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IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF ARIZONA

Roy and Josie Fisher, et al.,

Plaintiffs

CV 74-90 TUC DCB
(Lead Case)

v.

ANNUAL REPORT

United States of America,

Plaintiff-Intervenor,

CV 74-204 TUC DCB
(Consolidated Case)

v.

Anita Lohr, et al.,

Defendants,

and

Sidney L. Sutton, et al.,

Defendants-Intervenors,

Maria Mendoza, et al.

Plaintiffs,

United States of America,

Plaintiff-Intervenor,

v.

Tucson Unified School District No. One, et al.

Defendants.

**RACIAL (AFRICAN-AMERICAN) AND ETHNIC (HISPANIC) COMPOSITION OF
TUSD'S 2010 AND 2012 TEACHERS & ADMINISTRATORS**

Mary Dunn Baker, Ph.D.
Managing Director
ERS Group
September 30, 2013

I. INTRODUCTION

Assignment and Conclusions. Counsel for the Tucson Unified School District (TUSD or the District) asked me to conduct statistical analyses to determine whether the racial (African-American or Black) and ethnic (Hispanic) composition of TUSD's Teachers and Administrators employed in 2010 and in 2012 is consistent with relevant external labor market data. When African-American and Hispanic availability for Teacher and Administrator jobs is measured using the aggregate 2010 EEO-5 Report for Arizona public schools,¹ the data reveal that, in general, TUSD employed more African-American and Hispanic Teachers and Administrators than would be expected given the rates at which members of these demographic groups are employed in similar occupations throughout the state. Therefore, the analyses fail to produce any evidence whatsoever that African-Americans and Hispanics were underrepresented in TUSD's Teacher and Administrator workforces in 2010 and 2012. In fact, to the contrary, the data for each of the Teacher and Administrator categories yield patterns that suggest that these demographic groups were employed in numbers consistent with, or statistically significantly

¹ The U.S. Equal Employment Opportunity Commission and the Office for Civil Rights of the U.S. Department of Education require all public school districts with 100 or more employees to complete the Elementary-Secondary Staff Information Report (EEO-5) biennially, in even numbered years. The survey reports the number of employees by sex and race/ethnicity in each of 18 EEO categories, including Officials, Administrators & Managers; Principals; Assistant Principals (Teaching); Assistant Principals (Non-teaching); Elementary Classroom Teachers; Secondary Classroom Teachers; and Other Classroom Teachers.

The EEOC aggregated and published the 2010 EEO-5 surveys by state.

The 2010 aggregate EEO-5 Report for Arizona, provided at Appendix A, indicates that the survey includes data for 121 school districts.

greater than, their representation among individuals who are likely qualified for and interested in the District's Teacher and Administrator positions.

Credentials. I am a labor economist with extensive experience in statistical analyses of employment practices. Since July 1986, I have been employed by Economic Research Services Group (ERS) in Tallahassee, Florida where I presently serve as a Managing Director. ERS is a research and consulting firm whose professionals work with individuals, government agencies, colleges and universities, corporations and other organizations to analyze outcomes of employment decision-making processes and to compute estimates of the value of alleged economic losses. I have testified in federal courts and other judicial settings about statistical analyses and economic loss estimates that I have prepared on behalf of both plaintiffs and defendants.

For twenty years, I, along with other Ph.D. economists at ERS, have presented seminars on the economics and statistics of employment discrimination and the estimation of the value of economic losses arising from a variety of events and actions. State Bars offer continuing legal education credit for attending these ERS seminars. In addition, on many occasions, I have been invited by organizations such as the American Bar Association's (ABA's) Labor and Employment Section, the ABA's Equal Employment Opportunity Committee, the American Association for Affirmative Action and the Department of Labor's Office of Federal Contract Compliance Programs (OFCCP) to make presentations or conduct workshops on statistical analyses of employment issues and the valuation of economic losses using professionally accepted methods of analysis. An outline of my credentials and a list of cases in which I have given testimony are provided at Appendix B.

II. STATISTICAL COMPARISONS OF THE RACIAL/ETHNIC COMPOSITION OF A WORKFORCE

A workforce analysis is conducted to determine whether the racial/ethnic composition of employees in a given set of jobs is reflective of a particular demographic group's representation in the relevant external labor market. When the percent African-American or Hispanic among workers employed by a specific employer in a given occupation is "close to" their representation among all workers in that occupation in the relevant geographic area, the conclusion is that the racial/ethnic composition of the organization's workforce is consistent with their availability in the relevant occupation and geographic area.

