Other Building Equipment Contractors	6.62962%	62.08777%
238310	Drywall and Insulation Contractors	6.22468%	68.31245%
237310	Highway, Street, and Bridge Construction	5.49225%	73.80470%
238910	Site Preparation Contractors	3.73459%	77.53930%
238110	Poured Concrete Foundation and Structure Contractors	3.65656%	81.19586%
488119	Other Airport Operations	3.22719%	84.42304%
238390	Other Building Finishing Contractors	2.06438%	86.48743%
238350	Finish Carpentry Contractors	1.78870%	88.27613%
332323	Ornamental and Architectural Metal Work Manufacturing	1.21396%	89.49009%
236220	Commercial and Institutional Building Construction	1.21048%	90.70056%
238140	Masonry Contractors	0.79126%	91.49182%
327390	Other Concrete Product Manufacturing	0.70348%	92.19530%
238990	All Other Specialty Trade Contractors	0.69224%	92.88754%
541611	Administrative Management and General Management Consulting Services	0.64492%	93.53247%
541310	Architectural Services	0.58712%	94.11958%
541380	Testing Laboratories	0.56134%	94.68092%
236210	Industrial Building Construction	0.51999%	95.20091%
238160	Roofing Contractors	0.51604%	95.71695%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
238330	Flooring Contractors	0.51208%	96.22902%
237990	Other Heavy and Civil Engineering Construction	0.49638%	96.72541%
541690	Other Scientific and Technical Consulting Services	0.32346%	97.04887%
541320	Landscape Architectural Services	0.26369%	97.31256%
238190	Other Foundation, Structure, and Building Exterior Contractors	0.25442%	97.56698%
334519	Other Measuring and Controlling Device Manufacturing	0.24038%	97.80737%
541990	All Other Professional, Scientific, and Technical Services	0.22695%	98.03432%
541370	Surveying and Mapping (except Geophysical) Services	0.18200%	98.21632%
484220	Specialized Freight (except Used Goods) Trucking, Local	0.16677%	98.38309%
331110	Iron and Steel Mills and Ferroalloy Manufacturing	0.15899%	98.54208%
332312	Fabricated Structural Metal Manufacturing	0.14968%	98.69176%
334513	Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	0.11275%	98.80450%
562910	Remediation Services	0.10551%	98.91001%
237130	Power and Communication Line and Related Structures Construction	0.09993%	99.00994%
238340	Tile and Terrazzo Contractors	0.09530%	99.10524%
561621	Security Systems Services (except Locksmiths)	0.06754%	99.17277%
541511	Custom Computer Programming Services	0.06622%	99.23899%
485999	All Other Transit and Ground Passenger Transportation	0.05622%	99.29522%
541620	Environmental Consulting Services	0.05117%	99.34639%
541613	Marketing Consulting Services	0.05092%	99.39731%
541410	Interior Design Services	0.04760%	99.44491%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
238320	Painting and Wall Covering Contractors	0.04225%	99.48716%
531320	Offices of Real Estate Appraisers	0.03790%	99.52506%
423320	Brick, Stone, and Related Construction Material Merchant Wholesalers	0.03066%	99.55572%
541430	Graphic Design Services	0.02682%	99.58254%
423990	Other Miscellaneous Durable Goods Merchant Wholesalers	0.02551%	99.60804%
532490	Other Commercial and Industrial Machinery and Equipment Rental and Leasing	0.02307%	99.63112%
562998	All Other Miscellaneous Waste Management Services	0.02244%	99.65356%
336411	Aircraft Manufacturing	0.02055%	99.67411%
541910	Marketing Research and Public Opinion Polling	0.02013%	99.69423%
541512	Computer Systems Design Services	0.01957%	99.71381%
541820	Public Relations Agencies	0.01860%	99.73241%
926150	Regulation, Licensing, and Inspection of Miscellaneous Commercial Sectors	0.01661%	99.74903%
541614	Process, Physical Distribution, and Logistics Consulting Services	0.01500%	99.76403%
488310	Port and Harbor Operations	0.01458%	99.77860%
541618	Other Management Consulting Services	0.01413%	99.79273%
562991	Septic Tank and Related Services	0.01380%	99.80653%
424710	Petroleum Bulk Stations and Terminals	0.01366%	99.82019%
561730	Landscaping Services	0.01234%	99.83254%
323111	Commercial Printing (except Screen and Books)	0.01218%	99.84472%
541360	Geophysical Surveying and Mapping Services	0.01193%	99.85665%
423210	Furniture Merchant Wholesalers	0.01154%	99.86819%
424120	Stationery and Office Supplies Merchant Wholesalers	0.01138%	99.87957%
484230	Specialized Freight (except Used Goods) Trucking, Long-Distance	0.01106%	99.89063%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
561790	Other Services to Buildings and Dwellings	0.01102%	99.90165%
238130	Framing Contractors	0.01066%	99.91231%
532412	Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing	0.01037%	99.92268%
213111	Drilling Oil and Gas Wells	0.00930%	99.93198%
237120	Oil and Gas Pipeline and Related Structures Construction	0.00863%	99.94060%
423710	Hardware Merchant Wholesalers	0.00723%	99.94783%
722320	Caterers	0.00605%	99.95389%
541191	Title Abstract and Settlement Offices	0.00603%	99.95991%
454390	Other Direct Selling Establishments	0.00516%	99.96507%
237110	Water and Sewer Line and Related Structures Construction	0.00470%	99.96977%
813920	Professional Organizations	0.00400%	99.97377%
423440	Other Commercial Equipment Merchant Wholesalers	0.00395%	99.97772%
321912	Cut Stock, Resawing Lumber, and Planing	0.00375%	99.98148%
238170	Siding Contractors	0.00275%	99.98423%
561990	All Other Support Services	0.00250%	99.98673%
541211	Offices of Certified Public Accountants	0.00226%	99.98899%
524210	Insurance Agencies and Brokerages	0.00150%	99.99050%
327320	Ready-Mix Concrete Manufacturing	0.00143%	99.99193%
327215	Glass Product Manufacturing Made of Purchased Glass	0.00120%	99.99313%
484110	General Freight Trucking, Local	0.00104%	99.99416%
531120	Lessors of Nonresidential Buildings (except Miniwarehouses)	0.00102%	99.99519%
423450	Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers	0.00093%	99.99612%
424310	Piece Goods, Notions, and Other Dry Goods Merchant Wholesalers	0.00079%	99.99691%
532289	All Other Consumer Goods Rental	0.00072%	99.99763%

NAICS	NAICS Code Description	Pct Total Contract Dollars	Cumulative Pct Total Contract Dollars
213112	Support Activities for Oil and Gas Operations	0.00064%	99.99827%
713950	Bowling Centers	0.00054%	99.99881%
541720	Research and Development in the Social Sciences and Humanities	0.00033%	99.99914%
541420	Industrial Design Services	0.00030%	99.99943%
333997	Scale and Balance Manufacturing	0.00018%	99.99961%
722310	Food Service Contractors	0.00017%	99.99978%
541922	Commercial Photography	0.00010%	99.99989%
926130	Regulation and Administration of Communications, Electric, Gas, and Other Utilities	0.00008%	99.99997%
561920	Convention and Trade Show Organizers	0.00003%	100.00000%
TOTAL			100.0%

Source: CHA analysis of WSDOT data