

CHAPTER 7.

Utilization and Disparity Analysis

Keen Independent’s utilization analysis reports the percentage of ODOT transportation contract dollars going to minority- and women-owned firms. The disparity analysis compares that utilization with the participation of minority- and women-owned firms that might be expected based on the availability analysis. (Chapter 6 and Appendix D explain the availability analysis.)

Chapter 7 presents results of the utilization and disparity analysis in five parts:

- A. Overview of the utilization analysis;
- B. Overall MBE/WBE and DBE utilization on ODOT contracts;
- C. Utilization by racial, ethnic and gender group;
- D. Disparity analysis for ODOT contracts; and
- E. Statistical significance of disparity analysis results.

A. Overview of the Utilization Analysis

Keen Independent examined the participation of minority- and women-owned firms on ODOT transportation contracts from October 2010 through September 2014. In total, Keen Independent’s utilization analysis included 2,219 contracts totaling \$1.9 billion over this time period, including FHWA- and state-funded contracts. Keen Independent’s analysis of these contracts included 5,808 subcontracts.

The study team collected information about ODOT projects as well as work awarded for local public agency (LPA) projects that use funds administered through ODOT. Chapter 3 and Appendix C explain the methods used to collect these data and determine the racial, ethnic and gender ownership characteristics of individual firms.

Note that ODOT awards work through a variety of contract agreements; to simplify, the utilization analysis refers to all such work as “contracts.”¹

¹ Also, prime contractors, not ODOT or local agencies, “award” subcontracts to subcontractors. To streamline the discussion, ODOT and local agency “award” of contract elements is used here and throughout the report.

Calculation of “utilization.” MBE/WBE

“utilization” is measured as the percentage of prime contract and subcontract dollars awarded to MBE/WBEs during the study period (see Figure 7-1). Keen Independent calculated MBE/WBE utilization for a group of contracts by dividing the contract dollars going to MBE/WBEs by the contract dollars for all firms.

To avoid double-counting contract dollars and to more accurately gauge utilization of different types of firms, Keen Independent based the utilization of prime contractors on the amount of the contract “retained” by the prime after deducting subcontract amounts. In other words, a \$1 million contract that involved \$400,000 in subcontracting only counts as \$600,000 to the prime contractor in the utilization analysis.

Figure 7-1. Defining and measuring “utilization”

“Utilization” of MBE/WBEs refers to the share of prime contract and subcontract dollars that an agency awarded to MBE/WBEs during a particular time period. Keen Independent measures the utilization of all MBE/WBEs regardless of certification. The study team reports utilization for firms owned by different racial, ethnic and gender groups.

Keen Independent measures MBE/WBE utilization as a percentage of total prime contract and subcontract dollars. For example, if 5 percent of prime contract and subcontract dollars went to WBEs during the study period, WBE utilization would be 5 percent.

Information about MBE/WBE utilization is instructive on its own, but it is even more useful when it is compared with the utilization that might be expected based on the availability of MBE/WBEs for ODOT work. The study team presents such comparisons as part of the “disparity analysis” later in Chapter 7.

Different results than in ODOT Uniform Reports of DBE Commitments/Awards and Payments.

USDOT requires agencies such as ODOT to submit reports about its DBE utilization on its FHWA-funded transportation contracts twice each year (typically in April and October).

Keen Independent’s analysis of MBE/WBE utilization goes beyond what ODOT currently reports to the FHWA, as explained below.

- **All MBE/WBEs, not just certified DBEs.** Per USDOT regulations, ODOT’s Uniform Reports focus exclusively on certified DBEs.

Keen Independent examined the utilization of minority- and women-owned firms in general — not just the utilization of certified DBEs. The study team’s analysis includes the utilization of MBE/WBEs that may have once been DBE-certified and graduated (or let their certifications lapse) and the utilization of MBE/WBEs that have never been DBE-certified. (Keen Independent separately reports utilization of MBE/WBEs that were DBE-certified during the study period.)²

² Businesses that are owned and operated by socially- and economically-disadvantaged white men can become certified as DBEs. Keen Independent identified one DBE-certified white male-owned business that ODOT utilized during the study period for a relatively small amount of contract dollars. Thus, utilization results for certified DBEs are not entirely a subset of the utilization results for all MBE/WBEs, but can be viewed that way in this report because of the small dollars going to the white male-owned DBE.

- **All transportation contracts, not just FHWA-funded contracts.** Because FHWA requires ODOT to prepare DBE utilization reports on its FHWA-funded transportation contracts, ODOT's Uniform Reports do not include state-funded contracts.
- **More complete contract information.** Through ODOT's assistance during the disparity study, and as part of ODOT's ongoing improvements to its contract data collection and reporting, the study team was able to analyze more complete data than ODOT had in its Uniform Reports.
- **Differences in classifying a subcontract within a time period.** Keen Independent attempted to include subcontracts associated with a prime contract in the same time period as that prime contract (e.g., a 2015 subcontract on a September 2014 prime contract would be included in results for FFY 2014). ODOT included data for a subcontract in the time period in which it was awarded (e.g., a 2015 subcontract would be included in the 2015 results).

As a result, Keen Independent's estimates of MBE/WBE participation on FHWA-funded contracts during the study period differ from the overall DBE participation ODOT reported to FHWA over a similar time period. However, estimates of DBE participation based on awards are very similar between the ODOT Uniform Reports as explained in the discussion of Figure 7-4.

Different results than in ODOT's September 2015 Waiver Request. ODOT's September 30, 2015 Waiver Request to USDOT examined utilization of minority- and women-owned firms on FHWA-funded construction contracts. ODOT's analysis included certain non-DBE-certified firms in the totals for MBE/WBEs. ODOT analyzed contracts for five years: FFY 2010 through FFY 2014. These data show higher utilization than ODOT's analysis based solely on DBE-certified firms, such as in ODOT's Uniform Reports.

Because of the focus on FHWA-funded construction contracts and the different time period, ODOT's results in the Waiver Request are not perfectly comparable to the Keen Independent utilization results in this chapter.

B. Overall MBE/WBE and DBE Utilization on ODOT Contracts

Figure 7-2 presents overall MBE/WBE utilization (as a percentage of total dollars) on ODOT transportation-related contracts awarded during the study period for FHWA- and state-funded contracts. Results are for the 8,027 prime contracts and subcontracts. The darker portion of the bar presents the utilization of MBE/WBEs that were DBE-certified.

