

**FAA Statement  
on the  
Barrier Analysis of the Air Traffic Control Specialist  
Centralized Hiring Process**

Administrator Michael Huerta has made an historic commitment to transform the Federal Aviation Administration (FAA) into a more diverse and inclusive workplace that reflects, understands, and relates to the diverse customers we serve. To meet this goal and satisfy the requirements of the Equal Employment Opportunity Commission MD-715, the Administrator tasked the Office of the Assistant Administrator for Civil Rights to conduct barrier analyses of the Air Traffic Control Specialist (ATCS) Centralized Hiring Process, Aviation Safety Inspectors, and Airway Transportation Systems Specialists.

The first study completed is on the ATCS series; therefore, the FAA is pleased to submit the reports entitled, “Barrier Analysis of the Air Traffic Control Specialist (ATCS) Centralized Hiring Process” and “Extension to Barrier Analysis of the Air Traffic Control Specialist Centralized Hiring Process.” These reports reflect a collaborative effort undertaken by the FAA’s Office of Civil Rights, Office of Human Resources, and the Air Traffic Organization. The primary purpose of these reports is to identify and analyze potential barriers to equal employment opportunities within the ATCS Centralized Hiring Process and to offer solutions to establish the foundation for improving the Process.

The reports reflect a detailed scope of work, approaches and methodologies, work plans, and analytical provisions including overall hiring conditions within the ATCS job series 2152. Our consultant, Outtz and Associates, was commissioned to conduct the barrier analysis, which began in April 2012, with the issuance of the final report in May 2013. The barrier analysis identified that four (4) of seven (7) decision points in the air traffic controller hiring process resulted in adverse impact to applicants from at least one demographic group. Subsequently, another independent consultant, APT Metrics, was hired to analyze the barrier decision points, specifically reflecting on the differential pass rates for protected group members. APT Metrics’ report was finalized and issued in February 2013. These reports, in tandem, present recommendations and specific suggestions to improve the ATCS Centralized Hiring Process and to ensure that there will be no barriers to equal employment opportunity.

Significant progress is now underway. To date, progress includes the establishment of an Executive Steering Committee comprised of senior agency executives. The Steering Committee provides oversight for the new hiring process and has implemented multiple cross functional project teams to operationalize the recommendations identified in the report.

ATCS Centralized Hiring Process improvements being implemented to support the Fiscal Year 2014 hiring of air traffic controllers include (1) comprehensive outreach and recruitment, (2) improved automation enhancements to our application process, (3) revisions to the Air Traffic Selection Assessment Tools, and (4) standardization of human resource procedures in review of applications.

These efforts will result in important improvements in the ATCS Centralized Hiring Process, further demonstrating the FAA’s commitment to equal employment opportunity for all.

# **Extension to Barrier Analysis of Air Traffic Control Specialist Centralized Hiring Process**

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## **FINAL REPORT**

***April 16, 2013***



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## TABLE OF CONTENTS

Section	Page
Chapter 1: Executive Summary	3
Chapter 2: Overview, Barrier Analysis and Stakeholder Insights regarding the FAA ATCS Selection Process	10
Chapter 3: Root Cause Analysis of ATCS Decision Point Barriers	18
Chapter 4: Summary and Recommendations	51
Chapter 5: References/Appendices	57
References	57
Appendix A: IRP Review	59
Appendix B: Documents Received and Reviewed	77
Appendix C: FAA ATCS Stakeholder Interview Protocol	83
Appendix D: Analysis Decisions	90
Appendix E: Full Data Analysis Results	97
<b>List of Figures</b>	
Figure 1 Total Applicants by Source (2008 – 2011)	22
Figure 2 Applicant Demographics by Source (At Point of Application)	22
Figure 3 Total Applicant Flow – Applicant Survival (2008 – 2011)	23
Figure 4 Candidate Pool Representation Through to CSP by Ethnicity	24
Figure 5 Total Applicant Flow by Ethnicity – Applicant Survival (2008 – 2011)	25
Figure 6 Total Applicant Flow by Gender – Applicant Survival (2008 – 2011)	26
Figure 7 Total Applicant Flow by Source – Applicant Survival (2008 – 2011)	27
Figure 8 Percentage Qualified Applicants Who Are Referred (Announcements Throughout Nation/US Only)	38
Figure 9 Process Used to Create CSP Location-Specific Referral Pools	40
Figure 10 Distribution of Race & Gender Groups in AT-SAT Bands	43
<b>List of Tables</b>	
Table 1 ATCS Minimum Qualifications by Applicant Source	11
Table 2 Merit System Principles	14
Table 3 Outtz and Associates Barrier Analysis Summary	16
Table 4 Stakeholder Insights Regarding Barrier Analysis	17
Table 5 SME Interviews	19
Table 6a MQ: System Qualifications (from Applied) - Overall and By Applicant Source - Cumulative Applications Analysis - WHITE VS. AFRICAN AMERICAN	30
Table 6b MQ: System Qualifications (from Applied) - Overall and By Applicant Source - Cumulative Applications Analysis - WHITE VS. HISPANIC	31
Table 6c MQ: System Qualifications (from Applied) - Overall and By Applicant Source - Cumulative Applications Analysis - MALE VS. FEMALE	31
Table 6d System Qualifications (from Applied) - Unique Analysis	97
Table 6e System Qualifications (from Applied) - Cumulative Analysis	99
Table 7a MQ: HR Qualifications (from System Qualifications) - Overall and By Applicant Source - Cumulative Applications Analysis - WHITE VS. AFRICAN AMERICAN	32
Table 7b MQ: HR Qualifications (from System Qualifications) - Overall and By Applicant Source - Cumulative Applications Analysis - WHITE VS. HISPANIC	32
Table 7c MQ: HR Qualifications (from System Qualifications) - Overall and By Applicant Source - Cumulative Applications Analysis - MALE VS. FEMALE	33
Table 7d HR Qualifications Review (from System Qual) - Unique Analysis	101
Table 7e HR Qualifications Review (from System Qual) - Cumulative Analysis	103

## TABLE OF CONTENTS

Table 8a	MQ: HR Qualifications (from Applied) - Overall and By Applicant Source Cumulative Applications Analysis - WHITE VS. AFRICAN AMERICAN	34
Table 8b	MQ: HR Qualifications (from Applied) - Overall and By Applicant Source Cumulative Applications Analysis - WHITE VS. HISPANIC	34
Table 8c	MQ: HR Qualifications (from Applied) - Overall and By Applicant Source Cumulative Applications Analysis - MALE VS. FEMALE	35
Table 8d	HR Qualifications Review (from Applied) - Unique Analysis	105
Table 8e	HR Qualifications Review (from Applied) - Cumulative Analysis	107
Table 9a	AT-SAT Pass for Public Source - Unique Applicant Analysis - AFRICAN AMERICAN, HISPANIC, & FEMALE GROUPS	35
Table 9b	AT-SAT Pass (Public Source Only) - Unique Analysis	109
Table 10a	Geographic Location Preferences: Overall and By Applicant Source - Cumulative Applications Analysis – WHITE vs. AFRICAN AMERICAN	37
Table 10b	Geographic Location Preferences: Overall and By Applicant Source - Cumulative Applications Analysis – WHITE vs. Hispanic	37
Table 10c	Geographic Location Preferences: Overall and By Applicant Source - Cumulative Applications Analysis – Male vs. Female	37
Table 10d	Geographic Location Preferences - Cumulative Analysis	110
Table 11	Impact of Location Preferences on African Americans	39
Table 12a	Overview of Adverse Impact by Individual CSP	41
Table 12b	CSP - Selected (from Referred) - Unique Analysis	112
Table 12c	CSP - Selected (from Referred) - Cumulative Analysis	114
Table 12d	CSP Overall - Selected (from Referred) - Unique Analysis	116
Table 12e	CSP Eastern Service Area - Selected (from Referred) - Unique Analysis	120
Table 12f	CSP Central Service Area - Selected (from Referred) - Unique Analysis	124
Table 12g	CSP Western Service Area - Selected (from Referred) - Unique Analysis	128
Table 13	Examination of Impact of Lowering AT-SAT Cutoff Score	44
Table 14a	Interview, Medical, Suitability/Security, & Hire Decision - Unique Applicant Analysis - WHITE VS. AFRICAN AMERICAN	47
Table 14b	Interview, Medical, Suitability/Security, & Hire Decision - Unique Applicant Analysis - WHITE VS. HISPANIC	47
Table 14c	Interview, Medical, Suitability/Security, & Hire Decision - Unique Applicant Analysis - MALE VS. FEMALE	48
Table 14d	Interview Pass - Unique Analysis	132
Table 14e	Medical Pass - Unique Analysis	133
Table 14f	Conditional Suitability Pass - Unique Analysis	134
Table 14g	Final Suitability Pass - Unique Analysis	135
Table 14h	Both Conditional & Final Suitability Pass - Unique Analysis	136
Table 14i	Hire Decision Pass - Unique Analysis	137
Table 15a	Overall Hiring Process Decisions - Unique Applicant Analysis - WHITE VS. AFRICAN AMERICAN	49
Table 15b	Overall Hiring Process Decisions - Unique Applicant Analysis - WHITE VS. HISPANIC	49
Table 15c	Overall Hiring Process Decisions - Unique Applicant Analysis - MALE VS. FEMALE	49
Table 15d	Overall Process: Applied to Hired - Unique Analysis	138
Table 15e	Overall Process: Fully Qualified to Hired - Unique Analysis	139
Table 16	HR Screen Comments	90
Table 17	Referral Action Comment Recode	93
Table 18	Overall Security Score	94
Table 19	CSP Dates	96

# Chapter 1

## EXECUTIVE SUMMARY

A Barrier Analysis of the FAA's Air Traffic Control Specialist (ATCS) centralized hiring process was recently completed by Outtz and Associates (October, 2012). This analysis was guided by EEOC's Management Directive 715 & the Uniform Guidelines on Employee Selection Procedures (1978). The results of that analysis indicated that barriers exist for certain protected groups on four of the seven critical decision points that comprise the ATCS centralized hiring process. APTMetrics was contracted by the FAA's Office of Human Resources (OHR) in December, 2012 to conduct a detailed root cause analysis of the identified barriers and establish the foundation for corrective interventions. A summary of our approach, findings and recommendations are discussed below.

While there are 10 steps in the overall hiring process, from Vacancy Announcement (Step 1) through to Firm offer Letter (Step 10), seven of these steps require personnel actions that impact applicant flow and were therefore targeted for review by the barrier analysis (**See Chapter 2**). These seven decision points are:

- **Minimum Qualifications (MQs).** The ATCS minimum qualifications are customized to each applicant source. The minimum qualification review is carried out in two stages: automated system screening and manual HR review.
- **Air Traffic Selection and Training (AT-SAT).** The AT-SAT is a computer-based selection test battery designed to assess key ATCS worker requirements, aptitude, and personal characteristics associated with success as an ATCS. The AT-SAT is only relevant for individuals applying from CTI, General Public, and VTP applicant sources.
- **Generation of Referral Lists.** For all applicant sources except General Public, referral lists are generated separately for each applicant source and geographic location that has vacancies. Non-referral would occur if an applicant failed to specify a location preference or if the location preferences did not align with state/facility hiring needs.
- **Centralized Selection Panel (CSP).** Once referral lists have been generated, a CSP is convened to review these lists and select individuals to fill specific facility vacancies. The CSP is comprised of management representatives who have expertise in the ATCS occupation and knowledge of the facilities within their respective regions.
- **Interview.** Applicants who are selected during the CSP are invited to participate in an interview with a facility manager, typically at the facility that is closest to the address on record for the applicant.
- **Medical Screen.** The medical screen consists of both physical and psychological components.

- **Security Clearance.** The security screen consists mainly of a primary screen (termed Conditional Suitability). If the primary screen is insufficient to make a determination, a subsequent secondary screen (termed Final Suitability) is then conducted.

The decision points described above combine to form a fairly complex hiring process. This complexity is due to a number of factors including the use of multiple applicant sources with different minimum qualifications, mixed uses of the AT-SAT, application knock-out factors unrelated to qualifications (e.g., location preference), a potentially multi-year hiring process from the point of application to hire, and referral lists organized by applicant source. Each of these factors is addressed in this report in terms of its impact on protected groups as well as how it can be changed or improved.

Based upon the Barrier Analysis and FAA stakeholder responses to this analysis (including ATO, CAMI, and AHR), a root-cause analysis was blueprinted to thoroughly investigate each of the barriers identified and determine whether any additional hurdles existed to the fair and accurate selection of candidates for the ATCS position (**See Chapter 3**).

The process for conducting this root cause analysis required a thorough understanding of how the various decision points of the hiring process impact candidates' "survival" from application through to the hire decision. Both qualitative and quantitative analyses were employed to interpret the impact of each decision point and tease out the underlying causes of differential pass rates for protected group members.

#### *Qualitative Review*

The qualitative review incorporated stakeholder interviews, site visits, a review of existing FAA documentation, and an evaluation of recommendations generated through the *FAA Independent Review Panel on the Selection, Assignment and Training of Air Traffic Control Specialists (IRP)*. Among the insights gleaned during this review was the need to: 1) increase standardization, consistency and documentation across all decision points in the hiring process, 2) establish the job-relatedness of all decision points in the hiring process, 3) minimize subjectivity, particularly in the MQ and CSP steps, 4) improve data capturing and tracking capabilities, and 5) establish a central group to oversee and improve the ATCS hiring process. This phase of the study provided additional context to the barrier analysis and allowed for a thorough understanding of how the hiring system works, the unique challenges involved in balancing applicant flow with adverse impact, and provided direction for the types of analyses that would lead to sustainable interventions.

#### *Quantitative Review*

The quantitative review relied on data housed in the AVIATOR system between 2006 and 2011, as well as AT-SAT testing data provided by CAMI. This phase of the study began with a high-level evaluation of where important subgroup differences are occurring in the hiring process.

Survival Analysis. When examining the underlying diversity of the various applicant sources, the most dramatic difference was found between the Collegiate Training Initiative (CTI) source and

all other applicant sources with respect to African American representation. African American applicants comprise only 5% of the CTI pool compared to an average of 34% African American representation across the non-CTI applicant sources. While the CTI applicant source is relatively small compared to the other sources, the CTI subgroup differences are magnified when considering the relatively high “survival” rate of CTI candidates through the hiring process.

An analysis of survival rates by race, gender, and applicant source was conducted for each step in the hiring process. This applicant flow information provided insights into which of the decision points in the hiring process serve to disproportionately screen out minority candidates and certain applicant sources. These analyses illustrated a number of important findings:

- Nearly all applicant screening occurs prior to the interview stage, primarily during the MQ and CSP stages of the hiring process;
- Advancement in the hiring process is clearly correlated with race. White applicants pass the MQ screening and CSP stages at a significantly higher rate than African American applicants;
- Advancement in the hiring process is clearly correlated with applicant source. CTI applicants pass the MQ qualification and CSP hurdles at a significantly higher rate than all other applicant sources, and
- MQ screening dramatically alters the overall diversity of the applicant pool that moves forward in the hiring process. For example, prior to any screening, 32% of all applicants are African Americans and 48% are White. However, following the MQ screening, 16% of all applicants moving forward are African American while 65% are White. Moreover, this is the stage at which at least 80% of applicants from the most diverse sources are eliminated.

The applicant flow information above highlights several important points which were used to drive our subsequent analyses. First, the steps from application to CSP selection are the most likely places for systematic adverse impact simply because these steps are responsible for the vast majority of applicant fails. Second, African Americans stand out as having a very different survival rate for these earlier hurdles. Third, applicant sources show very different demographics. Because the CTI source is much less diverse, the CTI source itself can confound analyses by ethnicity.

Root Cause Analyses by Decision Point. Using the applicant survival analysis, the results of the Barrier Analysis, and our in depth interviews with SMEs, analyses were conducted to evaluate the underpinnings of this differential impact across the hiring decision points.

*MQ Stage.* The MQs were developed to be tailored to each applicant source and therefore differ significantly across sources. This approach impacts pass rates, which happen to vary considerably by applicant source. Results of our adverse impact analyses indicate that the overall MQ stage produces adverse impact for African Americans and Hispanics for all applicant sources except CTI (98% of CTI candidates pass through the MQ stage). Adverse impact was also found for Females for all applicant sources except CTI and General Public.



*Air Traffic Selection and Training (AT-SAT).* The AT-SAT serves as a hurdle after qualification for the General Public and VTP applicants and as a minimum qualification for CTI applicants. All three of these sources must score at least a 70 to pass their respective AT-SAT hurdle. However, the AT-SAT is used again during the CSP process to differentiate applicants into “qualified” and “well qualified” bands (see below). When used as a minimum qualification with a 70% pass score, approximately 95% of applicants pass the exam with no resulting adverse impact for African Americans, Hispanics, and Females

*Referral Stage.* The referral decision point is an automated decision based solely on the location preference provided by applicants. If the applicant chooses a location for which an ATCS candidate need exists, then the applicant is referred for that location.<sup>4</sup> However, the use of location preferences as a basis for the referral is problematic. Our analyses revealed that referral rates vary considerably by applicant source. Applicants from the CTI, CTO, and Reinstatement sources were referred at twice the rate of applicants from the RMC and VRA sources, and these also happen to be the sources with the largest percentage of African Americans. Ultimately, African American diversity is reduced disproportionality in the overall process because African American membership is highest for those sources that are referred at much lower rates. Given that the referral rates are so different (i.e., 97% vs. 47%) suggests that perhaps the CTI, CTO, and Reinstatement sources are better informed as to the location of open positions.

*CSP Stage.* For the CSP process, adverse impact was observed for African Americans and Females, for specific panel sessions, though no consistent pattern of adverse impact was observed over the 2008-2011 time period. One significant finding was that adverse impact only occurs for African Americans within the CSP when national Public announcements are used. This is due largely to how the AT-SAT is used to prioritize the selection of General Public applicants.

Currently, applicants are split into two bands based on predetermined score ranges. Scores less than 85 and greater than or equal to 70 are considered to be “qualified.” Scores at or above 85 are considered to be “well qualified.” Applicants who score in the “well qualified” band are given substantial preference in CSP selection decisions.

Applicants who score in the “Well Qualified” band on the AT-SAT receive priority over those scoring in the “Qualified” band. White applicants score in the preferred band at a disproportionately higher rate than racial minorities (e.g., 70% White vs. 36% African American and 47% Hispanic).

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<sup>4</sup> The referral process for General Public applicants is slightly different in that applicants are placed on national referral lists and are therefore considered for all locations.



*Interview Stage.* Almost 100% of applicants who were interviewed passed the interview. No race or gender adverse impact was found for the interview. The interview questions and answers can be found online.

*Medical Stage.* More than 90% of applicants passed the medical screen. No race or gender adverse impact was found for the medical screening.

*Security Stage.* Selection rates for all groups remained very high (greater than 95%). No race or gender adverse impact was found for passing the overall security screening process.

*Overall Hiring Process.* Adverse impact was found at several hurdles in the ATCS selection process, as well as across the overall ATCS selection process. Specifically, two of the three focal groups (African Americans and Females) have disproportionately lower pass rates than White and Male applicants for both minimum qualification hurdles (automated and HR) as well as for the CSP selection process. Regarding the minimum qualification hurdles, adverse impact was found within most of the applicant sources as well. Adverse impact was not observed for CTI at any point in the hiring process, though the qualification rate was very high in general. Importantly, adverse impact for the CSP process does vary considerably by individual CSP event and appears to be a function of using General Public source national referral lists. Also, the current method of using location preferences is decreasing applicant diversity due to vastly different referral rates for the applicant sources.

A summary of our findings along with a number of recommendations for each of the decision points that were identified as problematic are presented in **Chapter 4**. In addition, specific suggestions to improve assessment tool vulnerabilities, process inefficiencies, and overall design challenges that need to be addressed to ensure the sustainability of recommended interventions over time are discussed.

**STEP 1: Vacancy Announcements.** A structured process, involving a job analysis and formal validation, should be conducted to determine and validate the differentiating criteria for ranking and deciding upon which applicant sources should be drawn upon for each open position.

In addition, it is recommended that the FAA continue community outreach efforts to educate applicants about the ATCS occupational series and more broadly, establish a national recruitment outreach and education program around the ATCS position.

**STEP 2: Minimum Qualifications.** It is strongly recommended that the MQs be reviewed against the job analysis and revised and validated accordingly. Additionally, every attempt should be made to build consistent MQs across recruitment sources.

Consideration should also be given to the use of preferred qualifications (PQs) that could be used to differentiate between a large number of candidates meeting the MQs and other

qualification requirements (e.g., passing the AT-SAT). As with MQs, job relevance and potential for adverse impact must be considered for PQs.

A tracking system should also be established to evaluate MQ screening decisions for accuracy and adverse impact on an ongoing basis.

**STEP 3: AT-SAT.** Roughly 95% of applicants score at or above the passing score of 70, however, this rate drops precipitously and produces significant adverse impact for the cutoff associated with the well qualified band. Operationally, the cutoff score for selection in the CSP is 85 since applicants in the “qualified” band are rarely selected.

One potential solution to this issue is to replace the use of the AT-SAT within the CSP with a measure that can differentiate candidates without increasing adverse impact. For example, the use of validated preferred qualifications that are collected during the application process could be used for this purpose.

In terms of the AT-SAT itself, it is recommended that supplemental validation research be conducted to confirm its relevance to the job. Specifically, the AT-SAT should be reviewed against an updated job analysis to ensure that it is still measuring the most important requirements for success in the ATCS position.

**STEP 4: Generation of Referral Lists.** It is recommended that the air traffic controller application form be changed so that applicants could select the “anywhere in the nation” option. They should also be provided with information as to which facilities have openings. This is in line with the Independent Review Panel’s recommendation (ATO & AHR: Review of Independent Review Panel (IRP) Recommendations & Current Projects, November 6, 2012).

**STEP 5: Centralized Selection Panel (CSP).** It is recommended that the full CSP process design be evaluated for efficiency, accuracy and fairness. It is quite likely that alternative approaches to the CSP model would result in more precise, fair outcomes along with tremendous cost savings. For example, there may be potential to automate much of the current decision making localized in the CSP selection process. Under this scenario CSP panelists could operate in more of a final review/quality control role.

It will also be critical to implement a rigorous evaluation of the CSP decision making process to ensure that the process is operating as intended. Initially it will be important to closely monitor and oversee a full cycle of CSPs to ensure real-time decisions are fair and job-related. Decision making in the CSP should continue to be monitored by HR on an on-going basis thereafter.

**STEP 6: Interview.** The interview has become more of a formality in the ATCS hiring process as almost 100% of the candidates pass. It is recommended that new interview content be developed and validated, using the job analysis as the driver of which competencies need to be measured.

Additionally, it is recommended that training be provided to all hiring managers involved in conducting the interviews to ensure they understand how to fairly and accurately conduct the

interview process. Training should include “frame of reference” exercises in order to help calibrate judgments and ratings across hiring managers.

### **ATCS Overall Design Considerations**

The current ATCS selection process is highly decentralized, with decision making and process tracking occurring across multiple departments and organizations. The absence of a clear structure and accountability for the full selection process results in significant challenges to the evaluation, ongoing improvement, and long-term success of the program. It is our recommendation that a single organization take charge of this process so that it can be centrally managed from announcement through to placement into the FAA Academy. The organization best positioned to “own” and run this process is the Office of Human Resources.

A centralized process, housed in AHR, would enable improved standardization and targeted outreach of the recruitment process, an improved ability to track and evaluate the hiring process, and enhanced coordination of the entire process.

## Chapter 2

### OVERVIEW, BARRIER ANALYSIS AND STAKEHOLDER INSIGHTS REGARDING THE FAA ATCS SELECTION PROCESS

In order to set the context for these analyses, a brief description of the steps and decision points that comprise the ATCS hiring process is provided below.

#### Overview of ATCS Hiring Process

**STEP 1: Vacancy Announcements.** Applicants for ATCS positions must apply online to formal vacancy announcements. The vacancy announcements are specific to an applicant hiring source<sup>5</sup>. Applicant sources used in the ATCS hiring process include the following:

- Reinstatements/Transfers
  - Former FAA controllers
  - PATCO
  - Department of Defense (DOD)
- Former military controllers
  - Veterans' Recruitment Appointment (VRA)
  - Retired Military Controllers (RMC)
- Graduates from FAA accredited collegiate programs
  - Collegiate Training Initiative (CTI)
- General Public
  - Includes Veterans Training Program (VTP) candidates
- Control Tower Operators (CTO)

The mix of applicant sources chosen during any hiring period is based on a combination of the number of positions that need to be filled and preferences of the FAA for particular applicant sources. Notably, candidates can apply to multiple applicant source announcements at any given time.

Announcements, when made, are also designated to a specific geographic area. "National" announcements (i.e., Throughout the US/Nation) are typically issued to cover hiring needs across the US and US territories, though announcements have also been issued for specific states and facilities at different points in time. When applicants apply to an announcement, the applicant must indicate up to two location preferences. For example, for an announcement designated "Throughout the Nation," an applicant might indicate both "Illinois" and "Indiana." These location preferences can be changed by the applicant until the announcement is closed.

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<sup>5</sup> There are two exceptions to the announcement and application process. First, in 1993, a list of reinstatement and transfer eligible ATCS who were separated from the FAA as a result of the PATCO job action of 1981 was created (known as the PATCO list). This list represents an additional source of applicants. Vacancy announcements are not issued for PATCOs. Second, exceptions were accorded to Flight Service Station (FSS) employees whose positions were eliminated when FSS functions were contracted out,

For all applicant sources except General Public, location preferences dictate which location-specific referral list(s) (e.g., RMC-Illinois referral list) an applicant can be placed on once the applicant is deemed fully qualified. Qualified General Public applicants, however, are placed on a national referral list.

**STEP 2: Minimum Qualifications (MQs).** All applications, regardless of applicant hiring source, are then screened against the established minimum qualifications. The ATCS minimum qualifications are customized to each applicant source. Table 1 below outlines the minimum qualifications by applicant source.

**Table 1. ATCS Minimum Qualifications by Applicant Source**

	VRA	RMC	CTO	REIN	PUBLIC	CTI
<b>Citizenship</b>	U.S. citizen					
<b>Language</b>	Must be able to speak English clearly enough to be understood over radios, intercoms, and similar communications equipment					
<b>Age</b>	Maximum entry age of 31*					
<b>Experience or Education</b>	52 consecutive weeks of certified ATC experience		Experience in a military or air traffic tower facility	ATCS in FAA / DoD -CPC: Federal Civilian CPC or FPL -DOD: 52 wks certified ATC experience	3 yrs progressive responsible FT work experience OR Bachelor's degree OR Comb. of experience / education equal to 3 yrs OR Alternative requirements	Successful completion of FAA-approved curriculum with university rec
<b>Ratings, Certifications, and/or Assessments</b>	--	ATCS certification or facility rating according to FAA standards	Valid CTO certificate with facility rating of Tower/Cab	ATCS certification or facility rating according to FAA standards	--	AT-SAT score of 70 or higher
<b>Eligibility</b>	Veterans' Recruitment Appointment eligibility	On terminal leave pending retirement from active duty military svc. or retired from active duty on or after 1999-09-17	--	--	--	Within eligibility time period from graduation

\*Some applicant sources (i.e., VRA, Reinstatement, CTI) allow for applicants to be over the age of 31 as long as the applicant's initial appointment as an ATCS occurred prior to turning 31. Additionally, the maximum entry age requirement does not apply to the RMC applicant source.

The minimum qualification review is carried out in two stages: automated system screening and manual HR review. As part of the application process, applicants are required to answer a series of “Yes/No” questions to indicate whether or not they meet specific minimum requirements (e.g., age, experience). The minimum qualifications screening process begins with an automated system review of applicant responses to these online screening questions. Applicants are also required to provide specific documentation to support their responses. Applicants who pass the automated screening are then subject to further review by HR representatives to ensure they in fact meet the source-specific minimum qualifications. This includes a detailed review of the application, including work history (if relevant) and required supporting documentation (e.g., facility ratings, veteran’s service forms, certifications). Once an applicant has passed both of the qualification stages (automatic and manual HR review), they are considered to be fully qualified.

Note, there is no policy that prohibits an individual from applying through multiple applicant sources within a given hiring period. If an applicant chooses to apply to multiple applicant source announcements, this can result in cases of the same applicant both meeting and not meeting the minimum qualifications of the ATCS position within the same hiring period. Also, due to age requirements and military retirement dates, it is possible for a candidate who is minimally qualified at one point in the process to later be disqualified.

**STEP 3: Air Traffic Selection and Training (AT-SAT).** The AT-SAT is a computer-based selection test battery designed to assess key ATCS worker requirements, aptitude, and personal characteristics associated with success as an ATCS (Ramos, Heil, & Manning, 2001). The AT-SAT is only relevant for individuals applying to CTI, General Public, and VTP announcements, though the timing of when the test must be taken and passed differs between these applicant sources. Individuals applying to a VTP and General Public announcement who have been determined to be fully qualified based on the prior minimum qualification screening must then take and pass the AT-SAT in order to receive further consideration in the ATCS hiring process (i.e., be placed on a referral list). Individuals applying to a CTI vacancy announcement must first pass the AT-SAT before they can apply to a CTI vacancy announcement.

A score of 70 is required to pass the AT-SAT. Roughly 95% of applicants score at or above this passing score.

If the announcement was for a specific state or facility, these applicants must travel to that state to sit for the exam.

Notably, the AT-SAT scores of CTI, VTP, and General Public applicants are also considered during the Centralized Selection Process (CSP) which occurs later in the ATCS hiring process. Here, applicants are placed into either a Well Qualified band (score of 85 or higher) or a Qualified band (score between 70 and 84.9). A score of 85 or higher has become the operational cut score during the CSP selection phase. This is discussed in more detail below.

**STEP 4: Generation of Referral Lists.** Applicants who pass the previous stages of the ATCS hiring process are then referred on to the CSP for further consideration. More specifically,

referral lists are automatically generated on the basis of the applicant's previously specified location preferences. The only reasons an applicant who passed all prior stages of the ATCS hiring process would not be referred on to the CSP is if they failed to specify any location preference or if the applicant's location preferences did not align with state/facility hiring needs.

For all applicant sources except General Public, referral lists are generated separately for each applicant source and geographic location that has vacancies (e.g., RMC-Illinois, CTI-Illinois). Applicants on a specific state referral list can be considered by the CSP for selection for any facility vacancies within that state.

For the General Public applicant source, a single "national" referral list is generated containing those General Public applicants who passed all prior stages of the ATCS hiring process. Referred General Public applicants can be considered by the CSP for selection for any facility vacancy within the US or US territories.

The ordering and presentation of candidates on referral lists varies by applicant source. The following summarizes the rules for each applicant source:

*Reinstatements/Transfers:* Candidates are sorted by alpha order

*Veterans' Recruitment Appointment (VRA):* Candidates are sorted by Priority Veterans Preference

*Retired Military Controllers (RMC):* Candidates are sorted by Priority Veterans Preference

*Veterans Training Program (VTP):* Candidates are first sorted by AT-SAT score category grouping (85 and above, 70 to 84.9); candidates are then presented in random order within these two categories

*Collegiate Training Initiative (CTI):* Candidates are first sorted by AT-SAT score category grouping (85 and above, 70 to 84.9); candidates are then sorted by Priority Veterans Preference and secondarily presented in random order within these two categories

*General Public:* Candidates are first sorted by AT-SAT score category grouping (85 and above, 70 to 84.9); candidates are then sorted by Priority Veterans Preference and secondarily presented in random order within these two categories

*Control Tower Operators (CTO):* Candidates are sorted by Priority Veterans Preference.

**STEP 5: Centralized Selection Panel (CSP).** Once referral lists have been generated, a CSP is convened to review the referral lists and select individuals to fill specific facility vacancies. The CSP is comprised of management representatives who have expertise in the ATCS occupation and knowledge of the facilities within their respective regions. Facility selections must be made from amongst the pool of applicants referred on either the relevant state-specific list or national General Public referral list. Panelists have access to applications and vitas (if provided) to



inform their decision making. Panelists are instructed to treat each applicant source with equal weight. Additionally, panelists are instructed by HR that all selections must be made in compliance with merit system principles, veteran's preference, and agency policy. The merit system principles presented to CSP panelists are listed below in Table 2.

**Table 2. Merit System Principles**

Merit System Principles (FAA PMS VII and 5 U.S.C. § 2301 (b))
Recruit qualified people to achieve a workforce that fairly represents our society
Select and promote on the basis of relative knowledge, skills, and abilities as they relate to the requirements of the job to be filled
Use fair and open competition to assure equal opportunity
Treat employees and applicants fairly and equitably
Maintain high standards of integrity, conduct, and concern for the public interest

**STEP 6: Interview.** Applicants who are selected during the CSP are invited to participate in an interview with a facility manager, typically at the facility that is closest to the address on record for the applicant. The interview is used to assess six competencies: Dependability, Job Motivation, Reactions to Job Demands, Team Work, Air Traffic Control, and Spoken English. Interviewers provide an overall rating of either "Recommended", "Marginal", or "Not Recommended" to Selecting Officials. Applicants must receive a rating of "Recommended" in order to receive a Tentative Offer Letter (discussed in the next section).

Currently, interviews are not standardized and those conducting the interviews are not trained on how to administer and score the interview.

Importantly, interview questions can be found on the internet, providing applicants ample opportunity to practice the interview prior to its administration. Additionally, Selecting Officials, who are not present at the time of the interview, review all "Marginal" and "Not Recommended" decisions and make the final determination as to whether a "Marginal" or "Not Recommended" applicant should be "Recommended". During stakeholder interviews, it was noted that the pass rate at the interview stage is very high (e.g. 95%). Based on the cleaned, final sample used in this report, we found an even higher pass rate for the interview at approximately 99%.

**STEP 7: Tentative Offer Letter.** The tentative offer letter (TOL) is issued after the applicant passes the interview. At the point of a tentative offer it is generally assumed the applicant will be hired barring failure of medical or security clearance.

It should be noted that the TOL stage in the selection process can be somewhat of a "freezing" point for applicants. Specifically, applicants are permitted to turn age 31 after the TOL has been issued with no penalty to their application process (see FAA Policy Bulletin #12, In-Process Rule for Air Traffic Control Specialist Positions). Further, applicants who are on active duty in

the military may also be issued a TOL, which essentially holds the applicant's place in the selection process until their active duty service term is complete. In this case, the applicant's security and medical clearance would be postponed until the applicant nears the end of their active duty term. Once medical and security clearances have been conducted and the applicant is no longer on active duty, the applicant can then proceed through the final steps of the selection process.

**STEP 8: Medical and Security Clearance.** While distinct steps, both medical and security clearance screens can be initiated simultaneously. The medical screen consists of both physical and psychological components. The security screen consists mainly of a primary screen (termed Conditional Suitability). If the primary screen is insufficient to make a determination, a subsequent secondary screen (termed Final Suitability) is then conducted.

**STEP 9: Coordination with Air Traffic Organization on Entry on Duty (EOD) dates.** Following the medical and security screens, HR must coordinate with ATO to determine EOD dates. These dates indicate when the applicant will begin training at the Academy.

