# Staffing and Retention in Public Safety Communication Centers

August, 2005

## Technical Report

cAPCO Project RETAINS
Responsive Efforts to Assure Integral Needs in Staffing

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Veronica Gardner, M.S.

**August, 2005**

**APCO Project RETAINS**
**Responsive Efforts to Assure Integral Needs in Staffing**

University of Denver Research Institute

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# APCO Project RETAINS

Dear Public Safety Communications Colleagues:

On behalf of the APCO Project RETAINS Committee, the United States Department of Justice – National Institute of Justice, and the staff at the University of Denver Research Institute, we want to thank you for your interest in public safety communications.

This report, ***Staffing and Retention in Public Safety Communication Centers: Technical Report***, summarizes years of research devoted to understanding the issues from a practitioner's perspective. Two companion volumes are available on the APCO website: ***Staffing and Retention in Public Safety Communication Centers: A National Study and Staffing and Retention in Public Safety Communication Centers: Effective Practices Guide and Staffing Workbook.***

In addition, when you visit the APCO website, register for and explore the ***Staffing and Retention Tool Kit***, a set of powerful web-based tools that you can use to generate customized reports on Staffing, Retention and Employee Satisfaction for your center. The Tool Kit contains practical resources and links that we think you will find helpful. Visit the APCO website and follow the links to 9-1-1 and Project RETAINS at http://www.apcointl.org/about/911/retains/

Again, thank you for your interest. We hope you will find these resources useful.
We hope you find this document useful, and look forward to your feedback.

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# Staffing and Retention in Public Safety Communication Centers: A National Study

## TECHNICAL REPORT

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August 2005

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## INTRODUCTION

This report contains findings of the Staffing and Retention in Public Safety Communications Centers studies (Study I and Study II). Study I included the development of two survey instruments; one for communication center employees and one for communication center managers. Instrument development was based on “best practices” identified and articulated by the APCO Staffing Crisis Task Force in 2001. The survey questions were reviewed, revised, and selected for inclusion in the two surveys by the members of the APCO Project RETAINS Committee. They were piloted at the Northwest Regional Conference in Spokane in early 2004, revised and piloted again on the web with people on the Project RETAINS interest list. The surveys were finalized and centers were invited to participate in the study. After a 12-week data collection period, responses were received from 153 managers and 600 employees.

A second part of the national study, referred to as Study II, aimed to gather information from centers with 76 or more employees to determine whether the experiences of these large centers were similar or different from the small and medium centers that characterized Study I. Managers from 27 large centers responded to a short version of the original manager survey, following a 4-week data collection period.

The purpose of this report is to present the findings of the Staffing and Retention in Public Safety Communications Centers studies in regards to various research questions that were addressed. The findings presented in this report employed a variety of statistical methods, including basic descriptive statistics, t-tests, analysis of variance (ANOVA), chi-square, correlation, regression, reliability and factor analysis. Most of the findings focus on the relationship between center characteristics and practices (the independent variables), and two outcome measures: center retention rates and employee satisfaction (the dependent variables). However, relationships between other independent variables were also explored.

Preliminary data were previously presented at the APCO Annual Conference in Montreal on August 11, 2004. This report is a supplement to the full Research Report and the Effective Practices Guide.

## METHODOLOGY

### Survey Samples: Employees and Managers

A random sample of 763 centers was drawn from a center contact database of almost 8,000 public safety communications centers in the United States. Centers received an invitation to participate in the study with a URL and instructions for how managers and communications center staff could participate in the study. Print surveys were mailed to non-responders. The two methods yielded responses from 600 employees and 153 managers; representing 230 centers across the United States and resulting in an overall center response rate of 30%. Responses from employees and managers were entered in two separate databases for statistical analysis.

The employee database consisted of 600 employees from 191 centers. The average number of employees who responded per center was 3.14. Of the 191 centers, 40% were represented by only one employee, for 44% of the centers 2-4 employees responded per center, for 12% of the centers 5-10 employees responded per center; and for 4% of the centers over 10 employees responded per center.

The manager database consisted of 153 managers from 153 centers. In three cases where more than one manager responded from the same center, the first survey received was the one that was used for all analyses. Of the 153 centers represented in the manager database only 114 matched those in the employee database. There were 39 centers where we received manager responses but not employees, and there were 77 centers where we received employee responses but not managers.

The large center database consisted of 27 managers from centers with 76 or more employees.

### Survey Instruments

*Employee Survey*

The employee survey included 53 question categories and a total of 325 items. The purpose of the survey was to gather information from communication center employees about roles and responsibilities, center performance, scheduling, overtime, staffing, the application and selection process, and recognition. Employees were also asked basic

demographic questions such as gender and age. The employee survey included various response formats including, yes/no, fill in answers, checklists, and Likert response scales. Most items provided the respondent with the options of “Don’t know” or “Not applicable.”

However, one of the main purposes of the employee survey was to get a sense of employees opinions regarding a variety of topics, including the work itself, the physical environment, supervision and management, support provided by the center, scheduling policies and practices, preparation and training, compensation and benefits, and the overall performance of their center. Items that were grouped together under a survey question relating to one topic are referred to as subscales. Based on responses to each of the eight subscales, employees were assigned a “score” that represented their level of agreement with each subscale. The score for each subscale ranged from 1-5 “Strongly Disagree” to “Strongly Agree;” with lower numbers indicating less dissatisfaction and higher numbers indicating more dissatisfaction. These scores provided a basis for the Employee Satisfaction Index (ESI), an outcome measure or dependent variable developed to serve as the one indicator of employee satisfaction and for use in subsequent statistical analysis.

*Manager Surveys*

The manager survey included 66 question categories and a total of 280 items. The purpose of the manager survey was to gather general information about the communications center administration, the services provided, center statistics, staff assignments and tasks, staffing levels, the application and selection process, preparation and training, scheduling, overtime, benefits and compensation, employee recognition, and center performance. Like employees, managers were also asked certain demographic questions. Additionally, the manager survey included various response formats including, yes/no, fill in answers, checklists, and Likert response scales. When necessary, most items provided managers with the options of “Don’t know” or “Not applicable.”

Since 97 percent of the centers in Study I were small or medium sized centers, a second study was conducted to obtain additional information about staffing and retention in large centers. Managers from large centers were surveyed using a shorter version of the Study I manager survey. The shortened manager survey consisted of 57 questions and

included various response formats including, yes/no, fill in answers, checklists, and Likert response scales. When necessary, most items provided managers with the options of “Don’t know” or “Not applicable.”

### Dependent Variable: Center Retention Rate

Retention rates, in general, provide a one-year snapshot of the shifts in personnel within organizations. Although managers in this study were not asked to provide the retention rate for their center, they were asked certain questions that would allow the researchers to calculate a retention rate for each center. These questions were “What is the total number of current employees at your center?” (item m24_4); “How many new hires left in the previous year?” (m49b); and “How many experienced staff left in the last year?” (m50b). Based on this information, a turnover rate was calculated for each center with data provided by the manager; retention was then calculated from turnover, given that it is its opposite.

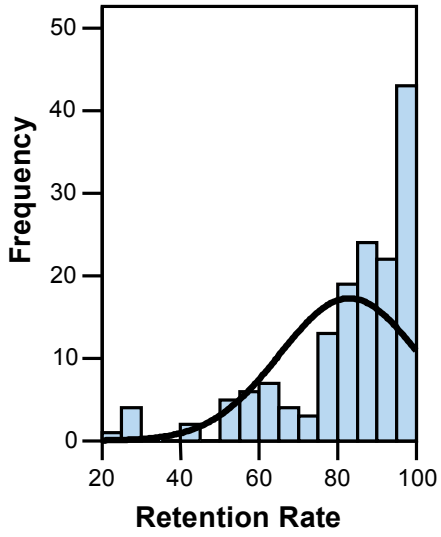
The calculations are as follows:

Turnover Rate = Number of staff that left last year ÷ Total number of current employees

Retention Rate (expressed as a percentage) = [1 – Turnover Rate] x 100

Center retention rates for 153 centers ranged from 23.08 to 100. The mean retention rate was 83.05 with a standard deviation of 17.71. ***Indicating that on average centers retained approximately 83% of their staff (i.e. had a turnover rate of 17%).*** As seen in Figure 1, the distribution of retention rate is negatively skewed, suggesting that most centers in the sample had higher retention rates versus lower.

Figure 1: Histogram of Center Retention Rate (with normal curve), N=153




**Dependent Variable: Employee Satisfaction Index**

Of the eight subscales included in the employee survey, six subscales that were related to satisfaction (52 items) were used to develop the Employee Satisfaction Index (ESI). These items asked employees to indicate their level of agreement (from 1-5 or "strongly disagree" to "strongly agree") with statements about the work itself, the physical environment, supervision and management, the level of support provided by the center, scheduling policies and practices, and compensation and benefits. These subscales are listed below in table 1.

Table 1: Six Subscales used in the Development of the Employee Satisfaction Index (ESI)

| Survey Question | Subscale | Number of Items |
|---|---|---|
| E18 | The Work Itself | 11 |
| E19 | The Physical Environment | 7 |
| E20 | Supervision and Management | 8 |
| E31 | Support | 7 |
| E33 | Scheduling Policies and Practices | 12 |
| E39 | Compensation and Benefits | 7 |
| | **TOTAL** | **52** |

A score that ranged from 1-5 "Strongly Disagree" to "Strongly Agree" was calculated for each employee for each subscale. "Don't know" and "Not applicable" were also options in the response scale. The score is based on the actual number of items an employee responded to, that is, each persons total was divided by the number of items they

responded to. Pearson correlations among the six subscales were all statistically significant and ranged from .46 to .72 indicating a moderate-to-strong linear relationship between the scales. Cronbach's alpha (i.e. reliability coefficient) was .942 suggesting that the six subscales (52 items) could be used together to represent satisfaction (i.e. they are measuring the same construct).

Finally, a composite score, the Employee Satisfaction Index was calculated for each employee by summing their scores for the six subscales. This variable, the ESI, ranged from 1 to 30 ***with lower values indicating less dissatisfaction and higher values indicating more dissatisfaction.***

| |
|---|
| A shortened, 20-item version of the survey, the Employee Satisfaction Survey, was developed and modified so that higher values indicate higher satisfaction and lower values indicate less satisfaction. |

The mean of the ESI, for 600 employees, was 15.71 with a standard deviation of 3.74, and ranged from 4.50 to 27.64. As seen in Figure 2, the ESI was normally distributed, indicating that most employees tended to be around the mean, tapering off on the low and high ends fairly evenly.

Figure 2: Histogram of Employee Satisfaction Index (with normal curve), N=600


*Relationship between Retention Rate and Employee Satisfaction Index*

The correlation between center retention rate and the ESI was statistically significant, *r*= -.137, ***indicating lower ESI values (less dissatisfaction) were associated with***

***higher retention rates.*** In terms of practical significance, these variables only explained 2% of the variance in each other, ***indicating other factors explain center retention rates better than employee satisfaction, and vice versa.***

## Research Questions

The Staffing and Retention in Public Communications Centers Study I aimed to address several research questions. These include:

1. Are the employee and manager survey instruments reliable?
2. What is the factor structure of the employee survey?
3. What variables are related to and/or predict center retention rate?
4. What variables are related to and/or predict employee satisfaction?
5. In what ways are other center or employee characteristics related?
6. Is there a discrepancy between manager and employee responses? If so, is this discrepancy related to the center?

The main research question that guided Study II was:

7. Do large centers experience staffing and retention issues differently than smaller centers?

A variety of statistical techniques were used to address these questions and are discussed in the following section. Research findings from these analyses are presented in the Results section of this report.

## Statistical Techniques

This section briefly describes the statistical techniques performed in the current analysis.

*Descriptive Statistics*

Each survey item included in the current analysis was first explored statistically via basic descriptive statistics. This includes an analysis of frequencies, percentages, minimum values, maximum values, means, standard deviations, kurtosis, and skewness. Through the use of descriptive statistics one can ascertain a variables' distribution and shape, whether there were any outliers or extreme cases, and whether data entry was done correctly.

*Correlation*

The letter “r” is a statistical term representing a correlation coefficient, which is an analysis used to describe the extent to which two variables are related. The correlation coefficient can have any value between –1.00 and +1.00. A correlation coefficient that has the value of +1.00 indicates a perfect linear relationship (i.e., as one variable increases so does the other); while a correlation coefficient of –1.00 indicates a perfect inverse relationship (as one variable increases, the other decreases). A general rule of thumb is that a correlation coefficient that is .60 and above indicates a moderate relationship and .80 or greater is considered highly related. A correlation analysis works best with variables that are continuous measures since its main purpose is to detect linear relationships.

*Chi-Square*

The chi-square test is used with categorical data. The test checks to see if statistically significant differences exist between the observed (or actual) frequencies and the expected (or hypothesized) frequencies of variables presented in a cross-tabulation or contingency table. The larger the observed frequency is in comparison with the expected frequency, the larger the chi-squared statistic and the more likely it is that the difference is statistically significant.

*t-test and Analysis of Variance*

The t-test is a test that determines whether two group means are statistically different from each other. Since the test looks at group means, it is best to use variables that are continuous. Analysis of variance (ANOVA) is an extension of the t-test in the sense that it has the ability to compare means of more than two groups. The t-test, as well as ANOVA, has three assumptions that should be met in order for the test to be appropriate. First, the observations are normally distributed on the dependent variable in each group. Second, the population variances for the groups are equal. This is called the homogeneity of variance assumption. Third, the observations are independent. Each of these assumptions was checked prior to running a t-test or ANOVA; violations to these assumptions and how they were handled are noted in the Results section where necessary.

Reliability, factor analysis, and regression techniques are described in their respective sections later in the report.

### Alpha Level

An alpha (statistical significance) value was chosen to use as a cutoff in evaluating the results from the statistical tests. Results are said to have a statistically significant difference if the p-value (probability value for the difference) is below the alpha cutoff level. The alpha value used in this study for all statistical analyses was .05, unless indicated otherwise. All analyses were performed using the Statistical Package for the Social Sciences (SPSS), version 12.0.

### Missing Data

Missing data were handled in one of two ways depending on the statistical analysis. In correlation analyses missing data were handled using pairwise deletion. That is, any case that contained missing data for one of the variables was removed from the calculation. Chi-square, analysis of variance, and t-tests excluded missing data analysis by analysis (same idea as pairwise). That is, each test used all cases that had valid data for the variables tested; therefore, sample sizes could vary from test to test. An advantage to pairwise deletion and to excluding missing data analysis by analysis is that they retain more data for use in calculations; whereas listwise deletion for example, completely removes a case from the calculation when that case has any missing data.

## RESULTS

### Reliability and Factor Analysis

The purpose of the reliability and factor analysis was twofold, a) to examine the reliability of the employee and manager surveys, and b) investigate the structure of the employee survey by using exploratory factor techniques.

*Description of Analyses*

Reliability Analysis

Reliability refers to the consistency or stability of an assessment over time, over forms of a test, or over items within a test. A reliability analysis yields a reliability coefficient,

Cronbach's alpha, which is a measure of how well the items in an instrument are internally consistent. Cronbach's alpha ranges from 0.00 (completely unreliable) to 1.00 (perfectly reliable). Scores toward the high end of that range (above .70) suggest that the items in an instrument are measuring the same thing. Reliability analysis also yields an item-total correlation, which is the correlation between an item and the scale overall. It is preferable this number is positive and higher versus lower (ranges from -1.00 to +1.00). Reliability analysis used listwise deletion when handling missing data.

Factor Analysis

Exploratory factor analysis (EFA) is a statistical technique that has a variety of uses. In most general terms, it assumes that a large number of items can be represented by a smaller number of underlying variables (or factors). The most common uses include item reduction; identifying items that are redundant, and construct validation; determining how well the items measure or accurately represent the construct of interest. Statistically, EFA groups highly intercorrelated items into a factor. Items can be conceptually and statistically related or grouped together. The analysis yields factor loadings, which range from -1.00 to +1.00 and represent the correlation between each item and the factor. Once the researcher establishes which factor an item loads on, each factor is carefully examined to understand the underlying dimension that unified the items and then names the factor accordingly.

Two major goals of EFA are simple structure and interpretability. Simple structure is observed when an item loads highly on only one factor and has low loadings on all other factors. The researcher chooses what cutoff to enforce when determining if items load on a factor. In the current analysis, a factor loading of .40 was selected as the cutoff point. Interpretability refers to how easily factors can be identified and named; factor rotation helps increase interpretability. It is recommended that at least three items load on a factor in order to consider it an interpretable factor.

## *Results*

Employee Survey Reliability Analysis

Eight subscales were included in the employee survey. Subscales consist of items that were grouped together to obtain responses about one general topic. A reliability analysis

was performed for each of the eight subscales in order to determine the internal consistency of the employee survey. Response scales for the eight subscales ranged from 1-5, and although they varied in the wording of responses, they all were ordered similarly, with lower values indicating agreement or satisfaction and higher values indicating disagreement or dissatisfaction. Employees who responded “Don’t know” or “Not applicable” were also included in the reliability analysis and were assigned a value of zero.

As shown in table 2, Cronbach’s alpha coefficients ranged from .72 to .92, and all eight subscales indicated adequate scale reliability. Four items were found to have low item-total correlations (less than ±.25), suggesting they did not contribute to the scale as a whole (i.e., they did not work well with the other items). Therefore, these items were deleted from their respective scales and were not part of the ESI development. These items were:

1. Helping people in need is very challenging- E18_5
2. I’m doing important work- E31_1
3. There are times when I don’t know how to handle a call- E31_2
4. I felt like I had the basic skills after initial classroom training- E30_1

Table 2: Reliability of Eight Subscales in Employee Survey, N=600

| Item | Subscale | Response Scale, 0-5 | Cronbach’s Alpha |
|---|---|---|---|
| E18 | The Work Itself | 0= Not applicable, 1-5= Strongly Agree to Strongly Disagree | .77 |
| E19 | The Physical Environment | 0= Not applicable, 1-5= Strongly Agree to Strongly Disagree | .86 |
| E20 | Supervision and Management | 0= Not applicable, 1-5= Strongly Agree to Strongly Disagree | .92 |
| E31 | Support | 0= Not applicable, 1-5= Strongly Agree to Strongly Disagree | .72 |
| E33 | Scheduling Policies and Practices | 0= Not applicable, 1-5= Very Satisfied to Very Dissatisfied | .80 |
| E39 | Compensation and Benefits | 0= Not applicable, 1-5= Very Satisfied to Very Dissatisfied | .78 |
| E11 | Overall Performance of the Center | 0= Don’t know, 1-5= Excellent to Poor | .87 |
| E30 | Preparation and Training | 0= Not applicable, 1-5= Strongly Agree to Strongly Disagree | .75 |

Manager Survey Reliability Analysis

Three subscales were included in the manager survey. A reliability analysis was performed for each of the three subscales in order to determine the internal consistency of the manager survey. Response scales for the three subscales ranged from 1-5, and although they varied in their wording, they all were ordered similarly, with lower values indicating agreement or satisfaction and higher values indicating disagreement or dissatisfaction. Managers who responded "Don't know" or "Not applicable" were also included in the reliability analysis and were assigned a value of zero.

As shown in table 3, Cronbach's alpha coefficients ranged from .62 to .77, with two out of three subscales indicating adequate scale reliability. Five items were found to have low item-total correlations (less than ±.25), indicating they did not contribute to the scale as a whole (i.e. they did not work well with the other items). These items were deleted from their respective scale. In fact, all five belonged to the same scale, M36, which exhibited the lowest reliability even after deleting the five items. These items were:

1. There are enough ongoing training opportunities- M36_6
2. Call takers and/or dispatchers have indicated they would like more training on certain topics- M36_7
3. Supervisors have indicated they would like more training on supervision issues- M36_8
4. Call takers and/or dispatchers speak to school and/or community groups about their work- M36_9
5. Call takers and/or dispatchers participate in screening and selection of new employees- M36_10

Table 3: Reliability of Three Subscales in Manager Survey, N=153

| Item | Subscale | Response Scale, 0-5 | Cronbach's Alpha |
|---|---|---|---|
| M26 | Application and Selection Process | 0= Not applicable, 1-5= Strongly Agree to Strongly Disagree | .77 |
| M36 | Preparation and Training | 0= Not applicable, 1-5= Strongly Agree to Strongly Disagree | .62 |
| M52b | Employees' Satisfaction with Compensation and Benefits | 0= Don't Know/NA, 1-5= Very Satisfied to Very Dissatisfied | .76 |

Cronbach's alpha coefficients such as those observed in this analysis are desirable when examining the psychometric properties of a survey instrument. In general, both the employee and the manager surveys exhibited adequate reliability. Items which did not appear to contribute a great deal to the instruments (due to low item-total correlations) were removed from their respective scale.

Factor Analysis

Seven of the eight subscales from the employee survey were included in the current factor analysis. These subscales were: the work itself (e18), the physical environment (e19), supervision and management (e20), preparation and training (e30), support (e31), scheduling policies and practices (e33), and compensation and benefits (e39). Not included in the factor analysis was overall performance of the center (e11) which was a scale that asked employees to rate their center on different areas of performance. The items did not relate to one specific topic like the other subscales included in the analysis. Sixty-three items which make up the seven subscales were entered simultaneously into the analysis.

An exploratory factor analysis was performed to determine whether the number of items in the employee survey could be represented by a smaller number of underlying factors. First, the principal axis (PA) factor method was used with direct oblimin rotation (Delta=0), an oblique rotation method which allows factors to be correlated. However the factors did not appear to be strongly correlated; therefore, orthogonal solutions were pursued. Another PA factor method was used with orthogonal rotation (Varimax). The general approach taken was to start with an initial EFA where factors would be extracted based on eigenvalues (□) greater than 1.0. This resulted in the retention of 16 factors. This initial EFA did not have simple structure and was not parsimonious or interpretable (had too many factors). A second approach was then taken to extract seven factors, based on the seven subscales, and compare it to other EFA models, including a 6-factor solution, 5-factor solution, 8-factor solution, and 9-factor solutions, to determine the best EFA model. Criteria for determining the best EFA model were: low residual correlations, fewer items demonstrating poor simple structure, parsimony and interpretability. After comparing the five models on the above criteria, it was determined that the 6-factor solution was the best EFA model for these data.

The 6-factor solution for the 63 items contained 40 items that exhibited simple structure (i.e., clearly loaded on only one factor) and 23 items that did not load highly on any factor (using the .40 factor loading cutoff). Analysis of the residual correlation matrix provided support for the 6-factor solution, with the large majority of values under .10 indicating adequate fit. The rotated factor matrix (factor loadings), eigenvalues, and percentages of variance are presented in table 4. The six factors accounted for 45.19% of the total variance.

*Interpretation of Factors:* As can be seen in table 4, items 1-16 are part of factor 1, items 17-24 make up factor 2, items 25-31 make up factor 3, and so on. The factors were interpreted as follows:

- Factor 1 contained 16 items intended to solicit opinions about *recognition and support, and the relationship with management and coworkers.*
- Factor 2 contained 8 items intended to solicit opinions about *the physical environment.*
- Factor 3 contained 7 items intended to solicit opinions about *scheduling.*
- Factor 4 contained 4 items intended to solicit opinions about *salary and benefits.*
- Factor 5 contained 3 items intended to solicit opinions about *training.*
- Factor 6 contained 2 items intended to solicit opinions about *work breaks.*
- Items 41-59 were those items that did not load on any particular factor. Possible explanations include: the loadings were crossing several factors so an item may reflect multiple underlying variables, or items do not relate much to the six factors retained and may be a measure of another construct.
- Items 60-63 are items that warrant closer attention. They either had low factor loadings across the factors or they were identified in the reliability analysis as items that did not work well with the other items.

Table 4 Rotated Factor Matrix Loadings from Principal Axis Analysis: Eigenvalues and Percentages of Variance. Note: Boldface indicates highest factor loadings.

| Item | F1 | F2 | F3 | F4 | F5 | F6 |
|---|---|---|---|---|---|---|
| 1. Interactions with co-workers are positive (both social and work related). (e18_2) | **.442** | .166 | .152 | .112 | .186 | .120 |
| 2. Call taking/dispatch staff is regularly recognized for high quality work. (e20_1) | **.681** | .204 | .082 | .184 | .127 | .010 |
| 3. Decision processes used in the department are fair. (e20_2) | **.724** | .220 | .206 | .115 | .112 | -.020 |
| 4. Interactions with management are generally positive. (e20_3) | **.724** | .305 | .196 | .056 | .106 | .043 |
| 5. Interactions with my immediate supervisor are generally positive. (e20_4) | **.484** | .293 | .165 | .018 | .224 | .019 |
| 6. Management consistently enforces high performance standards. (e20_5) | **.596** | .281 | .132 | .109 | .133 | .133 |
| 7. Management responds to errors in a constructive way. (e20_6) | **.747** | .256 | .228 | .022 | .083 | .021 |
| 8. Management shows an interest in creating good working conditions. (e20_7) | **.669** | .332 | .241 | .122 | .128 | .029 |
| 9. There are opportunities to participate in decisions that affect you. (e20_8) | **.699** | .178 | .238 | .157 | .090 | -.021 |
| 10. The ongoing training that is provided has been appropriate. (e30_6) | **.407** | .220 | .175 | .178 | .270 | -.028 |
| 11. There are plenty of ongoing training opportunities. (e30_7) | **.399** | .236 | .206 | .227 | .232 | -.057 |
| 12. The center provides support if I am experiencing stress. (e31_3) | **.457** | .156 | .087 | .190 | .279 | -.209 |
| 13. I think that my work is appreciated. (e31_4) | **.664** | .122 | .089 | .332 | .144 | .095 |
| 14. My co-workers are very supportive of my success. (e31_6) | **.408** | .047 | .076 | .153 | .136 | .125 |
| 15. I am listed to when I recommend a course of action. (e31_8) | **.643** | .100 | .241 | .135 | .145 | -.002 |
| 16. *Satisfaction with* Recognition for a job well done. (e33_12) | **.663** | .091 | .088 | .321 | .105 | .016 |
| 17. The arrangement of the work area supports effective performance. (e18_4) | .277 | **.601** | .118 | .138 | .154 | .023 |
| 18. The working conditions are comfortable (e.g., lighting, temperature). (e19_1) | .282 | **.683** | .110 | .159 | .064 | -.017 |
| 19. The technology supports high productivity. (e19_2) | .275 | **.623** | .128 | .160 | .076 | .193 |
| 20. The center provides comfortable seating and desk height. (e19_3) | .280 | **.685** | .108 | .140 | .065 | -.008 |
| 21. The noise level is acceptable (does not distract me from my work). (e19_4) | .195 | **.676** | .086 | .059 | .209 | .031 |
| 22. The restrooms are adequate. (e19_5) | .155 | **.575** | .043 | .148 | .166 | -.032 |

| Item | F1 | F2 | F3 | F4 | F5 | F6 |
|---|---|---|---|---|---|---|
| 23. There is an adequate place for employee breaks. (e19_6) | .307 | **.436** | .047 | .161 | .167 | -.392 |
| 24. Working conditions are safe. (e19_7) | .280 | **.660** | .084 | .180 | .156 | -.002 |
| 25. *Satisfaction with* The shift schedule used by this center. (e33_1) | .177 | .091 | **.745** | .082 | .115 | -.025 |
| 26. *Satisfaction with* Shift selection process. (e33_2) | .207 | .129 | **.728** | .034 | .099 | .028 |
| 27. *Satisfaction with* Vacation choice process. (e33_3) | .159 | .077 | **.624** | .186 | .099 | .083 |
| 28. *Satisfaction with* Days off. (e33_4) | .143 | .107 | **.732** | .166 | .079 | .084 |
| 29. *Satisfaction with* Participation in scheduling decisions. (e33_5) | .347 | .035 | **.674** | .063 | .073 | -.054 |
| 30. *Satisfaction with* Seniority privileges. (e33_7) | .215 | .109 | **.427** | .172 | .151 | -.023 |
| 31. *Satisfaction with* Vacation time. (e39_4) | .145 | .123 | .396 | **.524** | .137 | -.081 |
| 32. *Satisfaction with* Health care benefits. (e33_8) | .076 | .162 | -.005 | **.712** | -.057 | .051 |
| 33. *Satisfaction with* Salary/earnings (i.e., base pay). (e39_1) | .151 | .082 | .121 | **.481** | .193 | -.081 |
| 34. *Satisfaction with* Health benefits (e.g. medical, dental, vision). (e39_3) | .029 | .190 | -.038 | **.766** | -.087 | .011 |
| 35. *Satisfaction with* Retirement benefits. (e39_6) | .179 | .103 | .131 | **.508** | .100 | .027 |
| 36. There was an appropriate length of time from hiring to working independently. (e30_3) | .118 | .159 | .079 | .042 | **.793** | -.028 |
| 37. The training process prepared me to be effective in the job. (e30_4) | .196 | .141 | .132 | .074 | **.779** | .059 |
| 38. I had plenty of opportunity to practice before I started working independently. (e31_7) | .235 | .159 | .076 | .049 | **.722** | -.080 |
| 39. There is scheduled break time away from the console. (e18_8) | .333 | .177 | .168 | -.019 | .188 | **-.433** |
| 40. We are able to leave the work station for breaks and/or meals. (e18_9) | .235 | .186 | .136 | -.011 | .145 | **-.510** |
| 41. The distribution of work among staff is fair. (e18_1) | .366 | .246 | .213 | .125 | .186 | .019 |
| 42. The assigned tasks are usually manageable. (e18_2) | .263 | .344 | .191 | .120 | .200 | .000 |
| 43. It is exciting to direct resources where they are needed. (e18_3) | .215 | .235 | .062 | .063 | .163 | .287 |
| 44. The stress levels are manageable. (e18_6) | .306 | .369 | .092 | .155 | .173 | .106 |
| 45. Team members help each other perform well in crisis. (e18_7) | .331 | .211 | .128 | .100 | .153 | .210 |
| 46. Interactions with the centers we serve are mostly positive. (e18_10) | .358 | .227 | .136 | .085 | .088 | .046 |

| Item | F1 | F2 | F3 | F4 | F5 | F6 |
|---|---|---|---|---|---|---|
| 47. There is professional help available when stress levels get too high. (e18_11) | .383 | .188 | .036 | .156 | .205 | -.250 |
| 48. On the job training (mentoring, shadowing) was essential to my success. (e30_2) | .199 | .115 | .211 | .062 | .377 | .169 |
| 49. I am expected to continue learning and training. (e30_5) | .188 | .135 | .229 | .132 | .336 | .239 |
| 50. Most of my ongoing training has consisted of conferences or sessions offer by professional associations. (e30_8) | .175 | .128 | .055 | .093 | .096 | -.036 |
| 51. I am concerned that I may burn out in this job. (e31_5) | .165 | .161 | .055 | .199 | .160 | .134 |
| 52. I get a great sense of satisfaction from doing this job. (e31_9) | .259 | .178 | .088 | .147 | .161 | .370 |
| 53. *Satisfaction with* Participation in critical incident debriefings when desired. (e33_6) | .265 | .135 | .127 | .150 | .100 | -.102 |
| 54. *Satisfaction with* Difference in pay for different responsibilities. (e33_9) | .284 | .149 | .096 | .358 | .116 | -.144 |
| 55. *Satisfaction with* Access to an exercise room at no cost. (e33_10) | .196 | .105 | .105 | .202 | -.022 | .066 |
| 56. *Satisfaction with* Assistance in arranging for daycare. (e33_11) | .221 | .023 | .136 | .215 | .019 | .019 |
| 57. *Satisfaction with* Overtime. (e39_2) | .229 | .035 | .193 | .362 | .201 | .020 |
| 58. *Satisfaction with* Family friendly policies. (e39_5) | .286 | .031 | .242 | .347 | .115 | -.006 |
| 59. *Satisfaction with* Opportunities for advancement. (e39_7) | .318 | .156 | .163 | .358 | .217 | -.068 |
| 60. Helping people in need is very challenging. (e18_5) | .105 | .072 | .034 | -.069 | -.023 | .240 |
| 61. I felt like I had the basic skills after initial classroom training. (e30_1) | .120 | .111 | .076 | .125 | .223 | -.033 |
| 62. I'm doing important work. (e31_1) | .061 | .064 | .065 | .-.005 | .110 | .369 |
| 63. There are times when I don't know how to handle a call. (e31_2) | -.083 | .125 | -.033 | -.008 | -.053 | .077 |
| Eigenvalues | 16.710 | 2.843 | 2.523 | 2.236 | 2.175 | 1.984 |
| % of Variance | 26.523 | 4.513 | 4.005 | 3.549 | 3.452 | 3.148 |

Note: Boldface indicates highest factor loadings.