Figure 7-2.
MBE/WBE and DBE share of prime contract/subcontract dollars for ODOT FHWA- and state-funded transportation contracts, October 2010–September 2014

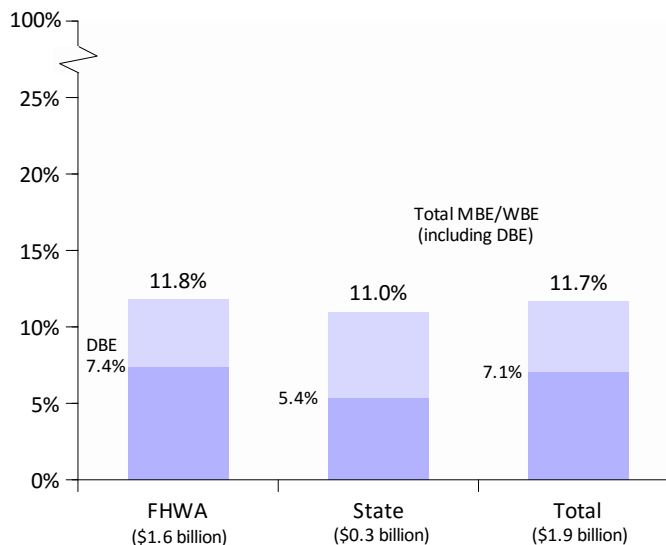
Note:

Dark portion of bar is certified DBE utilization.

Number of contracts/subcontracts analyzed is 6,248 for FHWA-funded contracts, 1,779 for state-funded contracts and 8,027 for all contracts/subcontracts.

Source:

Keen Independent from data on ODOT and LPA contracts October 2010-September 2014.



FHWA-funded contracts. Keen Independent examined 6,248 FHWA-funded prime contracts and subcontracts from October 2010 through September 2014. In total, there was \$1.6 billion in contract dollars for these contracts, much of the contract dollars examined in the study.³

MBE/WBEs received \$188 million, or 11.8 percent of ODOT FHWA-funded contract dollars during study period. About \$118 million (7.4%) of contract dollars went to MBE/WBEs that were DBE-certified at the time of the contract. Minority- and women-owned firms not certified as DBEs accounted for \$70 million or 4.4 percentage points of the total 11.8 percent MBE/WBE participation. (Note that ODOT set DBE contract goals on many FHWA-funded contracts during the study period.)

The above results for FHWA-funded contracts include more FHWA-funded contract dollars than ODOT included in its September 2015 Waiver Request for FFY 2011 through FFY 2014 (\$1.6 billion compared with the \$1.3 billion). The Waiver Request shows MBE/WBE utilization of 14.0 percent for this time period. Both the greater total dollars and the lower percentage of MBE/WBE participation in Keen Independent’s analysis of FHWA-funded contracts are mostly due to the engineering-related contracts that were not included in the ODOT waiver analysis.

³ Note that because ODOT and USDOT treat each contract with any FHWA dollars as “FHWA-funded,” the study team did so as well (some of the funding on these contracts was state dollars).

Keen Independent’s analysis of DBE participation for FFY 2011 through FFY 2014 also includes more FHWA-funded contract dollars than ODOT’s Uniform Reports of DBE Commitments/Awards and Payments for FFY 2011 through FFY 2014. Based on commitments and awards, ODOT’s reports show 10.4 percent DBE participation. As shown in Figure 7-2, Keen Independent reports 7.4 percent DBE participation, and includes both construction and engineering-related FHWA-funded contracts in this calculation. (Again, ODOT’s figures are just for construction.)

State-funded contracts. The study team obtained data on 1,779 state-funded transportation construction and engineering-related prime contracts and subcontracts for October 2010 through September 2014. These contracts totaled \$337 million.

Minority- and women-owned firms received 11.0 percent of the contract dollars for state-funded transportation contracts during the study period. Compared with FHWA-funded contracts, a smaller portion of this utilization (5.4%) was DBE participation (see Figure 7-2).

ODOT does not prepare DBE utilization reports for state-funded contracts.

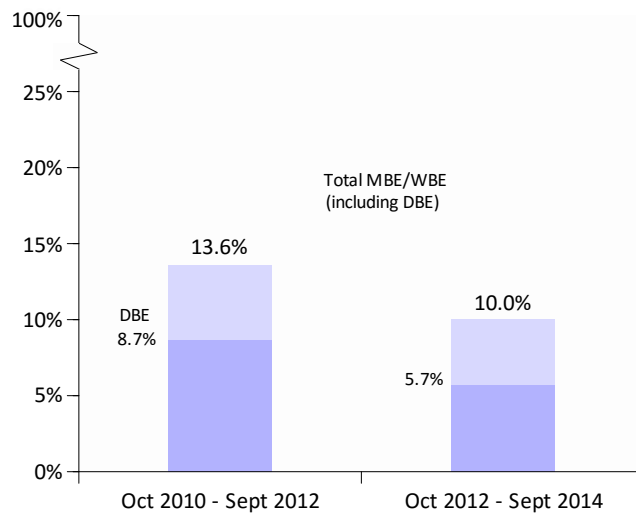
Contracts by time period. MBE/WBE participation was 13.6 percent for contracts awarded from October 2010 through September 2012. It dropped to 10.0 percent for October 2012 through September 2014. This decrease was associated with a sharp decrease in utilization of firms certified as DBEs (8.7 percent down to 5.7 percent). Figure 7-3 shows these results.

As discussed later in Chapter 7, decline in the utilization of Hispanic American-owned firms explains this decrease in overall MBE/WBE and in DBE utilization.

Figure 7-3.
MBE/WBE and DBE participation from
October 2010–September 2012 and
October 2012–September 2014

Note:
 Dark portion of bar is certified DBE utilization.
 Number of contracts/subcontracts analyzed is 3,986 for Oct. 2010–Sept. 2012 and 4,041 for Oct. 2012–Sept. 2014.

Source:
 Keen Independent from data on ODOT and LPA contracts October 2010–September 2014.



