

Running Head: FACTORS AFFECTING THE HIRING OF BLACK FIREFIGHTERS.

Factors Affecting the Hiring of Black Firefighters in the San Bernardino City Fire
Department.

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Abstract

The San Bernardino City Fire Department (SBFD) had not hired a Black firefighter in 12 years. Using historical research methods, this paper analyzed the number of Blacks in the community that had applied for firefighter positions with SBFD, how many were preparing themselves to meet the minimum qualifications for these positions, and the processes used to select individuals for these positions. The purpose was to determine how much impact these elements had on the number of Blacks being hired by SBFD. The research found that some of the elements of the selection process might have adversely affected Black candidates. The research also found a low percentage of Blacks in the community that were preparing for or applying for firefighter positions.

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Factors Affecting the Hiring of Black Firefighters in the San Bernardino City Fire
Department.

Introduction

One of the main components of the mission statement of the San Bernardino City (CA) Fire Department (SBFD) states that the department “will provide the highest level of preventative and emergency services consistent with the desires and resources of the community”. However, members of the community, local government officials, and even members of the department have made it clear that the fire department is failing to meet these groups’ desire of making full use of the community’s resources to achieve an ethnically diverse workforce.

Specifically, there is significant concern in the community over the fact that the fire department has not hired a Black firefighter in 12 years. Although there are other ethnic classes that are underrepresented among the ranks of SBFD in comparison to the ethnic make-up of the community, the greatest disparity appears to be among Blacks. This issue has resulted in intense public scrutiny of the fire department’s hiring practices, and of the fire department’s top administrators, who are responsible for developing and implementing such practices. Some community members have asserted publicly that they believe the problem is a direct result of the fire department’s process for selecting new employees (Gaudette, 2003). However, other possible contributing factors, such as the number of Blacks applying for firefighter positions, and the number of Blacks working toward meeting the minimum qualifications to apply for the position must be considered as well. Each of these factors will likely have some degree of influence on the problem.

In addition to not meeting the desires of the community, there are more, and possibly deeper, negative implications to this trend. The importance of ethnic diversity in the workforce is well documented. There is significant evidence that supports a connection between an ethnically diverse workforce and the overall health and effectiveness of the organization. Clearly, if the current trend continues, the number of Blacks in the department will continue to diminish over time as personnel retire. This could have far reaching implications that include a loss of organizational depth and efficiency, and a weakening of the department's connection to Black members of the community that it serves. This research is intended to be a step in preventing such a trend.

Securing employment with SBF D is a competitive and complex process. One way to capture the dynamics of this process is to view its elements as a system, with each element having some relational impact on the outcome. The system begins at the point where an individual decides to pursue a fire service career, and continues through the point where the individual has achieved full-time status as a firefighter.

Although this system has several components and variables, the purpose of this research is to analyze three specific components to determine what impact, if any, they may have on Black applicants being hired by SBF D. These specific components are:

- The selection methods used by the SBF D to determine which applicants are hired.
- The number of Blacks in the community who are actively working to meet the minimum qualifications to apply for a firefighter position with SBF D.
- The number of qualified Black candidates applying for employment as a firefighter with SBF D.

To accomplish the purpose of this applied research project, the following questions will be answered using historical research methods:

1. What are the components of SBFD's current testing and selection process?
2. Are there elements of SBFD's testing and/or selection process that are precluding Blacks that apply for a firefighter position from obtaining that position?
3. How many Black men and women have applied for an entry-level firefighter position with SBFD over the past 12 years?
4. How many Blacks in the community are actively taking the necessary steps to obtain the minimum qualifications needed to apply for an entry-level firefighter position with SBFD?

Background and Significance

The opening line of an article published in a local newspaper reads: "a few of the handful of Black firefighters lucky enough to make it through the door of the (San Bernardino) city's fire department . . . have stepped forward with complaints of systematic discriminatory hiring and promotion practices" (Anderson, 2003). These words echo the sentiments of many citizens and community leaders in the city of San Bernardino as they criticize the fact that their fire department has not hired a Black firefighter in 12 years.

The public outcry in response to this issue has been common and widespread. Local newspapers have published several articles on the subject that accuse SBFD's administration of purposefully changing job requirements and selection methods for the specific purpose of keeping Blacks out of the fire department (Brown, 2003).

Commentaries make statements such as “Cities and counties hire who they want to hire . . . many Black men have applied for firefighter positions but were never selected” (McGill, 2003). These public statements have had a negative effect on the community’s perception of the SBFD, as well as the morale of its members. Clearly, the SBFD wishes to serve its citizens in a manner that enhances the community and the role that the fire department plays in it. This document will contribute to reaching that goal by answering the specific research questions.

The San Bernardino City Fire Department is one of the oldest and largest fire departments in San Bernardino County. Established in 1878, it has a long and proud heritage of service to the community. The department employs a total of 172 full time personnel divided into six functional divisions. These divisions consist of administration (6 personnel), operations (143 personnel), prevention (8 personnel), communications center (10 personnel), automotive shop (4 personnel), and disaster preparedness (1 person). This research will focus primarily on the operations division, which is responsible for fire suppression and pre-hospital emergency medical service delivery to the community. Because some of the employees hired into the operations division were internal transfers from other SBFD divisions, these other divisions will be addressed only as far as the transfer process may have relevance to the research focus.

Like many fire departments, SBFD has traditionally been a White male dominated organization. In fact, its employee race composition was exclusively White male for decades. It was not until the early 1970’s that the department hired its first Black firefighter to serve in an operations position. Since that time, the department has hired a total of 19 Black firefighters. Of that number, four have retired, four have resigned, and

one was terminated. None of the personnel hired to replace these vacated positions were Black, which leaves a total of ten Black firefighters employed by the SBFD as of this writing.

As illustrated in table 1, the percentage of Black firefighters employed by the SBFD is substantially lower than both Whites and Hispanics. Not surprisingly, there is also a disproportionately low percentage of Blacks in middle and upper management positions in comparison to other race classes. In a broader observation, the percentage of Black firefighters employed by the SBFD is also disproportionate to the percentage of Black residents in the city of San Bernardino, which is nearly 18% (United States Census, 2000).

Although there are also a small number of Asian, American Indian and Filipino employees, these race classes are not the central focus of this research and therefore will not be addressed in detail. It is noteworthy, however, that the number of Asians, Filipinos and American Indians living in the San Bernardino area has increased by over thirty percent between 1990 and 2000 according to the United States Census Bureau (1990 and 2000). This is over double the rate of the increase in the population of Whites, Blacks or Hispanics during this same time period.

The significance of this is that although the Asian, American Indian and Filipino race classes also appear to be underrepresented in the SBFD, their population increase in the community is relatively new. As such, it is not reasonable to assume that their numbers would immediately be equally represented among the SBFD firefighting ranks.

The Black population, however, has been established in the community for a significantly longer time than these three other race classes. It would be reasonable to assume then that they would be better represented in the ranks of the fire department serving their area.

Table 1

Breakdown of ethnic class for the SBFD operations division. For comparison purposes, the far right column indicates the total ethnic composition of the city of San Bernardino according to the 2000 U.S. census.

Ethnicity	Number of Employees	Percent of total employees in division	Total ethnic composition of city ^a
Am. Indian	0	0%	2.5
Asian	1	0.7%	5.1
Black	10	7.9%	17.8
Filipino	0	0%	0.6
Hispanic	31	22.3%	30.4
White	96	69.1%	49.4
Total	136 ^b		

^a In combination with one or more of the other races listed. The U.S. Census Bureau’s numbers for race "alone or in combination" may add to more than 100 percent because individuals may report more than one race.

^b As of this writing, the operations division had seven positions that had not been filled. Once filled, the total number of operations personnel would be at 143.

Although there are a small number of Blacks employed by SBFD, the trend does not appear to be unique in the fire service. Table 2 shows the percentages of Blacks versus Whites that are employed as firefighters throughout the San Bernardino region, and nation wide according to equal employment opportunity statistics from the U.S.

Census Bureau (2000). This data suggests that the low number of Blacks in the fire service is an issue that goes beyond San Bernardino City, and therefore warrants attention on a much broader scale.

Table 2

Percentage of Black vs. White firefighters on a local, regional and national basis.

Geographic Area	White Firefighters	Black Firefighters
City of San Bernardino	69.1%	7.9%
County of San Bernardino	72.9%	5.2%
Nation	82.4%	8.1%

There have been several casual observations and assumptions made from within the department and throughout the community that attempt to explain why there is a low number of Blacks employed with SBFD. However, little research has been done that attempts to provide quantifiable evidence and answers that clarify why this trend is occurring, what the possible contributing factors are, and the actual or potential impact of those factors.

Even this applied research project will likely only provide some of the answers to this complex problem, as the research is focused on specific questions that the author feels are a logical starting place for the subject. This research will provide answers to the focus questions, but may also raise additional questions, which sets the stage for further research on this topic in the future.

In any case, there is compelling evidence that SBFD will increase its effectiveness as a public service organization by actively working towards a more ethnically diverse employee make-up. There is a logical nexus between a diverse ethnic make up, and improved overall organizational diversity. Using such diversity as a fire service resource is stated as one of the major themes of the National Fire Academy's Executive Development course (National Fire Academy, 2004). Clearly, this would include looking deeply into reasons why the number of Blacks in the ranks of the SBFD continues to be disproportionately lower than the community it serves.

Literature Review

The literature reviewed for this research project consisted of a selection of textbooks, journal articles, periodicals, databases, and Internet articles. These sources came from the National Fire Academy's Learning Resource Center (LRC), the Armacost Library at the University of Redlands CA., databases from local educational institutions and the city of San Bernardino, and various Internet sites. The literature review focused on the significance of diversity in organizations, the experiences of other public safety agencies in addressing issues of diversity, general guidelines and concepts to minimize adverse impact, and how an agency's hiring practices may help or hinder ethnic diversity in their organizations. Because the hiring practices in question were specific to the city of San Bernardino, a review of the relevant policies and practices of the city's Human Resources and Civil Service departments was also conducted.

The Significance of Diversity in an Organization

In terms of improving organizational diversity, Gilbert and Ivancevich articulate a rationale for doing so that includes ethics, morals, fairness, improved employee

satisfaction, and upholding the dignity of each person in the organization (2000). In addition, there is significant evidence that diversity in an organization leads to desirable outcomes in the areas of employee performance, flexibility, better decision making and problem solving, and increased employee retention (Orlando, Chadwick, & Dwyer, 2003). Parvis further outlines such benefits of organizational diversity to include “variety in ideas, styles, forms of devotion, vision, creativity, innovation, histories and lifestyles.” (2003, p. 97). Although these sources agree that the components of organizational diversity go beyond ethnicity, there is still compelling evidence that having an ethnically balanced workforce is a significant element in achieving organizational diversity.

Additional research performed by Linnehan and Konrad shows a connection between ethnic classes and a power gradient between these groups. Their research suggests that the social categorization that results from this power gradient leads to a negative stigma to historically less powerful groups, such as African Americans. This perpetuating stigma then lends to categorizations of low-power societal groups as having poor attitudes and low ability. A key to attaining organizational diversity then would be to achieve balance of these groups in the organization. Linnehan and Konrad suggest that this approach to diversity management includes removing preferential selection mechanisms, diversity training, and community based recruitment programs that enhance chances for employment for historically excluded groups (1999).