## Conclusions

The current reliability and factor analysis revealed that the employee and manager surveys were reliable and appeared to measure what they were designed to measure; thus providing support for the construct validity of the survey instruments. When 63 items designed to solicit employees' opinions about various topics were entered in the exploratory factor analysis, there was clear evidence for six factors: (1) recognition, support, and the relationship with management and coworkers, (2) the physical environment, (3) scheduling, (4) salary and benefits, (5) training, and (6) work breaks. The factor analysis provided insight into which items could be deleted from another shorter survey, in the development of the Employee Satisfaction Survey that is part of the Staffing and Retention Tool Kit available on the APCO website.

## Employee Survey Results: Retention and Satisfaction

This section presents the findings from analyses of items in the employee survey and their relationship with the two dependent variables: center retention and employee satisfaction. The format for the following section is as follows: items are listed based on the order they appeared in the employee survey and under the topic header from the survey; the statistical test used in the analysis is in parentheses; means (m) are provided for all groups compared; statements explaining statistically significant results are in bold font; and tables or figures are presented only for variables that were found to be statistically significant.

Before proceeding, a special note regarding center retention rate and employee satisfaction should be considered before interpreting employee survey results. Center retention rates were calculated based on data provided by managers about their center. Each manager in the manager database (n=153) had a center retention rate, since managers provided the information needed to calculate turnover and retention rates. However, in order to analyze employee survey items and center retention rates (a manager variable), it was necessary to match the manager database and the employee database based on center ID (zip code). Employees were assigned their center's retention rate; this process resulted in center retention rates for 453 of the 600 employees. In cases where there were multiple employees from one center, they all were assigned the same center retention rate.

The employee satisfaction index (ESI), on the other hand, is an employee-specific variable; therefore, each of the 600 employees in the database had their own ESI value. In the following section, any tables that present the results of analyses between employee survey items and center retention rates will have "N=453" in the title. Likewise, tables that present findings related to employee satisfaction have "N=600" in the title.

*Roles and Responsibilities*

- E5- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees whose immediate supervisor was civilian (m=84.66) or sworn personnel (m=85.06).

- E5- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose immediate supervisor was civilian (m=15.68) or sworn personnel (m=15.73).

- E6- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees whose primary role within their center was call taker or dispatcher (m=84.76) and supervisor or trainer (m=85.25).

- E6- ESI (t-test). ***On average, employees whose primary role in the center was supervisor or trainer were significantly less dissatisfied than employees whose primary role was call taker or dispatcher.***

Table 5 Mean Satisfaction Index of Employees who responded to E6 (N=600)

| Which of the following best describes your primary role within the communications center? | n | M | SD |
|---|---|---|---|
| Call taker or dispatcher | 446 | 15.86* | 3.84 |
| Supervisor or Trainer | 127 | 14.96* | 3.16 |

* Statistically significant at p<.05.

- E7- Retention and ESI (correlations). Employee's job complexity (i.e. the number of tasks they did as part of their job) was significantly related to center retention rate (r= -.187) and employee satisfaction (r = .119). ***As job complexity increased, center retention rates decreased and employee dissatisfaction increased.*** Note: Employee's job complexity ranged from one to nine, with a mean of 7.00 and a standard deviation of 1.95.

- E8- Retention and ESI (correlations). The number of years employees had been at their center was not significantly related to center retention rate (r= .059) or to employee satisfaction (r= -.005). Note: The number of years employees had been at

their center ranged from zero (or months) to 33 years, with a mean of 6.77 and a standard deviation of 6.23.

- E8- ESI (ANOVA). Three groups were created based on years employees had been at their center: one year or less, 1.01-3.00 years, and 6 years and over. ***On average, employees who had been employed at their center for 6 or more years were significantly more dissatisfied than those who had been employed at their center one year or less.*** There were no significant differences between groups 1 and 2, or 2 and 3.

Table 6: Mean Satisfaction Index of Employees who responded to E8 (N=600)

| How many full years have you been employed by this communications center? | n | M | SD |
|---|---|---|---|
| (1) 1 year or less | 88 | 14.91* | 3.92 |
| (2) 1.01-3.00 years | 128 | 15.76 | 3.58 |
| (3) over 6 years | 246 | 16.03* | 3.600 |

* Statistically significant at p<.05.

- E9- Retention and ESI (correlations). The number of years employees had been at their current assignment was not significantly related to center retention rate (r= .075) or to employee satisfaction (r= .019). Note: The number of years employees had been at their current assignment ranged from zero (or months) to 29 years, with a mean of 5.68 and a standard deviation of 5.81.

- E9- ESI (ANOVA). Three groups were created based on years employees had been at their current assignment: one year or less, 1.01-3.00 years, and 6 years and over. ***On average, employees who had been employed at their current assignment for 6 or more years were significantly more dissatisfied than those who had been at their current assignment one year or less.*** There were no significant differences between groups 1 and 2, or 2 and 3.

Table 7: Mean Satisfaction Index of Employees who responded to E9 (N=600)

| How many years have you been employed in your current assignment? | n | M | SD |
|---|---|---|---|
| (1) 1 year or less | 118 | 14.90* | 3.75 |
| (2) 1.01-3.00 years | 155 | 15.62 | 3.55 |
| (3) over 6 years | 190 | 16.40* | 3.66 |

* Statistically significant at p<.05.

*Services and Performance*

- E10- Retention and ESI (correlations). Center's complexity factor (i.e. the number of services provided by the center) was significantly related to center retention rate (r= -.106) and employee satisfaction (r= .083). ***As a center's complexity factor increased, center retention rates decreased and employee dissatisfaction increased.*** Note: Employees were provided with a listing of 12 types of services that citizens could access through their communications centers and were asked to "check all that apply." The number of services they check marked were summed to create a "center complexity factor." The center complexity factor ranged from one to 12, with a mean of 7.88 and a standard deviation of 2.22.

- E11- Retention (correlation). Employee's assessment of the overall performance of their center (subscale composite) was significantly related to center retention rate (r= -.188). ***As employees' ratings of the overall performance of their center decreased (i.e. was more positive), center retention rates increased.*** Note: The overall performance subscale ranged from 1.00 (less dissatisfied) to 4.78 (more dissatisfied), with a mean of 2.82 and a standard deviation of 0.71.

- E11- ESI (correlation). Employee's assessment of the overall performance of their center (subscale composite) was significantly related to employee satisfaction (r= .664). ***As employees' ratings of the overall performance of their center decreased (i.e. was more positive), employee dissatisfaction decreased.*** Note: The overall performance subscale ranged from 1.00 (less dissatisfied) to 4.78 (more dissatisfied), with a mean of 2.82 and a standard deviation of 0.71.

- E11_1- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of .01). ***On average, employees who rated the overall performance of their center on its ability to consistently staff necessary positions as "excellent or above average" were from centers with significantly higher retention rates than employees who rated their center as "average" or "below average or poor."*** There were no statistically significant differences between groups 2 and 3.

Table 8: Mean Center Retention Rates of Employees who responded to E11_1 (N=453)

| Please rate the overall performance of the center on its ability to consistently staff necessary positions. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 100 | 90.18** | 8.42 |
| (2) Average | 169 | 84.06** | 12.20 |
| (3) Below Average or Poor | 160 | 82.43** | 15.71 |

** Statistically significant at p<.01.

- E11_1- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on its ability to consistently staff necessary positions as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."***

Table 9: Mean Satisfaction Index of Employees who responded to E11_1 (N=600)

| Please rate the overall performance of the center on its ability to consistently staff necessary positions. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 143 | 13.21* | 3.03 |
| (2) Average | 214 | 15.38* | 3.03 |
| (3) Below Average or Poor | 212 | 17.89* | 3.64 |

* Statistically significant at p<.05.

- E11_2- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who rated the overall performance of their center on its ability to train as "excellent or above average" (m=85.87), "average" (m=84.80), or "below average or poor" (m=82.54).

- E11_2- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on its ability to train as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."***

Table 10: Mean Satisfaction Index of Employees who responded to E11_2 (N=600)

| Please rate the overall performance of the center on its ability to train. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 212 | 13.64* | 3.14 |
| (2) Average | 265 | 16.05* | 3.18 |
| (3) Below Average or Poor | 99 | 19.34* | 3.35 |

* Statistically significant at p<.05.

- E11_3- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who rated the overall performance of their center on call answering times as "excellent or above average" (m=84.76), "average" (m=85.44), or "below average or poor" (m=83.29).

- E11_3- ESI (ANOVA). ***On average, employees who rated the overall performance of the center on call answering times as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor."*** There were no statistically significant differences between groups 2 and 3.

Table 11: Mean Satisfaction Index of Employees who responded to E11_3 (N=600)

| Please rate the overall performance of the center on call answering times. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 357 | 15.06* | 3.75 |
| (2) Average | 186 | 16.64* | 3.39 |
| (3) Below Average or Poor | 27 | 18.37* | 3.96 |

* Statistically significant at p<.05.

- E11_4- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who rated the overall performance of their center on customer satisfaction as "excellent or above average" (m=85.68), "average" (m=84.92), or "below average or poor" (m=84.94).

- E11_4- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on customer satisfaction as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."***

Table 12: Mean Satisfaction Index of Employees who responded to E11_4 (N=600)

| Please rate the overall performance of the center on customer satisfaction. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 282 | 14.71* | 3.75 |
| (2) Average | 236 | 16.61* | 3.36 |
| (3) Below Average or Poor | 13 | 20.27* | 3.02 |

* Statistically significant at p<.05.

- E11_5- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who rated the overall performance of their center on efficient call management as "excellent or above average" (m=85.28), "average" (m=85.02), or "below average or poor" (m=82.56).

- E11_5- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on efficient call management as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."***

Table 13: Mean Satisfaction Index of Employees who responded to E11_5 (N=600)

| Please rate the overall performance of the center on efficient call management. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 306 | 14.83 | 3.78 |
| (2) Average | 219 | 16.52 | 3.28 |
| (3) Below Average or Poor | 29 | 19.44 | 3.67 |

* Statistically significant at p<.05.

- E11_6- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). ***On average, employees who rated the overall performance of their center on employee retention as "below average or poor" were from centers with significantly lower retention rates than employees who rated their center as "excellent or above average" or "average."*** There were no statistically significant differences between groups 1 and 2. Note: Analyzing this item served as an internal consistency check for the retention rate variable.

Table 14: Mean Center Retention Rates of Employees who responded to E11_6 (N=453)

| Please rate the overall performance of the center on employee retention. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 140 | 89.44** | 11.23 |
| (2) Average | 156 | 85.45** | 10.94 |
| (3) Below Average or Poor | 131 | 79.30** | 15.79 |

** Statistically significant at p<.01.

- E11_6- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on employee retention as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."***

Table 15: Mean Satisfaction Index of Employees who responded to E11_6 (N=600)

| Please rate the overall performance of the center on employee retention. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 180 | 13.80* | 3.27 |
| (2) Average | 199 | 15.42* | 3.35 |
| (3) Below Average or Poor | 182 | 18.02* | 3.41 |

* Statistically significant at p<.05.

- E11_7- Retention (ANOVA). ***On average, employees who rated the overall performance of the center on employee satisfaction as "excellent or above average" were from centers with significantly higher retention rates than employees who rated their center as "below average or poor."*** There were no statistically significant differences between groups 1 and 2, or groups 2 and 3.

Table 16: Mean Center Retention Rates of Employees who responded to E11_7 (N=453)

| Please rate the overall performance of the center on employee satisfaction. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 78 | 88.58* | 11.99 |
| (2) Average | 195 | 85.26 | 12.04 |
| (3) Below Average or Poor | 157 | 82.34* | 14.87 |

* Statistically significant at p<.05.

- E11_7- ESI (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on employee satisfaction as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."*** Note: Analyzing this item served as an internal consistency check for employee satisfaction.

Table 17: Mean Satisfaction Index of Employees who responded to E11_7 (N=600)

| Please rate the overall performance of the center on employee satisfaction. | n | M | SD |
|---|---|---|---|
| (1) Excellent or above average | 106 | 11.89** | 2.38 |
| (2) Average | 240 | 14.83** | 2.62 |
| (3) Below Average or Poor | 223 | 18.61** | 3.16 |

** Statistically significant at p<.01.

- E11_8- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of .01). ***On average, employees who rated the overall performance of their center on shift management as "average" were from centers with significantly higher retention rates than employees who rated their center as "below average or poor."*** There were no statistically significant differences between groups 1 and 2, or groups 1 and 3.

Table 18: Mean Center Retention Rates of Employees who responded to E11_8 (N=453)

| Please rate the overall performance of the center on shift management. | n | M | SD |
|---|---|---|---|
| (1) Excellent or above average | 116 | 86.08 | 12.41 |
| (2) Average | 207 | 86.02** | 11.65 |
| (3) Below Average or Poor | 102 | 81.32** | 15.38 |

** Statistically significant at p<.01.

- E11_8- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on shift management as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."***

Table 19: Mean Employee Satisfaction Index of Employees who responded to E11_8 (N=600)

| Please rate the overall performance of the center on shift management. | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 157 | 12.97* | 2.97 |
| (2) Average | 260 | 15.51* | 2.94 |
| (3) Below Average or Poor | 143 | 19.07* | 3.19 |

* Statistically significant at p<.05.

- E11_9- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who rated the overall performance of their center on use of overtime as "excellent or above average" (m=87.35), "average" (m=84.82), or "below average or poor" (m=82.97).

- E11_9- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who rated the overall performance of the center on use of overtime as "excellent or above average" were significantly less dissatisfied than employees who rated their center as "average" or "below average or poor." Likewise, employees who rated their center as "average" were significantly less dissatisfied, on average, than employees who rated their center as "below average or poor."***

Table 20: Mean Satisfaction Index of Employees who responded to E11_9 (N=600)

| Please rate the overall performance of the center on use of overtime | n | M | SD |
|---|---|---|---|
| (1) Excellent or Above Average | 113 | 13.42* | 3.42 |
| (2) Average | 267 | 15.51* | 3.35 |
| (3) Below Average or Poor | 153 | 18.10* | 3.60 |

* Statistically significant at p<.05.

*Scheduling and Assignments*

- E12- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees whose work schedule was a permanent

assignment (m=86.19), semi-permanent assignment (m=82.97), automatic rotation (m=84.01), or rotation by bid (m=85.05).

- E12- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees whose work schedule was a permanent assignment (m=15.36), semi-permanent assignment (m=15.52), automatic rotation (m=16.35), or rotation by bid (m=15.44).

- E13- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). ***On average, employees who worked two 12-hour days and two six-hour days were from centers with significantly lower retention rates than employees who worked five eight-hour days with two days off, four ten-hour days with three days off, three 12-hour days and one four-hour day, or those who worked an "other" type of schedule.*** There were no statistically significant differences among groups 1, 2, 3, or 5.

Table 21: Mean Center Retention Rates of Employees who responded to E13 (N=453)

| Which of the following best describes your weekly or biweekly schedule? | n | M | SD |
|---|---|---|---|
| (1) Five 8 hour days on, two days off | 221 | 86.05** | 11.19 |
| (2) Four 10 hour days on, three days off | 33 | 81.62** | 16.08 |
| (3) Three 12 hour days and one 4 hour day | 23 | 82.13** | 14.37 |
| (4) Two 12 hour days and two 6 hour days | 8 | 64.58** | 20.29 |
| (5) Other | 167 | 85.21** | 13.42 |

** Statistically significant at p<.01.

- E13- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees who worked five eight-hour days with two days off (m=15.31), four ten-hour days with three days off (m=16.85), three 12-hour days and one four-hour day (m=15.90), two 12-hour days and two six-hour days (m=17.04), or those who worked an "other" type of schedule (m=15.94).

- E14- Retention (ANOVA). ***On average, employees who worked on a weekly rotation schedule were from centers with significantly higher retention rates than employees who worked on a quarterly rotation schedule.***

Table 22: Mean Center Retention Rates of Employees who responded to E14 (N=453)

| Do you work on a rotating shift schedule? | n | M | SD |
|---|---|---|---|

| | | | |
|---|---|---|---|
| (1) No, no rotation (normally) | 183 | 84.55 | 13.48 |
| (2) Yes, a WEEKLY rotation | 46 | 89.90* | 11.28 |
| (3) Yes, a BIWEEKLY rotation | 19 | 86.71 | 17.02 |
| (4) Yes, a MONTHLY rotation | 63 | 85.35 | 11.32 |
| (5) Yes, a QUARTERLY rotation | 66 | 81.04* | 14.42 |
| (6) Yes, a YEARLY rotation | 22 | 83.87 | 9.93 |
| (7) Other | 33 | 85.32 | 14.13 |

* Statistically significant at p<.05.

- E14- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees who did not work on a rotating shift schedule (m=15.43), those who worked other than a rotating shift schedule (m=15.60), and those who did work weekly (m=16.03), biweekly (m=14.99), monthly (m=16.88), quarterly (m=15.94), and yearly (m=15.20) rotation schedules.

- E15_1- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who stated shift assignments in their center were customized to meet employee needs (m=83.03) and those who did not (m=85.13).

- E15_1- ESI (t-test). There was no statistically significant difference in mean ESI for employees who stated shift assignments in their center were customized to meet employee needs (m=15.75) and those who did not (m=15.71).

- E15_2- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who stated shift assignments in their center were determined by automatic rotation on a regular basis (m=83.97) and those who did not (m=85.18).

- E15_2- ESI (t-test). There was no statistically significant difference in mean ESI for employees who stated shift assignments in their center were determined by automatic rotation on a regular basis (m=15.81) and those who did not (m=15.69).

- E15_3- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who stated shift assignments in their center were assigned by the supervisor (m=82.67) and those who did not (m=85.72).

- E15_3- ESI (t-test). ***On average, employees who indicated shift assignments in their center were assigned by the supervisor were significantly more dissatisfied than employees who did not.***

Table 23: Mean Satisfaction Index of Employees who responded to E15_3 (N=600)

| How are shift assignments determined in your center: Assigned by supervisor (Mark ALL that apply) | n | M | SD |
|---|---|---|---|
| Yes | 185 | 16.42* | 3.67 |
| *No Response* | 415 | 15.40* | 3.73 |

* Statistically significant at p<.05.

- E15_4- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who stated shift assignments in their center were assigned by seniority preference (m=86.05) and those who did not (m=84.33).

- E15_4- ESI (t-test). There was no statistically significant difference in mean ESI for employees who stated shift assignments in their center were assigned by seniority preference (m=16.06) and those who did not (m=15.57).

- E15_5- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who stated shift assignments in their center were randomly drawn from a pool (m=83.57) and those who did not (m=84.85).

- E15_5- ESI (t-test). There was no statistically significant difference in mean ESI for employees who stated shift assignments in their center were randomly drawn from a pool (m=13.16) and those who did not (m=15.73).

- E15_6- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who stated shift assignments in their center were determined by employee's bidding on preferred assignments (m=83.61) and those who did not (m=85.03).

- E15_6- ESI (t-test). There was no statistically significant difference in mean ESI for employee's who stated shift assignments in their center were determined by

employee's bidding on preferred assignments (m=15.55) and those who did not (m=15.74).

- E15_7- Retention (t-test). There was no statistically significant difference in mean center retention rates for employee's who stated shift assignments in their center were determined by employee's bidding by seniority (m=84.93) and those who did not (m=84.80).

- E15_7- ESI (t-test). ***On average, employees who stated shift assignments in their center were determined by employee's bidding by seniority were significantly less dissatisfied than employees who did not.***

Table 24: Mean Satisfaction Index of Employees who responded to E15_7 (N=600)

| How are shift assignments determined in your center? Employees bid by seniority (Mark ALL that apply). | n | M | SD |
|---|---|---|---|
| Yes | 240 | 15.16* | 3.54 |
| *No Response* | 360 | 16.09* | 3.83 |

* Statistically significant at p<.05.

- E15_8- Retention- (t-test). ***On average, employees who stated shift assignments in their center were determined by employee's bidding by rotating seniority were from centers with significantly lower retention rates than employees who did not.***

Table 25: Mean Center Retention Rates of Employees who responded to E15_8 (N=453)

| How are shift assignments determined in your center? Employees bid by rotating seniority (Mark ALL that apply). | n | M | SD |
|---|---|---|---|
| Yes | 15 | 77.93* | 15.52 |
| *No Response* | 438 | 85.08* | 12.94 |

* Statistically Significant at p<.05.

- E15_8- ESI (t-test). There was no statistically significant difference in mean ESI for employee's who stated shift assignments in their center were determined by employee's bidding by rotating seniority (m=15.78) and those who did not (m=15.71).

*Overtime*

- E16- Retention and ESI (correlations). The number of overtime hours worked by employee's per month was significantly related to center retention rate (r= -.218) and to employee satisfaction (r= .143). ***As the number of overtime hours employee's worked per month increased, center retention rates decreased and employee dissatisfaction increased.*** Note: Number of overtime hours ranged from zero to 90, with a mean of 11.36 and a standard deviation of 14.44.

- E17_1- Retention (t-test). ***On average, employees who reported they usually worked overtime at least once a month were from centers with significantly lower retention rates than employees who did not.***

Table 26: Mean Center Retention Rates of Employees who responded to E17_1 (N=453)

| Do you usually work overtime at least once a month? | n | M | SD |
|---|---|---|---|
| Yes | 308 | 83.67* | 13.97 |
| No | 120 | 88.08* | 9.62 |

* Statistically significant at p<.05.

- E17_1- ESI (t-test). ***On average, employees who reported they usually worked overtime at least once a month were significantly more dissatisfied than employees who did not.***

Table 27: Mean Satisfaction Index of Employees who responded to E17_1 (N=600)

| Do you usually work overtime at least once a month? | n | M | SD |
|---|---|---|---|
| Yes | 411 | 16.09* | 3.74 |
| No | 159 | 15.07* | 3.45 |

* Statistically significant at p<.05.

- E17_2- Retention (t-test). ***On average, employees who reported they were required to work overtime were from centers with significantly lower retention rates than employees who did not.***

Table 28: Mean Center Retention Rates of Employees who responded to E17_2 (N=453)

| Are you routinely required to work overtime? | n | M | SD |
|---|---|---|---|
| Yes | 140 | 80.93* | 15.98 |
| No | 293 | 87.05* | 10.54 |

* Statistically significant at p<.05.

- E17_2- ESI (t-test). ***On average, employees who reported they were routinely required to work overtime were significantly more dissatisfied than those who did not.***

Table 29: Mean Satisfaction Index of Employees who responded to E17_2 (N=600)

| Are you routinely required to work overtime? | n | M | SD |
|---|---|---|---|
| Yes | 198 | 16.96* | 3.88 |
| No | 375 | 15.11* | 3.50 |

* Statistically significant at p<.05.

- E17_3- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees from centers where overtime work was entirely voluntary (m=86.13) and those from centers where it was not (m=84.65).

- E17_3- ESI (t-test). ***On average, employees that indicated overtime was entirely voluntary were significantly less dissatisfied than those who indicated it was not voluntary.***

Table 30: Mean Satisfaction Index of Employees who responded to E17_3 (N=600)

| Is overtime work entirely voluntary? | n | M | SD |
|---|---|---|---|
| Yes | 236 | 14.95* | 3.67 |
| No | 332 | 16.37* | 3.67 |

* Statistically significant at p<.05.

- E17_4- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees whose centers paid a higher rate for overtime (m=84.96) and those who did not (m=85.12).

- E17_4- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose centers paid a higher rate for overtime (m=15.81) and those who did not (m=15.66).

- E17_5- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who had the option of comp time rather than additional pay for overtime (m=84.53) and those who did not (m=85.41).

- E17_5- ESI (t-test). There was no statistically significant difference in mean ESI for employees who had the option of comp time rather than additional pay for overtime (m=15.65) and those who did not (m=16.02).

- E17_6- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who were limited to comp time instead of overtime pay (m=86.26) and those who were not (m=84.65).

- E17_6- ESI (t-test). There was no statistically significant difference in mean ESI for employees who were limited to comp time instead of overtime pay (m=15.60) and those who were not (m=15.79).

- E17_b1- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who were able to use their comp time when desired (m=85.65) and those who were not (m=85.12).

- E17_b1- ESI (t-test). ***On average, employees who reported they were able to use their comp time when desired were significantly less dissatisfied than employees who did not.***

Table 31: Mean Satisfaction Index of Employees who responded to E17_b1 (N=600)

| Are you able to use your comp time when desired? | n | M | SD |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Yes | 295 | 14.80* | 3.48 |
| No | 161 | 17.13* | 3.84 |

* Statistically significant at p<.05.

- E17_b2- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees whose centers paid a higher rate for hard to staff shifts (m=86.07) and those who did not (m=84.09).

- E17_b2- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose centers paid a higher rate for hard to staff shifts (m=15.68) and those who did not (m=15.86).

- E17_b3- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees whose centers paid them a higher rate when they volunteered to work on their days off (m=87.08) and those who did not (m=84.91).

- E17_b3- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose centers paid them a higher rate when they volunteered to work on their days off (m=15.76) and those who did not (m=15.74).

- E17_b4- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees whose centers paid a higher rate to employees working under a long term understaffing situation (m=87.56) and those who did not (m=84.84).

- E17_b4- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose centers paid a higher rate to employees working under a long term understaffing situation (m=15.84) and those who did not (m=15.82).

- E17_b5- Retention (t-test). ***On average, employees who reported overtime was a frequent necessity because their center was short staffed were from centers with significantly lower retention rates than employees who did not.***

Table 32: Mean Center Retention Rates of Employees who responded to E17_b5 (N=453)

| Is overtime a frequent necessity because the center is short staffed? | n | M | SD |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Yes | 274 | 82.79* | 13.46 |
| No | 152 | 88.61* | 11.49 |

* Statistically significant at p<.05.

- E17_b5- ESI (t-test). ***On average, employees who reported overtime was a frequent necessity because their center was short staffed were significantly more dissatisfied than employees who did not.***

Table 33: Mean Satisfaction Index of Employees who responded to E17_b5 (N=600)

| Is overtime a frequent necessity because the center is short staffed? | n | M | SD |
|---|---|---|---|
| Yes | 372 | 16.51* | 3.63 |
| No | 199 | 14.45* | 3.37 |

* Statistically significant at p<.05.

*The Work Itself*

- E18- Retention (correlation). Employee's overall satisfaction with the work itself (subscale composite) was significantly related to center retention rate (r= -.195). ***As employee dissatisfaction with the work itself increased, center retention rates decreased.*** Note: The work itself subscale ranged from 1.00 (less dissatisfied) to 4.27 (more dissatisfied), with a mean of 2.52 and a standard deviation of 0.56.

*The Physical Environment*

- E19- Retention (correlation). Employee's overall satisfaction with the physical environment (subscale composite) was significantly related to center retention rate (r= -.111). ***As employee dissatisfaction with the physical environment increased, center retention rates decreased.*** Note: The physical environment subscale ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.50 and a standard deviation of 0.81.

*Supervision and Management*

- E20- Retention (correlation). Employee's overall satisfaction with supervision and management (subscale composite) was significantly related to center retention rate (r= -.168). ***As employee dissatisfaction with supervision and management***

***increased, center retention rates decreased.*** Note: The supervision and management subscale ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.75 and a standard deviation of 0.85.

*Staffing*

- E21_1- Retention (t-test). ***On average, employees that indicated their center was fully staffed were from centers with significantly higher retention rates than employees who did not.***

Table 34: Mean Center Retention Rates of Employees who responded to E21_1 (N=453)

| The center is fully staffed at this time (all authorized positions are filled). Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 159 | 88.37* | 11.11 |
| *No Response* | 294 | 82.94* | 13.67 |

* Statistically significant at p<.05.

- E21_1- ESI (t-test). ***On average, employees that indicated their center was fully staffed were significantly less dissatisfied than employees who did not.***

Table 35: Mean Satisfaction Index of Employees who responded to E21_1 (N=600)

| The center is fully staffed at this time (all authorized positions are filled). Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 192 | 14.76* | 3.43 |
| *No Response* | 406 | 16.17* | 3.80 |

* Statistically significant at p<.05.