**STEP 10: Firm Offer Letter.** The last step of the ATCS centralized hiring process is the issuance of a firm offer letter.

The decision points described above combine to form a fairly complex hiring process. This complexity is due to a number of factors including the use of multiple applicant sources with different minimum qualifications, mixed uses of the AT-SAT, application knock-out factors unrelated to qualifications (e.g., location preference), a potentially multi-year hiring process from the point of application to hire, and referral lists organized by applicant source. Each of these factors is addressed in this report in terms of its impact on protected groups as well as how it can be changed or improved.

## **RESULTS OF BARRIER ANALYSIS**

As a first step in the root cause analysis, Outtz and Associates' Barrier Analysis (2012) was thoroughly reviewed. A high level summary table created by Outtz and Associates is presented below. As can be seen in Table 3, four of the seven evaluated decision points present barriers to protected group members. These decision points were therefore specifically targeted by *APTMetrics* for follow-up root cause analysis.

**Table 3. Outtz and Associates Barrier Analysis Summary**

Decision Points	Evaluation Comments	Female	Asian	AA	Hispanic	Multi
Minimum Qualifications Determination	Non-standardized training for HR Specialists	✓	✓	*	*	*
AT-SAT Testing	Decision to use well qualified band results in substantial reduction of RNO and gender representation Validity needs to be reestablished	*	*	*	*	*
Preparation of Referral Lists	Use of the minimum qualifications in the referral process builds on adverse impact caused by the qualifications determination	✓	✓	*	✓	✓
Centralized Selection Panel	CSP members do not receive formal training Inconsistent follow-up on references Applicant location preference has potential to create RNO issues Conflict of interests (candidates may be known to CSP panelists)	✓	✓	*	✓	✓
Interview	Interview questions are available to candidates on public web site – candidates all well prepared as a result Interview not effective in current form	✓	✓	✓	✓	✓
Medical Clearance		✓	✓	✓	✓	✓
Security Clearance		✓	✓	✓	✓	✓

\*Statistical criteria indicate that selection decision point is a barrier

✓Statistical criteria indicate that selection decision point is not a barrier

The Barrier Analysis was also reviewed internally by FAA stakeholders, including ATO, CAMI, and AHR. Insights from these constituents were thematically organized to provide additional direction for the root cause analysis. Table 4 presents a summary of these comments.

**Table 4. Stakeholder Insights Regarding Barrier Analysis**

Barrier	Stakeholder Insights
<b>Choice of Applicant Source Pools</b>	<ul style="list-style-type: none"> <li>Clarify bases for past selection of applicant source pools and the impact of these choices on subpopulations within the pools</li> <li>Recommend development of explicit rationale for balancing use of sources in the future to achieve desired RNO/gender/veteran/disabled representation in the FAA controller workforce <ul style="list-style-type: none"> <li>Rationale should take into account Federal guidance/mandates on hiring diversity (e.g., increase veterans) and preferences that are allowed under laws governing federal agencies</li> </ul> </li> <li>Compare non-BA CTI program AA drop-out rates to BA CTI programs <ul style="list-style-type: none"> <li>Compare US college drop-out rates to CTI BA programs</li> </ul> </li> <li>Recommend that FAA work to help CTI partners expand diversity and retain minority/women students in the program</li> <li>Investigate whether further targeted recruitment is needed to source candidates, particularly in CTI programs who will fare better in the selection process</li> <li>Establish whether it is reasonable to consider the amount of training required for different applicant sources as a factor in source selection</li> </ul>
<b>Minimum Qualifications</b>	<ul style="list-style-type: none"> <li>Conduct further analysis to determine impact of MQs used for each applicant source and their impact on diversity of the candidate output <ul style="list-style-type: none"> <li>E.g., Noted much lower qualification rates for VRA and RMC than other sources. Needs to be explored further</li> </ul> </li> <li>Minimum qualifications applied to each source need to be validated and modified based on findings; should be standardized to the extent feasible</li> <li>Recommend process enhancements to ensure consistency in application of minimum qualifications</li> </ul>
<b>AT-SAT Testing</b>	<ul style="list-style-type: none"> <li>Investigate need to bolster analysis of job-relatedness of the AT-SAT</li> <li>Review bi-level cutoff currently in use to assess impact on gender/RNO subgroups</li> <li>Determine reason for including test segments that were not previously shown as having incremental validity</li> <li>Investigate whether test may have been compromised by its availability through public websites</li> </ul>
<b>Referral List Preparation</b>	<ul style="list-style-type: none"> <li>Gather additional information on the process from interviews</li> <li>Analyze actual process for creating the referral list</li> <li>Review impact of AT-SAT score and location preference information on referral list and panel decisions</li> </ul>
<b>Centralized Selection Panel</b>	<ul style="list-style-type: none"> <li>Review selection of panel members, including their diversity, the training provided, and process as now documented and implemented</li> <li>Recommend guidelines for the process, selection of CSP decision-makers, and their training</li> <li>Consider potential impact of bias based on perceived race/ethnicity as represented by applicant names</li> <li>Examine the impact of changing the way location preference is handled <ul style="list-style-type: none"> <li>Potential inconsistency of application of location information by panel members</li> </ul> </li> <li>Propose improvements to increase consistency and reduce disparate impact</li> <li>Consider elimination of panel approach</li> </ul>

Based upon the Barrier Analysis and FAA stakeholder comments, a root cause analysis was blueprinted to thoroughly investigate each of the barriers identified and determine whether any additional hurdles existed to the fair and accurate selection of candidates for the ATCS position.

## Chapter 3

### ROOT CAUSE ANALYSIS

#### Methodology

*APTMetrics* took a two-pronged approach in executing the root cause analysis. First, we conducted a qualitative review, incorporating stakeholder interviews, existing FAA documentation, and best practices insights generated through the *FAA Independent Review Panel on the Selection, Assignment and Training of Air Traffic Control Specialists (IRP)* (contained within ATO & AHR: Review of Independent Review Panel (IRP) Recommendations & Current Projects, November 6, 2012). The qualitative review ultimately guided the quantitative review insofar as understanding how selection process decisions were made, interpreting the data we received, and highlighting where root causes may be located. The quantitative review relies on data housed in the AVIATOR system between 2006 and 2011, as well as AT-SAT testing data received from CAMI. The following two sections summarize the approaches used within the qualitative and quantitative reviews.

#### Qualitative Review

As a first step in the root cause analysis of potential barriers, *APTMetrics* was asked to review the IRP report, mentioned above, and provide specific recommendations and analysis of the panel's recommendations. Using several criteria, we evaluated each panel recommendation. The full report we prepared in November 2012 can be found in Appendix A. Note that much of the information collected for the root cause analysis was not yet available at the time of our original review of the IRP report<sup>6</sup>. However, the IRP report did highlight several key considerations that ultimately guided several analyses within this report, as well as the interview protocol developed and used for interviewing key stakeholders.

For the second, and primary step of *APTMetrics'* qualitative analysis, we conducted subject matter expert (SME) interviews, an on-site visit to the training academy, and a thorough policy and documentation review (all documents reviewed/used can be found in Appendix B). Table 5 lists the SMEs who were interviewed. The interview protocol is presented in Appendix C.

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<sup>6</sup> Our review of the IRP recommendations occurred prior to the commencement of our barrier analysis extension work described herein and was limited to the information presented in the FAA IRP Report. As such, *APTMetrics* did not have the opportunity to speak with any individuals to gather more information related to the IRP recommendations nor were any policy/process documentation available prior to preparation of the IRP report.

**Table 5. SME Interviews**

<b>Key Stakeholder Interviews</b>	
<b>December 3, 2012</b>	
HR Director	Diana Pearsall
Aviation Careers Manager	Rick Mitchell
Aviator Program Manager	J.B. Goelz
CAMI Representatives	Kate Bleckley, Ph.D., and Dana Broach, Ph.D.
Technical Workforce Representative	Henry Mogilka
Academy Representative	Brian Harmelink
<b>December 4, 2012</b>	
Aviation Careers Manager and Aviation Careers Supervisors	Rick Mitchell (Manager), Nancy-Owens Curtis & Elaine McCollum (Supervisors)
<b>January 9, 2013</b>	
Human Resources Specialist	Barbara Goldberg
VP of Management Services	Mike McCormick
<b>January 10, 2013</b>	
Manager of Corporate Recruitment and Marketing	Regina Jones
ATO Hiring Lead	Lisa Giordano
<b>January 11, 2013</b>	
Personnel Research Psychologist	Lexee Waterford, Ph.D.
Human Resources Specialist	Sheila Robinson
Supervisory Human Resources Specialist and former Director, ATO Support Team, AHR-4	Jay Aul, Ph.D.

Initial insights that emerged during this second phase of qualitative analysis included:

**Enhance Process Controls.** A consistent theme running through the SME interviews was a call for greater standardization, consistency and documentation across all decision points in the hiring process. The MQ review and CSP stage were singled out as decision points in particular need of attention. Training for HR specialists and CSP panelists was thought to be particularly important in achieving greater consistency. These conclusions were further reinforced by a review of existing policies and procedures and are aligned with the findings reported in the Barrier Analysis.

**Improve Validation & Ongoing Evaluation of ATCS Hiring Effectiveness.** While the AT-SAT has received a good deal of research attention and has been formally validated, the other steps in the selection process have not. Since each step in the hiring process is considered to be a selection tool under the Uniform Guidelines (1978), each requires documented evidence of job relatedness. Additionally, formal program evaluation was suggested as a way to ensure ongoing improvement and overall effectiveness of the ATCS hiring process.

**Reduce Subjectivity and Close “Loopholes” in the Hiring Process.** Information gained from the interviews indicated that too much subjectivity exists in the process, particularly in the MQ and CSP steps. This is a result of inconsistent MQ requirements by recruitment source and a lack of structured criteria for making CSP decisions. In addition, the use of location preference appears to benefit those who are able to determine where vacancies exist.

**Improve Data Capturing and Tracking Capabilities.** The FAA's ability to accurately track and analyze its hiring process is compromised by the AVIATOR system due to system limitations. Examples include repurposing variables, recording late process decisions in earlier process decision fields, lack of integration with AT-SAT data, and not recording specific minimum qualification pass/fail values.

**Establish a Central Group to Monitor and Improve the ATCS Hiring Process.** A common issue brought to light through the SME interviews, documentation review and Barrier Analysis is that the decision points within the hiring process are disjointed from one another. This is compounded by continual changes to various components of the process with little or no monitoring of the overall impact from year to year. There is currently no centralized entity in place to monitor, manage and take ownership of the full process.

The qualitative review provided additional context to the barrier analysis and allowed for a thorough understanding of how the hiring system works and the unique challenges involved in balancing applicant flow with adverse impact, and provided insight into additional data analyses that would be required to support recommended interventions. The next section details the results of the quantitative phase of the root cause analysis.

## **Data Cleaning**

Before the quantitative analyses could get underway, it was necessary to merge multiple databases and perform extensive data cleaning to ensure that the conclusions would be accurate.

**General Data Cleaning.** APTMetrics received multiple iterations of AVIATOR-exported data for the 2006-2011 time period. After confirming which files were appropriate for analysis with our stakeholders, we first merged this data into a master database, along with separate files containing AT-SAT data, facility information and location, referral list locations, and supplemental suitability data exports. After reviewing the data and the information obtained in the qualitative review, it became apparent that AVIATOR had incomplete data for 2006-2007. Specifically, not all applicant sources used during this time period proceeded through the AVIATOR system. Further, the medical and security clearance data was deemed unreliable for these years as it was not entered into the AVIATOR system until 2007. Therefore data for 2006-2007 were excluded from our analyses.

Significant data cleaning was used where necessary to ensure the data accurately reflects decisions made during the ATCS selection process. A full explanation of data cleaning and analysis decisions can be found in Appendix D, but the following are the key decisions that impacted the resulting clean data set to the greatest extent:

Individuals who were qualified but not referred were excluded (except for General Public applicants who failed the AT-SAT) based on the assumption of no vacancies and/or location preferences were not a match



Individuals who did not fully complete an application or did not submit all required documents were excluded

If an individual was selected from a referral list, they were removed from other referral lists within that same announcement (i.e. they cannot be hired twice)

Gender and ethnicity were filled in for individuals who may have indicated these values on an earlier or later application but did not indicate it on a given application

Individuals who declined somewhere during the process as indicated by referral actions and/or comments were excluded from analyses

Applications for announcements that did not have resulting location-specific referral lists (e.g. General Public) were assigned to all possible state/territory CSP location pools. For those selected from these lists, the location/facility that the applicant was selected for was extracted from the referral comments to withhold that individual from other referral list pools to ensure a selected applicant was not counted as an applicant elsewhere

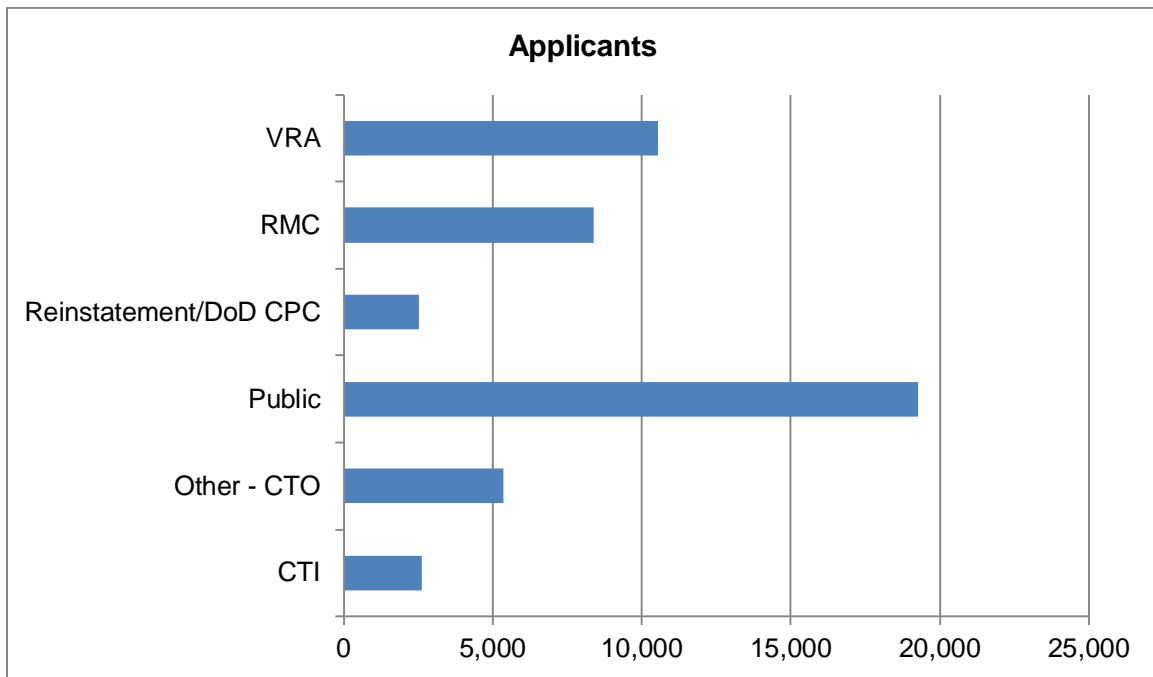
Comments found in the both the HR MQ screen and the referral notations were categorized and used in data cleaning rules. Comments were coded using a combination of manual review and automated categorization based on key terms.

### **Applicant Flow (Survival) Analysis**

Once the above data decision rules were put into place, we examined the flow of applicants using a variety of approaches. Importantly, our first goal was to diagnose at a high level where important differences in the hiring process may be occurring. To this end, we first examined the diversity of applicants within the ATCS applicant sources. We then examined applicant survival rates for ATCS decision points by race, gender and applicant source. The survival charts presented below visually illustrate the flow of applicants within each racial and gender subgroup across the hiring process. This approach helps highlight the parts of the hiring process that are resulting in the largest percentage decrease of minority applicants. Additionally, we examined the proportional racial and gender representation among those surviving each phase in the hiring process.

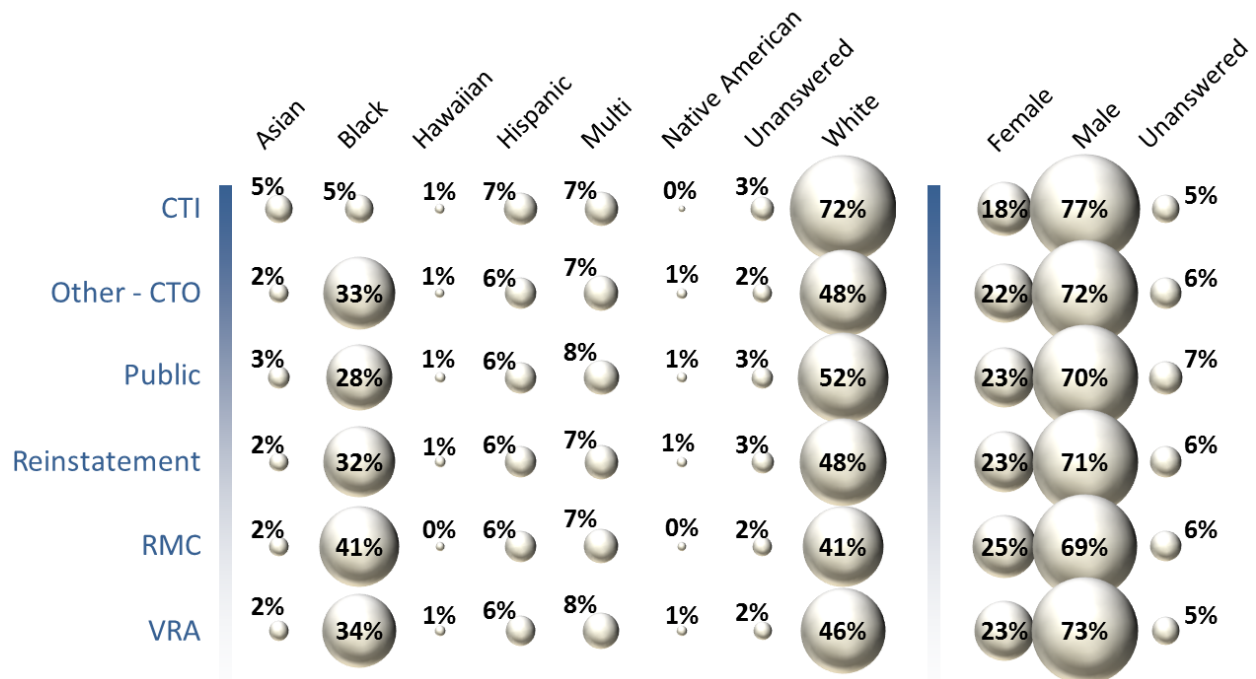
Figure 1 presents the total number of unique applicants by source for the 2008-2011 time period. While the General Public makes up the largest percentage of applicants, it is important to note that this applicant source is not consistently used across announcements.

**Figure 1. Total Applicants by Source (2008 – 2011)**



As can be seen below in Figure 2, applicant sources vary considerably in their respective demographic makeup. Importantly, representation of African Americans and Females is significantly lower in the CTI source.

**Figure 2. Applicant Demographics by Source (At Point of Application)**



We then examined the survival of all applicants through the entire hiring process to understand which ATCS selection hurdles were screening out the most applicants. Figure 3 displays the percentage of applicants that remained in the ATCS selection process at each hurdle. This figure reveals three important insights. First, both the automated and HR minimum qualification screen reduce the applicant pool substantially. Second, the CSP is also responsible for a significant reduction in applicants. Lastly, after the point of the CSP, the selection rates for applicants are exceptionally high, suggesting little practical adverse impact is likely to exist in the later stages of the process.

**Figure 3. Total Applicant Flow – Applicant Survival (2008 – 2011)**

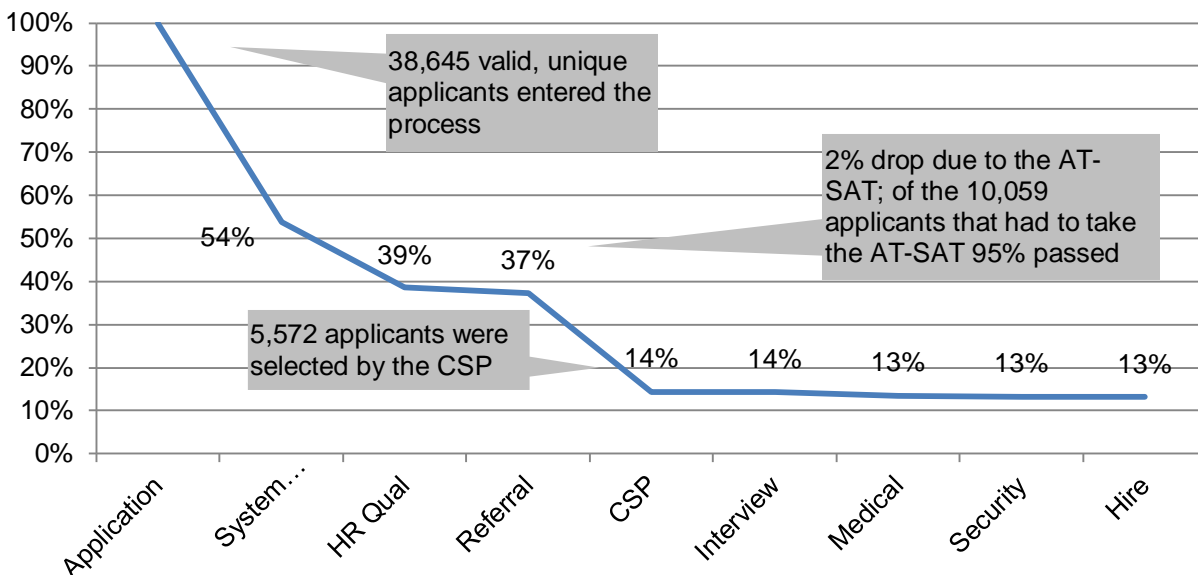


Figure 3 presents the percentage of the original applicant pool passing the hurdle. Results are based on unique applicant counts. Due to missing data, post CSP hurdle percentages were calculated using the overall estimated pass rate of each hurdle.

Figure 4 displays the proportional RNO representation of candidates at each stage from initial application through the CSP. The figure presents several key insights. First, MQ screening dramatically alters the overall diversity of the applicant pool that moves forward in the hiring process. For example, prior to any screening, 32% of all applicants are African Americans and 48% are White. However, following the MQ screening, 16% of all applicants moving forward are African American while 65% are White. Moreover, this is the stage at which at least 80% of applicants from the most diverse sources are eliminated. Second, the proportion of non-White and non-African American applicants relative to all applicants surviving each stage in the process is virtually constant across the process. However, relative to African American representation in the initial applicant pool, African Americans become increasingly underrepresented within the surviving applicant pool as the hiring process progresses.

**Figure 4. Candidate Pool Representation Through to CSP by Ethnicity**

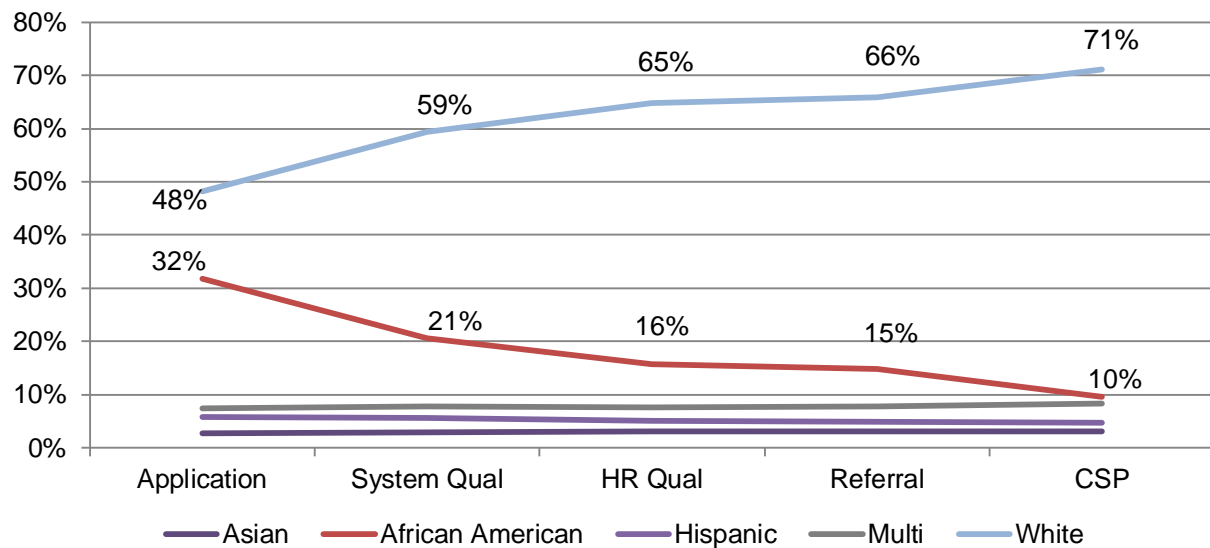


Figure 5 displays the survival of applicants across the ATCS selection process by ethnicity. The figure presents several key insights. First, and similar to Figure 3, the vast majority of applicant screening occurs prior to the interview for all ethnicities. Second, substantial differences exist between ethnic groups. Whites are passing the minimum qualification review at a much higher rate than other groups. A large effect is apparent for African Americans, with African Americans passing the minimum qualification and CSP hurdles at a much lower rate than Whites.

**Figure 5. Total Applicant Flow by Ethnicity – Applicant Survival (2008 – 2011)**

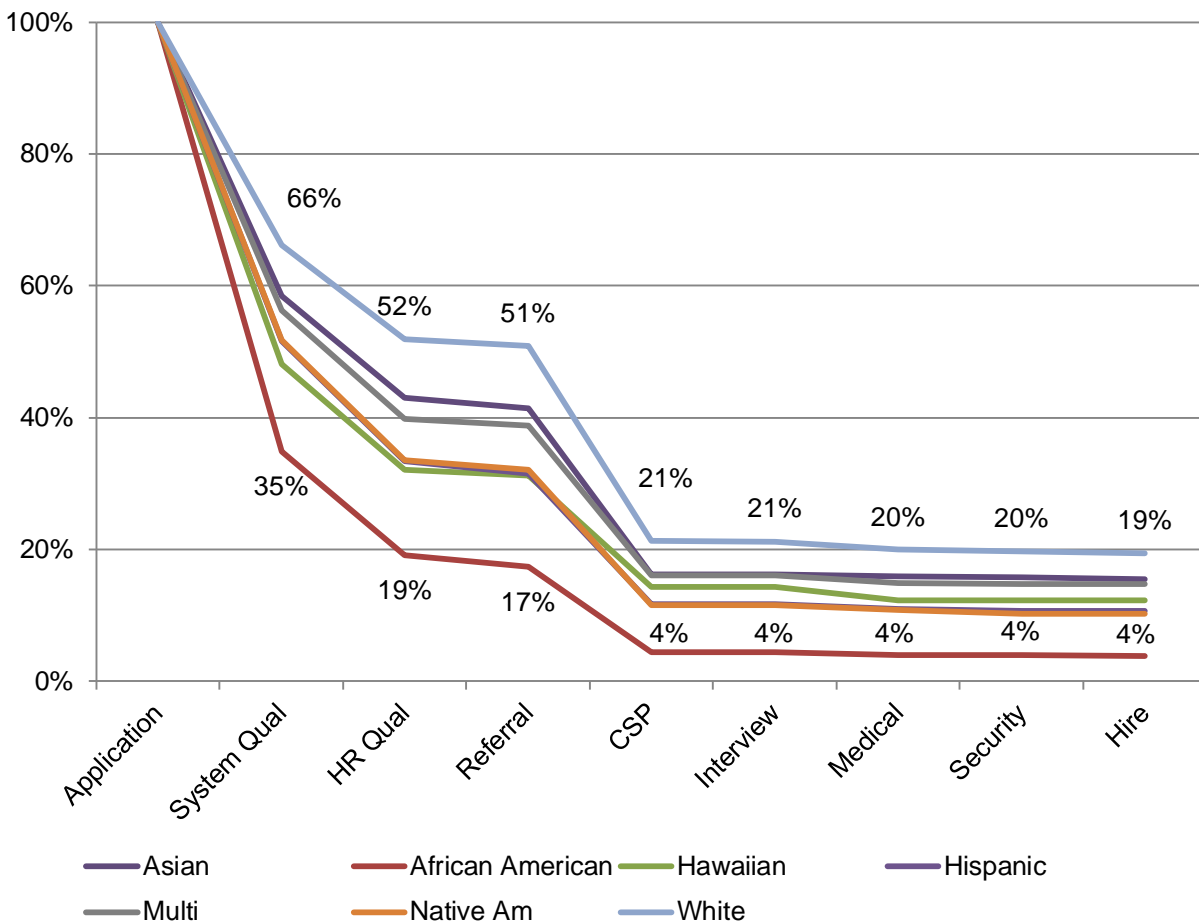


Figure 5 presents the percentage of the original applicant pool passing the hurdle. Results are based on unique applicant counts. Due to missing data, post CSP hurdle percentages were calculated using each group's estimated pass rate.

Figure 6 displays the survival of applicants across the ATCS selection process by gender. The figure also provides several insights. First, the vast majority of applicant screening occurs prior to the interview for both genders. Second, differences exist between men and women, particularly early on in the process during the minimum qualification screening.

**Figure 6. Total Applicant Flow by Gender – Applicant Survival (2008 – 2011)**

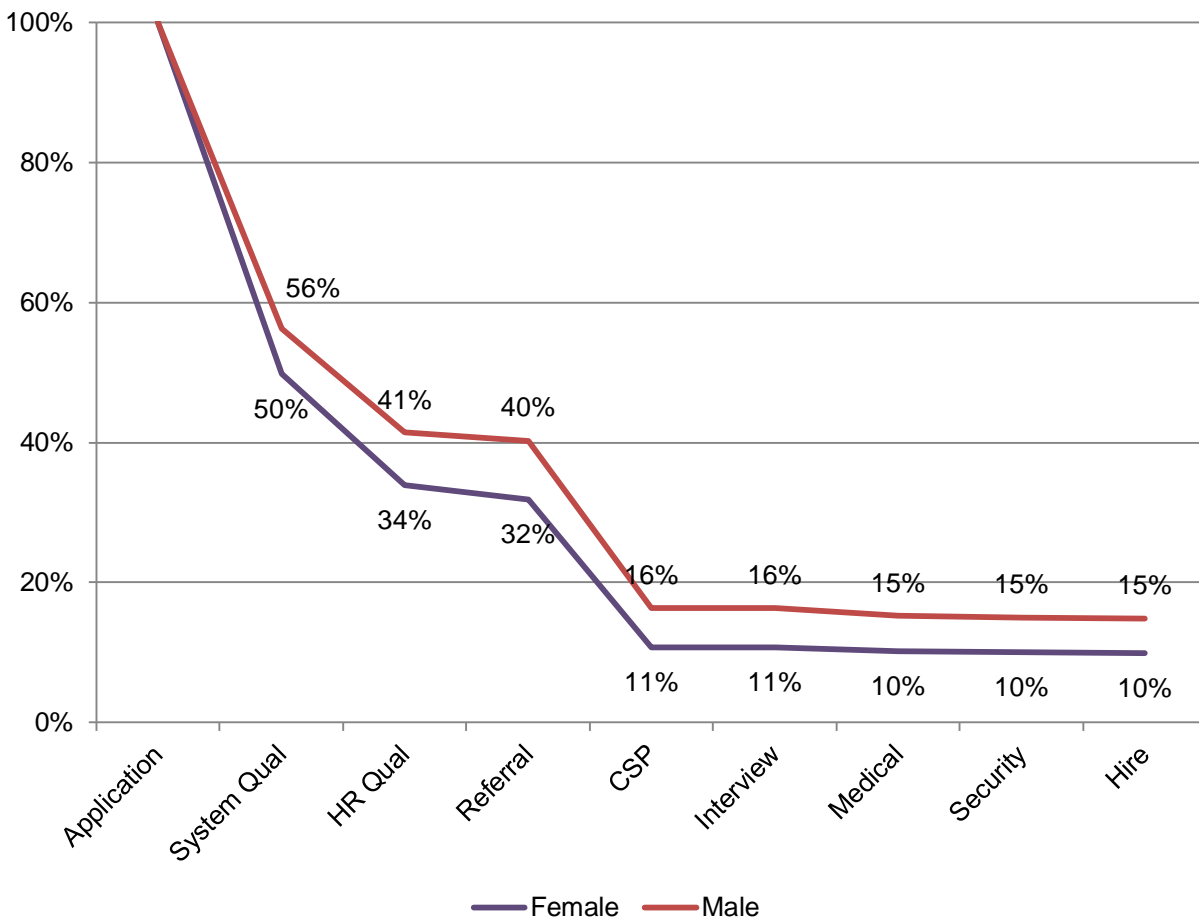


Figure 6 presents the percentage of the original applicant pool passing the hurdle. Results are based on unique applicant counts. Due to missing data, post CSP hurdle percentages were calculated using each group's estimated pass rate.

Figure 7 displays the survival of applicants across the ATCS selection process by applicant source. Similar to Figure 3, the vast majority of applicant screening occurs prior to the interview for all groups. More importantly, the figure illustrates that there are substantial differences in survival rates across the applicant sources. CTI applicants are passing the minimum qualification and CSP hurdles at a drastically higher rate than all other applicant sources. It is important to note here that survival rates in the hiring process should not be interpreted as indicative of the caliber of the applicants. Caliber is an empirical question, whereas our survival rates are merely descriptive of how groups of applicants fare in the hiring process. The fact that CTI applicants are hired at a significantly higher rate than any other applicant sources does not mean this is the strongest source of applicants.

