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## **Instructions for determining Underutilization:**

### **I. Methodology**

This tool works for all agencies regardless of size; if an agency has less than 30 employees IN A SINGLE JOB CATEGORY (NOT the total for the agency), the tool will return a result of "Inconclusive; sample too small" for Females, African-Americans and Hispanics in that job category. One common method for calculating Underutilization includes the 4/5th Rule (80%) paired with the Flip Flop Rule. This is the method used to calculate Underutilization in this document. All pages are protected and formulae hidden.

### **II. Layout of Spreadsheet**

The spreadsheet consists of 11 TABs consisting of:

- 1.) Table of Contents (by TAB)
- 2.) Instructions
- 3.) Data Inputs (User entries and Government defaults)
- 4.) Final Results (of Underutilization Calculations)
- 5.) Officials/Administrators Calculations
- 6.) Administrative Support Calculations
- 7.) Service Maintenance Calculations
- 8.) Professional Calculations
- 9.) Protective Service Calculations
- 10.) Skilled Craft Calculations
- 11.) Technical Calculations

The last seven TABs of calculations are the Job Categories listed on the Statewide Civilian Workforce Composition.

### **III. Information on pertinent TABs**

It is only necessary for the User to visit two tabs, 'Data Inputs' and 'Final Results'.

Tab 3: 'Data Inputs' consists of two tables: one for Agency Employment Data to be entered, the other is Availability information from the government, which is already populated.

Tab 4: 'Final Results' displays the Utilization conclusions for those Job Categories entered for your agency.

Tabs 5 - 11: Each tab completes the sequence of computations required to compute the results of Underutilization for each Job Category, as appropriate. They are visible to the user for their information only, if wanted. It is not necessary for the user to access these tabs.

### **IV. Entering Data:**

- a.) Data is entered by the user in the 'Agency Employment Data' table on Tab 3 for each Job Category as appropriate for the Agency. This area is shaded green and has Data Validation comments in each cell, identifying the required Job Category and Demographic information.
- b.) - All Job Categories and/or Demographics not used by the agency should have cells set to zero. -  
The table has been initially set to zeroes, and must remain so if not used for input data.
  - Before entering data, ensure that all cells in the table have maintained this status.
  - Do not set cells to blanks. If correcting an entry, input a zero; do not delete.
- c.) For each appropriate Job Category, the number of Males, Females, Whites, African-Americans, and Hispanics is entered. All demographics must be entered. Do not enter only the protected groups. The total number of employees is the sum of Males + Females.
- d.) Once data is manually entered, the appropriate Calculation tabs will populate and complete the computations, using embedded formulae. The 'Final Results' tab will then automatically populate with the final conclusions.

**For any potential underutilization, the agency must develop a specific recruitment strategy in a Recruitment Plan.**

**Data Inputs**

Instructions: Enter the appropriate number of employees in locations B5 through F11

**Agency Employment Data**

<b>Job category:</b>	<b>Male</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Employees</b>
Officials/Administrators (A)	19	41	4	56	60
Administrative Support (C)	15	113	13	115	128
Service Maintenance (M)	0	0	0	0	0
Professional (P)	82	127	27	182	209
Protective Services (R)	10	4	0	14	14
Skilled Craft (S)	0	0	0	0	0
Technical (T)	10	5	2	13	15
<b>Agency Grand Totals (#)</b>	<b>136</b>	<b>290</b>	<b>46</b>	<b>380</b>	<b>426</b>
<b>Agency Grand Totals (%'s)</b>	<b>31.92</b>	<b>68.08</b>	<b>10.80</b>	<b>89.20</b>	<b>100.00</b>

**Availability information from Government source (%'s)**

<b>Workforce Composition (%)</b>	<b>Male</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>
Officials/Administrators (A)	61.20	38.80	8.10	22.40
Administrative Support (C)	28.40	71.60	14.30	36.40
Service Maintenance (M)	48.00	52.00	13.20	52.40
Professional (P)	45.50	54.50	10.90	20.30
Protective Services (R)	77.00	23.00	20.80	30.90
Skilled Craft & Operatives (S)	88.00	12.00	10.20	51.50
Technical (T)	44.80	55.20	14.40	29.20

Table1, Statewide Civilian Workforce Composition, Texas Labor Code Sections 21.0035  
 Source: 2016 1-Year PUMS file from the American Community Survey (ACS), US Census

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## **Underutilization Final Results:**

Instructions: Listed are the final results for each Job Category. Those categories not chosen will display "Job Category Empty".