- E21_2- Retention (t-test). ***On average, employees that indicated they were not fully staffed but expected to be soon were from centers with significantly lower retention rates than those who did not.***

Table 36: Mean Center Retention Rates of Employees who responded to E21_2 (N=453)

| We are not fully staffed but expect to be fully staffed soon. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 126 | 80.94* | 12.05 |
| *No Response* | 327 | 86.35* | 13.16 |

* Statistically significant at p<.05.

- E21_2- ESI (t-test). There was no statistically significant difference in mean ESI for employees that indicated they were not fully staffed but expected to be fully staffed soon (m=15.48) and those that did not (m=15.81).

- E21_3- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees that indicated when fully staffed, the number of authorized positions meets their needs (m=86.00) and those that did not (m=84.17).

- E21_3- ESI (t-test). ***On average, employees that indicated when fully staffed the number of authorized positions meets their needs were significantly less dissatisfied than those who did not.***

Table 37: Mean Satisfaction Index of Employees who responded to E21_3 (N=600)

| When fully staffed, the number of positions authorized meets our needs. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 217 | 14.48* | 3.19 |
| *No Response* | 383 | 16.42* | 3.85 |

* Statistically significant at p<.05.

- E21_4- Retention (t-test). ***On average, employees that indicated their current staffing allowed them to comfortably handle the workload were from centers with significantly higher retention rates than employees who did not.***

Table 38: Mean Center Retention Rates of Employees who responded to E21_4 (N=453)

| The current staffing allows the center to comfortably handle the workload. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 121 | 87.86* | 9.59 |
| *No Response* | 332 | 83.74* | 13.99 |

* Statistically significant at p<.05.

- E21_4- ESI (t-test). ***On average, employees that indicated their current staffing allowed them to comfortably handle the workload were significantly less dissatisfied than employees who did not.***

Table 39: Mean Satisfaction Index of Employees who responded to E21_4 (N=600)

| The current staffing allows the center to comfortably handle the workload. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 148 | 13.96* | 3.25 |
| *No Response* | 450 | 16.29* | 3.72 |

* Statistically significant at p<.05.

- E21_5- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees that indicated they needed more staff than what was currently authorized to safely handle busy periods (m=85.12) and those that did not (m=84.65).

- E21_5- ESI (t-test). ***On average, employees that indicated they needed more staff than what was currently authorized to safely handle busy periods were significantly more dissatisfied than those who did not.***

Table 40: Mean Satisfaction Index of Employees who responded to E21_5 (N=600)

| We need more staff than is currently authorized to safely handle busy periods. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 249 | 16.58* | 3.71 |
| *No Response* | 351 | 15.10* | 3.64 |

* Statistically significant at p<.05.

- E21_b1- Retention (t-test). ***On average, employees that indicated their center was chronically understaffed were from centers with significantly lower retention rates than employees who did not.***

Table 41: Mean Center Retention Rates of Employees who responded to E21_b1 (N=453)

| The center is chronically (almost always) understaffed. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 167 | 82.12* | 14.50 |
| *No Response* | 286 | 86.43* | 11.91 |

* Statistically significant at p<.05.

- E21_b1- ESI (t-test). ***On average, employees that indicated their center was chronically understaffed were significantly more dissatisfied than employees who did not.***

Table 42: Mean Satisfaction Index of Employees who responded to E21_b1 (N=600)

| The center is chronically (almost always) understaffed. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 228 | 17.61* | 3.47 |
| *No Response* | 370 | 14.55* | 3.42 |

* Statistically significant at p<.05.

- E21_b2- Retention (t-test). ***On average, employees that indicated lack of adequate staff at their center was a serious problem were from centers with significantly lower retention rates than employees who did not.***

Table 43: Mean Center Retention Rates of Employees who responded to E21_b2 (N=453)

| Lack of adequate staff at this center is a serious problem. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 113 | 81.46* | 15.24 |
| *No Response* | 340 | 85.97* | 12.09 |

* Statistically significant at p<.05.

- E21_b2- ESI (t-test). ***On average, employees that indicated lack of adequate staff at their center was a serious problem were significantly more dissatisfied than employees who did not.***

Table 44: Mean Satisfaction Index of Employees who responded to E21_b2 (N=600)

| Lack of adequate staff at this center is a serious problem. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 157 | 17.81* | 3.63 |
| *No Response* | 441 | 14.97* | 3.50 |

* Statistically significant at p<.05.

- E21_b3- Retention (t-test). ***On average, employees that indicated their center has always been able to cover staffing needs with overtime were from centers with significantly lower retention rates than employees who did not.***

Table 45: Mean Center Retention Rates of Employees who responded to E21_b3 (N=453)

| The center has always been able to cover staffing needs with overtime. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 179 | 83.31* | 12.58 |
| *No Response* | 274 | 85.85* | 13.32 |

* Statistically significant at p<.05.

- E21_b3- ESI (t-test). ***On average, employees that indicated their center has always been able to cover staffing needs with overtime were significantly less dissatisfied than employees who did not.***

Table 46: Mean Satisfaction Index of Employees who responded to E21_b3 (N=600)

| The center has always been able to cover staffing needs with overtime. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 238 | 15.32* | 3.48 |
| *No Response* | 362 | 15.98* | 3.88 |

* Statistically significant at p<.05.

- E21_b4- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees that indicated there was a pool of qualified candidates waiting for an opening (m=84.75) and those that did not (m=84.85).

- E21_b4- ESI (t-test). ***On average, employees that indicated there was a pool of qualified candidates waiting for an opening were significantly less dissatisfied than employees who did not.***

Table 47: Mean Satisfaction Index of Employees who responded to E21_b4 (N=600)

| There is a pool of qualified candidates waiting for an opening. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 47 | 14.32* | 2.82 |
| *No Response* | 553 | 15.84* | 3.79 |

* Statistically significant at p<.05.

- E21_b5- Retention (t-test). ***On average, employees that indicated their center was having difficulty filling authorized positions were from centers with significantly lower retention rates than employees who did not.***

Table 48: Mean Center Retention Rates of Employees who responded to E21_b5 (N=453)

| The center is having difficulty filling authorized positions. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 100 | 80.39* | 16.65 |
| *No Response* | 353 | 86.11* | 11.59 |

* Statistically significant at p<.05.

- E21_b5- ESI (t-test). ***On average, employees that indicated their center was having difficulty filling authorized positions were significantly more dissatisfied than employees who did not.***

Table 49: Mean Satisfaction Index of Employees who responded to E21_b5 (N=600)

| The center is having difficulty filling authorized positions. Please check ALL that apply. | n | M | SD |
|---|---|---|---|
| Yes | 141 | 17.41* | 3.83 |
| *No Response* | 459 | 15.20* | 3.56 |

* Statistically significant at p<.05.

*Application and Selection Process*

- E22- Retention (t-test). ***On average, employees who considered the screening and application process at their center to be effective were from centers with significantly higher retention rates than employees who did not.***

Table 50: Mean Center Retention Rates of Employees who responded to E22 (N=453)

| Overall, would you consider the screening and application process used by your center to be an effective process for selecting the right people for the job? | n | M | SD |
|---|---|---|---|
| Yes | 212 | 86.41* | 12.53 |
| No | 145 | 82.90* | 14.16 |

* Statistically significant at p<.05.

- E22- ESI (t-test). ***On average, employees who considered the screening and application process at their center to be effective were significantly less dissatisfied than employees who considered the process at their center not effective.***

Table 51: Mean Satisfaction Index of Employees who responded to E22 (N=600)

| Overall, would you consider the screening and application process used by your center to be an effective process for selecting the right people for the job? | n | M | SD |
|---|---|---|---|
| Yes | 279 | 14.34* | 3.43 |
| No | 193 | 17.67* | 3.61 |

* Statistically significant at p<.05.

- E24- Retention and ESI- (correlations). The extensiveness of a center's screening process (i.e. the number of screening tests used by the center) was not significantly related to center retention rate (r= .066) or employee satisfaction (r= -.025). Note: Employees were provided with a listing of 13 screening tests that could be used by their center to help identify good candidates and were asked to "check all that apply." The number of tests they check marked were summed to create an "extensiveness of screening process" variable. This variable ranged from one to 13, with a mean of 9.98 and a standard deviation of 3.31

- E24_1- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that used background checks as part of their screening and rated them as "very or somewhat important" (m=84.94), those who used them and rated them as "not very important or not important at all" (m=78.00), and employees from centers that did not use background checks as part of their screening (m=83.15).

- E24_1- ESI (ANOVA). ***On average, employees from centers that used background checks as part of their screening and rated it as "very or somewhat important" were significantly less dissatisfied than employees from centers that did not use background checks as part of their screening, and centers that used it and rated it as "not very important or not important at all."*** There were no statistically significant differences between groups 1 and 3.

Table 52: Mean Satisfaction Index of Employees who responded to E24_1 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Background Check (Please respond to each item, checking NA for items that are not included in your center's screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 12 | 18.73* | 4.06 |
| (2) Very or somewhat important | 578 | 15.60* | 3.66 |
| (3) Not very important or not important at all | 5 | 21.08* | 5.53 |

* Statistically significant at p<.05.

- E24_2- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use civil service screening (m=84.21), employees from centers that used civil service screening and rated it as "very or somewhat important" (m=85.11), and employees from centers that used it and rated it as "not very important or not at all important" (m=86.29).

- E24_2- ESI (ANOVA). ***On average, employees from centers that used civil service screening and rated it as "very or somewhat important" were significantly less dissatisfied than employees from centers that used it and rated it as "not very important or not important at all."*** There were no statistically significant differences between groups 1 and 2, and groups 1 and 3.

Table 53: Mean Satisfaction Index of Employees who responded to E24_2 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Civil Service Screening (Please respond to each item, checking NA for items that are not included in your center's screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 265 | 15.81 | 3.50 |
| (2) Very or somewhat important | 232 | 15.40* | 3.67 |
| (3) Not very important or not important at all | 80 | 16.61* | 4.42 |

* Statistically significant at p<.05.

- E24_3- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use drug screening (m=85.79), employees from centers that used drug screening and rated it as "very or

somewhat important" (m=84.78), and employees from centers that used it and rated it as "not very important or not at all important" (m=87.01).

- E24_3- ESI (ANOVA). ***On average, employees from centers that used drug screening and rated it as "very or somewhat important" were significantly less dissatisfied than employees from centers that did not use drug screening.*** There were no statistically significant differences between groups 1 and 3, and groups 2 and 3.

Table 54: Mean Satisfaction Index of Employees who responded to E24_3 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Drug Screening (Please respond to each item, checking NA for items that are not included in your center's screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 75 | 16.81* | 3.83 |
| (2) Very or somewhat important | 508 | 15.51* | 3.64 |
| (3) Not very important or not important at all | 13 | 16.38 | 5.19 |

* Statistically significant at p<.05.

- E24_4- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use hearing tests as part of their screening (m=84.34), employees from centers that used hearing tests as part of their screening and rated it as "very or somewhat important" (m=85.19), and employees from centers that used it and rated it as "not very important or not at all important" (m=85.60).

- E24_4- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees from centers that did not use hearing tests as part of their screening (m=15.67), employees from centers that used hearing tests as part of their screening and rated it as "very or somewhat important" (m=15.64), and employees from centers that used it and rated it as "not very important or not at all important" (m=17.22).

- E24_5- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use an integrity test as part of their screening (m=83.93), employees from centers that used an integrity test

as part of their screening and rated it as “very or somewhat important” (m=85.33), and employees from centers that used it and rated it as “not very important or not at all important” (m=86.25).

- E24_5- ESI (ANOVA). ***On average, employees from centers that used an integrity test as part of their screening and rated it as “very or somewhat important” were significantly less dissatisfied than employees from centers that used it and rated it as “not very important or not important at all.”*** There were no statistically significant differences between groups 1 and 2, and groups 1 and 3.

Table 55: Mean Satisfaction Index of Employees who responded to E24_5 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Integrity Test (Please respond to each item, checking NA for items that are not included in your center’s screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 180 | 16.01 | 3.64 |
| (2) Very or somewhat important | 373 | 15.46* | 3.64 |
| (3) Not very important or not important at all | 32 | 17.12* | 4.84 |

* Statistically significant at p<.05.

- E24_6- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use an interview process as part of their screening (m=86.93), employees from centers that used an interview process as part of their screening and rated it as “very or somewhat important” (m=85.01), and employees from centers that used it and rated it as “not very important or not at all important” (m=81.72).

- E24_6- ESI (ANOVA). ***On average, employees from centers that used an interview process as part of their screening and rated it as “not very important or not important at all” were significantly more dissatisfied than employees from centers that did use it and rated it as “very or somewhat important,” and employees from centers that did not use an interview process as part of their screening.*** There were no statistically significant differences between groups 1 and 2.

Table 56: Mean Satisfaction Index of Employees who responded to E24_6 (N=600)

| Please rate the following statement based on the extent | n | M | SD |
|---|---|---|---|

| | | | |
|---|---|---|---|
| to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates:<br>Interview Process<br>(Please respond to each item, checking NA for items that are not included in your center's screening process) | | | |
| (1) Not applicable | 10 | 16.96* | 4.79 |
| (2) Very or somewhat important | 571 | 15.60* | 3.64 |
| (3) Not very important or not important at all | 8 | 21.56* | 2.88 |

* Statistically significant at p<.05.

- E24_7- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not assess keyboarding as part of their screening (m=84.52), employees from centers that assessed keyboarding as part of their screening and rated it as "very or somewhat important" (m=84.92), and employees from centers that assessed it and rated it as "not very important or not at all important" (m=87.99).

- E24_7- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees from centers that did not assess keyboarding as part of their screening (m=16.19), employees from centers that assessed keyboarding as part of their screening and rated it as "very or somewhat important" (m=15.58), and employees from centers that assessed it and rated it as "not very important or not at all important" (m=16.54).

- E24_8- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not assess map reading skills (m=84.65), employees from centers that assessed map reading skills and rated it as "very or somewhat important" (m=84.98), and employees from centers that assessed it and rated it as "not very important or not at all important" (m=85.56).

- E24_8- ESI (ANOVA). ***On average, employees from centers that assessed map reading skills as part of their screening and rated it as "not very important or not important at all" were significantly more dissatisfied than employees from centers that did assess it and rated it as "very or somewhat important," and***

***employees from centers that did not assess map reading skills as part of their screening.*** There were no statistically significant differences between groups 1 and 2.

Table 57: Mean Satisfaction Index of Employees who responded to E24_8 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Map Reading Skills (Please respond to each item, checking NA for items that are not included in your center's screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 133 | 15.59* | 3.82 |
| (2) Very or somewhat important | 410 | 15.59* | 3.62 |
| (3) Not very important or not important at all | 46 | 17.18* | 4.00 |

* Statistically significant at p<.05.

- E24_9- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not assess multitasking ability (m=84.08), employees from centers that assessed multitasking ability and rated it as "very or somewhat important" (m=85.05), and employees from centers that assessed it and rated it as "not very important or not at all important" (m=87.33).

- E24_9- ESI (ANOVA). ***On average, employees from centers that assessed multitasking ability as part of their screening and rated it as "not very important or not important at all" were significantly more dissatisfied than employees from centers that did assess it and rated it as "very or somewhat important."*** There were no statistically significant differences between groups 1 and 2, or groups 1 and 3.

Table 58: Mean Satisfaction Index of Employees who responded to E24_9 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Multitasking Ability (Please respond to each item, checking NA for items that are not included in your center's screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 80 | 16.29 | 4.05 |
| (2) Very or somewhat important | 491 | 15.56* | 3.63 |
| (3) Not very important or not important at all | 17 | 17.56* | 4.15 |

* Statistically significant at p<.05.

- E24_10- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use a polygraph exam as part of their screening (m=84.19), employees from centers that used a polygraph exam as part of their screening and rated it as "very or somewhat important" (m=85.13), and employees from centers that used it and rated it as "not very important or not at all important" (m=86.27).

- E24_10- ESI (ANOVA). ***On average, employees from centers that used a polygraph exam as part of their screening and rated it as "not very important or not important at all" were significantly more dissatisfied than employees from centers that did use it and rated it as "very or somewhat important."*** There were no statistically significant differences between groups 1 and 2, and groups 1 and 3.

Table 59: Mean Satisfaction Index of Employees who responded to E24_10 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Polygraph Exam (Please respond to each item, checking NA for items that are not included in your center's screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 181 | 15.98 | 3.67 |
| (2) Very or somewhat important | 297 | 15.25* | 3.56 |
| (3) Not very important or not important at all | 114 | 16.29* | 4.09 |

* Statistically significant at p<.05.

- E24_11- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use a

psychological test as part of their screening (m=84.70), employees from centers that used a psychological test as part of their screening and rated it as “very or somewhat important” (m=84.92), and employees from centers that used it and rated it as “not very important or not at all important” (m=85.67).

- E24_11- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees from centers that did not use a psychological test as part of their screening (m=15.78), employees from centers that used a psychological test as part of their screening and rated it as “very or somewhat important” (m=15.52), and employees from centers that used it and rated it as “not very important or not at all important” (m=16.66).

- E24_12- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use a simulation test as part of their screening (m=85.80), employees from centers that used a simulation test as part of their screening and rated it as “very or somewhat important” (m=83.76), and employees from centers that used it and rated it as “not very important or not at all important” (m=87.31).

- E24_12- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees from centers that did not use a simulation test as part of their screening (m=15.58), employees from centers that used a simulation test as part of their screening and rated it as “very or somewhat important” (m=15.72), and employees from centers that used it and rated it as “not very important or not at all important” (m=16.25).

- E24_13- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees from centers that did not use a voice test as part of their screening (m=83.91), employees from centers that used a voice test as part of their screening and rated it as “very or somewhat important” (m=85.61), and employees from centers that used it and rated it as “not very important or not at all important” (m=83.77).

- E24_13- ESI (ANOVA). ***On average, employees from centers that used a voice test as part of their screening and rated it as "not very important or not important at all" were significantly more dissatisfied than employees from centers that did use it and rated it as "very or somewhat important," and employees from centers that did not use a voice test as part of their screening.*** There were no statistically significant differences between groups 1 and 2.

Table 60: Mean Satisfaction Index of Employees who responded to E24_13 (N=600)

| Please rate the following statement based on the extent to which you feel the screening tests that are currently being used by your center are **important** in helping management identify good candidates: Voice Test/clarity of speech (Please respond to each item, checking NA for items that are not included in your center's screening process) | n | M | SD |
|---|---|---|---|
| (1) Not applicable | 185 | 15.79* | 3.58 |
| (2) Very or somewhat important | 364 | 15.50* | 3.75 |
| (3) Not very important or not important at all | 38 | 17.41* | 3.69 |

* Statistically significant at p<.05.

*Your Experience*

- E27_1- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees who agreed they "understood the demands of the job before they accepted the position" (m= 85.35), employees who disagreed with the statement (m=83.29), and employees who were neutral (m=82.73).

- E27_1- ESI (ANOVA). ***On average, employees that agreed with the statement "I understood the demands of the job before I accepted this position" were significantly less dissatisfied than employees who disagreed with the statement and employees that were neutral.*** There were no statistically significant differences between groups 2 and 3.

Table 61: Mean Satisfaction Index of Employees who responded to E27_1 (N=600)

| Please rate the following statement based on **your** experience. I understood the demands of the job before I accepted this position. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 469 | 15.38* | 3.62 |

| | | | |
|---|---|---|---|
| (2) Neutral | 57 | 17.01* | 3.55 |
| (3) Strongly disagree or disagree | 69 | 17.17* | 4.02 |

* Statistically significant at p<.05.

- E27_2- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees who agreed their center "had high standards for employee selection" (m= 85.81), employees who disagreed with the statement (m=83.05), and employees who were neutral (m=84.19).

- E27_2- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees that agreed with the statement "the center has high standards for employee selections" were significantly less dissatisfied than employees who disagreed with the statement and employees that were neutral. Likewise, employees that were neutral were significantly less dissatisfied, on average, than employees who disagreed with the statement.***

Table 62: Mean Satisfaction Index of Employees who responded to E27_2 (N=600)

| Please rate the following statement based on **your** experience. The center has high standards for employee selection. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 310 | 14.01* | 3.19 |
| (2) Neutral | 165 | 16.66* | 2.90 |
| (3) Strongly disagree or disagree | 113 | 19.11* | 3.41 |

* Statistically significant at p<.05.

- E27_3- Retention (ANOVA). ***On average, employees that disagreed with the statement "the application process was thorough and extensive" were from centers with significantly lower retention rates, than employees who agreed with the statement and employees that were neutral.*** There were no statistically significant differences between groups 1 and 2.

Table 63: Mean Center Retention Rates of Employees who responded to E27_3 (N=453)

| Please rate the following statement based on **your** experience. The application process was thorough and extensive. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree/agree | 275 | 85.14* | 13.25 |
| (2) Neutral | 95 | 87.20* | 10.72 |
| (3) Strongly disagree/disagree | 67 | 80.15* | 14.73 |

* Statistically significant at p<.05.

- E27_3- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees that agreed with the statement "the application process was thorough and extensive" were significantly less dissatisfied than employees who disagreed with the statement and employees that were neutral. Likewise, employees that were neutral were significantly less dissatisfied, on average, than employees who disagreed with the statement.***

Table 64: Mean Satisfaction Index of Employees who responded to E27_3 (N=600)

| Please rate the following statement based on **your** experience. The application process was thorough and extensive. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 368 | 14.63* | 3.36 |
| (2) Neutral | 124 | 16.46* | 3.06 |
| (3) Strongly disagree or disagree | 90 | 19.32* | 3.51 |

* Statistically significant at p<.05.

- E27_4- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed that "only candidates who fully met center requirements were hired" (m= 85.78), employees who disagreed with the statement (m=82.46), and employees who were neutral (m=85.36).

- E27_4- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees that agreed with the statement "only candidates who fully meet center requirements are hired" were significantly less dissatisfied than employees who disagreed with the statement and employees that were neutral. Likewise, employees that were neutral were significantly less dissatisfied, on average, than employees who disagreed with the statement.***

Table 65: Mean Satisfaction Index of Employees who responded to E27_4 (N=600)

| Please rate the following statement based on **your** experience. Only candidates who fully meet center requirements are hired. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 249 | 13.96* | 3.13 |
| (2) Neutral | 165 | 15.61* | 3.03 |
| (3) Strongly disagree or disagree | 168 | 18.50* | 3.49 |

* Statistically significant at p<.05.

- E28_1- Retention (t-test). There was no statistically significant difference in mean center retention rates among employees who rated the effectiveness of the job application process at their center as "very or mostly effective" (m=85.56) and employees that rated it as "not very effective or not at all effective" (m=81.62).

- E28_1- ESI (t-test). ***On average, employees who rated the effectiveness of the job application process at their center as "very or mostly effective" were significantly less dissatisfied than those who rated their center as "not very effective or not at all effective."***

Table 66: Mean Satisfaction Index of Employees who responded to E28_1 (N=600)

| Please rate the effectiveness of the following aspect of the employee application and training process that is currently being used by your communications center. Job application process | n | M | SD |
|---|---|---|---|
| Very or mostly effective | 444 | 14.90* | 3.39 |
| Not very effective or not at all effective | 123 | 18.68* | 3.38 |

* Statistically significant at p<.05.

- E28_2- Retention (t-test). There was no statistically significant difference in mean center retention rates among employees who rated the effectiveness of performance testing at their center as "very or mostly effective" (m=84.96) and employees that rated it as "not very effective or not at all effective" (m=84.41).

- E28_2- ESI (t-test). ***On average, employees who rated the effectiveness of performance testing at their center as "very or mostly effective" were significantly less dissatisfied than those who rated their center as "not very effective or not at all effective."***

Table 67: Mean Satisfaction Index of Employees who responded to E28_2 (N=600)

| Please rate the effectiveness of the following aspect of the employee application and training | n | M | SD |
|---|---|---|---|

| process that is currently being used by your communications center. Performance Testing | | | |
|---|---|---|---|
| Very or mostly effective | 319 | 14.78* | 3.52 |
| Not very effective or not at all effective | 154 | 17.40* | 3.55 |

* Statistically significant at p<.05.

- E28_3- Retention (t-test). There was no statistically significant difference in mean center retention rates among employees who rated the effectiveness of the recruiting process at their center as "very or mostly effective" (m=84.72) and employees that rated it as "not very effective or not at all effective" (m=84.33).

- E28_3- ESI (t-test). ***On average, employees who rated the effectiveness of the recruiting process at their center as "very or mostly effective" were significantly less dissatisfied than those who rated their center as "not very effective or not at all effective."***

Table 68: Mean Satisfaction Index of Employees who responded to E28_3 (N=600)

| Please rate the effectiveness of the following aspect of the employee application and training process that is currently being used by your communications center. Recruiting Process | n | M | SD |
|---|---|---|---|
| Very or mostly effective | 216 | 14.13* | 3.10 |
| Not very effective or not at all effective | 238 | 17.22* | 3.65 |

* Statistically significant at p<.05.

- E28_4- Retention (t-test). There was no statistically significant difference in mean center retention rates among employees who rated the effectiveness of the initial orientation process at their center as "very or mostly effective" (m=86.05) and employees that rated it as "not very effective or not at all effective" (m=83.41).

- E28_4- ESI (t-test). ***On average, employees who rated the effectiveness of the initial orientation process at their center as "very or mostly effective" were significantly less dissatisfied than those who rated their center as "not very effective or not at all effective."***

Table 69: Mean Satisfaction Index of Employees who responded to E28_4 (N=600)

| Please rate the effectiveness of the following aspect of the employee application and training process that is currently being used by your communications center. | n | M | SD |
|---|---|---|---|

| Initial Orientation Process | | | |
|---|---|---|---|
| Very or mostly effective | 389 | 14.51* | 3.19 |
| Not very effective or not at all effective | 145 | 18.53* | 3.35 |

* Statistically significant at p<.05.

- E28_5- Retention (t-test). There was no statistically significant difference in mean center retention rates among employees who rated the effectiveness of the initial classroom training at their center as "very or mostly effective" (m=85.02) and employees that rated it as "not very effective or not at all effective" (m=84.75).

- E28_5- ESI (t-test). ***On average, employees who rated the effectiveness of the initial classroom training at their center as "very or mostly effective" were significantly less dissatisfied than those who rated their center as "not very effective or not at all effective."***

Table 70: Mean Satisfaction Index of Employees who responded to E28_5 (N=600)

| Please rate the effectiveness of the following aspect of the employee application and training process that is currently being used by your communications center. Initial Classroom Training | n | M | SD |
|---|---|---|---|
| Very or mostly effective | 302 | 14.95* | 3.37 |
| Not very effective or not at all effective | 115 | 18.17* | 3.73 |

* Statistically significant at p<.05.

- E28_6- Retention (t-test). ***On average, employees who rated their center as "very or mostly effective" in the mentoring of new trainees were from centers with significantly higher retention rates than those who rated their center as "not very effective or not at all effective."***

Table 71: Mean Center Retention Rate of Employees who responded to E28_6 (N=453)

| Please rate the effectiveness of the following aspect of the employee application and training process that is currently being used by your communications center. Mentoring of new trainees | n | M | SD |
|---|---|---|---|
| Very or mostly effective | 312 | 85.70* | 11.69 |
| Not very effective or not at all effective | 90 | 81.70* | 16.08 |

* Statistically significant at p<.05.

- E28_6- ESI (t-test). ***On average, employees who rated their center as "very or mostly effective" in the mentoring of new trainees were significantly less dissatisfied than those who rated their center as "not very effective or not at all effective."***

Table 72: Mean Satisfaction Index of Employees who responded to E28_6 (N=600)

| Please rate the effectiveness of the following aspect of the employee application and training process that is currently being used by your communications center. Mentoring of new Trainees | n | M | SD |
|---|---|---|---|
| Very or mostly effective | 424 | 14.92* | 3.44 |
| Not very effective or not at all effective | 111 | 18.46* | 3.13 |

* Statistically significant at p<.05.

*Preparation and Training*

- E30- Retention (correlation). Employees overall assessment of preparation and training (subscale composite) was significantly related to center retention rate (r= -.120). ***As employee dissatisfaction with preparation and training decreased, center retention rates increased.*** Note: The preparation and training subscale ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.37 and a standard deviation of 0.71.

- E30_1- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed they "had the basic skills after initial classroom training" (m= 85.74), employees who disagreed with the statement (m=81.92), and employees who were neutral (m=85.18).

- E30_1- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who agreed they "had the basic skills after initial classroom training" were significantly less dissatisfied than employees who were neutral or who disagreed with the statement. Likewise, employees who were neutral were significantly less dissatisfied, on average, than those who disagreed with the statement.***

Table 73: Mean Satisfaction Index of Employees who responded to E30_1 (N=600)

| I felt like I had the basic skills after initial classroom training. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 265 | 14.90* | 3.41 |
| (2) Neutral | 77 | 16.17* | 3.30 |
| (3) Strongly disagree or disagree | 97 | 18.22* | 4.04 |

* Statistically significant at p<.05.

- E30_2- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed that "on the job training (mentoring, shadowing) was essential to their success" (m= 85.28), employees who disagreed with the statement (m=79.59), and employees who were neutral (m=84.78).

- E30_2- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who agreed that "on the job training (mentoring, shadowing) was essential to their success" were significantly less dissatisfied than employees who were neutral or who disagreed with the statement. Likewise, employees who were neutral were significantly less dissatisfied, on average, than those who disagreed with the statement.***

Table 74: Mean Satisfaction Index of Employees who responded to E30_2 (N=600)

| On the job training (mentoring, shadowing) was essential to my success. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 498 | 15.19* | 3.49 |
| (2) Neutral | 58 | 17.81* | 3.21 |
| (3) Strongly disagree or disagree | 33 | 19.78* | 3.42 |

* Statistically significant at p<.05.

- E30_3- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed "there was an appropriate length of time form hiring to working independently" (m= 85.31), employees who disagreed with the statement (m=83.04), and employees who were neutral (m=84.21).