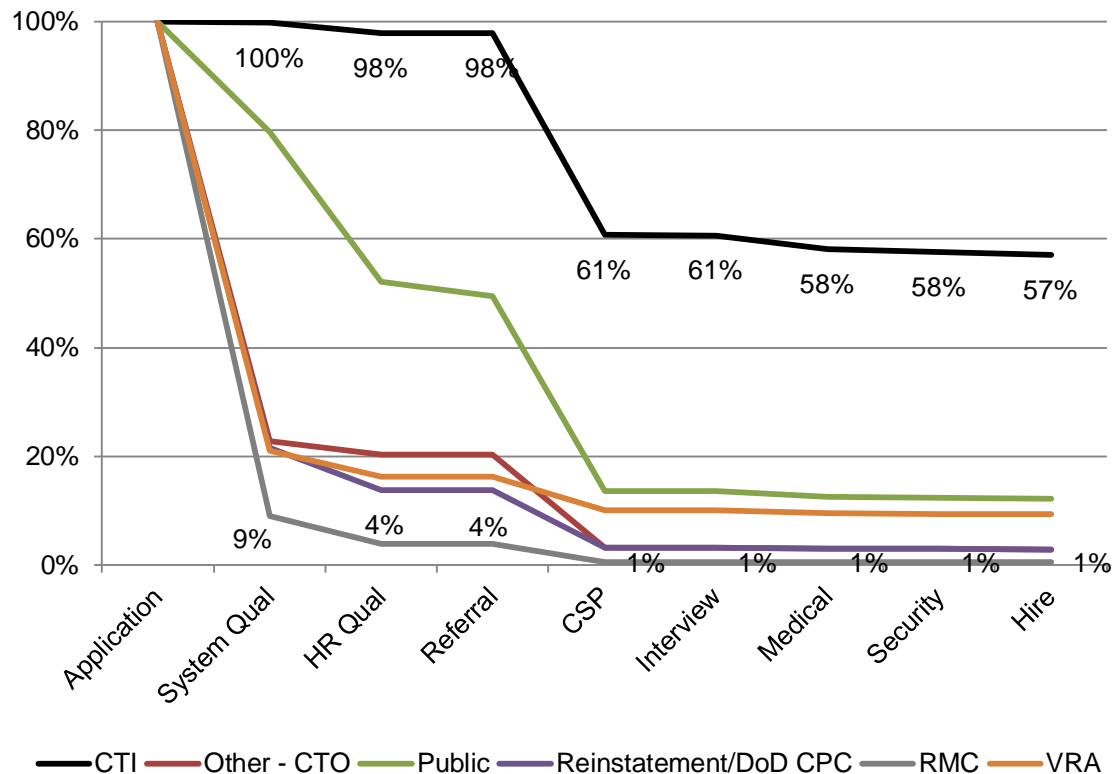
**Figure 7. Total Applicant Flow by Source – Applicant Survival (2008 – 2011)**

Figure 7 presents the percentage of the original applicant pool passing the hurdle. Results are based on unique applicant counts. Due to missing data, post CSP hurdle percentages were calculated using each group's estimated pass rate.

### Summary of Applicant Flows and Analysis Considerations

The applicant flow information above highlights several important points which were used to drive our subsequent analyses. First, nearly all screening (i.e., hurdle failures) of applicants occurs prior to the interview process. The steps from application to CSP selection are the most likely places for systematic adverse impact simply because these steps are responsible for the vast majority of applicant fails. Second, African Americans stand out as having a very different survival rate for these earlier hurdles. Third, applicant sources show very different demographics. Because the CTI source is much less diverse, the CTI source itself can confound analyses by ethnicity. We analyze sources distinctly throughout the process to determine if effects are due to applicant source alone.

Using the applicant survival analysis, the results of Outtz and Associates (October, 2012) Barrier Analysis, and our in depth interviews with SMEs, we developed a plan to best model the ATCS selection process so we could further evaluate potential points of adverse impact. The following section outlines our approach and decision rules used in our quantitative analysis.



## Statistics Used in Quantitative Analysis

For the primary quantitative analyses, APTMetrics analyzed all applicant sources and data from 2008-2011 simultaneously. All applicant sources chosen for announcements during a given hiring period are considered simultaneously during the process. Thus, an analysis of the overall process should treat these various candidate pools as a single pool. However, because applicant sources are subjected to many source-specific criteria and processes throughout the ATCS selection process, significant differences in adverse impact may exist by applicant source. To address these potential differences we also evaluated the impact of each decision point on each applicant source.

**Cumulative vs. Unique Person Counts.** When aggregating selection data, decisions and applicants can be combined in two different ways: using a cumulative person count, and using a unique person count. The cumulative person approach counts an applicant as many times as he or she appears on one or more decision points in the process. Therefore, if an applicant is on four announcements or referral lists over the relevant time period being examined (e.g., 2008-2011), he/she is counted four times. A unique person count, on the other hand, counts each unique applicant only once regardless of the number of times he or she appears on different referral lists over the relevant time period being examined. With a unique person count, a decision must be made as to which disposition to use in the analysis when there is conflicting information (e.g., applicant failed the MQ screening at time one but passed the MQ screening at time two). Using a cumulative count can provide a more accurate representation of the potential biases in the decisions and hurdles of a process. A unique count can provide a better assessment of the true impact of the process on the applicant pool. Both unique and cumulative approaches are used for our analyses, up to and including the point of CSP selection decisions. For the unique count, the applicant's best disposition (i.e. pass) at each hurdle/decision point was used. When both types of approaches were used, only the cumulative results are presented within the report text. Please refer to Appendix E for unique count results.

**Methods Used to Evaluate Adverse Impact.** APTMetrics used three primary methods to examine the FAA's hiring data for evidence of adverse impact: the Four-Fifths Rule, the standard deviation of the difference in selection rates, and the Mantel-Haenszel z test. All three analytical methods examine the differences in selection rates between subgroups (e.g. Female versus Male, African Americans versus Whites).

**Four-Fifths Rule.** The four-fifths rule is a non-statistical comparison or "rule of thumb" articulated in the federal Uniform Guidelines on Employee Selection Procedures (EEOC et al., 1978). Both the Guidelines and the Questions and Answers to the Guidelines (1979, 1980) (Q&As) indicate that the purpose of the Four-Fifths Rule is to assist the agencies in interpreting the practical meaningfulness of statistically significant differences in selection rates. Adverse Impact Ratios (AIR) less than 80% or .80 are regarded as an indication of adverse impact (EEOC et al., 1978).

When sample sizes are large, statistical significance can often be found when the "practical significance" of the difference is very small. Because the sample size is large in many of our analyses within the FAA selection process, it is especially important to couple a measure of

practical significance, such as the AIR, with measures of statistical significance. While an adverse impact ratio greater than 0.80 does not indicate a significant statistical result is invalid, it does assist in the interpretation of the relative impact.

*Standard Deviation of the Difference (SD diff).* The standard deviation of the difference in selection rates is a statistical test used to determine whether the selection rates between two groups are significantly different. Calculating the standard deviation of the difference results in a Z-score and associated probability value (i.e., p-value) which indicates the likelihood that the observed differences in selection rates occurred by chance alone. An SD diff value of greater than 1.96 indicates a statistically significant difference in selection rates.

Adverse impact was determined to be present when the indicators of statistical significance (i.e., SD diff) and practical significance (i.e., impact ratio) are present (i.e., SD difference is greater than 1.96; impact ratio is less than .80).

*Mantel-Haenszel z test.* The Mantel-Haenszel test examines the adverse impact at the cumulative person count level and was applied specifically for CSP decisions. The advantage of the Mantel-Haenszel z test is that it calculates the probability of majority and minority selection for each pool of applicants, and then aggregates these expectancies over time and/or applicant pools to arrive at an overall evaluation of the selection process. This approach allows accurate modeling of the CSP process even though the mix of sources is highly variable across years. A significant Mantel-Haenszel p-value indicates that the actual number of selections is statistically different than the expected number of selections, and hence is an indicator of adverse impact.

The two different ways for combining the data — using the cumulative person count or the unique person count — have different implications in terms of the strengths and challenges that they each impose on the interpretation of adverse impact analyses and results. Given the nature of the CSP hurdle, the cumulative count is analytically the most appropriate in conjunction with the Mantel-Haenszel z test. A cumulative person count also yields larger sample sizes which leads to increased statistical power, or an increased likelihood of finding a statistically significant result if one, in fact, exists. For completeness, however, both cumulative person and unique person count methods were calculated for all selection decisions through to the CSP process.

In the following review, we present statistics for three primary reference groups: African Americans, Hispanics, and Females. Data for all groups can be found in Appendix E.

## Quantitative Analysis

**FAA ATCS Selection Hurdle 1: Automated MQ Screen.** The qualifications vary greatly across the various applicant sources leading to different selection rates by applicant source. We analyzed the automated MQ screening step distinctly from the HR MQ screen. This analysis includes all applicants who applied to an announcement and met our data cleaning rules (see Appendix D). The automated screen consists of system-related decisions that automatically exclude applicants based on responses to previously determined minimum qualifications.

Overall, adverse impact was found for African Americans and Hispanics using both aggregation approaches (see Tables 6a-c for focal group cumulative results; see Tables 6d-e in Appendix E for full unique and cumulative approach results).

Importantly, the adverse impact associated with this decision point varies by applicant source. As noted above, the various applicant sources have a wide variety of minimum qualifications, which can lead to very different selection rates by source and by demographic groups. Adverse impact was found for African Americans, Hispanics, and Females for all applicant sources except CTI and General Public for the automated MQ screen.

**Table 6a. MQ: System Qualifications (from Applied) - Overall and By Applicant Source  
Cumulative Applications Analysis  
WHITE VS. AFRICAN AMERICAN\***

	# African Americans Considered	# Whites Considered	# African Americans Selected	# Whites Selected	# Expected African Americans Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>28,637</b>	<b>45,170</b>	<b>6,557</b>	<b>25,543</b>	<b>12,455</b>	<b>5,898</b>	<b>0.40</b>	<b>89.86</b>
CTI	474	5,233	472	5,219	473	1	1.00	0.61
Other - CTO	2,307	4,285	244	2,220	862	618	0.20	33.00
Public	6,267	13,567	4,604	11,804	5,184	580	0.84	23.45
Reinstatement	903	1,816	75	909	327	252	0.17	21.34
RMC	9,975	8,335	373	1,172	842	469	0.27	25.02
VRA	8,711	11,934	789	4,219	2,113	1,324	0.26	43.53

**\* Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units:  $\geq |1.96|$  indicates statistical significance.

**Table 6b. MQ: System Qualifications (from Applied) - Overall and By Applicant Source  
Cumulative Applications Analysis  
WHITE VS. HISPANIC\***

	# Hispanics Considered	# Whites Considered	# Hispanics Selected	# Whites Selected	# Expected Hispanics Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>5,285</b>	<b>45,170</b>	<b>2,271</b>	<b>25,543</b>	<b>2,913</b>	<b>642</b>	<b>0.76</b>	<b>18.78</b>
CTI	549	5,233	546	5,219	547	1	1.00	1.15
Other - CTO	427	4,285	126	2,220	213	87	0.57	8.79
Public	1,432	13,567	1,122	11,804	1,234	112	0.90	9.02
Reinstatement	176	1,816	32	909	83	51	0.36	8.09
RMC	1,311	8,335	111	1,172	174	63	0.60	5.54
VRA	1,390	11,934	334	4,219	475	141	0.68	8.42

**Table 6c. MQ: System Qualifications (from Applied) - Overall and By Applicant Source  
Cumulative Applications Analysis  
MALE VS. FEMALE\***

	# Females Considered	# Males Considered	# Females Selected	# Males Selected	# Expected Females Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>21,007</b>	<b>65,780</b>	<b>7,892</b>	<b>30,638</b>	<b>9,326</b>	<b>1,434</b>	<b>0.81</b>	<b>22.88</b>
CTI	1,363	5,821	1,359	5,801	1,358	-1	1.00	-0.29
Other - CTO	1,659	5,992	466	2,478	638	172	0.68	9.83
Public	5,555	17,685	4,587	14,673	4,604	17	1.00	0.68
Reinstatement	737	2,413	187	930	261	74	0.66	6.54
RMC	6,007	15,012	238	1,589	522	284	0.37	15.40
VRA	5,686	18,857	1,055	5,167	1,441	386	0.68	13.44

**FAA ATCS Selection Hurdle 2: HR MQ Screen.** We next analyzed the HR MQ screening step. This analysis includes all applicants who passed the automated MQ screen. The HR screen consists of minimum qualification pass/fail decisions made by HR representatives to screen out applicants based on detailed reviews of applicant work history and official documents (e.g., facility ratings, veteran's service forms, certifications) submitted during the application process.

Overall, adverse impact was found for African Americans using both aggregation approaches (see Table 7a-c for focal group cumulative results; see Tables 7d-e in Appendix E for full unique and cumulative results).

Importantly, and as found for the automated MQ screen, adverse impact for the HR MQ screen varies by applicant source. HR MQ screening for the General Public source resulted in adverse

**\* Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units:  $\geq |1.96|$  indicates statistical significance.

impact for African Americans and Hispanics. HR MQ screening for the RMC source resulted in adverse impact for Hispanics and Females. HR MQ screening for the Reinstatement source resulted in adverse impact for Hispanics.

**Table 7a. MQ: HR Qualifications (from System Qualifications) - Overall and By Applicant Source**  
**Cumulative Applications Analysis**  
**WHITE VS. AFRICAN AMERICAN\***

	# African Americans Considered	# Whites Considered	# African Americans Selected	# Whites Selected	# Expected African Americans Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>6,557</b>	<b>25,543</b>	<b>4,018</b>	<b>20,222</b>	<b>4,951</b>	<b>933</b>	<b>0.77</b>	<b>30.05</b>
CTI	472	5,219	463	5,129	464	1	1.00	0.29
Other - CTO	244	2,220	222	2,102	230	8	0.96	2.37
Public	4,604	11,804	2,538	8,780	3,176	638	0.74	23.96
Reinstatement	75	909	53	663	55	2	0.97	0.42
RMC	373	1,172	219	564	189	-30	1.22	-3.56
VRA	789	4,219	523	2,984	553	30	0.94	2.50

**Table 7b. MQ: HR Qualifications (from System Qualifications) - Overall and By Applicant Source**  
**Cumulative Applications Analysis**  
**WHITE VS. HISPANIC\***

	# Hispanics Considered	# Whites Considered	# Hispanics Selected	# Whites Selected	# Expected Hispanics Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>2,271</b>	<b>25,543</b>	<b>1,606</b>	<b>20,222</b>	<b>1,782</b>	<b>176</b>	<b>0.89</b>	<b>9.39</b>
CTI	546	5,219	530	5,129	536	6	0.99	2.00
Other - CTO	126	2,220	121	2,102	119	-2	1.01	-0.66
Public	1,122	11,804	667	8,780	820	153	0.80	10.78
Reinstatement	32	909	18	663	23	5	0.77	2.07
RMC	111	1,172	36	564	52	16	0.67	3.17
VRA	334	4,219	234	2,984	236	2	0.99	0.26

\* **Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units: >= |1.96| indicates statistical significance.

**Table 7c. MQ: HR Qualifications (from System Qualifications) - Overall and By Applicant Source**  
**Cumulative Applications Analysis**  
**MALE VS. FEMALE\***

	# Females Considered	# Males Considered	# Females Selected	# Males Selected	# Expected Females Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>7,892</b>	<b>30,638</b>	<b>5,730</b>	<b>23,395</b>	<b>5,966</b>	<b>236</b>	<b>0.95</b>	<b>6.92</b>
CTI	1,359	5,801	1,325	5,706	1,335	10	0.99	2.16
Other - CTO	466	2,478	433	2,354	441	8	0.98	1.83
Public	4,587	14,673	3,018	10,205	3,149	131	0.95	4.78
Reinstatement	187	930	136	684	137	1	0.99	0.23
RMC	238	1,589	80	812	116	36	0.66	5.03
VRA	1,055	5,167	738	3,634	741	3	0.99	0.25

**FAA ATCS Point of Full Qualification.** The point of full qualification is examined as applicants need to pass both the automated screen and HR screen to be considered fully qualified. This analysis includes all applicants who applied to an announcement and met our data cleaning rules, combining the pass/fail decisions at both the automated and HR MQ screen.

Overall, adverse impact was found for African Americans, Hispanics, and Females for the point of full qualification using both aggregation approaches (see Tables 8a-c for focal group cumulative results; see Tables 8d-e in Appendix E for full unique and cumulative results).

Importantly, and as was found in the separate analysis of the automated and HR MQ screening steps, the adverse impact for full qualification hurdle varies by applicant source. As noted previously, the various applicant sources have a wide variety of minimum qualifications, which can lead to very different selection rates by source and by demographic groups. Ultimately, adverse impact was found for African Americans and Hispanics for all applicant sources except CTI. Adverse impact was also found for Females for all applicant sources except CTI and General Public.

**\* Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units:  $\geq |1.96|$  indicates statistical significance.

**Table 8a. MQ: HR Qualifications (from Applied) - Overall and By Applicant Source  
Cumulative Applications Analysis  
WHITE VS. AFRICAN AMERICAN\***

	# African Americans Considered	# Whites Considered	# African Americans Selected	# Whites Selected	# Expected African Americans Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>28,637</b>	<b>45,170</b>	<b>4,018</b>	<b>20,222</b>	<b>9,405</b>	<b>5,387</b>	<b>0.31</b>	<b>86.65</b>
CTI	474	5,233	463	5,129	464	1	1.00	0.49
Other - CTO	2,307	4,285	222	2,102	813	591	0.20	31.96
Public	6,267	13,567	2,538	8,780	3,576	1,038	0.63	32.03
Reinstatement	903	1,816	53	663	238	185	0.16	17.08
RMC	9,975	8,335	219	564	427	208	0.32	15.22
VRA	8,711	11,934	523	2,984	1,480	957	0.24	35.90

**Table 8b. MQ: HR Qualifications (from Applied) - Overall and By Applicant Source  
Cumulative Applications Analysis  
WHITE VS. HISPANIC**

	# Hispanics Considered	# Whites Considered	# Hispanics Selected	# Whites Selected	# Expected Hispanics Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>5,285</b>	<b>45,170</b>	<b>1,606</b>	<b>20,222</b>	<b>2,286</b>	<b>680</b>	<b>0.68</b>	<b>19.97</b>
CTI	549	5,233	530	5,129	537	7	0.98	2.28
Other - CTO	427	4,285	121	2,102	201	80	0.58	8.18
Public	1,432	13,567	667	8,780	902	235	0.72	13.52
Reinstatement	176	1,816	18	663	60	42	0.28	7.02
RMC	1,311	8,335	36	564	82	46	0.41	5.60
VRA	1,390	11,934	234	2,984	336	102	0.67	6.74

\* **Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units: >= |1.96| indicates statistical significance.



**Table 8c. MQ: HR Qualifications (from Applied) - Overall and By Applicant Source  
Cumulative Applications Analysis  
MALE VS. FEMALE\***

	# Females Considered	# Males Considered	# Females Selected	# Males Selected	# Expected Females Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>21,007</b>	<b>65,780</b>	<b>5,730</b>	<b>23,395</b>	<b>7,050</b>	<b>1,320</b>	<b>0.77</b>	<b>22.15</b>
CTI	1,363	5,821	1,325	5,706	1,334	9	0.99	1.87
Other - CTO	1,659	5,992	433	2,354	604	171	0.66	9.88
Public	5,555	17,685	3,018	10,205	3,161	143	0.94	4.43
Reinstatement	737	2,413	136	684	192	56	0.65	5.36
RMC	6,007	15,012	80	812	255	175	0.25	13.25
VRA	5,686	18,857	738	3,634	1,013	275	0.67	10.87

### FAA ATCS Selection Hurdle 3: AT-SAT.

The next hurdle, the AT-SAT exam, occurs only for General Public and VTP applicants, although CTI applicants must complete and pass the AT-SAT prior to application. This analysis includes all General Public applicants (VTP applicants were dropped from the analysis due to their small sample size) who passed the minimum qualification stage. A unique count analysis approach was used for evaluating adverse impact related to the AT-SAT.

To pass the AT-SAT and move on to the referral stage, applicants must score at least a 70 on the exam. A score of 70 corresponds to a very low cut score, resulting in approximately 95% of applicants passing the exam.

As can be seen in Table 9a, the use of a passing score of 70 does not result in adverse impact for African Americans, Hispanics, and Females (see Table 9b in Appendix E for full results).

**Table 9a. AT-SAT Pass for Public Source - Unique Applicant Analysis  
AFRICAN AMERICAN, HISPANIC, & FEMALE GROUPS\***

	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	# Minority Expected	Shortfall #	AIR	Standard Deviation Difference
<b>White vs. African American</b>	1,942	6,235	1,715	6,049	1,844	129	0.91	15.30
<b>White vs. Hispanic</b>	494	6,235	451	6,049	477	26	0.94	6.75
<b>Male vs. Female</b>	2,185	7,361	1,997	7,052	2,071	74	0.95	8.14

\* **Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units:  $\geq |1.96|$  indicates statistical significance.

**FAA ATCS Selection Hurdle 4: Referral.** Adverse impact was not analyzed at the Referral decision point in our primary analyses because this screen is purely automated based on the geographic location preferences as discussed above. Once an applicant is qualified (and if a General Public applicant passes the AT-SAT), that applicant is automatically placed on a referral list if they indicated a location that has an open vacancy. If the applicant chose a location for which no identified ATCS candidate need exists, the applicant is not referred (the only exception is General Public applicants who are placed on national referral lists and are therefore considered for all locations).

Given the automatic nature of the process and our data cleaning rule that excluded individuals who were qualified but not referred due to location preferences, *APTMetrics* did not analyze the Referral decision point with our final, clean database. However, because there could be significant group differences in how location preferences impact selection rates, we did create a secondary data set specifically to evaluate the impact of location preferences in a separate analysis.

The data cleaning rules used to produce the data set for this analysis are distinct from those found in Appendix D and are listed below:

- 1) The analysis does not exclude applicant declines, incomplete applications, and applicants already selected elsewhere, which are exclusion rules used in our primary analysis.
- 2) The analysis approach uses a cumulative count rather than a unique count. From a process perspective, applicants can be referred/not referred many times, and it is important to use a cumulative perspective to capture these potential differences.
- 3) The analysis excludes General Public applicants who failed the AT-SAT. These applicants would not have been eligible for referral and therefore it is not known if location or the AT-SAT led to the applicants' failure to be referred.

As can be seen in Tables 10a-c, the use of geographic location preferences does not result in adverse impact within or across applicant sources for race or gender (see Table 10d in Appendix E for full results). However, this practice does serve to disproportionately reduce the diversity and the representation of certain applicant sources in the overall hiring process.

**Table 10a. Geographic Location Preferences: Overall and By Applicant Source - Cumulative Applications Analysis WHITE VS. AFRICAN AMERICAN\***

	# African Americans Considered	# Whites Considered	# African Americans Selected	# Whites Selected	# Expected African Americans Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>6,897</b>	<b>33,752</b>	<b>4,242</b>	<b>24,301</b>	<b>4,843</b>	<b>601</b>	<b>0.85</b>	<b>17.37</b>
CTI	605	7,651	598	7,575	599	1	1.00	0.39
Other - CTO	262	2,472	251	2,361	250	-1	1.00	-0.22
Public	3,702	12,051	2,357	9,016	2,673	316	0.85	13.24
Reinstatement/DoD CPC	61	775	61	744	59	-2	1.04	-1.59
RMC	486	1,344	237	643	234	-3	1.02	-0.35
VRA	1,781	9,459	738	3,962	745	7	0.99	0.35

**Table 10b. Geographic Location Preferences: Overall and By Applicant Source - Cumulative Applications Analysis WHITE VS. HISPANIC\***

	# Hispanics Considered	# Whites Considered	# Hispanics Selected	# Whites Selected	# Expected Hispanics Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>2,672</b>	<b>33,752</b>	<b>1,874</b>	<b>24,301</b>	<b>1,920</b>	<b>46</b>	<b>0.97</b>	<b>2.06</b>
CTI	717	7,651	714	7,575	710	-4	1.01	-1.52
Other - CTO	136	2,472	133	2,361	130	-3	1.02	-1.27
Public	948	12,051	646	9,016	705	59	0.91	4.53
Reinstatement/DoD CPC	21	775	20	744	20	0	0.99	0.18
RMC	98	1,344	47	643	47	0	1.00	-0.02
VRA	752	9,459	314	3,962	315	1	1.00	0.07

**Table 10c. Geographic Location Preferences: Overall and By Applicant Source - Cumulative Applications Analysis MALE VS. FEMALE\***

	# Females Considered	# Males Considered	# Females Selected	# Males Selected	# Expected Females Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall</b>	<b>9,558</b>	<b>39,361</b>	<b>6,541</b>	<b>27,789</b>	<b>6,708</b>	<b>167</b>	<b>0.97</b>	<b>4.15</b>
CTI	1,887	8,349	1,862	8,266	1,867	5	1.00	1.27
Other - CTO	516	2,763	497	2,634	493	-4	1.01	-0.99
Public	4,275	14,097	2,915	10,348	3,086	171	0.93	6.67
Reinstatement/DoD CPC	174	786	166	760	168	2	0.99	0.83
RMC	201	1,923	90	920	96	6	0.94	0.83
VRA	2,505	11,443	1,011	4,861	1,055	44	0.95	1.95

\* **Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

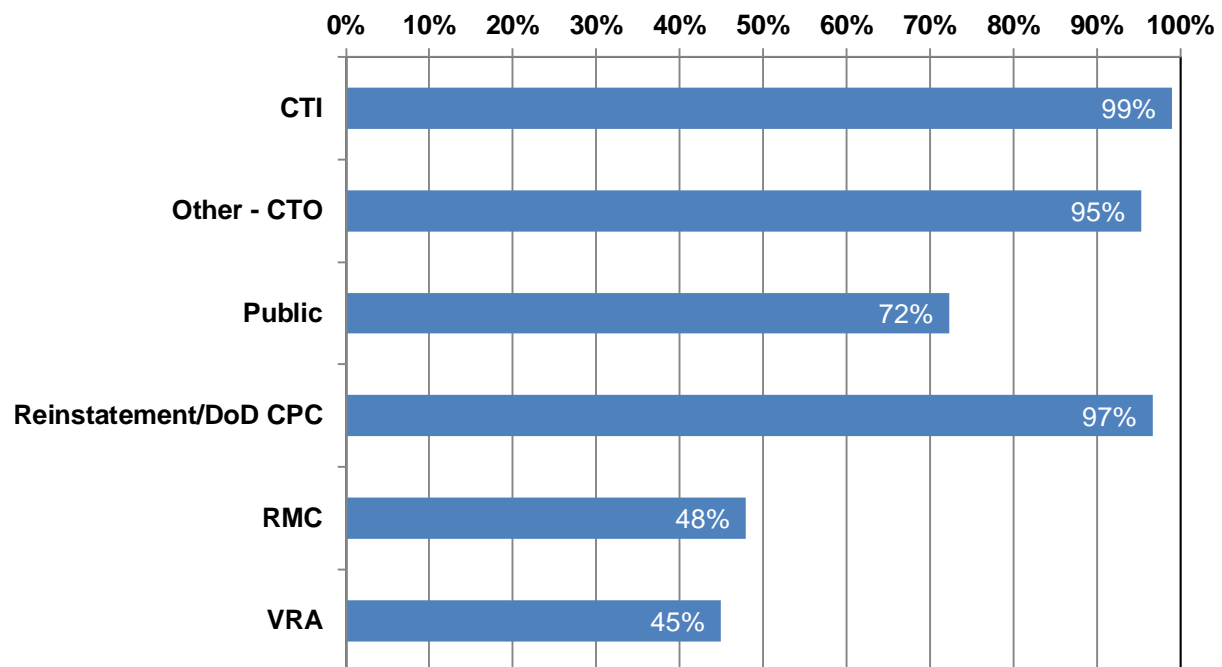
AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units: >= |1.96| indicates statistical significance.

As can clearly be seen in Figure 7, referral rates for each applicant source vary considerably. CTI, CTO, and Reinstatement applicants are referred at a much higher rate. It is believed that location preferences are at the root of these differential rates. The use of location preferences also has a differential impact on the referral rate of White and African American applicants, with qualified African Americans being referred at a substantively lower rate than qualified Whites (see Table 11). As can be seen in Table 11, the sources with the highest African American representation (Public, RMC, and VRA) at the point of referral are also the sources least likely to be referred based on location preferences. Ultimately, African American diversity is reduced disproportionality in the overall process because African American membership is highest for those sources that are referred at much lower rates. This effect is also exacerbated by the fact that the Public, RMC, and VRA applications constitute 68% of total applications at the point of referral.

**Figure 8. Percentage Qualified Applicants Who Are Referred (Announcements Throughout Nation/US Only)**



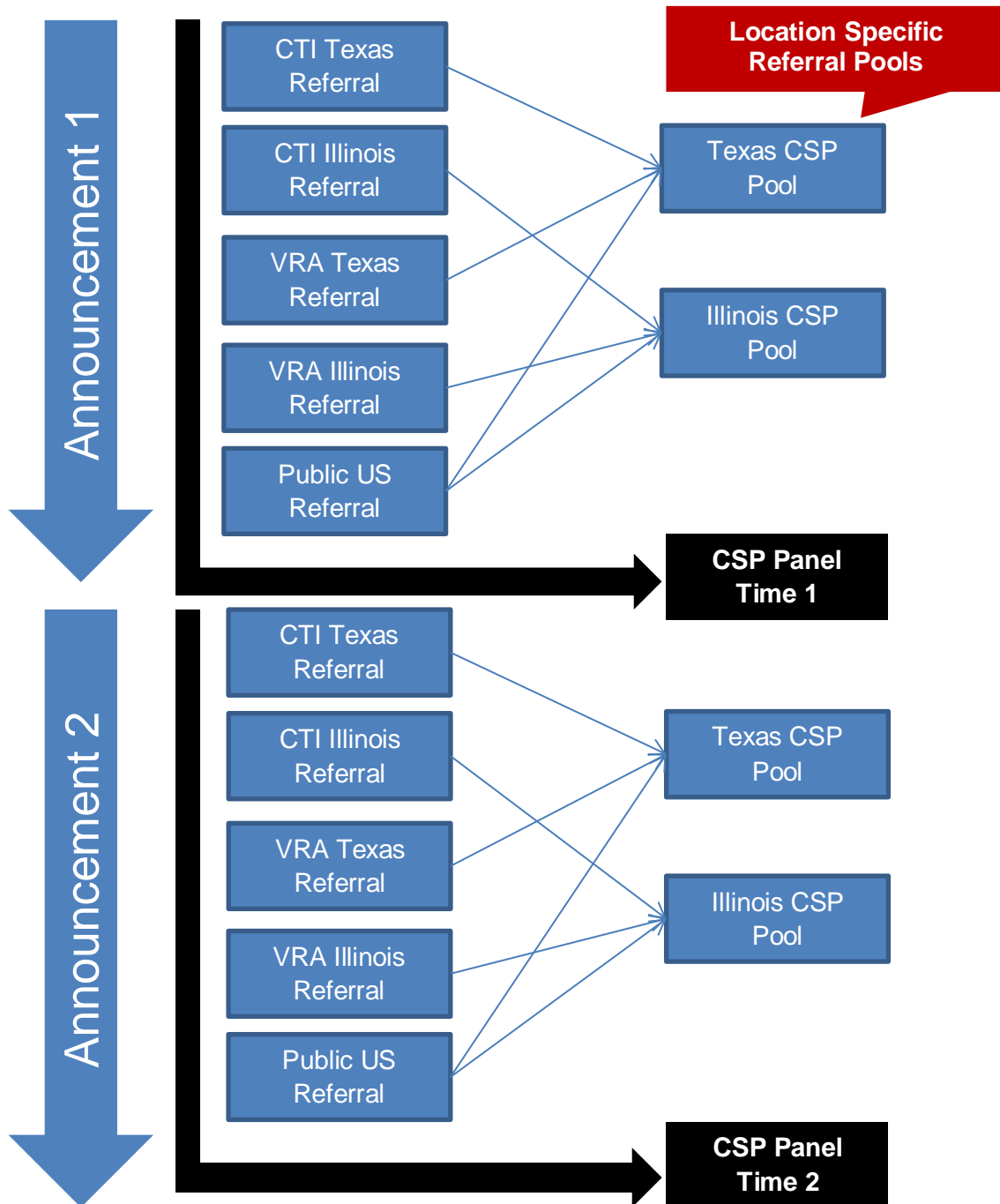
**Table 11. Impact of Location Preferences on African Americans**

	% Qualified Who are Referred	% Qualified Who are African American
CTI	99%	6%
Reinstatement/DoD CPC	97%	6%
Other - CTO	95%	8%
Public	72%	20%
RMC	48%	23%
VRA	45%	13%

**FAA ATCS Selection Hurdle 5: Centralized Selection Panel (CSP).** Once applicants are referred, the centralized selection panel process is used to select and slot applicants for specific facilities as needed. CSP panelists are provided referral lists containing the pool of applicants from which each specific facility vacancy can be filled. Once an applicant is selected, the applicant cannot be considered for another facility.

In order to analyze the CSP decisions, it was important to accurately model the constraints the CSP panelists had for making their selection decisions. To this end, *APT Metrics* reconstructed the candidate pools considered at each of the twelve CSP meetings from 2008 to 2012. Applicant pools were reconstructed by assigning referral lists with referral dates coinciding with the appropriate CSP date. Referral lists within a given CSP were then grouped into applicant pools based on the referral location (e.g. state or facility). Referral lists that were not location-specific (primarily occurring for the General Public source) were replicated to each location-specific pool. Figure 8 illustrates a simplified version of this process and how we arrived at location specific referral pools for each CSP.

Figure 9. Process Used to Create CSP Location-Specific Referral Pools



As discussed in the methodology section earlier, a Mantel-Haenszel approach is appropriate when modeling discrete applicant pools, such as location specific referral pools. We also conducted adverse impact analyses to examine demographic group differences for the following points of aggregation:

- By service area for each CSP meeting
- By service area across all CSP meetings
- For each CSP meeting
- Across all CSP meetings

Results indicate that across all CSPs from 2008-2012, adverse impact can be seen for African Americans and Females based on significant ( $>1.96$ ) and positive Mantel-Haenszel Z values (see Tables 12b-g in Appendix E for all results). We also analyzed the data by CSP service area to determine whether the observed adverse impact was merely a function of decision making in a particular service area as opposed to a pattern observed for all service areas. Our results indicated adverse impact for all service areas across the CSPs. Finally, the data were analyzed by individual CSP. Reviewing adverse impact across CSPs highlights that some CSP events contain adverse impact while other events do not. Table 12a summarizes the adverse impact by individual CSP.

**Table 12a. Overview of Adverse Impact by Individual CSP**

CSP	Adverse Impact							Public Source Used	Public Announcement Type
	African American	Hispanic	Asian	Native American	Hawaiian	Multi	Female		
February 26-28, 2008								✓	State Specific
May 6-8, 2008								✓	State Specific
June 10-12, 2008	*	*	*		*	*	*	✓	Throughout US
September 8-10, 2008	*		*				*	✓	Throughout US
January 13-15, 2009	*			*		*	*	✓	Throughout US
April 28-30, 2009	*						*	✓	Throughout US
October 27-29, 2009	*		*				*	✓	Throughout US
March 23-25, 2010			*	*					
October 19-21, 2010	*							✓	Throughout US
March 8-10, 2011									
November 1-3, 2011						*			
March 6-8, 2012							*		

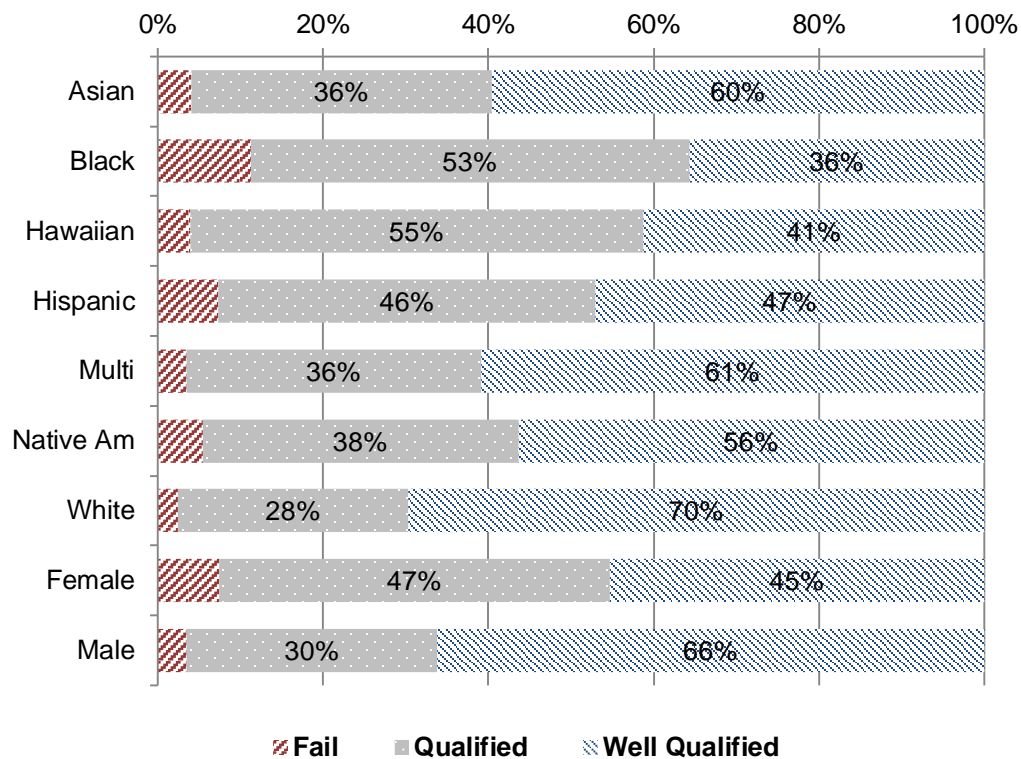


Taken together our results indicate the CSP hurdle does have adverse impact for protected groups, particularly African Americans and Females, for specific panel sessions, though no consistent pattern of adverse impact was observed over the 2008-2012 time period. However, closer investigation does reveal that adverse impact only occurs for African Americans when national Public announcements are used.