Determining Adverse Impact in Employment Testing and Selection.

Employment discrimination is held to be unlawful through a variety of protections. Among the most common are the Fourteenth Amendment of the U.S. Constitution, Title VII of the Civil Rights Act of 1964, the California Fair Employment

and Housing Act, and the Americans with Disabilities Act (Bogue & Joffe, 1994). Additional statutes include the Age Discrimination Act of 1967, Title I of the Civil Rights Act of 1991 (U.S. Department of Labor [DOL], 1999, p. 2-1) and the California Civil Rights Initiative of 1996 (American Civil, 2003).

Although some agencies have looked from within to try to recognize and address adverse impact, ultimately, the decision of whether a hiring practice or trend creates adverse impact is left to the courts. Through their process of analysis, the courts have established guidelines, tests, and rules of thumb to assist in their rule rendering, and to assist organizations in assessing their own practices. One such test is found in the Uniform Guidelines for Employee Selection Procedures, and is referred to as the “four-fifths” or “80%” rule. This rule was established to help enforce the provisions of Title VII of the Civil Rights Act rule (U.S. Equal Employment Opportunity Commission [EEOC], 1978). This rule states that:

A selection rate for any race, sex, or ethnic group which is less than (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse impact, while a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact. (Sec. 4-C).

The basic statistic used for the four-fifths rule is the impact ratio (IR), which is the ratio of the selection rate for the minority group (SR_{min}), to the selection rate of the majority group (SR_{maj}) (Morris & Lobsenz, 2000) or,

$$IR = \frac{SR_{min}}{SR_{maj}}$$

For example, if there is a majority pool of fifteen White candidates, and four are hired, the selection rate for the majority would be 4 divided by 15, or .27 (SR *maj* =.27).

If the minority pool contained nine Black candidates, and two were hired, the selection rate for the minority would be 2 divided by 9, or .22 (SR *min* =.22). The resulting formula would read:

$$IR = \frac{.22}{.27} = 81\%$$

According to the rule, Federal enforcement agencies would likely find that this scenario does not demonstrate adverse impact, as the IR is greater than eighty percent.

The four-fifths method is generally preferred as a rule of thumb because it is well-established and simple to use. However, it is not the exclusive criteria that can be used by the courts. If the number of applicants is very small, or there are unique circumstances, other methods of determining adverse impact may be used. Most of these alternative methods rely on the statistical significance of averages and standard deviations. It is quite possible then to have four-fifths data rebutted by another statistical method that yields a slightly different outcome (Morris & Lobsenz, 2000).

When such discrepancies occur, the courts may choose to take a more comprehensive view of the elements of the case, beyond numerical calculations. An example of this occurred in the 1991 decision of *Felix Waisome v. Port Authority of New York and New Jersey*. In this case, when the defendants used the four-fifths rule, the

court ruled that the hiring process must be "scrutinized with an eye towards practical as well as statistical significance." (Technical Affairs, 1996).

Although the four-fifths rule was originally applied to hiring rates, it has also been applied to pass/fail rates on employment testing to establish whether or not a test creates adverse impact (Ismail & Kleiner, 2001). The assumption is made that if all applicants are tested fairly, there will be no more than a 20% difference in pass rates between the applicants. Application of the four-fifths rule to testing pass/fail rates was used in the analysis of the consent decree imposed on the St. Louis fire department, which will be discussed later. Because of its wide use and acceptance, this method provides a tool to evaluate the testing system of the SBFD.

Another critical set of elements for employee testing that can be scrutinized is the validity and reliability of the test or testing process. The requirements for these test elements are covered in Code of Federal Regulations Title 29 sec.1607 3(A) (2004). In general, the reliability of a test is determined by how consistently it measures a specific characteristic. A test that returns a similar score for a person who repeats the test is said to be reliable. Reliability is measured in terms of a reliability coefficient, which is a number between 0, which indicates no reliability, and 1.0, which indicates perfect reliability. As a rule of thumb, a test should have a minimum reliability coefficient of .70 or greater (DOL, 1999, p. 3-3).

There are several types of reliability estimates. Two types of reliability are significant for the topic of this paper. The first is the parallel form of reliability, which measures how consistent test scores are likely to be if a person takes two or more forms of the same test. The second important form of reliability is referred to as inter-rater

reliability. This form measures how consistent test scores are likely to be if two or more raters score the test (DOL, 1999, p. 3-4). These perspectives of reliability will be examined and discussed in this research in terms of how they apply to SBFD's use of oral interviews as a primary method to determine the most desirable candidates.

There is evidence that the practice of using oral interviews as the primary means to establish the most desirable candidates has some inherent reliability deficiencies, as the raters mood and biases, even if unconscious, will impact the scoring. In his book "Tactics of Social Influence", Mahrabian (1970) states that it takes only about thirty seconds to form an opinion about someone. He further states that 55% of the opinion will be based on the way a person looks, 38% will be based on the person's voice cues, and only 7% will be based on what the person says.

Based on this, it could be said that the outcome of an oral interview may have as much or more to do with the interviewer and his/her perceptions, than with the quality of answers that the interviewee gives. This point is reinforced in the U.S. Department of Labor's Employers Guide to Good Test Practices (1999) as they recommend that interviews are structured, and make use of trained interviewers to increase reliability. They further comment that interviews that are not structured and do not make use of trained interviewers are more likely to have low reliability.

The validity of a testing process is another critical element of ensuring fair testing procedures. Test validity refers to the characteristics that the test is supposed to measure, and how well the test actually measures it. The U.S. Department of Labor has referred to validity as the most important aspect of any testing process (1999, p. 3-5) The scale that they have produced as a guideline uses validity coefficients that range from $<.11$, which

is considered “unlikely to be useful, to $>.35$, which is likely to be “very beneficial” (DOL 1999, p. 3-10).

These methods of determining adverse impact are significant for this research as they offer a standardized approach to evaluating the data to be reviewed. Additionally, the information on the validity and reliability measurements provide for a quantifiable evaluation of the different test methodologies used during the 12 year study period.

Pitfalls of Referrals and Nepotism.

Even with the best intentions, there are selection practices that may appear to be efficient and effective, but in fact may contribute to adverse impact. One such practice is using a referral system that puts emphasis on hiring recommendations made by family, friends or other employees from within the organization. Research conducted by Mouw (2002) showed that the use of such a referral system reduces the probability of hiring a Black worker by 75% in organizations that are less than 10% Black. Granovetter’s study (as cited in Mouw, 2002) found additional evidence of the potential impact of this trend as he showed that 40% to 50% of all jobs are found through help or information of friends or relatives.

Moore & Kleiner’s (2001) study on job discrimination occurring in firefighting organizations also found evidence of hiring discrimination stemming from nepotism and/or acquaintance preference. Making specific reference to the fire service, their study states that:

(a fire department) needs to do what it can to eliminate the "old boys network" and nepotism. The practice of hiring a firefighter's son just because he knows the

right people, or "keeping it in the family," needs to be abolished. Hiring should be based on qualifications, ability, and merit. (p. 214).

It is important that this research looks for any indications that these practices may have occurred in the testing or selection process. Although it may not be as easy to identify some of these practices through quantifiable methods, any evidence of their occurrence would be significant in this research.

Experiences with Diversity Issues in Other Fire Organizations

Achieving a balanced number of minorities within a fire department's ranks has created challenges for most fire organizations at some point in time. One notable experience occurred in the Los Angeles City (CA) Fire Department (LAFD) in 1975. At that time, the Fire Department's percentage of Black, Asian and Hispanic firefighters collectively stood at 5.06 %. This disparity led to a federal consent decree based on accusations that the city had failed to take steps to hire minorities (Hahn, 2002).

After 28 years of abiding by a quota system designed to increase the number of minority firefighters, however, the percentage of minority firefighters in LAFD rose to 50.2 %. With this improvement, a U.S. District Judge granted the city's motion to terminate the agreement in April of 2002. It should be noted that part of the impetus for bringing the consent decree back to the courts was a lawsuit filed in 1999 by four White firefighter applicants who sought to have the consent decree declared unconstitutional. Although the ruling judge refused to hear the White candidates case, the issue became moot after the removal of the quotas (Hupp Terminates, 2002).

A similar experience occurred with the Boston MA. Fire department in 1974. At that time, Blacks and Latinos represented only 1% of the department's firefighters.

Again, a consent decree was imposed requiring that one minority firefighter be hired for each White firefighter hired. By 2000, however, the number of minority firefighters had risen to 39.9%, prompting the federal appeals court to deem the quota unnecessary and illegal, and ended the requirement (Belkan, 2003).

A third case, where imposed quotas occurred in St. Louis, has a significant element for this research as the court order struck down the fire department's admissions test due to a disparate impact on Blacks. The order mandated a hiring quota of 50% White, 50% Black (Gebhart, Duffe, & McCurley R, 1998). In addition, the order mandated that points be added to all minority applicants' scores (Adversity.org, 2003).

The significance of this case for this research comes from a detailed case study of the St. Louis' fire department's testing procedure as it relates to disparate hiring practices. In this study, Gebhardt, Duffe, & McCurley suggest that more analysis should be done on the potential impact that paper-and-pencil written tests may have on racial class disparity created through the testing process. Of particular interest are their findings that, in general, paper-and-pencil written tests have had a historical adverse impact on Black applicants (1998). Such tests have been one of the traditional methods used by SBFDF to assess potential new employees.

Another point of interest in their study was their application of the four-fifths rule to pass/fail rates of the written test to assess for adverse impact in St. Louis' testing process. In that particular case, application of the rule showed that the tests did not have an adverse impact. However, by comparing the statistical mean of the scores, it was shown that White candidates did perform significantly better than the Black candidates

on average. This reinforces Morris & Lobsenz's idea that with different approaches to determining adverse impact, it is not uncommon to produce conflicting results (2000).

Although SBFD's current situation of employing a low number of Blacks does not represent the same numerical level of disparity as those fire departments that were reviewed, it is still an issue that requires attention. However, the option of hiring candidates simply because of their ethnic background, unless provided for through a federal mandate, is forbidden under a California law. This legislation, known as the California Civil Rights Initiative (CCRI), was voted into law in November of 1996 as proposition 209.

Although this law does not preclude an employer from conducting recruitment activities, or selecting candidates on a basis other than oral/assessment scores, the CCRI makes it clear that the criteria cannot be based on race, sex, color, ethnicity, or national origin. (Custred & Wood, 1997). Working within the parameters of this law will likely present challenges for SBFD as the department seeks to improve its ethnic diversity by hiring more Black firefighters.