C. Utilization by Racial, Ethnic and Gender Group

Figure 7-4 presents detailed information for minority- and women-owned firms (top portion of the table) and certified DBEs (bottom portion of the table) for FHWA- and for state-funded contracts. For each set of contracts, Figure 7-4 shows:

- Total number of prime contracts and subcontracts awarded to the group (e.g., 1,032 FHWA-funded prime contracts and subcontracts to white women-owned firms);
- Combined dollars of prime contracts and subcontracts going to the group (e.g., \$81,886,000 to white women-owned firms); and
- The percentage of combined contract dollars for the group (e.g., white women-owned firms received 5.2 percent of total FHWA-funded contract dollars).

FHWA-funded contracts. As shown in the top portion of Figure 7-4 for FHWA-funded contracts, white women-owned firms (WBEs) received the largest number of prime contracts and subcontracts, the most dollars and the highest share of dollars out of all MBE/WBE groups. Among minority-owned firms, African American-owned firms (150) and Native American-owned firms (150) received the most prime contracts and subcontracts. African American-owned firms (\$32 million) and Hispanic American-owned firms (\$31 million) received the most dollars of FHWA-funded contracts. Both African American- and Hispanic American-owned firms received 2.0 percent of FHWA-funded contracts.

Native American-owned firms received 1.4 percent of contract dollars. Utilization of Asian-Pacific American-owned firms was 0.7 percent and utilization of Subcontinent Asian American-owned firms was 0.7 percent for FHWA-funded contracts.

The bottom portion of Figure 7-4 indicates that DBEs owned by white women, Hispanic Americans and African Americans accounted for most of the DBE participation on FHWA-funded contracts. In total, firms certified as DBEs received 1,007 prime contracts and subcontracts and \$118 million of the FHWA-funded contract dollars during the study period. This accounted for 7.4 percent of FHWA-funded contract dollars.

State-funded contracts. Figure 7-4 also shows participation of MBE/WBEs on state-funded contracts. White women-owned firms (4.9%) and Hispanic American-owned firms (4.3%) accounted for most of the total participation of MBE/WBEs on state-funded contracts. Even though DBE contract goals were not applied, DBEs did participate in state-funded contracts, receiving about 5.4 percent of total contract dollars (see the bottom portion of Figure 7-4).

Figure 7-4.
 MBE/WBE and DBE share of ODOT prime contracts and subcontracts for
 FHWA- and state-funded contracts, October 2010–September 2014

	FHWA			State		
	Number of contracts*	\$1,000s	Percent of dollars	Number of contracts*	\$1,000s	Percent of dollars
MBE/WBEs						
African American-owned	150	\$ 31,663	2.0 %	15	\$ 355	0.1 %
Asian-Pacific American-owned	95	10,590	0.7	9	804	0.2
Subcontinent Asian American-owned	37	10,377	0.7	68	944	0.3
Hispanic American-owned	117	31,363	2.0	41	14,374	4.3
Native American-owned	150	21,629	1.4	35	3,947	1.2
Total MBE	549	105,623	6.6	168	20,424	6.1 %
WBE (white women-owned)	1,032	81,886	5.2	265	16,602	4.9
Total MBE/WBE	1,581	\$ 187,510	11.8 %	433	\$ 37,026	11.0 %
Majority-owned	4,667	1,401,664	88.2	1,346	300,077	89.0
Total	6,248	\$ 1,589,174	100.0 %	1,779	\$ 337,103	100.0 %
DBEs						
African American-owned	76	\$ 20,882	1.3 %	9	\$ 276	0.1 %
Asian-Pacific American-owned	57	3,117	0.2	7	579	0.2
Subcontinent Asian American-owned	36	10,372	0.7	65	500	0.1
Hispanic American-owned	81	23,801	1.5	26	7,005	2.1
Native American-owned	64	10,086	0.6	18	1,743	0.5
Total MBE	314	\$ 68,259	4.3 %	125	\$ 10,103	3.0 %
WBE (white women-owned)	693	49,661	3.1	130	7,961	2.4
White male-owned DBE	0	0	0.0	1	39	0.0
Total DBE certified	1,007	\$ 117,920	7.4 %	256	\$ 18,103	5.4 %
Non-DBE	5,241	1,471,254	92.6	1,523	319,000	94.6
Total	6,248	\$ 1,589,174	100.0 %	1,779	\$ 337,103	100.0 %

Note: *Number of prime contracts and subcontracts.

Numbers rounded to nearest tenth of 1 percent. Numbers may not add to totals due to rounding.

Source: Keen Independent from data on ODOT and LPA contracts October 2010-September 2014.

FHWA- and state-funded ODOT transportation contracts. Figure 7-5 presents MBE/WBE and DBE participation for combined FHWA- and state-funded ODOT transportation contracts during the study period.

White women-owned firms obtained 5.1 percent of ODOT contract dollars and minority-owned firms received 6.5 percent of ODOT contract dollars. In total, 11.7 percent of ODOT contract dollars went to minority- and women-owned firms.

Figure 7-5.
MBE/WBE and DBE share of ODOT prime contracts and subcontracts for combined FHWA- and state-funded contracts, October 2010–September 2014

	Total FHWA and State		
	Number of contracts*	\$1,000s	Percent of dollars
MBE/WBEs			
African American-owned	165	\$ 32,018	1.7 %
Asian-Pacific American-owned	104	11,394	0.6
Subcontinent Asian American-owned	105	11,321	0.6
Hispanic American-owned	158	45,737	2.4
Native American-owned	185	25,577	1.3
Total MBE	717	\$ 126,048	6.5 %
WBE (white women-owned)	1,297	98,488	5.1
Total MBE/WBE	2,014	\$ 224,536	11.7 %
Majority-owned	6,013	1,701,741	88.3
Total	8,027	\$ 1,926,277	100.0 %
DBEs			
African American-owned	85	\$ 21,159	1.1 %
Asian-Pacific American-owned	64	3,696	0.2
Subcontinent Asian American-owned	101	10,872	0.6
Hispanic American-owned	107	30,806	1.6
Native American-owned	82	11,829	0.6
Total MBE	439	\$ 78,362	4.1 %
WBE (white women-owned)	823	57,621	3.0
White male-owned DBE	1	39	0.0
Total DBE-certified	1,263	\$ 136,023	7.1 %
Non-DBE	6,764	1,790,254	92.9
Total	8,027	\$ 1,926,277	100.0 %

Note: *Number of prime contracts and subcontracts.

