SECTION IV.
Summary of Utilization and Disparity Analysis for SANDAG Contracts

The Federal DBE Program requires federal aid recipients to determine the percentage of the overall annual DBE goal that can be achieved through neutral means and the percentage, if any, to be achieved through race- and gender-based measures.

One way of examining what can be achieved through neutral means is to analyze relative utilization of minority- and women-owned firms on locally-funded transportation contracts, which do not have DBE contract goals. Certain FTA-funded contracts can be reviewed as well — SANDAG changed its implementation of the Federal DBE Program in May 2006.¹

Utilization Analysis
As outlined in Figure IV-1, “utilization” of minority- and women-owned firms refers to the percentage of contract dollars going to MBE/WBEs. BBC examined utilization of minority- and women-owned firms as prime contractors and subcontractors in SANDAG transportation contracts. The study period was 2003 through 2007. BBC’s analysis of MBE/WBE utilization goes beyond what SANDAG currently reports to the USDOT:

- In addition to utilization of certified DBEs, BBC examined utilization of minority- and women-owned firms including firms that are too large to be certified as DBEs and those that have never sought DBE certification. (Reasons for studying MBE/WBEs including those not currently certified as DBEs are discussed in Section III.) The disparity analysis performed at the end of this section focuses solely on minority- and women-owned firms, not DBE-certified firms.

- The study team collected data on subcontractor utilization in a consistent fashion for DBEs, MBE/WBEs and majority-owned firms to be able to accurately report the share of subcontract dollars that went to DBE and MBE/WBE firms for sets of contracts with and without DBE contract goals. Data collection procedures are summarized in Section II and explained in greater detail in Appendix C.

¹ SANDAG reported aspirational levels of participation for DBEs in bid documents for FTA-funded contracts after it changed its implementation of the DBE contract goals program. The “voluntary” DBE goals were for informational purposes and did not require any action on the part of the bidder. SANDAG discontinued reporting any DBE goals on FTA-funded contracts in early 2007.
Federally-funded transportation contracts when DBE goals/good faith efforts program was in place. Prior to moving to an all race- and gender-neutral implementation of the Federal DBE Program, SANDAG was setting DBE contract goals for FTA-funded contracts — prime contractors bidding on SANDAG projects would need to include DBE participation at a level to meet the goals or show good faith efforts to do so. SANDAG could also set a 0 percent DBE goal on a FTA-funded contract.

BBC examined 64 FTA-funded SANDAG contracts from 2003 through April 2006. Counting data available for both prime contracts and subcontracts, these FTA-funded contracts involved 159 contract elements for analysis of the period when SANDAG operated a DBE contract goals program. These contracts totaled $86 million. During this period, about 22 percent of prime contract and subcontract dollars went to minority- and women-owned firms.

Figure IV-2 portrays DBE and MBE/WBE utilization on FTA-funded contracts before and after May 1, 2006. DBE utilization is shown in the bottom portion of each bar. The difference between DBE utilization and total MBE/WBE utilization (the statistic shown on top of the bar) corresponds to MBE/WBEs that were not certified as DBEs. For example, from 2003 through April 2006, BBC found that about 8 percent of FTA-funded contract dollars went to firms certified as DBEs. About 14 percent of the contract dollars went to MBE/WBEs that were not certified as DBEs.

Federally-funded contracts from May 2006 through December 2007. SANDAG changed its implementation of the Federal DBE Program on May 1, 2006. There were 30 FTA-funded contracts from May 2006 through December 2007 within the procurement areas BBC examined in the SANDAG disparity study. Including subcontracts, BBC analyzed 77 FTA-funded contract elements during this time period.

MBE/WBEs obtained 21 percent of the FTA-funded contract dollars for May 2006 through December 2007, about the same as MBE/WBE utilization for FTA-funded contracts from 2003 to April 2006 when the DBE contract goals/good faith efforts program was in place. As shown in Figure IV-2, nearly all of the FTA-funded contract dollars that MBE/WBEs received for May 2006–December 2007 went to firms that were certified as DBEs.