*Analysis and Impact of AT-SAT during the CSP Process.* In evaluating the CSP selection decisions, and why adverse impact may be occurring, it is necessary to review how the AT-SAT is used within the CSP process. As discussed above, the AT-SAT serves as a hurdle after qualification for the General Public and VTP applicants and as a minimum qualification for CTI applicants. All three of these sources must score at least a 70 to pass their respective AT-SAT hurdle. However, the AT-SAT is used again during the CSP process to differentiate applicants into “qualified” and “well qualified” bands.

Currently, applicants are split into these two bands based on predetermined score ranges. Scores less than 85 and greater than or equal to 70 are considered to be “qualified.” Scores at or above 85 are considered to be “well qualified.” Applicants who score in the “well qualified” band are given substantial preference in CSP selection decisions.

Figure 9 shows a breakdown of % passing in each of the AT-SAT bands by race and gender groups. African Americans, Hawaiians, Females, and Hispanics have the lowest number of applicants falling into the Well Qualified band.

**Figure 10. Distribution of Race & Gender Groups in AT-SAT Bands**

APTMetrics conducted a focused analysis to understand potential barriers associated with the use of the AT-SAT in the upcoming ATCS hiring in early 2013. More specifically, an analysis was conducted to evaluate the impact of lowering the AT-SAT well-qualified band cutoff score on predicted success on the job and adverse impact for CTI candidates<sup>4</sup>. Table 13 outlines the impact of lowering the cutoff for achieving a “well qualified” score from an 85 to either an 80 or 75. Table 13 is organized as follows:

- Expected performance data based on two research studies (columns 2-3)
- Historical adverse impact for the AT-SAT with real applicants (column 4)
- Distribution of scores for the most recent CTI candidate group (columns 5-8)

An explanation of performance data in column 2 is drawn from a report entitled *Revision of the AT-SAT* (Wise, Tsacoumis, Waugh, Putka, & Hom, 2001). It is explained as follows:

*Performance ratings were collected using an anchored 7-point scale... a '4' reflected generally acceptable performance, but a '3' reflected performance that is not always acceptable. The*

<sup>4</sup> While applicants from the General Public also take the AT-SAT as part of the hiring process, the General Public applicant source was not used for this particular hiring wave.

dividing point between these two levels, 3.5, was mapped onto 70, the minimum passing score on the final reporting scale... Further, a value of 5.5 divided the middle (acceptable) range of performance and the upper two categories indicating outstanding or superior performance. This value was mapped onto a 90 on the final reporting scale. Because the mapping was linear, a final score of 65 was equivalent to a rating score of 3.0, 70 was equivalent to 3.5, 75 was equivalent to 4.0 and so forth. (Wise, et al., 2001, p. 5).

The performance data presented in column 3 is based on a study, *The Validity of the Air Traffic Selection and Training (AT-SAT) Test Battery in Operational Use* (Broach, Byrne, Manning, Pierce, McCauley, & Bleckley, M. K., under review), that examined the correlation between the AT-SAT and achievement of CPC status at the first field facility.

Based on Table 13, we can see that the current operational cut score of 85 predicts the following: 1) candidates are likely to achieve a job performance rating of "5" on a 7 point scale (Wise et al., 2001); 2) candidates have a 75% probability of achieving Certified Professional Controller (CPC) status (Broach et al.); 3) the adverse impact ratio for African Americans is .48 (using 2007-11 data analyzed by APTMetrics) and 4) 70% of the CTI candidates pass the AT-SAT at this level.

At an AT-SAT score of 80, the predicted job performance rating is 4.5 and the probability that candidates will achieve CPC status is 71%. The adverse impact ratio for African Americans is .62 and 87% of the CTI candidates pass the AT-SAT at this level.

At an AT-SAT score of 75, the predicted job performance rating is 4.0 and the probability that candidates will achieve CPC status is 67%. The adverse impact ratio for African Americans is .76 and 96% of the CTI candidates pass the AT-SAT at this level.

**Table 13. Examination of Impact of Lowering AT-SAT Cutoff Score**

AT-SAT "Well Qualified" Cutoff	Job Performance Rating (7 point scale) (Wise et al, 2001)	Probability of achieving CPC Status at First Field Facility (Broach et al, under review)	White vs. African American Adverse Impact Ratio (2007-2011 app data)	Current CTI Applicants			
				Pass N	Total N	% Pass	Additional Passing
70	3.5	60%	.88	1321	1321	100%	390
75	4	67%	.76	1269	1321	96%	338
80	4.5	71%	.62	1153	1321	87%	222
85	5	75%	.48	931	1321	70%	-

This analysis demonstrates that lowering the cutoff score to a 75 still reflects the prediction of acceptable performance with substantially less adverse impact. Despite this improvement in adverse impact, and given the historical pass rates for the General Public on the AT-SAT, a lower well-qualified band cutoff would be expected to have a sizeable increase in the number of

well qualified applicants included in the CSP process. Considerations for making a cut score change for entry into the well qualified band need to include adverse impact, predicted performance, and the number of additional candidates passing that will need to be incorporated into the evaluation phase (CSP).

*Data Management for Post-CSP Decisions.* Before discussing the analyses and results for the remaining selection hurdles, a brief note on data treatment is warranted. Given the process by which post-CSP selection information is entered into the AVIATOR system, the data for the interview, medical, and security clearance stages were sometimes incomplete. For example, 15% (1,273 out of 8,068) of individuals who were selected by the CSP did not have an interview score. As such, the analyses on these stages do not include the exact same applicants and applications at each step, e.g., an application may have been included in the security analysis but not in the medical and interview analyses, even though the latter screens should occur first in the overall process. Each analysis for interview, medical, and security screens contains only the applicants for which data existed (or was recoded based on data cleaning rules).

Data cleaning rules were established in an effort to attain the cleanest and most accurate applicant pools as possible. Due to missing data, rules were developed to maintain consistency in recoding and handling the data and can be found in Appendix D.

**FAA ATCS Selection Hurdle 6: Interview.** After applicants are selected by the CSP, the next step in the process is to take an interview. The interview is conducted by a selecting official and assesses six critical competencies: Dependability, Job Motivation, Reactions to Job Demands, Team Work, Air Traffic Control, and Spoken English. The applicants included in these analyses are those who had interview data in our database. These analyses were conducted across all applicant sources using the unique applicant count approach.

As can be seen in Tables 14a-c, almost 100% of applicants who were interviewed passed the interview. No race or gender adverse impact was found for the interview (see Table 14d in Appendix E for full results).

**FAA ATCS Selection Hurdle 7: Medical.** After passing the interview, candidates receive a tentative offer letter (TOL) and are moved into the medical and security screening stages. The medical screen consists of both physical and psychological components and results in an overall pass or fail determination. Applicants included in these analyses are those who had medical data in our database. These analyses were conducted across all applicant sources using the unique applicant count approach.

As can be seen in Tables 14a-c, more than 90% of applicants passed the medical screen. No race or gender adverse impact was found for the medical screening (see Table 14e in Appendix E for full results).

**FAA ATCS Selection Hurdle 8: Suitability/Security.** As was previously discussed, the security screen consists of two possible stages: a primary screen (termed Conditional

Suitability) and a subsequent secondary screen (Final Suitability). These screens will be discussed separately, followed by a discussion of the results for the overall security screen.

Applicants included in these analyses are those who had security/suitability data in our database. These analyses were conducted across all applicant sources using the unique applicant count approach.

*Primary Screen: Conditional Suitability.* As can be seen in Tables 14a-c, more than 90% of applicants passed the conditional suitability screen. No race or gender adverse impact was found for the conditional suitability screening (see Table 14f in Appendix E for full results).

*Secondary Screen: Final Suitability.* As can be seen in Tables 14a-c, passing rates remained very high (close to 100%) for the Final Suitability Screen. No race or gender adverse impact was found for the final suitability screening (see Table 14g in Appendix E for full results).

*Overall Security/Suitability Screen: Passing both Conditional and Final Suitability.* Tables 14a-c show the overall results for passing the suitability/security screen (incorporating both the Conditional and Final Suitability determinations). Selection rates for all groups remained very high (greater than 95%). No race or gender adverse impact was found for passing the overall security screening process (see Table 14h in Appendix E for full results).

**FAA ATCS Selection Hurdle 9: Hire Decision.** The final hurdle in the ATCS selection process is the hiring decision. Once an applicant has passed the medical and security clearances and coordinated with the FAA on facility and Academy dates, they are issued a firm offer letter (FOL) that indicates an official hiring decision. The applicants included in these analyses are those who had firm offer letter data in our database. These analyses were conducted across all applicant sources using the unique applicant count approach.

As can be seen in Tables 14a-c, once again a large majority of applicants at this stage received a firm offer letter. No race or gender adverse impact was found for the issuance of a FOL (see Table 14i in Appendix E for full results).

**Table 14a. Interview, Medical, Suitability/Security, & Hire Decision - Unique Applicant Analysis  
WHITE VS. AFRICAN AMERICAN\***

	# African Americans Considered	# Whites Considered	# African Americans Selected	# Whites Selected	# Expected African Americans Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Interview</b>	515	3,834	512	3,820	513	1	1.00	0.74
<b>Medical</b>	446	3,367	411	3,167	419	8	0.98	1.57
<b>Overall Suitability/Security</b>	484	3,721	472	3,670	477	5	0.99	1.89
Conditional Suitability	484	3,721	456	3,642	472	16	0.96	4.81
Final Suitability	317	2,420	313	2,383	312	-1	1.00	-0.37
<b>Hire Decision</b>	413	3,171	408	3,139	409	1	1.00	0.38

**Table 14b. Interview, Medical, Suitability/Security, & Hire Decision - Unique Applicant Analysis  
WHITE VS. HISPANIC\***

	# Hispanics Considered	# Whites Considered	# Hispanics Selected	# Whites Selected	# Expected Hispanics Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Interview</b>	252	3,834	252	3,820	251	-1	1.00	-0.96
<b>Medical</b>	218	3,367	204	3,167	205	1	0.99	0.29
<b>Overall Suitability/Security</b>	241	3,721	237	3,670	238	1	1.00	0.37
Conditional Suitability	241	3,721	233	3,642	236	3	0.99	1.23
Final Suitability	152	2,420	150	2,383	150	0	1.00	-0.21
<b>Hire Decision</b>	204	3,171	204	3,139	202	-2	1.01	-1.44

\* **Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units: >= |1.96| indicates statistical significance.

**Table 14c. Interview, Medical, Suitability/Security, & Hire Decision - Unique Applicant Analysis**  
**MALE VS. FEMALE\***

	# Females Considered	# Males Considered	# Females Selected	# Males Selected	# Expected Females Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Interview</b>	912	4,273	911	4,256	909	-2	1.00	-1.34
<b>Medical</b>	824	3,722	780	3,488	774	-6	1.01	-1.03
<b>Overall Suitability/Security</b>	881	4,126	870	4,062	868	-2	1.00	-0.67
Conditional Suitability	881	4,126	864	4,013	858	-6	1.01	-1.37
Final Suitability	535	2,631	529	2,594	528	-1	1.00	-0.52
<b>Hire Decision</b>	780	3,497	769	3,468	773	4	0.99	1.52

### FAA ATCS Full Process Review

Now that each hurdle in the selection process has been analyzed and examined separately, an important final analysis is a review of the ATCS selection process as a whole to determine the impact of decisions on adverse impact overall. Two analyses were undertaken here, both from a unique counts perspective, but distinguished by the starting applicant pool.

The first set of analyses was conducted using all applicants who applied to the position, or in other words, the full, clean database. The second set of analyses was conducted on an initial pool of individuals who were fully qualified, i.e., passed both the automated and HR MQ screens. Both analyses use the final hire decision as the outcome (see Tables 15a-c for results).

Given the fact that the job posting system essentially allows any applicant to apply through any applicant source, even though they may not meet even the most basic eligibility requirements on the vacancy announcement (e.g., is a veteran), it is impossible to discern who are “true” applicants for the specific applicant sources from those who indiscriminately applied. As such, we chose to model the hiring process two different ways to understand the adverse impact picture associated with the different definitions of an applicant (i.e., anyone who applies, only those applicants who meet the MQs).

**“Applied” Applicant Pool.** As can be seen in Tables 15a-c, our analyses of the overall hiring process (i.e., from application to hire) found adverse impact for African Americans, Hispanics, and Females (see Table 15d in Appendix E for full results).

**“Fully Qualified” Applicant Pool.** When excluding applicants who did not pass the minimum qualifications screening, adverse impact is also observed for African Americans though not for Hispanics and Females for the overall hiring process (i.e., from qualification to hire) (see Tables 15a-c below; see Table 15e in Appendix E for full results).



**Table 15a. Overall Hiring Process Decisions - Unique Applicant Analysis  
WHITE VS. AFRICAN AMERICAN\***

	# African Americans Considered	# Whites Considered	# African Americans Selected	# Whites Selected	# Expected African Americans Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall Process: Applied to Hired</b>	12,278	18,627	408	3,139	1,409	1,001	0.20	36.51
<b>Overall Process: Fully Qualified to Hired</b>	2,350	9,658	408	3,139	694	286	0.53	14.43

**Table 15b. Overall Hiring Process Decisions - Unique Applicant Analysis  
WHITE VS. HISPANIC\***

	# Hispanics Considered	# Whites Considered	# Hispanics Selected	# Whites Selected	# Expected Hispanics Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall Process: Applied to Hired</b>	2,267	18,627	204	3,139	363	159	0.53	9.63
<b>Overall Process: Fully Qualified to Hired</b>	756	9,658	204	3,139	243	39	0.83	3.13

**Table 15c. Overall Hiring Process Decisions - Unique Applicant Analysis  
MALE VS. FEMALE\***

	# Females Considered	# Males Considered	# Females Selected	# Males Selected	# Expected Females Selected	Shortfall #	AIR	Standard Deviation Difference
<b>Overall Process: Applied to Hired</b>	8,861	27,037	769	3,468	1,046	277	0.68	10.50
<b>Overall Process: Fully Qualified to Hired</b>	3,008	11,189	769	3,468	898	129	0.82	5.78

\* **Practical Significance Indices:**

Shortfall # = Difference between observed and expected frequencies of minority applicants.

AIR = Adverse Impact Ratio: 80% rule was applied.

**Statistical Significance Indices:**

Standard Deviation Difference = the proportion difference in standard deviation units:  $\geq |1.96|$  indicates statistical significance.

## **Summary of Quantitative Analyses**

Adverse impact was found at several hurdles in the ATCS selection process, as well as across the overall ATCS selection process. Specifically, two of our three focal groups (African Americans and Females) have disproportionately lower pass rates than White and Male applicants for both minimum qualification hurdles (automated and HR) as well as for the CSP selection process. Regarding the minimum qualification hurdles, adverse impact was found within most of the applicant sources as well. Adverse impact was not observed for CTI at any point in the hiring process, though the qualification rate was very high in general. Importantly, adverse impact for the CSP process does vary considerably by individual CSP event and appears to be a function of using General Public source national referral lists. Also, the current method of using location preferences is decreasing applicant diversity due to vastly different referral rates for the applicant sources.

Overall, our conclusions align with the findings in the Outtz and Associates Barrier Analysis although some specific analyses (e.g. referral, suitability) have changed substantially due to process and data insights gathered after that report was produced. The following chapter provides a summary of issues identified, associated recommendations, and additional questions that should be addressed.

## Chapter 4

### SUMMARY AND RECOMMENDATIONS

In addition to the adverse impact found at key points in the hiring process, this analysis also uncovered assessment tool vulnerabilities, process inefficiencies, and overall design challenges that need to be addressed to ensure the sustainability of recommended interventions.

The first step towards ensuring a high-quality, sustainable ATCS hiring process is to clearly understand and specify the candidate qualifications (i.e., knowledge, skill, ability, other personal characteristics; KSAOs) necessary for success on the job. This can be accomplished through a well-executed job analysis. Job analysis should serve as the foundation for the ATCS hiring process. Legal guidelines (Equal Employment Opportunity Commission [EEOC], 1978) and professional standards (APA, 1999; SIOP, 2003) describe the importance of job analysis in the development of legally defensible, fair, and effective selection programs. It is our understanding that a job analysis was conducted to support the AT-SAT. At the time of our review, we were only aware of the SACHA job analysis study. This study was published 18 years ago and is too dated to be regarded as professionally acceptable to support the hiring process. However, in response to our draft report, CAMI has noted that subsequent efforts have in fact been carried out that should be incorporated into this recommendation. APTMetrics is currently in possession of these subsequent studies and would propose to include their evaluation as part of this recommendation.

With an up-to-date job analysis in place, a blueprint can be established for refining the key decision points in the process, addressing the assessment tool vulnerabilities and refining the overall design. It is with the understanding that a current job analysis exists or will be conducted that the following recommendations are made. These recommendations have been organized into two categories: ATCS Decision Points and Overall Hiring Design.

### ATCS DECISION POINT RECOMMENDATIONS

**STEP 1: Vacancy Announcements.** As described in this report, there appears to be no consistent rationale for determining which applicant source pools are chosen for use for a given hiring period. There may in fact be certain applicant sources that are justifiably ranked above others based upon job-related experience, credentials or other factors. However, this determination needs to be based upon the job analysis, consultation with ATO subject matter experts and confirmed through a validation process using current incumbents. It is therefore recommended that a structured process, involving a job analysis and formal validation, be conducted to determine and validate the differentiating criteria for ranking applicant sources.

In addition, since the choice of applicant sources significantly impacts the diversity of the applicant pool, it is recommended that the applicant pool criteria explicitly serve to balance recruitment needs, operational issues, and commitment to diversity.

There is also a need to better populate the applicant pools with more diverse candidates. To this end, it is recommended that the FAA continue community outreach efforts to educate applicants about the ATCS occupational series and more broadly, establish a national recruitment outreach and education program around the ATCS position.

Furthermore, while CTI schools appear to be a preferred applicant source, this applicant source tends to have very little diversity. It is highly recommended that the FAA work with CTI schools to address the low retention rates of minority candidates in their programs. Specifically, it is recommended that the FAA work with CTI schools to evaluate how diversity can be increased at these schools to more generally represent the US population. For example, this might include targeted recruiting efforts, working with CTI school marketing to ensure both minority and majority population are targeted with advertising.

**STEP 2: Minimum Qualifications.** The MQs as they currently stand were drawn from standards provided by the Office of Personnel Management (OPM). There is no evidence that these qualifications have been recently reviewed or even validated against the ATCS position. Furthermore, these MQs are specific to each applicant source, which results in inconsistent eligibility and qualification standards being applied for individuals applying to perform the same job. Beyond that, many of the MQs are vague and open to interpretation. It is therefore strongly recommended that the MQs be reviewed against a current job analysis and revised and validated accordingly. Additionally, every attempt should be made to build consistent MQs across recruitment sources.

Consideration should also be given to the use of preferred qualifications (PQs) that could be used to differentiate between a large number of candidates meeting the MQs and other qualification requirements (e.g., passing the AT-SAT). As with MQs, job relevance and potential for adverse impact must be considered for PQs.

It is also recommended that the evaluation of MQs be automated to the extent possible through the creation of a standardized application blank. Criteria that cannot be automatically evaluated must be articulated in such a way as to be objectively evaluated by HR Specialists – with minimal opportunity for differential interpretation. HR Specialists engaged in this evaluation should receive training and a standard operating manual with accompanying screening checklists for each recruitment source. Refresher training should be conducted periodically and documented.

Finally, a tracking system should be established to evaluate MQ screening decisions for accuracy and adverse impact on an ongoing basis.

**STEP 3: AT-SAT.** The AT-SAT is approximately 12 years old and while more recent studies have been conducted to establish its ongoing job relevance and weighting, this test battery

continues to produce adverse impact. The AT-SAT is used at two points in the hiring process: 1) to determine whether particular applicants will be referred on to the CSP (i.e., achieve at least a score of 70) and 2) to prioritize selection decisions in the CSP for particular applicants (i.e., use of “well qualified” and “qualified” bands). Roughly 95% of applicants score at or above the passing score of 70, however, this rate drops precipitously and produces significant adverse impact for the cutoff associated with the well qualified band. Operationally, the cutoff score for selection in the CSP is 85 since applicants in the “qualified” band are rarely selected.

One potential solution to this issue is to replace the use of the AT-SAT within the CSP with a measure that can differentiate candidates without increasing adverse impact. For example, the use of validated preferred qualifications that are collected during the application process could be used for this purpose. These PQs would be based on background and experience dimensions (and other factors) identified through the job analysis and established as valid through a proper validation study. This approach has been successfully leveraged for similar applications. We would propose to leverage CAMI’s previous work and experience in the development of PQs for this position. We therefore recommend that PQs be explored as a valid differentiator and substitute for the AT-SAT for use during the CSP.

In terms of the AT-SAT itself, it is recommended that supplemental validation research be conducted to confirm its relevance to the job. Specifically, the AT-SAT should be reviewed against a recent job analysis to ensure that it is still measuring the most important requirements for success in the ATCS position. A determination can then be made as to whether any gaps exist in its coverage of the important requirements. If it is determined that the test covers the essential requirements of the job, the next step would be to review the subtest weights and cutoff scores to determine whether a different configuration of subtests could be modeled and cutoff scores modified to more effectively balance validity and adverse impact considerations.

If the mapping of the AT-SAT to the job analysis identifies gaps in coverage of the essential requirements of the job, then new tests should be proposed to fill in these gaps. Regardless of the findings of the job analysis/AT-SAT mapping process, it is highly recommended that the AT-SAT, or its revised form, be revalidated using a criterion-related strategy, which is outlined below<sup>5</sup>.

1. Review/conduct job analysis of ATCS position
  - Verify importance of key responsibilities and required knowledge, skill, ability and personal characteristics
2. Map current AT-SAT against job requirements
  - Identify any gaps in competency coverage
  - Recommend as needed any additions/revisions to test components
  - Develop new components as required

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<sup>5</sup> As CAMI noted in their response to a prior draft of this report, a properly conducted criterion-related validation study will require a meaningful investment of time and resources.

3. Conduct criterion validation study

- Develop training and performance criteria
- Administer experimental version of revised AT-SAT to representative sample of incumbents and applicants
- Collect performance data on participating incumbents
- Conduct psychometric, validation and adverse impact analyses

4. Finalize and implement revised test

**STEP 4: Generation of Referral Lists.** At present, when applicants apply to an announcement, the applicant must also indicate up to two location preferences. Except for General Public applicants, location preferences ultimately drive which referral lists an applicant can be placed on once the applicant is deemed fully qualified. Applicants who select a location that does not have a position opening are *not* referred on to the CSP even though they meet the source-specific minimum qualifications. It is therefore recommended that the air traffic controller application form be changed so that applicants could select the “anywhere in the nation” option. They should also be provided with information as to which facilities have openings. This is in line with the Independent Review Panel’s recommendation (ATO & AHR: Review of Independent Review Panel (IRP) Recommendations & Current Projects, November 6, 2012).

**STEP 5: Centralized Selection Panel (CSP).** Based upon both the qualitative and quantitative reviews, it was determined that there is a significant opportunity for improvement of the CSP process. The process has been described by stakeholders as complex, unstandardized and subjective. In addition, the CSP process has exhibited adverse impact for protected groups, although those effects are not consistent from one CSP to another.

It is recommended that the full CSP process design be evaluated for efficiency, accuracy and fairness. It is quite likely that alternative approaches to the CSP model would result in more precise, fair outcomes along with tremendous cost savings. For example, there may be potential to automate much of the current decision making localized in the CSP selection process. Under this scenario CSP panelists could operate in more of a final review/quality control role.

Regardless of the final CSP configuration, it is highly recommended that the criteria by which decisions are made at this stage in the hiring process be firmly established and validated against the essential requirements of the job. Once the criteria have been documented and validated, CSP panelists should be trained and monitored in the application of these criteria. It will be important to develop clear policies, rating guidelines, and standardized processes for reviewing applicants and making decisions, including criteria that can and cannot be considered. All panel members must have the same understanding of the purpose of the process and be provided with an approach that will ensure accurate and fair treatment of the candidates.

Finally, it will be critical to implement a rigorous evaluation of the CSP decision making process to ensure that the process is operating as intended. Initially it will be important to closely monitor and oversee a full cycle of CSPs to ensure real-time decisions are fair and job-related. Decision making in the CSP should continue to be monitored by HR on an on-going basis thereafter.

**STEP 6: Interview.** The interview has become more of a formality in the ATCS hiring process as almost 100% of the candidates pass. It is recommended that new interview content be developed and validated, using the job analysis as the driver of which competencies need to be measured. Specifically, the interview should be developed and mapped against required knowledge, skills, and abilities and validated using subject matter experts. Multiple questions should be developed to assess each competency and behavioral anchors should be developed and validated for each of the questions to help guide interviewers in making accurate ratings.

Additionally, it is recommended that training be provided to all individuals involved in conducting the interviews to ensure they understand how to fairly and accurately conduct the interview process. Training should include “frame of reference” exercises in order to help calibrate judgments and ratings across interviewers.

### **ATCS Overall Design Considerations**

The current ATCS selection process is highly decentralized, with decision making and process tracking occurring across multiple departments and organizations. The absence of a clear structure and accountability for the full selection process results in significant challenges to the evaluation, ongoing improvement, and long-term success of the program. It is our recommendation that a single organization take charge of this process so that it can be centrally managed from announcement through to placement into the FAA Academy. The organization best positioned to “own” and run this process is the Office of Human Resources.

A centralized process, housed in AHR, would enable improved standardization and targeted outreach of the recruitment process, an improved ability to track and evaluate the hiring process, and enhanced coordination of the entire process.

AHR centralization and benefits include:

1. Review and coordination of the applicant sources chosen for a given hiring period, ensuring choices are aligned with FAA diversity and inclusion goals and overall ATCS openings in the field.
2. Coordinated and consistent development, validation, and training on and implementation of minimum qualification screens.
3. Generation of referral lists and tracking applicants throughout the selection process to ensure declinations, location assignments, and communications to applicants are handled fairly and consistently.



4. Coordination of applicant selections from referral lists, using formulaic and standardized decision rules for moving applicants further along in the selection process.
5. Coordination, review, and sign off on all applicant interview results.
6. Review of the medical and security screen processes.
7. Consistent documentation of decisions regarding the selection process.
8. Consistent documentation of applicant dispositions throughout the process.
9. Coordination with FAA facilities, Training Academy, and applicants on EODs and distribution of tentative and firm offer letters.

## Chapter 5

### REFERENCES/APPENDICES

#### References

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## **Appendix A: IRP Review**

*The information presented here reflects the exact report generated in November 2012. This IRP report was prepared prior to the commencement of APTMetrics' barrier analysis extension work described in the current report. As such, APTMetrics did not have the opportunity to speak with FAA representatives nor review any policy/process documentation prior to preparation of the IRP report presented below. The opinions expressed in the IRP report below are based solely on the information presented in "FAA Independent Review Panel on the Selection, Assignment and Training of Air Traffic Control Specialists (September 22, 2011)."*

### **Review of "Blue Ribbon Panel" Findings and Recommendations**

Based on request, APTMetrics conducted a review of the FAA Independent Review Panel on the Selection, Assignment and Training of Air Traffic Control Specialists report.

APTMetrics reviewed and critically evaluated each of the IRP recommendations found in the September 22, 2011 FAA Independent Review Panel on the Selection, Assignment and Training of Air Traffic Control Specialists report (contained within ATO & AHR: Review of Independent Review Panel (IRP) Recommendations & Current Projects, November 6, 2012).

Five primary factors were considered when evaluating each recommendation:

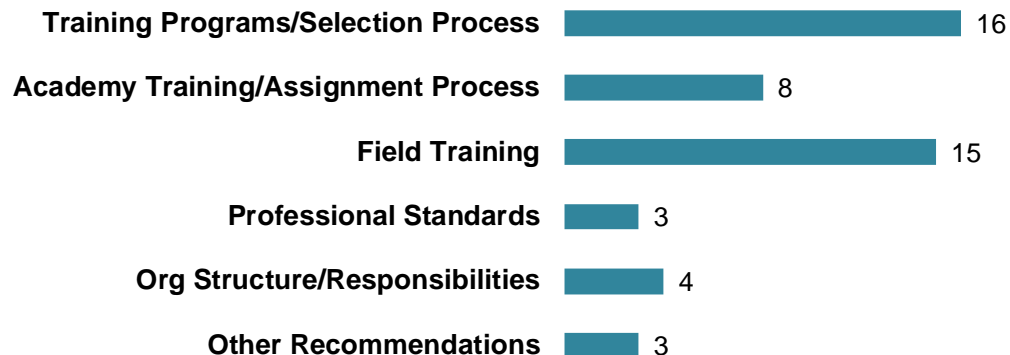
- 1) Process efficiency improvement (PE)
- 2) Transparency and equity impact (TEI)
- 3) Consistency with best practices (CBP)
- 4) Ease of implementation – time (EIT)
- 5) Ease of implementation – resources (EIR)

Recommendations that scored highly are prioritized and highlighted to help guide stakeholders in the best short and long term strategies for improving the selection process for ATCSs

## Report Symbols

- ✓ PE/TEI/CBP: Recommendation should result in a positive impact on evaluation criteria.  
EIT/EIR: Requires minimal time/resources.
- PE/TEI/CBP: Recommendation should result in a moderate impact on evaluation criteria.  
EIT/EIR: Requires moderate time/resources or may decrease the need for some resources while increasing the need for others.
- ✗ PE/TEI/CBP: Recommendation may have a negative impact on evaluation criteria.  
EIT/EIR: Requires substantial time/resources.
- ① This recommendation is a high priority and can commence before the barrier analysis is complete.
- ② This recommendation is a high priority but should be postponed until after the barrier analysis is complete.
- ③ This recommendation is sound but is a lower priority.
- C Caution should be taken in implementing this consideration. Assumptions used for recommendation may not hold.

The original report is divided into 6 primary sections. *APT Metrics* follows this structure in our detailed review, presenting each recommendation in its original order. The chart below displays the number of recommendations in each section.