Numbers rounded to nearest tenth of 1 percent. Numbers may not add to totals due to rounding.

Source: Keen Independent from data on ODOT and LPA contracts October 2010-September 2014.

Contracts by time period. Figure 7-6 examines combined FHWA- and state-funded contract dollars going to minority- and women-owned firms on contracts for the first two years of the study period (FFY 2011 through FFY 2012) and the final two years of the study period (FFY 2013 through FFY 2014).

The drop in MBE/WBE participation between the first two years and final two years of the study period was largely due to a decrease in participation of Hispanic American-owned firms. Utilization for this group was 3.8 percent of ODOT contract dollars from October 2010 through September 2012. For October 2012 through September 2014, Hispanic American-owned firms obtained 1.2 percent of contract dollars.

Utilization of white women-owned firms was about 5 percent in both time periods. Among other MBE groups, utilization increased for Subcontinent Asian American-owned (from 0.1% to 1.0%). Utilization of all other MBE groups declined from the first two years to the final two years.

Figure 7-6.
MBE/WBE and DBE share of ODOT prime contracts and subcontracts for FHWA- and state-funded contracts with and without DBE contract goals, October 2010–September 2012 and October 2012–September 2014

	FFY2011–FFY2012			FFY2013–FFY2014		
	Number of contracts*	\$1,000s	Percent of dollars	Number of contracts*	\$1,000s	Percent of dollars
MBE/WBEs						
African American-owned	82	\$ 17,380	2.0 %	83	\$ 14,638	1.4 %
Asian-Pacific American-owned	65	5,629	0.6	39	5,765	0.5
Subcontinent Asian American-owned	15	1,184	0.1	90	10,137	1.0
Hispanic American-owned	88	32,952	3.8	70	12,785	1.2
Native American-owned	93	16,273	1.9	92	9,304	0.9
Total MBE	343	73,418	8.4	374	\$ 52,630	5.0 %
WBE (white women-owned)	649	45,849	5.2	648	52,639	5.0
Total MBE/WBE	992	\$ 119,266	13.6 %	1,022	\$ 105,270	10.0 %
Majority-owned	2,994	756,838	86.4	3,019	944,903	90.0
Total	3,986	\$ 876,104	100.0 %	4,041	\$ 1,050,173	100.0 %
DBEs						
African American-owned	54	\$ 13,233	1.5 %	31	\$ 7,925	0.8 %
Asian-Pacific American-owned	37	2,302	0.3	27	1,394	0.1
Subcontinent Asian American-owned	14	1,179	0.1	87	9,693	0.9
Hispanic American-owned	64	26,362	3.0	43	4,445	0.4
Native American-owned	45	8,214	0.9	37	3,616	0.3
Total MBE	214	\$ 51,289	5.9 %	225	\$ 27,073	2.6 %
WBE (white women-owned)	414	25,047	2.9	409	32,574	3.1
White male-owned DBE	0	0	0.0	1	39	0.0
Total DBE certified	628	\$ 76,337	8.7 %	635	\$ 59,686	5.7 %
Non-DBE	3,358	799,767	91.3	3,406	990,487	94.3
Total	3,986	\$ 876,104	100.0 %	4,041	\$ 1,050,173	100.0 %

Note: *Number of prime contracts and subcontracts.

Numbers rounded to nearest tenth of 1 percent. Numbers may not add to totals due to rounding.

Source: Keen Independent from data on ODOT and LPA contracts October 2010-September 2014.

D. Disparity Analysis for ODOT Contracts

To conduct the disparity analysis, Keen Independent compared the actual utilization of MBE/WBEs on ODOT and LPA transportation prime contracts and subcontracts with the percentage of contract dollars that MBE/WBEs might be expected to receive based on their availability for that work. (Availability is also referred to as the “utilization benchmark.”) Keen Independent made those comparisons for individual MBE/WBE groups. Chapter 6 explains how the study team developed benchmarks from the availability data.

To make results directly comparable, Keen Independent expressed both utilization and availability as percentages of the total dollars associated with a particular set of contracts (e.g., 5% utilization compared with 4% availability). Keen Independent then calculated a “disparity index” to easily compare utilization and availability results among MBE/WBE groups and across different sets of contracts.

- A disparity index of “100” indicates an exact match between actual utilization and what might be expected based on MBE/WBE availability for a specific set of contracts (often referred to as “parity”).
- A disparity index of less than 100 may indicate a disparity between utilization and availability, and disparities of less than 80 in this report are described as “substantial.”⁴

Figure 7-7 describes how Keen Independent calculated disparity indices.

Figure 7-7.
Calculation of disparity indices

The disparity index provides a straightforward way of assessing how closely actual utilization of an MBE/WBE group matches what might be expected based on its availability for a specific set of contracts. With the disparity index, one can directly compare results for one group to that of another group, and across different sets of contracts. Disparity indices are calculated using the following formula:

$$\frac{\% \text{ actual utilization} \times 100}{\% \text{ availability}}$$

For example, if actual utilization of MBEs on a set of ODOT contracts was 2 percent and the availability of MBEs for those contracts was 4 percent, then the disparity index would be 2 percent divided by 4 percent, which would then be multiplied by 100 to equal 50. In this example, MBEs would have actually received 50 cents of every dollar that they might be expected to receive based on their availability for the work.

⁴ Some courts deem a disparity index below 80 as being “substantial,” and have accepted it as evidence of adverse impacts against MBE/WBEs. For example, see *Associated General Contractors of America, San Diego Chapter, Inc. v. California Department of Transportation, et al.*, 713 F.3d 1187, 2013 WL 1607239 (9th Cir. April 16, 2013); *Rotbe Development Corp v. U.S. Dept of Defense*, 545 F.3d 1023, 1041; *Eng’g Contractors Ass’n of South Florida, Inc. v. Metropolitan Dade County*, 122 F.3d at 914, 923 (11th Circuit 1997); *Concrete Works of Colo., Inc. v. City and County of Denver*, 36 F.3d 1513, 1524 (10th Cir. 1994). Also see Appendix B for additional discussion.

