



# City of High Point

## Planning & Development Department

### Residential Customer Survey Report

Conducted November 2010

## Table of Contents

	Page
<b>Purpose &amp; Scope</b>	<b>2</b>
<b>Survey Description</b>	<b>3</b>
<b>Survey Construction</b>	<b>4</b>
<b>Survey Distribution</b>	<b>5</b>
<b>Results</b>	<b>6</b>
◆ <b>Response Profile</b>	<b>6</b>
◆ <b>Findings</b>	<b>7</b>
• Table & Graph Descriptions	<b>7</b>
• Interpreting the Ratings	<b>8</b>
• Section 1 (General)	<b>9</b>
• Section 2 (Plan Reviewers)	<b>10</b>
• Section 3 (Other Office Staff)	<b>11</b>
• Section 4 (Field Inspectors)	<b>12</b>
• All Statements in One Table (All Respondents)	<b>13</b>
• All Statements in One Table (Ranked – Highest to Lowest)	<b>14</b>
• Distributions of Ratings (A Different View of the Data)	<b>15</b>
• The Search for Significant Differences: (Between Groups)	<b>20</b>
• Correlations and Regression (Predictors of Satisfaction)	<b>22</b>
• Written Comments	<b>25</b>
• Summing Up – An Executive Summary	<b>35</b>
<b>Appendix A - Survey</b>	<b>-</b>
<b>Appendix B - Measurements and Statistical Analyses</b>	<b>-</b>



# City of High Point

## Planning & Development Department

### Residential Customer Survey Report

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## Purpose and Scope:

Survey research represents one method of collecting important opinion information from your citizens. Properly conducted survey research helps convert citizen opinion information into clear “messages” to you about what your citizens expect from you and believe about you as a supplier of services.

The purpose of this survey is to obtain citizen opinion information regarding services provided by the City of High Point, and to help identify important “messages” from your citizens that can assist you in decision making. Specifically, the principle goals of this survey might be summarized as follows:

- ◆ Identify what the department does well. These things have a positive influence on customer satisfaction and are the things you want to retain.
- ◆ Identify areas for improvement that can negatively impact customer satisfaction.
- ◆ Identify the priorities of your customers.
- ◆ Establish a baseline of customer opinions that can be trended over time to determine if satisfaction and priorities are changing.

The ability of survey results to assist you in decision making can be enhanced by looking at the survey data from different perspectives or ‘views’. Each view contributes to a more complete understanding of the true opinions underlying people’s responses to the survey questions. Looking at multiple views is part of the process of transforming relatively meaningless ‘data’ into useful ‘information’ and hopefully even into ‘insight’. Consequently, the results presented in this report are presented in various levels of detail in order to provide you with different views of the data. For example, in some cases the results summarize the opinions of *all* of the people who responded to the survey taken together. In other cases, the survey data is segmented into *groups* of respondents who differ from one another along one or more dimensions (*See Table Below*). This segmentation of the data enables you to determine if different groups of people answered questions differently based on these questions:

- Which best describes the type of work that you had done at your house? (Check ALL that apply)

In this report, we will refer to respondents, citizens and customers interchangeably.

## Survey Description:

The survey is divided into three principle parts:

- 1. Background Questions**
- 2. Customer Opinion Statements**
- 3. Open Ended Questions.**

1. Background information was collected to understand what types of people responded to the survey. This information enables important differences in people's responses to be examined based on these questions:

<ul style="list-style-type: none"><li>• Which best describes the type of work that you had done at your house? (Check ALL that apply)</li></ul>	<input type="checkbox"/> Electrical <input type="checkbox"/> Mechanical (Heat/AC)	<input type="checkbox"/> Building <input type="checkbox"/> Plumbing
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2. Several categories of statements were included in the survey to provide a wide array of respondents' opinions. These categories include:
  - General statements reflecting broad gauge satisfaction items
  - Plan Reviewers
  - Other Office Staff
  - Field Inspectors
  - Other General Items: both broad gauge and more specific items
3. Comments were also captured. Comments provide an opportunity for respondents to reveal information of importance that was not specifically asked for in the survey. They also lend value to the interpretation of ratings by providing a better sense of context or supportive evidence that enriches the interpretation.