The Civil Service Process in San Bernardino City

Section 246 of the charter for the city of San Bernardino establishes the Civil Service Board. The Civil Service board consists of five members who are appointed by the Mayor and common council. Their function is to approve all job descriptions including the minimum qualifications, job functions, and testing procedures. In addition, the board appoints one chief examiner to be employed full time to serve as an advisor. The chief examiner is tasked with carrying out the board's decisions and overseeing all

phases of the application, screening and written testing process. The board's responsibilities are outlined in section 250 as follows:

The Civil Service Board, subject to the approval of the Mayor and Council, shall adopt, amend and enforce a code of rules and regulations, providing for appointment and employments in all positions in the classified service, based on merit, efficiency, character and industry, which shall have the force and effect of law; shall make investigations concerning the enforcement and effect of this article and of the rules adopted. (Charter, 1905)

When a written test is given for any new employees of the city, the chief examiner is responsible for putting together a list of questions or "items" to be administered, Unless the testing department requests to write the questions themselves. If this is done, the chief examiner must still review and approve the test items, and may add any items that he/she feels are needed to reflect the job description.

Overall, the literature review provided compelling information supporting the need for ethnic diversity in organizations. It also gave important examples of the experiences of other fire departments that were not ethnically diverse, and areas to look for to avoid potential discriminatory hiring practices. Collectively, these two points support the need for this research for SBFD if the department wishes to remain an effective service organization for the community. Furthermore, the literature review offered solid methodology for analyzing employment and testing outcome statistics, as well as determining validity and reliability of the tests themselves.

Procedures

This study was conducted using historical research methods to determine if past hiring practices have contributed to the disproportionately low number of Black firefighters that are employed by the SBFD. The study uses the same methods to analyze the number of Blacks that have applied for the position of firefighter or paramedic/firefighter over the last 12 years, as well as the number Blacks in the community that have taken steps to meet the minimum qualifications for the positions.

The procedures for this research included the following:

- An analysis of the types of instruments used by the city of San Bernardino for entry-level selection for the positions of firefighter and paramedic/firefighter.
- A statistical analysis of the outcomes of entry-level assessments instruments and methods used over the last 12 years by the city of San Bernardino for the position of firefighter and paramedic/firefighter.
- A review of a data gathered from the San Bernardino Unified School District, including career choice surveys of graduating seniors, and enrollment rates by ethnic class in specialized public safety programs.
- A review of data outlining enrollment and completion rates, by race class, from local training institutions that offer the training necessary to meet the minimum qualifications for the position of firefighter and paramedic/firefighter.

Testing Instruments and Methods Used by the City of San Bernardino

Information on the approved assessment instruments and procedures used by the city of San Bernardino, and specifically by the fire department, was obtained through a review of the civil service rules established by the city's Civil Service Board, fire department records, and information obtained from the city's Civil Service Chief Examiner. Because the city obtains the questions used for its written tests through outside contracts, interviews and reviews of validation reports were conducted to obtain background information on the test instruments.

In addition to written tests, the SBFD has used structured oral interviews, paramedic and EMT skills assessments, and physical ability tests. In 2004, a commercially available assessment called "FireTEAM[®]" was used that measures desirable behavioral characteristics, mechanical aptitude, and reading skills. The outcomes of each of these tests were analyzed for indications of adverse impact on Black applicants using the "four-fifths" method (described in the literature review) and mathematical averages and standard deviations.

Analysis of Entry Level Test Outcomes

Information on the outcomes of entry-level testing procedures was obtained through the city's Civil Service electronic data collection system, and fire department records. The data analyzed covered tests that were administered in years 1992, 1996, 2000, and 2004. Civil service records indicate that these were the only entry-level tests that were administered during that 12-year period for the position of firefighter or paramedic/firefighter. Most of the recruitment tests administered used different test instruments and methods. In addition, the job classification for firefighter that was in

effect for the 1992 test covered both paramedic and non-paramedic applicants.

Subsequent to that test, these positions were re-classified as separate positions, requiring two separate lists, and eventually, separate testing and scoring criteria. These changes, along with the variations in testing and selection mechanics will likely have an impact on each year's test outcomes. Therefore, each year's tests will be analyzed individually

The 12-year time frame of the test data was selected for two reasons. First, this research focused on why the SBF D had not hired a Black firefighter in the past 12 years. Prior to 1992, Black firefighters were hired on a more consistent basis, although the overall numbers were still low. The last Black firefighter that was hired for the SBF D was hired from the 1992 list. This offered a logical time frame for the study that encompassed all 12 years where a Black firefighter had not been hired.

The second reason for choosing this time frame was because of the lack of availability and questionable reliability of data on tests prior to 1992. Although this data is captured in some form, the methods of capture vary significantly from more current data, potentially leading to inaccurate assumptions and misrepresented conclusions.

The test data used was captured through a computer database and paper records. The data provided by civil service captures information from anyone who submits an application for a position, whether they are qualified for the position or not. The data includes the applicants name, ethnicity, a "Q" for those that met the minimum job qualifications, and a "U" for those that did not. Although civil service captures the actual test scores, it is their policy not to divulge the scores to anyone, not even the department requesting the test. Although the author requested this information for the purpose of this research, the city's Civil Service Chief Examiner denied it. The only information that was

provided in reference to the test scores was whether the candidate passed, failed, or did not show up for the test.

In 2000, the requirement for an entry level written test was dropped by the fire department with the approval of the city's Civil Service Board. The reasons for this change are outlined in the Results section of this document. Because the written portion was waived, the assessment process was conducted by the fire department, independent of civil service. Therefore, the actual scores were available and used in the calculations. This data was obtained from fire department paper records, which were electronically scanned into a computer spreadsheet program for ease of statistical calculation.

In 2004, a new commercial form of testing was introduced for entry-level applicants. The test measured positive behavioral dimensions, mechanical aptitude, and reading abilities. Although the Civil Service Board agreed to allow the fire department to use the test, they insisted that the chief examiner administer it. As such, it fell in the classification of a civil service written test, and the final scores were not made available to anyone outside civil service. Therefore, only pass/fail data, in addition to data on race class and whether each candidate qualified was available for this research.

Data gathered from the San Bernardino Unified School District

Research question number four focuses on the number of Black men and women in the community that are preparing themselves to qualify for a position with SBFD. Because career decisions often begin taking shape in the final years of high school, research was conducted to assess what the interest level in a fire service career was among Black students graduating from high school.

The author contacted Linda Preciado, a councilor at San Gorgonio High School in San Bernardino. According to Preciado, the school administers a questionnaire to graduating seniors that asks, among other things, what career they plan to pursue after graduation. Although the survey instrument's focus is to assist each student in securing scholarships for their continuing education, the question of the student's college plans, occupational preference and their ethnicity are captured. This provided at least some idea of the number of graduates that are considering a fire service career. A copy of the questionnaire can be viewed in Appendix "A".

A total of 370 high school seniors from the graduating classes of 2002 and 2003 completed the questionnaire. Although the school district conducts a similar survey of seniors district wide, it did not prove as useful as the San Gorgonio survey for this research. This is because the district wide survey used a forced choice format for general career categories, none of which were specifically aimed at the fire service as a career choice. The San Gorgonio survey was formatted for free text, which allowed for the input of specific occupations to be listed.

Additional data was collected from a specialized high school program that operates through the San Bernardino City Unified School District. This program, known as the "Public Safety Academy" focuses on basic instruction and preparation for a career in the fire service or law enforcement, in addition to state required high school level curriculum. As such, many of the students will likely pursue fire service careers soon after graduation. The data outlines the ethnic class of the enrolled and graduating students, and will be used to compare career choices of these students to graduates of the traditional high school system.

Enrollment and Completion Rates in Post High School Fire Training Programs

The next step in following the progression of potential applicants for a fire service position was to assess enrollment and completion rates in programs that would allow the candidate to meet the minimum requirements to apply for such a position. Typically, members of the San Bernardino community wishing to enter into a fire service career with the Sbfd would enroll in specialized classes at Crafton Hills College in Yucaipa CA. Crafton Hills is a two year college which is part of the San Bernardino Community College District.

The research focused on Crafton Hills because it offered the most comprehensive list of fire and EMS classes available in the San Bernardino valley. Enrollment records from Crafton Hills indicate that over 82% of its students come from communities located in the San Bernardino valley area (Moran, 2004). Additionally, there are no other training institutions within twenty miles travel distance from the city that offer this curriculum.

Because Crafton Hills is one of the few institutions in the area that offers a complete fire and EMS curriculum, the majority of the employees hired by the Sbfd received their training there. Therefore, enrollment and completion data from this institution should provide significant insight into how many people are participating in classes that will provide them with the minimum qualifications to apply for a firefighter position with Sbfd.

For the purpose of this study, Crafton Hills' Office of Research and Planning compiled enrollment and completion data for all students that had enrolled in any fire science or EMS curriculum during the past eight years. The data was organized in

spreadsheet form, and formatted in pivot tables so that it could be arranged and summarized by course number, year, and ethnic class of the enrollees.

Another source of significant data was retrieved through the San Bernardino City Unified School District's Adult Education Program. Although this program did not typically provide fire service training, SBFD formed a partnership with the institution in 2002 in an attempt to provide a part-time academy for individuals that were interested in a fire service career, but could not attend a traditional academy on a full time basis.

The program was developed after several Black firefighters in the department approached the fire chief with a concept that they felt might increase the number of qualified Black applicants for the position of firefighter. Through their own observations and discussions with members of the Black community, they had found that many potential applicants lacked many of the minimum required certifications to apply for the positions. Specifically, most of them were not able to achieve completion from a California State accredited fire academy because the only accredited academies offered in the area (Crafton Hills College) ran five days a week, eight hours a day for ten weeks. Because most of the individuals that these firefighters spoke with were 100% self supported financially, they could not afford to quit their present jobs in order to attend and academy with such a schedule (Gaudette, 2003).

The unique aspect of the SBFD/Adult Education fire academy was that it was designed for individuals who had to maintain a full time job, but also wanted to pursue a fire service career. Classes were scheduled on two evenings per week for four hours, and eight hours on Saturday. Although this academy would not be accredited by the California State Fire Marshall, participants would receive the same State Fire Marshall

approved curriculum in basic firefighting as an accredited academy. They would also be trained and certified as an Emergency Medical Technician (EMT) with the local certifying authority. In concept, this would provide each successful graduate with the training necessary to perform as an entry-level firefighter with the SBFDF.

Although the program did not achieve its original objectives, it did provide important data on enrollment rates by ethnic class. Enrollment data was collected from the city school district's Department of Adult Education on this program that identified elements of the recruitment process as well as enrollment and completion rates by ethnic class.

Assumptions and Limitations

Because the study focuses on trends based on specific ethnic classes, the majority of the data was retrieved and organized by that parameter. Nearly all of this information was gathered through employment applications from the city of San Bernardino, and class registration information from various educational institutions in the San Bernardino area. As such, the actual ethnic class of the person filling out such forms is self-defined, and offered only on a voluntary basis. None of the institutions providing data have a mechanism in place to verify the ethnic class of applicants at the stage of the process when this information is gathered. Therefore, there is an assumption made that the applicants whose data was tracked for this study accurately recorded their ethnicity. Although the ethnic based data appears to be reliable, there is no guarantee as to its level of accuracy.