- E30_3- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who agreed "there was an appropriate length of time from hiring to working independently" were significantly less dissatisfied than employees who were neutral or who disagreed with the statement. Likewise, employees who were neutral were significantly less dissatisfied, on average, than those who disagreed with the statement.***

Table 75: Mean Satisfaction Index of Employees who responded to E30_3 (N=600)

| There was an appropriate length of time from hiring to working independently. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 427 | 15.01* | 3.50 |
| (2) Neutral | 67 | 16.61* | 3.08 |
| (3) Strongly disagree or disagree | 93 | 18.47* | 3.71 |

* Statistically significant at p<.05.

- E30_4- Retention (ANOVA homogeneity of variance assumption was violated, ran a second ANOVA with a more stringent alpha level of .01). There were no statistically significant differences among employees who agreed "the training process prepared me to be effective in the job" (m= 86.20), employees who disagreed with the statement (m=82.10), and employees who were neutral (m=81.32).

- E30_4- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who agreed "the training process prepared them to be effective in the job" were significantly less dissatisfied than employees who were neutral or who disagreed with the statement. Likewise, employees who were neutral were significantly less dissatisfied, on average, than employees who disagreed with the statement.***

Table 76: Mean Satisfaction Index of Employees who responded to E30_4 (N=600)

| The training process prepared me to be effective in the job. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 420 | 14.78* | 3.30 |
| (2) Neutral | 97 | 17.10* | 3.21 |
| (3) Strongly disagree or disagree | 72 | 19.34* | 3.67 |

* Statistically significant at p<.05.

- E30_5- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed they were "expected to continue

learning and training" (m= 85.13), employees who disagreed with the statement (m=82.66), and employees who were neutral (m=82.95).

- E30_5- ESI (ANOVA). ***On average, employees who agreed they were "expected to continue learning and training" were significantly less dissatisfied than employees who were neutral or who disagreed with the statement.*** There were no statistically significant differences between groups 2 and 3.

Table 77: Mean Satisfaction Index of Employees who responded to E30_5 (N=600)

| I am expected to continue learning and training. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 521 | 15.39* | 3.53 |
| (2) Neutral | 43 | 18.03* | 3.68 |
| (3) Strongly disagree or disagree | 24 | 19.53* | 3.31 |

* Statistically significant at p<.05.

- E30_6- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed that "ongoing training has been appropriate" (m=85.65), employees who disagreed with the statement (m=82.96), and employees who were neutral (m=85.10).

- E30_6- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who agreed that "ongoing training has been appropriate" were significantly less dissatisfied than employees who were neutral or who disagreed with the statement. Likewise, employees who were neutral were significantly less dissatisfied, on average, than those who disagreed with the statement.***

Table 78: Mean Satisfaction Index of Employees who responded to E30_6 (N=600)

| The ongoing training that is provided has been appropriate. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 306 | 14.10* | 3.10 |
| (2) Neutral | 136 | 16.40* | 3.21 |
| (3) Strongly disagree or disagree | 132 | 18.79* | 3.32 |

* Statistically significant at p<.05.

- E30_7- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed "there were plenty of ongoing training opportunities" (m=86.17), employees who disagreed with the statement (m=83.32), and employees who were neutral (m=84.98).

- E30_7- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who agreed "there were plenty of ongoing training opportunities" were significantly less dissatisfied than employees who were neutral or who disagreed with the statement. Likewise, employees who were neutral were significantly less dissatisfied, on average, than those who disagreed with the statement.***

Table 79: Mean Satisfaction Index of Employees who responded to E30_7 (N=600)

| There are plenty of ongoing training opportunities. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 208 | 13.46* | 3.05 |
| (2) Neutral | 156 | 15.64* | 2.88 |
| (3) Strongly disagree or disagree | 221 | 17.99* | 3.43 |

* Statistically significant at p<.05.

- E30_8- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who agreed "most of their ongoing training had consisted of conferences or sessions offered by professional associations" (m=85.43), employees who disagreed with the statement (m=84.59), and employees who were neutral (m=83.69).

- E30_8- ESI (ANOVA). ***On average, employees who agreed "most of their ongoing training had consisted of conferences or sessions offered by professional associations" and those who were neutral were significantly less dissatisfied than employees who disagreed with the statement.*** There were no statistically significant differences between groups 1 and 2.

Table 80: Mean Satisfaction Index of Employees who responded to E30_8 (N=600)

| Most of my ongoing training has consisted of conferences or sessions offered by professional associations. | n | M | SD |
|---|---|---|---|
| (1) Strongly agree or agree | 294 | 14.92* | 3.35 |
| (2) Neutral | 121 | 15.59* | 3.52 |
| (3) Strongly disagree or disagree | 119 | 17.71* | 4.00 |

* Statistically significant at p<.05.

*Support*

- E31- Retention (correlation). Employee's overall assessment of the support they receive from their center (subscale composite) was not significantly related to center retention rate (r= -.090). Note: The support subscale ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.73 and a standard deviation of 0.67.

- E32- Retention (ANOVA). ***On average, employees that indicated all employees at their center were union members were from centers with significantly higher retention rates than employees that indicated no employees at their center were union members.*** There were no statistically significant differences between groups 1 and 2 or between groups 2 and 3.

Table 81: Mean Center Retention Rates of Employees who responded to E32 (N=453)

| Are any of the employees in your center members of a union? | n | M | SD |
|---|---|---|---|
| (1) Yes, all are union members | 94 | 89.09* | 11.96 |
| (2) Yes, some are union members | 52 | 85.71 | 14.97 |
| (3) No | 238 | 83.05* | 13.67 |

* Statistically significant at p<.05.

- E32- ESI (ANOVA). ***On average, employees that indicated no employees at their center were union members were significantly less dissatisfied than employees who indicated all or some of the employees at their center were union members.*** There were no statistically significant differences between groups 1 and 2.

Table 82: Mean Satisfaction Index of Employees who responded to E32 (N=600)

| Are any of the employees in your center members of a union? | n | M | SD |
|---|---|---|---|
| (1) Yes, all are union members | 125 | 16.66* | 3.65 |
| (2) Yes, some are union members | 70 | 16.82* | 3.84 |
| (3) No | 317 | 15.44* | 3.66 |

* Statistically significant at p<.05.

*Satisfaction*

- E33- Retention (correlation). Employees' satisfaction with scheduling policies and practices (subscale composite) was significantly related to center retention rate (r= -.098). ***As employee dissatisfaction with scheduling policies and practices decreased, center retention rates increased.*** Note: The scheduling policies and practices subscale ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.64 and a standard deviation of 0.81.

- E33_1, 2, 5- Retention (correlation). Employees' satisfaction with scheduling (three-item composite) was not significantly related to center retention rate (r= -.058). Note: A "scheduling" composite score was calculated for each employee based on their responses to the three items (e22_1, e33_2, and e33_5). This score ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.48 and a standard deviation of 1.10.

- E33_1, 2, 5- ESI (correlation). Employees' satisfaction with scheduling (three-item composite) was significantly related to employee satisfaction (r= .592). ***As employee dissatisfaction with scheduling decreases, overall employee dissatisfaction (ESI) also decreases.*** Note: A "scheduling" composite score was calculated for each employee based on their responses to the three items (e22_1, e33_2, and e33_5). This score ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.48 and a standard deviation of 1.10. The three items that make up the scheduling composite are also included in the ESI, thus the strong correlation.

- E33_2- Retention (ANOVA). ***On average, employees who were "very or somewhat satisfied" with the shift selection process were from centers with significantly***

***higher retention rates than employees who were "very or somewhat dissatisfied."*** There were no differences between groups 1 and 2; or groups 2 and 3.

Table 83: Mean Center Retention Rates of Employees who responded to E33_2 (N=453)

| How would you rate your general satisfaction with the shift selection process? | n | M | SD |
|---|---|---|---|
| (1) Very or somewhat satisfied | 270 | 85.72* | 11.97 |
| (2) Neutral | 85 | 84.57 | 14.47 |
| (3) Very or somewhat dissatisfied | 75 | 81.55* | 14.32 |

* Statistically significant at p<.05.

- E33_2- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who were "very or somewhat satisfied" with the shift selection process were significantly less dissatisfied (ESI) than employees who were "neutral" or "very or somewhat dissatisfied." Likewise, employees who were "neutral" were significantly less dissatisfied (ESI), on average, than employees who were "very or somewhat dissatisfied" with the shift selection process.*** Note: This item is included in the ESI.

Table 84: Mean Satisfaction Index of Employees who responded to E33_2 (N=600)

| How would you rate your general satisfaction with the shift selection process? | n | M | SD |
|---|---|---|---|
| (1) Very or somewhat satisfied | 360 | 14.55* | 3.43 |
| (2) Neutral | 109 | 16.36* | 3.10 |
| (3) Very or somewhat dissatisfied | 104 | 19.08* | 3.36 |

* Statistically significant at p<.05.

*Compensation and Benefits*

- E37- Retention (correlation). Employees' hourly base pay rate was significantly related to center retention rate (r= .115). ***As employee hourly base pay rates increased, center retention rates also increased.*** Note: Employees' hourly base pay rate ranged from $7.00 to $28.85, with a mean of $15.25 and a standard deviation of 4.53.

- E37- ESI (correlation). Employees' hourly base pay rate was not significantly related to employee satisfaction (r= -.060). Note: Employees' hourly base pay rate ranged from $7.00 to $28.85, with a mean of $15.25 and a standard deviation of 4.53.

- E39- Retention (correlation). Employees' satisfaction with compensation and benefits (subscale composite) was not significantly related to center retention rate (r= -.073).

Note: The compensation and benefits subscale ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.64 and a standard deviation of 0.85.

- E39_1- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean center retention rates among employees that indicated they were “very or somewhat satisfied” with their salary/earnings (m=86.47), those that indicated they were “neutral” (m=84.31), and those that indicated they were “very or somewhat dissatisfied” (m=82.64).

- E39_2- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees that indicated they were “very or somewhat satisfied” with overtime (m=84.86), those that indicated they were “neutral” (m=85.59), and those that indicated they were “very or somewhat dissatisfied” (m=83.56).

- E39_3- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees that indicated they were “very or somewhat satisfied” with their health benefits (m=85.94), those that indicated they were “neutral” (m=83.48), and those that indicated they were “very or somewhat dissatisfied” (m=84.57).

- E39_4- Retention (ANOVA homogeneity of variance assumption was violated- ran a separate ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean center retention rates among employees that indicated they were “very or somewhat satisfied” with their vacation time (m=85.83), those that indicated they were “neutral” (m=82.41), and those that indicated they were “very or somewhat dissatisfied” (m=83.87).

- E39_5- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees that indicated they were “very or somewhat satisfied” with family friendly policies (m=86.57), those that indicated they were “neutral” (m=84.41), and those that indicated they were “very or somewhat dissatisfied” (m=84.15).

- E39_6- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees that indicated they were “very or somewhat satisfied” with their retirement benefits (m=85.67), those that indicated they were “neutral” (m=84.71), and those that indicated they were “very or somewhat dissatisfied” (m=84.54).

- E39_7- Retention (ANOVA homogeneity of variance assumption was violated- ran a separate ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean center retention rates among employees that indicated they were “very or somewhat satisfied” with opportunities for advancement (m=85.92), those that indicated they were “neutral” (m=84.24), and those that indicated they were “very or somewhat dissatisfied” (m=84.58).

- E40- Retention (ANOVA homogeneity of variance assumption was violated, ran a second ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean center retention rates among employees that indicated their salary schedule was “low” compared to other jobs in the community (m=83.48), “about average” compared to other jobs in the community (m=85.67), “well paid if overtime is included” (m=81.91), or “well paid even without overtime” (m=87.00).

- E40- ESI (ANOVA). ***When asked to compare their salary schedule to other jobs in the community, employees that indicated theirs “paid well even without overtime” were significantly less dissatisfied, on average, than employees who indicated theirs “paid well if overtime was included”, or was “low.” Additionally, employees that indicated theirs “paid well even without overtime” were significantly less dissatisfied than those who indicated theirs “paid well if overtime was included.”*** There were no statistically significant differences between groups 1 and 3; 2 and 3; or between groups 2 and 4.

Table 85: Mean Satisfaction Index of Employees who responded to E40 (N=600)

| How does the salary schedule in your communications center compare to pay for other jobs in the community? | n | M | SD |
|---|---|---|---|
| (1) Low for this community | 127 | 17.08* | 3.32 |
| (2) About average for this community | 262 | 15.44* | 3.76 |

| | | | |
|---|---|---|---|
| (3) Well paid if overtime is included | 86 | 16.21* | 4.05 |
| (4) Well paid even without overtime | 111 | 14.60* | 3.47 |

* Statistically significant at p<.05.

- E41- Retention (ANOVA). ***When asked to compare their salary schedule to other public safety personnel, employees that indicated "don't know" were from centers with significantly higher retention rates, on average, than employees who indicated theirs was "lower," or "higher." Additionally, employees that indicated theirs was "comparable" were from centers with significantly higher retention rates than those who indicated theirs was "lower."*** There were no statistically significant differences between groups 1 and 3; 1 and 2, or between groups 2 and 4.

Table 86: Mean Center Retention Rates of Employees who responded to E41 (N=453)

| How does the salary schedule in your call center compare to the salary schedules for other public safety personnel? | n | M | SD |
|---|---|---|---|
| (1) Higher than other public safety personnel | 34 | 83.08* | 9.76 |
| (2) Comparable to other public safety personnel | 125 | 86.34* | 10.42 |
| (3) Lower than other public safety personnel | 205 | 83.21* | 15.67 |
| (4) Don't know | 79 | 87.67* | 9.58 |

* Statistically significant at p<.05.

- E41- ESI (ANOVA). ***When asked to compare their salary schedule to other public safety personnel, employees that indicated theirs was "lower" were significantly more dissatisfied, on average, than employees who indicated theirs was "higher," "comparable," or those who indicated "don't know."*** There were no statistically significant differences between groups 1, 2 and 4.

Table 87: Mean Satisfaction Index of Employees who responded to E41 (N=600)

| How does the salary schedule in your call center compare to the salary schedules for other public safety personnel? | n | M | SD |
|---|---|---|---|
| (1) Higher than other public safety personnel | 49 | 14.44* | 3.67 |
| (2) Comparable to other public safety personnel | 158 | 14.55* | 3.34 |
| (3) Lower than other public safety personnel | 287 | 16.86* | 3.62 |
| (4) Don't know | 96 | 14.97* | 3.76 |

* Statistically significant at p<.05.

*Recognition*

- E42- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees who reported civilians seemed to get better treatment at their center (m=83.11), those who reported sworn personnel seemed to get better treatment at their center (m=83.79), those who reported no difference in treatment at their center (m=85.45), and those who responded "don't know" (m=85.09).

- E42- ESI (ANOVA). ***On average, employees that indicated "civilians got better treatment" at their center were significantly more dissatisfied than those who indicated "no difference in treatment" or "don't know." Additionally, employees that indicated "sworn personnel got better treatment" at their center were significantly more dissatisfied, on average, than those who indicated "no difference in treatment" or "don't know."*** There were no statistically significant differences between groups 1 and 2, or groups 3 and 4.

Table 88: Mean Satisfaction Index of Employees who responded to E42 (N=600)

| Is different treatment of civilian and sworn personnel a source of tension in the center? | n | M | SD |
|---|---|---|---|
| (1) Yes, civilians seem to get better treatment | 3 | 21.12* | 2.27 |
| (2) Yes, sworn personnel seem to get better treatment | 187 | 17.27* | 3.34 |
| (3) No difference in treatment | 208 | 14.38* | 3.37 |
| (4) Don't know | 90 | 15.01* | 3.61 |

* Statistically significant at p<.05.

- E43_1- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by co-workers (m=84.65) and those who did not (m=83.94).

- E43_2- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by their immediate supervisor (m=85.54) and those who did not (m=82.11).

- E43_3- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by management (m=85.47) and those who did not (m=83.21).

- E43_4- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by sworn officers or officials (m=84.81) and those who did not (m=84.44).

- E43_5- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by the centers they served (m=85.02) and those who did not (m=83.81).

- E43_6- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by the public and/or elected officials (m=83.75) and those who did not (m=83.69).

- E43_7- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by the media (m=85.41) and those who did not (m=84.65).

- E43_8- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by their partner or family members (m=84.76) and those who did not (m=81.52).

- E43_9- Retention (t-test). There was no statistically significant difference in mean center retention rates for employees who thought their work was appreciated by the public (m=83.70) and those who did not (m=86.11).

- E43_1-9- ESI (ran nine separate t-tests, all were statistically significant). ***On average, employee's who thought their work was appreciated by their co-workers,***

***immediate supervisor, management, sworn officer or/officials, centers they served, public and/or elected officials, the media, their partner or family members, and the public were significantly less dissatisfied than those who didn't think their work was appreciated.***

Table 89: Mean Satisfaction Index of Employees who responded to E43 1-9 (N=600)

| Do you think your work is appreciated by: | n | M | SD |
|---|---|---|---|
| (1) Co-workers | | | |
| Yes | 402 | 15.27* | 3.70 |
| No | 83 | 17.57* | 3.63 |
| (2) Immediate Supervisor | | | |
| Yes | 442 | 14.80* | 3.31 |
| No | 79 | 19.71* | 3.33 |
| (3) Management | | | |
| Yes | 299 | 13.78* | 2.89 |
| No | 148 | 19.07* | 3.13 |
| (4) Sworn officers/officials | | | |
| Yes | 336 | 15.17* | 3.71 |
| No | 159 | 17.37* | 3.62 |
| (5) Centers you serve | | | |
| Yes | 321 | 14.83* | 3.59 |
| No | 109 | 18.16* | 3.38 |
| (6) Public and/or elected officials | | | |
| Yes | 158 | 13.75* | 3.43 |
| No | 193 | 17.60* | 3.36 |
| (7) The media | | | |
| Yes | 107 | 13.23* | 3.00 |
| No | 216 | 17.06* | 3.54 |
| (8) Partner/family members | | | |
| Yes | 496 | 15.54* | 3.71 |
| No | 35 | 17.55* | 3.76 |
| (9) The public | | | |
| Yes | 246 | 14.47* | 3.59 |
| No | 186 | 17.00* | 3.43 |

* Statistically significant at p<.05.

*Retirement Benefits*

- E45- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among employees that indicated their retirement benefits were "higher" than those of other public safety personnel (m=89.64), those who indicated

they were “comparable” (m=85.09), those who indicated they were “lower” (m=84.19), and those who indicated “don’t know” (m=84.83).

- E45- ESI (ANOVA). ***When asked to compare their retirement benefits to other public safety personnel, employees that indicated theirs was “lower” were significantly more dissatisfied, on average, than employees who indicated theirs was “comparable,” and those who indicated “don’t know.”*** There were no statistically significant differences between groups 1, 2 and 4. Note: Significant differences were not detected between group 3 and 1 most likely due to the small sample size of group 1, and thus decreased power or ability to detect a statistical difference.

Table 90: Mean Satisfaction Index of Employees who responded to E45 (N=600)

| How do the retirement benefits for communications center employees compare to other public safety personnel? | n | M | SD |
|---|---|---|---|
| (1) Higher | 10 | 14.61 | 3.48 |
| (2) Comparable | 187 | 15.01* | 3.66 |
| (3) Lower | 139 | 17.18* | 3.82 |
| (4) Don’t know | 257 | 15.51* | 3.52 |

* Statistically significant at p<.05.

- E46- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees who were “probably” going to stay in their current job for at least five more years (m=85.23), those who indicated “probably not” (m=85.47), and those who were “not sure” (m=83.38).

- E46- ESI (ANOVA). ***On average, employees who indicated they were “probably” going to continue in their current job for at least five more years were significantly less dissatisfied than employees who indicated “probably not” or “not sure.”*** There was no statistically significant difference between groups 2 and 3.

Table 91: Mean Satisfaction Index of Employees who responded to E46 (N=600)

| Do you expect to continue in your current job at least for five more years? | n | M | SD |
|---|---|---|---|
| (1) Probably | 370 | 14.91* | 3.48 |
| (2) Probably Not | 105 | 17.21* | 3.64 |
| (3) Not sure | 116 | 17.10* | 3.82 |

* Statistically significant at p<.05.

- E47- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for employees who were "probably" planning to spend the rest of their career at their current organization (m=85.79), those who indicated "probably not" (m=83.52), and those who were "not sure" (m=84.53).

- E47- ESI (ANOVA). The three groups were significantly different from each other. ***On average, employees who indicated they were "probably" going to spend the rest of their career at their current organization were significantly less dissatisfied than employees who indicated they were "not sure." Additionally, employees who indicated they were "not sure" were significantly less dissatisfied than those who indicated "probably not."***

Table 92: Mean Satisfaction Index of Employees Who Responded to E47 (N=600)

| Do you plan to spend the rest of your career with this organization? | n | M | SD |
|---|---|---|---|
| (1) Probably | 295 | 14.65* | 3.45 |
| (2) Probably Not | 136 | 17.40* | 3.61 |
| (3) Not sure | 159 | 16.37* | 3.70 |

* Statistically significant at p<.05.

*Respondent Information*

- E49- ESI (t-test). ***On average, males were significantly less dissatisfied than females.***

Table 93: Mean Satisfaction Index of Male and Female Employees (N=600)

| What is your gender? | n | M | SD |
|---|---|---|---|
| Male | 164 | 15.13* | 3.54 |
| Female | 418 | 15.94* | 3.82 |

* Statistically significant at p<.05.

- E50- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees who were under 25 years old (m=14.89), 26-35 years old (m=15.72), 36-45 years old (m=15.90), 46-55 years old (m=15.85), or 56 years or older (m=16.55).

- E52- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean center retention rates for employees who had some high school education or were high school graduates (m=82.44), those who had attended trade school or had a certification (m=88.24), those who had received military training (m=89.45), those who had some college but no degree (m=84.07), those who had an associates degree (m=87.42), those who had a bachelors degree (m=84.19), or those who had taken graduate courses or had a graduate degree (m=95.34). Note: Significant differences were probably not detected due to small sample sizes in certain groups, and thus a decreased level of power in the analysis.

- E52- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees who had some high school education or were high school graduates (m=15.28), those who had attended trade school or had a certification (m=16.34), those who had received military training (m=16.32), those who had some college but no degree (m=15.91), those who had an associates degree (m=15.55), those who had a bachelors degree (m=15.89), or those who had taken graduate courses or had a graduate degree (m=14.27). Note: Significant differences were probably not detected due to small sample sizes in certain groups, and thus a decreased level of power in the analysis.

## Manager Survey Results: Retention and Satisfaction

This section presents the findings from analyses of items in the manager survey and their relationship with retention and satisfaction. The format for the following section is like that of the employee survey, and is as follows: items are listed based on the order they appeared in the employee survey and under the topic header from the survey; the statistical test used in the analysis is in parentheses; means (m) are provided for all groups compared; statements explaining statistically significant results are in bold font; and tables or figures are presented only for variables that were found to be statistically significant.

Before proceeding, a special note regarding center retention rate and employee satisfaction should be considered before interpreting manager survey results. Center retention rates were calculated based on data provided by managers about their center. All 153 managers in the manager database had a center retention rate, since all managers provided the necessary information.

The employee satisfaction index (ESI), on the other hand, is an employee variable derived from employee data. So, in order to analyze manager survey items and employee satisfaction, it was necessary to match the employee database and the manager database based on center ID. Managers that were a match were assigned the ESI of the employees from their center; this process resulted in ESI values for 114 of the 153 managers. In the cases where there were multiple employees from one center, the manager from that center was assigned an ESI average (i.e., the average satisfaction index for 'X' number of employees in that center).

In the following section, any tables that present the results of analyses between manager survey items and center retention rates will have "N=153" in the title. Likewise, tables that present findings related to employee satisfaction have "N=114" in the title.

*General Information*

- M4- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers from centers that were a division within another center (m=82.90) or an independent center (m=84.26).

- M4- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers from centers that were a division within another center (m=15.65) or an independent center (m=15.98).

*Administration*

- M5- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who described themselves as "civilian" (m=83.62) or "sworn personnel" (m=83.96).

- M5- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who described themselves as "civilian" (m=15.79) or "sworn personnel" (m=15.62).

- M6- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who described their immediate supervisor as "civilian" (m=83.33) or "sworn personnel" (m=82.70).

- M6- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who described their immediate supervisor as "civilian" (m=15.22) or "sworn personnel" (m=15.91).

- M7- Retention (ANOVA). There were no significant differences in mean center retention rates for managers who got their current position through a competitive hiring process (m=82.80), were promoted from within (m=83.54), were appointed to the position (m=89.71), or were assigned to their position by the center (m=74.92). Note: Two response options from the survey were not included in the analysis due to small sample size. These were "Volunteered/applied for the position" (n=6) and "Rotation in to the assignment" (n=3).

- M7- ESI (t-test). There were no significant differences in mean ESI for employees of managers who got their current position through a competitive hiring process

(m=15.94) or were promoted from within (m=15.75). Note: Four response options from the survey were not included in the analysis due to small sample size. These were "Volunteered/applied for the position" (n=6), "Appointed to the position" (n=7), "Assigned by the center" (n=8), and "Rotation in to the assignment" (n=3).

*Jurisdiction and Services*

- M10- Retention (t-test). There was no statistically significant difference in mean center retention rate for primary-service centers (m=83.69) or multi-service centers (m=83.38). Note: Managers were provided with a listing of 12 types of services that citizens could access through their communications centers and were asked to "check all that apply." Based on this information, centers were categorized as providing "primary services" if they only provided either police/law enforcement, fire, emergency medical, and/or administrative services. Managers that indicated their centers provided any of the previous four services plus any one of the other eight services (i.e. public works, animal control, emergency weather notification, hazardous materials, 311 or other non-emergency calls, transportation/transit system, records, or after hours service for other public centers), were identified as "multi-service" centers. Of the 153 centers 14% were primary service and 86% were multi-service.

- M10- ESI (t-test). There was no statistically significant difference in mean ESI for employees from primary-service centers (m=15.97) or multi-service centers (m=15.70). Note: Managers were provided with a listing of 12 types of services that citizens could access through their communications centers and were asked to "check all that apply." Based on this information, centers were categorized as providing "primary services" if they only provided either police/law enforcement, fire, emergency medical, and/or administrative services. Managers that indicated their centers provided any of the previous four services plus any one of the other eight services (i.e. public works, animal control, emergency weather notification, hazardous materials, 311 or other non-emergency calls, transportation/transit system, records, or after hours service for other public centers), were identified as "multi-service" centers. Of the 153 centers 14% were primary service and 86% were multi-service.

- M11- Retention (correlation). Center's complexity factor (i.e. the total number of centers or jurisdictions they served) was not significantly related to center retention rate (r= .008). Note: Managers were asked to indicate the number of centers or jurisdictions they served in four separate categories: police/law enforcement, combined fire and Emergency Medical Services (EMS), fire only, or EMS only. These were summed to create a "center complexity factor." The center complexity factor ranged from one to 131, with a mean of 12.87 and a standard deviation of 16.15.

- M11- ESI (correlation). Center's complexity factor (i.e. the total number of centers or jurisdictions they served) was not significantly related to employee satisfaction (r= -.108). Note: Managers were asked to indicate the number of centers or jurisdictions they served in four separate categories: police/law enforcement, combined fire and Emergency Medical Services (EMS), fire only, or EMS only. These were summed to create a "center complexity factor." The center complexity factor ranged from one to 131, with a mean of 12.87 and a standard deviation of 16.15.

- M12_1- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated staffing levels at their center varied substantially by shift and/or time of day (m=83.22) and those who indicated they did not (m=83.77).

- M12_2- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated staffing levels at their center varied substantially by day of the week (m=81.29) and those who indicated they did not (m=84.49).

- M12_3- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated staffing levels at their center varied substantially by season or time of year (m=80.97) and those who indicated they did not (m=84.09).

*Communications Center Statistics*

- M13_5 and M13_8- Retention (ANOVA). There was no statistically significant difference in mean center retention rate for managers who provided both total incoming call volume and dispatched calls (m=81.57) and those who provided neither (m=83.12).

- M13_5 and M13_8- ESI (ANOVA). There was no statistically significant difference in mean ESI for employees of managers who provided both total incoming call volume and dispatched calls (m=15.70) and those who provided neither (m=16.01).

- M13_5- Retention (correlation). Total incoming call volume was not significantly related to center retention rate (r= .064). Note: Total incoming call volume ranged from 1,800 to 2,204,704, with a mean of 153,949 and a standard deviation of 267,929.

- M13_5- ESI (correlation). Total incoming call volume was not significantly related to employee satisfaction (r= .032). Note: Total incoming call volume ranged from 1,800 to 2,204,704, with a mean of 153,949 and a standard deviation of 267,929.

- M14b- Retention (t-test). There was no statistically significant difference in mean center retention rates for centers that used automated call reporting software to track incoming and outgoing calls (m=83.81) and those who did not (m=82.48).

- M14b- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used automated call reporting software to track incoming and outgoing calls (m=15.98) and those who did not (m=15.56).

- M14c- Retention (t-test). There was no statistically significant difference in mean center retention rates for managers who indicated their center used a Computer Aided Dispatch (CAD) system (m=83.98) and those who indicated they did not (m=80.23).

- M14c- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used a Computer Aided Dispatch (CAD) system (m=15.81) and those who did not (m=15.40).

*Trends*

- M15_1- Retention (t-test). There were no statistically significant differences in mean center retention rates for managers who perceived the trend in total call volume had "increased" since January 2000 (m=82.50) or those who perceived the trend had "stayed about the same" (m=87.14). Note: The third response option provided in the survey, "Decreased" was not included in the analysis because no one selected it.

- M15_1- ESI (t-test). There were no statistically significant differences in mean ESI for employees of managers who perceived the trend in total call volume had "increased" since January 2000 (m=15.67) or those who perceived the trend had "stayed about the same" (m=16.43). Note: The third response option provided in the survey, "Decreased" was not included in the analysis because no managers selected it.

- M15_4- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who perceived the trend in the number of authorized staff had "increased" since January of 2000 (m=82.89), those who perceived the trend had "stayed about the same" (m=83.74), and those who indicated the trend had "decreased" (m=79.53).

- M15_4- ESI (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean ESI for employees of managers who perceived the trend in the number of authorized staff had "increased" since January of 2000 (m=15.98), those who perceived the trend had "stayed about the same" (m=15.55), and those who indicated the trend had "decreased" (m=17.55).

- M15_6- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). ***On average, managers that perceived the trend in the retention of qualified staff to have "increased" or to have "stayed about the same" since January of 2000 were from centers with significantly higher retention rates than managers who perceived the trend to have "decreased."*** There was no difference between groups 1 and 2.