Figure IV-2.
MBE/WBE share of prime/subcontract dollars for FTA-funded transportation contracts, before and after May 1, 2006

Note:
Certified DBE utilization.
Number of contracts/subcontracts analyzed is 159 for 2003–April 2006 FTA-funded contracts and 77 for May 2006–Dec. 2007 FTA-funded contracts.
For more detail and results by group, see Figures E-2 and E-3 in Appendix E.

Source:
BBC Research & Consulting from data on SANDAG contracts.
**DBE and MBE/WBE utilization on locally-funded contracts.** BBC studied MBE/WBE utilization for 57 locally-funded transportation contracts totaling $37 million for 2003 through 2007. Including subcontracts, there were 94 contract elements identified for these procurements.

Figure IV-3 displays MBE/WBE utilization on locally-funded contracts and on FTA-funded contracts prior to May 2006. MBE/WBE utilization on locally-funded contracts was about 13 percent, considerably below MBE/WBE utilization on FTA-funded contracts when the DBE contract goals/good faith efforts program was in operation. Utilization of certified DBEs on locally-funded contracts was 6 percent.

**Figure IV-3.**
**MBE/WBE share of prime contract/subcontract dollars for transportation contracts, FTA vs. local funding**

*Note: Certified DBE utilization.
Number of contracts/subcontracts analyzed is 159 for 2003–April 2006 FTA-funded contracts and 94 for 2003–2007 locally-funded contracts.
For more detail and results, see Figures E-2 and E-4 in Appendix E.*

*Source:* BBC Research & Consulting from data on SANDAG contracts.

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2 “Locally-funded” contracts are those without USDOT funds. As such, some contracts with state funding could be included.
Utilization of firms by race and gender group. Among MBE/WBEs, Asian-Pacific American-owned firms received most of the MBE/WBE prime/subcontract dollars on SANDAG contracts examined in the disparity study. No firms identified as Native American-owned obtained SANDAG prime contracts or subcontracts in the procurement areas studied by BBC. WBEs, Hispanic American-owned firms, African American-owned businesses, and Subcontinent Asian American-owned firms received some SANDAG contract dollars.

Figure IV-4 provides utilization results for MBE/WBEs and separately for DBEs.

**Figure IV-4.**
DBE and MBE/WBE share of prime/subcontract dollars for transportation contracts, by race/ethnicity/gender

<table>
<thead>
<tr>
<th></th>
<th>Federally-funded contracts</th>
<th>Locally-funded contracts</th>
<th>Total 2003-2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBE/WBEs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American-owned</td>
<td>0.8%</td>
<td>2.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Asian-Pacific American-owned</td>
<td>12.9</td>
<td>17.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Subcontinent Asian American-owned</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Hispanic American-owned</td>
<td>4.4</td>
<td>1.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Native American-owned</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total MBE</td>
<td><strong>20.7%</strong></td>
<td><strong>20.2%</strong></td>
<td><strong>11.7%</strong></td>
</tr>
<tr>
<td>WBE (white women-owned)</td>
<td>1.0</td>
<td>0.6</td>
<td>1.2</td>
</tr>
<tr>
<td>Total MBE/WBE</td>
<td><strong>21.6%</strong></td>
<td><strong>20.8%</strong></td>
<td><strong>12.9%</strong></td>
</tr>
<tr>
<td>DBEs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American-owned</td>
<td>0.1%</td>
<td>2.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Asian-Pacific American-owned</td>
<td>3.0</td>
<td>17.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Subcontinent Asian American-owned</td>
<td>2.6</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Hispanic American-owned</td>
<td>2.0</td>
<td>0.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Native American-owned</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total MBE</td>
<td><strong>7.6%</strong></td>
<td><strong>20.2%</strong></td>
<td><strong>4.8%</strong></td>
</tr>
<tr>
<td>WBE (white women-owned)</td>
<td>0.3</td>
<td>0.4</td>
<td>1.0</td>
</tr>
<tr>
<td>White male-owned DBE</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total DBE</td>
<td><strong>7.9%</strong></td>
<td><strong>20.6%</strong></td>
<td><strong>5.9%</strong></td>
</tr>
</tbody>
</table>

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

For more detail, see Figures E-2, E-3, E-4 and E-38 in Appendix E.