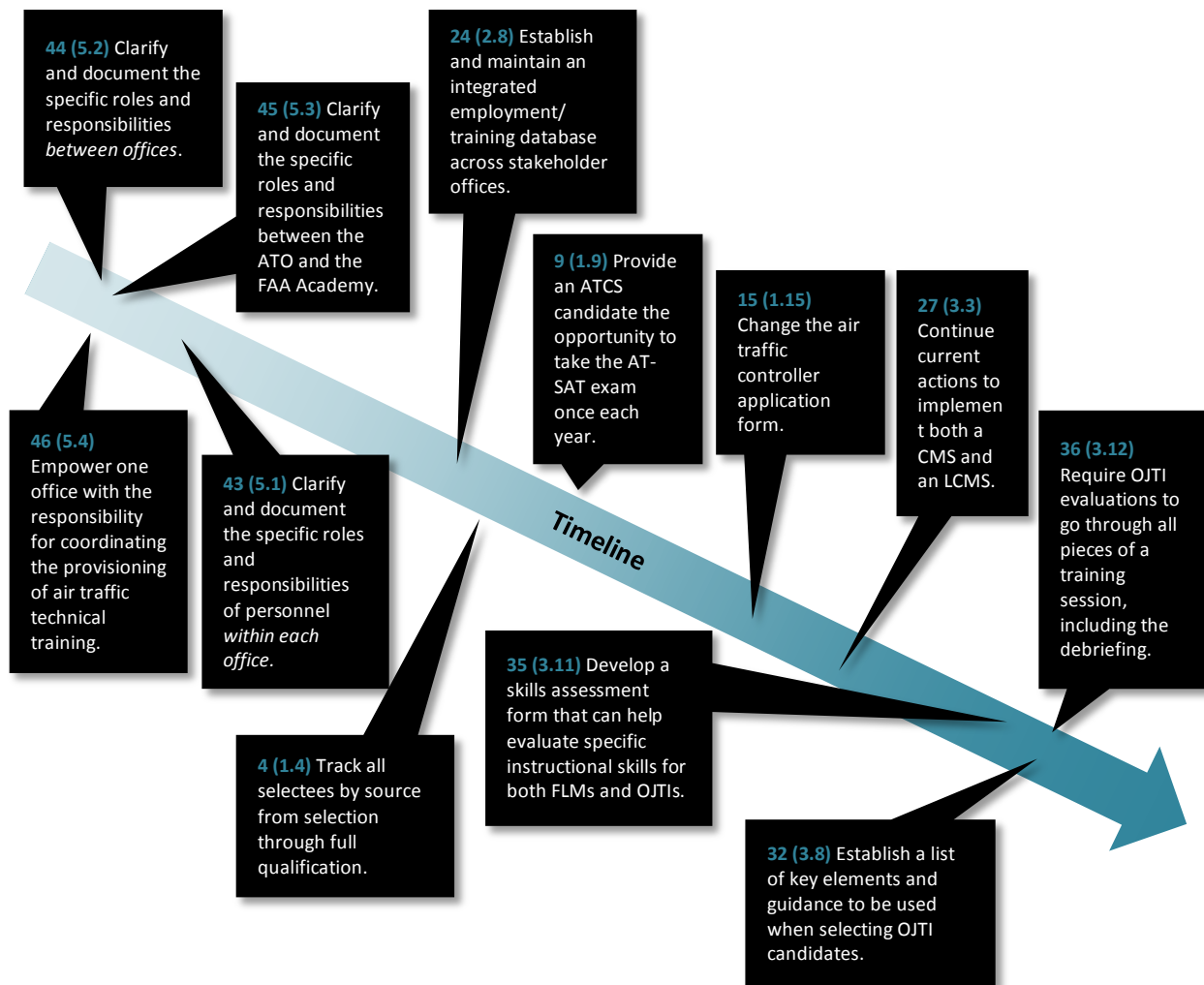


## Key Notes

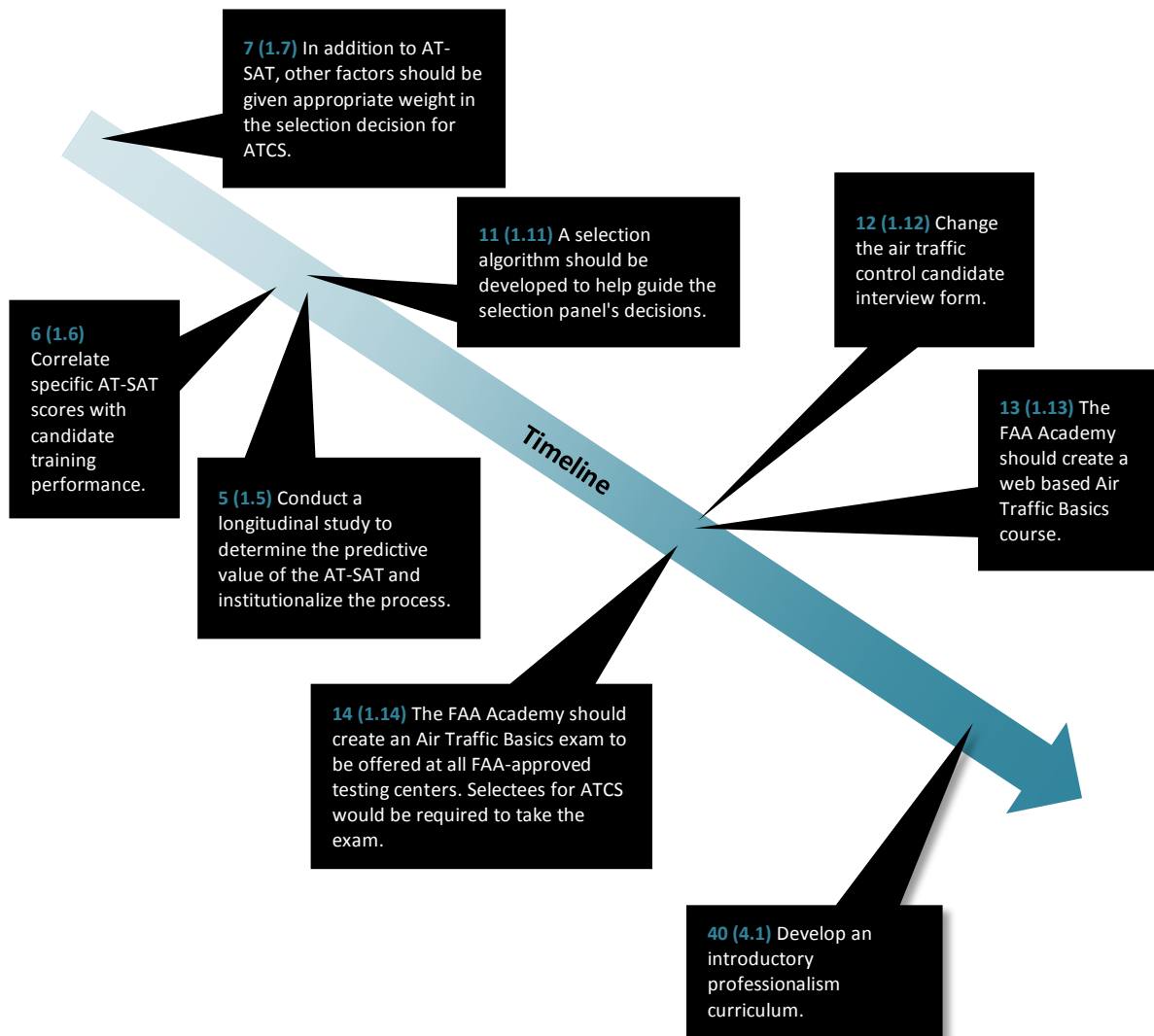
The IRP's recommendations regarding organizational structure (Section 5) are of critical and immediate importance and should serve as the foundation upon which all other recommendations are executed.

The IRP's recommendations regarding the proper mix and relative weight of selection components (Section 1) should be treated as examples only, since a full validation study is required to establish this configuration.

### IRP RECOMMENDATION REVIEW Prioritized Short-term Recommendations (Implement Now)



## IRP RECOMMENDATION REVIEW Long-term Recommendations (Wait for Barrier Analysis Completion)





## **IRP RECOMMENDATION REVIEW Recommendations Requiring Caution (Caution)**

APT*Metrics* did not conclude any recommendation to be totally unsound. However, in our opinion the specific processes shown and assumptions made for the recommendations below must be tempered or modified by additional empirical support.

**1 (1.1)** Evaluate AT-CTI schools based upon the strength of the ATC-related curriculum and assign levels (1 through 4)

**2 (1.2)** Use AT-CTI levels in the selection process.

**10 (1.10)** Selection for ATCS training and selection for assignment to a facility should be a two-step process.

**16 (1.16)** The FAA needs to review its hiring practices for controller candidates and take advantage of the AT-CTI system it has created.

**31 (3.7)** Develop a voice recognition-training tool to be used supplement instructor based field training.

**37 (3.13)** Extend the current six-month requirement for OJTIs, identified in FAA Order 3120.4M, to one year.

## TRAINING PROGRAMS / SELECTION PROCESS Recommendations Part 1

<b>Collegiate Training Initiative Programs</b>	<b>Evaluation Comments</b>	<b>PE</b>	<b>TEI</b>	<b>CBP</b>	<b>EIT</b>	<b>EIR</b>	<b>Priority</b>
<b>1 (1.1)</b> Evaluate AT-CTI schools based upon the strength of the ATC-related curriculum and assign levels (1 through 4).	<ul style="list-style-type: none"> <li>•Requires sustained resources to maintain ranking program and address school concerns</li> <li>•No way to know if the school level is a valid predictor</li> <li>•Process is applicable to only a subset of job applicants</li> </ul>	●	●	●	✗	✗	C
<b>2 (1.2)</b> Use AT-CTI levels in the selection process.	<ul style="list-style-type: none"> <li>•School levels may be correlated with protected groups resulting in adverse impact</li> <li>•Allows quick prioritization of applicants</li> <li>•Applicants may not understand criteria and can't improve their situation easily</li> <li>•School level should be fully validated as a predictor of job performance and/or training performance</li> <li>•Process is applicable to only a subset of job applicants</li> </ul>	✓	✗	✗	●	●	C
<b>3 (1.3)</b> Share AT-CTI selectee training performance data with the source institutions.	<ul style="list-style-type: none"> <li>•Improves transparency for schools</li> </ul>		✓	✓	✓	✓	3

## TRAINING PROGRAMS / SELECTION PROCESS Recommendations Part 2

Selection Process	Evaluation Comments	PE	TEI	CBP	EIT	EIR	Priority
<b>4 (1.4)</b> Track all selectees by source from selection through full qualification as a CPC.	<ul style="list-style-type: none"> <li>•Will improve process transparency to key stakeholders</li> <li>•Will improve evaluation of process effectiveness, diagnostics, and fairness</li> </ul>	✓	✓	✓	✓	✓	1
<b>5 (1.5)</b> Conduct a longitudinal study to determine the predictive value of the AT-SAT and institutionalize the process.	<ul style="list-style-type: none"> <li>•Test may need to be updated so any criterion study should be delayed until that decision is reached</li> </ul>		✓	✓	✗	•	2
<b>6 (1.6)</b> Correlate specific AT-SAT scores with candidate training performance.	<ul style="list-style-type: none"> <li>•Requires processes to track training performance and map to test scores</li> </ul>		✓	✓	•	•	2
<b>7 (1.7)</b> In addition to AT-SAT, other factors should be given appropriate weight in the selection decision for ATCS.	<ul style="list-style-type: none"> <li>•Weights should be determined through proper validation and fairness considerations</li> </ul>		✓	✓	✗	•	2
<b>8 (1.8)</b> Offer the AT-SAT exam through existing FAA testing centers.	<ul style="list-style-type: none"> <li>•Recommendation would be bolstered by evidence of severity of scheduling issues and/or disproportionate access</li> <li>•Could ease administrative burden on schedulers</li> </ul>	•	✓	✓	•	✓	3

### TRAINING PROGRAMS / SELECTION PROCESS Recommendations Part 3

Selection Process	Evaluation Comments	PE	TEI	CBP	EIT	EIR	Priority
<b>9 (1.9)</b> Provide an ATCS candidate the opportunity to take the AT-SAT exam once each year.	<ul style="list-style-type: none"> <li>•Consistent with most test-retest policies</li> <li>•Can increase perceptions of fairness</li> <li>•Could increase number of applications</li> <li>•Consider cap on total number of administrations</li> </ul>	●	✓	✓			1
<b>10 (1.10)</b> Selection for ATCS training and selection for assignment to a facility should be a two-step process.	<ul style="list-style-type: none"> <li>•While conceptually reasonable, it assumes applicants will be ok with the facility they are assigned</li> <li>•Based on available applicant data many applicants decline based on facility/location</li> <li>•May result in increased training of subsequent ATCSs who turnover</li> <li>•Process becomes detached from actual openings, increasing potential for trained ATCSs without a position to fill</li> </ul>	✗			●	●	C
<b>11 (1.11)</b> A selection algorithm should be developed to help guide the selection panel's decisions.	<ul style="list-style-type: none"> <li>•Increased standardization and transparency afforded</li> <li>•The model shown in the report should be approached with significant caution</li> <li>•GPA is problematic considering the aforementioned differences in schools</li> <li>•Any algorithm would need to be driven by validation study and adverse impact considerations</li> </ul>	✓	✓	✓	✗	●	2

## TRAINING PROGRAMS / SELECTION PROCESS Recommendations Part 4

Selection Process	Evaluation Comments	PE	TEI	CBP	EIT	EIR	Priori ty
<b>12 (1.12)</b> Change the air traffic control candidate interview form to three questions which the manager would evaluate using a five-choice Likert scale. Reduce the 41-page Interview Guide to a two page handout listing the dos and don'ts of interviewing.	<ul style="list-style-type: none"> <li>•Overly complex supporting documentation is seldom used so shortening is beneficial</li> <li>•The three question suggestion is arbitrary</li> <li>•The interview should be developed and mapped against required knowledge, skills, and abilities and validated</li> </ul>	✓	✓	✓	●	✓	2
<b>13 (1.13)</b> The FAA Academy should create a web based Air Traffic Basics course. Completion of this course should be required of all candidates entering ATCS training.	<ul style="list-style-type: none"> <li>•Completion requirements should not be tied to level of AT-CTI programs</li> <li>•Requires increased and sustained training and administrative resources</li> </ul>	✗	✓	✓	✗	✗	2
<b>14 (1.14)</b> The FAA Academy should create an Air Traffic Basics exam to be offered at all FAA-approved testing centers. Selectees for ATCS would be required to take the exam.	<ul style="list-style-type: none"> <li>•Consistent with the recommendation, an exam used for all applicant sources is ideal</li> <li>•Scoring recommendation is arbitrary; passing scores should be determined based on a full validation study and equity analysis</li> </ul>	✓	✓	✓	●	✓	2

## TRAINING PROGRAMS / SELECTION PROCESS Recommendations Part 5

Selection Process	Evaluation Comments	PE	TEI	CBP	EIT	EIR	Priori ty
<b>15 (1.15)</b> Change the air traffic controller application form so that applicants could select one region, one state, or anywhere.	•Improvement could have a positive impact for protected groups	✓	✓	✓	✓	✓	1
<b>16 (1.16)</b> The FAA needs to review its hiring practices for controller candidates and take advantage of the AT-CTI system it has created.	<ul style="list-style-type: none"> <li>•It is not clear if CTI applicants significantly outperform other sources except for anecdotal evidence</li> <li>•Full reliance on the CTI pool, a knowingly less diverse applicant population, should only be implemented if it can be shown that curriculum is necessary to perform the job; this can only be determined through a validation approach that compares applicant sources</li> </ul>		•	•	✗	✗	C

## ACADEMY TRAINING/ASSIGNMENT PROCESS Recommendations Part 1

Academy Training	Evaluation Comments	PE	TEI	CBP	EIT	EIR	Priorty
<b>17 (2.1)</b> Provide Air Traffic Basics training via an online module.	<ul style="list-style-type: none"> <li>•Requires additional content maintenance and increased administrative resources</li> <li>•Will lengthen onboarding process but should improve performance</li> </ul>	●	✓	✓	✗	✗	3
<b>18 (2.2)</b> Incorporate the Professional Standards module within the Academy-based ATCS curriculum and use contract instructors (augmented by field management and NATCA representatives, as needed) in this role.	<ul style="list-style-type: none"> <li>•Ensure professional standards are job related</li> <li>•Conduct a full needs assessment rather than anecdotal evidence</li> <li>•Identify what can easily be learned on the job</li> </ul>		●	✓	✓	✗	3
<b>19 (2.3)</b> Expose Academy students to all ATCS track specialties and use contract instructors and OJTIs in this role.	<ul style="list-style-type: none"> <li>•Above review notwithstanding, exposure to tracks is necessary if facility assignment is based on performance</li> </ul>		✓		●	●	3
<b>20 (2.4)</b> Incorporate an "advanced" course for all candidates prior to reporting to the field units and use OJTIs in this role.	<ul style="list-style-type: none"> <li>•Training demands in the field should be reduced</li> <li>•Training will likely be standardized potentially increasing quality</li> <li>•Restriction of course to "advanced" trainees could result in negative reactions</li> </ul>	✓	●	✓	✗	●	3

## ACADEMY TRAINING/ASSIGNMENT PROCESS Recommendations Part 2

<b>Academy Training</b>	<b>Evaluation Comments</b>	<b>PE</b>	<b>TEI</b>	<b>CBP</b>	<b>EIT</b>	<b>EIR</b>	<b>Priori ty</b>
<b>21 (2.5)</b> Improve the quality of Academy-based training by (a) capturing additional performance samples during training, (b) replacing the "pass/fail" grading strategy with multi-level performance measures, and (c) providing detailed Academy training records to the gaining facility manager.	<ul style="list-style-type: none"> <li>•Substantial administrative burden</li> <li>•Increased depth of training feedback and potential performance improvement initiatives</li> </ul>	✓	✓	✓	✗	✗	3
<b>22 (2.6)</b> Delay the <i>track assignment</i> until after the candidate's aptitude is assessed during initial training at the FAA Academy training and use OJTIs in this process.	<ul style="list-style-type: none"> <li>•Consistency is key and may be difficult based on actual vacancies/needs</li> <li>•Need to develop and validate clear criteria for assignments</li> <li>•Consider inclusion of an appeals process</li> </ul>		•		•	•	3
<b>23 (2.7)</b> Delay the <i>facility assignment</i> until after the candidate's aptitude is assessed during Academy training and use field management in this process.	<ul style="list-style-type: none"> <li>•Consistency is key and may be difficult based on actual vacancies/needs</li> <li>•Consider inclusion of an appeals process</li> <li>•Need to develop clear criteria for assignment</li> <li>•Refer to recommendation 10 (1.10 )</li> </ul>		•		✓	✓	3
<b>Employee Records</b>							
<b>24 (2.8)</b> Establish and maintain an integrated employment/training database across stakeholder offices that captures employees' data from application to retirement date.	<ul style="list-style-type: none"> <li>•Improves transparency and the ability to evaluate processes for effectiveness and equity</li> </ul>	✓	✓	✓	✓	✓	1



## FIELD TRAINING Recommendations Part 1

Field Training	Evaluation Comments	PE	TEI	CBP	EIT	EIR	Priori ty
<b>25 (3.1)</b> Identify key elements of instructional performance for FAA classroom and simulation instructors.		✓		✓	●	●	3
<b>26 (3.2)</b> Establish a group of early career controllers to evaluate changes in teaching methodology utilized by both non-FAA and FAA instructors, and assess those changes against the current Air Traffic Control environment.	<ul style="list-style-type: none"> <li>•Implementation of CMS/LCMS will decrease the need for this group</li> </ul>	✓		✓	✗	✗	3
<b>27 (3.3)</b> Continue current actions to implement both a CMS and an LCMS and continue the planned technical training strategy to maintain the currency and accuracy of training.	<ul style="list-style-type: none"> <li>•Consider a full-featured LMS system, not just content management</li> <li>•Implementation is an extended process</li> </ul>	✓		✓	✗	✗	1
<b>28 (3.4)</b> Collect and monitor information to measure the effectiveness of the technologies used for classroom and facility training.	<ul style="list-style-type: none"> <li>•Tracking the effectiveness of specific mediums can help assess how specific groups and types of learners learn best</li> </ul>	✓	✓	✓	✗	●	3

## FIELD TRAINING Recommendations Part 2

<b>Simulation Strategy</b>	<b>Evaluation Comments</b>	<b>PE</b>	<b>TEI</b>	<b>CBP</b>	<b>EIT</b>	<b>EIR</b>	<b>Priori ty</b>
<b>29 (3.5)</b> Continue to move forward with the implementation of simulation technology in field training.	•Upfront cost/time but decreased reliance on field resources	✓		✓	●	●	3
<b>30 (3.6)</b> Develop a mobile simulator lab(s).	•Upfront cost/time but decreased reliance on field resources	✓		✓	✗	●	3
<b>31 (3.7)</b> Develop a voice recognition-training tool to be used supplement instructor based field training.	•Voice recognition technology can be difficult to implement & use	●		●	✗	✗	C
<b>On-the-Job Training Instructors</b>							
<b>32 (3.8)</b> Establish a list of key elements and guidance to be used when selecting OJT candidates.	•Consider a minimum qualification and preferred qualification approach	✓	✓	✓	✓	✓	1
<b>33 (3.9)</b> Develop instructor skill enhancement courses for OJTIs that address specific areas to be improved.	•Increased need for content development and administrative resources	✓	✓	✓	✗	✗	3
<b>34 (3.10)</b> Develop refresher training for FLMS to assist in evaluating current training techniques and best practices in their certification and evaluation of OJTIs.	•Increased need for content development and administrative resources	✓		✓	✗	✗	3

### FIELD TRAINING Recommendations Part 3 *On-the-Job*

<i>Training Instructors</i>	<i>Evaluation Comments</i>	<i>PE</i>	<i>TEI</i>	<i>CBP</i>	<i>EIT</i>	<i>EIR</i>	<i>Priori ty</i>
<b>35 (3.11)</b> Develop a skills assessment form that can help evaluate specific instructional skills for both FLMs and OJTIs.	•Increased consistency and sound tool to communicate expectations	✓	✓	✓	✓	✓	1
<b>36 (3.12)</b> Require OJTI evaluations to go through all pieces of a training session, including the debriefing.	•Solid approach to evaluation and ongoing improvement	✓	✓	✓	✓	✓	1
<b>37 (3.13)</b> Extend the current six-month requirement for OJTIs, identified in FAA Order 3120.4M, to one year.	•Review interview notes to determine how/why candidates were insufficient; confirm it is a function of tenure				✓	✓	C
<b>38 (3.14)</b> Develop a national database of best practices, lessons learned and current training techniques that are easily available to OJTIs.	•This level of detail could also be tracked in a central LMS system per 27 (3.3) •Leveraging the LMS would increase the PE score •Effective population, retrieval and use of the data requires time and administrative resources	✗		✓	✗	✗	3
<b>39 (3.15)</b> Establish an annual refresher course for OJTIs.	•Increase time spent in training for OJTIs every year; this should be balanced against value			✓	•	✗	3

## PROFESSIONAL STANDARDS Recommendations

Professional Standards	Evaluation Comments	PE	TEI	CPB	EIT	EIR	Priority
<b>40 (4.1)</b> Develop an introductory professionalism curriculum.	•Curriculum may be able to be purchased quickly		✓	✓	✓	✗	2
<b>41 (4.2)</b> Develop a complete Academy-level class on professional standards.			✓	✓	✗	✗	3
<b>42 (4.3)</b> Continue to expand and develop the joint ProStan Program at the field level. Develop a refresher class on professional standards and require annual training.			✓		✗	✗	3

## ORG STRUCTURE / RESPONSIBILITIES Recommendations

Organizational Structure	Evaluation Comments	PE	EIT	CBP	EIT	EIR	Pri- ty
<b>43 (5.1)</b> Clarify and document the specific roles and responsibilities of personnel <i>within each office</i> that contributes, receives or uses information related to provisioning of air traffic technical training, inclusive of the ATO Service Units, Service Areas, Service Centers and facilities, as well as any other FAA offices.	•Requires significant collaboration from and participation by stakeholders	✓	✓	✓	✓	●	1
<b>44 (5.2)</b> Clarify and document the specific roles and responsibilities <i>between offices</i> that contribute, receive or use information related to provisioning of air traffic technical training, inclusive of the ATO Service Units, Service Areas, Service Centers and facilities, as well as any other FAA offices.	•Requires significant collaboration from and participation by stakeholders	✓	✓	✓	✓	●	1
<b>45 (5.3)</b> Clarify and document the specific roles and responsibilities between the ATO and the FAA Academy as each contributes to air traffic technical training.	•Requires significant collaboration from and participation by stakeholders	✓	✓	✓	✓	●	1
<b>46 (5.4)</b> Empower one office with the responsibility, as the REDAC advised the Administrator in 2005, for coordinating the provisioning of air traffic technical training, including the means to fund and execute this responsibility.	•Requires significant collaboration from and participation by stakeholders •Significant organizational changes required	✓	✓		✗	✗	1

## OTHER RECOMMENDATIONS

<b>Other Recommendations</b>	<b>Evaluation Comments</b>	<b>PE</b>	<b>TEI</b>	<b>CPB</b>	<b>EIT</b>	<b>EIR</b>	<b>Priori ty</b>
<b>47 (6.1)</b> The FAA Academy should shift curriculum to the outcomes-based model over the next five years.	•Best practices approach	✓	✓	✓	✗	✗	3
<b>48 (6.2)</b> AJL should join the franchise fund at the Mike Monroney Aeronautical Center to better serve its mission.	•APT did not evaluate this recommendation						
<b>49 (6.3)</b> The use of the term "Developmental" has a less than positive connotation. A better descriptor should be used.			•	•			3

## Appendix B. Documents Received and Reviewed

Document Title	Overview
2152 Barrier Analysis Draft (October 19, 2012)- Phase 1 (AGC Comments)	Comments on Barrier Analysis from Legal team
2152 vacancy announcement RNO data	Breakdown of race data (%) by applicant source for 2152 vacancy announcement
20120830_FY06_Barrier_Analysis	2006 data file from barrier analysis broken down by applicant source
20120830_FY07_Barrier_Analysis	2007 data file from barrier analysis broken down by applicant source
20120830_FY08_Barrier_Analysis	2008 data file from barrier analysis broken down by applicant source
20120830_FY09_Barrier_Analysis	2009 data file from barrier analysis broken down by applicant source
20120830_FY10_Barrier_Analysis	2010 data file from barrier analysis broken down by applicant source
20120830_FY11_Barrier_Analysis	2011 data file from barrier analysis broken down by applicant source
AAC-AMH-07-CTO-06747	CTO Vacancy announcement: Aug 15, 2007 - Aug 21, 2007
AAC-AMH-07-CTO-06895	Amended CTO vacancy announcement: Aug 24, 2007 to Aug 24, 2007
AAC-AMH-07-CTO-07044	Amended CTO vacancy announcement: Sep 5, 2007 to Sep 6, 2007
AT Hiring sources by fiscal year	List of hiring sources by year
ATCS system vs HR Specialist DQ	List of disqualification/screen out questions by applicant source
ATO & AHR Review of IRP 11.6.12	IRP / Blue Ribbon report and update
BA_Final Report 8 for Distribution	October 19, 2012 Barrier Analysis report by Outtz
Barrier Analysis - Additional Questions for SMEs	1-page document with 3 questions re: MQ Determination and CSP
Barrier Analysis qualification response	Summary document referring to a chart of race breakdown % by year for qualified applicants
Barrier Analysis questions	List of questions/requests for Barrier Analysis
Barrier Analysis_2152 FY 2006 to 2012 info	PPT: "ATCS Hiring Sources and Process by Fiscal Year"
CAMI response to the second draft of the barrier analysis	CAMI comments on the barrier analysis
CSP March 12 20 pitch	PPT: "CSP Briefing" presented to Centralized Selection Panel
Data documents sent to APT 27 November 2012	List/screenshot of documents sent to APT
General Public exclusion numbers	Counts by General Public announcement of # applied, # AVIATOR DQ'd, # HR Specialist DQ'd
General Public exclusions	List of excluded General Public applicants by name with reason
Interview Names	List of applicant names by year re: interviews.
Memo for the record concerning the data provided to the Barrier Analysis workgroup	Memo provided to barrier analysis contractor re: barrier analysis data (presumably from the FAA)
Overview of ATCS hiring process	PPT: "Overview of the Air Traffic Controller Hiring Process"
King et al (2007)	"Operational Use of the Air Traffic Selection and Training Battery"
00_02	Manning (2000) - "Measuring Air Traffic Controller Performance in a High-Fidelity Simulation" - 2 reports
00_12	Heil & Agnew (2000) - "The Effects of Previous Computer Experience on Air Traffic-Selection and Training (AT-SAT) Test Performance"
00_15	Russell, Dean, & Broach (2000) - "Guidelines for Bootstrapping Validity Coefficients in ATCS Selection Research"

Document Title	Overview
0105	"Documentation of Validity for the AT-SAT Computerized Test Battery Volume I"
0106	Ramos, Heil, & Manning (2001) - "Documentation of Validity for the AT-SAT Computerized Test Battery Volume II"
Append_C_I0106V1	tech report Appendix C
AppendA_B_0501V1	tech report Appendices A and B
1607.5 validity studies	UG - "General standards for validity studies"
1607.7 use of other validity studies	UG - "Use of other validity studies"
1607.14 selection	UG - "Technical standards for validity studies"
1607.15 selection	UG - "Documentation of impact and validity evidence"
Broach and Brect-Clark 1994	"Validation of the Federal Aviation Administration Air Traffic Control Specialist Pre-Training Screen"
collins and morris (2008)	"Testing for Adverse Impact when Sample Size is Small"
Dattel and King 2006	"Reweighting AT-SAT to Mitigate Group Score Differences"
Manning et al 1988	Manning et al (1988). "Studies of Poststrike Air Traffic Control Specialist Trainees: II. Selection and Screening Programs"
SIOP Principles	SIOP Principles
uniform guidelines	EEOC Uniform Guidelines
HROI ATC CTI SOP	Standard operating procedures for CTI
HRPM EMP-1.7 Testing Policy 2152	Testing policy for filling entry level Terminal and EnRoute ATCS positions
HRPM EMP-1.19 PATCO	Employment of former ATCS
HRPM EMP-1.20 Max Entry Age	Maximum entry age for ATCSs
HRPM EMP-1.20a RMC	Employment Policy for Employment of RMC program
HRPM EMP-1.26b VRA	Employment Policy for Veterans' Recruitment Appointment (VRA)
HRPM EMP-1.26g (CTO)	HR Policy Manual: Individuals possessing a CTO certificate with facility rating from trade schools / universities / colleges
HRPM FOR RMC Q & A	HR Policy Manual: Employment of RMC Program - Questions and Answers
Policy Bulletin #12-Inprocess Rule	Bulletin: In-process rule for ATCS positions
HROI METHOD OF EVALUATING	HROI - Method of Evaluating Candidates
HRPM EMP-1.10 External Hiring	HRPM - Permanent External Hiring
HRPM EMP-1.12 Emp of Vets & Svc Members	HRPM: Employment of Vets and Service Members
HRPM Ref Material EVHO	HRPM: Expanded Veterans Hiring Opportunity (EVHO) - Questions and Answers
HRPM EMP-1.11 Entry-Level Pay FG-1	HRPM Supplement - employment policy: Entry-level pay and grade for AT Academy trainees
OPM Qual Standard 2152	Qualification Standards for 2152
AAC-AMH-09-PUBNAT8-12162	Job Posting and completed applicant questionnaire
FAA-AMH-13-CTI-27053	Job Posting and completed applicant questionnaire
FAA-AMH-13-CTO-27017	Job Posting and completed applicant questionnaire
FAA-AMH-13-VRA-26915	Job Posting and completed applicant questionnaire
FAA-AMH-13-REINCPC-27019	Job Posting and completed applicant questionnaire
FAA-AMH-13-REINDOD-27021	Job Posting and completed applicant questionnaire
FAA-AMH-13-RMC-27006	Job Posting and completed applicant questionnaire
PATCO RECRUIT NOTICE 93-01	Recruitment Notice from 1993
ATC Hiring Process (TIGER TEAM RECOMMENDATIONS)	Tiger Team evaluation of hiring process
ATSP Pay Bands EFF. 1-1-2012	ATSP Pay Bands by ATC level and career level
EnRoute facility listing with levels	List of EnRoute facilities with facility ID, ATC level, facility type, service area, and specific location/facility name
Terminal facility code listing with levels	List of Terminal facilities with facility ID, ATC level, facility name, district, and service area



Document Title	Overview
CWP_2012	"A Plan for the Future: 10-Year Strategy for the ATC Workforce 2012-2021"
20121211_FY06_Barrier_Analysis	new data pull
20121211_FY07_Barrier_Analysis	new data pull
20121211_FY08_Barrier_Analysis	new data pull
20121211_FY09_Barrier_Analysis	new data pull
20121211_FY10_Barrier_Analysis	new data pull
20121211_FY11_Barrier_Analysis	new data pull
FY06_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 1)]	
FY07_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 1)]	
FY08_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 1)]	
FY09_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 1)]	
FY10_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 1)]	
FY11_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 1)]	
FY06_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 4)]	
FY07_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 4)]	
FY08_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 4)]	
FY09_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 4)]	
FY10_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 4)]	
FY11_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 4)]	
FY06_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 5)]	
FY07_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 5)]	
FY08_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 5)]	
FY09_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 5)]	
FY10_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 5)]	
FY11_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 5)]	
FY06_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 6)]	
FY07_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 6)]	
FY08_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 6)]	
FY09_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 6)]	
FY10_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 6)]	
FY11_Barrier_Analysis [from 20120326_Barrier_Analysis_2012 (disk 6)]	
FY06_Barrier_Analysis [from 20120611_FY06- 11_Barrier_Analysis_B (disk 3)]	

Document Title	Overview
FY07_Barrier_Analysis [from 20120611_FY06-11_Barrier_Analysis_B (disk 3)]	
FY08_Barrier_Analysis [from 20120611_FY06-11_Barrier_Analysis_B (disk 3)]	
FY09_Barrier_Analysis [from 20120611_FY06-11_Barrier_Analysis_B (disk 3)]	
FY10_Barrier_Analysis [from 20120611_FY06-11_Barrier_Analysis_B (disk 3)]	
FY11_Barrier_Analysis [from 20120611_FY06-11_Barrier_Analysis_B (disk 3)]	
20120830_FY06_Barrier_Analysis [from 20120830_FY06-11_Barrier_Analysis (disk 2)]	
20120830_FY07_Barrier_Analysis [from 20120830_FY06-11_Barrier_Analysis (disk 2)]	
20120830_FY08_Barrier_Analysis [from 20120830_FY06-11_Barrier_Analysis (disk 2)]	
20120830_FY09_Barrier_Analysis [from 20120830_FY06-11_Barrier_Analysis (disk 2)]	
20120830_FY10_Barrier_Analysis [from 20120830_FY06-11_Barrier_Analysis (disk 2)]	
20120830_FY11_Barrier_Analysis [from 20120830_FY06-11_Barrier_Analysis (disk 2)]	
SPSS Files Breakdown	description of variables in Outtz's data files
Academy Training Data_ATSATethnicityMay2012	Outtz's data
agg_2006_qual_ref_sel	Outtz's data
agg_2007_qual_ref_sel	Outtz's data
agg_2008_qual_ref_sel	Outtz's data
agg_2009_qual_ref_sel	Outtz's data
agg_2010_qual_ref_sel	Outtz's data
agg_2011_qual_ref_sel	Outtz's data
ATSATethnicity	Outtz's data
ATC Applicants Disqualified Due To Medical Conditions	Medically disqualified applicants with date
ATC Applicants Identified By MMPI-2 And Subsequently Medically Disqualified	Medically disqualified applicants with date
AVIATOR Announcements Data (N=386)	Announcements with counts of applicants
Interview Template 9-3-08	ATCS Interview Evaluation Template
FY2013 Air Traffic Facility Listing with City, State, Location	2013 facility info
transtoDrOuttz2012-07-13-104858	List of documents provided to Outtz
DrOuttztransfer2012-12-11-102926	List of documents provided to Outtz
Rock et al 1984	Encyclopedic review of ATC selection research
Validity of AT-SAT in Operational Use (v4.0)	draft study - Broach et al "The Validity of the Air Traffic Selection and Training (AT-SAT) Test Battery in Operational Use"
atsat subscores raw	AT-SAT raw data file
ATSAT subtest code book	Descriptions of AT-SAT variables and subtests
ATSAT weights	Weights (coefficients and constants) for ATSAT subscales and total score
Barrier Analysis Data Requests-B. Fleener	Response to data request, including announcements mapped to more than one CSP
Information Request	Email containing specific CSP start and stop dates
20121227_FY06_Barrier_Analysis	Repull of AVIATOR data with updated Security "N/A" and "No" values
20121227_FY07_Barrier_Analysis	Repull of AVIATOR data with updated Security "N/A" and "No" values
20121227_FY08_Barrier_Analysis	Repull of AVIATOR data with updated Security "N/A" and "No" values

Document Title	Overview
20121227_FY09_Barrier_Analysis	Repull of AVIATOR data with updated Security "N/A" and "No" values
20121227_FY10_Barrier_Analysis	Repull of AVIATOR data with updated Security "N/A" and "No" values
20121227_FY11_Barrier_Analysis	Repull of AVIATOR data with updated Security "N/A" and "No" values
HUMRRO Wise et al 2001	AT-SAT Reweighting study
Barrier Analysis Data Request 1-4-13	FAA Responses to B. Fleener's AVIATOR data questions
Academy Training Data_ATSATethnicityMay2012	Outtz's data
agg_2006_qual_ref_sel	Outtz's data
agg_2007_qual_ref_sel	Outtz's data
agg_2008_qual_ref_sel	Outtz's data
agg_2009_qual_ref_sel	Outtz's data
agg_2010_qual_ref_sel	Outtz's data
agg_2011_qual_ref_sel	Outtz's data
ATSATethnicity	Outtz's data
ATSATethnicityMay2012	Outtz's data
FAA Training criterion July 2012	Outtz's data
MedDisAgg_1	Outtz's data
SPSS Files Breakdown	Outtz's data
AAM-RFS-300-002 ATCS Clearance	ATCS Clearance revision history, flow chart (effective 3-2-11), and procedure
AAM-RFS-300-003 ATCS Disqualification	ATCS Disqualification and Appeals revision history, flow chart (effective 3-2-11), and procedure
AAM-RFS-300-005 ATCS Applicant Clearance	ATCS Applicant Clearance revision history, flow chart (effective 3-2-11), and procedure
ATC Qualification Order 3930.3A Change 1	ATCS Health Program - change to medical examinations
CHAPTER 7-Suitability Guidance	Personnel Suitability Standards, Criteria, and Adjudication (I believe this is from FAA Human Resources Handbook for Suitability Determinations/Adjudications - doc does not say this, though)
CHAPTER 8 Security Adjudication	Personnel Security Standards, Criteria, and Adjudication (I believe this is from FAA Human Resources Handbook for Suitability Determinations/Adjudications - doc does not say this, though)
Drug and Alcohol Order DOT ncr handbook	Drug and Alcohol-Free Departmental Workplace Program
How ATSAT was Changed	PPT of changes to AT-SAT
Medical Process Per Dr.Lomangino	1-page memo re: medical process; contains links to ATCS Applicant Clearance (cannot access because on intranet); Qualification Order (can access and received as a separate document); and Drug and Alcohol Testing (can access)
Response-ATCS system vs HR Specialist DQ	Clarification on Public MQs
FG-1 qualifications	Policy Bulletin #33: Qualifications Standard for ATCS Trainee - FAA Academy (FG-2152-1)
<a href="http://www.dol.gov/vets/programs/userra/">http://www.dol.gov/vets/programs/userra/</a>	Link to information on USERRA program
Draft v2 JO 3330.XX Centralized Selection Placement ATCS_7-25-11	Draft updates to CSP of new hires in En Route and FAA
Final AT CSP SOP	Standard Operating Procedures for CSP process
nd1600-1E	DOT Personnel Security Program order
2010 Task 1. Longitudinal Validation of ATCS Selection Instruments	Longitudinal Validation of ATC Specialist Selection Instruments: Assessment of Cognitive Aptitude (Bleckley, Pierce)
2010 Task 2. Evaluation of ATCS Bio Data and Interview Selection Procedures	Evaluation of ATCS Biographical Data and Interview Selection Procedures (Broach)
2010 Task 14. Improving ATCS Selection from Sources other than Gen Public	Task 14: Improving ATCS Selection from Sources Other than the General Public (Pierce, Bleckley)
handbook	FAA HUMAN RESOURCES (HR) HANDBOOK FOR SUITABILITY DETERMINATIONS / ADJUDICATIONS

Document Title	Overview
Clarification of HR Qualification Screening	Rick Mitchell's responses to APT's questions re: HR MQ screen
Supplemental guidance for ATCS qualification review	FAA guidance for MQ screen
BASIC_QUALIFICATION_RATING_SHEET	MQ rating sheet for General Public
Guidance on VRA Applications	Detailed guidance on qualifying experience for VRA
FAA AT-CTI Schools	Listing of CTI schools and associated FAA-approved degrees

## Appendix C. FAA ATCS Stakeholder Interview Protocol

### High level Objectives:

- Clarify our understanding of each key decision point in the hiring process, including:
  - What policy, guidelines, and monitoring is in place to ensure fairness and consistency?
  - When and why there are deviations in the process between applicant sources and years (for the relevant time period)?
- Clarify the desired strategy and impact of each aspect of the existing selection process
- Learn more about stakeholder perspectives around the Outtz Barrier Analysis and IRP report, and well as answers to questions that arose from these reports

### General Questions

1. What is the typical elapsed time of the selection process?
2. Were the hurdles ever not sequential (b/t '07-'11)?
  - E.g., We're seeing situations in the data in which an applicant went through the medical review phase, but has no record of having been interviewed (which we understand is the preceding step in the process)
3. Relative to the attention the AT-SAT has received, there appears to have been little focus over the past decade on strengthening the subsequent steps in the selection process. Why is that?
4. What are the different ATC "specialties"? (*this is referenced in the IRP report*)
5. What is an alpha grouping? What significance does it have in the overall process?
6. What, if any, legal restrictions are placed on explicit consideration of RNO when determining recruitment sources?
7. What, if any, recruitment incentives exist?
8. Explain "early referral CTI". Were individuals in CTI programs referred to the FAA before they're ready to graduate?
9. IRP report cites the following documents – can we get our hands on these?
  - Tiger Team Report (cited on p. 8)
  - NATCA working group recommendations (cited on p. 8)



## Applicant Source Preferences

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10. The choice of applicant sources used has varied over the years. What specifically has factored into the decision of what applicant sources to use at a given point in time?