Table 94: Mean Center Retention Rates of Managers who responded to M15_6 (N=153)

| Which of the following best describes the trends in your communications center's call volume and staffing situation since January of 2000? Retention of Qualified Staff | n | M | SD |
|---|---|---|---|
| (1) Increased | 21 | 86.96** | 11.58 |
| (2) About the same | 95 | 86.23** | 15.20 |
| (3) Decreased | 31 | 70.37** | 20.54 |

** Statistically significant at p<.01.

- M15_6- ESI (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean ESI for employees of managers who perceived the trend in the retention of qualified staff had "increased" since January of 2000 (m=14.69), those who perceived the trend had "stayed about the same" (m=15.78), and those who indicated the trend had "decreased" (m=16.03).

*Staff Assignments and Tasks*

- M17- Retention (t-test). There was no statistically significant difference in mean center retention rates for managers who indicated all of their call takers/dispatchers' time was devoted to taking calls and/or dispatch (m=82.49) and those who indicated the majority of their call takers/dispatchers' time was devoted to taking calls and/or dispatch (m=89.41).

- M17- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated all of their call takers/dispatchers' time was devoted to taking calls and/or dispatch (m=15.69) and those who indicated the majority of their call takers/dispatchers' time was devoted to taking calls and/or dispatch (m=15.80).

*Adequacy of Staffing*

- M18- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who indicated they had been able to meet the demand with their current authorized staffing level (m=83.93), those who indicated

they had not (m=82.82), or those who indicated “don’t know” because they had never been fully staffed (m=78.14).

- M18- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees of managers who indicated they had been able to meet the demand with their current authorized staffing level (m=15.62), those who indicated they had not (m=16.71), or those who indicated “don’t know” because they had never been fully staffed (m=14.59).

*Authorized vs. Actual Staffing*

- M22- Retention (correlation). Center’s staffing ratio (i.e. the number of people hired to cover one position) was not significantly related to center retention rate (r= .108). Note: Staffing ratios ranged from one to eight, with a mean of 3.73 and a standard deviation of 1.88.

- M22- ESI (correlation). Center’s staffing ratio (i.e. the number of people hired to cover one position) was not significantly related to employee satisfaction (r= .122). Note: Staffing ratios ranged from one to eight, with a mean of 3.73 and a standard deviation of 1.88.

- M24_4- Retention (correlation). Center size (i.e. the total number of current employees) was not significantly related to center retention rate (r=.139). Note: Center size ranged from four to 140, with a mean of 17.58 and a standard deviation of 20.13.

- M24_4- ESI (correlation). Center size (i.e. the total number of current employees) was not significantly related to employee satisfaction (r= -.027). Note: Center size ranged from four to 140, with a mean of 17.58 and a standard deviation of 20.13.

- M25_1- Retention (t-test). ***On average, managers who indicated their center was fully staffed were from centers with significantly higher retention rates than those who did not.***

Table 95: Mean Center Retention Rates of Managers who responded to M25_1 (N=153)

| The center is fully staffed at this time (all authorized positions are filled). | n | M | SD |
|---|---|---|---|
| Yes | 73 | 86.86* | 15.66 |
| *No Response* | 80 | 79.56* | 18.82 |

* Statistically significant at p<.05.

- M25_1- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that were fully staffed (m=15.51) or those who were not (m=16.04).

- M25_2- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers from centers that were not fully staffed but expected to be fully staffed soon (m=80.80) and those who were not (m=83.87).

- M25_2- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that were not fully staffed but expected to be fully staffed soon (m=15.96) and those that were not (m=15.75).

- M25_3- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers that indicated when fully staffed, the number of authorized positions met their needs (m=83.79) and those that did not (m=82.64).

- M25_3- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers that indicated when fully staffed, the number of authorized positions met their needs (m=15.48) and those that did not (m=15.98).

- M25_4- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated the current staffing allowed their center to comfortably handle the workload (m=83.29) and those who did not (m=82.92).

- M25_4- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated the current staffing allowed their center to comfortably handle the workload (m=15.65) and those who did not (m=15.89).

- M25_5- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers that indicated they needed more staff than what was currently authorized to safely handle busy periods (m=82.28) and those who did not (m=83.41).

- M25_5- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers that indicated they needed more staff than what was currently authorized to safely handle busy periods (m=16.01) and those who did not (m=15.69).

- M25_b1- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated their center was chronically or almost always understaffed (m=78.57) and those who did not (m=83.96).

- M25_b1- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated their center was chronically or almost always understaffed (m=16.32) and those who did not (m=15.70).

- M25_b2- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated that lack of adequate staff at their center was a serious problem (m=81.79) and those who did not (m=83.20).

- M25_b2- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated that lack of adequate staff at their center was a serious problem (m=16.53) and those who did not (m=15.70).

- M25_b3- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated their center had always been able to cover staffing needs with overtime (m=80.85) and those who did not (m=85.39).

- M25_b3- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated their center had always been able to cover staffing needs with overtime (m=15.79) and those who did not (m=15.82).

- M25_b4- Retention (t-test). ***On average, managers who indicated there was a pool of qualified candidates waiting for an opening were from centers with significantly higher retention rates than those who did not.***

Table 96: Mean Center Retention Rates of Managers who responded to M25_b4 (N=153)

| There is a pool of qualified candidates waiting for an opening. | n | M | SD |
|---|---|---|---|
| Yes | 17 | 92.05* | 7.37 |
| *No Response* | 136 | 81.92* | 18.31 |

* Statistically significant at p<.05.

- M25_b4- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated there was a pool of qualified candidates waiting for an opening (m=15.65) and those who did not (m=15.83).

- M25_b5- Retention (t-test). ***On average, managers who indicated their center was having difficulty filling authorized positions were from centers with significantly lower retention rates than those who did not.***

Table 97: Mean Center Retention Rates of Managers who responded to M25_b5 (N=153)

| The center is having difficulty filling authorized positions. | n | M | SD |
|---|---|---|---|
| Yes | 36 | 75.51* | 18.59 |
| *No Response* | 117 | 85.36* | 16.84 |

* Statistically significant at p<.05.

- M25_b5- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated their center was having difficulty filling authorized positions (m=16.09) and those who did not (m=15.70).

*Application and Selection Process*

- M26_5- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among managers who agreed that "only candidates who fully met center requirements were hired" (m= 83.63), managers who disagreed with the statement (m=79.60), and managers who were neutral (m=88.26).

- M28_1- Retention (t-test). There was no statistically significant difference in mean center retention rate among managers who rated the effectiveness of the recruiting

process at their center as “very or mostly effective” (m=84.14) and managers that rated it as “not very effective or not at all effective” (m=82.05).

- M28_2- Retention (t-test). There was no statistically significant difference in mean center retention rate among managers who rated the effectiveness of the initial orientation process at their center as “very or mostly effective” (m=83.57) and managers that rated it as “not very effective or not at all effective” (m=82.67).

- M28_3- Retention (t-test). There was no statistically significant difference in mean center retention rate among managers who rated the effectiveness of the job application process at their center as “very or mostly effective” (m=84.19) and managers that rated it as “not very effective or not at all effective” (m=81.73).

- M28_4- Retention (t-test). There was no statistically significant difference in mean center retention rate among managers who rated the effectiveness of performance testing at their center as “very or mostly effective” (m=84.20) and managers that rated it as “not very effective or not at all effective” (m=84.04).

- M28_5- Retention (t-test). There was no statistically significant difference in mean center retention rate among managers who rated the effectiveness of the length of time from application to hiring and filling positions at their center as “very or mostly effective” (m=84.38) and managers that rated it as “not very effective or not at all effective” (m=82.33).

*Selection of Employees*

- M29- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who indicated the hiring at their center was done by the communications center management and/or staff (m=81.97), by the human resources office or civil service commission (m=85.45), or those who indicated hiring was shared between the communications center and human resources (m=86.57).

- M29- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees of managers who indicated the hiring at their center was done by the

communications center management and/or staff (m=15.35), by the human resources office or civil service commission (m=15.74), or those who indicated hiring was shared between the communications center and human resources (m=16.85).

- M30- Retention (correlation). Centers' extensiveness in screening for interpersonal skills (i.e. the total number of interpersonal skills assessed) was not significantly related to center retention rate (r=.065). Note: Managers were provided with a listing of eight interpersonal skills that could be used in their center to screen and select candidates and were asked to "check all that apply." The number of skills they check marked were summed to create an "extensiveness in screening of interpersonal skills" variable. This variable ranged from one to eight, with a mean of 4.79 and a standard deviation of 1.60.

- M32a- Retention (correlation). Centers' extensiveness in screening for technical skills (i.e. the total number of technical skills assessed) was not significantly related to center retention rate (r=.101). Note: Managers were provided with a listing of 12 technical skills that could be used in their center to screen and select candidates and were asked to "check all that apply." The number of skills they check marked were summed to create an "extensiveness in screening of technical skills" variable. This variable ranged from one to 11, with a mean of 5.13 and a standard deviation of 2.15.

- M32a- ESI (correlation). Centers' extensiveness in screening for technical skills (i.e. the total number of technical skills assessed) was not significantly related to employee satisfaction (r= -.157). Note: Managers were provided with a listing of 12 technical skills that could be used in their center to screen and select candidates and were asked to "check all that apply." The number of skills they check marked were summed to create an "extensiveness in screening of technical skills" variable. This variable ranged from one to 11, with a mean of 5.13 and a standard deviation of 2.15.

- M32b- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who considered the screening and application process used by their center effective (m=84.09) and those who did not (m=81.78).

- M32b- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who considered the screening and application process used by their center effective (m=15.41) and those who did not (m=16.22).

*Preparation and Training*

- M35- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated the training that was provided for new employees was preparing them for successful performance (m=84.29) and those who indicated it was not (m=76.88).

- M35- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated the training that was provided for new employees was preparing them for successful performance (m=15.61) and those who indicated it was not (m=16.40).

*Schedules and Scheduling*

- M37- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who worked “five eight-hour days on, and two days off” (m=84.60), “four 10-hour days on, and three days off” (m=82.85), or an “other” type of schedule (m=84.91). Note: Two response options from the survey were not included in the analysis due to small sample size. These were “Three 12-hour days and one four-hour day” (n=4) and “Two 12-hour days and two eight-hour days” (n=6).

- M38- Retention (t-test). There was no statistically significant difference in mean center retention rates for managers who indicated their employees worked on a rotating shift schedule (m=82.92) and those who indicated their employees did not work on a rotating shift schedule (m=83.66).

- M38- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose managers indicated employees at their center worked on a rotating shift schedule (m=15.92) and those who did not (m=15.58).

- M39- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who indicated the current process used in their center for determining shift assignments “worked very well” (m=87.15), “worked well most of the time” (m=80.46), and those who indicated it “needed to be changed” (m=80.85).

- M39- ESI (ANOVA). ***On average, managers who indicated the current process used in their center for determining shift assignments “worked very well” or “worked well most of the time,” had employees who were significantly less dissatisfied compared to managers who indicated the current process “needed to be changed.”*** There was no statistically significant difference between groups 1 and 2.

Table 98: Mean Satisfaction Index of Employees whose Managers responded to M39 (N=114)

| How effective is the process that is currently used within your center to determine shift assignments? | n | M | SD |
|---|---|---|---|
| (1) Current process works very well | 48 | 15.52* | 2.89 |
| (2) Current process works well most of the time | 54 | 15.59* | 2.41 |
| (3) Current process needs to be changed | 8 | 18.13* | 1.80 |

* Statistically significant at p<.05.

*Overtime*

- M40- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who used less than 10% of their personnel budget for overtime pay (m=86.42), those who used between 11%-20% of their personnel budget for overtime pay (m=83.83), or those who used over 21% of their personnel budget for overtime pay (m=75.93). Note: Managers were asked to enter the percentage of the personnel budget that they used for overtime pay. Based on this information, it was determined that three categories best represented the centers: less than 10%, 11-20%, and over 21%. Of the 121 managers that responded to this item, 47% spent less than ten percent of their personnel budget on overtime pay, 36% spent between 11-20 percent of their personnel budget on overtime pay, and 17% spent over 21 percent of their personnel budget on overtime pay.

- M40- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees of managers who used less than 10% of their personnel budget for overtime pay (m=15.46), those who used between 11%-20% of their personnel budget for overtime pay (m=15.62), or those who used over 21% of their personnel budget for overtime pay (m=16.24). Note: Managers were asked to enter the percentage of the personnel budget that they used for overtime pay. Based on this information, it was determined that three categories best represented the centers: less than 10%, 11-20%, and over 21%. Of the 121 managers that responded to this item, 47% spent less than ten percent of their personnel budget on overtime pay, 36% spent between 11-20 percent of their personnel budget on overtime pay, and 17% spent over 21 percent of their personnel budget on overtime pay.

- M40b_1- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers whose centers compensated employees at a higher rate of pay for voluntary and/or required overtime (m=83.23) and those who did not (m=85.21).

- M40b_1- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose centers compensated them at a higher rate of pay for voluntary and/or required overtime (m=15.68) and those who did not (m=15.86).

- M40b_2- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers whose centers paid a higher rate for hard to staff shifts (m=84.49) and those who did not (m=82.92).

- M40b_2- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose centers paid a higher rate for hard to staff shifts (m=15.47) and those who did not (m=15.83).

- M40b_3- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers whose centers paid a higher rate to employees who volunteered to work on their days off (m=86.37) and those who did not (m=82.62).

- M40b_3- ESI (t-test). There was no statistically significant difference in mean ESI for employees whose centers paid those who volunteered to work on their days off a higher rate (m=16.38) and those who did not (m=15.36).

- M40b_4- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers whose centers paid a higher rate to employees who worked under a long-term understaffing situation (m=78.65) and those who did not (m=83.58).

- M40b_4- ESI (t-test). ***On average, managers whose centers paid a higher rate to employees who worked under a long-term understaffing situation had employees who were significantly more dissatisfied than managers who did not.***

Table 99: Mean Satisfaction Index of Employees whose Managers responded to M40b_4 (N=114)

| Is there a higher rate of pay for employees working under a long-term understaffing situation? | n | M | SD |
|---|---|---|---|
| Yes | 5 | 19.11* | 3.40 |
| No | 102 | 15.60* | 2.52 |

* Statistically significant at p<.05.

- M40b_5- Retention (t-test). ***On average, managers who reported overtime was a frequent necessity because their center was short staffed were from centers with significantly lower retention rates than managers who did not.***

Table 100: Mean Center Retention Rates of Managers who responded to M40b_5 (N=153)

| Is overtime a frequent necessity because the center is short staffed? | n | M | SD |
|---|---|---|---|
| Yes | 88 | 79.93* | 18.34 |
| No | 60 | 88.82* | 13.77 |

* Statistically significant at p<.05.

- M40b_5- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who indicated overtime was a frequent necessity because their center was short staffed (m=15.84) and those who did not (m=15.57).

*Seniority*

- M43- Retention (ANOVA). ***On average, managers who indicated "all employees were union members" were from centers with significantly higher retention rates than managers who indicated "no employees were union members."*** There were no statistically significant differences between groups 1 and 2; or between groups 2 and 3.

Table 101: Mean Center Retention Rates of Managers who responded to M43 (N=153)

| Are any of the employees in your center members of a union? | n | M | SD |
|---|---|---|---|
| (1) Yes, all are union members | 42 | 89.83* | 13.32 |
| (2) Yes, some are union members | 22 | 82.77 | 19.43 |
| (3) No | 86 | 80.31* | 17.65 |

* Statistically significant at p<.05.

- M43- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees from centers where managers indicated "all employees were union

members" (m=16.64), "some employees were union members" (m=15.50), or "no employees were union members" (m=15.40).

*Determination of Staffing Levels*

- M44- Retention (correlation). A center's dispatcher-to-field unit ratio (i.e. the average number of field units typically handled by one dispatcher) was not significantly related to center retention rate (r= -.040). Note: Dispatcher-to-field unit ratio ranged from two to 50, with a mean of 10.69 and a standard deviation of 10.12.

- M44- ESI (correlation). A center's dispatcher-to-field unit ratio (i.e. the average number of field units typically handled by one dispatcher) was not significantly related to employee satisfaction (r= -.017). Note: Dispatcher-to-field unit ratio ranged from two to 50, with a mean of 10.69 and a standard deviation of 10.12.

- M46- Retention (correlation). The number of factors included in determining staffing levels was not significantly related to center retention rate (r= .051). Note: Managers were provided with a listing of 12 factors that could be included in their center's process for determining staffing levels, and were asked to "check all that apply." The number of factors they check marked were summed to create a variable, "factors in determining staffing levels." This variable ranged from zero to 12, with a mean of 3.50 and a standard deviation of 2.64.

- M46- ESI (correlation). The number of factors included in determining staffing was not significantly related to employee satisfaction (r= -.116). Note: Managers were provided with a listing of 12 factors that could be included in their center's process for determining staffing levels, and were asked to "check all that apply." The number of factors they check marked were summed to create a variable, "factors in determining staffing levels." This variable ranged from zero to 12, with a mean of 3.50 and a standard deviation of 2.64.

- M46- Factors considered in determining call taker and/or dispatcher staffing. ***The top three items selected by managers as factors used in determining staffing levels were: (a) budget (66%), (b) a tie between number of consoles in the center (44%)***

***and total call volume (44%), and (c) peak hour call volume (33%).*** Note: Managers were provided with a listing of 12 factors that could be included in their center's process for determining staffing levels, and were asked to "check all that apply."

- M46_1- Retention (t-test). ***On average, centers that used "available radio frequencies" as a factor in determining staffing levels had significantly higher retention rates than those who did not.***

Table 102: Mean Center Retention Rates of Managers who responded to M46_1 (N=153)

| Indicate the factors included in the process your center uses to determine total call taker and/or dispatcher staffing. Please check ALL that apply. Available radio frequencies | n | M | SD |
|---|---|---|---|
| Yes | 28 | 88.03* | 12.27 |
| *No Response* | 125 | 81.93* | 18.57 |

* Statistically significant at p<.05.

- M46_1- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used "available radio frequencies" as a factor in determining staffing levels (m=14.90) and those who did not (m=16.06).

- M46_2- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used "average answering time" as a factor in determining staffing levels (m=86.84) and those who did not (m=82.47).

- M46_2- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used "average answering time" as a factor in determining staffing levels (m=15.15) and those who did not (m=15.92).

- M46_3- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used "average calls per hour" as a factor in determining staffing levels (m=81.73) and those who did not (m=83.53).

- M46_3- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used "average calls per hour" as a factor in determining staffing levels (m=16.13) and those who did not (m=15.69).

- M46_4- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “budget” as a factor in determining staffing levels (m=82.72) and those who did not (m=83.69).

- M46_4- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “budget” as a factor in determining staffing levels (m=15.97) and those who did not (m=15.49).

- M46_5- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “desired service level” as a factor in determining staffing levels (m=85.32) and those who did not (m=82.27).

- M46_5- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “desired service level” as a factor in determining staffing levels (m=14.95) and those who did not (m=16.09).

- M46_6- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “hourly call volume” as a factor in determining staffing levels (m=81.91) and those who did not (m=83.34).

- M46_6- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “hourly call volume” as a factor in determining staffing levels (m=15.65) and those who did not (m=15.84).

- M46_7- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “number of consoles in the center” as a factor in determining staffing levels (m=83.83) and those who did not (m=82.44).

- M46_7- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “number of consoles in the center” as a factor in determining staffing levels (m=15.50) and those who did not (m=16.05).

- M46_8- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “peak hour call volume” as a factor in determining staffing levels (m=83.93) and those who did not (m=82.61).

- M46_8- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “peak hour call volume” as a factor in determining staffing levels (m=15.26) and those who did not (m=16.11).

- M46_9- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “physical limitations of the center” as a factor in determining staffing levels (m=82.32) and those who did not (m=83.23).

- M46_9- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “physical limitations of the center” as a factor in determining staffing levels (m=15.60) and those who did not (m=15.85).

- M46_10- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “total call volume” as a factor in determining staffing levels (m=83.18) and those who did not (m=82.94).

- M46_10- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “total call volume” as a factor in determining staffing levels (m=15.52) and those who did not (m=16.06).

- M46_11- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers that used “unique center or geographic requirements” as a factor in determining staffing levels (m=82.61) and those who did not (m=83.12).

- M46_11- ESI (t-test). There was no statistically significant difference in mean ESI for employees from centers that used “unique center or geographic requirements” as a factor in determining staffing levels (m=14.80) and those who did not (m=15.97).

*Employee Benefits*

- M47- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated the employee benefits offered by their center had had a positive impact on the retention of qualified staff (m=84.02) and those who indicated they had not (m=80.49).

- M48- Retention (correlation). The number of services and benefits available to employees was not significantly related to center retention rate (r=.072). Note: Managers were provided with a listing of 15 services or benefits that could be available to full-time employees at their center and were asked to "check all that apply." The number of services or benefits they check marked were summed to create a "services and benefits" variable. This variable ranged from one to 14, with a mean of 7.58 and a standard deviation of 2.78.

- M48- ESI (correlation). The number of services and benefits available to employees was significantly related to employee satisfaction (r= -.193). ***As the number of services or benefits provided by centers increased, employee dissatisfaction decreased.*** Note: Managers were provided with a listing of 15 services or benefits that could be available to full-time employees at their center and were asked to "check all that apply." The number of services or benefits they check marked were summed to create a "services and benefits" variable. This variable ranged from one to 14, with a mean of 7.58 and a standard deviation of 2.78.

*Employee Retention and Turnover*

- M51_11- Retention (t-test). There was no statistically significant difference in mean center retention rate for centers where employee's left due to burnout (m=73.03) and those where no employees left due to burnout (m=83.45).

*Compensation*

- M52b- Retention (correlation). Manager's assessment of employee's satisfaction with compensation and benefits (subscale composite) was not significantly related to center retention rate (r= -.026). Note: Manager's assessment of employee's

satisfaction with compensation and benefits subscale ranged from 1.00 (less dissatisfied) to 5.00 (more dissatisfied), with a mean of 2.50 and a standard deviation of 0.74.

- M53- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among managers that indicated the salary schedule in their center was “low” compared to other jobs in the community (m=86.01), “about average” compared to other jobs in the community (m=80.61), “well paid if overtime was included” (m=87.40), or “well paid even without overtime” (m=85.47).

- M53- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees of managers that indicated the salary schedule in their center was “low” compared to other jobs in the community (m=15.93), “about average” compared to other jobs in the community (m=16.25), “well paid if overtime was included” (m=15.50), or “well paid even without overtime” (m=14.70).

- M54- Retention (ANOVA). There were no statistically significant differences in mean center retention rates among managers that indicated the salary schedule in their center was “higher” compared to other public safety personnel (m=83.21), “comparable” (m=84.54), or “lower” than other public safety personnel (m=82.57).

- M54- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees of managers that indicated the salary schedule in their center was “higher” compared to other public safety personnel (m=15.62), “comparable” (m=15.21), or “lower” than other public safety personnel (m=16.10).

- M56- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of $p<.01$). There were no statistically significant differences in mean center retention rates among managers that indicated the retirement benefits at their center were “higher” compared to other public safety personnel (m=84.91), “comparable” (m=84.03), “lower” than other public safety personnel (m=79.42), or “don’t know” (m=89.19).

- M56- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees of managers that indicated the retirement benefits at their center were "higher" compared to other public safety personnel (m=15.53), "comparable" (m=15.37), "lower" than other public safety personnel (m=16.18), or "don't know" (m=16.58).

*Employee Recognition*

- M57- Retention (t-test). There was no statistically significant difference in mean center retention rate among managers who reported sworn personnel seemed to get better treatment at their center (m=82.75) or those who reported no difference in treatment of sworn or civilian personnel at their center (m=83.42). Note: The response option, "Yes, civilians seem to get better treatment" was not included in the analysis due to small sample size (n=2).

- M57- ESI (t-test). There was no statistically significant difference in mean ESI for employees of managers who reported sworn personnel seemed to get better treatment at their center (m=16.17) or those who reported no difference in treatment of sworn vs. civilian personnel at their center (m=15.37). Note: The response option, "Yes, civilians seem to get better treatment" was not included in the analysis due to small sample size (n=2).

- M58- Retention (t-test). There was no statistically significant difference in mean center retention rate for managers who indicated their communications center staff were adequately recognized as important members of the public safety team (m=84.97) and those who did not (m=82.40).

- M58- ESI (t-test). ***On average, managers who indicated their communications center staff were adequately recognized as important members of the public safety team had employees who were significantly less dissatisfied than those who did not.***

Table 103: Mean Satisfaction Index of Employees whose Managers responded to M58 (N=114)

| Do you think communications center staff are adequately recognized as important members | n | M | SD |
|---|---|---|---|

| | | | |
|---|---|---|---|
| of the public safety team? | | | |
| Yes | 41 | 14.82* | 2.73 |
| No | 71 | 16.33* | 2.49 |

* Statistically significant at p<.05.

*Center Performance*

- M59- Retention (correlation). Manager's assessment of the overall performance of their center (subscale composite) was significantly related to center retention rate (r= -.202). ***As managers' ratings of the overall performance of their center decreased (i.e. was more positive), center retention rates increased.*** Note: The overall performance subscale ranged from 1.00 (less dissatisfied) to 3.78 (more dissatisfied), with a mean of 2.46 and a standard deviation of 0.58.

- M59_1- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of .01). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center on the ability to consistently staff necessary positions as "excellent or above average" (m=84.80), "average" (m=84.87), or "below average or poor" (m=73.72).

- M59_2- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center on the ability to train as "excellent or above average" (m=84.93), "average" (m=81.72), or "below average or poor" (m=81.56).

- M59_3- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center on call answering times as "excellent or above average" (m=84.38), "average" (m=79.86), or "below average or poor" (m=87.57).

- M59_4- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center

on customer satisfaction as “excellent or above average” (m=84.87), “average” (m=80.43), or “below average or poor” (m=70.45).

- M59_5- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center on efficient call management as “excellent or above average” (m=85.34), “average” (m=78.90), or “below average or poor” (m=87.14).

- M59_6- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of .01). ***On average, managers who rated the overall performance of their center on employee retention as “below average or poor” were from centers with significantly lower retention rates than employees who rated their center as “excellent or above average” or “average.”*** There were no statistically significant differences between groups 1 and 2.

Table 104: Mean Center Retention Rate of Managers who responded to M59_6 (N=153)

| Please rate the overall performance of the center on employee retention. | n | M | SD |
|---|---|---|---|
| (1) Excellent or above average | 68 | 88.68** | 13.50 |
| (2) Average | 58 | 83.38** | 15.28 |
| (3) Below Average or Poor | 25 | 68.58** | 21.51 |

** Statistically significant at p<.01.

- M59_7- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center on employee satisfaction as “excellent or above average” (m=85.45), “average” (m=82.83), or “below average or poor” (m=81.48).

- M59_8- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center on shift management as “excellent or above average” (m=84.88), “average” (m=82.33), or “below average or poor” (m=81.06).

- M59_9- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who rated the overall performance of their center

on use of overtime as “excellent or above average” (m=84.22), “average” (m=81.90), or “below average or poor” (m=86.42).

*Respondent Information*

- M64- Retention (ANOVA). There were no statistically significant differences in mean center retention rates for managers who were “probably” going to stay in their current job for at least five more years (m=82.61), those who indicated “probably not” (m=82.97), and those who were “not sure” (m=90.20).

- M64- ESI (ANOVA). There were no statistically significant differences in mean ESI for employees of managers who were “probably” going to stay in their current job for at least five more years (m=15.84), those who indicated “probably not” (m=15.81), and those who were “not sure” (m=15.08).

- M65- Retention (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of p<.01). There were no statistically significant differences in mean center retention rates for managers who were “probably” planning to spend the rest of their career at their current organization (m=85.02), those who indicated “probably not” (m=75.23), and those who were “not sure” (m=81.72).

- M65- ESI (ANOVA).***On average, managers who indicated they were “probably not” going to spend the rest of their career at their current organization had employees who were significantly more dissatisfied than managers who indicated they were “not sure.”*** There were no statistically significant differences between groups 1 and 2, or 1 and 3.

Table 105: Mean Satisfaction Index of Employees whose Managers responded to M65 (N=114)

| Do you plan to spend the rest of your career with this organization? | n | M | SD |
|---|---|---|---|
| (1) Probably | 79 | 15.88 | 2.59 |
| (2) Probably Not | 12 | 16.92* | 2.81 |
| (3) Not sure | 22 | 14.58* | 2.70 |

* Statistically significant at p<.05.

## Regression Analyses

Based on the findings of the employee and manager surveys and the fact that a number of variables were significantly related to center retention rate and employee satisfaction, several regression analyses were performed to test which variables were most predictive of center retention and employee satisfaction. Two models that were based on preliminary findings were reported in August of 2004, and are presented in this section. The regression models that were performed after all statistical analyses were completed are also presented in this section, and referred to as final models.

### *Preliminary Regression Models*

Based on the results up to that point; two regression models were analyzed and presented at the APCO International Conference, one for center retention and another for employee satisfaction. The models were entered using the hierarchical regression procedure where the researcher enters independent variables in groups or "blocks" based on an understanding of the relations among the variables.

#### Center Retention Rate

Ten employee variables that were significantly related to center retention rate were entered in three blocks as follows: staffing variables were entered first in block 1, overtime variables were entered in block 2, and all other variables were entered in block 3. The regression model was statistically significant, $R^2$ =.170; indicating the model explained 17% of the variance in center retention rate. ***Four variables were found to significantly predict center retention; in order of importance: number of overtime hours worked per month (e16), hourly pay (e37), whether their center was fully staffed (e21_1), and effective training process (e30_4).*** Results are presented in the following table.