There were also limitations on the data collected from San Bernardino's Civil Service department. It is the board's practice not to allow anyone to see the actual scores

of the applicants, except for the board members and the chief examiner. Therefore, information that would be useful in this analysis, such as actual scores by race, missed questions by race, and the content of such questions, was not available. This is unfortunate, as this data could have identified specific testing trends that would allow for conclusions that are more concise. Even without this information, however, significant information about the test outcomes was garnered by looking at overall pass/fail rates by race.

Definition of Terms

- “Banding” A method used to separate candidates into groups based on their final scores. Although there are several variations on this method, generally, these groups, referred to as “bands”, are given alpha designators (“A” band, “B” band, etc.). Each band is separated based on natural breaks in the array of all the candidates’ scores. The highest scorers will be placed in the “A” band in alphabetical order, the next group in the “B” band, etc. The number of bands may depend on the total number of candidates, but usually there are two to three bands. Once all the candidates are placed in a band, the employer may select among any candidate within the highest band. If that band is exhausted, and the employer does not find a candidate in that band that they feel is suitable, they may select from the next lower band.
- “EMS” Emergency Medical Service. Refers to the general provision of pre-hospital emergency medical care at a basic or advanced level.

- “EMT-1” Emergency Medical Technician. Provides pre-hospital emergency medical care at a basic level. Generally does not administer medications, interpret electrocardiograms, or provide advanced airway management maneuvers.
- “Paramedic” Provides pre-hospital emergency medical care at an advanced level. Scope of practice includes administration of medications, electrocardiogram interpretation, defibrillation and cardioversion, and advances airway maneuvers.
- “P-1” Occupational classification use by the city of San Bernardino for the position of firefighters who are certified to the EMT level only.
- “P-2” Occupational classification use by the city of San Bernardino for the position of firefighters who are certified to the paramedic level.
- “WRIB” Western Regional Item Bank. A subscription system that public agencies can use to share and obtain a multitude of written test questions for different job types. Participating agencies contribute questions that they have written to the “bank”. Bank questions are then shared with other participating agencies for the development of new written tests.

Results

Through an extensive review of the data gathered, and with the supporting information found in the literature review, answers to the specific research questions were established and are outlined by specific question below.

Research Question 1: What are the components of SBFD’s current hiring process?

Employment with the SBFD begins through one of two entry-level positions: firefighter, which is classified as a “P-1” position, or firefighter/paramedic, which is classified as “P-2”. The only difference between the two positions is that the P-2 must be certified to work as a paramedic (advanced life support) in the State of California, whereas the P-1 position must only have a valid State of California Emergency Medical Technician (EMT-1) certificate. Because of the higher level of qualifications needed for the position, a P-2 has a higher pay scale than a P-1. Even so, both are considered entry-level positions, and nearly all of the testing process that does not focus specifically on advanced emergency medical skills is identical for both positions.

The research identified four significant elements of the hiring process for these entry-level positions.

- Development and approval of the job description.
- Public notification that the department is accepting applications.
- Testing of qualified applicants.
- Selecting and hiring the most desirable candidates.

Development and Approval of the Job Description

Although SBFD’s administrative staff has significant input on the technical requirements for the job descriptions of P-1 and P-2, the city’s Human Resource Department also provides a great deal of input. Collectively, the two departments focus on elements that are necessary to carry out the job functions such as visual acuity, ability to lift a specified amount of weight, as well as minimum educational or experience requirements. Human Resources and the city’s legal department scrutinize these elements of the job description heavily as they hold the potential for litigation if they are found to

be unnecessarily exclusionary. They ensure that the requirements do not violate any of the statutes governing hiring and employments practices discussed in the literature review. Once the job description is complete, the Civil Service Board must approve it. Once approved, all applicants must meet the stated minimum qualifications to continue with the process.

According to the city's legal department, the job descriptions for P-1 and P-2 meet all applicable legal requirements. However, the possibility that some of the minimum requirements could be passively or unintentionally exclusionary will be discussed in more detail in the analysis of research question two.

Public notification that the department is accepting applications

When a department wishes to test for an approved job classification, they must contact the city's Civil Service Chief Examiner and make the request to establish a hiring list. Once this is done, the city's Human Resources department will advertise for the new position. This advertisement consists of posting the job opening outside the Human Resources office in a conspicuous place, placing ads for the position in the two major local newspapers, and placing the opening on the city's web page. This system appears to be reaching a significant number of people, as records from past tests show application rates in the hundreds.

The critical question, however, is whether or not these mediums are specifically reaching Blacks in the community. One indication of the effectiveness of this method was found in researching the SBFD/ San Bernardino Adult Education fire academy program (reviewed in depth under heading "Research Question 4" later in this section). The Adult Education department focused the program's advertising on attracting residents in the

San Bernardino City area who may be interested in a fire service career. The adult education program used hard copy postings at their office, announcements of the program on their web site, and ads placed in the same major newspapers that city's Human Resources department did. In addition, they published ads in five small local community newspapers, four of which targeted specific minority groups. They also had the information displayed on a large electronic billboard mounted on the front of their two-story building.

This advertising campaign resulted in 132 applicants, with an ethnic composition of 43% White, 41% Hispanic, and 15% Black (Brown, 2003). In comparison, data retrieved from the city's recruitment show that application rates from Blacks ranged from only 1% to 4%. Clearly, this is not an exact comparison. The academy offered through the adult education program was not an application, nor a guarantee, for a job as a firefighter. It simply offered the necessary training that could lead to one. Even so, it does suggest that with expanded marketing, and a focus on the areas of the city where there is a high minority population, more potential Black applicants could be reached.

Testing of Qualified Applicants

Once the applications are screened by civil service to ensure that only qualified applicants continue in the process, a written test is administered. Of the last four entry-level tests administered between 1992 and 2004 for the P-1 and P-2 positions, two have included written tests that were prepared by civil service. Although the written portion of the testing process is strictly as pass/fail, the tests are graded on a scale of 0 to 100%. A score below 70% is considered failing. Because the tests are pass/fail, the scores cannot be used to put candidates in a rank order later in the process.

These civil service written tests are comprised of questions taken from a cooperative test question bank system known as the Western Regional Item Bank, or “WRIB”. Developed in the early 1970’s in Michigan, the WRIB system was implemented in San Bernardino County in December 1981. By that time, 27 other jurisdictions in California, Oregon, Nevada and Arizona were participating in the system (Western Regional, 2003). In this system, questions, referred to as “items”, are submitted by participating agencies and put into the “bank”. The items are placed in to appropriate job categories based on their content. When a participating agency needs to construct a test, they request a number of questions from the appropriate category. In San Bernardino City’s case, the request would be made through an established contract with San Bernardino County, who oversees the system.

The question arises however as to how such a system is validated, since the questions come from multiple sources. To answer this question, the author interviewed Kristine Smith of Darany and Associates in Redlands CA (personal communication, June 11, 2004). Ted Darany, her employer, was the original developer of the WRIB system in 1970. Prior to working full time with Mr. Darany, Ms. Smith oversaw the WRIB system for San Bernardino County for several years.

Ms. Smith stated that the individual WRIB questions are not validated. She stated that because there are literally thousands of questions in the bank, a test could be made up of any number of item combinations. Therefore, if a participating agency wishes to validate a test, they must go through the steps of validating the test as a whole themselves.

Ms. Smith further stated that one of the primary steps in validating a test such as this is to have someone who is very familiar with the actual job duties review the test before it is administered. This is important since items in the test may have been written for another jurisdiction whose policies or practices are substantially different than the testing agency's.

To carry out this step in San Bernardino City's case for example, an experienced member of the fire department would review the test along with the city's Civil Service Chief Examiner to ensure that the questions are applicable to the specific job duties of a San Bernardino City firefighter. This was not done with the entry level written tests given by civil service in 1992 and 1996. This issue of validation on the entry level written tests and its possible impact will be discussed in detail in the analysis of research question three.

An exception to the practice of giving an entry-level written test was granted to the fire department by the Civil Service Board in 2000. This was done because the fire department changed the nature of the hiring process to include applicants who had a minimum of one year full-time paid experience, or two years part-time experience as a firefighter. Applicants would also be accepted if they had two years full-time and an EMT/paramedic for a private ambulance company.

Because these would be experienced personnel, SBFD's administration believed that it was no longer necessary to use the written test to determine basic firefighting knowledge. Instead, the department would assess applicants through an oral interview and an assessment of their EMS skills. The lateral criteria remained in effect for the most

recent test held in 2004, although the testing process was changed significantly. The specifics of these changes are discussed in the next section.

Selecting and hiring the most desirable candidates

Once the written test is administered, the names of all the passing candidates are sent to the fire chief, who must sign off in approval. Approval at this phase simply means that there are a sufficient number of candidates to select from given the number of openings expected during the term that these names will be active. This term is usually for one year. This establishes the official “list” of qualified candidates for the position.

Although the list is officially in effect for one year, it can be extended at the request of the fire chief. The SBFDF has used this extension on each of the four tests evaluated. Each of these tests was extended for a total span of approximately four years each. These extensions were made for several reasons, including the cost of testing, the time and resources needed to test on a more regular basis, a lack of administrative personnel available to conduct more frequent tests, and in the case of the 1996 list, the to accommodate the SBFDF/Adult Education fire academy.

Once the list is established, Civil Service turns over the responsibility for any further evaluation to the fire department. The only requirement from civil service is that the fire department gives a minimum of an oral interview to determine who the most desirable candidates are. Although two of the lists analyzed used only an oral interview to evaluate candidates, others have included pass/fail emergency medical services (EMS) skills assessments.

The most recent list, which was established in May of 2004, used a commercial assessment system called “FireTEAM[®]” to establish 50% of the overall final score. The

remaining 50% was established through an oral interview process. An overview of the “FireTEAM[®]” system is given later in this section.

Once an assessment is completed, the candidates’ names are placed in an order to help identify who would be the most desirable candidates to hire first. The candidates may be placed in score order, alphabetical, or placed into groups referred to as “bands” (see definitions in “Procedures” section), based on their scores. On the 1992, 1996 and 2000 tests, the banding method was used.

Once the candidates are banded, the fire chief may select any candidate in the “A” band. Because the candidates are not placed in score order within each band, there is the option to hire a candidate that may have scored lower on the oral/assessment portion than one who is not selected for hire. This option gives the fire chief a degree of latitude to select candidates that he/she feels may have desirable attributes that could not be identified in the oral/assessment process. Furthermore, if the fire chief does not find a satisfactory candidate in the “A” band, he/she has the option of skipping the “A” band entirely and going to a lower band.

Research Question 2: How many Black men and women have applied for an entry-level firefighter position with SBFD over the past eleven years?

A review of applicant data from 1992 through 2004 suggests that there are only a small number of Blacks that are applying for a P-1 or P-2 positions for SBFD. Table 3 outlines the number of Black applicants for these positions. These numbers are based on the available data from San Bernardino City’s Civil Service database. Although both qualified and non-qualified applicants are shown for demonstration purposes, the number

of qualified applicants is the most significant representation of the size of the hireable Black applicant pool.

As table 3 shows, the number of black applicants represents a very small number of the total applicants, with the highest percentage of qualified applicants rising to only 2.8% in 2004. During the 12 years that were evaluated, there were no records of any Black females applying for the position of P-1 or P-2.