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[Service Maintenance](#)

[Professional](#)

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### **Officials/Administrators**

Female - Passed 4/5ths Rule

African-American - Passed 4/5ths Rule

Hispanic - Passed 4/5ths Rule

### **Administrative Support**

Female - Passed 4/5ths Rule

African-American - Potential Underutilization

Hispanic - Passed 4/5ths Rule

### **Service Maintenance**

Female - Job Category empty

African-American - Job Category empty

Hispanic - Job Category empty

### **Professional**

Female - Passed 4/5ths Rule

African-American - Passed 4/5ths Rule

Hispanic - Passed 4/5ths Rule

### **Protective Services**

Female - Passed 4/5ths Rule

African-American - Potential Underutilization

Hispanic - Passed 4/5ths Rule

### **Skilled Craft**

Female - Job Category empty

African-American - Job Category empty

Hispanic - Job Category empty

### **Technical**

Female - Potential Underutilization

African-American - Passed 4/5ths Rule

Hispanic - Passed 4/5ths Rule

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**Officials/Administrative Calculations TAB5**

Instructions: The following tables are a mathematical sequence of 5 steps and must be completed as such. The hyperlinks are in case you want to review a section. Control-Home keys will return to top of page at any time.

**On this Page:**

- [Step 1. Percent Calculations](#)
- [Step 2. 4/5th \(80%\) Rule](#)
- [Step 3. Preliminary Results based on 4/5th Rule](#)
- [Step 4. Flip Flop Rule](#)
- [Step 5. Preliminary Results based on Flip Flop Rule](#)

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 1. Percent Calculations:</b>					
# In Job Category	60	41	4	56	60
% Job category	--	68.33	6.67	93.33	100.00
Workforce Composition (%)	--	38.80	8.10	22.40	30.50
Expected #'s	--	23.28	4.86	13.44	18.30

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 2. 4/5th (80%) Rule :</b>					
4/5th Rule (80%)	--	1.7612	0.8230	4.1667	3.2787
Fail 4/5ths? (See Note 1)	--	No	No	No	No

Note 1) If '4/5th rule(80%)' is less than 0.80, 4/5ths Rule fails.

**Step 3. Preliminary Results based on 4/5th Rule:**  
 Female - Pass 4/5ths Rule  
 African-American - Pass 4/5ths Rule  
 Hispanic - Pass 4/5ths Rule

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 4. Flip Flop Rule</b>					
Adjusted # in Job Category	--	--	--	--	--
Adjusted Job category %	--	--	--	--	--
Adjusted 4/5th Rule (80%)	--	--	--	--	--
Fail/Pass Flip Flop Rule (>= 0.80)? (See Note 2)	--	--	--	--	--

Note 2) If results reverse (pass), indication is that the sample size is too small. Analysis is Inconclusive.

**Step 5. Preliminary Results based on Flip Flop Rule:**  
 Female N/A for Flip Flop Rule  
 African-American N/A for flip Flop Rule  
 Hispanic - N/A for Flip Flop Rule

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## Administrative Support Calculations TAB6

Instructions: The following tables are a mathematical sequence of 5 steps and must be completed as such. The hyperlinks are in case you want to review a section. Control-Home keys will return to top of page at any time.

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[Step 4. Flip Flop Rule](#)

[Step 5. Preliminary Results based on Flip Flop Rule](#)

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 1. Percent Calculations</b>					
# In Job Category	128	113	13	115	128
% Job category	--	88.28	10.16	89.84	100.00
Workforce Composition (%)	--	71.60	14.30	36.40	50.70
Expected #'s	--	91.65	18.30	46.59	64.90

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 2. 4/5th (80%) Rule</b>					
4/5th Rule (80%)	--	1.2330	0.7102	2.4682	1.9724
Fail 4/5ths? (See Note 1)	--	No	Yes	No	No

Note 1) If '4/5th rule(80%)' is less than 0.80, 4/5ths Rule fails.

### Step 3. Preliminary Results based on 4/5th Rule:

Female - Pass 4/5ths Rule  
 African-American- Fail 4/5ths Rule  
 Hispanic - Pass 4/5ths Rule

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 4. Flip Flop Rule</b>					
Adjusted # in Job Category	--	--	14	--	--
Adjusted Job category %	--	--	10.94	--	--
Adjusted 4/5th Rule (80%)	--	--	0.7649	--	--
Fail/Pass Flip Flop Rule ( $\geq 0.80$ )? (See Note 2)	--	--	Fail	--	--

Note 2) If results reverse (pass), indication is that the sample size is too small. Analysis is Inconclusive.

### Step 5. Preliminary Results based on Flip Flop Rule:

Female N/A for Flip Flop Rule  
 African-American - Potential Underutilization  
 Hispanic - N/A for Flip Flop Rule

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**Service Maintenance Calculations TAB7**

Instructions: The following tables are a mathematical sequence of 5 steps and must be completed as such. The hyperlinks are in case you want to review a section. Control-Home keys will return to top of page at any time.