11. Has the relationship between CTI training and/or specific prior experience and performance either in the Academy or subsequently on the job ever been examined? How about relative performance in training or in the job between applicant sources?



12. Did the FAA have applications from sources that were not considered at particular points in time in the hiring process? (e.g., solicited from Gen Pop but did not actually consider these as applicants)

## Application Process

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13. Please describe the application process.

- a) Does it vary? How so?
- b) Is applicant pool passive? (e.g., does applicant need to express interest for every single vacancy)
- c) Do applicants apply to a specific job posting? Or just apply overall to be an ATC?



14. Location/Geographic Preference

- a) How is the location/geographic preference information used in the hiring process?
- b) Why does the # of geographic preferences that applicants can specify vary (e.g., by applicant source, by year, possibly even by region)?
- c) How/when do applicants decline a location/facility and how long does the decline last?
- d) What happens in the passive application process when this occurs?
- e) Get a copy of the forms where this information is provided by applicants as well as what is shared with decision makers.

15. The types of announcements appear to vary across applicant source and year. Why?

- E.g., some app sources receive announcements by state, others by state and option (terminal vs. enroute), others by option, and others by specific option, i.e., terminal only instead of terminal or enroute.
- a) What goes into these decisions?
  - b) Why would some types of announcements be used for some app sources but not for others?
  - c) Do data exist that support these choices?

## **MQs**

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16. Describe the process through which the MQs were developed. Were they ever validated?

17. Why are MQs different across applicant sources?

18. We understand HR Specialists are the ones reviewing applicants relative to the MQs and that there is formal and informal training available to them. Is formal training of the individuals (i.e., HR Specialists) who conduct the MQ review mandatory?



19. Is there any monitoring or oversight of the MQ review process?

20. Re: 3 years of progressive experience...

- a) How was the 3 years of progressively responsible experience in any job established as a minimum qualification?
- b) How exactly is degree of responsibility operationalized?



21. CAMI acknowledges there are inconsistencies in the crediting of experience and this should be addressed.

- a) Have CAMI describe the nature of the problem.
- b) Have any efforts been taken to resolve this problem?
- c) Do you have any particular recommendations to resolve this?

22. Is the 31 year maximum age requirement actually mandated by law, or does the law simply afford the FAA the right to establish an age policy? [Note: CAMI says it is within the FAA's prerogative, thus implying this is not a legal mandate. Get confirmations from CAMI and HR]

- a) If the specific age is not a legal mandate, what steps were taken to determine what the age maximum should be?

## **AT-SAT**

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23. What is the AT-SAT retesting policy?



24. For how long are AT-SAT scores valid?



25. Applicants from certain sources are exempt from taking the AT-SAT. There also appear to be differences as to when applicants from certain sources take the AT-SAT. On what basis were these decisions made?

26. Any evidence (firm or anecdotal) to suggest the AT-SAT has been compromised?

27. Have any actions been taken to address the increase in adverse impact resulting from the higher cutoff score?



28. CAMI noted in their response to the Outtz report that the FAA is already in the process of looking for additional predictors to add to the selection protocol. Learn where they are in the process (what they've looked at, who they are talking to, decisions reached, etc.). Also, get a sense for what value they believe they are getting from the AT-SAT.

29. **(For CAMI)** CAMI report references OPM guidance contained in its "Category Rating Fact Sheet". Ask for this documentation.



30. It is noted that certain subtests of the AT-SAT were included despite evidence that they provided no incremental validity. Why? (e.g., construct coverage, political reasons?)



## Referral List

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31. Describe this phase of the process.

- a) How are referral lists assembled?
- b) What factors are considered (e.g., MQ, location preference)?
- c) Who is involved?
- d) Is Hi qualified band on AT-SAT considered first and exhausted before moving on?
- e) Is the actual AT-SAT composite score considered in the referral process (apart from band)?

(Note: we need to make sure we understand how to identify a unique referral list in the data)



32. Guidelines and Training

- a) Are there formal guidelines and policy governing referrals?
- b) Are decision makers involved with referral list required to undergo any formal training around this part of the process?



33. Is there any monitoring or oversight of this phase of the process?

34. Has adverse impact been calculated by band?

## Centralized Selection Panel

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35. Describe the CSP (e.g., process, factors considered, individuals involved).

- a) Is the CSP convened for every opening?
- b) To what extent does the AT-SAT score impact decisions of the CSP?
- c) Why was this established to begin with?



36. Guidelines and Training:

- a) Are there formal guidelines governing this phase of the process?
- b) Are decision makers involved with CSP required to undergo any formal training around this part of the process?
- c) Speak with someone who has actually sat on a CSP
  - i. Do people who've been on the CSP think this guidance was useful?
  - ii. Is it followed accurately?
  - iii. How did they actually make their decisions?



37. Is there any monitoring or oversight of the CSP phase?



38. **(For CAMI)** CAMI response suggests there is potential inconsistency of application of location information by panel members. Learn more about this.

39. Please explain what OPM guidelines are relevant for this step of the process.

### Interview

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40. Describe the interview process (e.g., level of structure, individuals involved, scoring considerations).

a) Have any efforts ever been taken to validate the interview?

41. Were all of the individuals who were recommended for an interview by the CSP actually interviewed?



42. How long are interview scores valid?



43. How do interviews relate to applications (e.g. can an applicant have multiple applications, each with its own interview?)



44. Do interviewers undergo any formal training around this part of the process?



45. Is there any monitoring or oversight around this part of the process?

### Medical/Security

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46. What is the sequence of steps for the medical hurdle?



47. The medical clearance process changed at one point from 16PF to MMPI. What were the reasons behind this decision? Validation evidence?

48. Are applicants screened out based on specific disabilities?

a) When does this screening occur? (during medical evaluation or prior to this?)

b) What disabilities are screen out? On what basis (e.g., evidence establishing that individuals with this disability cannot perform essential function of the job with or without reasonable accommodation?)

c) What steps have been taken to establish these

d) Are there specific criteria?



49. The percent that pass security seems very different in the early years. Was there a change in the process? If not, what do you believe explains this trend (e.g., is it solely a function of different applicant sources or is there something else going on here).

50. We read somewhere that Medical data stopped being entered into the system in 2010 and however we were actually provided data for 2010 and 2011 (though there is a lot of "N/A"s). What was the rationale behind stopping the logging of this data? Do you know why it was still being logged in particular situations?

### **Acceptance to Academy and beyond...**

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51. How were final decisions made regarding who gets accepted into the Academy? Did the process vary depending on applicant source?

a) Do decision makers undergo any formal training around this part of the process?



52. What are the requirements for graduating from the Academy?

a) Are graduation rates tracked?

b) When exactly are applicants considered “hired”?



53. Are specific applicant sources, on average, more successful at the Academy? How about on the job? Have you ever examined this?



54. Track and Facility Assignments:

a) It sounds as if track and facility assignments are made prior to entry into the Academy.

i. How are these decisions made? What factors are considered?

ii. Can/do these change?

iii. What is the process for revising track and facility assignments?

b) How are the actual ATC assignments made for graduating applicants?

55. Post-Academy Training

a) How much training is required post academy at the facility and how formal is this training?

b) It is possible to also “not graduate” from this stage of training?”

## Appendix D: Analysis Decisions

APT*Metrics* received a series of MS Excel files, each file containing referral level applications by source across multiple sheets. We first merged all spreadsheets into a single master database. Once data was integrated into a single database, we reviewed the data and met with stakeholders to develop a comprehensive and accurate understanding of the data. Over the course of several meetings and interview, as well as data cleaning best practices, the following decisions and rules were reached regarding Aviator and AT-SAT data. A total of 164,765 cases of applicant data were received for the 2008-2011 time period.

### Decision Rule Set 1

We found 17,502 rows of the same individual with different demographic values (ethnicity, gender). If an individual provided demographic data at one point (e.g. on an announcement in 2010) but not at another point (e.g. on an announcement in 2009), the demographic information was carried over to those blank instances. In cases where the individual indicated unanswered values, as well as if the individual provided conflicting demographics, the last value supplied was chosen.

### Decision Rule Set 2

We found 2,520 cases of an applicant having multiple records within the same case (i.e. vacancy announcement) with the same referral/location designation. The only differentiating factor for these records was a different HR screening value. In these instances, one of the rows of data was removed for the applicant as it was completely redundant.

### Decision Rule Set 3

The HR screen variable contains a variety of information that identified the disposition of individuals. We reviewed 30,701 comments (4,605 unique comments) and mapped comments to the following categories with specified actions shown in Table 16.

**Table 16. HR Screen Comments**

Comment Type	N	Action
Active Duty	1818	Recoded as HR min qual fail, qualified fail, referred fail
Area of Consideration	18	No Action
AT-SAT	15	No Action – assume actual AT-SAT score will dictate
Declined	347	Removed from analysis if applicant was not selected/referred based
Min Qual	11792	Recoded as HR min qual fail, qualified fail, referred fail
Missing Application Information	11310	Removed from analysis where applicant not selected
Other	40	No Action
Other and Selected	1	Removed from analysis where applicant not selected
Previously Terminated	1	No Action
Selected	5359	Removed from analysis where applicant not selected

#### **Decision Rule Set 4**

We found many instances in which individuals were qualified but not referred. An individual could be qualified and not referred due to 1) the location preference was for a location which did not require ATCS candidates, ultimately meaning no referral list was generated, 2) for state specific Public announcements the candidate may have been qualified but not traveled to the state to take the AT-SAT, and 3) Public applicants may not have specified location preferences in a secondary Public location tracking system. In all instances it was decided that these individuals should not be treated as true applicants in our analyses. However, we did analyze the impact of location preferences separately, which is addressed in Chapter 2.

#### **Decision Rule Set 5**

We identified a small number of records (978) that were referred but not qualified. Data stakeholders explained this can occur due to the timing of qualification reviews and how data is stored in Aviator. The following is an example of how this could occur:

Step 1: Applicant applies to announcement and is qualified

Step 2: Applicant is referred for a location

Step 3: A new referral list is needed. All applicant qualifications are automatically reviewed when a second referral list is generated. Let's say the applicant turned 31 between step 1 and step 3, making the applicant now not qualified

Step 4: The applicant's qualification for the entire announcement is now recorded as not qualified, so the applicant now appears as not qualified but referred on the referral list generated in step 2

Since this incorrectly represents the application qualification pass/fail at the point of the referral, we recoded the data to indicate that the referred candidate was qualified.

#### **Decision Rule Set 6**

It was decided that individuals who decline positions and/or do not complete required components of the application process should be excluded from analysis. Unfortunately, the decline variables stored in Aviator at the announcement level cannot be used reliably due to 1) the location decline variable was dual purposed by system users to also indicate an applicant was in process somewhere else and 2) the applicant could decline referrals individually, meaning that within a case an applicant can both decline and not decline but Aviator is only capable of storing one value. To address these issues we used referral action codes, HR screen comments, and referral comments to identify declinations and exclude individuals from our analyses.

## **Decision Rule Set 7**

In building the master analysis database, it was necessary to merge AT-SAT test data with the broader Aviator applicant information. The AT-SAT was added to the Aviator system using the following rules:

- a. The AT-SAT was linked to candidates based on SSN
- b. The individual's AT-SAT data was attached to applications for CTI and General Public applicants where the test date occurred before the announcement close date or application referral date. If the test date occurred after the referral date, it was not attached to the individual's application.
- c. AT-SAT score was added in for Public candidates only if the Public candidate was qualified

Public and CTI candidates that were missing the AT-SAT after layering data were removed. This resulted in a handful of applications (86 CTI, 60 Public) being excluded for our 2008-2011 timeframe.

## **Decision Rule Set 8**

We reviewed and classified referral action comments into a number of categories used to drive subsequent data cleaning/actions in the AVIATOR data. This decision was made because applicant disposition information could be found in the referral comments that was inconsistent with other recorded values for the applicant, or simply added additional data for the applicant's other hurdles. For example, referral action comments could indicate selection decisions for other hurdles or whether the applicant had self-selected out at particular phases of the hiring process. In total, 23,140 comments were reviewed (10,854 unique comments) and we mapped these to the categories indicated in Table 17 below.

Importantly, *APTMetrics* discovered that the CSP "Selected" values provided in the AVIATOR data by default to be incorrect if the applicant later failed a component of the process (i.e., interview, medical, and security) and that fail was recorded at the referral action level. This error occurs because the CSP "selected" value is calculated from the referral action code and stored at the announcement level. The following is a simple example of this coding:

Applicant Data:

Referral Action Code: "Removed – Suitability"

CSP Selected Value: Blank which translates to "No"

Because of the ordering of the ATCS selection process, it is known this applicant did get selected from the CSP as that is the only route to ultimately take the security screen. In the above example, the CSP selected value should have been an affirmative disposition. To correct

these issues, we indicated the applicant was selected by the CSP and later failed the indicated hurdle provided in the referral action.

**Table 17. Referral Action Comment Recode**

Comment Type	N	Action
Active Duty	784	Recoded as HR min qual fail, qualified fail, referred fail
Bad Referral List	68	Removed referral list
Declined	1712	Removed application from analysis where applicant was not selected by CSP
Did not respond	1770	Removed application from analysis
Interview	1	Recoded interview as fail
Medical	10	Recoded medical as fail
Minimum Qualification	1125	Recoded as HR min qual fail, qualified fail, referred fail
Missing Application Information	1121	Removed application from analysis
Other	910	No Action
Selected	15639	No Action

When two reasons were given for exclusion (e.g. medical, min quals) in referral comments the first reason from a process perspective was indicated as fail, as well as successive hurdles.

#### Decision Rule Set 9

If an applicant was selected by a CSP, that applicant's other applications within that same, specific announcement were removed from analysis. We used this logic under the assumption that an applicant cannot be selected twice and thus would not have been considered eligible for selection from the other referral list(s) by the CSP selecting officials.

#### Decision Rule Set 10

A large amount of data was missing in the interview, medical, and security clearance stage. Much of the data was either coded as N/A or was left blank. For example, 1273 applicants selected by the CSP did not have an interview score out of 8068 selected individuals. Where possible, we backfilled this information where we felt an accurate determination could be made regarding the applicant's disposition. The following outlines the rules for interview, medical, suitability, and hire information:

1. If the applicant had a firm offer date, it was assumed the applicant passed the interview, medical and conditional security screen if those screens were blank.
2. Where possible, the medical value was recoded based on the following:
  - o If final medical determination was valid it was used
  - o If final medical determination was missing but the applicant had a firm offer date, it was assumed they passed

3. The original AVIATOR security review data also required a second export of the AVIATOR data. N/A values in AVIATOR are used to indicate the given field was not populated with data. In the original AVIATOR export, all N/A values were incorrectly coded as “No” for the suitability screens, indicating failure of the hurdle, and resulting in a highly inflated failure rate. The second export from AVIATOR corrected this issue and the new “Yes/No” values were integrated into our master database. Conditional and final suitability were coded based on the following:
  - Conditional Suitability = “Yes” or firm offer date is valid, assume conditional suitability pass
  - If conditional suitability = “No”, assume conditional suitability fail
  - If final suitability is not missing and conditional suitability is missing, it is assumed that conditional suitability is a fail
  - If final suitability = “Yes”, assume final suitability pass
  - If final suitability = “No”, assume final suitability fail
4. We also calculated an overall security pass/fail value for each applicant to enable evaluating the joint effect of the conditional and final screen. The overall security pass calculation includes logic for various combinations of conditional and final suitability, which is shown in Table 18.

**Table 18. Overall Security Score**

Conditional Value	Final Value	Treatment
Yes	Yes	Passing
Yes	No	Fail
Yes	Missing	Passing
No	Yes	Passing
No	No	Fail
No	Missing	Fail
Missing	Yes	Passing
Missing	No	Fail

5. Several scenarios required custom decision logic. The following bullets outline these decisions.
  - 396 application/referral instances occur where the applicant did not pass medical but does have security screen information. Medical data was not recoded for these individuals.
  - 23 application/referral instances were found where individuals did not pass suitability but they did have a firm offer date. Suitability data was not recoded for these individuals.



- 55 application/referral instances were found where individuals did not pass medical but received a firm offer data. Medical data was not recoded for these individuals.
  - 103 application/referral instances were denoted disqualified/qualified in their medical comments while missing the overall medical qualification code – these were recoded to disqualified and qualified respectively
6. If the applicant had a firm offer date and was selected for that specific referral list, the applicant was treated as hired. If the applicant did not have a firm offer date but was selected for the referral list, passed the interview, passed medical, and passed security, it is assumed they passed everything and were not hired (i.e., they were in the final pool of potential hires when analyzing the localized hire decision step).
  7. In a small number of cases, applicants had a firm offer date even though they were not selected. Based on discussions with stakeholders this was likely due to improper data entry of the interview/medical/and security information. Cases such as these were indicated as not selected and not hired.
  8. Based on our understanding of the hiring process, if applicants had medical or security information but did not have an interview score it is assumed they passed the interview.
  9. After all data cleaning efforts in the post CSP process, some data gaps still exist. This includes 322 applications out of 5752 (2008-2011) that did not have interview through hire information even though they were selected. Assuming data entry errors are normally distributed across demographic groups it should not have an adverse impact on our analyses. However, because of these gaps, and the gaps in the data discussed above, unlike our analyses up to the CSP, the data used for the interview, medical, and security analyses do not include the exact same applicants and applications (e.g., an application could have been included in the security analysis but not the prior medical and interview analyses) from one analysis to another. Instead we analyze only those applicants we complete/sufficient data to analyze.

### **Decision Rule Set 11**

In order to model the CSP decision point, it was necessary to accurately map and control applicant pools and decisions by referral location. The first step of this process required us to map CSP events to specific referral lists. CSP dates are shown in Table 19.

**Table 19. CSP Dates**

CSP
February 26-28, 2008
May 6-8, 2008
June 10-12, 2008
September 8-10, 2008
January 13-15, 2009
April 28-30, 2009
October 27-29, 2009
March 23-25, 2010
October 19-21, 2010
March 8-10, 2011
November 1-3, 2011
March 6-8, 2012

In mapping referral lists to CSP events, referral dates relative to the CSP dates were used. Referral lists that were issued after the preceding CSP were mapped to the subsequent CSP. In reconstructing the CSP location pools, the following rules were applied and are consistent with how the referral lists are actually generated:

1. Location preference of District of Columbia was mapped to both the Maryland and Virginia referral lists
2. Throughout the US referral lists were mapped to all locations (see diagram X in Chapter 2). If applicants were selected for a specific location, they were subsequently removed from other pools (i.e., they were not considered an applicant in other pools). In order to achieve this objective, the facility was extracted from referral action comments where possible. Note that many referral action comments had multiple facilities indicated. Where this was the case, the first facility shown was used.

## Appendix E. Full Data Analysis Results

Table 6d: System Qualifications (from Applied) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	1,076	18,627	628	12,328	708	80	0.88	5.26
			CTI	126	1,905	126	1,899	126	0	1.00	-0.63
			Other - CTO	121	2,563	28	873	41	13	0.68	2.49
			Public	567	10,026	459	8,512	480	21	0.95	2.54
			Reinstatement/DoD CPC	53	1,222	10	413	18	8	0.56	2.26
			RMC	197	3,429	15	494	28	13	0.53	2.67
			VRA	245	4,882	45	1,464	72	27	0.61	3.89
	White	Black	Overall	12,278	18,627	4,282	12,328	6,599	2,317	0.53	54.02
			CTI	136	1,905	135	1,899	136	1	1.00	0.81
			Other - CTO	1,786	2,563	112	873	405	293	0.18	21.54
			Public	5,331	10,026	3,775	8,512	4,265	490	0.83	20.78
			Reinstatement/DoD CPC	810	1,222	39	413	180	141	0.14	15.38
			RMC	3,395	3,429	139	494	315	176	0.28	14.68
			VRA	3,639	4,882	282	1,464	746	464	0.26	25.16
	White	Hawaiian	Overall	231	18,627	111	12,328	152	41	0.73	5.78
			CTI	14	1,905	14	1,899	14	0	1.00	-0.21
			Other - CTO	27	2,563	10	873	9	-1	1.09	-0.32
			Public	124	10,026	73	8,512	105	32	0.69	7.98
			Reinstatement/DoD CPC	18	1,222	2	413	6	4	0.33	2.02
			RMC	39	3,429	3	494	6	3	0.53	1.19
			VRA	73	4,882	24	1,464	22	-2	1.10	-0.53
	White	Hispanic	Overall	2,267	18,627	1,170	12,328	1,465	295	0.78	13.70
			CTI	172	1,905	171	1,899	171	0	1.00	0.58
			Other - CTO	316	2,563	58	873	102	44	0.54	5.63
			Public	1,155	10,026	879	8,512	970	91	0.90	7.72

Table 6d: System Qualifications (from Applied) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
			Reinstatement/DoD CPC	154	1,222	21	413	49	28	0.40	5.07
			RMC	486	3,429	38	494	66	28	0.54	3.97
			VRA	590	4,882	128	1,464	172	44	0.72	4.19
	White	Multi	Overall	2,865	18,627	1,611	12,328	1,858	247	0.85	10.39
			CTI	183	1,905	183	1,899	182	-1	1.00	-0.76
			Other - CTO	396	2,563	105	873	131	26	0.78	2.97
			Public	1,447	10,026	1,170	8,512	1,221	51	0.95	3.96
			Reinstatement/DoD CPC	179	1,222	35	413	57	22	0.58	3.82
			RMC	608	3,429	55	494	83	28	0.63	3.55
			VRA	851	4,882	234	1,464	252	18	0.92	1.47
	White	Native American	Overall	209	18,627	108	12,328	138	30	0.78	4.40
			CTI	7	1,905	7	1,899	7	0	1.00	-0.15
			Other - CTO	35	2,563	8	873	12	4	0.67	1.39
			Public	110	10,026	80	8,512	93	13	0.86	3.53
			Reinstatement/DoD CPC	15	1,222	5	413	5	0	0.99	0.04
			RMC	36	3,429	4	494	5	1	0.77	0.56
			VRA	63	4,882	17	1,464	19	2	0.90	0.52
Gender	Male	Female	Overall	8,861	27,037	4,408	15,210	4,842	434	0.88	10.68
			CTI	479	2,030	478	2,023	477	-1	1.00	-0.48
			Other - CTO	1,192	3,842	210	974	280	70	0.69	5.50
			Public	4,371	13,589	3,484	10,918	3,505	21	0.99	0.92
			Reinstatement/DoD CPC	588	1,782	87	426	127	40	0.62	4.65
			RMC	2,116	5,780	107	632	198	91	0.46	7.94
			VRA	2,378	7,675	378	1,805	516	138	0.68	7.88

Table 6e: System Qualifications (from Applied) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	2,310	45,170	1,172	25,543	1,300	128	0.90	5.49
			CTI	355	5,233	355	5,219	354	-1	1.00	-0.98
			Other - CTO	168	4,285	64	2,220	86	22	0.74	3.49
			Public	705	13,567	581	11,804	612	31	0.95	3.51
			Reinstatement/DoD CPC	57	1,816	11	909	28	17	0.39	4.57
			RMC	461	8,335	34	1,172	63	29	0.52	4.06
			VRA	564	11,934	127	4,219	196	69	0.64	6.25
	White	Black	Overall	28,637	45,170	6,557	25,543	12,455	5,898	0.40	89.86
			CTI	474	5,233	472	5,219	473	1	1.00	0.61
			Other - CTO	2,307	4,285	244	2,220	862	618	0.20	33.00
			Public	6,267	13,567	4,604	11,804	5,184	580	0.84	23.45
			Reinstatement/DoD CPC	903	1,816	75	909	327	252	0.17	21.34
			RMC	9,975	8,335	373	1,172	842	469	0.27	25.02
			VRA	8,711	11,934	789	4,219	2,113	1,324	0.26	43.53
	White	Hawaiian	Overall	515	45,170	221	25,543	290	69	0.76	6.20
			CTI	39	5,233	39	5,219	39	0	1.00	-0.32
			Other - CTO	42	4,285	22	2,220	22	0	1.01	-0.07
			Public	145	13,567	90	11,804	126	36	0.71	8.81
			Reinstatement/DoD CPC	18	1,816	2	909	9	7	0.22	3.29
			RMC	106	8,335	7	1,172	15	8	0.47	2.20
			VRA	165	11,934	61	4,219	58	-3	1.05	-0.43
	White	Hispanic	Overall	5,285	45,170	2,271	25,543	2,913	642	0.76	18.78
			CTI	549	5,233	546	5,219	547	1	1.00	1.15
			Other - CTO	427	4,285	126	2,220	213	87	0.57	8.79
			Public	1,432	13,567	1,122	11,804	1,234	112	0.90	9.02
			Reinstatement/DoD CPC	176	1,816	32	909	83	51	0.36	8.09

Table 6e: System Qualifications (from Applied) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
			RMC	1,311	8,335	111	1,172	174	63	0.60	5.54
			VRA	1,390	11,934	334	4,219	475	141	0.68	8.42
	White	Multi	Overall	6,891	45,170	3,246	25,543	3,811	565	0.83	14.69
			CTI	586	5,233	581	5,219	584	3	0.99	2.36
			Other - CTO	621	4,285	263	2,220	314	51	0.82	4.41
			Public	1,813	13,567	1,522	11,804	1,571	49	0.96	3.59
			Reinstatement/DoD CPC	249	1,816	96	909	121	25	0.77	3.40
			RMC	1,508	8,335	146	1,172	202	56	0.69	4.60
			VRA	2,114	11,934	638	4,219	731	93	0.85	4.61
	White	Native American	Overall	457	45,170	218	25,543	258	40	0.84	3.80
			CTI	15	5,233	15	5,219	15	0	1.00	-0.20
			Other - CTO	48	4,285	18	2,220	25	7	0.72	1.97
			Public	139	13,567	105	11,804	121	16	0.87	3.98
			Reinstatement/DoD CPC	17	1,816	6	909	8	2	0.71	1.21
			RMC	83	8,335	6	1,172	12	6	0.51	1.79
			VRA	155	11,934	68	4,219	55	-13	1.24	-2.20
Gender	Male	Female	Overall	21,007	65,780	7,892	30,638	9,326	1,434	0.81	22.88
			CTI	1,363	5,821	1,359	5,801	1,358	-1	1.00	-0.29
			Other - CTO	1,659	5,992	466	2,478	638	172	0.68	9.83
			Public	5,555	17,685	4,587	14,673	4,604	17	1.00	0.68
			Reinstatement/DoD CPC	737	2,413	187	930	261	74	0.66	6.54
			RMC	6,007	15,012	238	1,589	522	284	0.37	15.40
			VRA	5,686	18,857	1,055	5,167	1,441	386	0.68	13.44

Table 7d: HR Qualifications Review (from System Qual) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	628	12,328	462	9,658	491	29	0.94	2.82
			CTI	126	1,899	122	1,864	124	2	0.99	1.05
			Other - CTO	28	873	25	783	25	0	1.00	0.07
			Public	459	8,512	308	6,235	335	27	0.92	2.89
			Reinstatement/DoD CPC	10	413	6	267	6	0	0.93	0.30
			RMC	15	494	5	212	6	1	0.78	0.74
			VRA	45	1,464	36	1,150	35	-1	1.02	-0.23
	White	Black	Overall	4,282	12,328	2,350	9,658	3,096	746	0.70	29.55
			CTI	135	1,899	133	1,864	133	0	1.00	-0.30
			Other - CTO	112	873	94	783	100	6	0.94	1.84
			Public	3,775	8,512	1,942	6,235	2,512	570	0.70	23.63
			Reinstatement/DoD CPC	39	413	18	267	25	7	0.71	2.29
			RMC	139	494	64	212	61	-3	1.07	-0.66
			VRA	282	1,464	200	1,150	218	18	0.90	2.80
	White	Hawaiian	Overall	111	12,328	74	9,658	87	13	0.85	2.97
			CTI	14	1,899	14	1,864	14	0	1.02	-0.51
			Other - CTO	10	873	9	783	9	0	1.00	-0.03
			Public	73	8,512	38	6,235	53	15	0.71	4.06
			Reinstatement/DoD CPC	2	413	1	267	1	0	0.77	0.43
			RMC	3	494	1	212	1	0	0.78	0.33
			VRA	24	1,464	20	1,150	19	-1	1.06	-0.57
	White	Hispanic	Overall	1,170	12,328	756	9,658	903	147	0.82	10.69
			CTI	171	1,899	166	1,864	168	2	0.99	0.98
			Other - CTO	58	873	54	783	52	-2	1.04	-0.84
			Public	879	8,512	494	6,235	630	136	0.77	10.68
			Reinstatement/DoD CPC	21	413	9	267	13	4	0.66	2.02

Table 7d: HR Qualifications Review (from System Qual) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
	White	Multi	RMC	38	494	12	212	16	4	0.74	1.36
			VRA	128	1,464	101	1,150	101	0	1.00	-0.09
			Overall	1,611	12,328	1,141	9,658	1,248	107	0.90	6.79
			CTI	183	1,899	181	1,864	180	-1	1.01	-0.73
			Other - CTO	105	873	97	783	94	-3	1.03	-0.87
			Public	1,170	8,512	740	6,235	843	103	0.86	7.15
			Reinstatement/DoD CPC	35	413	28	267	23	-5	1.24	-1.84
			RMC	55	494	25	212	24	-1	1.06	-0.36
			VRA	234	1,464	179	1,150	183	4	0.97	0.71
	White	Native American	Overall	108	12,328	70	9,658	84	14	0.83	3.39
			CTI	7	1,899	7	1,864	7	0	1.02	-0.36
			Other - CTO	8	873	7	783	7	0	0.98	0.20
			Public	80	8,512	47	6,235	58	11	0.80	2.91
			Reinstatement/DoD CPC	5	413	2	267	3	1	0.62	1.14
			RMC	4	494	2	212	2	0	1.17	-0.29
			VRA	17	1,464	12	1,150	13	1	0.90	0.79
Gender	Male	Female	Overall	4,408	15,210	3,008	11,189	3,190	182	0.93	6.96
			CTI	478	2,023	465	1,988	469	4	0.99	1.42
			Other - CTO	210	974	185	878	189	4	0.98	0.89
			Public	3,484	10,918	2,185	7,361	2,309	124	0.93	5.12
			Reinstatement/DoD CPC	87	426	56	267	55	-1	1.03	-0.30
			RMC	107	632	37	280	46	9	0.78	1.88
			VRA	378	1,805	294	1,399	293	-1	1.00	-0.11