Labor economists and statisticians determine whether the percent African-American or the percent Hispanic in a given workforce is "close enough" to their representation rates among labor force participants who are interested in and qualified for the relevant job by computing the number of standard deviations of the difference between the two proportions. When the number of standard deviations is less than approximately two (technically, ± 1.96), the conclusion is that the organization's workforce is reflective of availability in the relevant occupation and geographic area. When the African-American or Hispanic representation rate in the organization's workforce falls short of the relevant availability rate and the number of standard deviations of the difference is greater than approximately two, the conclusion is that the employer employs statistically significantly fewer African-Americans or Hispanics than would be expected, given their representation among individuals who are interested in and qualified for the occupation at issue. However, when the African-American or Hispanic representation rate in the specific workforce exceeds the relevant external labor market availability rate by approximately two or more standard deviations, the conclusion is that the organization employs statistically significantly more members of the race or ethnic group than would be expected. A

positive and statistically significant difference between the percent African-American or Hispanic employed by a given organization and the relevant representation rate in relevant economy indicates that the employer successfully aggressively recruits members of the demographic group and/or is an “employer of choice” for the racial or ethnic group.

III. DATA

Two types of data are required to conduct an analysis of the racial/ethnic composition of a workforce. First, the number of employees who were employed by the relevant organization in each relevant occupation at a given point in time must be counted by race/ethnicity. Second, an appropriate benchmark (i.e., availability rate) for each demographic group of interest must be established for each relevant occupation.

TUSD provided the information necessary to count employees by occupation and race/ethnicity. Specifically, the District provided its 2010 EEO-5 Report which shows the number of individuals in each sex and race/ethnic group who, as of October 1, 2010, worked in each of the relevant Teacher (Elementary, Secondary and Other Classroom Teachers) and Administrator (Officials, Administrators & Managers, Principals and Assistant Principals) categories. TUSD also provided the same information for individuals who were employed in these Teacher and Administrator categories on November 29, 2012.

The best source of the data necessary to measure African-American and Hispanic representation among individuals who are interested in and qualified for TUSD Teacher and Administrator jobs is the most recent EEO-5 Reports submitted by covered public schools in the relevant geographic area. The EEOC recently published reports that aggregate the EEO-5 data across covered public schools in each state.² Therefore, the most appropriate aggregate EEO-5 Report is for Arizona. The Arizona EEO-5 Report is a reliable source for measurement of Black

² No other EEO-5 aggregations have been published by the EEOC.

and Hispanic availability for the relevant TUSD jobs because individuals who were, in fact, employed in relevant Teacher and Administrator categories have, by assumption of these jobs, demonstrated their interest in and qualification for these occupations.³ Moreover, the fact that they were working in Arizona indicates that they are willing and able to accept employment in this geographic area.⁴

IV. AFRICAN-AMERICAN REPRESENTATION IN TUSD'S TEACHER AND ADMINISTRATOR WORKFORCES

Teachers - 2010. According to its 2010 EEO-5 Report, TUSD employed 1,922 Elementary Classroom Teachers (Elementary Teachers). The 2010 aggregate Arizona EEO-5 Report shows that 2.10% of public school Elementary Teachers in the state were African-American. Therefore, if TUSD employed Blacks in this Teacher category in numbers consistent with African-American representation in this occupation in Arizona, then the District would have employed approximately 40 Black Elementary Teachers ($1,922 \times 0.0210 = 40.44$).

³ Connolly, Peterson and Connolly (2006) state, "[t]he census data that we find most relevant in determining the composition of a skill-segment of a local labor force are those giving, by affinity group and by local geographic area, the numbers of people employed in jobs associated with the skill-segment of interest. These data are appropriate because the assumption of a job by an individual is a reasonably good indication that she or he is interested in and capable of the type of work the job involves." Use of Statistics in Equal Employment Opportunity Litigation. New York: Law Journal Press, pages 5-36.]

⁴ In my opinion, the computation of availability rates using data that includes other states with substantially larger Black populations (e.g., California and Texas) is not appropriate. While individuals who are employed as public school Teachers and Administrators in these other geographic areas are presumably interested in and qualified for the occupation, the African-Americans may be less willing and able to work in Arizona than members of other demographic groups.