Source: BBC Research & Consulting from data on SANDAG contracts.
Asian-Pacific American-owned firms. BBC further analyzed SANDAG’s utilization of Asian-Pacific American-owned firms on FTA-funded contracts and found that seven Asian-Pacific American-owned firms received FTA-funded prime- or subcontracts. Three firms accounted for the vast majority of those dollars (95% of FTA-funded dollars going to Asian-Pacific American-owned firms):

- Simon Wong Engineering (four contracts or subcontracts for a total of $10.4 million);
- LAN Engineering (two contracts or subcontracts for $8.0 million); and
- Katz Okitsu and Associates (six contracts or subcontract for $0.7 million).

Disparity Analysis
Interpreting any differences in MBE/WBE utilization for contracts with and without goals is difficult because the types and sizes of contracts and subcontracts may differ. Also, utilization of MBE/WBEs may be below what would be expected even with DBE goals in place.

The following disparity analysis controls for differences in types and sizes of prime contracts and subcontracts and how these factors affect relative availability of minority- and women-owned firms for a specific set of contracts. If disparities exist, disparity analysis helps to identify the types of contracts and subcontracts and the race/ethnicity/gender groups showing disparities.

Methodology. BBC compared percentage utilization of minority- and women-owned firms by race/ethnicity/gender with the share of contract dollars that would be expected to go to minority- and women-owned firms based on BBC availability analysis.

Example of a disparity analysis table. The balance of this section of the report, and the disparity results presented in the sections that follow, are based on the detailed disparity tables found in Appendix E. Therefore, it is useful to describe the detailed analysis from which BBC draws results.

Figure IV-5 on page IV-7 presents an example of a disparity table from Appendix E (it is labeled Figure E-2 in Appendix E). This disparity table pertains to SANDAG FTA-funded construction and engineering contracts awarded for 2003 through April 2006. It includes dollars for prime contractors and subcontractors. The parameters of the set of contracts being examined are noted in the heading of each table. Appendix E contains similar tables for different sets of contract elements. Each set of contract elements is for a specific:

- Funding source (all funding sources, FTA-funded or locally-funded);
- Type of work (combined contracts, all construction-related, all engineering-related, and other goods and services);
- Time period, which is how BBC knows whether or not the DBE contract goals program was in operation; and
- Contract role (combined prime/sub, only prime contracts, and only subcontracts).

Certain analyses focus on small contracts when noted. The final table in Appendix E presents availability information limited to potential DBEs (MBE/WBE firms that have not graduated from the DBE Program and did not appear to have revenue exceeding the size limits for DBE certification).
**Utilization.** Each of the disparity tables includes the same columns and rows, as discussed below.

- Column (a) of the table notes the number of prime contracts and subcontracts in the set of contracting data under examination (in this case, 159 total contracts and subcontracts).

- Column (b) identifies the dollars examined in the set of contract elements. Because “prime contract dollars” refers to the dollars retained by the prime contractor after subtracting subcontract dollars, the combined prime/subcontract analyses equals the total contract amounts. Dollars are reported in thousands. This disparity table examines contract dollars totaling $85,913,000.

- Column (c) provides dollars of utilization by group after pro-rating any money going to firms identified as MBEs for which specific race/ethnicity was not available (see footnote on Figure IV-5). In this disparity table, there was only one contract element for $15,000 to an MBE for which race/ethnicity could not be determined.

- Column (d) portrays relative utilization on a percentage basis. Each percentage in column (d) is calculated by dividing dollars going to that group in column (c) by the total dollars in the set of contracts or subcontracts as shown in row (1) of column (c).

Figure IV-5 also has rows for each firm type:

- “All firms” in row (1) pertains to combined majority-, minority- and women-owned firms.

- “MBEs” refers to all minority-owned firms, whether or not they are DBE-certified.

- “WBEs” are white women-owned firms.

Data for individual minority groups add up to the total for MBEs (in some cases, numbers may not perfectly add due to rounding). Note limitations on race/ethnicity information sometimes mean that totals for Asian American-owned firms cannot always be fully disaggregated into Asian-Pacific American-owned firms and Subcontinent Asian American-owned firms.