Results for minority- and women-owned firms on ODOT contracts. White women-owned firms received 5.1 percent of ODOT contract dollars (FHWA- and state-funded combined). This utilization was below what might be expected from the availability analysis — 9.9 percent. Minority-owned firms received 6.5 percent of ODOT contract dollars, a result that was also below what might be expected from the availability analysis — 9.4 percent. Figure 7-8 shows these results.

The resulting disparity index for WBEs is 52 (5.11% divided by 9.88%, times 100). The disparity index for MBEs is 70 (6.54% divided by 9.37%, times 100). Because the indices for WBEs and for MBEs were below 80, they are “substantial,” as explained on the previous page.

Figure 7-8.
MBE/WBE utilization and availability for ODOT FHWA- and state-funded contracts, October 2010–September 2014

Note:
 Number of contracts/subcontracts analyzed is 8,027.

Source:
 Keen Independent disparity analysis for ODOT and LPA contracts.

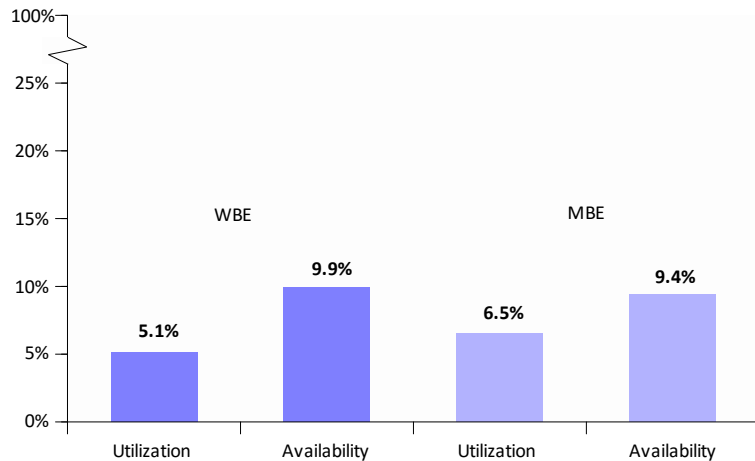


Figure 7-9 on the next page shows disparity indices for individual MBE groups as well as WBEs.⁵

African American-owned firms. African American-owned firms received 1.7 percent of contract dollars, substantially less than what might be expected in the availability analysis (2.9%). The disparity index for this group was 58. Keen Independent identified this substantial disparity for African American-owned firms in spite of DBE-certified African American-owned businesses being eligible to participate in ODOT’s DBE goals for construction contracts during this period.

Asian-Pacific American-owned businesses. Utilization of Asian-Pacific American-owned firms (0.6%) was substantially below what might be expected from the availability analysis (0.9%), and the disparity index was 69 for this group, even though DBEs owned by Asian Pacific Americans were eligible to meet DBE contract goals in the first two years of the study period.

Subcontinent Asian American-owned companies. Utilization of Subcontinent Asian American-owned businesses (0.6%) was somewhat less than expected from the availability analysis (0.7%). The disparity index for this group was 90. Subcontinent Asian American-owned firms were eligible to meet DBE contract goals for construction contracts during the study period.

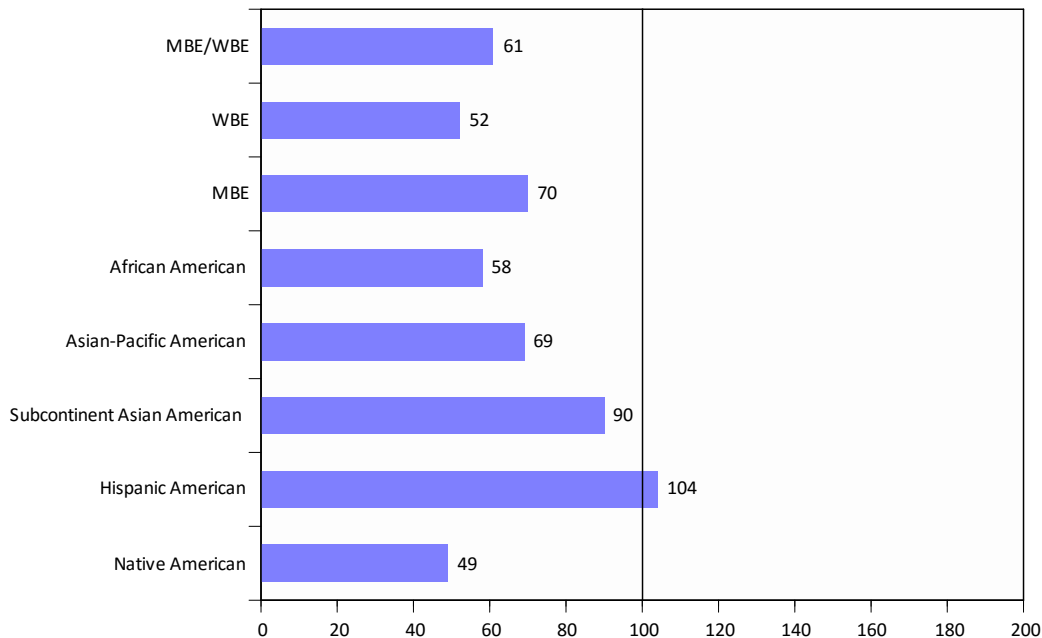
⁵ Note that the utilization and availability statistics are rounded to the nearest tenth of a percent, but the disparity indices were calculated from non-rounded results.

Hispanic American-owned firms. From October 2010 through September 2014, Hispanic American-owned firms obtained 2.4 percent of ODOT contract dollars, about the same what might be expected from the availability analysis (2.3%), resulting in a disparity index of 104. Most of this utilization was two firms: Capital Concrete Construction and LaDuke Construction. The availability results for Hispanic American-owned firms are limited by the fact that neither of these firms provided information to be included in the detailed availability analysis. Capital Concrete has voluntarily surrendered its contractor’s license, no longer has a working telephone number and does not appear to be available for ODOT work. LaDuke Construction indicated that they were not interested in discussing future work for ODOT when contacted by the study team to participate in an availability interview in 2015. Even though neither firm provided information necessary to be included in the availability analysis for Hispanic American-owned firms, both of these firms are still counted in the utilization results. (Without these two firms, utilization of Hispanic American-owned firms would have been 0.9 percent.)