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[Step 3. Preliminary Results based on 4/5th Rule](#)

[Step 4. Flip Flop Rule](#)

[Step 5. Preliminary Results based on Flip Flop Rule](#)

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 1. Percent Calculations</b>					
<b># In Job Category</b>	0	n/a	n/a	n/a	n/a
<b>% Job category</b>	--	n/a	n/a	n/a	n/a
<b>Workforce Composition (%)</b>	--	52.00	13.20	52.40	65.60
<b>Expected #'s</b>	--	n/a	n/a	n/a	n/a

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 2. 4/5th (80%) Rule</b>					
<b>4/5th Rule (80%)</b>	--	n/a	n/a	n/a	n/a
<b>Fail 4/5ths? (See Note 1)</b>	--	n/a	n/a	n/a	n/a

Note 1) If '4/5th rule(80%)' is less than 0.80, 4/5ths Rule fails.

<b>Step 3. Preliminary Results based on 4/5th Rule:</b> Female-Job Category empty African-american-Job Category empty Hispanic-Job Category empty
--

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 4. Flip Flop Rule</b>					
<b>Adjusted # in Job Category</b>	--	n/a	n/a	n/a	n/a
<b>Adjusted Job category %</b>	--	n/a	n/a	n/a	n/a
<b>Adjusted 4/5th Rule (80%)</b>	--	n/a	n/a	n/a	n/a
<b>Fail/Pass Flip Flop Rule (&gt;= 0.80)? (See Note 2)</b>	--	n/a	n/a	n/a	n/a

Note 2) If results reverse (pass), indication is that the sample size is too small. Analysis is Inconclusive.

<b>Step 5. Preliminary Results based on Flip Flop Rule:</b> Female - Job Category empty African-American - Job Category empty Hispanic - Job Category empty
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## Professional Calculations TAB8

Instructions: The following tables are a mathematical sequence of 5 steps and must be completed as such. The hyperlinks are in case you want to review a section. Control-Home keys will return to top of page at any time.

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[Step 5. Preliminary Results based on Flip Flop Rule](#)

<b>Step 1. Percent Calculations</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b># In Job Category</b>	209	127	27	182	209
<b>% Job category</b>	--	60.77	12.92	87.08	100.00
<b>Workforce Composition (%)</b>	--	54.50	10.90	20.30	101.88
<b>Expected #'s</b>	--	113.91	22.78	42.43	212.94

<b>Step 2. 4/5th (80%) Rule</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b>4/5th Rule (80%)</b>	--	1.1150	1.1852	4.2897	0.9815
<b>Fail 4/5ths? (See Note 1)</b>	--	No	No	No	No

Note 1) If '4/5th rule(80%)' is less than 0.80, 4/5ths Rule fails.

### Step 3. Preliminary Results based on 4/5th Rule:

Female - Pass 4/5ths Rule

African-American - Pass 4/5ths Rule

Hispanic - Pass 4/5ths Rule

<b>Step 4. Flip Flop Rule</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b>Adjusted # in Job Category</b>	--	--	--	--	--
<b>Adjusted Job category %</b>	--	--	--	--	--
<b>Adjusted 4/5th Rule (80%)</b>	--	--	--	--	--
<b>Fail/Pass Flip Flop Rule (&gt;= 0.80)? (See Note 2)</b>	--	--	--	--	--

Note 2) If results reverse (pass), indication is that the sample size is too small. Analysis is Inconclusive.

### Step 5. Preliminary Results based on Flip Flop Rule:

Female N/A for Flip Flop Rule

African-American N/A for flip Flop Rule

Hispanic - N/A for Flip Flop Rule

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**Protective Services Calculations TAB9**

Instructions: The following tables are a mathematical sequence of 5 steps and must be completed as such. The hyperlinks are in case you want to review a section. Control-Home keys will return to top of page at any time.

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[Step 4. Flip Flop Rule](#)

[Step 5. Preliminary Results based on Flip Flop Rule](#)

<b>Step 1. Percent Calculations</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b># In Job Category</b>	14	4	0	14	14
<b>% Job category</b>	--	28.6	0.0	100.0	100.0
<b>Workforce Composition (%)</b>	--	23.00	20.80	30.90	62.17
<b>Expected #'s</b>	--	3.22	2.91	4.33	8.70

<b>Step 2. 4/5th (80%) Rule</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b>4/5th Rule (80%)</b>	--	1.2422	0.0000	3.2362	1.6084
<b>Fail 4/5ths? (See Note 1)</b>	--	No	Yes	No	No

Note 1) If '4/5th rule(80%)' is less than 0.80, 4/5ths Rule fails.