The bottom half of Figure IV-5 reports utilization for firms that were certified as DBEs. BBC included a row for white male-owned DBEs even though no such DBE-certified firms appeared to have received SANDAG contracts or subcontracts examined in this study. DBE utilization data reported in the bottom half of Figure IV-5 were prepared independently from SANDAG and will not match DBE utilization reports prepared by SANDAG.
Relative availability. BBC developed an estimate of relative availability of firms for each race/ethnicity/gender group following the procedures described in Section III. Availability results, represented as a percentage, provide a benchmark with which to evaluate relative utilization for that group for a particular set of contracts. BBC separately calculated relative availability for each group and set of contracts and subcontracts.

Column (e) of Figure IV-5 reports relative availability for this disparity table:

- Based on the types of work involved in the prime contracts and subcontracts included in the Figure IV-5 analysis, plus the sizes of these contract elements and their geographic location, BBC estimated that about 24 percent of FTA-funded contract dollars from 2003 through April 2006 would be expected to go to minority- and women-owned firms after considering each firm’s specialization, interest and qualifications in prime versus subcontract work, geographic reach and bid capacity of firms to perform this work (and whether or not the firm was in business in the year of the contract).

- This result can be found in row (2) of column (e) in Figure IV-5.
### Figure IV-5.
#### MBE/WBE utilization, availability and disparity analysis for prime contracts/subcontracts on FTA-funded transportation contracts, 2003-April 30, 2006

<table>
<thead>
<tr>
<th>Firm Type</th>
<th>Number of contracts (subcontracts)</th>
<th>Total dollars after Unknown MBE allocation (thousands)*</th>
<th>Actual utilization (column c / column c, row 1) %</th>
<th>Utilization benchmark (availability) %</th>
<th>Difference (column d - column e) %</th>
<th>Disparity index (d / e) x 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) All firms</td>
<td>159</td>
<td>$85,913</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) MBE/WBE</td>
<td>57</td>
<td>$18,589</td>
<td>21.6</td>
<td>23.8</td>
<td>-2.1</td>
<td>91.0</td>
</tr>
<tr>
<td>(3) WBE</td>
<td>12</td>
<td>$823</td>
<td>1.0</td>
<td>8.6</td>
<td>-7.6</td>
<td>11.1</td>
</tr>
<tr>
<td>(4) MBE</td>
<td>45</td>
<td>$17,766</td>
<td>20.7</td>
<td>15.2</td>
<td>5.5</td>
<td>136.3</td>
</tr>
<tr>
<td>(5) African American-owned</td>
<td>3</td>
<td>$681</td>
<td>0.8</td>
<td>1.5</td>
<td>-0.7</td>
<td>54.1</td>
</tr>
<tr>
<td>(6) Total Asian American-owned</td>
<td>18</td>
<td>$13,280</td>
<td>15.5</td>
<td>7.3</td>
<td>8.2</td>
<td>200+</td>
</tr>
<tr>
<td>(7) Asian-Pacific American-owned</td>
<td>14</td>
<td>$11,077</td>
<td>12.9</td>
<td>6.2</td>
<td>6.7</td>
<td>200+</td>
</tr>
<tr>
<td>(8) Subcontinent Asian American-owned</td>
<td>4</td>
<td>$2,213</td>
<td>2.6</td>
<td>1.1</td>
<td>1.5</td>
<td>200+</td>
</tr>
<tr>
<td>(9) Hispanic American-owned</td>
<td>23</td>
<td>$3,793</td>
<td>4.4</td>
<td>6.0</td>
<td>-1.6</td>
<td>73.4</td>
</tr>
<tr>
<td>(10) Native American-owned</td>
<td>0</td>
<td>$0</td>
<td>0.0</td>
<td>0.4</td>
<td>-0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>(11) Unknown MBE</td>
<td>1</td>
<td>$15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(12) DBE-certified</td>
<td>35</td>
<td>$6,795</td>
<td>7.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(13) Woman-owned DBE</td>
<td>4</td>
<td>$258</td>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(14) Minority-owned DBE</td>
<td>31</td>
<td>$6,537</td>
<td>7.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(15) African American-owned DBE</td>
<td>1</td>
<td>$75</td>
<td>0.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(16) Total Asian American-owned DBE</td>
<td>15</td>
<td>$4,765</td>
<td>5.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(17) Asian-Pacific American-owned DBE</td>
<td>11</td>
<td>$2,552</td>
<td>3.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(18) Subcontinent Asian American-owned DBE</td>
<td>4</td>
<td>$2,213</td>
<td>2.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(19) Hispanic American-owned DBE</td>
<td>15</td>
<td>$1,697</td>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(20) Native American-owned DBE</td>
<td>0</td>
<td>$0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(21) Unknown DBE-MBE</td>
<td>0</td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(22) White male-owned DBE</td>
<td>0</td>
<td>$0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(23) Unknown DBE</td>
<td>0</td>
<td>$0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Spreadsheet rounds numbers to nearest thousand dollars or tenth of one percent. WBE is white women-owned firms.

