

THE STATISTICAL ANALYSIS

Sample Workforce Analysis

The Division of Personnel Services has developed a program to provide statistical workforce analysis for each agency. The initial analysis has been prepared for the entire agency. A base period analysis was created from data available for occupied positions as of March 31, 1996. Updates/progress reports to these analyses are prepared quarterly and the Division of Personnel Services will forward those to the agencies for their use in their EEO/AA and diversity initiatives. (A sample of a workforce availability analysis follows)

The State of Kansas – Workforce/Availability Analysis

Page 1-5 evaluates the agency as the employer.

Page 1: The first analysis on page one provides data for the identified Unit without considering the EEO categories. This evaluation compares the composition of the workforce (using data for positions filled by employees designated as “A” (Active) in the SHARP system and the percent of time worked to calculate the workforce) to the composition of the Labor Market, comprised of similar occupations, in the counties and contiguous counties where each position is located unique to the Unit. This information is based on the 2000 Census data.

The area identified as (1) shows the data for the most recent quarter.

The area identified as (2) shows base data for comparison purposes.

The area identified as (3) provides data on the available workforce in Kansas

The lower portion of page one provides a recap of the analysis of the unit computed on each EEO Category and indicates any inference of adverse impact for each category.

The area identified as (4) outlines the number of people need is each category
Needed to correct any inference of adverse impact.

The area identified as (5) provides number of people in each EEO category that
will be eligible to retire within the specified years.

Pages 2 – 5: Provide detailed analysis of the workforce in each EEO Category. For each category the following information is provided:

The area identified as (6) shows workforce data for the most recent quarter:
including FTE, % of females, and % of minorities;

The area identified as (7) shows workforce data for the comparative baseline.

The area identified as (8) shows the % of female and minority in the available
civilian workforce.

The area identified as (9) indicates whether there is any inference of adverse
Impact. “NH” indicates there is no inference of adverse impact. If there is

a number in those boxes, it indicates the number of people needed to eliminate an inference of adverse impact. (See Glossary for definition of Adverse Impact)

Pages 6 – 8: Shows the distribution of pay rates for each of the EEO Categories
(Identified as (10))

Annual salaries were standardized for comparative analysis purposes by multiplying the hourly rate, as carried in the SHARP data file, by 2080. Please note that the annualization is for comparative purposes only and is not meant to reflect annual amounts actually paid.

Page 9: This data shows employment percentages by age by gender for each of the
EEO Categories (Identified as (11))
Ages were calculated as of the date the data compilation occurred.

Statistical Analysis

Evaluating Underutilization

For this report, underutilization is said to exist where the representation of race, sex, or ethnic group in an occupation differs significantly from the group's representation in the Relevant Labor Market. In more precise terms, underutilization may be "inferred" where the proportion of workers in a race, sex, or ethnic group for a given occupation differs significantly from the proportion of the group in the relevant labor market. The underlying assumption is that employers are hiring or have selected persons from the population of available qualified persons on a random basis, such that each person is equally likely to be selected regardless of race, sex or ethnic identification. Operating from this assumption of random selection, it is appropriate to hypothesize that for a specific race, sex, or ethnic group within a given occupation, the proportion of workers in an agency (p) is equal to the proportion of workers (P_m) in the relevant labor market for that occupation, such that any deviation between p and P_m may be attributed solely to chance.

In statistical analysis this hypothesis is referred to as the "null hypothesis" (NH) and is stated algebraically as: $P(\text{workers in agency}) - P_m(\text{workers in Relevant Labor Market}) = 0$ or $P = P_m$.

In the evaluation of underutilization the observed data for " p " and " P_m " is analyzed to determine whether to reject the null hypothesis. The extent to which " p " may differ from " P_m " must be determined before the null hypothesis may be rejected. This decision is cast in terms of probability. The probability of a large discrepancy between the observed values of " p " and " P_m " is highly unlikely if, in fact, there is no difference between the proportion of workers in an agency and the proportion of workers in the relevant labor market.

In the workforce analysis report, a .05 level of significance has been adopted. (Adverse impact is defined as occurring when the selection rate for a racial, sex, or ethnic group is less than four-fifths (80%) of the rate for the group with the highest selection ratio.) Thus, the null hypothesis is rejected if the probability of obtaining the observed difference between " p " and " P_m " by chance is more than 5%, and an inference of underutilization is made.