Table 1
Analyses of the Racial (African-American) Composition of 2010 TUSD Teachers
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent African-American in Labor Market	Total Number of TUSD Employees	Expected Number of African-American TUSD Employees	Actual Number of African-American TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Elementary Classroom Teachers	2.10%	1,922	40.44	56	15.56	2.47	*
Secondary Classroom Teachers	2.46%	754	18.58	28	9.42	2.21	*
Other Classroom Teachers	2.61%	136	3.55	0	-3.55	-1.91	
Total Teachers	2.22%	2,812	62.56	84	21.44	2.74	*

As Table 1 shows, TUSD actually employed 56 African-American Elementary Teachers in 2010, or nearly 16 more than the predicted. Given that the number of standard deviations of this difference is 2.47 and the actual number of TUSD Black Elementary Teachers is 1.4 times larger than predicted, the conclusion is that TUSD employed Blacks in this Teacher category in numbers statistically significantly and substantially larger than would be expected given their representation in this job in Arizona public schools.

According to its EEO-5 Report, TUSD employed 754 Secondary Classroom Teachers (Secondary Teachers) in 2010. The 2010 aggregate Arizona EEO-5 Report shows that 2.46% of the Secondary Teachers in public schools were African-American. Therefore, if TUSD employed African-Americans in this occupation in numbers proportionate to Black representation in these jobs in Arizona, then the District would have employed approximately 19 African-American Secondary Teachers ($754 \times 0.0246 = 18.58$).

As Table 1 shows, in 2010, TUSD actually employed 28 Black Secondary Teachers, or approximately nine more than predicted. Given that the number of standard deviations of this positive difference is 2.21 and the actual number of TUSD African-American Secondary Teachers is 1.5 times larger than predicted, the conclusion is that, in 2010, TUSD employed

African-Americans in this occupation in numbers statistically significantly and substantially larger than would be expected given their representation in this Teacher category in Arizona public schools.

The TUSD 2010 EEO-5 Report shows that the District employed 136 Other Classroom Teachers (Other Teachers) in that year. According to the 2010 aggregate EEO-5 Report, 2.61% of the Other Teachers in Arizona public schools were African-American. Hence, if TUSD employed Blacks in this occupation in numbers proportionate to their representation in this Teacher category in Arizona, then the District would have employed approximately four African-American Other Teachers ($136 \times 0.0261 = 3.55$).

As Table 1 shows, in 2010, TUSD did not employ any Black Other Teachers, or four fewer than predicted. Given that the number of standard deviations of this four person shortfall is not statistically significant (-1.91 standard deviations), this outcome is reflective of the external labor market data.

When the results of the analyses for the three types of Teachers are aggregated, the model reveals that, among the 2,812 Teachers employed in 2010, the expectation is that approximately 63 would be African-American ($2,812 \times 0.0222 = 62.56$).⁵ In fact, TUSD employed 84 Black Teachers in 2010, or approximately 21 more than predicted. Given that the number of standard deviations of this excess number of African-Americans is 2.74 and the actual number of TUSD Black Teachers is 1.3 times larger than the model predicts, the conclusion is that, in 2010, TUSD employed Black Teachers at a statistically significantly and substantially higher rate than would be expected given African-American representation among Teachers in Arizona public schools.

⁵ The weighted average percent African-American among all Teachers in Arizona public schools is 2.22%. The weighted average African-American availability rate is computed by dividing the total expected number of African-American TUSD Teachers by the total number of TUSD Teachers.

Teachers – 2012. Table 2 reports the results of the 2012 African-American Teacher workforce analysis. Given that the most recent aggregate EEO-5 data that are available are from 2010, the 2012 analyses use the same African-American benchmarks as the 2010 analyses.

Table 2
Analyses of the Racial (African-American) Composition of 11/29/2012 TUSD Teachers
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent African-American in Labor Market	Total Number of TUSD Employees	Expected Number of African-American TUSD Employees	Actual Number of African-American TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Elementary Classroom Teachers	2.10%	1,903	40.04	55	14.96	2.39	*
Secondary Classroom Teachers	2.46%	692	17.05	27	9.95	2.44	*
Other Classroom Teachers	2.61%	135	3.52	2	-1.52	-0.82	
Total Teachers	2.22%	2,730	60.61	84	23.39	3.04	*

As Table 2 shows, the 2012 TUSD data reveal a pattern similar to the 2010 analyses. In 2012:

- TUSD employed statistically significantly and substantially larger numbers of African-American Elementary and Secondary Teachers than would be expected given the representation of this demographic group among individuals employed in these two occupations in public schools across Arizona;⁶ and
- the number of Black Other Teachers employed by TUSD in 2012 is consistent with the external labor market benchmark.⁷

When the results of the 2012 analyses are aggregated across the three Teacher categories, as Table 2 shows, TUSD employed approximately 23 more African-Americans than the model predicts. Given that the number of standard deviations of this positive difference is 3.04 and the actual number of TUSD Black Teachers is 1.4 times larger than predicted, the conclusion is that,

⁶ The actual number of Black TUSD Elementary Teachers is 1.4 times larger than the expectation. The actual number of Black TUSD Secondary Teachers is 1.6 times larger than predicted.

⁷ Table 2 shows that the actual number of TUSD African-American Other Teachers fell one or two people short of the predicted number. This shortfall is not statistically significant (-0.82 standard deviations).

in 2012, TUSD employed statistically significantly and substantially more Black Teachers than would be expected given their representation among Teachers in Arizona public schools.

Administrators – 2010. According to its EEO-5 Report, in 2010, TUSD employed 35 individuals in the Officials, Administrators & Managers category. The aggregate 2010 Arizona EEO-5 Report shows that 3.11% of public school employees who worked in these occupations were Black. Therefore, if TUSD employed African-Americans in these occupations in numbers proportionate to their representation rate in these jobs in Arizona, then the District would have employed approximately one member of this racial group ($35 \times 0.0311 = 1.09$).

Table 3
Analyses of the Racial (African-American) Composition of 2010 TUSD Administrators
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent African-American in Labor Market	Total Number of TUSD Employees	Expected Number of African-American TUSD Employees	Actual Number of African-American TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Officials, Administrators, Mgrs	3.11%	35	1.09	5	3.91	3.81	*
Principals	3.97%	92	3.65	4	0.35	0.19	
Assistant Principals	4.92%	46	2.26	3	0.74	0.50	
Total Administrators	4.05%	173	7.00	12	5.00	1.93	

As Table 3 shows, TUSD actually employed five African-Americans in these jobs, or nearly four more than predicted. Given that the number of standard deviations of this positive difference is 3.81 and the actual number of Black Officials, Administrators & Managers is 4.6 times the prediction, the conclusion is that TUSD employed Blacks in these occupations in numbers statistically significantly and substantially larger than expected.

According to TUSD's 2010 EEO-5 Report, the District employed 92 Principals in that year. The 2010 aggregate Arizona EEO-5 Report indicates that 3.97% of Principals in public schools are African-American. Therefore, if TUSD employed Blacks in this occupation in

numbers proportionate to their representation in Arizona public schools, then the number of African-American Principals would be approximately four.

As Table 3 shows, in 2010, TUSD, in fact, employed four African-Americans in this position. Therefore, Black representation among TUSD's Principals is essentially equal to the expected number.

In 2010, TUSD employed 46 Assistant Principals. The 2010 aggregate Arizona EEO-5 Report shows that 4.92% of the individuals who worked in this job in public schools were Black.⁸ Therefore, if TUSD employed African-Americans in this occupation in numbers consistent with their representation in this labor market, then the District would have employed approximately two Black Assistant Principals.

As Table 3 shows, in 2010, TUSD employed three African-Americans in this job, or approximately one more than predicted.⁹ Given that the actual number exceeded the expectation by less than one whole person, this outcome is consistent with the state data.

When the results of the analyses for the three types of Administrators are aggregated, the model reveals that, among the 173 TUSD employees, the expectation is that seven of these individuals would be African-American. In fact, TUSD employed twelve Black Administrators, or five more than predicted. Given that the number of standard deviations of this positive five person difference is less than approximately two (1.93), the conclusion is that TUSD employed African-American Administrators in numbers reflective of their representation among workers in similar occupations in Arizona public schools. However, as a practical matter, the excess

⁸ This benchmark is the percent Black among Assistant Principals (Teaching) and Assistant Principals (Non-Teaching).

⁹ The actual number of African-American Assistant Principals employed by TUSD in 2010 is 1.3 times larger than the model predicts.

number of TUSD Black Administrators is large – the actual number of 2010 TUSD African-American Administrators was 1.7 times larger than predicted.