Table 7e: HR Qualifications Review (from System Qual) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	1,172	25,543	910	20,222	927	17	0.98	1.25
			CTI	355	5,219	349	5,129	349	0	1.00	-0.05
			Other - CTO	64	2,220	59	2,102	61	2	0.97	0.87
			Public	581	11,804	405	8,780	431	26	0.94	2.51
			Reinstatement/DoD CPC	11	909	7	663	8	1	0.87	0.69
			RMC	34	1,172	9	564	16	7	0.55	2.49
			VRA	127	4,219	81	2,984	90	9	0.90	1.69
	White	Black	Overall	6,557	25,543	4,018	20,222	4,951	933	0.77	30.05
			CTI	472	5,219	463	5,129	464	1	1.00	0.29
			Other - CTO	244	2,220	222	2,102	230	8	0.96	2.37
			Public	4,604	11,804	2,538	8,780	3,176	638	0.74	23.96
			Reinstatement/DoD CPC	75	909	53	663	55	2	0.97	0.42
			RMC	373	1,172	219	564	189	-30	1.22	-3.56
			VRA	789	4,219	523	2,984	553	30	0.94	2.50
	White	Hawaiian	Overall	221	25,543	159	20,222	175	16	0.91	2.63
			CTI	39	5,219	36	5,129	38	2	0.94	2.82
			Other - CTO	22	2,220	21	2,102	21	0	1.01	-0.16
			Public	90	11,804	47	8,780	67	20	0.70	4.79
			Reinstatement/DoD CPC	2	909	1	663	1	0	0.69	0.73
			RMC	7	1,172	2	564	3	1	0.59	1.03
			VRA	61	4,219	52	2,984	43	-9	1.21	-2.48
	White	Hispanic	Overall	2,271	25,543	1,606	20,222	1,782	176	0.89	9.39
			CTI	546	5,219	530	5,129	536	6	0.99	2.00
			Other - CTO	126	2,220	121	2,102	119	-2	1.01	-0.66
			Public	1,122	11,804	667	8,780	820	153	0.80	10.78
			Reinstatement/DoD CPC	32	909	18	663	23	5	0.77	2.07

Table 7e: HR Qualifications Review (from System Qual) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
	White	Multi	RMC	111	1,172	36	564	52	16	0.67	3.17
			VRA	334	4,219	234	2,984	236	2	0.99	0.26
			Overall	3,246	25,543	2,434	20,222	2,554	120	0.95	5.48
			CTI	581	5,219	573	5,129	571	-2	1.00	-0.62
			Other - CTO	263	2,220	254	2,102	250	-4	1.02	-1.32
			Public	1,522	11,804	998	8,780	1,117	119	0.88	7.32
			Reinstatement/DoD CPC	96	909	85	663	71	-14	1.21	-3.33
			RMC	146	1,172	75	564	71	-4	1.07	-0.74
			VRA	638	4,219	449	2,984	451	2	1.00	0.18
	White	Native American	Overall	218	25,543	155	20,222	172	17	0.90	2.92
			CTI	15	5,219	15	5,129	15	0	1.02	-0.51
			Other - CTO	18	2,220	17	2,102	17	0	1.00	0.05
			Public	105	11,804	59	8,780	78	19	0.76	4.24
			Reinstatement/DoD CPC	6	909	3	663	4	1	0.69	1.26
			RMC	6	1,172	4	564	3	-1	1.39	-0.91
			VRA	68	4,219	57	2,984	48	-9	1.19	-2.36
Gender	Male	Female	Overall	7,892	30,638	5,730	23,395	5,966	236	0.95	6.92
			CTI	1,359	5,801	1,325	5,706	1,335	10	0.99	2.16
			Other - CTO	466	2,478	433	2,354	441	8	0.98	1.83
			Public	4,587	14,673	3,018	10,205	3,149	131	0.95	4.78
			Reinstatement/DoD CPC	187	930	136	684	137	1	0.99	0.23
			RMC	238	1,589	80	812	116	36	0.66	5.03
			VRA	1,055	5,167	738	3,634	741	3	0.99	0.25

Table 8d: HR Qualifications Review (from Applied) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	1,076	18,627	462	9,658	553	91	0.83	5.69
			CTI	126	1,905	122	1,864	123	1	0.99	0.76
			Other - CTO	121	2,563	25	783	36	11	0.68	2.32
			Public	567	10,026	308	6,235	350	42	0.87	3.75
			Reinstatement/DoD CPC	53	1,222	6	267	11	5	0.52	1.83
			RMC	197	3,429	5	212	12	7	0.41	2.10
			VRA	245	4,882	36	1,150	57	21	0.62	3.21
	White	Black	Overall	12,278	18,627	2,350	9,658	4,771	2,421	0.37	57.73
			CTI	136	1,905	133	1,864	133	0	1.00	0.04
			Other - CTO	1,786	2,563	94	783	360	266	0.17	20.45
			Public	5,331	10,026	1,942	6,235	2,839	897	0.59	30.46
			Reinstatement/DoD CPC	810	1,222	18	267	114	96	0.10	12.47
			RMC	3,395	3,429	64	212	137	73	0.30	9.01
			VRA	3,639	4,882	200	1,150	577	377	0.23	22.58
	White	Hawaiian	Overall	231	18,627	74	9,658	119	45	0.62	5.99
			CTI	14	1,905	14	1,864	14	0	1.02	-0.55
			Other - CTO	27	2,563	9	783	8	-1	1.09	-0.31
			Public	124	10,026	38	6,235	77	39	0.49	7.19
			Reinstatement/DoD CPC	18	1,222	1	267	4	3	0.25	1.67
			RMC	39	3,429	1	212	2	1	0.41	0.94
			VRA	73	4,882	20	1,150	17	-3	1.16	-0.77
	White	Hispanic	Overall	2,267	18,627	756	9,658	1,130	374	0.64	16.64
			CTI	172	1,905	166	1,864	168	2	0.99	1.13
			Other - CTO	316	2,563	54	783	92	38	0.56	4.97
			Public	1,155	10,026	494	6,235	695	201	0.69	12.77
			Reinstatement/DoD CPC	154	1,222	9	267	31	22	0.27	4.67

Table 8d: HR Qualifications Review (from Applied) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
	White	Multi	RMC	486	3,429	12	212	28	16	0.40	3.30
			VRA	590	4,882	101	1,150	135	34	0.73	3.52
			Overall	2,865	18,627	1,141	9,658	1,440	299	0.77	11.98
			CTI	183	1,905	181	1,864	179	-2	1.01	-0.96
			Other - CTO	396	2,563	97	783	118	21	0.80	2.45
			Public	1,447	10,026	740	6,235	880	140	0.82	8.05
			Reinstatement/DoD CPC	179	1,222	28	267	38	10	0.72	1.90
			RMC	608	3,429	25	212	36	11	0.67	2.00
			VRA	851	4,882	179	1,150	197	18	0.89	1.61
	White	Native American	Overall	209	18,627	70	9,658	108	38	0.65	5.28
			CTI	7	1,905	7	1,864	7	0	1.02	-0.39
			Other - CTO	35	2,563	7	783	11	4	0.65	1.35
			Public	110	10,026	47	6,235	68	21	0.69	4.18
			Reinstatement/DoD CPC	15	1,222	2	267	3	1	0.61	0.79
			RMC	36	3,429	2	212	2	0	0.90	0.16
			VRA	63	4,882	12	1,150	15	3	0.81	0.84
Gender	Male	Female	Overall	8,861	27,037	3,008	11,189	3,504	496	0.82	12.43
			CTI	479	2,030	465	1,988	468	3	0.99	1.14
			Other - CTO	1,192	3,842	185	878	252	67	0.68	5.42
			Public	4,371	13,589	2,185	7,361	2,323	138	0.92	4.82
			Reinstatement/DoD CPC	588	1,782	56	267	80	24	0.64	3.35
			RMC	2,116	5,780	37	280	85	48	0.36	6.21
			VRA	2,378	7,675	294	1,399	400	106	0.68	6.68

Table 8e: HR Qualifications Review (from Applied) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	2,310	45,170	910	20,222	1,028	118	0.88	5.07
			CTI	355	5,233	349	5,129	348	-1	1.00	-0.39
			Other - CTO	168	4,285	59	2,102	82	23	0.72	3.55
			Public	705	13,567	405	8,780	454	49	0.89	3.93
			Reinstatement/DoD CPC	57	1,816	7	663	20	13	0.34	3.76
			RMC	461	8,335	9	564	30	21	0.29	4.08
			VRA	564	11,934	81	2,984	138	57	0.57	5.74
	White	Black	Overall	28,637	45,170	4,018	20,222	9,405	5,387	0.31	86.65
			CTI	474	5,233	463	5,129	464	1	1.00	0.49
			Other - CTO	2,307	4,285	222	2,102	813	591	0.20	31.96
			Public	6,267	13,567	2,538	8,780	3,576	1,038	0.63	32.03
			Reinstatement/DoD CPC	903	1,816	53	663	238	185	0.16	17.08
			RMC	9,975	8,335	219	564	427	208	0.32	15.22
			VRA	8,711	11,934	523	2,984	1,480	957	0.24	35.90
	White	Hawaiian	Overall	515	45,170	159	20,222	230	71	0.69	6.31
			CTI	39	5,233	36	5,129	38	2	0.94	2.52
			Other - CTO	42	4,285	21	2,102	21	0	1.02	-0.12
			Public	145	13,567	47	8,780	93	46	0.50	8.08
			Reinstatement/DoD CPC	18	1,816	1	663	7	6	0.15	2.72
			RMC	106	8,335	2	564	7	5	0.28	2.00
			VRA	165	11,934	52	2,984	41	-11	1.26	-1.92
	White	Hispanic	Overall	5,285	45,170	1,606	20,222	2,286	680	0.68	19.97
			CTI	549	5,233	530	5,129	537	7	0.98	2.28
			Other - CTO	427	4,285	121	2,102	201	80	0.58	8.18
			Public	1,432	13,567	667	8,780	902	235	0.72	13.52
			Reinstatement/DoD CPC	176	1,816	18	663	60	42	0.28	7.02

Table 8e: HR Qualifications Review (from Applied) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
			RMC	1,311	8,335	36	564	82	46	0.41	5.60
			VRA	1,390	11,934	234	2,984	336	102	0.67	6.74
	White	Multi	Overall	6,891	45,170	2,434	20,222	2,999	565	0.79	14.73
			CTI	586	5,233	573	5,129	574	1	1.00	0.38
			Other - CTO	621	4,285	254	2,102	298	44	0.83	3.80
			Public	1,813	13,567	998	8,780	1,153	155	0.85	8.04
			Reinstatement/DoD CPC	249	1,816	85	663	90	5	0.94	0.73
			RMC	1,508	8,335	75	564	98	23	0.73	2.60
			VRA	2,114	11,934	449	2,984	517	68	0.85	3.71
	White	Native American	Overall	457	45,170	155	20,222	204	49	0.76	4.64
			CTI	15	5,233	15	5,129	15	0	1.02	-0.55
			Other - CTO	48	4,285	17	2,102	23	6	0.72	1.88
			Public	139	13,567	59	8,780	90	31	0.66	5.46
			Reinstatement/DoD CPC	17	1,816	3	663	6	3	0.48	1.61
			RMC	83	8,335	4	564	6	2	0.71	0.70
			VRA	155	11,934	57	2,984	39	-18	1.47	-3.36
Gender	Male	Female	Overall	21,007	65,780	5,730	23,395	7,050	1,320	0.77	22.15
			CTI	1,363	5,821	1,325	5,706	1,334	9	0.99	1.87
			Other - CTO	1,659	5,992	433	2,354	604	171	0.66	9.88
			Public	5,555	17,685	3,018	10,205	3,161	143	0.94	4.43
			Reinstatement/DoD CPC	737	2,413	136	684	192	56	0.65	5.36
			RMC	6,007	15,012	80	812	255	175	0.25	13.25
			VRA	5,686	18,857	738	3,634	1,013	275	0.67	10.87

Table 9b: AT-SAT Pass (Public Source Only) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Public	308	6,235	291	6,049	298	7	0.97	2.51
	White	Black	Public	1,942	6,235	1,715	6,049	1,844	129	0.91	15.30
	White	Hawaiian	Public	38	6,235	36	6,049	37	1	0.98	0.82
	White	Hispanic	Public	494	6,235	451	6,049	477	26	0.94	6.75
	White	Multi	Public	740	6,235	709	6,049	717	8	0.99	1.79
	White	Native American	Public	47	6,235	44	6,049	46	2	0.96	1.36
<b>Gender</b>	Male	Female	Public	2,185	7,361	1,997	7,052	2,071	74	0.95	8.14

Table 10d: Geographic Location Preferences - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	1,473	33,752	1,081	24,301	1,061	-20	1.02	-1.16
			CTI	498	7,651	489	7,575	493	4	0.99	1.73
			Other - CTO	67	2,472	64	2,361	64	0	1.00	0.00
			Public	601	12,051	395	9,016	447	52	0.88	4.98
			Reinstatement/DoD CPC	12	775	12	744	12	0	1.04	-0.71
			RMC	39	1,344	10	643	18	8	0.54	2.74
			VRA	256	9,459	111	3,962	107	-4	1.04	-0.47
	White	Black	Overall	6,897	33,752	4,242	24,301	4,843	601	0.85	17.37
			CTI	605	7,651	598	7,575	599	1	1.00	0.39
			Other - CTO	262	2,472	251	2,361	250	-1	1.00	-0.22
			Public	3,702	12,051	2,357	9,016	2,673	316	0.85	13.24
			Reinstatement/DoD CPC	61	775	61	744	59	-2	1.04	-1.59
			RMC	486	1,344	237	643	234	-3	1.02	-0.35
			VRA	1,781	9,459	738	3,962	745	7	0.99	0.35
	White	Hawaiian	Overall	321	33,752	192	24,301	231	39	0.83	4.83
			CTI	48	7,651	47	7,575	48	1	0.99	0.76
			Other - CTO	27	2,472	26	2,361	26	0	1.01	-0.20
			Public	94	12,051	48	9,016	70	22	0.68	5.27
			Reinstatement/DoD CPC	2	775	1	744	2	1	0.52	3.27
			RMC	10	1,344	2	643	5	3	0.42	1.76
			VRA	140	9,459	68	3,962	59	-9	1.16	-1.59
	White	Hispanic	Overall	2,672	33,752	1,874	24,301	1,920	46	0.97	2.06
			CTI	717	7,651	714	7,575	710	-4	1.01	-1.52
			Other - CTO	136	2,472	133	2,361	130	-3	1.02	-1.27
			Public	948	12,051	646	9,016	705	59	0.91	4.53
			Reinstatement/DoD CPC	21	775	20	744	20	0	0.99	0.18



Table 10d: Geographic Location Preferences - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
			RMC	98	1,344	47	643	47	0	1.00	-0.02
			VRA	752	9,459	314	3,962	315	1	1.00	0.07
	White	Multi	Overall	4,164	33,752	2,878	24,301	2,985	107	0.96	3.90
			CTI	793	7,651	783	7,575	785	2	1.00	0.71
			Other - CTO	306	2,472	287	2,361	292	5	0.98	1.34
			Public	1,424	12,051	1,016	9,016	1,060	44	0.95	2.84
			Reinstatement/DoD CPC	97	775	97	744	94	-3	1.04	-2.01
			RMC	150	1,344	84	643	73	-11	1.17	-1.90
			VRA	1,394	9,459	611	3,962	587	-24	1.05	-1.37
	White	Native American	Overall	339	33,752	183	24,301	243	60	0.75	7.34
			CTI	24	7,651	22	7,575	24	2	0.93	3.58
			Other - CTO	20	2,472	19	2,361	19	0	0.99	0.11
			Public	95	12,051	59	9,016	71	12	0.83	2.84
			Reinstatement/DoD CPC	4	775	3	744	4	1	0.78	2.11
			RMC	14	1,344	4	643	7	3	0.60	1.44
			VRA	182	9,459	76	3,962	76	0	1.00	0.03
Gender	Male	Female	Overall	9,558	39,361	6,541	27,789	6,708	167	0.97	4.15
			CTI	1,887	8,349	1,862	8,266	1,867	5	1.00	1.27
			Other - CTO	516	2,763	497	2,634	493	-4	1.01	-0.99
			Public	4,275	14,097	2,915	10,348	3,086	171	0.93	6.67
			Reinstatement/DoD CPC	174	786	166	760	168	2	0.99	0.83
			RMC	201	1,923	90	920	96	6	0.94	0.83
			VRA	2,505	11,443	1,011	4,861	1,055	44	0.95	1.95

Table 12b: CSP - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	446	9,474	175	3,963	186	11	0.94	1.09
			CTI	122	1,864	71	1,199	78	7	0.90	1.37
			Other - CTO	25	783	3	138	4	1	0.68	0.73
			Public	291	6,049	71	1,849	88	17	0.80	2.24
			Reinstatement/DoD CPC	6	267	4	57	1	-3	3.12	-2.64
			RMC	5	212	2	28	1	-1	3.03	-1.72
			VRA	36	1,150	25	708	22	-3	1.13	-0.96
	White	Black	Overall	2,124	9,474	541	3,963	825	284	0.61	13.98
			CTI	133	1,864	75	1,199	85	10	0.88	1.84
			Other - CTO	94	783	7	138	16	9	0.42	2.51
			Public	1,715	6,049	325	1,849	480	155	0.62	9.46
			Reinstatement/DoD CPC	18	267	5	57	4	-1	1.30	-0.64
			RMC	64	212	7	28	8	1	0.83	0.48
			VRA	200	1,150	124	708	123	-1	1.01	-0.12
	White	Hawaiian	Overall	72	9,474	33	3,963	30	-3	1.10	-0.69
			CTI	14	1,864	9	1,199	9	0	1.00	0.00
			Other - CTO	9	783	0	138	2	2	0.00	1.39
			Public	36	6,049	7	1,849	11	4	0.64	1.45
			Reinstatement/DoD CPC	1	267	0	57	0	0	0.00	0.52
			RMC	1	212	0	28	0	0	0.00	0.39
			VRA	20	1,150	17	708	12	-5	1.38	-2.14
	White	Hispanic	Overall	715	9,474	264	3,963	297	33	0.88	2.57
			CTI	166	1,864	86	1,199	105	19	0.81	3.21
			Other - CTO	54	783	10	138	10	0	1.05	-0.17
			Public	451	6,049	104	1,849	136	32	0.75	3.35
			Reinstatement/DoD CPC	9	267	3	57	2	-1	1.56	-0.86

Table 12b: CSP - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
	White	Multi	RMC	12	212	1	28	2	1	0.63	0.49
			VRA	101	1,150	61	708	62	1	0.98	0.23
			Overall	1,112	9,474	461	3,963	465	4	0.99	0.24
			CTI	181	1,864	109	1,199	116	7	0.94	1.10
			Other - CTO	97	783	9	138	16	7	0.53	2.08
			Public	709	6,049	218	1,849	217	-1	1.01	-0.10
			Reinstatement/DoD CPC	28	267	8	57	6	-2	1.34	-0.88
			RMC	25	212	5	28	3	-2	1.51	-0.93
			VRA	179	1,150	113	708	111	-2	1.03	-0.40
	White	Native American	Overall	67	9,474	24	3,963	28	4	0.86	0.99
			CTI	7	1,864	4	1,199	5	1	0.89	0.40
			Other - CTO	7	783	1	138	1	0	0.81	0.23
			Public	44	6,049	12	1,849	13	1	0.89	0.47
			Reinstatement/DoD CPC	2	267	0	57	0	0	0.00	0.74
			RMC	2	212	0	28	0	0	0.00	0.55
			VRA	12	1,150	7	708	7	0	0.95	0.23
Gender	Male	Female	Overall	2,822	10,886	953	4,425	1,107	154	0.83	6.67
			CTI	465	1,988	280	1,247	289	9	0.96	1.01
			Other - CTO	185	878	35	132	29	-6	1.26	-1.32
			Public	1,997	7,052	427	2,107	559	132	0.72	7.46
			Reinstatement/DoD CPC	56	267	21	54	13	-8	1.85	-2.78
			RMC	37	280	5	38	5	0	1.00	0.01
			VRA	294	1,399	189	864	183	-6	1.04	-0.81

Table 12c: CSP - Selected (from Referred) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
Ethnicity	White	Asian	Overall	891	19,995	179	4,093	182	3	0.98	0.28
			CTI	349	5,129	73	1,233	83	10	0.87	1.32
			Other - CTO	59	2,102	3	138	4	1	0.77	0.45
			Public	386	8,553	72	1,895	85	13	0.84	1.63
			Reinstatement/DoD CPC	7	663	4	57	1	-3	6.65	-4.44
			RMC	9	564	2	30	1	-1	4.18	-2.19
			VRA	81	2,984	25	740	20	-5	1.24	-1.24
	White	Black	Overall	3,758	19,995	564	4,093	737	173	0.73	7.74
			CTI	463	5,129	77	1,233	108	31	0.69	3.60
			Other - CTO	222	2,102	7	138	14	7	0.48	2.00
			Public	2,278	8,553	335	1,895	469	134	0.66	7.81
			Reinstatement/DoD CPC	53	663	5	57	5	0	1.10	-0.21
			RMC	219	564	7	30	10	3	0.60	1.26
			VRA	523	2,984	133	740	130	-3	1.03	-0.31
	White	Hawaiian	Overall	157	19,995	34	4,093	32	-2	1.06	-0.37
			CTI	36	5,129	9	1,233	9	0	1.04	-0.13
			Other - CTO	21	2,102	0	138	1	1	0.00	1.21
			Public	45	8,553	7	1,895	10	3	0.70	1.06
			Reinstatement/DoD CPC	1	663	0	57	0	0	0.00	0.31
			RMC	2	564	0	30	0	0	0.00	0.34
			VRA	52	2,984	18	740	13	-5	1.40	-1.62
	White	Hispanic	Overall	1,559	19,995	268	4,093	315	47	0.84	3.10
			CTI	530	5,129	87	1,233	124	37	0.68	3.95
			Other - CTO	121	2,102	10	138	8	-2	1.26	-0.73
			Public	620	8,553	106	1,895	135	29	0.77	2.95
			Reinstatement/DoD CPC	18	663	3	57	2	-1	1.94	-1.19

Table 12c: CSP - Selected (from Referred) - Cumulative Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
	White	Multi	RMC	36	564	1	30	2	1	0.52	0.67
			VRA	234	2,984	61	740	58	-3	1.05	-0.43
			Overall	2,399	19,995	475	4,093	489	14	0.97	0.77
			CTI	573	5,129	111	1,233	135	24	0.81	2.50
			Other - CTO	254	2,102	9	138	16	7	0.54	1.88
			Public	963	8,553	222	1,895	214	-8	1.04	-0.63
			Reinstatement/DoD CPC	85	663	9	57	8	-2	1.23	-0.61
			RMC	75	564	5	30	4	-1	1.25	-0.48
			VRA	449	2,984	119	740	112	-7	1.07	-0.78
	White	Native American	Overall	152	19,995	25	4,093	31	6	0.80	1.23
			CTI	15	5,129	4	1,233	4	0	1.11	-0.24
			Other - CTO	17	2,102	1	138	1	0	0.90	0.11
			Public	56	8,553	12	1,895	12	0	0.97	0.13
			Reinstatement/DoD CPC	3	663	0	57	0	0	0.00	0.53
			RMC	4	564	0	30	0	0	0.00	0.47
			VRA	57	2,984	8	740	14	6	0.57	1.87
Gender	Male	Female	Overall	5,513	23,033	979	4,574	1,072	93	0.89	3.54
			CTI	1,325	5,706	284	1,282	295	11	0.95	0.81
			Other - CTO	433	2,354	35	132	26	-9	1.44	-1.99
			Public	2,801	9,843	436	2,161	575	139	0.71	7.38
			Reinstatement/DoD CPC	136	684	22	54	13	-9	2.05	-3.04
			RMC	80	812	5	40	4	-1	1.27	-0.52
			VRA	738	3,634	197	905	186	-11	1.07	-1.02

Table 12d: CSP Overall - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Ethnicity	White	Asian	Overall	31,747	700,537	440	9,562	401	-39			0.00	-2.03	0.04
			February 26-28, 2008	53	1,073	7	215	11	4	0.66	1.22	0.98	1.28	0.20
			May 6-8, 2008	149	7,249	52	140	4	-48	18.07	-25.05	0.29	-25.25	0.00
			June 10-12, 2008	1,539	37,411	28	978	40	12	0.70	1.93	0.00	2.03	0.04
			September 8-10, 2008	1,607	35,125	23	858	39	16	0.59	2.59	0.05	2.62	0.01
			January 13-15, 2009	3,293	86,554	141	2,954	114	-27	1.25	-2.68	0.62	-2.66	0.01
			April 28-30, 2009	5,711	145,740	65	1,531	61	-4	1.08	-0.64	0.00	-0.53	0.59
			October 27-29, 2009	3,142	64,455	11	464	22	11	0.49	2.42	0.00	2.39	0.02
			March 23-25, 2010	235	6,028	6	401	17	11	0.38	2.50	0.07	2.87	0.00
			October 19-21, 2010	15,232	287,991	69	1,178	64	-5	1.11	-0.83	0.00	-0.67	0.51
			March 8-10, 2011	70	1,438	16	344	16	0	0.96	0.20	0.03	-0.10	0.92
			November 1-3, 2011	690	27,051	18	418	12	-6	1.69	-2.22	0.71	-1.74	0.08
			March 6-8, 2012	26	422	4	81	3	-1	0.80	0.48	0.82	-0.43	0.67
	White	Black	Overall	173,526	700,537	1,164	9,562	2,297	1,133			0.00	27.68	0.00
			February 26-28, 2008	224	1,073	41	215	45	4	0.91	0.59	0.87	0.85	0.39
			May 6-8, 2008	642	7,249	12	140	13	1	0.97	0.11	0.20	0.19	0.85
			June 10-12, 2008	19,441	37,411	126	978	375	249	0.25	16.12	0.00	16.09	0.00
			September 8-10, 2008	16,533	35,125	134	858	315	181	0.33	12.61	0.53	12.55	0.00
			January 13-15, 2009	26,344	86,554	299	2,954	757	458	0.33	19.35	0.80	19.32	0.00
			April 28-30, 2009	37,004	145,740	199	1,531	349	150	0.51	9.10	0.00	9.11	0.00
			October 27-29, 2009	12,664	64,455	57	464	86	29	0.63	3.39	0.00	3.42	0.00
			March 23-25, 2010	843	6,028	51	401	55	4	0.91	0.66	0.00	0.56	0.58
			October 19-21, 2010	56,460	287,991	176	1,178	219	43	0.76	3.38	0.00	3.21	0.00
			March 8-10, 2011	165	1,438	31	344	31	0	0.79	1.48	0.21	-0.04	0.97
			November 1-3, 2011	3,166	27,051	37	418	49	12	0.76	1.65	0.71	1.92	0.05
			March 6-8, 2012	40	422	1	81	3	2	0.13	2.64	0.99	1.51	0.13

Table 12d: CSP Overall - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
White	Hawaiian	Overall		3,255	700,537	72	9,562	42	-30			0.00	-4.85	0.00
		February 26-28, 2008		4	1,073	1	215	1	0	1.25	-0.25	0.38	-0.13	0.90
		May 6-8, 2008		46	7,249	0	140	1	1	0.00	0.95		0.93	0.35
		June 10-12, 2008		211	37,411	1	978	6	5	0.18	1.95	1.00	1.97	0.05
		September 8-10, 2008		153	35,125	4	858	4	0	1.07	-0.14	1.00	-0.10	0.92
		January 13-15, 2009		136	86,554	6	2,954	5	-1	1.29	-0.64	0.97	-0.40	0.69
		April 28-30, 2009		608	145,740	15	1,531	7	-8	2.35	-3.41	0.40	-3.18	0.00
		October 27-29, 2009		237	64,455	0	464	2	2	0.00	1.31		1.34	0.18
		March 23-25, 2010		74	6,028	6	401	4	-2	1.22	-0.50	0.20	-0.98	0.32
		October 19-21, 2010		1,558	287,991	30	1,178	7	-23	4.71	-9.26	0.00	-9.05	0.00
		March 8-10, 2011		13	1,438	5	344	3	-2	1.61	-1.22	0.04	-1.66	0.10
		November 1-3, 2011		212	27,051	4	418	3	-1	1.22	-0.40	0.22	-0.47	0.64
		March 6-8, 2012		3	422	0	81	0	0	0.00	0.84		0.55	0.58
White	Hispanic	Overall		51,591	700,537	961	9,562	802	-159			0.00	-6.02	0.00
		February 26-28, 2008		71	1,073	11	215	16	5	0.77	0.93	1.00	1.49	0.14
		May 6-8, 2008		255	7,249	12	140	6	-6	2.44	-3.09	0.28	-2.78	0.01
		June 10-12, 2008		2,957	37,411	36	978	74	38	0.47	4.67	0.38	4.70	0.00
		September 8-10, 2008		3,399	35,125	133	858	88	-45	1.60	-5.17	1.00	-5.17	0.00
		January 13-15, 2009		8,004	86,554	424	2,954	286	-138	1.55	-8.69	1.00	-8.71	0.00
		April 28-30, 2009		12,717	145,740	121	1,531	134	13	0.91	1.05	0.00	1.17	0.24
		October 27-29, 2009		4,754	64,455	29	464	35	6	0.85	0.87	0.01	1.03	0.31
		March 23-25, 2010		648	6,028	45	401	45	0	1.04	-0.28	0.08	-0.08	0.94
		October 19-21, 2010		17,466	287,991	105	1,178	76	-29	1.47	-3.81	0.00	-3.46	0.00
		March 8-10, 2011		99	1,438	22	344	19	-3	0.93	0.38	0.91	-0.78	0.44
		November 1-3, 2011		1,183	27,051	19	418	20	1	1.04	-0.17	0.00	0.24	0.81
		March 6-8, 2012		38	422	4	81	4	0	0.55	1.32	0.15	0.23	0.82

Table 12d: CSP Overall - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
	White	Multi	Overall	74,032	700,537	1,117	9,562	1,115	-2			0.00	-0.07	0.95
			February 26-28, 2008	118	1,073	68	215	31	-37	2.88	-9.11	0.07	-8.66	0.00
			May 6-8, 2008	268	7,249	15	140	6	-9	2.90	-4.15	0.10	-3.58	0.00
			June 10-12, 2008	5,488	37,411	64	978	133	69	0.45	6.51	0.10	6.56	0.00
			September 8-10, 2008	4,712	35,125	114	858	115	1	0.99	0.10	1.00	0.13	0.90
			January 13-15, 2009	10,300	86,554	306	2,954	348	42	0.87	2.35	0.87	2.41	0.02
			April 28-30, 2009	14,211	145,740	184	1,531	155	-29	1.23	-2.70	0.00	-2.49	0.01
			October 27-29, 2009	6,235	64,455	57	464	47	-10	1.27	-1.71	0.00	-1.57	0.12
			March 23-25, 2010	721	6,028	42	401	53	11	0.88	0.85	0.00	1.78	0.07
			October 19-21, 2010	27,639	287,991	177	1,178	121	-56	1.57	-5.62	0.00	-5.41	0.00
			March 8-10, 2011	199	1,438	43	344	41	-2	0.90	0.72	0.01	-0.45	0.66
			November 1-3, 2011	4,089	27,051	45	418	60	15	0.71	2.19	0.98	2.14	0.03
			March 6-8, 2012	52	422	2	81	5	3	0.20	2.75	0.26	1.94	0.05
	White	Native American	Overall	4,588	700,537	89	9,562	66	-23			0.00	-3.00	0.00
			February 26-28, 2008	16	1,073	2	215	3	1	0.62	0.75	0.07	0.69	0.49
			May 6-8, 2008	49	7,249	2	140	1	-1	2.11	-1.09	1.00	-0.92	0.35
			June 10-12, 2008	318	37,411	57	978	9	-48	6.86	-16.64	1.00	-16.79	0.00
			September 8-10, 2008	302	35,125	5	858	7	2	0.68	0.88	1.00	0.90	0.37
			January 13-15, 2009	486	86,554	6	2,954	17	11	0.36	2.64	0.68	2.70	0.01
			April 28-30, 2009	597	145,740	8	1,531	6	-2	1.28	-0.69	0.00	-0.68	0.50
			October 27-29, 2009	519	64,455	0	464	4	4	0.00	1.94		1.93	0.05
			March 23-25, 2010	60	6,028	0	401	4	4	0.00	2.07		1.98	0.05
			October 19-21, 2010	1,917	287,991	6	1,178	8	2	0.77	0.66	0.00	0.64	0.52
			March 8-10, 2011	10	1,438	2	344	3	1	0.84	0.29	0.03	0.60	0.55
			November 1-3, 2011	314	27,051	1	418	4	3	0.21	1.76	1.00	1.67	0.10
			March 6-8, 2012	0	422	0	81	0	0			1.00		1.00



Table 12d: CSP Overall - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Gender	Male	Female	Overall	227,315	790,700	2,277	10,873	3,016	739			0.00	15.79	0.00
			February 26-28, 2008	248	1,311	136	209	54	-82	3.44	-13.53	0.00	-14.28	0.00
			May 6-8, 2008	1,094	7,418	38	192	31	-7	1.34	-1.69	0.99	-1.48	0.14
			June 10-12, 2008	19,091	46,905	271	1,002	365	94	0.66	6.07	1.00	5.96	0.00
			September 8-10, 2008	15,962	44,923	289	967	327	38	0.84	2.61	1.00	2.51	0.01
			January 13-15, 2009	33,050	99,983	486	3,546	999	513	0.41	19.09	0.71	19.04	0.00
			April 28-30, 2009	52,659	160,485	304	1,778	511	207	0.52	10.74	0.00	10.69	0.00
			October 27-29, 2009	18,544	71,758	102	511	125	23	0.77	2.40	0.01	2.32	0.02
			March 23-25, 2010	1,323	7,195	105	437	91	-14	1.31	-2.55	0.00	-1.76	0.08
			October 19-21, 2010	79,308	317,594	319	1,365	335	16	0.94	1.07	0.00	0.99	0.32
			March 8-10, 2011	347	1,645	97	365	80	-17	1.26	-2.31	0.02	-2.63	0.01
			November 1-3, 2011	5,582	31,013	121	419	84	-37	1.60	-4.66	0.10	-4.48	0.00
			March 6-8, 2012	107	470	9	82	14	5	0.48	2.31	0.39	2.19	0.03