Table 106: Hierarchical Regression Analysis Summary for Employee Variables Predicting Center Retention Rate

| Variable | B | SEB | □ | $R^2$ | □$R^2$ |
|---|---|---|---|---|---|
| Block 1 | | | | .07* | |
| Fully staffed (e21_1) | 3.76 | 1.51 | .14* | | |
| Comfortably handle the workload (e21_4) | .56 | 1.60 | .02 | | |
| Chronically understaffed (e21_b1) | -1.81 | 1.61 | -.07 | | |
| Lack of staff a serious problem (e21_b2) | -.55 | 1.76 | -.02 | | |
| Block 2 | | | | .13* | .06 |
| Overtime hours worked per month (e16) | -.21 | .06 | -.21* | | |
| Routinely required to work overtime (e17_2) | 1.68 | 1.69 | .06 | | |
| Block 3 | | | | .17* | .04* |
| Training process prepared me to be effective (e30_4) | -1.39 | .70 | -.11* | | |
| Satisfaction with shift selection process (e33_2) | -.37 | .55 | -.04 | | |
| Hourly base pay rate (e37) | .40 | .15 | .14* | | |
| Effective screening and application process (e22) | -.92 | .85 | -.06 | | |

* Statistically significant at p<.05.

Employee Satisfaction

Eighteen employee variables significantly related to employee satisfaction were entered in four blocks as follows: staffing variables were entered first in block 1, overtime variables were entered in block 2, “work is appreciated by others” variables were entered in block 3, and all other variables were entered in block 4. The regression model was statistically significant, $R^2$ =.525, indicating the model explained 52.5% of the variance in employee satisfaction. ***Seven variables were found to significantly predict employee satisfaction; in order of importance: satisfaction with shift selection process (e33_2), effective training process (e30_4), appreciated by management (e43_3), whether their center was chronically understaffed (e21_b1), appreciated by***

***supervisor (e43_2), effective screening and application process (e22), and whether their center could comfortably handle the workload (e21_4).***

Table 107: Hierarchical Regression Analysis Summary for Employee Variables Predicting Employee Satisfaction

| Variable | B | SEB | β | $R^2$ | Δ$R^2$ |
|---|---|---|---|---|---|
| Block 1 | | | | .19* | |
| Fully staffed (e21_1) | -.30 | .27 | -.04 | | |
| Comfortably handle the workload (e21_4) | -.77 | .28 | -.09* | | |
| Chronically understaffed (e21_b1) | 1.06 | .29 | .14* | | |
| Lack of staff a serious problem (e21_b2) | .56 | .31 | .07 | | |
| Block 2 | | | | .20* | .01 |
| Overtime hours worked per month (e16) | .01 | .01 | .04 | | |
| Routinely required to work overtime (e17_2) | .05 | .28 | .01 | | |
| Block 3 | | | | .34* | .14 |
| Appreciated by co-workers (e43_1) | -.06 | .16 | -.01 | | |
| Appreciated by immediate supervisor (e43_2) | .74 | .19 | .13* | | |
| Appreciated by management (e43_3) | .63 | .16 | .14* | | |
| Appreciated by sworn officials (e43_4) | -.09 | .17 | -.02 | | |
| Appreciated by centers served (e43_5) | .27 | .16 | .06 | | |
| Appreciated by public or elected officials (e43_6) | -.03 | .17 | -.01 | | |
| Appreciated by the media (e43_7) | .01 | .17 | .00 | | |
| Appreciated by partner/family (e43_8) | .08 | .19 | .01 | | |
| Appreciated by the public (e43_9) | .16 | .16 | .04 | | |
| Block 4 | | | | .52* | .18* |
| Effective screening and application process (e22) | .46 | .15 | .10* | | |
| Training process prepared me to be effective (e30_4) | .95 | .12 | .25* | | |
| Satisfaction with shift selection process (e33_2) | .96 | .10 | .31* | | |

* Statistically significant at p<.05.

*Final Regression Models*

After statistical tests were performed on virtually all items in the employee survey, another two regression models were specified. The variables for these models, however, were entered using the stepwise procedure. In this procedure, independent variables are entered in various combinations and orders, using both forward selection and backward elimination methods. Variables are selected and eliminated until there are none left that meet the criteria for removal. This process is performed by the software program and is based on statistical associations among the variables.

Center Retention Rate

Nineteen variables that were significantly related to center retention rate were entered into the regression model. The stepwise procedure accepted five variables for inclusion in five blocks. The regression model was statistically significant, $R^2$ =.144; indicating the model explained 14% of the variance in center retention rate. ***The five variables that were found to significantly predict center retention; in order of importance were: whether their center was fully staffed (e21_1), number of overtime hours worked per month (e16), job complexity (e7), hourly pay (e37), and work conditions (e18).*** Results are presented in the following table.

Table 108: Stepwise Regression Analysis Summary for Employee Variables Predicting Center Retention Rate

| Variable | B | SEB | □ | $R^2$ | □$R^2$ |
|---|---|---|---|---|---|
| Block 1 | | | | .05* | |
| Overtime hours worked per month (e16) | -.16 | .05 | -.18* | | |
| Block 2 | | | | .08* | .03 |
| Working Conditions (e18 subscale composite) | -2.46 | 1.33 | -.11* | | |
| Block 3 | | | | .10* | .02 |
| Fully staffed (e21_1) | 5.20 | 1.59 | .19* | | |
| Block 4 | | | | .13* | .03 |
| Job complexity (sum of e7) | -1.10 | .38 | -.17* | | |
| Block 5 | | | | .14* | .01* |
| Hourly base pay rate (e37) | .41 | .16 | .14* | | |

* Statistically significant at p<.10.

Employee Satisfaction

Twenty-five variables that were significantly related to employee satisfaction were entered into the regression model. The stepwise procedure accepted eight variables for inclusion in eight blocks. The regression model was statistically significant, $R^2$ =.717; indicating the model explained approximately 72% of the variance in employee satisfaction. ***The eight variables that were found to significantly predict employee satisfaction; in order of importance were: overall performance of the center (e11), preparation and training (e30), appreciated by management (e43_3), satisfaction with shift selection process (e33_2), mentoring of new trainees (e28_6), appreciated by immediate supervisor (e43_2), an extensive and thorough application process (e27_3), and appreciated by the media (e43_7).*** Results are presented in the following table.

Table 109: Stepwise Regression Analysis Summary for Employee Variables Predicting Employee Satisfaction

| Variable | B | SEB | □ | $R^2$ | □$R^2$ |
|---|---|---|---|---|---|
| Block 1 | | | | .44* | |
| Preparation and training (e30 subscale composite) | 1.20 | .25 | .23 | | |
| Block 2 | | | | .57* | .13 |
| Appreciated by management (e43_3) | 1.41 | .34 | .19 | | |
| Block 3 | | | | .65* | .08 |
| Overall performance of the center (e11 subscale composite) | 1.36 | .24 | .26 | | |
| Block 4 | | | | .68* | .03 |
| Satisfaction with shift selection process (e33_2) | .57 | .12 | .18 | | |
| Block 5 | | | | .70* | .02 |
| Mentoring of new trainees (e28_6) | .56 | .20 | .11 | | |
| Block 6 | | | | .71* | .01 |
| Appreciated by immediate supervisor (e43_2) | 1.05 | .42 | .11 | | |
| Block 7 | | | | .71* | .00 |
| Extensive and thorough application process (e27_3) | .33 | .15 | .09 | | |
| Block 8 | | | | .72* | .01* |
| Appreciated by the media (e43_7) | .59 | .28 | .09 | | |

* Statistically significant at p<.10.

## Conclusions

Findings of the preliminary regression models presented in Montreal and the models analyzed post-Montreal revealed that the employee satisfaction model, in both cases, resulted in the strongest model; that is, the employee variables entered explained more of the variance in employee satisfaction than the variables entered in the center retention rate models.

## Additional Analyses from Employee and Manager Surveys

In the previous sections, employee and manager survey items were analyzed in terms of their relationship with center retention rate and employee satisfaction. The following section presents the results from additional analyses that were performed that looked at relationships between specific survey items. The format for the following section is as follows: title headers (underlined) refer to the item that functioned as the dependent variable in the analysis; the research question that was addressed in the analysis is listed first in italics; the statistical test used in the analysis is listed in parentheses; means (m) are provided for all groups compared (when applicable); statements explaining statistically significant results are in bold font; and tables or figures are presented only for variables that were found to be statistically significant (except in the case of chi-square analyses where all results are presented in tables).

*Years Employed at their Current Center (E8)*

- *Is there a relationship between the number of years employees had been at their center (e8) and whether they indicated their center was fully staffed (e21_1)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated their center was fully staffed (m=7.38) and those who did not (m=6.48).

- *Is there a relationship between the number of years employees had been at their center (e8) and whether they indicated that current staffing allowed their center to comfortably handle the workload (e21_4)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated the current staffing at their center allowed them to comfortably handle the workload (m=6.58) and those who did not (m=6.84).

- *Is there a relationship between the number of years employees had been at their center (e8) and whether they indicated their center was chronically or almost always understaffed (e21_b1)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated

their center was chronically or almost always understaffed (m=6.66) and those who did not (m=6.85).

- *Is there a relationship between the number of years employees had been at their center (e8) and whether they indicated lack of adequate staffing at their center was a serious problem (e21_b2)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated lack of adequate staffing at their center was a serious problem (m=6.96) and those who did not (m=6.71).

*Years Employed in their Current Assignment (E9 and M63)*

- *Is there a relationship between the number of years employees had been in their current assignment (e9) and whether they indicated their center was fully staffed (e21_1)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated their center was fully staffed (m=6.02) and those who did not (m=5.51).

- *Is there a relationship between the number of years employees had been in their current assignment (e9) and whether they indicated that current staffing allowed their center to comfortably handle the workload (e21_4)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated the current staffing at their center allowed them to comfortably handle the workload (m=5.01) and those who did not (m=5.90).

- *Is there a relationship between the number of years employees had been in their current assignment (e9) and whether they indicated their center was chronically or almost always understaffed (e21_b1)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated their center was chronically or almost always understaffed (m=5.40) and those who did not (m=5.85).

- *Is there a relationship between the number of years employees had been in their current assignment (e9) and whether they indicated lack of adequate staffing at their*

*center was a serious problem (e21_b2)?* (T-test). There was no statistically significant difference in mean number of years employees had been at their center for those who indicated lack of adequate staffing at their center was a serious problem (m=5.43) and those who did not (m=5.77).

- *Is there a relationship between the number of years managers had been in their current assignment (m63) and the type of trend they perceived in regards to the retention of qualified staff (m15_6)?* (ANOVA). There were no statistically significant differences in mean number of years in current assignment between managers who indicated trends in the retention of qualified staff had "increased" (m=7.05), "stayed about the same" (m=6.82), or "decreased" (m=6.65) in their center since January 2000.

<u>*Overtime (E16)*</u>

- *Does number of overtime hours worked (e16) differ for low, medium, and high retaining centers?* (ANOVA). Three groups were created based on retention rate: Low retaining centers (retained 70% of their employees or less), medium retaining centers (retained between 71%-90% of their employees), and high retaining centers (retained 91% of their employees or more). There were no statistically significant differences in average number of overtime hours worked between low retaining (m=15.96), medium retaining (m=10.59), and high retaining (m=11.53) centers.

- *Is there a relationship between the number of years employees had been at their center (e8) and the number of overtime hours they worked per month (e16)?* (Correlation). The number of years employees had worked at their center was not significantly related to the number of overtime hours worked (r= -.030).

- *Is there a relationship between the number of overtime hours employees worked (e16) and whether they indicated their center was fully staffed (e21_1)?* (T-test). ***On average, employees who indicated their center was fully staffed worked significantly less hours of overtime per month than those who did not.***

Table 110: Mean Overtime hours worked per month (e16) of Employees who responded to E21_1 (N=600)

| The center is fully staffed at this time (all authorized positions are filled). | n | M | SD |
|---|---|---|---|
| Yes | 193 | 8.10* | 11.00 |
| *No Response* | 402 | 12.93* | 15.59 |

* Statistically significant at p<.05.

- *Is there a relationship between the number of overtime hours employees worked (e16) and whether they indicated that current staffing allowed their center to comfortably handle the workload (e21_4)?* (T-test). ***On average, employees who indicated that current staffing allowed their center to comfortably handle the workload worked significantly less hours of overtime per month than those who did not.***

Table 111: Mean Overtime hours worked per month (e16) of Employees who responded to E21_4 (N=600)

| The current staffing allows the center to comfortably handle the workload. | n | M | SD |
|---|---|---|---|
| Yes | 148 | 7.95* | 10.62 |
| *No Response* | 447 | 12.49* | 15.34 |

* Statistically significant at p<.05.

- *Is there a relationship between the number of overtime hours employees worked (e16) and whether they indicated their center was chronically or almost always understaffed (e21_b1)?* (T-test). ***On average, employees who indicated their center was chronically or almost always understaffed worked significantly more hours of overtime per month than those who did not.***

Table 112: Mean Overtime hours worked per month (e16) of Employees who responded to E21_b1 (N=600)

| The center is chronically (almost always) understaffed. | n | M | SD |
|---|---|---|---|
| Yes | 226 | 15.73* | 17.22 |
| *No Response* | 369 | 8.69* | 11.67 |

* Statistically significant at p<.05.

- *Is there a relationship between the number of overtime hours employees worked (e16) and whether they indicated lack of adequate staffing at their center was a serious problem (e21_b2)?* (T-test). ***On average, employees who indicated lack of adequate staffing at their center was a serious problem worked significantly more hours of overtime per month than those who did not.***

Table 113: Mean Overtime hours worked per month (e16) of Employees who responded to E21_b2 (N=600)

| Lack of adequate staff at this center is a serious problem. | n | M | SD |
|---|---|---|---|
| Yes | 155 | 17.68* | 17.59 |
| *No Response* | 440 | 9.14* | 12.42 |

* Statistically significant at p<.05.

*Union Membership Items (E32 and M43)*

- *Is there a difference in union membership (m43) between civilian managers who had a civilian supervisor and sworn managers who had a sworn supervisor?* Manager variables m5 and m6: Civilian Manager with Civilian Supervisor and Sworn Manager with Sworn Supervisor. Of the 25 civilian managers with civilian supervisors, 29% were from centers where all or some of the employees were union members and 71% were non-union. Of the 40 sworn managers with sworn supervisors, 42% were from centers where all or some of the employees were union members and 58% were non-union. Union membership does not appear to be related to these combinations of managers and supervisors.

- *How are centers where "all are union members" different from those where "none are union members" (E32)?* These two groups were compared on eight employee survey items.

  E21_1, E21_4, and E21_b4. (Chi-square). Union membership was not dependent to three staffing scenarios.

Table 114: Employee Responses to E32 based on responses to E21_1, E21_4, and E21_b4 (N=600)

| E32: As far as you know, are any of the employees in your center members of a union? | n | Yes, all are union members | No |
|---|---|---|---|
| The center is fully staffed at this time (all authorized positions are filled). | 142 | 30% | 70% |
| The current staffing allows the center to comfortably handle the workload. | 108 | 28% | 72% |
| There is a pool of qualified candidates waiting for an opening. | 37 | 32% | 68% |

E39 (t-test)- There was no statistically significant difference in mean satisfaction with compensation and benefits (subscale composite) between employees from centers where "all were union members" (m=2.72) and those from centers where "none were union members" (m=2.61).

E19 (t-test)- ***On average, employees from centers where "none were union members" were significantly less dissatisfied with their physical environment than those from centers where "all were union members."***

Note: E19 composite ranges from 1-5 "strongly agree to strongly disagree."

Table 115: Mean Physical Environment Satisfaction Rating (e19 composite) of Employees who responded to E32 (N=600)

| As far as you know, are any of the employees in your center members of a union? | n | M | SD |
|---|---|---|---|
| Yes, all are union members | 125 | 2.78* | .93 |
| No | 317 | 2.42* | .76 |

* Statistically significant at p<.05.

E16 (t-test)- ***On average, employees from centers where "none were union members" worked significantly less hours of overtime than those from centers where "all were union members."***

Table 116: Mean Overtime hours worked (e16) of Employees who responded to E32 (N=600)

| As far as you know, are any of the employees in your center members of a union? | n | M | SD |
|---|---|---|---|
| Yes, all are union members | 122 | 18.16* | 18.00 |
| No | 316 | 9.15* | 11.56 |

* Statistically significant at p<.05.

E37 (t-test)- ***On average, employees from centers where "all were union members" earned significantly higher hourly pay than those from centers where "none were union members."***

Table 117: Mean Hourly base pay rate (e37) of Employees who responded to E32 (N=600)

| As far as you know, are any of the employees in your center members of a union? | n | M | SD |
|---|---|---|---|
| Yes, all are union members | 105 | 17.83* | 4.04 |
| No | 279 | 14.21* | 4.12 |

* Statistically significant at p<.05.

- E38 (Chi-square)-. Union membership was dependent to some degree on income level. ***A significantly larger proportion of employees (between 60%-97%) were from centers where "none were union members." This was the case across income levels, except for employees who earned over $50,000, where the majority (64%) were from centers where "all were union members."***

Table 118: Employee Responses to E32 based on responses to E38 (N=600)

| E32: As far as you know, are any of the employees in your center members of a union? | n | Yes, all are union members | No |
|---|---|---|---|
| E38: Income Level | | | |
| (1) under $19,000 | 31 | 3% | 97% |
| (2) $20,000-$29,000 | 159 | 15% | 85% |
| (3) $30,000-$39,000 | 129 | 33% | 67% |
| (4) $40,000-$49,000 | 65 | 40% | 60% |
| (5) over $50,000 | 44 | 64% | 36% |

* $X^2$ was statistically significant at p<.05.

- *Do managers and employees differ in their responses to the union membership question (E32 and M43)?* ***It appears that more employees (62%) than managers (57%) perceive that "no employees in their center are union members."***

Figure 3 Employee Responses to E32, Union membership

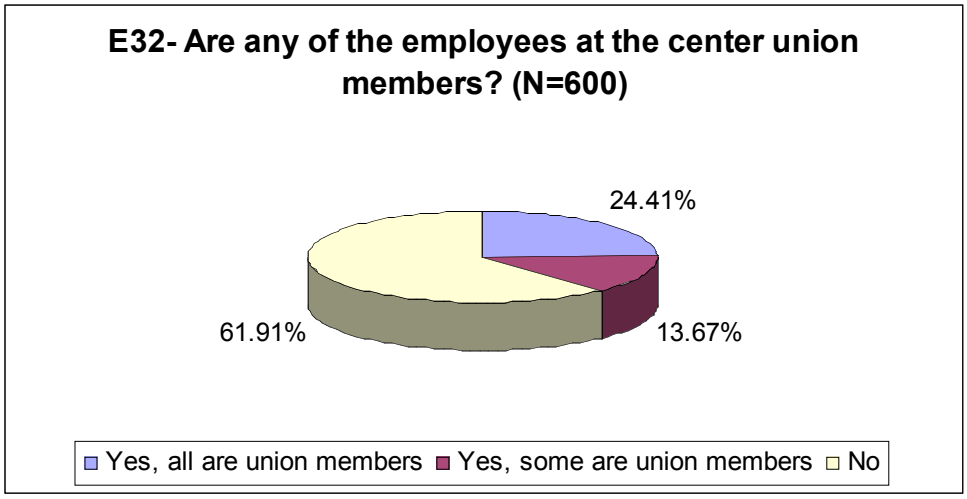
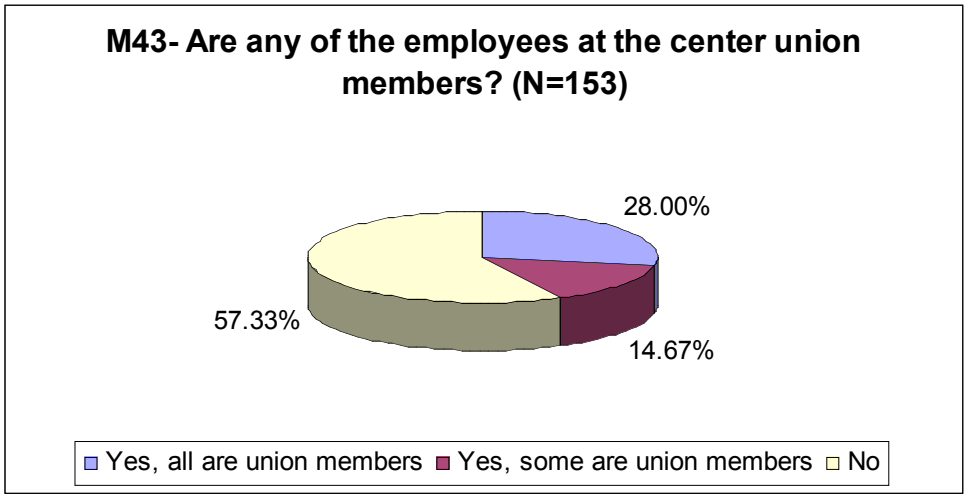



Figure 4 Manager Responses to M43, Union membership




*Hourly Base Pay Rate (e37)*

- *Does hourly base pay rate (e37) differ for low, medium, and high retaining centers?* (ANOVA). Three groups were created based on retention rate: Low retaining centers (retained 70% of their employees or less), medium retaining centers (retained between 71%-90% of their employees), and high retaining centers (retained 91% of their employees or more). There were no statistically significant differences in base pay rate between low retaining (m=14.02), medium retaining (m=15.77), and high retaining (m=15.18) centers.

*Intention to Stay in Current Assignment (E46)*

- *Is there a relationship between employee's plans to stay in their current job for the next five years (e46) and the number of overtime hours they worked (e16)?* (ANOVA). There were no significant differences in mean number of overtime hours worked for employees who indicated they were "probably" going to stay in their current job for at least five more years (m=10.79), those who indicated "probably not" (m=12.48), and those who were "not sure" (m=12.76).

- *Did employee's plans to stay in their current job for the next five years (e46) vary by gender (e49)?* (Chi-square). Employee's plan to stay in their current job for the next five years was not dependent on gender.

- *Did employee's plans to stay in their current job for the next five years (e46) vary by education level (e52)?* (Chi-square). Employee's plan to stay in their current job for the next five years was dependent to some degree on education level. ***A significantly larger proportion of employees (between 55%-74%) indicated they were "probably" going to stay in their current job for at least five more years, compared to "probably not" or "not sure"; across all levels of education.***

Table 119: Percent of Employees that responded to E46 by Education Level (N=600)

| E46: Do you expect to continue at your current job for at least five more years? | n | Probably | Probably Not | Not Sure |
|---|---|---|---|---|
| E52: Education Level | | | | |
| (1) Some high school or high school graduate | 115 | 74% | 12% | 14% |
| (2) Some trade school or trade school certification | 37 | 74% | 9% | 17% |
| (3) Military training | 15 | 60% | 27% | 13% |
| (4) Some college – no degree | 269 | 62% | 16% | 22% |
| (5) Associates degree | 74 | 55% | 26% | 19% |
| (6) Bachelors degree | 65 | 46% | 28% | 26% |
| (7) Graduate courses or graduate degree | 17 | 70% | 12% | 18% |

* $X^2$ was statistically significant at p<.05.

*Intention to Spend the Rest of their Career at their Current Organization (E47)*

- *Did employee's plans to spend the rest of their career at their current organization (e47) vary by gender (e49)?* (Chi-square). Employee's plan to spend the rest of their career at their current organization was not dependent on gender.

- *Did employee's plans to spend the rest of their career at their current organization (e47) vary by education level (e52)?* (Chi-square). Employee's plan to spend the rest of their career at their current organization was dependent to some degree on education level. ***A significantly larger proportion of employees (between 46%-67%) indicated they were "probably" going to spend the rest of their career at their current organization, compared to "probably not" or "not sure." This was the case regardless of education level, except for employees with bachelor's degrees, where employees were evenly split across "probably" (32%), "probably not" (34%), and "not sure" (34%).***

Table 120: Percent of Employees that responded to E47 by Education Level (N=600)

| E47: Do you plan to spend the rest of your career with this organization? | n | Probably | Probably Not | Not Sure |
|---|---|---|---|---|
| E52: Education Level | | | | |
| (1) Some high school or high school graduate | 115 | 67% | 12% | 21% |
| (2) Some trade school or trade school certification | 37 | 56% | 22% | 22% |
| (3) Military training | 15 | 60% | 33% | 7% |
| (4) Some college – no degree | 269 | 46% | 23% | 31% |
| (5) Associates degree | 74 | 52% | 28% | 20% |
| (6) Bachelors degree | 65 | 32% | 34% | 34% |
| (7) Graduate courses or graduate degree | 17 | 53% | 18% | 29% |

* $X^2$ was statistically significant at p<.05.

*Center Size (M24_4)*

- *Does center size (m24_4) differ for low and high retaining centers?* (T-test). Two groups were created based on center retention rate: Low retaining centers (retained less than 75% of their employees) and high retaining centers (retained 76% or more of their employees). ***On average, high retaining centers were significantly larger in size than low retaining centers.***

Table 121: Mean Center Size of Low and High Retaining Centers (N=153)

| Group | n | M | SD |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Low retaining (<75%) | 32 | 9.94* | 4.52 |
| High retaining (>76%) | 121 | 19.60* | 22.10 |

* Statistically significant at p<.05.

- *Does center size (m24_4) differ for low, medium, and high retaining centers?* (ANOVA homogeneity of variance assumption was violated, ran a second ANOVA at a more stringent alpha level of p<.01). Three groups were created based on retention rate: Low retaining centers (retained 70% of their employees or less), medium retaining centers (retained between 71%-90% of their employees), and high retaining centers (retained 91% of their employees or more). ***Low retaining centers were significantly smaller in size than medium retaining centers.*** There were no statistically significant differences between groups 1 and 3, or 2 and 3. Note: This analysis did not include three centers identified as extreme cases due to their large size (over 100 employees); thus N=150.

Table 122: Mean Center Size of Low, Medium, and High Retaining Centers (N=150)

| Group | n | M | SD |
|---|---|---|---|
| (1) Low retaining (<70% retention rate) | 29 | 10.14** | 4.68 |
| (2) Medium retaining (71-90% retention rate) | 58 | 19.47** | 16.07 |
| (3) High retaining (>91% retention rate) | 63 | 13.95 | 9.64 |

** Statistically significant at p<.01.

- *Is there a relationship between center size (m24_4) and whether centers used automated call reporting software to track incoming and outgoing calls (m14b)?* (T-test). ***On average, centers that used automated call reporting software to track incoming and outgoing calls were significantly larger than those who did not.***

Table 123: Mean Center Size of Managers who Responded to M14b (N=153)

| Does your center use automated call reporting software that tracks and reports statistics on all incoming and outgoing telephone calls? | n | M | SD |
|---|---|---|---|
| Yes | 57 | 25.95* | 29.59 |
| No | 67 | 12.49* | 8.38 |

* Statistically significant at p<.05.

- *Is there a relationship between center size (m24_4) and whether centers used a Computer Aided Dispatch (CAD) system (m14c)?* (T-test). ***On average, centers that used a CAD system were significantly larger than those who did not.***

Table 124: Mean Center Size of Managers who Responded to M14c (N=153)

| Does your center use a Computer Aided Dispatch (CAD) system to record emergency calls/requests for service/9-1-1 calls/dispatches? | n | M | SD |
|---|---|---|---|
| Yes | 104 | 20.36* | 23.44 |
| No | 23 | 10.22* | 6.15 |

* Statistically significant at p<.05.

- *Is there a relationship between center size (m24_4) and whether managers indicated their center was fully staffed (m25_1)?* (T-test). ***On average, managers who indicated their center was fully staffed were from centers that were significantly smaller than those who did not.***

Table 125: Mean Center Size (m24_4) of Managers who responded to M25_1 (N=153)

| The center is fully staffed at this time (all authorized positions are filled). | n | M | SD |
|---|---|---|---|
| Yes | 73 | 11.97* | 8.82 |
| *No Response* | 80 | 22.70* | 25.56 |

* Statistically significant at p<.05.

- *Is there a relationship between center size (m24_4) and whether managers indicated the current staffing at their center allowed them to comfortably handle the workload (m25_4)?* (T-test). There was no significant difference in mean center size between centers where managers indicated the current staffing at their center allowed them to comfortably handle the workload (m=15.42) and those who did not (m=18.73).

- *Is there a relationship between center size (m24_4) and whether managers indicated their center was chronically or almost always understaffed (m25_b1)?* (T-test). There was no significant difference in mean center size between centers where managers indicated their center was chronically or almost always understaffed (m=23.27) and those who did not (m=16.42).

- *Is there a relationship between center size (m24_4) and whether managers indicated that lack of adequate staff at their center was a serious problem (m25_b2)?* (T-test). There was no statistically significant difference in mean center size for managers who indicated that lack of adequate staff at their center was a serious problem (m=24.18) and those who did not (m=16.76).

- *Is there a relationship between center size (m24_4) and whether managers indicated their center was able to cover staffing needs with overtime (m25_b3)?* (T-test). There was no statistically significant difference in mean center size for managers who indicated their center had always been able to cover staffing needs with overtime (m=14.89) and those who did not (m=20.46).

- *Is there a relationship between center size (m24_4) and whether managers indicated there was a pool of qualified candidates waiting for an opening (m25_b4)?* (T-test). There was no statistically significant difference in mean center size for managers who indicated there was a pool of qualified candidates waiting for an opening (m=25.82) and those who did not (m=16.55).

- *Is there a relationship between center size (m24_4) and whether managers indicated their center was having difficulty filling authorized positions (m25_b5)?* (T-test). There was no statistically significant difference in mean center size for managers who indicated their center was having difficulty filling authorized positions (m=18.78) and those who did not (m=17.21).