Native American-owned businesses. Native American-owned firms had a utilization of 1.3 percent, below what might be expected based on the availability analysis (2.7%). The disparity index for this group was 49.

Overall results for MBE/WBEs. Overall, the disparity index for MBE/WBEs combined was 61, even with the application of DBE contract goals for some DBE groups for some of these contracts. As previously noted, Figure 7-9 also presents the disparity index for white women-owned firms (52).

Figure 7-9. Disparity indices for MBE/WBEs, by group, for ODOT FHWA- and state-funded contracts, October 2010–September 2014



Note: Number of contracts/subcontracts analyzed is 8,027.

Source: Keen Independent disparity analysis for ODOT and LPA contracts.

Results for October 2010 through September 2012. Keen Independent also separately examined utilization and availability results for the first two years of the study period and the final two years of the study period. Figure 7-10 presents results for ODOT contracts from October 2010 through September 2012.

White women-owned firms received 5.2 percent of ODOT contract dollars, which was below the 9.9 percent that might be expected from the availability analysis for this time period. As shown in Figure 7-11 on the following page, the disparity index was 53, indicating a substantial disparity for white women-owned firms in this time period.

Minority-owned firms received 8.4 percent of the contract dollars, somewhat below what might be expected from the availability analysis (10.0%). The disparity index was 84 for MBEs in this time period, not a substantial disparity.

Figure 7-10.
MBE/WBE utilization and availability for FHWA- and state-funded contracts without DBE contract goals, October 2010–September 2012

Note:
 Number of contracts/subcontracts analyzed is 3,986.

Source:
 Keen Independent disparity analysis for ODOT and LPA contracts.

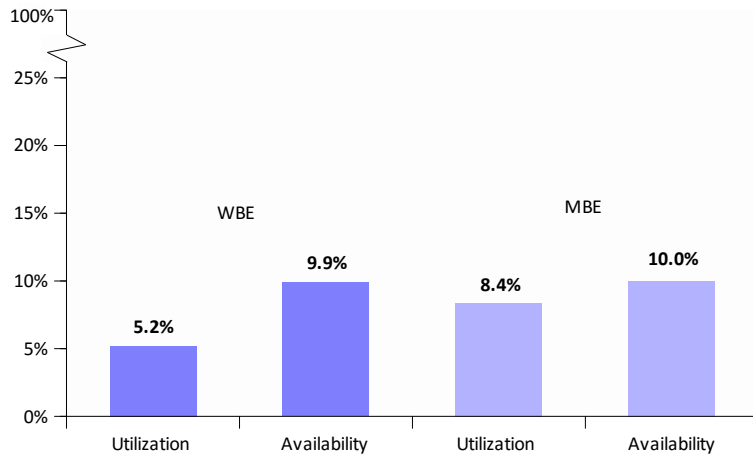
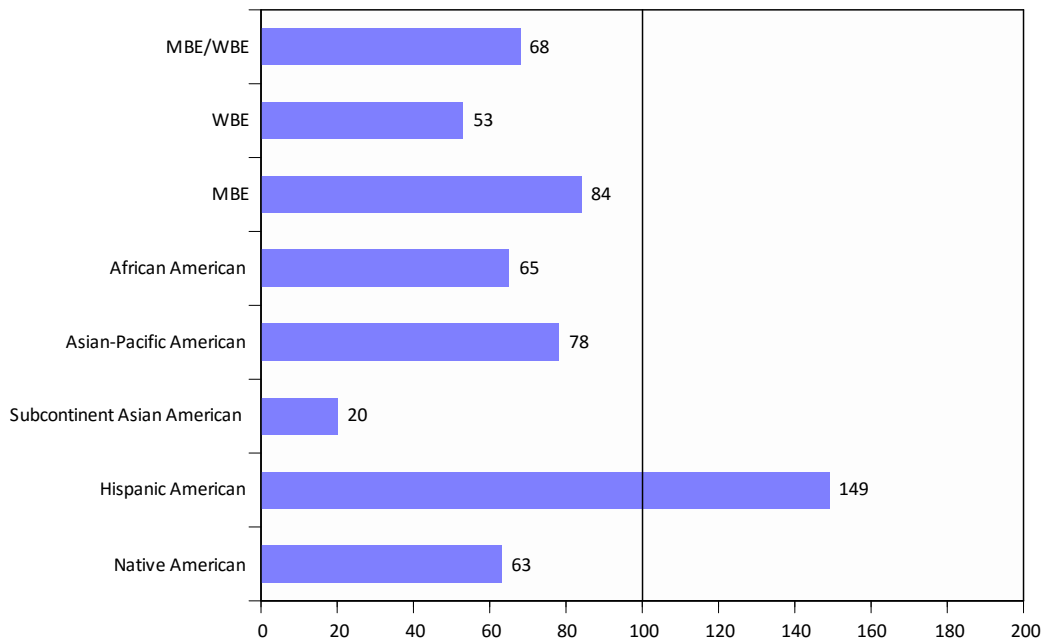


Figure 7-11 provides disparity indexes for each MBE group as well as for WBEs and MBE/WBEs overall for ODOT contracts from October 2010 through September 2012.

- As previously noted, WBEs obtained about one-half of the contract dollars that might be expected based on the availability analysis (disparity index of 53).
- There were substantial disparities for African American-, Asian-Pacific American-, Subcontinent Asian American- and Native American-owned businesses.
- Utilization of Hispanic American-owned firms (3.8%) exceeded the 2.5 percent availability benchmark for this group. The disparity index was 149 for Hispanic American-owned firms in these two years.

Figure 7-11. Disparity indices for MBE/WBEs, by group, for ODOT FHWA- and state-funded contracts, October 2010–September 2012



Note: Number of contracts/subcontracts analyzed is 3,986.

Source: Keen Independent disparity analysis for ODOT and LPA contracts.

Results for October 2012 through September 2014. Figure 7-12 presents WBE and MBE utilization and availability results for contracts from October 2012 through September 2014.

Utilization (5.0%) and availability (9.9%) for white women-owned firms were similar for this time period as for the previous two years. The disparity index was 51, which was also substantial (see Figure 7-13).

MBE utilization dropped to 5.0 percent for October 2012 through September 2014. The disparity index for MBEs was 57, which indicates a substantial disparity.