<b>Step 3. Preliminary Results based on 4/5th Rule:</b>
Female - Pass 4/5ths Rule
African-American- Fail 4/5ths Rule
Hispanic - Pass 4/5ths Rule

<b>Step 4. Flip Flop Rule</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b>Adjusted # in Job Category</b>	--	--	1	--	--
<b>Adjusted Job category %</b>	--	--	7.14	--	--
<b>Adjusted 4/5th Rule (80%)</b>	--	--	0.3434	--	--
<b>Fail/Pass Flip Flop Rule (&gt;= 0.80)? (See Note 2)</b>	--	--	Fail	--	--

Note 2) If results reverse (pass), indication is that the sample size is too small. Analysis is Inconclusive.

<b>Step 5. Preliminary Results based on Flip Flop Rule:</b>
Female N/A for Flip Flop Rule
African-American - Potential Underutilization
Hispanic - N/A for Flip Flop Rule

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## Technical Calculations TAB11

Instructions: The following tables are a mathematical sequence of 5 steps and must be completed as such. The hyperlinks are in case you want to review a section. Control-Home keys will return to top of page at any time.

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[Step 5. Preliminary Results based on Flip Flop Rule](#)

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 1. Percent Calculations</b>					
<b># In Job Category</b>	15	5	2	13	15
<b>% Job category</b>	--	33.33	13.33	86.67	100.00
<b>Workforce Composition (%)</b>	--	55.20	14.40	29.20	54.03
<b>Expected #'s</b>	--	8.28	2.16	4.38	8.11

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 2. 4/5th (80%) Rule</b>					
<b>4/5th Rule (80%)</b>	--	0.6039	0.9259	2.9680	1.8507
<b>Fail 4/5ths? (See Note 1)</b>	--	Yes	No	No	No

Note 1) If '4/5th rule(80%)' is less than 0.80, 4/5ths Rule fails.

### Step 3. Preliminary Results based on 4/5th Rule:

Female - Fail 4/5ths Rule

African-American - Pass 4/5ths Rule

Hispanic - Pass 4/5ths Rule

	Total in Job Category	Female	African-American	Hispanic	Total Minorities
<b>Step 4. Flip Flop Rule</b>					
<b>Adjusted # in Job Category</b>	--	6.00	--	--	--
<b>Adjusted Job category %</b>	--	40.00	--	--	--
<b>Adjusted 4/5th Rule (80%)</b>	--	0.7246	--	--	--
<b>Fail/Pass Flip Flop Rule (&gt;= 0.80)? (See Note 2)</b>	--	Fail	--	--	--

Note 2) If results reverse (pass), indication is that the sample size is too small. Analysis is Inconclusive.

### Step 5. Preliminary Results based on Flip Flop Rule:

Female - Potential Underutilization

African-American N/A for flip Flop Rule

Hispanic - N/A for Flip Flop Rule

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### Skilled Craft Calculations TAB10

Instructions: The following tables are a mathematical sequence of 5 steps and must be completed as such. The hyperlinks are in case you want to review a section. Control-Home keys will return to top of page at any time.

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[Step 2. 4/5th \(80%\) Rule](#)

[Step 3. Preliminary Results based on 4/5th Rule](#)

[Step 4. Flip Flop Rule](#)

[Step 5. Preliminary Results based on Flip Flop Rule](#)

<b>Step 1. Percent Calculations</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b># In Job Category</b>	0	n/a	n/a	n/a	n/a
<b>% Job category</b>	--	n/a	n/a	n/a	n/a
<b>Workforce Composition (%)</b>	--	12.00	10.20	51.50	61.70
<b>Expected #'s</b>	--	n/a	n/a	n/a	n/a

<b>Step 2. 4/5th (80%) Rule</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b>4/5th Rule (80%)</b>	--	n/a	n/a	n/a	n/a
<b>Fail 4/5ths? (See Note 1)</b>	--	n/a	n/a	n/a	n/a

Note 1) If '4/5th rule(80%)' is less than 0.80, 4/5ths Rule fails.

**Step 3. Preliminary Results based on 4/5th Rule:**

Female-Job Category empty  
 African-american-Job Category empty  
 Hispanic-Job Category empty

<b>Step 4. Flip Flop Rule</b>	<b>Total in Job Category</b>	<b>Female</b>	<b>African-American</b>	<b>Hispanic</b>	<b>Total Minorities</b>
<b>Adjusted # in Job Category</b>	--	n/a	n/a	n/a	n/a
<b>Adjusted Job category %</b>	--	n/a	n/a	n/a	n/a
<b>Adjusted 4/5th Rule (80%)</b>	--	n/a	n/a	n/a	n/a
<b>Fail/Pass Flip Flop Rule (&gt;= 0.80)? (See Note 2)</b>	--	n/a	n/a	n/a	n/a

Note 2) If results reverse (pass), indication is that the sample size is too small. Analysis is Inconclusive.

**Step 5. Preliminary Results based on Flip Flop Rule:**

Female - Job Category empty  
 African-American - Job Category empty  
 Hispanic - Job Category empty

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