*Four Staffing Scenarios (M25)*

- *Did managers who provided both total incoming call volume (m13_5) and dispatched calls (m13_8) versus those that provided neither differ in their responses to four staffing scenarios (m25_1, m25_4, m25_b1, m25_b2)?* (Chi-square). Of the 153 managers, 110 met the above criteria (i.e., provided both m13_5 and m13_8 or did not provide either). Managers that provided both total incoming call volume and dispatched calls and those that provided neither did not differ in their responses to whether their center was fully staffed (m25_1), whether their center could comfortably handle the workload (m25_4), or whether their center was chronically understaffed (m25_b1). ***However, of the managers that provided neither numbers, a significantly larger proportion (22%) indicated "lack of adequate staffing at their center was a serious problem" compared to managers that provided both numbers (6%).***

Table 126: Managers who provided numbers or did not and their responses to M25_1 (N=110)

| Item: The center is fully staffed at this time (all authorized positions are filled). | n | Yes | *No Response* |
|---|---|---|---|
| Manager provided both total incoming call volume and dispatched calls | 87 | 45% | 55% |
| Manager provided neither total incoming call volume nor dispatched calls | 23 | 48% | 52% |

Table 127: Managers who provided numbers or did not and their responses to M25_4 (N=110)

| Item: The current staffing allows the center to comfortably handle the workload. | n | Yes | *No Response* |
|---|---|---|---|
| Manager provided both total incoming call volume and dispatched calls | 87 | 39% | 61% |
| Manager provided neither total incoming call volume nor dispatched calls | 23 | 43% | 57% |

Table 128: Managers who provided numbers or did not and their responses to M25_b1 (N=110)

| Item: The center is chronically (almost always) understaffed. | n | Yes | *No Response* |
|---|---|---|---|
| Manager provided both total incoming call volume and dispatched calls | 87 | 16% | 84% |
| Manager provided neither total incoming call volume nor dispatched calls | 23 | 17% | 82% |

Table 129Managers who provided numbers or did not and their responses to M25_b2 (N=110)*

| Item: Lack of adequate staff at this center is a serious problem | n | Yes | *No Response* |
|---|---|---|---|
| Manager provided both total incoming call volume and dispatched calls | 87 | 6% | 94% |
| Manager provided neither total incoming call volume nor dispatched calls | 23 | 22% | 78% |

* $X^2$ was statistically significant at p<.05.

*Strategies Implemented that had a Positive Impact on Employee Retention (M42)*

- *Does whether an center implemented strategies that had a positive impact on employee retention (m42) vary for extremely low retaining centers, low retaining centers, medium retaining centers, and high retaining centers?* (Chi-square). Four groups were created based on center retention rates: Extremely low retaining centers

(retained 50% of their employees or less), low retaining centers (retained between 51%-70% of their employees), medium retaining centers (retained between 71-90% of their employees), and high retaining centers (retained 91% of their employees or more). Whether a center implemented strategies that had a positive impact on employee retention was dependent to some degree to center retention rate. ***A higher proportion of managers from extremely low retaining centers (90%) indicated they had not implemented strategies that had had an impact on employee retention. Managers from low retaining centers were fairly split between "yes" (53%) and "no" (47%). A higher proportion of managers from medium and high retaining centers indicated they had not implemented strategies that had had an impact on employee retention, 74% and 82% respectively.***

Table 130: Manager Responses to M42 based on Four Retention Groups* (N=153)

| Have any strategies been implemented that have had a measurable positive impact on employee retention in your center? | n | Yes | No |
|---|---|---|---|
| 1. Extremely low retainers (retained <50%) | 11 | 10% | 90% |
| 2. Low retainers (51%-70% retained) | 18 | 53% | 47% |
| 3. Medium retainers (71%-90% retained) | 59 | 26% | 74% |
| 4. High retainers (retained >91%) | 65 | 18% | 82% |

* $X^2$ was statistically significant at p<.05.

- *Does whether an center implemented strategies that had a positive impact on employee retention (m42) vary for managers from centers that were chronically or almost always understaffed (m25_b1) and those from centers where lack of adequate staff was a serious problem (m25_b2)?* (Chi-square). Whether a center implemented strategies that had a positive impact on employee retention was not dependent to the two staffing scenarios.

Table 131: Manager Responses to M42 based on responses to M25_b1 and M25_b2 (N=153)

| M42: Have any strategies been implemented that have had a measurable positive impact on employee retention in your center? | Yes | No |
|---|---|---|
| The center is chronically (almost always) understaffed. | 25% | 75% |
| Lack of adequate staff at this center is a serious problem. | 29% | 71% |

*Factors Used in Determining Staffing Levels (M46)*

- *What were the top three factors used in determining staffing levels for all centers (N=153), centers with 100% retention rate (n=36), and centers with less than 70% retention rate (n=29)?* ***The top three factors used in determining staffing levels for all centers, regardless of their retention rate, were 1) budget, 2) total call volume, and 3) number of consoles in the center.***

  ***The top three factors used in determining staffing levels for centers with 100% retention rates were 1) budget, 2) number of consoles in the center, and 3) total call volume.***

  ***The top three factors used in determining staffing levels for centers with low retention (70% or less), were 1) budget, 2) number of consoles in the center, and 3) total call volume.***

- *What percent of managers indicated their centers used any of the following 12 factors in determining staffing levels at their centers?* ***Most managers, regardless of their center retention rate used budget, total call volume, and number of consoles in their center as factors in determining staffing levels.***

Table 132: Percent of Managers that responded to M46 1-12 for All Centers, Centers with 100% Retention Rate, and Centers with less than 70% Retention Rate

| Indicate the factors included in the process your center uses to determine total call taker and/or dispatching staffing. | All Centers (N=153) | Centers that have 100% Retention Rate (n=36) | Centers that have <70% Retention Rate (n=29) |
|---|---|---|---|
| (1) Available radio frequencies | 18.3% | 13.9% | 13.8% |
| (2) Average answering time | 13.1% | 8.3% | 6.9% |
| (3) Average calls per hour | 26.8% | 11.1% | 27.6% |
| (4) Budget | 66.0% | 58.3% | 69.0% |
| (5) Desired service levels (e.g. "95% of calls answered within 10 seconds") | 25.5% | 22.2% | 20.7% |
| (6) Hourly call volume | 20.9% | 11.1% | 20.7% |
| (7) Number of consoles in the center | 43.8% | 33.3% | 44.8% |
| (8) Peak hour call volume | 33.3% | 25.0% | 27.6% |
| (9) Physical limitations of the center | 20.3% | 16.7% | 24.1% |
| (10) Total call volume | 44.4% | 27.8% | 44.8% |
| (11) Unique center or geographic requirements | 14.4% | 16.7% | 20.7% |
| (12) Other | 23.5% | 33.3% | 13.8% |

*Region*

- Several research questions addressed the issue of center location, specifically if center location was related to retention, satisfaction, or union membership. Centers were identified as belonging to one of four regions in the United States. These regions were developed by and are currently used by the U.S. Census Bureau. The following table shows the states that make up each region.

Table 133: States in the Four Regions of the United States (as defined by the U.S. Census Bureau)

| Northeast | Midwest | South | West |
|---|---|---|---|
| Connecticut | Indiana | Alabama | Alaska |
| Maine | Illinois | Arkansas | Arizona |
| Massachusetts | Iowa | Delaware | California |
| New Hampshire | Kansas | District of Columbia | Colorado |
| New Jersey | Michigan | Florida | Hawaii |
| New York | Minnesota | Georgia | Idaho |
| Pennsylvania | Missouri | Kentucky | Montana |
| Rhode Island | Nebraska | Louisiana | Nevada |
| Vermont | North Dakota | Maryland | New Mexico |
| | Ohio | Mississippi | Oregon |
| | South Dakota | North Carolina | Utah |
| | Wisconsin | Oklahoma | Washington |
| | | South Carolina | Wyoming |
| | | Tennessee | |
| | | Texas | |
| | | Virginia | |
| | | West Virginia | |

- *Are there differences in center retention rates based on center's location?* (ANOVA normality assumption was violated; deleted 13 extreme cases to resolve violation. Additionally, homogeneity of variance assumption was violated, ran a second ANOVA with a more stringent alpha level of p<.01). ***On average, centers located in the Northeast region of the U.S. had significantly higher retention rates than those in the South region of the U.S.***

Table 134: Mean Center Retention Rates by Region (as defined by the U.S. Census Bureau) (N=153)

| Region | n | M | SD |
|---|---|---|---|
| (1) Northeast | 16 | 95.74** | 4.85 |
| (2) Midwest | 39 | 88.82 | 12.65 |
| (3) South | 49 | 82.81** | 12.39 |
| (4) West | 36 | 86.20 | 12.06 |

** Statistically significant at p<.01.
Note: Retention rates for all centers including the extreme cases were: northeast (92%), Midwest (84%), south (79%), and west (83%).

- *Are there differences in employee satisfaction based on center's location?* (ANOVA). ***On average, centers in the West region of the U.S. had significantly higher employee dissatisfaction than centers in the South and the Midwest.*** There were no statistically significant differences between groups 1 and any of the other three groups; or between groups 2 and 3.

Table 135: Mean Satisfaction Index of Employees by Region (as defined by the U.S. Census Bureau) (N=600)

| Region | n | M | SD |
|---|---|---|---|
| (1) Northeast | 43 | 16.23 | 4.00 |
| (2) Midwest | 164 | 15.25* | 3.57 |
| (3) South | 247 | 14.96* | 3.61 |
| (4) West | 144 | 17.38* | 3.57 |

* Statistically significant at p<.05.

- *Does union membership, as determined by employees, vary based on the center's location?* Employee variable: Union membership (e32) by Region (chi-square). Union membership was dependent to some degree on the location of the center. ***A higher percentage of employees in the Northeast (66%) indicated "all employees in their center were union members." In the Midwest and the South, most employees, 61% and 85% respectively, indicated "none of the employees in their center were union members." Employees in the West were evenly split between "all are union members" (43%) and "none are union members" (42%).***

Table 136: Union membership by Region based on Employees response to E32* (N=600)

| Region | n | Yes, all are union members | Yes, some are union members | None are union members |
|---|---|---|---|---|
| (1) Northeast | 41 | 66% | 17% | 17% |
| (2) Midwest | 143 | 25% | 14% | 61% |
| (3) South | 197 | 3% | 12% | 85% |
| (4) West | 131 | 43% | 15% | 42% |

* $X^2$ was statistically significant at p<.05.

- *Does union membership, as determined by managers, vary based on the center's location?* Manager variable: Union membership (m43) and Region (chi-square). Union membership was dependent to some degree on the location of the center. ***A higher percentage of managers in the Northeast (50%) indicated "all employees in their center were union members." In the Midwest, managers were fairly split***

***between "all are union members" (44%) and "none are union members" (37%). In the South and in the West, a higher percentage of managers, 88% and 57% respectively, indicated "none of the employees in their center were union members."***

Table 137: Union membership by Region based on Manager's response to M43* (N=153)

| Region | n | Yes, all are union members | Yes, some are union members | None are union members |
|---|---|---|---|---|
| (1) Northeast | 18 | 50% | 33% | 17% |
| (2) Midwest | 43 | 44% | 19% | 37% |
| (3) South | 52 | 6% | 6% | 88% |
| (4) West | 37 | 30% | 13% | 57% |

* $X^2$ was statistically significant at p<.05.

*Annual Calls per Employee*

- A variable called "annual calls per employee" was created; it was calculated using total call volume (m13_5)/total current employees (m24_4), and represents the average number of calls that each employee in the center handled.

- For the 115 centers (i.e. managers) that provided both numbers (m13_5 and m24_4), the average annual calls per employee were 6,562, with a median of 5,223 and a standard deviation of 4,673.53. Annual calls per employee ranged from a minimum of 257 calls to 19,231 calls. Approximately 75% of the 115 centers had less than 10,000 annual calls per employee, the other 25% (upper end of the distribution) gradually increased in calls from 10,000 through 19,000.

- Annual calls per employee was significantly related to center retention rate (r= -.196). ***As annual calls per employee increased, center retention rates decreased.***

- Annual calls per employee was not significantly related to employee satisfaction (r= .087).

- Annual calls per employee was significantly related to center size (m24_4), r= .228. ***As annual calls per employee increased, center size increased.***

- *Are there differences in annual calls per employee for low, medium, and high retaining centers?* (ANOVA). Three groups were created based on retention rate: Low retaining centers (retained 70% or less), medium retaining centers (retained between 71-90%), and high retaining centers (retained 91% or more). There were no statistically significant differences in mean annual calls per employee for low retaining centers (m=7,999.43), medium retaining centers (m=7,091.48), or high retaining centers (m=5,335.78). Note: A second analysis was performed on four retention groups: Extremely low retaining (retained 50% or less), low retaining (retained between 51%-70%), medium retaining (retained between 71%-90%), and high retaining centers (retained 91% or more); however, the extremely low group contained too small of a sample size (n=6) to adequately test for differences (HOV assumption was violated, ran at a more stringent alpha level, ANOVA was not significant at $p<.01$).

- *Is there a relationship between annual calls per employee and the center's complexity factor?* (Correlation). Annual calls per employee was not significantly related to the center's complexity factor (i.e. the total number of centers or jurisdictions they served) ($r= .047$). Note: Managers were asked to indicate the number of centers or jurisdictions they served in four separate categories: police/law enforcement, combined fire and Emergency Medical Services (EMS), fire only, or EMS only. These were summed to create a "center complexity factor." The center complexity factor ranged from one to 131, with a mean of 12.87 and a standard deviation of 16.15.

- *Is there a relationship between annual calls per employee and whether the center was fully staffed (m25_1)?* (T-test). ***On average, managers that indicated their center was fully staffed had significantly less annual calls per employee than those who did not.***

Table 138: Mean Annual Calls per Employee of Managers who responded to m25_1 (N=115)

| The center is fully staffed at this time (all authorized positions are filled). | N | M | SD | Median | Range |
|---|---|---|---|---|---|
| Yes | 54 | 5,216.14 | 4,977.52 | 4,167 | 257-14,286 |
| *No Response* | 61 | 7,754.12 | 3,930.84 | 7,200 | 281-19,231 |

* Statistically significant at p<.05

- *Is there a relationship between annual calls per employee and whether the current staffing allowed the center to comfortably handle the workload (m25_4)?* (T-test). There was no statistically significant difference in mean annual calls per employee for managers who indicated the current staffing at their center allowed them to comfortably handle the workload (m=5,805.14) and those who did not (m=6,966.22).

- *Is there a relationship between annual calls per employee and whether the center was chronically or almost always understaffed (m25_b1)?* (T-test). ***On average, managers that indicated their center was chronically or almost always understaffed had significantly more annual calls per employee than those who did not.***

Table 139: Mean Annual Calls per Employee of Managers who responded to m25_b1 (N=115)

| The center is chronically (almost always) understaffed. | N | M | SD | Median | Range |
|---|---|---|---|---|---|
| Yes | 19 | 11,211.46 | 4,111.72 | 11,765 | 3,572-17,601 |
| *No Response* | 96 | 5,642.24 | 4,222.39 | 4,487 | 257-19,231 |

* Statistically significant at p<.05

- *Is there a relationship between annual calls per employee and whether lack of adequate staffing at their center was a serious problem (m25_b2)?* (T-test). ***On average, managers that indicated lack of adequate staff at their center was a serious problem had significantly more annual calls per employee than those who did not.***

Table 140: Mean Annual Calls per Employee of Managers who responded to m25_b2 (N=115)

| Lack of adequate staff at this center is a serious problem. | N | M | SD | Median | Range |
|---|---|---|---|---|---|
| Yes | 10 | 9,656.76 | 5,720.38 | 11,649 | 1,667-17,601 |
| *No Response* | 105 | 6,267.67 | 4,483.51 | 5,107 | 257-19,231 |

* Statistically significant at p<.05

- *Is there a relationship between annual calls per employee and whether employee's left a center due to burnout (m51_11)?* (T-test). There was no statistically significant difference in mean annual calls per employee for centers where employees had left due to burnout (m=6870.80) and those where no employees left due to burnout (m=6548.35).

*Percent Fully Trained*

- A variable called "fully trained" was created; it was calculated using 1 minus the number of current trainees not working independently (m24_3)/total current employees (m24_4), and represents the percent of staff that was fully trained and working independently.

- For the 153 centers (i.e. managers) that provided both numbers (m23_3 and m24_4), the average percent of employees fully trained was 93.35, with a median of 97.22 and a standard deviation of 8.99. Percent fully trained ranged from a minimum of 60.00 to 100.00. Approximately 48% of the 153 centers had 100 percent of their staff fully trained and working independently.

- Percent fully trained was significantly related to center retention rate (r= .266). ***As percent fully trained increased, center retention rates increased.***

- Percent fully trained was not significantly related to employee satisfaction (r= .002).

- Percent fully trained was significantly related to annual calls per employee (r= -.280). ***As percent fully trained increased, annual calls per employee decreased.***

- *Does center retention rate differ based on percent of staff fully trained?* (ANOVA homogeneity of variance assumption was violated- ran a second ANOVA with a more stringent alpha level of .01). Three groups were created based on percent of staff fully trained: centers with 60%-89% staff fully trained, centers with 90%-99% staff fully trained, and centers with 100% staff fully trained. ***On average, centers with 60%-89% staff fully trained had significantly lower center retention rates than those with 90%-99% staff fully trained and 100% staff fully trained.***

Table 141: Mean Retention Rate of Centers by Percent of Staff Fully Trained (N=153)

| Percent of Staff Fully Trained | n | M | SD |
|---|---|---|---|
| (1) 60%-89% staff fully trained | 38 | 73.79** | 19.58 |
| (2) 90%-99% staff fully trained | 41 | 86.53** | 7.95 |
| (3) 100% staff fully trained | 74 | 85.87** | 19.09 |

** Statistically significant at p<.01.

- *Is there a relationship between the percent of staff fully trained and whether managers indicated their center was fully staffed (m25_1)?* (T-test). ***On average, managers who indicated their center was fully staffed were from centers with a significantly higher percent of staff fully trained than those who did not.***

Table 142: Mean Percent of Staff Fully Trained in Centers of Managers who responded to M25_1 (N=153)

| The center is fully staffed at this time (all authorized positions are filled). | n | M | SD |
|---|---|---|---|
| Yes | 73 | 95.29* | 7.81 |
| *No Response* | 80 | 91.58* | 9.66 |

* Statistically significant at p<.05.

- *Is there a relationship between the percent of staff fully trained and whether managers indicated that current staffing allowed their center to comfortably handle the workload (m25_4)?* (T-test). There was no statistically significant difference in mean percent of staff fully trained for managers who indicated the current staffing at their center allowed them to comfortably handle the workload (m=93.94) and those who did not (m=93.03).

- *Is there a relationship between the percent of staff fully trained and whether managers indicated their center was chronically or almost always understaffed (m25_b1)?* (T-test). There was no statistically significant difference in mean percent of staff fully trained for managers who indicated their center was chronically or almost always understaffed (m=90.40) and those who did not (m=93.95).

- *Is there a relationship between the percent of staff fully trained and whether managers indicated that lack of adequate staff at their center was a serious problem (m25_4)?* (T-test). There was no statistically significant difference in mean percent of staff fully trained for managers who indicated that lack of adequate staff at their center was a serious problem (m=90.71) and those who did not (m=93.68).

*Percent of Turnover due to New Hires that Left*

- A variable called "percent of turnover due to new hires" was created; it was calculated by determining the percent of a center's turnover rate that was due to the number of new hires that left in the last year (m49b).

- For the 117 centers (i.e. managers) that experienced turnover in the last year, the average percent of turnover that was due to new hires that had left was 43.16, with a median of 50.00 and a standard deviation of 37.29. The percent of turnover that was due to new hires that had left ranged from a minimum of 0.00 to 100.00. Approximately 33% of the 117 centers had 0 percent of their turnover due to new hires (these are centers where their entire turnover was due to experienced staff that had left), another 19% had 100 percent of their turnover caused by new hires that had left in the last year. The following analyses highlight these two groups (0% group and 100% group) that were of particular interest.

- *Is there a relationship between percent of turnover due to new hires and center retention rate?* (T-test). There was no statistically significant difference in mean center retention rate between centers who had 0% of their turnover due to new hires (m=81.38) and those who had 100% of their turnover due to new hires (m=83.89).

- *Is there a relationship between percent of turnover due to new hires and employee satisfaction?* (T-test). There was no statistically significant difference in employee satisfaction for centers who had 0% of their turnover due to new hires (m=15.80) and those who had 100% of their turnover due to new hires (m=15.68).

- *Is there a relationship between percent of turnover due to new hires and center size (m24_4)?* (T-test). There was no statistically significant difference in mean center size between centers who had 0% of their turnover due to new hires (m=12.76) and those who had 100% of their turnover due to new hires (m=13.14).

- *Does percent of turnover due to new hires vary for managers that indicated their center was fully staffed (m25_1)?* (Chi-square). Percent of turnover due to new hires

(two groups: no turnover was due to new hires, and all turnover was due to new hires) was not dependent on whether managers indicated their center was fully staffed.

- *Does percent of turnover due to new hires vary for managers that indicated the current staffing at their center allowed them to comfortably handle the workload (m25_4)?* (Chi-square). Percent of turnover due to new hires (two groups: no turnover was due to new hires, and all turnover was due to new hires) was not dependent on whether managers indicated the current staffing at their center allowed them to comfortably handle the workload.

- *Does percent of turnover due to new hires vary for managers that indicated their center was chronically or almost always understaffed (m25_b1)?* (Chi-square). Percent of turnover due to new hires (two groups: no turnover was due to new hires, and all turnover was due to new hires) was not dependent on whether managers indicated their center was chronically or almost always understaffed.

- *Does percent of turnover due to new hires vary for managers that indicated lack of adequate staff at their center was a serious problem (m25_b2)?* (Chi-square). Percent of turnover due to new hires (two groups: no turnover was due to new hires, and all turnover was due to new hires) was not dependent on whether managers indicated lack of adequate staff at their center was a serious problem.

- *Is there a relationship between percent of turnover due to new hires and managers rating of the application and selection process (m26 subscale composite)?* (T-test). There was no statistically significant difference in managers mean rating of the application and selection process for centers who had 0% of their turnover due to new hires (m=2.02) and those who had 100% of their turnover due to new hires (m=2.12).

- *Does percent of turnover due to new hires vary for managers that indicated the training that was provided for new employees was preparing them for successful performance (m35)?* (Chi-square). Percent of turnover due to new hires was not dependent on whether managers indicated the training provided for new employees was preparing them for successful performance.

- *Does percent of turnover due to new hires vary for managers that rated the overall performance of their center on ability to train (m59_2)?* (Chi-square). Percent of turnover due to new hires was not dependent on how managers rated their center on ability to train.

*Employees in Training or on Probation*

- A variable called "employees in training" was created; it was calculated using the number of employees in training or on probationary status (m41_1)/total current employees (m24_4), and represents the proportion of employees in training or on probation.

- Two groups were created based on percent of employees in training or on probation: centers that had no employees in training or probation, and centers that had some (more than 1) employees in training or probation. The following analyses highlight these two groups that were of particular interest.

- *Is there a relationship between employees in training or probation and center retention rate?* (T-test). ***On average, centers that had no employees in training or on probation had significantly higher retention rates than those that had some employees in training or on probation.***

Table 143: Mean Retention Rate of Centers by Employees in Training or on Probation (N=153)

| Employees in Training or on Probation | n | M | SD |
|---|---|---|---|
| Have no employees in training or on probation | 49 | 90.27* | 18.45 |
| Have some employees in training or on probation | 101 | 79.15* | 16.34 |

* Statistically significant at p<.05.

- *Is there a relationship between employees in training or probation and employee satisfaction?* (T-test). There was no statistically significant difference in mean employee satisfaction for centers that had no employees in training or on probation (m=15.66) and those that had some employees in training or on probation (m=15.88).

- *Is there a relationship between employees in training or probation and center size (m24-4)?* (T-test). ***On average, centers that had no employees in training or on probation were significantly smaller than those that had some employees in training or on probation.***

Table 144: Mean Center Size (M24_4) by Employees in Training or on Probation (N=153)

| Employees in Training or on Probation | n | M | SD |
|---|---|---|---|
| Have no employees in training or on probation | 49 | 11.16* | 7.04 |
| Have some employees in training or on probation | 101 | 21.01* | 23.59 |

* Statistically significant at p<.05.

- *Is there a relationship between employees in training or probation and annual calls per employee?* (T-test). ***On average, centers that had no employees in training or on probation had significantly less annual calls per employee than those that had some employees in training or on probation.***

Table 145: Mean Annual Calls per Employee by Employees in Training or on Probation (N=153)

| Employees in Training or on Probation | n | M | SD |
|---|---|---|---|
| Have no employees in training or on probation | 34 | 4624.37* | 4074.80 |
| Have some employees in training or on probation | 78 | 7564.11* | 4671.94 |

* Statistically significant at p<.05.

## Discrepancy Analysis

The purpose of the discrepancy analysis was to address two specific research questions: (1) Is there a discrepancy between Manager and Employee responses?; and (2) Is the discrepancy related to the center? (i.e. do managers and employees from the same center differ in their responses)

### *Data*

The manager survey database included 153 managers and the employee survey database included 600 employees. When the files were merged it was determined there were 147 employees whose manager did not respond to the manager survey and 39 managers whose employees did not respond to the employee survey. Since the purpose was to compare manager and employee responses, such centers where there was no representation from either manager or employee were deleted from the database, resulting in 567 valid records for the discrepancy analysis (114 managers and 453 employees). Responses to 26 items found in both manager and employee surveys were compared in the discrepancy analysis. These items relate to satisfaction, staffing, the comparability of salary and retirement benefits to other public safety personnel, and the overall performance of the communications center.

### *Results*

Satisfaction with Compensation and Benefits

The employee survey asked respondents to rate their satisfaction with seven items relating to compensation and benefits (question e39). The manager survey asked that managers indicate their sense of employee's satisfaction with seven items (question m52b), however only five items were the same as in the employee survey. The response scale ranged from 1-5 *Very satisfied* to *Very dissatisfied;* therefore, low values indicate satisfaction and higher values indicate dissatisfaction. Descriptive statistics indicated there was sufficient variation in the responses to treat the items as interval (versus ordinal) for the purpose of this analysis. Independent samples t-test's were performed to determine whether there were significant differences between mean ratings of managers' sense of employee satisfaction and actual reported employee satisfaction.

Table 146: Group Differences for Satisfaction Items between Managers and Employees

| Satisfaction with… | Managers (n=114) | | Employees (n=453) | | | |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | df | t |
| Salary/Earnings | 2.87 | 1.359 | 2.74 | 1.306 | 547 | -.879 |
| Health Benefits | **2.34** | 1.112 | **2.60** | 1.351 | 533 | 2.038* |
| Vacation Time | **1.85** | .731 | **2.20** | 1.132 | 538 | 3.880* |
| Family Friendly Policies | 2.56 | .975 | 2.74 | 1.165 | 482 | 1.387 |
| Retirement Benefits | 2.31 | 1.095 | 2.53 | 1.169 | 528 | 1.728 |

*Statistically significant at p<.05

As shown in table 146, managers and employees were found to be statistically different, or discrepant, on two of the five items relating to satisfaction with compensation and benefits (discrepant categories are in bold font). On average, managers overestimated their employee's satisfaction with health benefits and vacation time. However, on average, managers did provide an accurate sense of their employee's satisfaction with salary/earnings, family friendly policies, and retirement benefits. A one-way analysis of variance (ANOVA) revealed that the discrepancy between managers and employees on the health benefits item was significantly related to center, suggesting that managers and employees from the same center tend to disagree on their health benefit satisfaction ratings.

Current Staffing Situation

Both the manager and employee surveys asked respondents to indicate their current staffing situation based on a list of ten scenarios (they were asked to check all that apply). These questions were m25 and e21. Respondents that checked a scenario were coded as 1 and those who did not were coded as 0. Due to the categorical nature of the data, a chi-square test was performed to determine whether there were differences in the reported staffing situation between managers and employees.

Table 147: Current Staffing Situation Reported by Managers and Employees (%)

| Staffing Situation | Managers (n=114) | Employees (n=453) | $\chi^2$ (1) |
|---|---|---|---|
| The center is fully staffed at this time (all authorized positions are filled). | 44 | 35 | 3.00 |
| We are not fully staffed but expect to be fully staffed soon. | 26 | 28 | .103 |
| When fully staffed, the number of positions authorized meets our needs. | 35 | 37 | .124 |
| The current staffing allows the center to comfortably handle the workload. | 34 | 27 | 2.53 |
| We need more staff than is currently authorized to safely handle busy periods. | 37 | 42 | .82 |
| The center is chronically (almost always) understaffed. | **17** | **37** | 16.86* |
| Lack of adequate staff at this center is a serious problem. | **13** | **25** | 7.24* |
| The center has always been able to cover staffing needs with overtime. | 46 | 40 | 1.40 |
| There is a pool of qualified candidates waiting for an opening. | 12 | 8 | 1.66 |
| The center is having difficulty filling authorized positions. | 27 | 22 | 1.34 |

* Statistically significant at p<.05

As shown in table 147, managers and employees were found to be discrepant on two of the ten staffing scenarios. A significantly higher proportion of employees (37%) stated their center was chronically understaffed compared to 17% of managers. Similarly, a significantly higher proportion of employees (25%) stated that lack of adequate staff at their center was a serious problem, compared to 13% of managers who agreed with the statement. These discrepancies, centered around centers with staffing issues, suggest that managers tend to underestimate the severity of their staffing situation in comparison to employees. None of the significant discrepancies were found to be related to center. That is, in general, discrepancies at the center level between managers and employees were not observed.

Comparability of Salary and Retirement Benefits

Both the manager and employee surveys asked respondents to rate the comparability of the salary schedule in their call center to those of other public safety personnel (questions m54 and e41). Similarly, they were both asked to rate the comparability of their retirement benefits to those of other public safety personnel (questions m56 and

e45). The response scale ranged from 1-4 *Higher* to *Don't know*. A chi-square test was performed to determine whether there were differences in the reported comparability of salary schedules and retirement benefits between managers and employees.

As shown in table 148, managers and employees did differ in their responses to the two questions. There was more discrepancy between managers and employees for the question relating to the comparability of retirement benefits than for the salary question. For both questions, a significantly higher proportion of employees answered *"Don't know"* compared to managers, indicating that in general, managers were more acquainted with salaries and retirement benefits of other public safety personnel. Employees, however, appeared to feel more acquainted with the salaries of other public safety personnel than with the retirement benefits of other public safety personnel. None of the significant discrepancies were found to be related to center.

Table 148: Manager and Employee Responses (%) to Comparability Questions

| Question | Managers (n=114) | Employees (n=453) | $\chi^2$ (1) |
|---|---|---|---|
| How does the salary schedule in your call center compare to the salary schedules for other public safety personnel? | | | 12.51* |
| Higher than other public safety personnel | 8 | 8 | |
| Comparable to other public safety personnel | 27 | 28 | |
| Lower than other public safety personnel | 60 | 46 | |
| Don't know | **5** | **18** | |
| How do retirement benefits for communications center employees compare to other public safety personnel? | | | 46.90* |
| Higher | **7** | **1** | |
| Comparable | **55** | **33** | |
| Lower | 25 | 22 | |
| Don't know | **13** | **44** | |

* Statistically significant at $p<.05$

Overall Performance of the Center

The employee survey asked respondents to rate the overall performance of their communications center on nine separate criteria (question e11). The manager survey asked the same question about the same nine criteria (question m59). The response scale ranged from 1= *Excellent* to 5 = *Poor;* therefore, low values indicate a positive rating and higher values indicate a negative rating. Descriptive statistics indicated there was sufficient variation in the responses to treat the items as interval (versus ordinal) for the purpose of this analysis. Various independent samples t-test's were performed to determine whether there were significant differences between mean ratings of employees and managers.