**Source:** BBC Research & Consulting Disparity Analysis.
Differences between utilization and availability. The first step in analyzing whether there was a disparity between the relative utilization of a particular group and its relative availability is to subtract percentage utilization from percentage availability.

- As reported in row (2), column (f) of Figure IV-5, utilization was 2.1 percentage points below availability.

It is sometimes difficult to interpret absolute differences between relative utilization and relative availability, especially when utilization and availability are very small. Therefore, BBC also calculated a “disparity index,” which divides percentage utilization by percentage availability and multiplies the result by 100. An index of “100” means that there is “parity” between relative utilization and availability for a particular group. An index below 100, especially below 80, may indicate a substantial disparity.

- Column (g) in the disparity tables provides the disparity index for each group. For example, the disparity index of 91 means that overall MBE/WBE utilization for FTA-funded contracts was close to what would be expected given the relative availability of minority- and women-owned firms to perform that work.

Note that all percentages in the disparity tables were rounded to the nearest tenth of 1 percent after making all calculations. Percentages correctly add and subtract, even though the rounding may make actual sums appear to differ by one tenth of 1 percent. In addition, the disparity index is derived from the detailed data for percentage utilization and availability before any rounding.

Results when disparity indices are very large or when availability is zero. BBC applied the following rules when the disparity indices calculated were exceedingly large or could not be calculated because no firms were identified as available for the contracts under examination:

- When BBC’s calculations showed a disparity index exceeding 200, BBC reported an index of “200+.”

- When there was no utilization and 0 percent availability for a particular group for a set of contracts, BBC reported “parity” between utilization and availability (indicated by a disparity index of “100”).

- When BBC identified utilization for a group but 0 availability (which could occur for many reasons, including the fact that one or more utilized firms were out of business by the time of BBC’s availability survey), BBC reported a disparity index of “200+.”

The DBE utilization statistics at the bottom of Figure IV-5 are provided as reference. BBC did not conduct disparity analyses for certified DBEs for the reasons described in Section III.

Results. Disparity analysis results shown in Figure IV-5 reflect the influence of DBE contract goals. Any lack of disparity for a particular MBE/WBE group could suggest that the DBE contract goals program was effective in increasing utilization for that group.

The information presented in the balance of this report section, as well as Section V, explores (a) whether or not there would be disparities in SANDAG’s utilization of MBE/WBEs absent a DBE goals program and (b) why any disparities between utilization and availability for a specific group may be occurring.
Figure IV-6 summarizes the results of the disparity analysis in Figure IV-5 using disparity indices by race/ethnic/gender group from column (g).

- A line down the center of the graph shows an index of 100, which indicates “parity” between relative utilization and relative availability for a group.
- Indices under 100 may indicate a disparity between utilization and availability.
- The graph ends at a disparity index of 200 even though, in some cases, disparity indices exceed 200.
- For reference, a line is drawn at an index of 80. In the context of employment law, some courts use 80 as a benchmark for what may indicate a substantial disparity.

There was no substantial underutilization of MBE/WBEs as a whole for FTA-funded contracts when SANDAG’s DBE contract goals/good faith efforts program was in place (disparity index of 91). There were, however, disparities for WBEs (disparity index of 11), African American-owned firms (index of 54), Hispanic American-owned firms (index of 73) and Native American-owned firms (disparity index of 0).