Mathematical Calculation

In analyzing the differences between " p " and " P_m ", two factors determine the statistical model to be used: the number of persons employed in the target occupation by a given unit (the sample size) and the certainty of the relevant labor market availability figure

(Pm). With respect to the latter factor, the 2000 Census data is based on samples from the populations and, hence, the relevant labor market availability figure is an estimate, carrying with it a certain amount of sampling variance. In cases where the sample size (n) is reasonably large and “Pm” is an estimate, the test of significance of a difference between two independent proportions is appropriate.

The calculation of the standard error (Spm) for the difference between proportions is determined. The standard error is an index of the variability of samples means (in this case, “p” and “Pm”) in a sampling distribution. More precisely, it provides a uniform or standard measure for pinpointing where a particular proportion difference falls on the normal curve.

The formula for the standard error is:

$$\text{Spm} = \text{Square root } (((p*(1-p))/n) + ((Pm * (1-Pm)/Nm)))$$

Where Spm = standard error of the difference between p and Pm

n = total number of employees in a given occupation

Nm = total number of persons in the relevant labor market

p = proportion of workers in a specific group in an agency

Pm = proportion of workers in the group in the relevant labor market.

By computing the standard error and finding the difference between the two proportions (p and Pm) one can determine the statistical significance of this difference by converting it to a z score. The formula for z is as follows:

$$(P - Pm)/Spm$$

Finally, the computed value of z is compared to the critical value, found in the z tables, to determine if the null hypothesis will not be rejected. A .05 level of significance has been adopted for the purposes of this report. At the .05 level of significance, z is always equal to a plus or minus 1.96 for a two-tailed test and a plus or minus 1.645 for a one tailed test.

Example: An employer in a given agency determines that 22% of the 240 statisticians employed in the agency are women, and that in the relevant labor market (Census data) 29% of the 3,800 statisticians are women. Is there a significant difference between the proportion of women statisticians in the employer’s agency and the proportion of women statisticians in the relevant labor market? Calculating the standard error Spm we obtain:

$$\text{Spm} = \text{Square root } (((.22*(1-.22))/240) + ((.29*(1-.29)/3800)))$$

$$\text{Spm} = .027$$

Calculating **z** we obtain

$$\mathbf{z = (p-P_m)/S_{p_m}}$$

$$\mathbf{z = (.22-.29)/.027=2.59}$$

$$\mathbf{a = .05(two-tailed\ test)}$$

$$\mathbf{z = -2.59, p\ is\ less\ than\ .05)}$$

Since the computed **z** (-2.59) is less than -1.96, the employer would reject the null hypothesis that $p = P_m$ and conclude that the proportion of women statisticians in the agency differs significantly from the expected value in the relevant labor market. An inference of underutilization can be made since the difference between p and P_m cannot be attributed solely to chance.

Department of Administration
Department Code

Department Code									BLACK & WHITE	ASIAN & WHITE	AIAN* & WHITE	AIAN* & BLACK
ENTIRE UNIT				WHITE	BLACK	ASIAN	AIAN*	NHOPI*				
Work Force as: December 31, 2005	TOTALS		HISPANIC	Non - HISPANIC								
	FTE	602.48	29.62	533.24	29.00	7.62	3.00					
	%Female	44.76%	1.49%	39.02%	2.82%	1.10%	0.33%					
	%Minority	11.49%	4.92%		4.81%	1.26%	0.50%					
Work Force as of start of plan period: December 31, 2003	FTE	653.01	27.62	580.77	32.00	8.62	4.00					
	%Female	45.72%	1.38%	39.35%	3.37%	1.17%	0.46%					
	%Minority	11.06%	4.23%		4.90%	1.32%	0.61%					
	Changes to date:		(2.00)	47.53	3.00	1.00	1.00					

AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations

%Female	49.39%	2.26%	44.43%	1.44%	0.69%	0.32%	0.00%	0.02%	0.02%	0.13%	0.01%
%Minority	10.68%	4.18%		3.67%	1.17%	0.63%	0.01%	0.07%	0.10%	0.53%	0.03%

RECAP Inference of adverse impact by EEO Category (Targets for consideration)				
	MINORITIES			WHITE Female
	Male	Female		
Officials and Managers - (A)				
Professional - (B)				20.69
Technicians - (C)		0.36		0.21
Protective Service: Sworn - (D)				
Protective Service: Non-Sworn - (E)				
Administrative Support - (F)				32.79
Skilled Craft - (G)	4.52			
Service Maintenance - (H)				
	4.52	0.36		53.69