Table 12e: CSP Eastern Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Ethnicity	White	Asian	Overall	14,526	322,330	172	4,009	165	-7			0.00	-0.54	0.59
			February 26-28, 2008	23	540	3	86	4	1	0.82	0.37	0.95	0.31	0.76
			May 6-8, 2008	68	3,159	25	48	2	-23	24.20	-19.34	0.10	-19.02	0.00
			June 10-12, 2008	647	15,806	7	382	15	8	0.45	2.19	0.62	2.19	0.03
			September 8-10, 2008	684	14,986	3	271	12	9	0.24	2.67	0.42	2.67	0.01
			January 13-15, 2009	1,350	35,542	57	1,096	42	-15	1.37	-2.36	0.78	-2.34	0.02
			April 28-30, 2009	2,573	65,960	21	593	23	2	0.91	0.44	0.04	0.47	0.64
			October 27-29, 2009	1,856	38,232	6	336	16	10	0.37	2.54	0.87	2.51	0.01
			March 23-25, 2010	81	3,065	6	202	6	0	1.12	-0.29	0.77	0.11	0.91
			October 19-21, 2010	6,900	131,303	27	634	33	6	0.81	1.07	0.05	1.08	0.28
			March 8-10, 2011	25	689	10	150	7	-3	1.84	-2.15	0.16	-1.31	0.19
			November 1-3, 2011	316	12,918	7	199	5	-2	1.44	-0.96	0.59	-0.87	0.38
			March 6-8, 2012	3	130	0	12	0	0	0.00	0.55		0.58	0.56
	White	Black	Overall	79,124	322,330	651	4,009	986	335			0.00	12.41	0.00
			February 26-28, 2008	135	540	25	86	22	-3	1.16	-0.73	0.55	-0.88	0.38
			May 6-8, 2008	290	3,159	6	48	5	-1	1.36	-0.72	0.15	-0.62	0.54
			June 10-12, 2008	8,239	15,806	63	382	151	88	0.32	9.02	0.03	9.00	0.00
			September 8-10, 2008	7,100	14,986	47	271	102	55	0.37	6.68	0.72	6.65	0.00
			January 13-15, 2009	10,885	35,542	125	1,096	286	161	0.37	11.04	0.96	11.03	0.00
			April 28-30, 2009	16,797	65,960	105	593	141	36	0.70	3.47	0.00	3.46	0.00
			October 27-29, 2009	7,556	38,232	47	336	63	16	0.71	2.24	0.00	2.27	0.02
			March 23-25, 2010	565	3,065	39	202	40	1	1.05	-0.27	0.00	0.13	0.90
			October 19-21, 2010	25,865	131,303	144	634	127	-17	1.15	-1.55	0.00	-1.62	0.11
			March 8-10, 2011	103	689	19	150	22	3	0.85	0.77	0.61	0.75	0.45
			November 1-3, 2011	1,565	12,918	31	199	26	-5	1.29	-1.32	0.84	-1.06	0.29
			March 6-8, 2012	24	130	0	12	1	1	0.00	1.55		1.01	0.31

Table 12e: CSP Eastern Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
White	Hawaiian	Overall		1,449	322,330	6	4,009	16	10			0.72	2.64	0.01
		February 26-28, 2008		4	540	1	86	1	0	1.57	-0.49	0.38	-0.13	0.90
		May 6-8, 2008		20	3,159	0	48	0	0	0.00	0.56		0.54	0.59
		June 10-12, 2008		90	15,806	0	382	2	2	0.00	1.49		1.52	0.13
		September 8-10, 2008		66	14,986	2	271	1	-1	1.68	-0.74	1.00	-0.69	0.49
		January 13-15, 2009		41	35,542	0	1,096	1	1	0.00	1.14		1.16	0.25
		April 28-30, 2009		273	65,960	0	593	3	3	0.00	1.57		1.63	0.10
		October 27-29, 2009		141	38,232	0	336	1	1	0.00	1.12		1.14	0.25
		March 23-25, 2010		30	3,065	0	202	2	2	0.00	1.45		1.39	0.17
		October 19-21, 2010		683	131,303	0	634	3	3	0.00	1.82		1.82	0.07
		March 8-10, 2011		2	689	2	150	0	-2	4.59	-2.67	1.00	-3.60	0.00
		November 1-3, 2011		98	12,918	1	199	1	0	0.66	0.42	0.16	0.33	0.74
		March 6-8, 2012		1	130	0	12	0	0	0.00	0.32	1.00		1.00
White	Hispanic	Overall		23,799	322,330	440	4,009	336	-104			0.00	-6.07	0.00
		February 26-28, 2008		30	540	5	86	5	0	1.05	-0.11	0.90	-0.15	0.88
		May 6-8, 2008		113	3,159	7	48	2	-5	4.08	-3.80	0.04	-3.47	0.00
		June 10-12, 2008		1,255	15,806	17	382	29	12	0.56	2.40	0.12	2.43	0.02
		September 8-10, 2008		1,453	14,986	51	271	28	-23	1.94	-4.47	0.99	-4.48	0.00
		January 13-15, 2009		3,302	35,542	170	1,096	108	-62	1.67	-6.39	1.00	-6.41	0.00
		April 28-30, 2009		5,794	65,960	67	593	54	-13	1.29	-1.97	0.00	-1.88	0.06
		October 27-29, 2009		2,838	38,232	18	336	25	7	0.72	1.36	0.03	1.49	0.14
		March 23-25, 2010		318	3,065	20	202	21	1	0.95	0.21	0.18	0.33	0.74
		October 19-21, 2010		8,034	131,303	57	634	41	-16	1.47	-2.81	0.00	-2.59	0.01
		March 8-10, 2011		54	689	14	150	11	-3	1.19	-0.71	0.89	-1.20	0.23
		November 1-3, 2011		586	12,918	14	199	11	-3	1.55	-1.61	0.00	-1.11	0.27
		March 6-8, 2012		22	130	0	12	1	1	0.00	1.48		0.99	0.32

Table 12e: CSP Eastern Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
	White	Multi	Overall	33,871	322,330	452	4,009	458	6			0.00	0.32	0.75
			February 26-28, 2008	58	540	23	86	10	-13	2.49	-4.45	0.08	-4.80	0.00
			May 6-8, 2008	125	3,159	7	48	3	-4	3.69	-3.49	0.02	-2.71	0.01
			June 10-12, 2008	2,323	15,806	26	382	52	26	0.46	3.94	0.28	3.96	0.00
			September 8-10, 2008	2,020	14,986	42	271	37	-5	1.15	-0.85	1.00	-0.84	0.40
			January 13-15, 2009	4,215	35,542	110	1,096	128	18	0.85	1.70	0.49	1.72	0.09
			April 28-30, 2009	6,418	65,960	65	593	59	-6	1.13	-0.92	0.00	-0.78	0.43
			October 27-29, 2009	3,693	38,232	32	336	33	1	0.99	0.08	0.00	0.20	0.84
			March 23-25, 2010	340	3,065	21	202	21	0	0.94	0.29	0.00	0.07	0.94
			October 19-21, 2010	12,612	131,303	85	634	63	-22	1.40	-2.91	0.00	-2.85	0.00
			March 8-10, 2011	92	689	20	150	21	1	1.00	0.01	0.08	0.22	0.82
			November 1-3, 2011	1,951	12,918	21	199	29	8	0.70	1.58	0.96	1.66	0.10
			March 6-8, 2012	24	130	0	12	1	1	0.00	1.55		1.13	0.26
	White	Native American	Overall	2,129	322,330	32	4,009	29	-3			0.00	-0.63	0.53
			February 26-28, 2008	10	540	0	86	1	1	0.00	1.37		1.20	0.23
			May 6-8, 2008	21	3,159	1	48	0	-1	3.13	-1.20	1.00	-1.05	0.29
			June 10-12, 2008	133	15,806	23	382	3	-20	7.16	-10.86	0.99	-10.97	0.00
			September 8-10, 2008	128	14,986	2	271	2	0	0.86	0.21	1.00	0.21	0.83
			January 13-15, 2009	197	35,542	0	1,096	6	6	0.00	2.50		2.51	0.01
			April 28-30, 2009	273	65,960	4	593	2	-2	1.63	-0.99	0.00	-0.97	0.33
			October 27-29, 2009	307	38,232	0	336	3	3	0.00	1.65		1.64	0.10
			March 23-25, 2010	36	3,065	0	202	3	3	0.00	1.59		1.73	0.08
			October 19-21, 2010	871	131,303	0	634	4	4	0.00	2.06		2.04	0.04
			March 8-10, 2011	5	689	1	150	1	0	0.92	0.10	0.24	0.36	0.72
			November 1-3, 2011	148	12,918	1	199	2	1	0.44	0.85	1.00	0.82	0.41
			March 6-8, 2012	0	130	0	12	0	0			1		1

Table 12e: CSP Eastern Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Gender	Male	Female	Overall	103,645	363,824	1,019	4,625	1,268	249			0.00	8.15	0.00
			February 26-28, 2008	134	666	60	83	24	-36	3.59	-8.91	0.00	-9.01	0.00
			May 6-8, 2008	489	3,244	20	74	13	-7	1.79	-2.38	0.98	-2.14	0.03
			June 10-12, 2008	8,103	19,807	129	378	147	18	0.83	1.80	1.00	1.79	0.07
			September 8-10, 2008	6,831	19,202	96	317	108	12	0.85	1.39	0.94	1.33	0.18
			January 13-15, 2009	13,615	41,057	175	1,342	377	202	0.39	12.21	0.88	12.20	0.00
			April 28-30, 2009	23,829	72,701	109	731	206	97	0.45	7.91	0.00	7.85	0.00
			October 27-29, 2009	10,974	42,639	81	355	88	7	0.89	0.98	0.01	0.89	0.37
			March 23-25, 2010	678	3,712	49	233	44	-5	1.15	-0.93	0.00	-0.90	0.37
			October 19-21, 2010	36,125	144,962	195	716	181	-14	1.09	-1.10	0.00	-1.18	0.24
			March 8-10, 2011	154	816	41	175	34	-7	1.24	-1.42	0.00	-1.46	0.15
			November 1-3, 2011	2,676	14,853	61	212	42	-19	1.60	-3.28	0.04	-3.19	0.00
			March 6-8, 2012	37	165	3	9	4	1	1.49	-0.62	0.28	0.53	0.60

Table 12f: CSP Central Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Ethnicity	White	Asian	Overall	8,826	198,505	83	2,954	113	30			0.00	2.98	0.00
			February 26-28, 2008	17	279	1	75	4	3	0.22	1.92	1.00	1.87	0.06
			May 6-8, 2008	43	2,188	14	34	1	-13	20.95	-13.88	0.71	-14.20	0.00
			June 10-12, 2008	499	12,241	5	349	14	9	0.35	2.46	0.89	2.47	0.01
			September 8-10, 2008	520	11,487	6	323	14	8	0.41	2.27	0.20	2.26	0.02
			January 13-15, 2009	1,062	28,333	37	1,009	38	1	0.98	0.13	0.99	0.12	0.90
			April 28-30, 2009	1,549	39,882	13	545	21	8	0.61	1.77	0.00	1.78	0.08
			October 27-29, 2009	597	12,301	0	80	4	4	0.00	1.98		1.97	0.05
			March 23-25, 2010	43	1,479	0	93	1	1	0.00	1.70		0.82	0.41
			October 19-21, 2010	4,263	81,325	3	235	12	9	0.24	2.64	0.00	2.64	0.01
			March 8-10, 2011	17	338	1	74	2	1	0.27	1.58	0.22	0.70	0.49
			November 1-3, 2011	210	8,537	1	89	2	1	0.46	0.80	0.98	0.99	0.32
			March 6-8, 2012	6	115	2	48	1	-1	0.80	0.41	0.85	-1.15	0.25
	White	Black	Overall	50,238	198,505	333	2,954	731	398			0.00	17.37	0.00
			February 26-28, 2008	51	279	12	75	15	3	0.88	0.50	0.98	0.99	0.32
			May 6-8, 2008	191	2,188	3	34	3	0	1.01	-0.02	0.19	0.01	0.99
			June 10-12, 2008	6,354	12,241	43	349	133	90	0.24	9.79	0.00	9.81	0.00
			September 8-10, 2008	5,394	11,487	53	323	120	67	0.35	7.51	0.17	7.50	0.00
			January 13-15, 2009	8,639	28,333	106	1,009	260	154	0.34	11.11	0.19	11.10	0.00
			April 28-30, 2009	10,127	39,882	73	545	125	52	0.53	5.25	0.00	5.29	0.00
			October 27-29, 2009	2,393	12,301	5	80	14	9	0.32	2.61	0.01	2.59	0.01
			March 23-25, 2010	137	1,479	6	93	3	-3	0.70	0.89	0.00	-1.53	0.13
			October 19-21, 2010	15,933	81,325	20	235	41	21	0.43	3.69	0.01	3.64	0.00
			March 8-10, 2011	35	338	8	74	5	-3	1.04	-0.13	0.08	-1.76	0.08
			November 1-3, 2011	980	8,537	3	89	10	7	0.29	2.23	0.99	2.54	0.01
			March 6-8, 2012	4	115	1	48	1	0	0.60	0.67	0.54	0.31	0.76

Table 12f: CSP Central Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
	White	Hawaiian	Overall	893	198,505	8	2,954	10	2			1.00	0.61	0.54
			February 26-28, 2008	0	279	0	75	0	0			1.00		1.00
			May 6-8, 2008	14	2,188	0	34	0	0	0.00	0.47		0.46	0.64
			June 10-12, 2008	68	12,241	0	349	2	2	0.00	1.41		1.41	0.16
			September 8-10, 2008	49	11,487	1	323	1	0	0.73	0.33	0.79	0.32	0.75
			January 13-15, 2009	31	28,333	0	1,009	1	1	0.00	1.07		1.07	0.28
			April 28-30, 2009	163	39,882	3	545	2	-1	1.35	-0.52	0.97	-0.46	0.64
			October 27-29, 2009	48	12,301	0	80	0	0	0.00	0.56		0.59	0.56
			March 23-25, 2010	23	1,479	0	93	0	0	0.00	1.24		0.72	0.47
			October 19-21, 2010	430	81,325	3	235	1	-2	2.41	-1.57	0.99	-1.49	0.14
			March 8-10, 2011	2	338	0	74	0	0	0.00	0.75		0.52	0.60
			November 1-3, 2011	65	8,537	1	89	1	0	1.48	-0.39	0.90	-0.45	0.65
			March 6-8, 2012	0	115	0	48	0	0			1.00		1.00
	White	Hispanic	Overall	14,542	198,505	270	2,954	244	-26			0.43	-1.75	0.08
			February 26-28, 2008	26	279	4	75	8	4	0.57	1.28	1.00	1.67	0.10
			May 6-8, 2008	77	2,188	2	34	1	-1	1.67	-0.72	0.99	-0.55	0.58
			June 10-12, 2008	963	12,241	10	349	26	16	0.36	3.33	0.88	3.34	0.00
			September 8-10, 2008	1,109	11,487	46	323	32	-14	1.48	-2.52	0.98	-2.53	0.01
			January 13-15, 2009	2,622	28,333	140	1,009	97	-43	1.50	-4.61	0.82	-4.64	0.00
			April 28-30, 2009	3,464	39,882	35	545	47	12	0.74	1.75	0.00	1.83	0.07
			October 27-29, 2009	895	12,301	9	80	6	-3	1.55	-1.25	0.22	-1.23	0.22
			March 23-25, 2010	116	1,479	3	93	4	1	0.41	1.61	0.38	0.60	0.55
			October 19-21, 2010	4,881	81,325	15	235	14	-1	1.06	-0.23	0.46	-0.17	0.87
			March 8-10, 2011	21	338	2	74	2	0	0.44	1.35	0.46	0.31	0.76
			November 1-3, 2011	360	8,537	1	89	4	3	0.27	1.42	0.36	1.37	0.17
			March 6-8, 2012	8	115	3	48	2	-1	0.90	0.24	0.08	-0.64	0.52

Table 12f: CSP Central Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
	White	Multi	Overall	21,069	198,505	283	2,954	339	56			0.00	3.33	0.00
			February 26-28, 2008	35	279	30	75	14	-16	3.19	-6.95	0.58	-6.21	0.00
			May 6-8, 2008	77	2,188	3	34	1	-2	2.51	-1.59	0.22	-1.53	0.13
			June 10-12, 2008	1,790	12,241	20	349	47	27	0.39	4.28	0.23	4.29	0.00
			September 8-10, 2008	1,533	11,487	37	323	42	5	0.86	0.89	0.98	0.89	0.37
			January 13-15, 2009	3,353	28,333	96	1,009	117	21	0.80	2.08	0.85	2.09	0.04
			April 28-30, 2009	3,857	39,882	38	545	52	14	0.72	1.97	0.00	2.01	0.04
			October 27-29, 2009	1,199	12,301	19	80	9	-10	2.44	-3.62	0.02	-3.51	0.00
			March 23-25, 2010	168	1,479	12	93	14	2	1.14	-0.43	0.00	0.76	0.45
			October 19-21, 2010	7,711	81,325	12	235	21	9	0.54	2.13	0.04	2.15	0.03
			March 8-10, 2011	46	338	9	74	6	-3	0.89	0.36	0.05	-1.31	0.19
			November 1-3, 2011	1,288	8,537	6	89	12	6	0.45	1.97	0.63	1.84	0.07
			March 6-8, 2012	12	115	1	48	3	2	0.20	2.26	0.96	1.89	0.06
	White	Native American	Overall	1,294	198,505	30	2,954	18	-12			0.00	-2.88	0.00
			February 26-28, 2008	2	279	1	75	1	0	1.86	-0.73		-0.28	0.78
			May 6-8, 2008	15	2,188	0	34	0	0	0.00	0.49		0.52	0.60
			June 10-12, 2008	106	12,241	20	349	3	-17	6.62	-9.64	0.72	-9.71	0.00
			September 8-10, 2008	99	11,487	1	323	3	2	0.36	1.08	0.99	1.10	0.27
			January 13-15, 2009	157	28,333	2	1,009	6	4	0.36	1.54	0.67	1.56	0.12
			April 28-30, 2009	160	39,882	0	545	2	2	0.00	1.49		1.49	0.14
			October 27-29, 2009	98	12,301	0	80	1	1	0.00	0.80		0.79	0.43
			March 23-25, 2010	12	1,479	0	93	0	0	0.00	0.90		0.30	0.76
			October 19-21, 2010	544	81,325	6	235	2	-4	3.82	-3.49	0.00	-3.53	0.00
			March 8-10, 2011	1	338	0	74	0	0	0.00	0.53		0.26	0.79
			November 1-3, 2011	100	8,537	0	89	1	1	0.00	1.03		1.00	0.32
			March 6-8, 2012	0	115	0	48	0	0			1.00		1.00



Table 12f: CSP Central Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Gender	Male	Female	Overall	65,017	224,331	651	3,237	911	260			0.00	10.16	0.00
			February 26-28, 2008	58	352	48	75	18	-30	3.88	-9.46	0.00	-9.39	0.00
			May 6-8, 2008	321	2,239	5	50	7	2	0.70	0.78	0.32	0.78	0.44
			June 10-12, 2008	6,232	15,344	87	357	127	40	0.60	4.36	1.00	4.31	0.00
			September 8-10, 2008	5,215	14,664	111	348	120	9	0.90	1.01	0.97	0.98	0.33
			January 13-15, 2009	10,843	32,664	165	1,186	337	172	0.42	10.97	0.21	10.98	0.00
			April 28-30, 2009	14,400	43,866	119	580	172	53	0.63	4.74	0.00	4.71	0.00
			October 27-29, 2009	3,541	13,668	9	104	23	14	0.33	3.33	0.36	3.34	0.00
			March 23-25, 2010	260	1,699	28	83	17	-11	2.20	-3.82	0.38	-3.35	0.00
			October 19-21, 2010	22,336	89,538	33	252	56	23	0.52	3.55	0.00	3.48	0.00
			March 8-10, 2011	63	397	19	75	12	-7	1.60	-2.06	0.24	-2.84	0.00
			November 1-3, 2011	1,730	9,774	24	76	15	-9	1.78	-2.52	0.41	-2.50	0.01
			March 6-8, 2012	18	126	3	51	6	3	0.41	1.95	0.54	2.31	0.02

Table 12g: CSP Western Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Ethnicity	White	Asian	Overall	8,395	179,702	185	2,599	123	-62			0.00	-5.97	0.00
			February 26-28, 2008	13	254	3	54	3	0	1.09	-0.16	0.57	-0.09	0.93
			May 6-8, 2008	38	1,902	13	58	1	-12	11.22	-10.13	0.56	-10.33	0.00
			June 10-12, 2008	393	9,364	16	247	11	-5	1.54	-1.72	0.01	-1.48	0.14
			September 8-10, 2008	403	8,652	14	264	13	-1	1.14	-0.48	0.08	-0.45	0.65
			January 13-15, 2009	881	22,679	47	849	34	-13	1.43	-2.42	0.06	-2.41	0.02
			April 28-30, 2009	1,589	39,898	31	393	17	-14	1.98	-3.75	0.00	-3.53	0.00
			October 27-29, 2009	689	13,922	5	48	3	-2	2.10	-1.62	0.00	-1.59	0.11
			March 23-25, 2010	111	1,484	0	106	10	10	0.00	2.91		3.51	0.00
			October 19-21, 2010	4,069	75,363	39	309	19	-20	2.34	-5.16	0.00	-4.77	0.00
			March 8-10, 2011	28	411	5	120	7	2	0.61	1.29	0.15	0.78	0.43
			November 1-3, 2011	164	5,596	10	130	5	-5	2.62	-3.09	0.18	-2.64	0.01
			March 6-8, 2012	17	177	2	21	2	0	0.99	0.01	0.62	-0.13	0.90
	White	Black	Overall	44,164	179,702	180	2,599	580	400			0.00	19.46	0.00
			February 26-28, 2008	38	254	4	54	9	5	0.50	1.55	0.90	2.17	0.03
			May 6-8, 2008	161	1,902	3	58	5	2	0.61	0.85	0.79	0.91	0.36
			June 10-12, 2008	4,848	9,364	20	247	90	70	0.16	9.26	0.03	9.22	0.00
			September 8-10, 2008	4,039	8,652	34	264	94	60	0.28	7.66	0.69	7.61	0.00
			January 13-15, 2009	6,820	22,679	68	849	211	143	0.27	11.46	0.95	11.43	0.00
			April 28-30, 2009	10,080	39,898	21	393	83	62	0.21	7.69	0.00	7.67	0.00
			October 27-29, 2009	2,715	13,922	5	48	9	4	0.53	1.36	0.04	1.34	0.18
			March 23-25, 2010	141	1,484	6	106	11	5	0.60	1.29	0.56	1.82	0.07
			October 19-21, 2010	14,662	75,363	12	309	51	39	0.20	6.10	0.00	5.96	0.00
			March 8-10, 2011	27	411	4	120	4	0	0.51	1.61	0.58	0.21	0.83
			November 1-3, 2011	621	5,596	3	130	13	10	0.21	3.01	0.93	2.99	0.00
			March 6-8, 2012	12	177	0	21	1	1	0.00	1.27		1.13	0.26

Table 12g: CSP Western Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
White	Hawaiian	Overall		913	179,702	58	2,599	15	-43			0.00	-11.40	0.00
		February 26-28, 2008		0	254	0	54	0	0			1.00		1.00
		May 6-8, 2008		12	1,902	0	58	0	0	0.00	0.61		0.61	0.54
		June 10-12, 2008		53	9,364	1	247	1	0	0.72	0.34	1.00	0.37	0.71
		September 8-10, 2008		38	8,652	1	264	1	0	0.86	0.15	0.37	0.19	0.85
		January 13-15, 2009		64	22,679	6	849	3	-3	2.50	-2.37	0.20	-2.05	0.04
		April 28-30, 2009		172	39,898	12	393	2	-10	7.08	-7.84	0.79	-7.35	0.00
		October 27-29, 2009		48	13,922	0	48	0	0	0.00	0.41		0.40	0.69
		March 23-25, 2010		21	1,484	6	106	2	-4	4.00	-3.72	0.32	-3.21	0.00
		October 19-21, 2010		445	75,363	27	309	2	-25	14.80	-17.91	0.00	-17.02	0.00
		March 8-10, 2011		9	411	3	120	2	-1	1.14	-0.27	0.12	-0.67	0.50
		November 1-3, 2011		49	5,596	2	130	1	-1	1.76	-0.81	0.02	-0.80	0.42
		March 6-8, 2012		2	177	0	21	0	0	0.00	0.52		0.55	0.58
White	Hispanic	Overall		13,250	179,702	251	2,599	222	-29			0.00	-2.12	0.03
		February 26-28, 2008		15	254	2	54	4	2	0.63	0.73	1.00	1.04	0.30
		May 6-8, 2008		65	1,902	3	58	2	-1	1.51	-0.72	0.95	-0.61	0.54
		June 10-12, 2008		739	9,364	9	247	19	10	0.46	2.36	0.58	2.37	0.02
		September 8-10, 2008		837	8,652	36	264	27	-9	1.41	-1.97	0.91	-1.93	0.05
		January 13-15, 2009		2,080	22,679	114	849	81	-33	1.46	-3.92	0.86	-3.89	0.00
		April 28-30, 2009		3,459	39,898	19	393	33	14	0.56	2.53	0.00	2.58	0.01
		October 27-29, 2009		1,021	13,922	2	48	4	2	0.57	0.80	0.04	0.86	0.39
		March 23-25, 2010		214	1,484	22	106	19	-3	1.44	-1.63	0.03	-0.76	0.45
		October 19-21, 2010		4,551	75,363	33	309	21	-12	1.77	-3.16	0.00	-2.87	0.00
		March 8-10, 2011		24	411	6	120	6	0	0.86	0.44	0.64	0.02	0.99
		November 1-3, 2011		237	5,596	4	130	6	2	0.73	0.64	0.40	0.85	0.39
		March 6-8, 2012		8	177	1	21	1	0	1.05	-0.05	0.63	0.14	0.88

Table 12g: CSP Western Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
	White	Multi	Overall	19,092	179,702	382	2,599	318	-64			0.00	-3.93	0.00
			February 26-28, 2008	25	254	15	54	7	-8	2.82	-4.28	0.08	-3.87	0.00
			May 6-8, 2008	66	1,902	5	58	2	-3	2.48	-2.05	0.76	-1.84	0.07
			June 10-12, 2008	1,375	9,364	18	247	34	16	0.50	2.97	0.08	3.03	0.00
			September 8-10, 2008	1,159	8,652	35	264	36	1	0.99	0.06	0.75	0.11	0.91
			January 13-15, 2009	2,732	22,679	100	849	103	3	0.98	0.22	0.83	0.29	0.77
			April 28-30, 2009	3,936	39,898	81	393	44	-37	2.09	-6.21	0.00	-5.95	0.00
			October 27-29, 2009	1,343	13,922	6	48	5	-1	1.30	-0.60	0.63	-0.61	0.54
			March 23-25, 2010	213	1,484	9	106	18	9	0.59	1.58	0.01	2.37	0.02
			October 19-21, 2010	7,316	75,363	80	309	36	-44	2.67	-8.16	0.00	-7.85	0.00
			March 8-10, 2011	61	411	14	120	14	0	0.79	1.01	0.11	-0.07	0.94
			November 1-3, 2011	850	5,596	18	130	19	1	0.91	0.37	0.79	0.29	0.77
			March 6-8, 2012	16	177	1	21	1	0	0.53	0.68	0.09	0.42	0.67
	White	Native American	Overall	1,165	179,702	27	2,599	19	-8			0.08	-2.01	0.04
			February 26-28, 2008	4	254	1	54	1	0	1.18	-0.18	0.02	0.01	0.99
			May 6-8, 2008	13	1,902	1	58	0	-1	2.52	-0.97	0.99	-0.89	0.37
			June 10-12, 2008	79	9,364	14	247	2	-12	6.72	-8.14	0.96	-8.22	0.00
			September 8-10, 2008	75	8,652	2	264	2	0	0.87	0.19	0.89	0.19	0.85
			January 13-15, 2009	132	22,679	4	849	5	1	0.81	0.43	0.32	0.53	0.60
			April 28-30, 2009	164	39,898	4	393	2	-2	2.48	-1.88	0.89	-1.79	0.07
			October 27-29, 2009	114	13,922	0	48	0	0	0.00	0.63		0.64	0.52
			March 23-25, 2010	12	1,484	0	106	1	1	0.00	0.96		0.92	0.36
			October 19-21, 2010	502	75,363	0	309	2	2	0.00	1.44		1.46	0.14
			March 8-10, 2011	4	411	1	120	1	0	0.86	0.18	0.01	0.44	0.66
			November 1-3, 2011	66	5,596	0	130	1	1	0.00	1.25		1.16	0.25
			March 6-8, 2012	0	177	0	21	0	0			1.00		1.00

Table 12g: CSP Western Service Area - Selected (from Referred) - Unique Analysis

Comparison	Majority Group	Minority Group	CSP Date	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff	Breslow-Day p-value	MH z	MH p-value
Gender	Male	Female	Overall	58,653	202,545	607	3,011	837	230			0.00	9.38	0.00
			February 26-28, 2008	56	293	28	51	11	-17	2.87	-5.34	0.19	-6.18	0.00
			May 6-8, 2008	284	1,935	13	68	11	-2	1.30	-0.89	0.95	-0.79	0.43
			June 10-12, 2008	4,756	11,754	55	267	91	36	0.51	4.69	0.81	4.58	0.00
			September 8-10, 2008	3,916	11,057	82	302	99	17	0.77	2.17	0.88	2.09	0.04
			January 13-15, 2009	8,592	26,262	146	1,018	285	139	0.44	9.75	0.59	9.68	0.00
			April 28-30, 2009	14,430	43,918	76	467	134	58	0.50	5.82	0.00	5.82	0.00
			October 27-29, 2009	4,029	15,451	12	52	13	1	0.88	0.38	0.65	0.40	0.69
			March 23-25, 2010	385	1,784	28	121	30	2	1.07	-0.34	0.01	0.39	0.70
			October 19-21, 2010	20,847	83,094	91	397	98	7	0.91	0.78	0.55	0.78	0.44
			March 8-10, 2011	130	432	37	115	34	-3	1.07	-0.41	0.76	-0.85	0.39
			November 1-3, 2011	1,176	6,386	36	131	27	-9	1.49	-2.17	0.38	-2.05	0.04
			March 6-8, 2012	52	179	3	22	5	2	0.47	1.33	0.41	0.99	0.32

Table 14d: Interview Pass - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	166	3,834	166	3,820	165	-1	1.00	-0.78
	White	Black	Overall	515	3,834	512	3,820	513	1	1.00	0.74
	White	Hawaiian	Overall	33	3,834	33	3,820	33	0	1.00	-0.35
	White	Hispanic	Overall	252	3,834	252	3,820	251	-1	1.00	-0.96
	White	Multi	Overall	444	3,834	443	3,820	442	-1	1.00	-0.47
	White	Native American	Overall	21	3,834	21	3,820	21	0	1.00	-0.28
<b>Gender</b>	Male	Female	Overall	912	4,273	911	4,256	909	-2	1.00	-1.34

Table 14e: Medical Pass - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	149	3,367	146	3,167	140	-6	1.04	-2.01
	White	Black	Overall	446	3,367	411	3,167	419	8	0.98	1.57
	White	Hawaiian	Overall	29	3,367	25	3,167	27	2	0.92	1.77
	White	Hispanic	Overall	218	3,367	204	3,167	205	1	0.99	0.29
	White	Multi	Overall	391	3,367	364	3,167	367	3	0.99	0.76
	White	Native American	Overall	18	3,367	17	3,167	17	0	1.00	-0.07
<b>Gender</b>	Male	Female	Overall	824	3,722	780	3,488	774	-6	1.01	-1.03

Table 14f: Conditional Suitability Pass - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	160	3,721	157	3,642	157	0	1.00	-0.21
	White	Black	Overall	484	3,721	456	3,642	472	16	0.96	4.81
	White	Hawaiian	Overall	31	3,721	31	3,642	30	-1	1.02	-0.82
	White	Hispanic	Overall	241	3,721	233	3,642	236	3	0.99	1.23
	White	Multi	Overall	428	3,721	416	3,642	419	3	0.99	0.91
	White	Native American	Overall	19	3,721	18	3,642	19	1	0.97	0.94
<b>Gender</b>	Male	Female	Overall	881	4,126	864	4,013	858	-6	1.01	-1.37



Table 14g: Final Suitability Pass - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	73	2,420	73	2,383	72	-1	1.02	-1.06
	White	Black	Overall	317	2,420	313	2,383	312	-1	1.00	-0.37
	White	Hawaiian	Overall	12	2,420	12	2,383	12	0	1.02	-0.43
	White	Hispanic	Overall	152	2,420	150	2,383	150	0	1.00	-0.21
	White	Multi	Overall	232	2,420	232	2,383	229	-3	1.02	-1.90
	White	Native American	Overall	11	2,420	11	2,383	11	0	1.02	-0.41
<b>Gender</b>	Male	Female	Overall	535	2,631	529	2,594	528	-1	1.00	-0.52

Table 14h: Both Conditional & Final Suitability Pass - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	160	3,721	158	3,670	158	0	1.00	-0.13
	White	Black	Overall	484	3,721	472	3,670	477	5	0.99	1.89
	White	Hawaiian	Overall	31	3,721	31	3,670	31	0	1.01	-0.66
	White	Hispanic	Overall	241	3,721	237	3,670	238	1	1.00	0.37
	White	Multi	Overall	428	3,721	423	3,670	422	-1	1.00	-0.34
	White	Native American	Overall	19	3,721	18	3,670	19	1	0.96	1.45
<b>Gender</b>	Male	Female	Overall	881	4,126	870	4,062	868	-2	1.00	-0.67

Table 14i: Hire Decision Pass - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	146	3,171	143	3,139	144	1	0.99	1.21
	White	Black	Overall	413	3,171	408	3,139	409	1	1.00	0.38
	White	Hawaiian	Overall	25	3,171	25	3,139	25	0	1.01	-0.50
	White	Hispanic	Overall	204	3,171	204	3,139	202	-2	1.01	-1.44
	White	Multi	Overall	367	3,171	367	3,139	364	-3	1.01	-1.93
	White	Native American	Overall	17	3,171	17	3,139	17	0	1.01	-0.42
<b>Gender</b>	Male	Female	Overall	780	3,497	769	3,468	773	4	0.99	1.52

Table 15d: Overall Process: Applied to Hired - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	1,076	18,627	143	3,139	179	36	0.79	3.05
	White	Black	Overall	12,278	18,627	408	3,139	1,409	1,001	0.20	36.51
	White	Hawaiian	Overall	231	18,627	25	3,139	39	14	0.64	2.44
	White	Hispanic	Overall	2,267	18,627	204	3,139	363	159	0.53	9.63
	White	Multi	Overall	2,865	18,627	367	3,139	467	100	0.76	5.45
	White	Native American	Overall	209	18,627	17	3,139	35	18	0.48	3.36
<b>Gender</b>	Male	Female	Overall	8,861	27,037	769	3,468	1,046	277	0.68	10.50

Table 15e: Overall Process: Fully Qualified to Hired - Unique Analysis

Comparison	Majority Group	Minority Group	Applicant Source	# Minority Considered	# Majority Considered	# Minority Selected	# Majority Selected	Expected	Shortfall	AIR	SD Diff
<b>Ethnicity</b>	White	Asian	Overall	462	9,658	143	3,139	150	7	0.95	0.69
	White	Black	Overall	2,350	9,658	408	3,139	694	286	0.53	14.43
	White	Hawaiian	Overall	74	9,658	25	3,139	24	-1	1.04	-0.23
	White	Hispanic	Overall	756	9,658	204	3,139	243	39	0.83	3.13
	White	Multi	Overall	1,141	9,658	367	3,139	370	3	0.99	0.23
	White	Native American	Overall	70	9,658	17	3,139	23	6	0.75	1.46
<b>Gender</b>	Male	Female	Overall	3,008	11,189	769	3,468	898	129	0.82	5.78