Administrators – 2012. Table 4 reports the results of the 2012 African-American Administrator workforce analysis. As Table 4 shows, the 2012 Administrator data reveal a pattern similar to the 2010 analyses. In 2012:

- TUSD employed statistically significantly more Black Officials, Administrators & Managers than would be expected given the representation of this demographic group in the relevant occupations in Arizona public schools;¹⁰ and
- the number of African-American Principals and Assistant Principals employed by the District is consistent with the external labor market benchmarks.

Table 4
Analyses of the Racial (African-American) Composition of 11/29/2012 TUSD Administrators
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent African-American in Labor Market	Total Number of TUSD Employees	Expected Number of African-American TUSD Employees	Actual Number of African-American TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Officials, Administrators, Mgrs	3.11%	45	1.40	8	6.60	5.67	*
Principals	3.97%	88	3.49	5	1.51	0.82	
Assistant Principals	4.92%	54	2.66	3	0.34	0.22	
Total Administrators	4.03%	187	7.55	16	8.46	3.14	*

When the results of the 2012 analyses are aggregated across the three Administrator categories, the data reveal that TUSD employed approximately eight more Blacks than the model predicts.¹¹ Given that the number of standard deviations of this positive difference is 3.14 and the actual number of Black TUSD Administrators is 2.1 times larger than predicted, the conclusion is that, in 2012, the District employed statistically significantly and substantially more African-American Administrators than would be expected given their representation among Administrators in Arizona public schools.

¹⁰ The actual number of Black TUSD Officials, Administrators & Managers is 5.7 times larger than the model predicts.

¹¹ The actual number of African-American TUSD Administrators is 2.1 times larger than the expectation.

V. HISPANIC REPRESENTATION IN TUSD'S TEACHER AND ADMINISTRATOR WORKFORCES

Teachers – 2010. Table 5 presents the results of the analyses of the ethnic composition of Teachers employed by TUSD in 2010. According to the 2010 aggregate Arizona EEO-5 Report, 12.20% of Elementary Teachers in public schools were Hispanic. Given that, in 2010, TUSD employed 1,922 Elementary Teachers, the expectation is that the District would have employed approximately 235 Hispanics in this occupation ($1,922 \times 0.1220 = 234.56$). In fact, TUSD employed approximately 530 Hispanics in this Teacher category, or 295 more than the statistical model predicts. Given that the number of standard deviations of this large positive difference is 20.59 standard deviations and TUSD employed Hispanic Elementary Teachers in numbers 2.3 times higher than the statewide benchmark, the conclusion is that Hispanics were statistically significantly and substantially overrepresented in this District occupation.

Table 5
Analyses of the Ethnic (Hispanic) Composition of 2010 TUSD Teachers
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent Hispanic in Labor Market	Total Number of TUSD Employees	Expected Number of Hispanic TUSD Employees	Actual Number of Hispanic TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Elementary Classroom Teachers	12.20%	1,922	234.56	530	295.44	20.59	*
Secondary Classroom Teachers	9.90%	754	74.63	124	49.38	6.02	*
Other Classroom Teachers	14.01%	136	19.06	39	19.94	4.93	*
Total Teachers	11.67%	2,812	328.24	693	364.75	21.44	*

According to the 2010 aggregate Arizona EEO-5 Report, 9.90% of Secondary Teachers in public schools were Hispanic. Given that, in 2010, TUSD employed 754 Secondary Teachers, the expectation is that the District would have employed approximately 75 Hispanics in this Teacher category ($754 \times 0.0990 = 74.63$).

As Table 5 indicates, TUSD actually employed 124 Hispanic Secondary Teachers, or approximately 49 more than the statistical model predicts. Given that the number of standard deviations of this positive difference is 6.02 and that TUSD employed Hispanic Secondary Teachers at 1.7 times the expectation, the conclusion is that Hispanics are statistically significantly and substantially overrepresented in this District occupation.

According to the 2010 aggregate Arizona EEO-5 Report, 14.01% of Other Teachers in public schools were Hispanic. Given that TUSD employed 136 individuals in this Teacher category, the expectation is that it would employ approximately 19 Hispanics in this occupation.

Table 5 shows that the District actually employed 39 Hispanic Other Teachers, or nearly 20 more than predicted. Given that this positive difference is statistically significant at 4.93 standard deviations and that TUSD employed Hispanics in this occupation in numbers twice as high as expected, the conclusion is that this ethnic group was statistically significantly and substantially overrepresented in the Other Teacher category in 2010.