Persons Eligible for Full Retirement Through KPERS			
During: 2006	Additional: 2007	2008	TOTAL
3	1	2	6
18	5	4	27
5	1	1	7
1	1		2
7	3	1	11
3	4	2	9
8	1	2	11
45	16	12	73

* AIAN = American Indian and Alaskan Native
NHOPI = Native Hawaiian and Other Pacific Islander

STATE OF KANSAS - WORKFORCE / AVAILABILITY ANALYSIS

Department of Administration

Department Code

Officials and Managers - (A)

	TOTALS		HISPANIC	WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
				Non - HISPANIC									
Work Force as of:	FTE	105.00	3.00	99.00	2.00		1.00						
December 31, 2005	%Female	45.71%		43.81%	0.95%		0.95%						
	%Minority	5.71%	2.86%		1.90%		0.95%						
Work Force as of start of plan period:	FTE	120.00	3.00	111.00	4.00	1.00	1.00						
December 31, 2003	%Female	45.00%		40.83%	2.50%	0.83%	0.83%						
	%Minority	7.50%	2.50%		3.33%	0.83%	0.83%						
Changes to date				(12.00)	(2.00)	(1.00)							

AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations

	%Female	25.38%	0.49%	23.27%	0.71%	0.32%	0.37%	0.04%		0.00%	0.10%	0.04%	0.04%
	%Minority				2.11%	1.14%	0.69%	0.04%					
<i>Inference of adverse impact</i>		Female	NH										
		Minority	NH										

Professional - (B)

	TOTALS		HISPANIC	WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
				Non - HISPANIC									
Work Force as of:	FTE	209.00	9.00	189.00	5.00	5.00	1.00						
December 31, 2005	%Female	49.28%	1.44%	44.98%	0.96%	1.91%							
	%Minority	9.57%	4.31%		2.39%	2.39%	0.48%						
Work Force as of start of plan period:	FTE	242.25	7.00	225.25	4.00	4.00	2.00						
December 31, 2003	%Female	46.34%	1.24%	42.62%	0.83%	1.24%	0.41%						
	%Minority	7.02%	2.89%		1.65%	1.65%	0.83%						
Changes to date				2.00	(36.25)	1.00	(1.00)						

AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations

	%Female	59.18%	1.21%	53.54%	2.30%	1.39%	0.27%		0.04%	0.04%	0.18%	0.01%	0.21%
	%Minority	7.98%	2.11%		2.96%	1.80%	0.31%	0.00%					
<i>Inference of adverse impact</i>		Female	20.69										
		Minority	NH										

STATE OF KANSAS - WORKFORCE / AVAILABILITY ANALYSIS

Department of Administration

Department Code

Technicians - (C)

			WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
	TOTALS	HISPANIC	Non - HISPANIC									
Work Force as of: December 31, 2005	FTE	3.00	3.00									
	%Female											
	%Minority											
Work Force as of start of plan period: December 31, 2003	FTE	4.00	4.00									
	%Female	25.00%	25.00%									
	%Minority											
Changes to date			(1.00)									

AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations

	%Female	18.85%	0.25%	16.73%	0.38%	1.38%						0.10%
	%Minority	11.93%	2.26%		4.78%	3.52%	0.75%			0.25%		0.35%
<i>Inference of adverse impact</i>	Female	0.57										
	Minority	0.36										

Protective Service: Sworn - (D)

			WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
	TOTALS	HISPANIC	Non - HISPANIC									
Work Force as of: December 31, 2005	FTE											
	%Female											
	%Minority											
Work Force as of start of plan period: December 31, 2003	FTE											
	%Female											
	%Minority											
Changes to date												

AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations

	%Female											
<i>Inference of adverse impact</i>	Female	N/A										
	Minority	N/A										

STATE OF KANSAS - WORKFORCE / AVAILABILITY ANALYSIS

Department of Administration

Department Code

				WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
<u>Protective Service: Non-Sworn - (E)</u>	TOTALS		HISPANIC	Non - HISPANIC									
Work Force as of:	FTE												
December 31, 2005													
Work Force as of start of plan period:													
December 31, 2003	%Female												
	%Minority												
Changes to date													
AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations													
	%Female												
	%Minority												
<u>Inference of adverse impact</u>	Female	N/A											
	Minority	N/A											

				WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
<u>Administrative Support - (F)</u>	TOTALS		HISPANIC	Non - HISPANIC									
Work Force as of:	FTE	121.00	5.00	105.00	11.00								
December 31, 2005	%Female	68.60%	2.48%	58.68%	7.44%								
	%Minority	13.22%	4.13%		9.09%								
Work Force as of start of plan period:	FTE	123.60	6.00	104.60	13.00								
December 31, 2003	%Female	74.11%	2.43%	63.59%	8.09%								
	%Minority	15.37%	4.85%		10.52%								
Changes to date				(1.00)	(2.00)								
AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations													
	%Female	95.69%	3.15%	87.58%	3.06%	0.38%	0.65%	0.00%	0.08%	0.08%	0.52%	0.00%	0.20%
	%Minority	8.79%	3.30%		3.43%	0.42%	0.69%	0.00%	0.08%	0.10%	0.55%	0.00%	0.21%
<u>Inference of adverse impact</u>	Female	32.79											
	Minority	NH											

STATE OF KANSAS - WORKFORCE / AVAILABILITY ANALYSIS

Department of Administration

Department Code

Skilled Craft - (G)

Work Force as of:
December 31, 2005Work Force as of start of plan period:
December 31, 2003

			WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
	TOTALS	HISPANIC	Non - HISPANIC									
	FTE	76.10	3.00	72.10	1.00							
	%Female	8.73%		8.73%								
		5.26%	3.94%		1.31%							
		77.04	2.00	75.04								
	%Female	9.92%		9.92%								
	%Minority	2.60%	2.60%									
	Changes to date		1.00	(2.94)	1.00							

AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations

%Female	5.71%	0.21%	5.02%	0.15%	0.15%	0.09%					0.04%	0.04%
%Minority	11.19%	5.69%		3.12%	0.46%		0.01%	0.12%	0.09%	0.58%		

Inference of adverse impact

Female	NH
Minority	4.52

Service Maintenance - (H)

Work Force as of:
December 31, 2005Work Force as of start of plan period:
December 31, 2003

			WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
	TOTALS	HISPANIC	Non - HISPANIC									
	FTE	88.38	9.62	65.14	10.00	2.62	1.00					
	%Female	32.88%	3.39%	19.73%	5.66%	2.96%	1.13%					
	%Minority	26.30%	10.88%		11.31%	2.96%	1.13%					
	FTE	86.12	9.62	60.88	11.00	3.62	1.00					
	%Female	37.23%	3.48%	20.25%	8.13%	4.20%	1.16%					
	%Minority	29.31%	11.17%		12.77%	4.20%	1.16%					
	Changes to date			4.26	(1.00)	(1.00)						

AVAILABLE CIVILIAN WORK FORCE - 16 years and older with similar occupations

%Female	30.01%	4.03%	23.11%	1.55%	0.64%	0.28%		0.05%	0.02%	0.21%	0.02%	0.12%
%Minority	23.63%	11.68%		7.98%	1.25%	1.07%		0.18%	0.08%	0.76%	0.06%	0.55%

Inference of adverse impact

Female	NH
Minority	NH

STATE OF KANSAS - WORKFORCE / AVAILABILITY ANALYSIS

Department of Administration

Department Code

10 ANNUAL
All EEO Categories
December 31, 2005
All EEO Categories

Distribution of Salaries within	EEO Cat.	FEMALE	HISPANIC	WHITE	BLACK	ASIAN	AIAN	NHOPI	BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
				Non - HISPANIC									
16.0 - 19.9	8.69%	47.25%	16.46%	65.16%	11.46%	5.00%	1.91%						
20.0 - 24.9	8.63%	44.23%	7.69%	78.85%	13.46%								
25.0 - 32.9	20.13%	53.82%	3.30%	90.10%	6.60%								
33.0 - 42.9	25.70%	40.49%	3.23%	92.90%	3.23%	0.65%							
43.0 - 54.9	21.62%	43.95%	3.07%	90.79%	2.30%	3.07%	0.77%						
55.0 - 69.9	12.74%	40.07%	2.61%	96.09%			1.30%						
70.0 - Plus	2.49%	40.00%	13.33%	86.67%									
Officials and Managers - (A)													
\$0.10 - 15.9													
		100.00%		100.00%									
		58.33%		97.22%	2.78%								
		38.10%		95.24%	4.76%								
		35.48%	3.23%	93.55%			3.23%						
70.0 - Plus	13.33%	35.71%	14.29%	85.71%									
Professionals - (B)													
		100.00%		100.00%									
		54.90%	7.84%	84.31%	5.88%	1.96%							
		45.84%	3.80%	89.55%	1.90%	3.80%	0.95%						
		43.17%	2.19%	97.81%									
70.0 - Plus	0.48%	100.00%		100.00%									