Table 3

Number of Black applicants for the position of P-1 or P-2 from 1992 through 2004.

	1992	1992 % of total apps.	1996	1996 % of total apps.	2000	2000 % of total apps.	2004	2004 % of total apps.
Black applicants								
P-1 applied ^a	47	2.5%	6	1.0%	6	1.4%	12	2.8%
P-1 qualified ^b	27	4.5%	6	1.0%	4	1.0%	6	1.4%
P-2 applied	- ^c	-	0	0	1	0.7%	1	0.2%
P-2 qualified	-	-	0	0	0	0	0	0

^a“Applied” refers to the total number of Blacks that submitted an application for the position, including those who did not meet the minimum qualifications for the position.

^b“Qualified” refers to the total number of Blacks that submitted an application that met the minimum qualifications to for the position.

^cThe position of P-2 (paramedic/firefighter) was not established until after the 1992 test.

Research Question 3: Are there elements of Sbfd’s testing and/or selection process that are precluding Blacks that apply for a firefighter position from obtaining that position?

After reviewing the information found in the literature review, and performing a review of the outcomes of Sbfd’s testing and selection results, it appears that there are

elements of the processes that may have impeded Black applicants from securing employment with SBFD. Because the testing and selection process changed significantly for each of the four recruitments reviewed, each of the four tests administered over the last 12 years were analyzed individually by test year, beginning with the first test in the series, administered in 1992.

1992 Recruitment test

The recruitment test administered in 1992 differed from each of the other four recruitments as it placed all candidates in the single job class of P-1. At that time, SBFD did not utilize a P-2 category for paramedic/firefighters. Although there were specific positions on the department for paramedic/firefighter, all entry-level employees were hired as P-1s. Those personnel who were performing the job functions of paramedic were given a set monetary bonus for performing those additional responsibilities. Subsequent to this test, the P-2 position was established, and all personnel carrying out the job responsibilities of paramedic/firefighter were reclassified to that position. Thereafter, all entry-level lists for P-1 and P-2 were established as separate lists, although most of the testing criterion was identical for both positions.

The first phase of the 1992 test consisted of a civil service written test, which was administered by the City's Chief Examiner, and used WRIB questions. Those that passed the written test were then invited to participate in an oral interview given by the fire department. Fire department records from the oral portion of the test were no longer available. However, records kept by the city's Civil Service department were evaluated extensively.

The data in table 4 shows that out of a total of 1,056 applicants, 824 of them, or 78%, met the minimum qualifications. To have a significant number of applicants that do not meet the minimum qualifications for a position does not appear to be unusual as applications are accepted from any person who desires to fill one out. It is not until the applications are screened that any of the applicant's qualifications are verified.

Table 4

Application and pass rates for 1992 written test for combined P-1 firefighter and firefighter/paramedic by race.

Race	Total applications received	Number of qualified applicants	% of qualified applicants	% of race that passed written
Am. Indian	18	13	1.2%	92.3%
Asian	41	39	3.7%	71.8%
Black	47	27	2.5%	51.9%
Filip	0	0	0	0%
Hispanic	182	132	12.5%	78.8%
White	714	586	55.3%	90.8%
Race Not Recorded	36	15	1.4%	100.0%
Unknown	18	12	1.1%	75.0%
TOTAL	1056	824		

Although the number of Blacks that applied for a P-1 position was significantly lower by percentage than either Whites or Hispanics, the 1992 test represents the largest total number of Black applicants, both qualified and not qualified, of any test given since that time. Even so, by applying the four-fifths rule, and by evaluating statistical averages

and standard deviations, there is evidence that the written test may have caused some degree of adverse impact on Black applicants.

As shown in table B1 of Appendix B, the Impact Ratio (“IR”, four-fifths rule) between White (majority race class) candidates and Black candidates is at 0.56, which is significantly below the 0.80 benchmark set forth by the Uniform Guidelines for Employee Selection Procedures (1978). When making the same evaluation between White candidates and Hispanic candidates, the IR is 0.87, suggesting no adverse impact to Hispanics (See table B2 of Appendix B).

Additional analysis shows that of the Black candidates that took the written test, the percentage that passed (51.9%) was lower than the percentage of any other ethnic class tested. With an average pass rate by race of 80%, and a standard deviation (SD) of 16%, this placed the percentage of passing Blacks greater than one standard deviation below the average pass rate of each individual ethnic classes studied.

As stated in the results of research question one, the administrators of the WRIB program do not validate the individual WRIB questions such as the ones used on the 1992 test. It is up to the agency administering the test, in this case San Bernardino Civil Service Chief Examiner, to do so. There is no clear evidence that this was ever done, and the civil service chief examiner at the time of the 1992 test is no longer with the city of San Bernardino (deceased) to verify such validation. It is known, however, that no members of SBFD were asked to, or allowed to, participate in validating questions for relevancy to the job being tested for prior to, or after the test was administered.

Ironically, the last Black firefighter that was hired by SBFD was hired off of the 1992 list. SBFD records are not clear on how the selection process was conducted after

the written test, other than the process did consist of an oral interview. Detailed records from this part of the process were not available.

1996 Recruitment Test

Of all the tests that were evaluated in this research, the 1996 P-1 test results suggested the greatest possibility of adverse impact towards Black applicants. Like the 1992 recruitment testing, the 1996 process began with a civil service written test using WRIB questions. As in 1992, the test was put together and administered by the Civil Service Chief Examiner. There was no input from SBFD regarding the relevancy of the questions as recommended by the developers of the WRIB system. Additionally, no record could be found that indicated that the test was validated to Federal EEOC standards by the city of San Bernardino.

By 1996, paramedic/firefighters had been reclassified to their own position, which is referred to as P-2. As such, the scores for P-1 and P-2 were separated into two individual lists.

The unique aspect of the 1996 P-2 list was that during the time between 1992 and 1996, SBFD attempted to start providing it's own EMS transport, breaking away from their traditional approach of contracting these services with a private provider. In preparation for this program, the department hired 23 P-2s to fill the new additional positions.

Shortly after the P-2s were hired however, a court order was executed that disallowed the department from any further pursuit of an ambulance transport program, and mandated that all new P-2s be immediately dismissed. Out of concern for the P-2s that had to be let go, the department vowed to do everything it could to find them

employment. This included extending the P-1 and P-2 hiring list so that these personnel could be hired back by SBFD when future positions opened up. As such, none of the civil service records for the P-2 list for 1996 indicate test results, as the candidates were simply carried over to the list. For this reason, the 1996 results focused only on the P-1 positions.

The 1996 written test for P-1 had an alarming low overall pass rate of only 14%. As table 5 shows, all of the applicants that claimed Black ethnicity failed this written test. As such, detailed mathematical computations, such as the four-fifths rule and standard deviations, are somewhat moot as it is clear by simply looking at the pass/fail percentages that Black applicants fared significantly worse than nearly all other races.

The 1996 data also showed that there was a significant number of applicants that either did not indicate their race, or their race was not recorded in the civil service records. In either case, civil service records show that all of the applicants that did not have ethnicity recorded also did not pass the written test. Although the presence of this information would have further clarified applicant ethnicity rates, the information that is available does provide insight into the pass/fail rates of the written test.

Obviously, there were no Black candidates that could be hired from this list. Further aggravating the problem was the fact that SBFD chose to extend this list from its original time frame of one year, to a total of four years. The primary reason for this extension was to try to hire back as many of the P-2 candidates that were let go due to the ambulance transport court order as possible, even if they were to take a P-1 position. Even so, a four-year time frame for a list that does not have any Black applicants decreased the odds that a Black firefighter would be hired.

Table 5
Application and pass rates for 1996 written test for P-1 firefighter by race.

Race	Total qualified applicants	% of total applicants by race	% of race that passed written
Am. Indian	5	0.9%	0%
Asian	6	1.0%	16.7%
Black	6	1.0%	0%
Filip	0	0	0%
Hispanic	49	8.4%	12.2%
White	121	20.6%	18.2%
Race Not Recorded	310	52.2%	0%
Unknown	87	14.8%	58.6%
TOTAL	584		

2000 Recruitment Test

The entry level testing procedure used in 2000 represented a major shift from the process used in the previous two tests evaluated. In an effort to streamline the process, and to reduce testing time, SBFD asked the Civil Service Board to change the job description of P-1 and P-2 to include the “lateral transfer” criteria discussed in research question one.

Because applicants hired under this criterion would have previous experience, the fire department requested that the written test be waived, and that only an oral interview and EMS skills assessment be used to determine the most qualified applicants. The Civil Service Board agreed and the changes were made. Because the fire department conducted

the oral interviews internally, the actual final oral scores from the applicants were available for this research. Therefore, the pass/fail rates, as well as averages and standard deviation of scores could be calculated.

Tables 6 and 7 show that the pass rates for qualified applicants were significantly higher overall than any of the other tests evaluated. For this test, an oral score of 70% or greater was considered passing. In the case of both P-1 and P-2, the pass rates for Black applicants surpassed both Whites and Hispanics, making it unnecessary to apply the four-fifths rule to determine adverse impact toward Black applicants based on pass/fail rates.

Table 6
Application and pass rates for 2000 written test for P-1 by race.

Race	Total applications received	Number of qualified applicants	% of qualified applicants	% of race that passed written
Am. Indian	11	6	2.6%	100%
Asian	16	14	3.8%	80%
Black	6	4	1.4%	100%
Filip	0	0	0	0%
Hispanic	102	74	24.5%	75%
White	264	188	63.5%	90%
Unknown	17	7	4.1%	67%
Total	416	293		

The next step was to evaluate the actual oral scores for each rank to determine if there was a significant difference in the scoring pattern by race. The scoring scale used

for the oral assessment ranged numerically from zero to a maximum of fifty points. As table 8 and 9 (P-1 and P-2 scores respectively) show, each race class's scoring falls within one standard deviation (SD) of the average score.

Table 7

Application and pass rates for 2000 written test for P-2 by race.

Race	Total applications received	Number of qualified applicants	% of qualified applicants	% of race that passed written
Am. Indian	1	1	0.7%	0%
Asian	5	4	3.6%	100%
Black	1	1	0.7%	100%
Filip	0	0	0	0%
Hispanic	33	25	23.9%	60%
White	89	75	64.5%	86%
Unknown	9	6	6.5%	100%
Total	138	112		

Although this is a good indication of evenly applied scoring patterns, the scores of all but one of the applicants that were eventually hired from either the P-1 or P-2 list was 48.5 or greater. This score is very close to being over 1 standard deviation (SD) above the average (the high end of one SD fell at 48.79 points for P-1s, and 48.15 for P-2s). This suggests that although the majority of the applicants scored relatively closely, the score necessary to be competitive in the hiring was above the range scored by all but 28 Whites, 1 Black, and 7 Hispanic candidates.

Table 8

Averages and standard deviations (SD) for 2000 P-1 oral assessment scores by race.

Race	Avg. Score	% of applicants whose scores fell within 1 SD of the overall avg.	% of applicants whose scores were >1 SD of the avg. score.
Am. Indian	43.00	50%	50%
Asian	37.00	80%	10%
Black	42.17	100%	0%
Hispanic	40.13	69%	2%
White	42.26	82%	9%
Race not stated	41.07	50%	17%

Table 9

Averages and standard deviations (SD) for 2000 P-2 oral assessment scores by race.