When the results of the 2010 analyses are aggregated across the three Teacher categories, the data reveal a pattern of significant overrepresentation of Hispanics in the TUSD Teacher occupations (21.44 standard deviations). In addition, as a practical matter, the positive difference is large – the rate at which the District employed Hispanic Teachers were 2.1 times their representation among Teachers in Arizona public schools.

Teachers – 2012. Table 6 presents the results of the 2012 Hispanic Teacher workforce analysis. As Table 6 reveals, the 2012 TUSD data reveal a pattern similar to the 2010 analyses. In 2012:

- TUSD employed statistically significantly and dramatically larger numbers of Hispanic Elementary and Secondary Teachers than would be expected given the

representation of this ethnic group among individuals who work in these two occupations in public schools in Arizona;¹² and

- the number of Hispanic Other Teachers employed by the District exceeds the statistical expectation, but not statistically significantly so.¹³

Table 6
Analyses of the Ethnic (Hispanic) Composition of 11/29/2012 TUSD Teachers
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent Hispanic in Labor Market	Total Number of TUSD Employees	Expected Number of Hispanic TUSD Employees	Actual Number of Hispanic TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Elementary Classroom Teachers	12.20%	1,903	232.24	553	320.76	22.46	*
Secondary Classroom Teachers	9.90%	692	68.49	124	55.51	7.07	*
Other Classroom Teachers	14.01%	135	18.92	26	7.08	1.76	
Total Teachers	11.71%	2,730	319.65	703	383.36	22.83	*

When the 2012 results are aggregated across the three Teacher categories, the data reveal a pattern of statistically significant overrepresentation of Hispanics in TUSD Teacher occupations. Moreover, as a practical matter this positive difference is large – the rate at which the District employed Hispanic Teachers was 2.2 times their representation among Arizona public school Teachers.

Administrators – 2010. According to its 2010 EEO-5 Report, TUSD employed 35 individuals in the Officials, Administrators & Managers category. The 2010 aggregate Arizona EEO-5 Report shows that 20.33% of the public school employees who worked in these occupations were Hispanic. Therefore, if TUSD employed Hispanics in these jobs in numbers

¹² The actual number of Hispanic TUSD Elementary Teachers is 2.4 times larger than the expectation. The actual number of Hispanic TUSD Secondary Teachers is 1.8 times larger than the model predicts.

¹³ Although this difference is not statistically significant, as a practical matter, the excess number of Hispanic Other Teachers is large – the actual number of TUSD Hispanic Other Teachers is 1.4 times larger than the statistical expectation.

proportionate to their representation in these occupations in Arizona, then the District would have employed approximately seven members of this demographic group ($35 \times 0.2033 = 7.12$).

Table 7
Analyses of the Ethnic (Hispanic) Composition of 2010 TUSD Administrators
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent Hispanic In Labor Market	Total Number of TUSD Employees	Expected Number of Hispanic TUSD Employees	Actual Number of Hispanic TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Officials, Administrators, Mgrs	20.33%	35	7.12	8	0.89	0.37	
Principals	15.04%	92	13.84	33	19.16	5.59	*
Assistant Principals	14.88%	46	6.85	19	12.16	5.04	*
Total Administrators	16.07%	173	27.80	60	32.20	6.68	*

As Table 7 shows, TUSD actually employed eight Hispanics in these jobs, or approximately one more than predicted. Given that this one person surplus is not statistically significant (0.37 standard deviations), the conclusion is that TUSD employed Hispanics in these occupations in numbers consistent with their representation in similar jobs in Arizona public schools.

According to TUSD's EEO-5 Report, the District employed 92 Principals in 2010. The 2010 aggregate Arizona EEO-5 Report indicates that 15.04% of public school Principals in the state were Hispanic. Therefore, if TUSD employed Hispanics in this occupation in numbers consistent with their representation in the relevant external labor market, then the number of Hispanic Principals would be approximately 14 ($92 \times 0.1504 = 13.84$).

As Table 7 shows, the District actually employed 33 Hispanic Principals in 2010, or approximately 19 more than the model predicts. Given that the number of standard deviations of this positive difference is 5.59 and that TUSD employed Hispanics in numbers 2.4 times larger than the expectation, the conclusion is that Hispanics were statistically significantly and substantially overrepresented among the District's Principals in 2010.