Figure 7-12.
MBE/WBE utilization and availability for ODOT FHWA- and state-funded contracts without DBE contract goals, October 2012–September 2014

Note:
 Number of contracts/subcontracts analyzed is 4,041.

Source:
 Keen Independent disparity analysis for ODOT and LPA contracts.

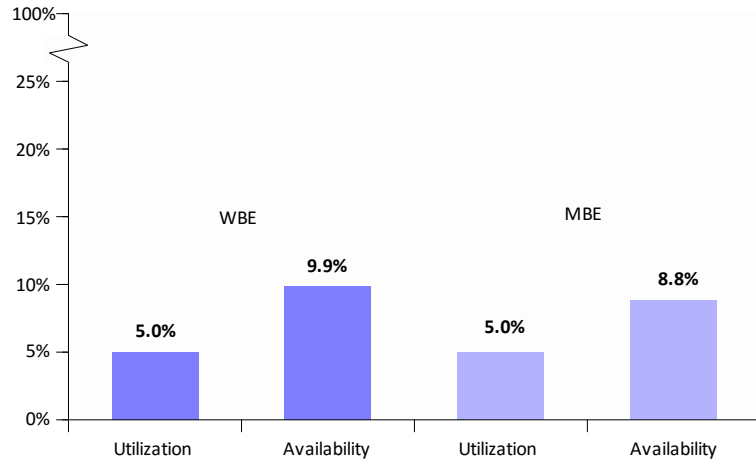
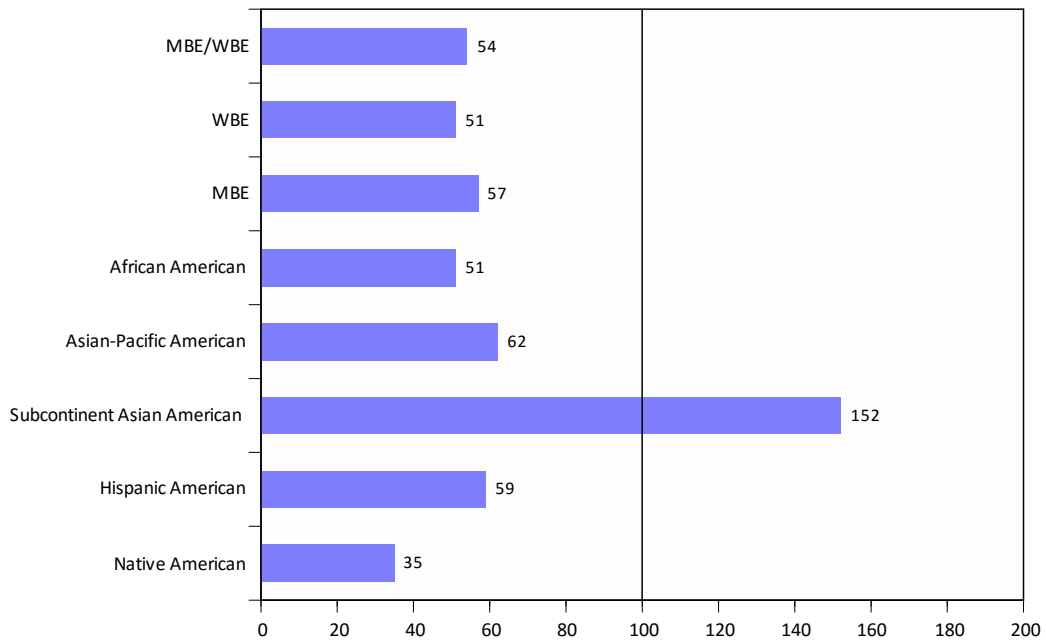


Figure 7-13 indicates substantial disparities for all MBE groups except for Subcontinent Asian American-owned firms.

- Unlike the previous two years, there was no disparity for Subcontinent Asian American-owned firms in this time period. Note that DBEs owned by Subcontinent Asian Americans were eligible to participate in DBE contract goals for ODOT construction contracts.
- There were substantial disparities for other MBE groups, including Hispanic American-owned firms (disparity index of 59 for this group). Even with eligibility to meet DBE contract goals, there was a substantial disparity in ODOT’s utilization of African American-owned firms (disparity index of 51).

Figure 7-13. Disparity indices for MBE/WBEs, by group, for ODOT FHWA- and state-funded contracts, October 2012–September 2014



Note: Number of contracts/subcontracts analyzed is 4,041.

Source: Keen Independent disparity analysis for ODOT and LPA contracts.

Utilization and disparity results for other sets of ODOT contracts. Chapter 8 examines utilization results for subsets of ODOT contracts to further explore factors behind the disparities identified in Chapter 7.

E. Statistical Significance of Disparity Analysis Results

Analysis of statistical significance relates to testing the degree to which a researcher can reject “random chance” as an explanation for any observed differences. Random chance in data sampling is the factor that researchers consider most in determining the statistical significance of results. As both the availability and the utilization analyses attempted to obtain information for populations of firms and contracts rather than samples, this opportunity for an alternative explanation of any disparity is minimized.

Statistical confidence in availability results.

Keen Independent did not draw a sample of companies to research in the availability analysis. The study team attempted to reach each firm in the relevant geographic market area identified by ODOT or by Dun & Bradstreet as possibly doing business within relevant subindustries (as described in Chapter 6).

Keen Independent examined the accuracy of the initial list of potentially available firms and the number of firms successfully reached from that list in the availability survey effort.

- The list of potentially available firms very accurately depicted the universe of highway construction and engineering-related firms in the relevant marketplace. One measure is whether firms receiving the most ODOT work were represented on the list of firms to be contacted in the availability survey. Keen Independent examined firms receiving at least \$300,000 in ODOT contract dollars (423 firms representing more than 96 percent of total contract dollars). All of those firms were on Keen Independent’s list to be contacted in the availability survey if they were located in the relevant geographic market area and performed relevant work. This demonstrates the comprehensiveness and accuracy of the initial list of firms to be contacted in the availability survey.
- The second issue is how many of the potentially availability firms were successfully contacted in the availability survey. Keen Independent was able to reach more than 7,100 businesses on the list of potentially available companies, a very large number of responses. The “response rate” to the survey was very high: more than 57 percent of the businesses on the initial list were successfully contacted. Figure 7-14 explains the high level of statistical confidence in the availability results due to the number of responses and the high response rate. (Of the firms on the availability list that received at least \$300,000 in ODOT work, 72 percent were successfully contacted.)