Race	Avg. Score	% of applicants whose scores fell within 1 SD of the overall avg.	% of applicants whose scores were >1 SD of the avg. score.
Am. Indian	36	0%	0%
Asian	41.5	100%	0%
Black	42.50	100%	0%
Hispanic	43.14	73%	9%
White	43.17	70%	15%
Race not stated	43.75	100%	0%

Once the scores were tabulated, a banded list was established for each rank. The P-1 list consisted of the top scoring 36 applicants, which were divided into three bands (A, B, & C). Only one Black applicant scored high enough to be banded, and was placed

in the “C” band based on the candidate’s score. Of the ten P-1s that were hired off of this list, eight came from the “A” band, one came from the “B” band, and none from the “C” band.

One anomaly to the score-based hiring for P-1s involved a White candidate who passed the 2000 P-1 testing process, but did not score high enough to be placed on the banded list. Later, the applicant secured a full time position with the SBF’s fire prevention bureau as an inspector. This was done through a separate testing process and, therefore, a separate list that was in no way associated with the P-1 list for firefighter.

After working for the fire prevention bureau for over a year, the fire chief approved the transfer of this individual to the operations division as a P-1 when a position became available. The justification for this decision was that this candidate had performed well as an employee, and that the candidate should get preference as a current employee of the city. The practice of internal transfers such as this is not uncommon throughout the city.

However, hiring this candidate as a P-1 meant that several other P-1 candidates who had scored higher than this individual would be skipped over. Among those who were skipped over was the only Black candidate that made the banded list. Subsequent hiring for P-1 from this list came again from the “A” band, and the list expired without hiring any Black candidates.

There is no clear evidence that the fire department’s choice to go outside the banded list was a deliberate attempt to shut out a Black applicant. However, the action does generate points for argument among those who are suspicious of SBF’s hiring practice, which will be reviewed in the Discussion section of this research.

2004 Recruitment Test

Because of concerns about the cost and effectiveness of the 2000 test, a different approach was taken in 2004. This assessment made use of a commercial testing tool that was developed by the Edmonds WA based Ergometrics & Applied Psychological Research, Inc. The testing system, called FireTEAM[®] contains a 115 question multiple-choice, video-based assessment. Seventy percent of the assessment evaluates and scores the candidates teamwork and human relations skills as they relate to the job of firefighter. The assessment also contains a 40 item animated simulation measuring mechanical aptitude and system learning, and a 25 item reading test based on typical materials a firefighter must read to perform the job. During the test, the candidate watched video situations that are followed by multiple-choice selections that suggest possible correct answers. The candidate records what they believe to be the most appropriate answers on an electronically scanned answer sheet, which is sent to Ergometrics for scoring.

Although FireTEAM[®] has been commercially available for less than five years, Ergometrics Inc. has been providing the same type of testing for law enforcement and other public service occupations since the early 1980's. The company has also conducted a complete validation study of the FireTEAM[®] system, which includes a comprehensive outcome analysis of several other fire departments that had either used the product, or participated in a validation study (Ergometrics, 2004). SBFDF was one of the departments that participated in validation studies of the product in 2003.

The validation studies offered quantifiable evidence of the testing systems validity and reliability, and included an in depth job analysis. In the report, the validity coefficient for the three main components of the FireTEAM[®] test were reported as:

- Behavioral: .366
- Mechanical: .222
- Reading: .150

As discussed in the literature review, the rule of thumb for validation coefficients indicates that scores above .35 are considered to be “very beneficial” in measuring the desirable characteristics of a candidate for given position. The behavioral element of the FireTEAM[®] system, which comprises 70% of the overall score, clearly falls in this category according to the study. The mechanical aptitude’s (20% of total score) coefficient of .22 puts it in the category of “likely to be useful”, and the reading portion’s (10% of the total score) coefficient of .15 suggested that it “might be useful”. (U.S. Department of, 1999, 3-10).

Although this data suggests that a candidate who scores high on this test will likely exhibit the positive qualities that were assessed if they were hired, the reading and mechanical portions show this to a lesser degree. Because these portions of the test represent a small percentage of the overall score, it is not likely that the lower coefficients would have a significant impact, and none was noted in the validation report. However, the fire department and the city’s Civil Service Board agreed that each individual portion of the test would be given a fail point of 70%.

For example, if a candidate had an overall score of 80%, but only scored 68% on the mechanical portion, they would be disqualified from the entire process and not considered for employment. In this example then, it could be said that although the test’s design for the mechanical aptitude was weighted at 20% of the total score, it would actually have an impact as though it were 100% of the test because the score of <70%

results in complete disqualification. Although Ergometrics allows individual agencies to establish a fail point, it is not an inherent part of the system. In fact, the validation report for the system clearly states that there is “no point or score at which all candidates are qualified and below which they are not qualified” (Ergometrics, 2004, p. 76).

The reliability of the test was also measured in the validation report. As outlined in the literature review, test reliability measures how consistent the test results would be if candidates were to be tested multiple times using the same general instruments. The reliability coefficients for the FireTEAM[®] system were:

- Behavioral: .88
- Mechanical: .69
- Reading: .99

The rule of thumb outlined in the literature review states that reliability coefficients should be greater than .70 to be considered reliable.

Although the mechanical aptitude portion is one point under the recommended minimum, the overall scores suggest that the testing system should generate dependable, reproducible, and consistent information about candidates. Again, with the stipulation requiring a score of 70% or greater in each individual category, the .69 coefficient is more significant than if no fail point had been established.

Because standard civil service procedures require an oral interview as part of the assessment process, a second phase to the assessment process was added. In this phase, a four-person oral interview panel of SBFD personnel would interview the top scoring candidates from the FireTEAM[®] process. After the interviewers scored each applicant, the scores would be averaged for a final oral score. That score would then be sent to civil

service, where it would be factored in with the FireTEAM[®] score, to produce a numerical list which based on fifty percent FireTEAM[®] score, and fifty percent oral score.

Candidates would then be hired based on their order on the list, highest scoring first, assuming that they pass the standard background investigation. Because the oral interview portion of this testing process is ongoing as of this writing, there is little data available to measure the effectiveness of this testing process. However, the FireTEAM[®] portion was completed, and offered relevant data that will be evaluated in this research.

The overall outcomes of these tests were measured in a manner similar to previous tests analyzed in this research. Because the city's Civil Service Board considered this a "written" test, they administered it per their policy. Civil service policy also disallows revealing the actual test scores to anyone outside of civil service. Therefore, only pass/fail information by ethnic class was made available.

As in previous tests, P-1 and P-2 applicants were put on separate lists, but were all given the same FireTEAM[®] test at the same time. As table 10 shows, the 2004 test again had a low number of Black applicants for the position of P-1, although it was the second highest percentage of Black applicants in the last 12 years. There was only one Black applicant for the position of P-2.

According to civil service, that applicant did not meet the minimum qualifications for the position, leaving no qualified Black P-2 applicants. For this reason, no further calculation was needed for the 2004 P-2 portion of the test.

Table 10

Application and pass rates for FireTEAM[®] test given in 2004 for the position of P-1 firefighter.

Race	Total applicants	% of total applicants by Race	Total qualified applicants by race	Applicants who participated in Ergometrics test (Qualified minus no-shows)	% that passed written
Am. Indian	1	0%	0	0	0%
Asian	5	1%	3	1	0%
Black	12	3%	6	4	50.0%
Filip	0	0	0	0	0%
Hispanic	48	11%	24	18	52.4%
White	109	25%	50	37	64.9%
Unknown	257	59%	110	72	70.8%
TOTAL	432		193	132	

The percentage of Black applicants who passed the 2004 P-1 written assessment was still low at only 50%. Even so, the average pass rate percentage by race was 48%. This puts all of the passing Black applicants within one standard deviation above the average.

Application of the four-fifths rule to the pass/fail rate for Black candidates resulted in an IR of .77. This indicates that there is a possibility of adverse impact, although it is only four points below the target of .80 or greater. It should be noted however that at least one of the qualified Black applicants failed only the mechanical aptitude portion of the test. Had the test been administered as originally designed by its

developers, this candidate would have passed, and the percentage of Black applicants would rise to 75%. The implications of the fail point established for this portion of the test will be covered further in the discussion section.

Research Question 4: How many Blacks in the community are actively taking the necessary steps to obtain the general qualifications needed for a career in the fire service?

The data gathered from the programs and institutions researched for this question suggests that in comparison to the number of Blacks residing in the San Bernardino area, relatively few are taking the steps necessary to obtain the general qualifications needed for a career in the fire service. Without these qualifications, potential applicants are not allowed to participate in the employment selection process for the position of P-1 or P-2 with SBFD.

The research for this question began by looking at the proposed career choices of 370 seniors attending one of San Bernardino's high schools. As seen in table 11, the data from the survey appeared to represent a good ethnic balance of the student body. However, based on SBFD's applications rates, there appears to be a limited connection between the career choices shown in this data, and the number of students who will actually pursue a career in the fire service. This may be a result of a data set that is too small to show a significant trend.

Although further research would be needed to establish such a trend, the available data does suggest that there may be few Blacks in the community who are considering a fire service career at the high school level.

Table 11

Breakdown of graduating seniors that participated in the career choice survey conducted at San Geronio High School.

Race	Total student body ethnic composition	% respondents to senior survey by race	Number of respondents choosing a fire service career.
American Indian	1.4%	2%	0
Asian	5%	9%	0
Black	20%	17%	0
Filipino	1%	1%	1
Hispanic	50%	41%	1
Pacific Islander	0.6%	0%	0
White	22%	29%	2

The next set of data that focused on high school age students came from one of San Bernardino City Unified School Districts specialized programs called the Public Safety Academy (PSA). In addition to providing all of the high school curriculum required by the State of California, PSA offers specific curriculum geared toward students who hope to pursue a law enforcement or fire service career. As such, a large percentage of its enrollees and graduates will likely continue their education and training in pursuit of a fire service career. This is in sharp contrast to the results of the senior's survey from San Geronio High School, where only 1% of the graduating students indicated that they plan to pursue a career in the fire service after high school.

The PSA program began in 2000, and accepts students from grades 9-12. Although its enrollment has grown substantially over the last four years, it is a still relatively new program. Therefore, there is no data available showing the success rate of

the programs graduates in securing employment in a fire service agency. However, as indicated in table 12, the ethnic breakdown of the programs enrollment thus far suggests that it will increase the number of minority graduates who will pursue a fire service career compared to traditional high school programs (Dickinson, 2004). Furthermore, the data indicates that overall, PSA’s Black students show the greatest increase in interest compared to Black students in the traditional high school system.

Table 12
 Enrollment by race in Public Safety Academy (PSA) versus enrollment in traditional high school programs throughout the San Bernardino City Unifies School District.