In 2010, TUSD employed 46 Assistant Principals. The 2010 aggregate Arizona EEO-5 Report shows that 14.88% of public school Assistant Principals were Hispanic. Therefore, if the District employed Hispanics in this occupation in numbers proportionate to their representation in this job across the state, then TUSD would have employed approximately seven Hispanic Assistant Principals ($46 \times 0.1488 = 6.85$). In fact, the data show that 19 of the 2010 Assistant Principals were Hispanic, or approximately twelve more than the model predicts. Given that the number of standard deviations of this difference is 5.04 and that the actual number of Hispanic TUSD Assistant Principals was 2.8 times larger than the model predicts, the conclusion is that Hispanics were statistically significantly and substantially overrepresented among the District's Assistant Principals in 2010.

When the results of the 2010 analyses are aggregated across the three types of Administrators, the data reveal that TUSD employed approximately 32 more Hispanics than would be expected given their representation in relevant occupations in Arizona public schools. As the number of standard deviations of this positive difference is 6.68 and the actual number of Hispanic TUSD Administrators is 2.2 times larger than the model predicts, the conclusion is that, in 2010, the District employed a statistically significantly and substantially large number of Hispanics in these occupations.

Administrators – 2012. Table 8 reports the results of the 2012 Hispanic Administrator workforce analysis. As Table 8 shows, the 2012 Administrator data reveal a pattern similar to the 2010 analyses. In 2012:

- TUSD employed approximately one more Hispanic in the Officials, Administrators & Managers category than the model predicts;¹⁴ and

¹⁴ This positive difference is insignificant at 0.32 standard deviations.

- the actual number of Hispanic Principals and Assistant Principals employed by the District significantly and substantially exceeds the predicted number by approximately five or more standard deviations.¹⁵

Table 8
Analyses of the Ethnic (Hispanic) Composition of 11/29/2012 TUSD Administrators
Using 2010 Arizona EEO-5 Availability Rates

Occupation	Percent Hispanic in Labor Market	Total Number of TUSD Employees	Expected Number of Hispanic TUSD Employees	Actual Number of Hispanic TUSD Employees	Difference Between Actual and Expected	Binomial Number of Standard Deviations of Difference	Statistically Significant
Officials, Administrators, Mgrs	20.33%	45	9.15	10	0.85	0.32	
Principals	15.04%	88	13.24	32	18.76	5.60	*
Assistant Principals	14.88%	54	8.04	21	12.97	4.96	*
Total Administrators	16.27%	187	30.42	63	32.58	6.47	*

When the results of the 2012 analyses are aggregated across the three types of Administrators, the data reveal that TUSD employed approximately 33 more Hispanics than would be expected given their representation in similar occupations in Arizona public schools. As the number of standard deviations of this positive difference is 6.47 and the actual number of Hispanic TUSD Administrators is 2.1 times the expectation, the conclusion is that, in 2012, Hispanics were significantly and substantially overrepresented in the administrative occupations.¹⁶

VI. SUMMARY

Based on the results of all of the analyses described above, the inference drawn is that, in 2010 and 2012, African-Americans and Hispanics were employed by TUSD as Teachers and

¹⁵ The actual number of Hispanic TUSD Principals is 2.4 times larger than the expectation. The actual number of Hispanic TUSD Assistant Principals is 2.6 times larger than the model predicts.

¹⁶ Analyses of the 09/06/2012 TUSD Teacher and Administrator workforce that use Hispanic benchmarks derived from the 2006-2010 EEO/American Community Survey reveal that the number of Hispanic Teachers employed by the District was statistically significantly and substantially greater than their representation among Elementary & Middle School Teachers (occupation code 2310), Secondary School Teachers (2320) and Special Education Teachers (2330) in Arizona and the surrounding states (California, Colorado, New Mexico, Nevada, Texas and Utah), as well as in subsets of the surrounding states (California, New Mexico and Texas; California, Colorado and Texas).

The 09/06/2012 number of Hispanic TUSD Administrators was also statistically significantly and substantially larger than their representation among Education Administrators (0230) in these broader geographic areas.

Administrators in numbers consistent with or statistically significantly and/or substantially larger than the rates at which they are represented in public schools across Arizona. The data fail to produce any evidence whatsoever that these demographic groups are underrepresented in the District's workforce.

Mary Dunn Baker, Ph.D.

Date