**Figure IV-6.**
**Disparity indices for MBE/WBE utilization as prime contractors and subcontractors on FTA-funded transportation contracts, 2003—April 2006**

Note: Number of contracts/subcontracts analyzed is 159. For more detail, see Figure E-2 in Appendix E.

Source: BBC Research & Consulting.
Federally-funded contracts from May 2006 through December 2007. MBE/WBE utilization for FTA-funded contracts from May 2006 through December 2007 was 21 percent, slightly less than what would be expected given overall MBE/WBE availability for these contracts (24%). Asian-Pacific American-owned firms accounted for most of this utilization, although about $1 million went to African American-owned firms.

Figure IV-7 below compares disparity indices for specific MBE/WBE groups for FTA-funded contracts when DBE contract goals were in place (darker bar) and for FTA-funded contracts when DBE goals were not in place (lighter bar). There were disparities for WBEs and African American-, Subcontinent Asian American-, Hispanic American- and Native American-owned firms.

**Figure IV-7.**
Disparity indices for MBE/WBE utilization as prime contractors and subcontractors on FTA-funded transportation contracts before and after May 1, 2006

Note:
Number of contracts/subcontracts analyzed is 159 for 2003–April 2006 and 77 for May 2006–Dec. 2006.
For more detail, see Figures E-2 and E-3 in Appendix E.

Source:
BBC Research & Consulting.
Locally-funded contracts. Overall MBE/WBE utilization for locally-funded contracts (13%) was about one-half of what would be expected based on MBE/WBE availability for these contracts. The disparity index for MBE/WBEs on SANDAG locally-funded contracts is 49.

Figure IV-8 compares disparity indices for specific MBE/WBE groups for 2003-April 2006 FTA-funded contracts (dark bar) and 2003-2007 locally-funded contracts (lighter bar). There were disparities for each MBE/WBE group except for Asian Pacific American-owned firms.

**Figure IV-8.** Disparity indices for MBE/WBE utilization as prime contractors and subcontractors on FTA- and locally-funded transportation contracts

Note:
Number of contracts/subcontracts analyzed was 159 for FTA-funded and 94 for locally-funded contracts.
For more detail and results, see Figure E-2 and E-4 in Appendix E.

Source:
BBC Research & Consulting.

![Disparity indices chart](chart.png)
**Combined FTA- and locally-funded contracts.** Figure IV-9 shows combined results for FTA- and locally-funded contracts for 2003 through 2007. Overall, MBE/WBEs received 20 percent of SANDAG contract dollars, about 81 percent of what would be expected based on availability for this work. There were large disparities for WBEs, African American-owned firms, Hispanic American-owned firms and Native American-owned businesses.

![Chart](image)

The disparity analyses presented here suggest the need for additional exploration of factors behind the relatively high overall utilization of MBE/WBEs on SANDAG’s FTA-funded contracts when the DBE goals program applied and contracts without DBE contract goals, especially locally-funded contracts.

The next element of BBC’s disparity analysis is to determine the likelihood that these disparities may have occurred by chance. Section V examines other factors that may explain SANDAG’s relative success for some groups and the disparities identified for other MBE/WBE groups.

**Analysis of Statistical Significance of Any Disparities**

Statistical significance of any disparities relates to the degree a researcher can reject “random chance” as a cause of the disparities. Often, chance in sampling of data is the factor that researchers consider in determining statistical significance of results. However, BBC attempted to contact every firm in Southern California in the set of firms identified by Dun & Bradstreet as doing business within relevant subindustries, as described in Appendix D. Further discussion of sampling as it relates to availability results is presented in Figure IV-10.

The utilization analysis also approaches a “population” of contracts. Therefore, any disparity found when comparing overall utilization with availability would be “statistically significant.” BBC used a more sophisticated analytical tool to examine statistical significance of disparity results.
Figure IV-10. Confidence intervals for availability measures

BBC conducted telephone interviews with more than 11,000 business establishments—a number of completed interviews that is so large as to often be treated as a “population,” not a sample. BBC’s analysis of the confidence interval around the estimate of MBE/WBE representation among all firms available for Consortium transportation work, 37.7 percent, is accurate within about +/- 1.5 percentage points at the 95 percent confidence level (BBC applied the finite population correction factor when determining confidence intervals). At this level of accuracy in the availability analysis, a disparity index of 96 could technically be “statistically significant.” BBC’s availability figures for most minority groups are even more accurate. (By comparison, most survey results for proportions reported in the popular press are +/- 5 percentage points.)