Race	PSA enrollment	SBCUSD traditional high school enrollment
Asian	1.8%	3%
Black	25.6%	20%
Hispanic	58.6%	57%
Native American	4.1%	1%
White	10.1%	18%

The next step in preparation for a fire service career generally begins at the community college level. Here, interested persons can enroll in courses designed specifically to teach the requisite job skills for fire and EMS careers. This includes a California State Fire Marshall accredited basic fire academy, and successful completion of EMT-1 or Paramedic curriculum and certification. Although there are other avenues to obtain this required training and certification, such as through specific fire departments that offer such programs, the majority of these fire and EMS related classes throughout the state take place at the community college level.

Data retrieved from Crafton Hills Office of Research and Planning (2004) provided evidence that there has been a proportionately small number of Blacks that have enrolled and completed the classes that would be considered part of the minimum requirements for employment as a full time firefighter or paramedic with SBFD. These classes include (by course number) FIRET-100, FIRET-101, and EMS-020. As detailed in Appendix “C”, the enrollment breakdown for these courses by the three dominant ethnic classes calculates to roughly 62% white, 29% Hispanic, and only 5% Black.

Completion of these three classes would then make the student eligible to enroll in the state accredited basic fire academy (FIRET-115), which is the primary prerequisite to apply for a P-1 or P-2 position with SBFD, as well as most fire departments in the state. As table 13 shows, the completion rate of Blacks for the fire academy at Crafton Hills has been consistently low over the seven years of data provided.

Table 13

Number of students who completed the CHC basic fire academy by race.

Race	1996	1997	1998	1999	2000	2001	2002	TOTAL	% of total
Asian/Pacific islander	5	5	8	3	0	0	0	21	2%
Black, non-Hispanic	0	3	0	0	1	3	6	13	1%
Hispanic/Latino	60	47	36	20	15	16	25	219	24%
Native American	2	0	5	3	3	0	0	13	1%
Other non-White	2	3	0	4	0	3	4	16	2%
White, non-Hispanic	118	145	119	86	58	48	43	617	67%
Decline to state/unreported	2	2	0	0	6	4	3	17	2%

Collectively, this data suggests that there is not a high level of interest among Blacks in the community in pursuing a fire service career at the community college level.

The final area of research for this question focused on SBFD/San Bernardino Adult Education's basic fire academy that was discussed in the procedures section of this document. This program was initiated as an effort to make completion of a basic fire academy more obtainable to working adults in the community.

Because the SBFD/Adult Education program was a product of the city's school district, the focus for recruiting applicants was directed at the community of San Bernardino City. Of the 132 people that applied for the program, only 20 were Black. Of that 20, nine passed the 12th grade level written test, and of those, only five appeared for the oral interview. Ultimately, four Black candidates were selected to participate in the program, and of those four, none of them completed the program. Each one decided to drop out on their own accord, and did not complete the curriculum. Of those that did complete the program, 67% were white, 30% were Hispanic, and 3% were American Indian (Brown, 2003).

In addition to showing a low overall number of Blacks participating in this program, the data also contradicts the theory that more Blacks would participate in preparatory programs if their offerings were more conducive to persons who must work full time.

Discussion

Although some might argue that true organizational diversity is not dependant on the ethnic blend of the organization, this research has found evidence that ethnic diversity is in fact a significant, fundamental element of a healthy, diverse organization.

Compelling support for this fact was illustrated in the literature review in Linnehan and Konrad's study of ethnically balanced workforces (1999). Additional research by Orlando, Chadwick, & Dwyer's showed that ethnic diversity leads to improved employee performance and increased employee retention (2003).

Furthermore, SBFD's administration has made it clear that in their pursuit of organizational diversity, they will actively seek out ways to include people from diverse ethnic backgrounds in the organization. Such attempts to do so were illustrated in the creation of the SBFD/Adult Education Fire Academy. This applied research project is practical example of the department's desire to find ways to improve ethnic diversity.

When the decision to conduct this research was made, there was already evidence that the number of Blacks applying for a P-1 or P-2 position for SBFD was low in comparison to the number of Blacks living in the community. As such, these low application rates have a direct and significant effect on the number of Blacks that could be hired.

The research also found evidence that suggests that the testing process itself may have historically contributed, at least in part, to the low number of Blacks being hired by SBFD. These findings were reached by using standardized methods to determine adverse impact, such as the four-fifths rule (EEOC, 1978) and statistical calculations of averages and standard deviations (Morris & Lobsenz, 2000). Although this finding was somewhat unexpected, it offers a strong starting point for reforming the testing and selection process in order to improve the ethnic diversity of the department.

The research reveals missed opportunities over the last 12 years to hire more qualified Black applicants. One example would be the 1996 P-1 test, where every Black

applicant who took the test failed. Although the failure rate itself is of great concern, the fact that a list with no Black candidates was extended for four years likely had a much greater negative impact. A more prudent approach would have been to recognize the potential adverse impact, and call for a new test as soon as the list expired. It is possible that even more aggressive steps could have been taken by immediately calling for a new test.

There is also evidence that SBFD and the City's Civil Service Department could have given more attention to the administration and evaluation of the written tests. There are two significant issues with this.

First, Gebhardt, Duffe, & McCurley's research indicates that, in general, paper-and-pencil written tests, such as the ones used by San Bernardino City, have had a historical adverse impact on Black applicants (1998). This does not suggest that such tests should be eliminated, but simply that there should be careful analysis of the test process and of the test instruments to ensure that any adverse impact is minimized. Because the FireTEAM[®] test uses video to present test items, it appears to be a positive step in offering innovative assessment mechanisms that move away from traditional paper-and-pencil formats.

Second, the city's use of the WRIB written questions did not include all of the steps necessary to ensure that the test does not create an adverse impact on any specific ethnic classes (Western Regional, 2003). Furthermore, no members of SBFD were allowed to review the test prior to its administration to ensure that the questions were a correct reflection of the job duties of an SBFD firefighter. This particular step was

strongly recommended by the developers of the WRIB system as another safeguard against adverse impact.

The test given in 2000 also suggests that a potential opportunity to improve diversity was either not recognized, or not pursued. In this case, SBFD decided to hire a White P-1 candidate who was on the 2000 P-1 list, and was also working in the department's fire prevention bureau at the time. However, this candidate had scored significantly lower on the list than another Black candidate on the same list. It should be noted that there were other candidates that had scored higher than this Black candidate that were also not hired because there were not enough openings. Therefore, even if the department had not selected the lower scoring White candidate, there was no guarantee that the Black candidate would have been hired.

The research revealed some SBFD members frustration as they posed the question that if the department was willing to select employees off of a list using criteria other than scores, as was done in this case, why couldn't they select a candidate based on the desire to meet the department's diversity goals? This is a difficult question to answer. There was justification for hiring the White candidate, as he had been working for SBFD's Fire Prevention Bureau (a related field), had a good employment record, and had been recommended by the prevention bureau's staff. However, by looking at Granovetter's research, there is evidence that giving candidates the advantage of an inside referral can reduce the probability of hiring a Black worker by 75% in organizations that are less than 10% Black (Mouw, 2002). Although this could be applicable in this case, to establish a clear connection would require further study.

The choice to use an oral interview as the primary scoring and selection mechanism for the 2000 test also raises some concern. The research from Mahrabian (1970), as well as recommendations by the U.S. Department of Labor (1999) both suggest that although this method is widely used, its validity and reliability can easily diminished if the method is not applied properly. The application of the 2000 oral interview process certainly included practices that may have significantly reduced its reliability.

In this case, the department used five separate rating teams, each consisting of two raters, to begin the oral interview process. Although all candidates were given the same interview questions, they were rated by only one of the five rating teams. From there, the scores from each of the teams were combined and tabulated, and the overall top scoring candidates (36 P-1s and 21 P-2s) were invited back to a second interview. This interview was conducted by a different panel of three raters, using a different set of questions. The scores from this interview established the placement of candidates in bands. Finally, the fire chief and two other chief officers conducted a third oral interview of the candidates in the “A” band. Candidates were hired based on their placement on this final interview.

Although the specific rater’s scores from the first phase of this interview process were not available, several of the raters who participated in the process complained that scoring patterns varied widely between rating teams. Because candidates were selected for the second interview based on the scores of the first, candidates who were scored by a rating team that typically gave high scores had better chance of making to the second

interview than a candidate who was scored by a rating team that was typically scored more conservatively.

Without the actual scoring records of each rater, it is difficult to demonstrate the impact of this rating system. It is reasonable to assume however that to some degree, the final hiring was influenced significantly by each raters opinions and biases, and not just the performance of the candidates. Although it may be impossible to eliminate rater bias, having multiple rating teams increases the possibility that candidates competing for the same position will be subject to different levels and types of bias depending on who conducts the interview. Therefore, from a test reliability standpoint, this would not be viewed as the optimal method to establish a hiring priority. In fact, the U.S. Department of Labor found that the reliability coefficients of the multiple rater method are typically lower than those found with other rating methods (1999).

This is not to say that the use of the oral interview does not have its place in the selection process. Clearly, there is significant information about a candidate that can be gleaned from the process, as long as the oral is conducted correctly, and kept in perspective with other evaluation elements.

Although the number of Black firefighters employed with SBFD is low in comparison to the community's ethnic makeup, the research showed that SBFD is more ethnically diverse overall in comparison to the total percentage of minority firefighters employed throughout San Bernardino County. The department still trails slightly behind the national average for Black firefighters, although only by less than 1%. (United States Census, 2002).

In reviewing fire departments that had experienced significant turmoil as well as federal consent decrees based on low employment numbers of minority firefighters, it would appear that SBFD does not have the same degree of racial disparity that they experienced. For example, in the Boston MA fire department, Blacks, Asians, and Hispanics made up only 1% of the entire department when a consent decree was imposed upon them in 1974. The decree was then lifted when the total minority rate rose to 39% in 2000 (Belkan, 2003). Both Los Angeles City CA fire department (Hahn, 2002) and St. Louis MO (Adversity.org, 2003) also had federal consent decrees imposed on them as minority representation was less than 5% of the department's ethnic make up in Los Angeles, and less than 11% in St. Louis. In both cases, the sanctions were not lifted until the number of minority firefighters rose to 50% of their total employee make up.

With the overall number of minorities employed by SBFD currently at 31%, the department is clearly closer to reaching racial equality than these cities were when sanctions were imposed upon them. However, we are still nearly 20% away from the minority composition that eventually satisfied the courts in two of the cases. This may suggest that although SBFD is not a likely candidate to have hiring sanctions place upon them, there is still room for improvement. As this research shows, these improvements should include ways to increase the number of Black firefighters that are employed by SBFD.

The final question of the study looked at the number of Blacks who were actively preparing themselves to meet the minimum qualifications for an occupation in the fire service. Although there was some expectation that the number of Blacks participating in fire and EMS related training would be low, the data from Crafton Hills showed lower

numbers than the author expected. This same trend was seen in the high school graduate survey, and in the SBFD/Adult Education basic fire academy. As long as this trend continues, it will be difficult for the SBFD to consistently generate a pool of qualified Black applicants that is large enough to sustain progress in promoting ethnic diversity. Finding the specific reasons behind these low enrollment rates is beyond the scope of this applied research project. Even so, the topic is worthy of future research as it is clearly a significant component of the low application rates for P-1 and P-2 positions with SBFD.