STATE OF KANSAS - WORKFORCE / AVAILABILITY ANALYSIS

Department of Administration

Department Code

SALARY

(In thousands 000)

Distribution of Salaries within								BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
			WHITE	BLACK	ASIAN	AIAN	NHOPI					
EEO Cat.	FEMALE	HISPANIC	Non - HISPANIC									

Technicians - (C)

\$0.10 - 15.9												
16.0 - 19.9												
20.0 - 24.9												
25.0 - 32.9												
33.0 - 42.9	100.00%			100.00%								
43.0 - 54.9												
55.0 - 69.9												
70.0 - Plus												

Protective Service: Sworn - (D)

16.0 - 19.9												
20.0 - 24.9												
25.0 - 32.9												
33.0 - 42.9												
43.0 - 54.9												
55.0 - 69.9												
70.0 - Plus												

Protective Service: Non-Sworn - (E)

\$0.10 - 15.9												
16.0 - 19.9												
20.0 - 24.9												
25.0 - 32.9												
33.0 - 42.9												
43.0 - 54.9												
55.0 - 69.9												

STATE OF KANSAS - WORKFORCE / AVAILABILITY ANALYSIS

Department of Administration

Department Code

**ANNUAL
SALARY**

(In thousands 000)

Distribution of Salaries within							BLACK & WHITE	ASIAN & WHITE	AIAN & WHITE	AIAN & BLACK	Bal 2+ RACES
	FEMALE	HISPANIC	WHITE	BLACK	ASIAN	AIAN	NHOPI	Non - HISPANIC			
EEO Cat.	FEMALE	HISPANIC									

Administrative Support - (F)

\$0.10 - 15.9												
16.0 - 19.9	7.85%	89.47%	10.53%	78.95%	10.53%							
20.0 - 24.9	21.49%	61.54%	7.69%	80.77%	11.54%							
25.0 - 32.9	58.26%	70.21%	2.84%	88.65%	8.51%							
		60.00%		93.33%	6.67%							

\$0.10 - 15.9												
	3.94%		33.33%	66.67%								
20.0 - 24.9	13.14%	10.00%		100.00%								
25.0 - 32.9	43.05%	11.48%	3.05%	93.89%	3.05%							
33.0 - 42.9	38.55%	6.41%	3.41%	96.59%								
43.0 - 54.9	1.31%			100.00%								
55.0 - 69.9												
70.0 - Plus												

Service Maintenance - (H)

\$0.10 - 15.9												
16.0 - 19.9	45.10%	40.74%	16.61%	61.77%	12.54%	6.57%	2.51%					
20.0 - 24.9	18.10%	37.50%	12.50%	62.50%	25.00%							
25.0 - 32.9	10.18%	33.33%	11.11%	77.78%	11.11%							
33.0 - 42.9	23.22%	13.74%		100.00%								
43.0 - 54.9	3.39%	33.33%		100.00%								
55.0 - 69.9												
70.0 - Plus												

STATE OF KANSAS - WORKFORCE / AGE ANALYSIS

Department of Administration

Department Code

11

EEO All EEO Categories	MALE							FEMALE						
	Under 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	Over 65	Under 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	Over 65
December 31, 2005	11.60%	9.71%	9.44%	10.22%	10.28%	3.32%	0.66%	7.68%	7.97%	8.76%	9.89%	7.74%	1.66%	1.08%
A	7.62%	4.76%	10.48%	4.76%	19.05%	4.76%	2.86%	6.67%	11.43%	6.67%	12.38%	8.57%		
B	12.44%	8.13%	7.18%	11.00%	7.66%	3.83%	0.48%	9.21%	8.13%	12.44%	8.97%	6.70%	2.39%	1.44%
C	33.33%		66.67%											
D														
E														
F	7.44%	10.74%	4.96%	4.13%	4.13%			13.22%	10.74%	8.26%	16.53%	13.64%	3.31%	2.89%
G	16.93%	22.18%	14.30%	18.24%	11.75%	7.88%				3.78%	2.47%	2.47%		
H	14.71%	7.49%	13.58%	16.63%	13.58%	1.13%		4.53%	6.79%	7.78%	6.72%	5.93%	1.13%	