Monte Carlo simulation. There are many opportunities in the sets of prime contracts and subcontracts BBC analyzed for minority- and women-owned firms to be awarded work. Some contract elements involve large dollars and others may be only a few thousand dollars. Monte Carlo analysis is a useful tool because there are many individual chances at winning work and each has a different payoff.

The technique works as follows:

- The Monte Carlo simulation randomly chooses a firm for a contract element from the pool of available firms for that element. For example, the odds of a woman-owned firm receiving that contract element are equal to the number of women-owned firms available for that work divided by the total number of firms available for that contract element.

- A single Monte Carlo simulation run repeats the above process for all other elements in that set of contracts. The output of a single Monte Carlo run is simulated utilization of minority- and women-owned firms, by group, for that set of contract elements for that run.

- The Monte Carlo simulation is then repeated 1 million times for each set of contracts.

- BBC applied a 95 percent confidence level statistical standard, which is equivalent to a “two standard deviation test” sometimes applied by the courts when evaluating statistical significance. Applying a two-tailed test, the maximum number of simulations that could equal or fall below actual utilization is 25,000 out of 1 million, or 2.5 percent of total simulation runs, for a result to be statistically significant.

Results. Output of a Monte Carlo simulation is the number of runs out of 1 million that produce a result observed in the actual data. As shown in Figure IV-11, one can reject chance in contract awards as a cause of the disparities for WBEs for FTA-funded contracts from 2003 through April 2006. The Monte Carlo analysis could replicate the disparities for WBEs on these contracts in fewer than 1 percent of the simulations. For locally-funded contracts, chance in contract awards cannot be rejected as an explanation for the disparities for WBEs.

Because of the small number of prime contracts and subcontracts, and the diverse distribution of contract sizes, chance in contract awards might still be considered as an explanation for the observed disparities.
Monte Carlo simulation results for other disparities identified in Section IV indicate that chance cannot be rejected as the cause of the disparities for MBE/WBEs overall, or for specific minority groups.

SANDAG may still review the disparity indices to draw inferences concerning its implementation of the Federal DBE Program. Other local governments receiving USDOT funds that award a small number of transportation contracts may face similar issues. SANDAG must use some caution, however, in interpreting disparity results, especially for smaller sets of contracts and subcontracts.

**Figure IV-11.**
**Statistical significance of disparities in WBE utilization**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Disparity index</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Number of simulation runs out of 1 million that replicated observed disparity</td>
<td>6,868</td>
<td>61,997</td>
</tr>
<tr>
<td>Odds of observing disparity occurring due to “chance”</td>
<td>0.69%</td>
<td>6.20%</td>
</tr>
<tr>
<td>Reject chance in awards of contracts as a cause of disparity?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: BBC Research & Consulting.

**Summary**

Key information from the summary analysis of MBE/WBE utilization and availability includes:

- Overall MBE/WBE utilization on SANDAG FTA-funded contracts for 2003 through April 2006 (about 22%) was close to what would be expected based on MBE/WBE availability for these contracts (24%). Results were similar for FTA-funded contracts from May 2006 through December 2007.

- Asian-Pacific American-owned firms had relatively high utilization for FTA-funded contracts during the study period (although three firms accounted for most of those dollars). There were large disparities between utilization and availability for other MBE/WBE groups.

- There were large disparities in overall MBE/WBE utilization for locally-funded contracts. Except for Asian-Pacific American-owned firms, each group of MBE/WBEs had utilization well below relative availability. Disparity indices ranged from 0 to 28 for these MBE/WBE groups.

This information, alone, may not be sufficient for SANDAG to make decisions as to future implementation of the Federal DBE Program. Using additional disparity analysis and other research, BBC explores why any disparities may be occurring in the following section of the report. BBC also examines SANDAG efforts that may be contributing to the high level of overall MBE/WBE utilization for some groups for some sets of contracts. Appendix E provides considerable additional information concerning utilization of MBE/WBEs and certified DBEs on SANDAG projects.