The extent to which this applied research project will impact SBFD will depend largely on how much heed is given to the research findings and recommendations by the fire department's administrative officers, the mayor and council, and the City's Civil Service Board. At a minimum, the illustration of the hiring system's preventable faults of the past should give compelling reasons to modify or discontinue practices that may have been contributing factors in the low number of Blacks being hired by SBFD. Furthermore, these parties should welcome the idea of evaluating and pursuing different testing and assessment models that show promise for increasing ethnic diversity. It is highly unlikely that the department will experience outcomes that are more favorable in the future by using the same systems that failed in the past.

Ideally, this research will encourage the city's Civil Service Board to take a hard look at the city's hiring practices overall to ensure that we proactively address potential adverse impact issues. This is important to the city because the Civil Service Board oversees multiple city departments' hiring processes, and many of them use the same testing systems that SBFD has used over the last 12 years.

Finally, it is the author's hope that this applied research project will encourage others to perform additional research in the areas of Black education, minority recruitment practices, and new entry level testing models that enhance diversity. Furthermore, the author hopes that others will find this research useful in developing programs and ideas that will promote ethnic diversity in the fire service nation wide.

Recommendations

The findings of this applied research project show that there is a need to make modifications to the entry-level testing and assessment process in order to ensure fairness, and to improve the ethnic diversity of the SBFD. In addition, the low number of Blacks participating in programs designed to prepare individuals for the position of firefighter or paramedic/firefighter gives insight into areas where intervention by SBFD could improve Black participation in such programs. An effective outcome in either of these areas would likely result in a larger pool of qualified Black firefighter applicants, which would likely result in more Black firefighters being hired by SBFD. The final product of such changes then would be a more ethnically diverse fire department, which is a positive outcome for the entire community. To that end, the following recommendations are made, based on the findings of this research:

1. The City's Civil Service Board should require that all written tests or similar assessments that are given for entry-level positions have gone through a bona fide validation process. This validation process should follow the guidelines provided by the Federal Equal Employment Opportunity Commission (1978), with an emphasis on providing clear evidence that the test is job related, predictive, and does not create adverse impact on any ethnic or gender group.

2. The City's Civil Service Chief Examiner should keep detailed records of all test outcomes and the processes performed to validate such tests. This should include documentation of validity evidence, as outlined by the Federal Equal Employment Opportunity Commission (1978).
3. The City's Civil Service Board must make validation evidence readily available to the department requesting the test so that any trends, both positive and negative, can be immediately identified. This includes test scores and data on pass/fail rates by race and by specific test questions. Without this data, it is not reasonable to expect the department requesting the test to make timely changes in their selection process to ensure that it is not inadvertently excluding any specific ethnic or gender class.
4. Validated tests must be administered exactly as designed, particularly when the test is developed and validated commercially. Both SBFD and the City's Civil Service Board should refrain from making changes in the designed scoring, administration or score interpretation except when allowed for by the test developers.
5. The city should reevaluate their use of WRIB questions. If test items are used from this bank, then the department for which the test is given should evaluate the test before it is administered to ensure the relevance of each question. After the test is administered and graded, steps should be taken to evaluate the pass/fail ratio by race and gender for each test question. If a question or groups of questions show a high failure rate overall, or by race or gender, the question should be removed. The exception to this would be if specific, detailed knowledge of the question content is critical for the function of the job for which the test is being given. Allowances for such exceptions are outlined in the guidelines provided by the Federal Equal

- Employment Opportunity Commission (1978). The department for which the test is given should establish such critical content after reviewing the test question(s).
6. When oral interviews are used as a primary assessment tool, the interview panel members should be properly briefed and trained on how to appropriately score a candidate, and how to avoid some of the classic pitfalls of scoring an oral interview. In order maximize test reliability, candidates should be evaluated by one oral board panel consisting of the same panel members for each candidate whenever possible. The practice of using multiple oral board panels as was done in the 2000 test should be discontinued.
 7. If a validated entry-level test yields a list of applicants which poorly represents a specific ethnic or gender class, SBFDD should ensure that the list is not extended beyond its original expiration date.
 8. SBFDD should discontinue the use of the lateral hire criteria for the positions of P-1 and P-2. This practice limits the applicant pool to those who are already in the fire service. As this research shows, the fire service in general is lacking in ethnic diversity, and therefore will not provide an applicant pool that will promote such. An open application process that accepts qualified persons without requiring past affiliations in the fire service will likely draw a larger, more diverse pool of applicants, while still allowing for those already in the fire service to apply.
 9. If the banding system is used to establish a list, the discretion that it provides to pick candidates on a basis other than overall score should be used carefully. If a candidate who scored lower than others is going to be selected, the reasons for doing so should be clear and compelling. Without question, the impact that such a decision may have

on enhancing or diminishing organizational diversity should be closely analyzed and given strong consideration.

10. SBFD should clarify its commitment to organizational diversity to every member of the department. Suggestions for accomplishing this would include providing diversity training for every department member, creating a statement of values that identifies diversity as a department-wide priority, and putting in writing the proposed steps that the department plans to take to promote a more diverse organization. Additionally, the fire department's leaders must reflect this commitment in all transactions. Although these suggestions do not guarantee organizational diversity, they are an important step in making diversity a primary component in the department's decision-making process.
11. SBFD should increase its efforts to recruit and mentor ethnic minorities in the community who may be interested in a fire service career. As this research shows, there are only a small number of Blacks who are taking the necessary steps to acquire employment as a firefighter. Even with a fair and effective testing and assessment processes, there will not be a significant increase in the number of Black firefighters employed by SBFD if only a few engage in the steps necessary to secure employment. Currently, there are no SBFD personnel available for assignment to such recruitment or mentoring projects, nor is there any money budgeted for these activities. The City's Mayor and Council must support this effort by providing the necessary resources to promote an effective program. Without such support, it is unlikely that any attempt to recruit or mentor will be sustainable or fruitful.

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APPENDIX A

Example of survey used by the San Bernardino City Unified School District to assess the career choices made by graduating high school seniors.

**SAN GORGONIO HIGH SCHOOL
SCHOLARSHIP QUESTIONNAIRE**

Dear Senior,
Please write your name and answer the first question below whether or not you intend to apply for scholarships and compete in the practice interview sessions and selection process.

STUDENT NAME: _____ English Teacher: _____
Period: _____

___ **NO**, I do not intend to apply for scholarships. (**Do not** fill out form if you check this box.)
___ **YES**, I would like to compete in San G's Scholarship Program. (Please continue filling out the form.)

Please answer the following questions so that we can assist you in your scholarship search:

QUESTION	ANSWER
What will your college major(s) be?	
Did your parent/grandparent attend Ramona Alessandro Elementary?	YES _____ NO _____
Did your parent/grandparent attend Pacific High School?	YES _____ NO _____
Is your parent an employee of San Bernardino City Unified School District? If so, what position and title?	Position: _____ Title: _____ Location: _____
Is your parent a Union Member? (i.e.: postal, retail clerk, Teamsters, city employee, teacher, state employee, school district employee) If so, what Union(s)?	
Do you live in Highland?	YES _____ NO _____
What elementary school(s) did you attend?	
How many community services hours do you have?	#: _____ hours
What college(s) do you plan to attend?	4 yr: _____ or 2 yr: _____ or Vocational/Tech: _____ or Out of State College: _____
Is your parent/grandparent in the Military or a veteran?	Branch: (i.e.: Army, Marines, Navy, etc.) _____ Rank: (i.e.: Mstr, Sg., Capt, 2 nd Lt) _____ Active: _____ Retired _____ Disabled _____ % Veteran of Foreign War: (i.e. Korean, Vietnam, Desert Storm) _____
Ethnicity (optional) (Please circle one)	American Indian Black Asian Filipino Pacific Islander Hispanic White

APPENDIX B

Application of 4/5ths rule to the 1992 entry level written test for the position of firefighter for Black and Hispanic applicants.

Table B1

Application of the 4/5 rule to Black applicants for the 1992 entry-level written test for the position of firefighter.

4/5 Rule (Blacks)	<i>n</i> =	Pass Ratio (PR)= P/T	IR (PR min./PR maj.)
White Tested (T)	584		
White Passed (P)	532	PR maj (White) = 0.91	
Black Tested (T)	27	PR min (Black) = 0.51	IR=0.56
Black Passed (P)	14		

Table B2

Application of 4/5 rule to Hispanic applicants for the 1992 entry-level written test for the position of firefighter.

4/5 rule (Hispanics)	<i>n</i> =	Pass Ratio (PR) = P/T	IR (PR min./PR maj.)
White Tested (T)	584		
White Passed (P)	532	PR maj (White) = 0.91	
Hisp. Tested (T)	130	PR min (Black) = 0.80	IR = 0.87
Hisp. Passed (P)	104		

APPENDIX C

Enrollment rates for courses (by course number) FIRET-100, FIRET-101, and EMS-020 by race at Crafton Hills College. Successful completion of these courses is required for entry into the fire academy (FIRET-115). Completion of a California State Fire Marshall accredited fire academy, such as this one, is a minimum requirement for the positions of firefighter and paramedic/firefighter for SBFd.

TABLE C1

Enrollment rates for FIRET-100, "Fire Protection Organization" by race

Race	2000	2001	2002	2003	2004	Average
African American, Non-Hispanic	5%	4%	6%	4%	7%	5%
Asian/Pacific Islander	1%	3%	2%	4%	5%	3%
Declined to State/Not Reported	4%	2%	4%	5%	8%	5%
Hispanic/Latino	32%	29%	24%	25%	37%	30%
Native Alaskan/American Indian	1%	1%	1%	1%	3%	2%
Other Non-White	3%	0%	1%	1%	0%	1%
White Non-Hispanic	54%	61%	61%	61%	77%	63%

APPENDIX C (Continued)

Table C2

Enrollment rates for FIRET-101, "Fire Prevention Technology" by race.

Race	2000	2001	2002	2003	2004	Average
African American, Non-Hispanic	5%	3%	6%	5%	5%	5%
Asian/Pacific Islander	0%	3%	2%	4%	4%	3%
Declined to State/Not Reported	5%	2%	3%	4%	5%	4%
Hispanic/Latino	26%	28%	22%	23%	28%	25%
Native Alaskan/ American Indian	2%	0%	1%	1%	2%	1%
Other Non-White	2%	1%	2%	1%	0%	1%
White Non-Hispanic	59%	62%	64%	63%	56%	61%

Table C3

Enrollment rates for EMS-020 "Emergency Medical Technician" by race.

Race	2000	2001	2002	2003	2004	Average
African American, Non-Hispanic	4%	5%	6%	4%	7%	5%
Asian/Pacific Islander	3%	4%	5%	3%	5%	4%
Declined to State/Not Reported	3%	3%	4%	3%	4%	3%
Hispanic/Latino	24%	24%	22%	21%	25%	23%
Native Alaskan/ American Indian	1%	2%	2%	0%	2%	1%
Other Non-White	1%	2%	1%	1%	0%	1%
White Non-Hispanic	63%	61%	60%	68%	57%	62%