Table 149: Manager and Employee Ratings of the Overall Performance of their Center

| Rate the overall performance of the center in... | Managers (n=114) | | Employees (n=453) | | | |
|---|---|---|---|---|---|---|
| | M | SD | M | SD | Df | t |
| 1. Ability to consistently staff necessary positions | **2.71** | .942 | **3.22** | 1.120 | 537 | 4.843* |
| 2. Ability to train | **2.49** | 1.002 | **2.77** | .933 | 544 | 2.651* |
| 3. Call answering times | 2.06 | .742 | 2.21 | .892 | 540 | 1.795 |
| 4. Customer satisfaction | **2.17** | .705 | **2.39** | .719 | 511 | 2.805* |
| 5. Efficient call management | **2.21** | .702 | **2.38** | .805 | 526 | 2.186* |
| 6. Employee retention | **2.66** | .982 | **2.99** | 1.111 | 537 | 2.862* |
| 7. Employee satisfaction | **2.84** | .773 | **3.28** | .989 | 538 | 5.098* |
| 8. Shift management | **2.67** | .785 | **2.98** | .994 | 531 | 3.032* |
| 9. Use of overtime | **2.83** | .887 | **3.13** | 1.034 | 509 | 2.692* |

*Statistically significant at p<.05

As shown in Table 149, managers rated the overall performance of their center significantly lower (i.e. more positive) than employees on ability to consistently staff necessary positions, ability to train, customer satisfaction, efficient call management, employee retention, employee satisfaction, shift management, and use of overtime (eight of the nine criteria listed). There was no statistically significant difference, or discrepancy, between managers and employees in their average ratings of their center's overall performance in call answering times. The eight items that managers and employees were discrepant on are presented in Figures 5-6. Results of this analysis suggest that on average, managers rate their center more favorably than employees rate

their center, except in the case of call answering times, where the managers and employee did not significantly differ in their responses.

Figure 5 Manager and Employee Average Ratings of Overall Performance of the Center- graph 1

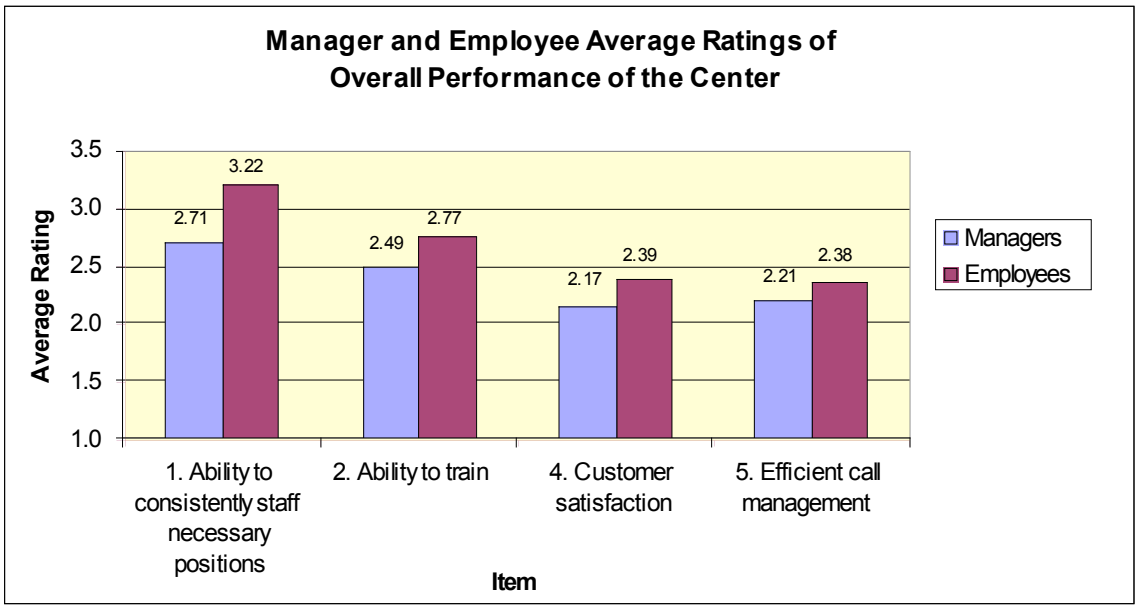
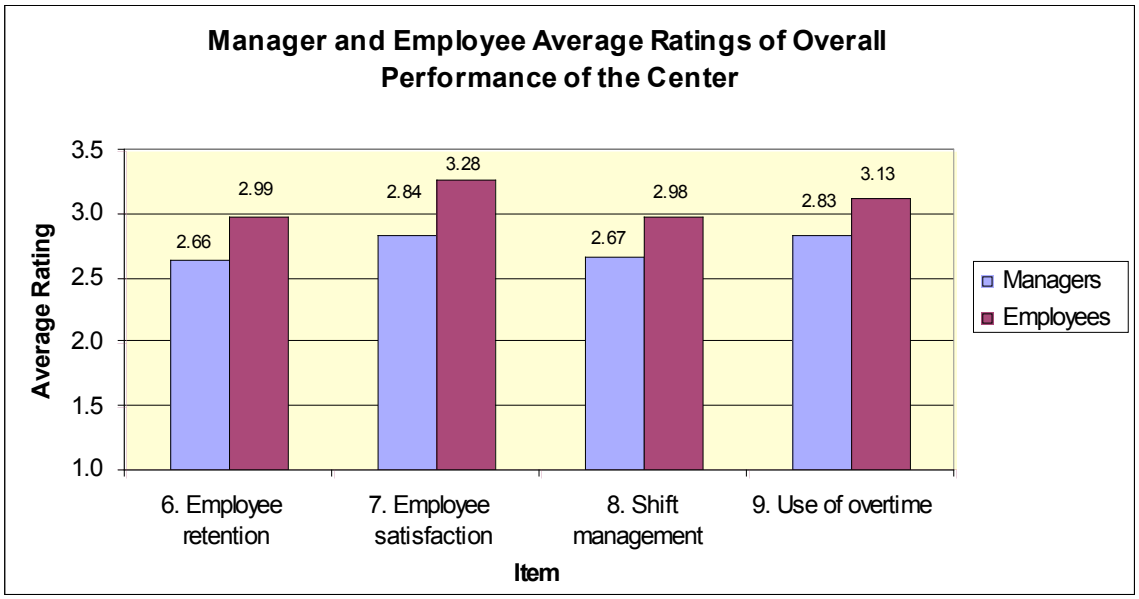



Figure 6 Manager and Employee Average Ratings of Overall Performance of the Center- graph 2



## Large Center Study

The purpose of this analysis was to compare the results (i.e., descriptive data) of large centers from Study II to the centers in Study I. Specifically, the research questions were: *How are large centers similar or different than smaller centers? Are staffing and retention issues different in larger centers?*

*Description of Centers in Study I and Study II*

As shown in table 150, most of the public safety communications centers from Study I were small (65%), another one-third were medium sized (32%), and large centers represented the smallest proportion of respondents (3%). The purpose of Study II was to survey managers of large centers using a shorter version of the manager survey. The sampling frame was purposive and used a combination of strategies: 1) the U.S. Census Bureau listing of cities and counties with populations in excess of 100,000 and tried to match names and zip codes of communities in excess of 250,000 with the Public Safety PSAP database, 2) we included law enforcement centers with 500 or more sworn personnel that indicated they provided E9-1-1 services using National Directory of Las Enforcement Administrators, 3) we made sure our list included centers that were members on the Major Cities Chiefs, and 4) we asked APCO affiliates to send us the names and contact information for the five largest centers in each state. Approximately 217 large centers were invited to participate; a total of 77 manager surveys were returned, a 35% response rate. Data were entered and prepared for analysis. Although the sample in Study II consisted more of medium centers (53%), large centers were represented at a much higher rate (35%) than in Study I (3%). The goal of the second survey, to sample more large centers, was achieved.

Table 150: Percent of Small, Medium, and Large Centers in Study I and Study II

| Center Size* | Study I (N=153) | | Study II (N=77) | |
|---|---|---|---|---|
| | n | Percent | n | Percent |
| Small (1-15 employees) | 100 | 65% | 9 | 12% |
| Medium (16-75 employees) | 49 | 32% | 41 | 53% |
| Large (76+ employees) | 4 | 3% | 27 | 35% |
| TOTAL | 153 | 100% | 77 | 100% |

* The size categories used in this analysis are those specified by the Commission on Accreditation for Law Enforcement Centers, Inc. (CALEA).

*Retention Rate*

The average retention rate for all 153 centers in Study I was 83.05; in Study II the retention rate for all 77 centers was 83.94, suggesting no major differences. As shown in table 151, the retention rates for Study I and II differed slightly by center size; with the biggest difference noted in the large centers. The sample of large centers from Study II revealed a lower retention rate (85%) than that of Study I (91%).

Table 151: Average Retention Rate for Small, Medium, and Large Centers in Study I & Study II

| Center Size | Study I (N=153) | | Study II (N=77) | |
|---|---|---|---|---|
| | n | Retention Rate | n | Retention Rate |
| Small | 100 | 81% | 9 | 81% |
| Medium | 49 | 87% | 41 | 84% |
| Large | 4 | 91% | 27 | 85% |
| TOTAL | 153 | 83% | 77 | 84% |

*Total Call Volume*

The shortened survey asked managers to report specific numbers for their total call volume (i.e., incoming and outgoing calls) for 2003 and 2004. The original survey only asked for total call volume for the most recent year (i.e., 2003). Therefore, in Study II, based on the numbers provided, we were able to identify those centers that did in fact experience an increase or decrease in call volume. As shown in table 152, the majority of small centers (75%) experienced a decrease in total call volume between 2003 and 2004. For large centers, on the other hand, the inverse was true; the large majority (74%) experienced an increase in call volume between the two years. There was an even split for medium centers between those whose call volume increased (47%) and those whose call volume decreased (44%), with another 9% indicating their call volume stayed the same between 2003 and 2004.

Table 152: Percent of Small, Medium, and Large Centers from Study II that Increased, Stayed the Same, and Decreased in their Total Call Volume between 2003 and 2004

| Center Size and average increase in total call volume | n | Increased | Stayed the same | Decreased |
|---|---|---|---|---|
| Small (Average = 10,000) | 4 | 25% | -- | 75% |
| Medium (Average = 105,000) | 32 | 47% | 9% | 44% |
| Large (Average = 134,500) | 19 | 74% | -- | 26% |

Of the 30 centers in Study II that experienced an increase in total call volume between 2003 and 2004, the average increase by center size was 10,000 (small), 105,257 (medium), and 134,502 (large).

*Trends in Total Call Volume*

In Study II, managers were asked to report their perception of the trend in their communications center's total call volume since January of 2000; whether it had increased, stayed the same, or decreased. They were also asked to provide the numbers for total calls in 2003 and 2004. Exhibit 11 illustrates the fact that changes in actual call volume between 2003 and 2004 were not congruent with managers' perceptions of the overall trend since 2000. For example, only 92% of the managers who provided numbers that indicated an increase in call volume from 2003 to 2004, indicated the trend since 2000 had been one of increasing call volume. None of the managers indicated that call volume had "decreased" at their center since 2000, although for some, their numbers declined between 2003 and 2004.

Table 153: Congruence between Actual Call Volume Activity and Manager's Perception of the Call Volume Trend, Medium Centers

| Center Experienced….. | n | Trend: Increased | Trend: Stayed the same | Trend: Decreased |
|---|---|---|---|---|
| Increase in call volume | 15 | 92% | 8% | -- |
| Call volume stayed the same | 3 | 100% | -- | -- |
| Decrease in Call volume | 14 | 64% | 36% | -- |

*SURVEY RESULTS: Comparative Data for Centers in Study I and LARGE centers in Study II*

In the following section comparative data are presented for the 153 centers in Study I and the LARGE centers in Study II (n=27). Items included in the shortened survey that were not part of the original survey are also presented without comparisons. Large

centers had an average of 135 employees, ranging from 76 to 322. The average center size for Study I was 18, and ranged from 4 to 140.

General Information

Q2- As shown in table 154, more centers in Study II processed enhanced 9-1-1 wireless (phase II) calls than in Study I, 52% compared to 21%.

Table 154: Types of calls processed for centers in Study I and Study II

| Types of calls processed by center | Study I (N=153) | Large Centers in Study II (N=27) |
|---|---|---|
| Basic 9-1-1 | 5% | -- |
| Enhanced 9-1-1 | 40% | 26% |
| Enhanced 9-1-1 wireless (Phase I with a general location) | 34% | 22% |
| Enhanced 9-1-1 wireless (Phase II with a specific GPS location) | 21% | 52% |

Q3- Average *geographic area* served for the 153 centers in Study I was 770 square miles, and ranged from 1 to over 40,000 square miles. For the 27 large centers in Study II, the average geographic area served was 822 square miles, and ranged from 59 to 8,000 square miles.

Q4- The *population served* in Study I averaged 79,000, and ranged from 2,000 to just under 1 million. For large centers in Study II the average was 756,427 persons, with a range from 291,000 to 1,450,000.

Q5- Most of the centers in Study I were the *primary public safety answering point* (PSAP) for their community (78%) and 16% indicated they served as both (primary and secondary). In Study II, 74% of the large centers indicated they were primary PSAPs and 22% said they were both a primary and secondary PSAP.

Q6- When asked if their center was using *automated call reporting software* that tracks and reports statistics on all incoming and outgoing calls, 45% of the managers in study I indicated they were using it; in study II 85% of managers indicated they were using it.

Q7- Most managers (82%) in Study I indicated they were using a *Computer Aided Dispatch* (CAD) system and 18% said they were not. In Study II, 100% of the large centers indicated they were using a CAD system.

Jurisdiction and Services

Q8- The average number of *centers and/or jurisdictions served* by the centers in Study I was 12 (Median = 6); in Study II for large centers it was 8 (Median = 3).

Trends

Q9- Table 155 displays the trends perceived by managers in Study I and Study II. One difference to note is that no managers in Study II indicated that *call volume* (total or wireless) had decreased since 2000; whereas in Study I a few managers did indicate they perceived a decrease. Also, larger centers in Study II appeared to feel the *availability of qualified applicants* and the *retention of qualified staff* had increased in their centers (29% and 36% respectively), compared to the managers from the smaller centers in Study I (8% and 14% respectively).

Table 155: Trends Perceived by Managers since January of 2000, Study I and Study II Results

| Which of the following best describes the trends in your communications center since January of 2000? | Study I (N=153) | | | Large Centers in Study II (N=27) | | |
|---|---|---|---|---|---|---|
| | Increased | About the same | Decreased | Increased | About the same | Decreased |
| Total call volume | 85% | 12% | 3% | 92% | 8% | -- |
| Wireless call volume | 82% | 6% | 12% | 92% | 8% | -- |
| Number of dispatched calls | 80% | 16% | 4% | 72% | 16% | 12% |
| Number of authorized staff | 31% | 62% | 7% | 48% | 44% | 8% |
| Availability of qualified applicants | 8% | 37% | 55% | 29% | 42% | 29% |
| Retention of qualified staff | 14% | 62% | 24% | 36% | 48% | 16% |

Results for Q10- Q13 are displayed in table 156. Data were provided by managers for 2003 and 2004 call volume activity. The two-year trend suggests that on average, large centers experienced an increase in call volume, across all categories: total call volume, incoming 9-1-1 and 7-10 digit emergency calls, wireless 9-1-1 emergency calls, and calls

that resulted in dispatch to the scene. Study I results suggest that smaller centers handle a significantly smaller number of calls than those in Study II. In 2003, Study I centers had an average total call volume of 238,000; and an average of 54,000 calls that resulted in dispatch to the scene.

Table 156: Call Information for Years 2003 and 2004, Large Center Study II Results (N=27)

| What was the total number of calls in 2003 and 2004? | 2003 | 2004 |
|---|---|---|
| Average Total incoming and outgoing call volume | 1,095,416 | 1,164,699 |
| Average Incoming 9-1-1 and 7-10 digit emergency calls | 971,704 | 1,029,334 |
| Average 9-1-1 emergency calls that were wireless | 261,175 | 291,546 |
| Average Number of calls that resulted in a dispatch to the scene | 559,466 | 753,682 |

Staffing

Q14- Managers were asked to indicate to the best of their ability the total number of staff currently employed at their center. As shown in table 157, there were large differences between the two studies in terms of their staffing numbers. On average, the centers in Study II had significantly more call takers and dispatchers, supervisors, trainees, and current employees. Managers in Study I were not asked to provide the number of trainers or the number of vacancies.

Table 157: Manager Responses to Staffing Question, Study I (N=153), Study II (N=27) Results

| Staffing question | Average | | Minimum | | Maximum | |
|---|---|---|---|---|---|---|
| | Study I | Study II | Study I | Study II | Study I | Study II |
| Total call takers AND dispatchers | 15 | 106 | 3 | 49 | 118 | 269 |
| Total shift supervisors (not included in previous number) | 2 | 13 | 0 | 3 | 20 | 39 |
| Number of current call taker and/or dispatcher trainees (not working independently) | 1 | 10 | 0 | 2 | 17 | 37 |
| Total full time trainers (not included in previous numbers) | -- | 5 | -- | 0 | -- | 25 |
| Total current employees in the communications center | 18 | 135 | 4 | 76 | 140 | 322 |
| Total call taker/dispatcher vacancies | -- | 9 | -- | 0 | -- | 36 |

Q15- In the shortened survey managers were asked to describe their current staffing situation by marking only ONE of four descriptions. In the original survey, however, managers were presented with 10 staffing scenarios and were asked to “check all that

apply." The results presented in table 158 indicate that the majority of large centers (44%) are chronically understaffed; another 30% said their current staffing allowed them to comfortably handle the workload, and very few (11%) indicated they were fully staffed. Almost half of smaller centers (48%), on the other hand, indicated they were fully staffed, and 34% indicated they could comfortably handle the workload, with fewer managers indicating their center was chronically understaffed. It is not clear what the effect of only being able to select one option had on Study II results.

Table 158: Percent of Managers that Responded to Staffing Situation Question, Study I & Study II

| Which of the following statements most closely describes the current staffing situation in your center? Please mark only one description that best describes your center. | Study I (N=153) | Large Centers in Study II (N=27) |
|---|---|---|
| The center is fully staffed at this time (all authorized positions are filled). | 48% | 11% |
| The current staffing allows the center to comfortably handle the workload. | 34% | 30% |
| The center is chronically (almost always) understaffed. | 17% | 44% |
| Lack of adequate staff at this center is a serious problem. | 11% | 15% |

Q18- Fifty-eight percent (58%) of managers in Study I indicated that *overtime was a frequent necessity* because their center was short staffed; in Study II 89% of managers indicated the same.

Q19- Thirty-nine percent (39%) of managers in Study II indicated they *"over-hire"* to accommodate routine turnover and/or unexpected employee absence. This question was not asked in Study I. Among those who reported they over hired, managers were less likely to report that their center was "chronically understaffed" or that understaffing was a "serious problem" (40% compared to 67% among those who did not over hire).

Q21- The portion of call takers/dispatchers' time devoted to call taking and dispatch did vary for the centers in Study I and Study II. In Study I, 35% of managers indicated *all* of their call takers/dispatcher's time was devoted to taking calls and/or dispatch, and 62% said the *majority* of their call takers/dispatcher's time was devoted to taking calls and dispatch. In larger centers, however, the inverse was true. Eighty-nine percent 89% of managers indicated that *all* of their call takers/dispatcher's time was devoted to taking

calls and/or dispatch, and 11% said the *majority* of their call takers/dispatcher's time was devoted to taking calls and dispatch.

Q22- In Study I 63% of the managers felt the *screening and application process* used by their center was effective for selecting the right people for the job; in Study II 69% of managers agreed with the statement.

Q23- Managers were asked in both surveys (Study I and Study II) about the process that is used in their center to determine *shift assignments*. However, the shortened survey included two response options and the original included three. As shown in table 159, the majority of managers from large centers (81%) indicated they were pleased with the current process, more than those from the smaller centers (66%).

Table 159: Manager Responses to Shift Assignment Question, Study I and Study II Results

| How effective is the process that is currently used within your center to determine shift assignments? | Study I (N=153) | Large Centers in Study II (N=27) |
|---|---|---|
| Current process works very well | 31% | -- |
| Current process works well most of the time | 35% | 81% |
| Current process needs to be changed | 5% | 19% |

Determination of Staffing Levels

Q24- Fifty-six percent (56%) of large centers in Study II indicated they use a *formula* to determine staffing levels at their center. This exact question was not asked of managers in Study I.

Employee Retention and Turnover

Q31- Only 21% of centers from Study I indicated whether the *strategies they implemented had a positive impact* on employee retention; 35% of the large centers from Study II indicated the same.

Union Membership

Q34- About an equal percent of centers indicated that *all employees were union members* in Study I and Study II, 28% and 23%, respectively. Significantly more centers

in Study II (46%) indicated that *some were union members*, compared to 15% in Study I. Significantly more centers in Study I (59%) indicated that *none were union members*, compared to 31% of large centers.

Center Performance

Q35- Manager's assessment of the *overall performance of their center* was based on responses to nine items, which were combined into a subscale composite score that ranged 1.00 (excellent) to 5.00 (poor). In Study I the average score was 2.46; in Study II the average score was 2.48, indicating no major differences between managers of small or large centers in their rating of the overall performance of their center. The results for the nine items are presented in table 160.

Table 160: Manager Responses to Overall Performance of the Center, Study I and II Results

| Please rate the overall performance of the communications center on each of the following criteria. | Study I (N=153) | | | Large Centers in Study II (N=27) | | |
|---|---|---|---|---|---|---|
| | Excellent or Above Average | Average | Below Average or Poor | Excellent or Above Average | Average | Below Average or Poor |
| Ability to consistently staff necessary positions | 38% | 50% | 12% | 52% | 37% | 11% |
| Ability to train | 50% | 40% | 10% | 85% | 11% | 4% |
| Call answering times | 75% | 23% | 2% | 56% | 28% | 16% |
| Customer Satisfaction | 67% | 32% | 1% | 64% | 36% | -- |
| Efficient call management | 66% | 33% | 1% | 63% | 29% | 8% |
| Employee Retention | 45% | 38% | 17% | 30% | 57% | 13% |
| Employee Satisfaction | 29% | 57% | 14% | 31% | 54% | 15% |
| Shift Management | 39% | 54% | 7% | 42% | 46% | 12% |
| Use of Overtime | 37% | 49% | 14% | 41% | 33% | 26% |

As seen in table 160, more managers from the large centers (52%) rated their center as "excellent or above average" in the *ability to consistently staff* necessary positions, compared to those from smaller centers (38%). Significantly more managers from large centers (85%) rated their center as "excellent or above average" in the *ability to train* compared to those from smaller centers (50%). In terms of *call answering times*, more managers from small centers (75%) felt their center was "excellent or above average" compared to managers from large centers (56%). Managers from both small and large

centers appeared to equally rate themselves in terms of *customer satisfaction* and *efficient call management*, with a 60/30 split (roughly) between "excellent or above average" and "average." Small centers were rated as "excellent or above average" in the area of *employee retention* by more managers (45%), than in larger centers (30%). The majority of managers in both large (54%) and small centers (57%) rated the performance of their center in the area of *employee satisfaction* as "average." The majority of managers from small centers (49%) rated the performance of their center in the *use of overtime* as "average;" whereas most managers from larger centers (41%) rated their center as "excellent or above average."

Other Variables Analyzed

*Annual Calls per Employee*

A variable called "annual calls per employee" was created and represents the average number of calls that each employee in a center handled on an annual basis. It was calculated using [total call volume ÷ total call takers and dispatchers]. For small centers where supervisors often help with call taking and dispatch, the number of supervisors was included in the calculation. Supervisors in medium and large centers were not included in the calculation of the average workload.

Descriptive data for the "annual calls per employee" variable are presented in table 161 for Study I and Study II. In Study I, annual calls per employee was significantly related to center size, r=.228. This type of relationship was confirmed in the current analysis. It appears that large centers handle almost twice as many annual calls per employee (12,187), on average, than smaller centers (6,562).

Table 161: Annual Calls per Employee, Study I and Study II

| Annual Calls Per Employee | Study I (N=115) | Large Centers in Study II (N=21) |
|---|---|---|
| Average | 6,562 | 12,187 |
| Median | 5,223 | 11,809 |
| Standard Deviation | 4,674 | 4,729 |
| Minimum | 257 | 5,994 |
| Maximum | 19,231 | 21,957 |

Note: The smaller N for each of these groups is due to the fact that only centers that provided complete numbers for call volume and employee categories were included in the calculations.

*Percent Fully Trained*

A variable called "percent fully trained" was created and represents the percent of staff that was fully trained and working independently. It was calculated using [1 – (the number of current trainees not working independently ÷ total current employees)]. Descriptive data for the "percent fully trained" variable are presented in table 162 for Study I and Study II. Large and small centers appear to be the same when it comes to the percent of staff that is fully trained, with both averaging 93%. A look at the other descriptive statistics also reveals similarities in median, standard deviation, and range.

Table 162: Percent Fully Trained, Study I and Study II

| Percent Fully Trained | Study I (N=153) | Large Centers in Study II (N=25) |
|---|---|---|
| Average | 93 | 93 |
| Median | 97 | 93 |
| Standard Deviation | 9 | 5 |
| Minimum | 60 | 80 |
| Maximum | 100 | 98 |

*Percent of Turnover due to New Hires that Left*

A variable called "percent of turnover due to new hires" was created; it was calculated by determining the percent of a center's turnover rate that was due to the number of new hires that left in the last year.

Descriptive data for the "percent of turnover due to new hires" variable are presented in table 163 for Study I and Study II, for centers that experienced turnover in the last year. On average, in larger centers a smaller portion of the turnover was due to new hires that left (34%) compared to smaller centers (43%). In Study I, one-third (33%) of centers that experienced turnover had 0 percent of their turnover due to new hires. In Study II, only 7% of centers that experienced turnover had 0 percent due to new hires.

Table 163: Percent of Turnover due to New Hires that Left, Study I and Study II

| Percent of Turnover due to New Hires that Left | Study I (N=117) | Large Centers in Study II (N=27) |
|---|---|---|
| Average | 43 | 34 |
| Median | 50 | 33 |
| Standard Deviation | 37 | 22 |
| Minimum | 0 | 0 |

| | | |
|---|---|---|
| Maximum | 100 | 75 |

*Summary of Findings: Comparison of Large Centers versus Smaller Centers*

The following is a summary of the ways in which the cross section of centers in the national sample from Study I was similar to or different from the large centers in Study II. The national sample was predominantly small and medium-sized centers, and contained only four centers that qualified as large. In addition, some of the questions were modified between Study I and Study II. The results for items that were sufficiently similar to report comparisons are presented here.

*Large Centers were Similar to Smaller Centers in…*

- Their average retention rate: 85% for large centers, 81% for small centers.
- The average geographic area served: 822 square miles for large centers and 770 for small centers.
- Being the primary PSAP for their community: 74% of large centers and 78% of small centers.
- The effectiveness of the screening and application process used by their center: 69% agreed with the statement and 63% of managers from small centers agreed with the statement.
- Their average rating of the overall performance of the center: 2.48 for large centers and 2.46 for small centers (based on a 1-5 scale, *excellent* to *poor*).
- Several aspects of the overall performance of their center. A similar percent of managers from both large and small centers rated their center as *excellent or above average* in their customer satisfaction and efficient call management. A similar percent of managers from both large and small centers rated their center as *average* in employee satisfaction and shift management.
- Average percent of employees who were fully trained and working independently: both large and small centers had an average of 93% fully trained.

*Large Centers were Different from Smaller Centers in…*

- The types of calls they process. Significantly more large centers processed enhanced 9-1-1 wireless (phase II) calls than smaller centers.

- The average size of the population served. Large centers served almost 10x the number of people served by small centers.
- Their use of automated call reporting software (almost twice as many used it compared to small centers) AND use of CAD system (all large centers used it compared to 82% of small centers).
- The average number of centers or jurisdictions served: 8 for large centers, 12 for small centers.
- The trends in the *availability of qualified applicants* and the *retention of qualified staff*. Substantially more managers from large centers perceived the trends in these areas had "increased" compared to managers in small centers.
- Their staffing situation. The majority of large centers are chronically understaffed and the majority of small centers are fully staffed.
- Their use of overtime. Substantially more large centers indicated that overtime was a frequent necessity because their center was short staffed compared to small centers.
- The portion of call takers/dispatchers' time devoted to taking calls or dispatch. Most large centers said that *all* of their CT/D time was devoted to taking calls or dispatch; most small centers said that the *majority* of their CT/D time was devoted to taking calls or dispatch.
- The effectiveness of the process used to determining shift assignments. More large centers indicated the current process worked well, compared to small centers.
- Whether the strategies they implemented had a positive impact on employee retention. More large centers agreed with the statement compared to small centers.
- Their union membership. Most large centers indicated that *some* employees in their center were union members, while the majority of small centers indicated that *none* were union members.

- Their rating of the overall performance of the center in the ability to consistently staff necessary positions and the ability to train. More large centers rated their center as *excellent or above average* compared to smaller centers.
- Their rating of the overall performance of the center in call answering times. More small centers rated their center as *excellent or above average* compared to large centers.
- Their rating of the overall performance of the center in employee retention. Most large centers rated their center as *average* in this area, while small centers were split between *excellent or above average* and *average.*
- Their rating of the overall performance of the center in use of overtime. Most large centers rated their center as *excellent or above average* in this area, while most small centers rated their center as *average.*
- Their average annual calls per employee. Employees in large centers handled almost twice the amount of calls (per employee) compared to those in small centers.
- Average percent of turnover due to new hires that left. Large centers had significantly less percent of their turnover due to new hires that left compared to small centers.

***Other Highlights…***

- Total call volume increased for all centers (small, medium, and large) between 2003 and 2004.
- Average increase in total call volume between 2003 and 2004 differed substantially by center size.