Figure 7-14.

Confidence interval for availability results

Keen Independent conducted telephone interviews with more than 7,100 business establishments — a very large number of businesses for this type of research. Of those businesses, 1,639 were available for ODOT transportation contracts. If the results are treated as a sample, the reported 27.2 percent representation of MBE/WBEs among all available firms is accurate within about +/- 0.7 percentage points. By comparison, many survey results for proportions reported in the popular press are accurate within +/- 5 percentage points. (Keen Independent applied a 95 percent confidence level and a finite population correction factor when determining these confidence intervals.)

- The third issue is whether there was any indication that availability results would differ if 100 percent of the firms the study team attempted to contact were successfully reached.
 - The very high response rate reduces this possibility.
 - The survey approach also minimizes this possibility. There were multiple callbacks at different times of day and different days of the week to reach companies that didn't respond to the first contact, and interviewees were given multiple ways to complete a survey (phone, online, fax, email). Interviewers clearly identified that they were calling as part of an ODOT-sponsored study. Efforts to address potential language barriers also minimized the possibility of under-reaching certain groups. (The study team switched to a Spanish-language introduction if there were associated language barriers. Because of this step, language barriers presented a difficulty in conducting the survey for only 11 companies due to languages such as Russian or Romanian.)
 - Finally, Keen Independent reviewed whether there was any difference in response rates for minority- and women-owned firms compared with other firms. As discussed in Appendix D, Keen Independent performed this analysis by comparing the representation of minority- and women-owned firms in the initial list and the representation in the set of successfully contacted firms. Ownership information for firms in both lists came from D&B ownership records for those firms. Minority- and women-owned firms were 7.4 percent of firms in the initial list and 8.0 percent of firms successfully contacted (based solely on D&B information on ownership). The consistency in these results suggests minimal potential for any non-response bias affecting the availability results.

In sum, it is reasonable to view the quality of the availability data as approaching that of a “population” of available firms.

Statistical confidence in utilization results. Keen Independent also attempted to compile a complete “population” of ODOT transportation contracts and subcontracts for the study period. The study team successfully examined each contract and subcontract in the study period included in the ODOT data and was able to code firms receiving those contracts and subcontracts as minority-owned (by group), white women-owned or majority-owned. There was no sampling of the contract data.

The study team performed in-depth research on ownership status of all firms obtaining at least \$10,000 of ODOT transportation-related work during the study period. Keen Independent also coded ownership of firms below this threshold, but did not perform in-depth research on every firm. ODOT and the External Stakeholder Group also reviewed firm ownership information. Although inaccuracies in ownership information are possible, it is extremely unlikely that they could materially affect utilization results.

In sum, it is appropriate to use the utilization results as highly accurate information reflecting a population of ODOT transportation contracts and subcontracts.

Therefore, one might consider any disparity identified when comparing overall utilization with availability to be “statistically significant.”

Additional analysis of statistical confidence in results of the disparity analysis. As outlined below, the study team also used a sophisticated statistical simulation tool to examine whether there were a sufficient number of contracts and subcontracts examined to be confident that results indicating disparities could not be easily replicated by chance in contract awards.

Monte Carlo analysis. One can be more confident in making certain interpretations from the disparity results if they are not easily replicated by chance in contract awards. For example, if there were only 10 ODOT contracts examined in the disparity study, one might be concerned that any resulting disparity might be explained by random chance in the award of those contracts.

Figure 7-15 describes Keen Independent’s use of Monte Carlo analysis to statistically examine this issue.

Results. Figure 7-16 presents the results from the Monte Carlo analysis as they relate to the statistical significance of disparity analysis results for MBEs and WBEs for all contracts.

The Monte Carlo simulations did not replicate the disparities for WBEs in any of the 10,000 simulation runs. Therefore, one can be confident that chance in contract and subcontract awards can be rejected as an explanation for the observed disparity for white women-owned businesses in ODOT contracts.

Figure 7-15. Monte Carlo analysis

The study team began the Monte Carlo analysis by examining individual contract elements. For each contract element, Keen Independent’s availability database provided information on individual businesses that were available for that contract element, based on type of work, contractor role, contract size and location of the work.

The study team assumed that each available firm had an equal chance of “receiving” that contract element. For example, the odds of an MBE receiving that contract element were equal to the number of MBEs available for the contract element divided by the total number of firms available for the work. The Monte Carlo simulation then randomly chose a business from the pool of available businesses to “receive” that contract element.

The Monte Carlo simulation repeated the above process for all other elements in a particular set of contracts. The output of a single Monte Carlo simulation for all contract elements in the set represented simulated utilization of MBEs for that set of contract elements.

The entire Monte Carlo simulation was then repeated 10,000 times. The combined output from all 10,000 simulations represented a probability distribution of the overall utilization of MBEs and utilization of WBEs if contracts were awarded randomly based on the availability of businesses working in the Oregon transportation contracting industry.

The Monte Carlo simulations replicated the disparity for minority-owned firms in three of the 10,000 simulation runs, or less than 0.1 percent of the time. Applying a 95 percent confidence level for “statistical significance,” the disparity for minority-owned firms is statistically significant, and one can reject chance in contract awards as the explanation of the disparity.

It is important to note that this test may not be necessary to establish statistical significance of results (see discussion in Figure 7-14 and elsewhere in this chapter), and it may not be appropriate for very small populations of firms.⁶

Figure 7-16.
Monte Carlo results for MBEs and WBEs for ODOT FHWA- and state-funded contracts, October 2010–September 2014

	MBE	WBE
Disparity index	70	52
Number of simulation runs out of 10,000 that replicated observed utilization	3	0
Probability of observed disparity occurring due to "chance"	< 0.1 %	< 0.1 %
Reject chance in awards of contracts as a cause of disparity?	Yes	Yes

Source: Keen Independent from data on ODOT and LPA FHWA- and state-funded contracts, October 2010-September 2014.

⁶ Even if there were zero utilization of a particular group, Monte Carlo simulation might not reject chance in contract awards as an explanation for that result if there were a small number of firms in that group or a small number of contracts and subcontracts included in the analysis. Results can also be affected by the size distribution of contracts and subcontracts.