## Survey Construction:

Care has been taken in the construction of this survey to help ensure citizen opinion information is gathered in an appropriate manner. In particular, the following characteristics of surveys, which are known to influence the accuracy of the information received, were considered during construction. These include:

<b>1. Wording of Statements</b>	<ul style="list-style-type: none"><li>◆ Statements are kept brief to reduce the amount of reading required.</li><li>◆ Statements are reviewed for ambiguity to ensure they convey only one meaning where possible.</li><li>◆ Statements are designed to be neutral or slightly positive.</li><li>◆ Each statement ideally covers only one idea to be rated.</li></ul>
<b>2. Statement Order</b>	<ul style="list-style-type: none"><li>◆ When possible, statements are put in order from the most general to the most specific. This is done to avoid raising specific issues early that may positively or negatively influence responses on more general statements that follow.</li><li>◆ Statements are grouped with other statements into similar categories.</li><li>◆ More emotionally charged statements to be rated are generally placed toward the end of a category, or the end of the survey since they can influence ratings on other less emotionally charged issues.</li></ul>
<b>3. Instructions</b>	<ul style="list-style-type: none"><li>◆ Instructions provided at the beginning of the survey clearly indicate the purpose for the survey. The instructions also assure respondents that confidentiality will be preserved, and described when and how to return the survey.</li></ul>
<b>4. Rating Scale</b>	<ul style="list-style-type: none"><li>◆ A 7 point scale is used for rating purposes. This type of scale supports a multitude of parametric statistical tests that are most useful in evaluating and prioritizing the strengths and areas for improvement.</li></ul>

- ◆ ***A copy of the survey used is presented at the end of this report.***

## Survey Distribution:

Approximately 600 surveys were delivered to customers via first class US Mail. The surveys were mailed by Insight Research, Inc. Any undeliverable envelopes should have been returned to the City by the USPS.

A cover letter was included with the survey. The letter included:

- ◆ The reason for the survey
- ◆ How and when to complete the survey
- ◆ Guarantee of anonymity by using an independent research firm

Recipients were given a pre-stamped return envelope for return of their survey to Insight Research.

About one week after the surveys were distributed, a reminder postcard was also mailed to each survey recipient.

# RESULTS

## Response Profile:

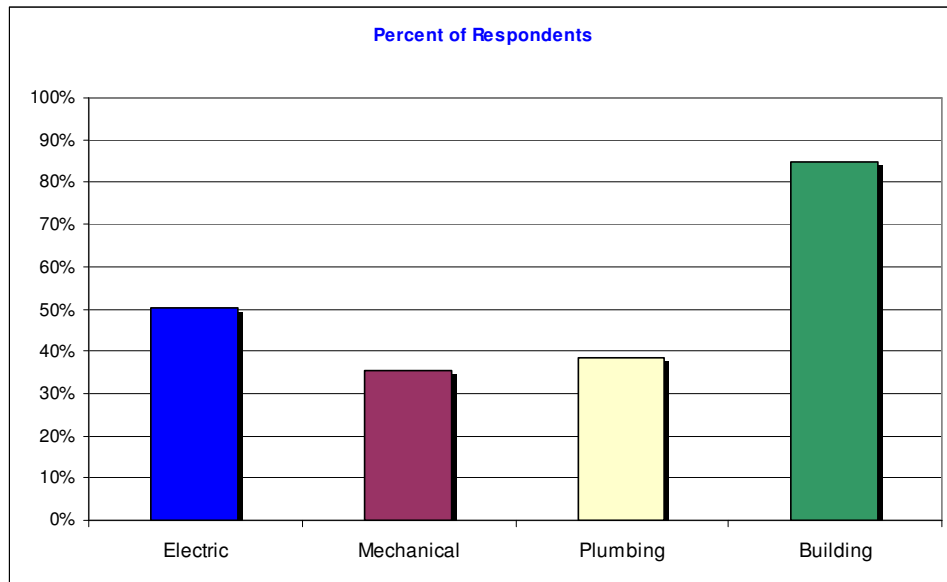
Of the approximately 600 surveys that were actually delivered, 153 surveys were returned, for a total response rate of about 25%. This good response is sufficient to achieve the goals of the study as summarized on page 2 and is within the expected response rate. Surveys conducted in this manner very often yield response rates of between 15 and 30 percent.

Which best describes the type of work that you had done at your house?  
(Check ALL that apply)

- Electric
- Mechanical (Heat/AC)
- Plumbing
- Building

*Please note: Not every respondent answers every question.*

	Count	Percent of the 153 Respondents
Electric	77	50.3%
Mechanical	54	35.3%
Plumbing	59	38.6%
Building	130	85.0%



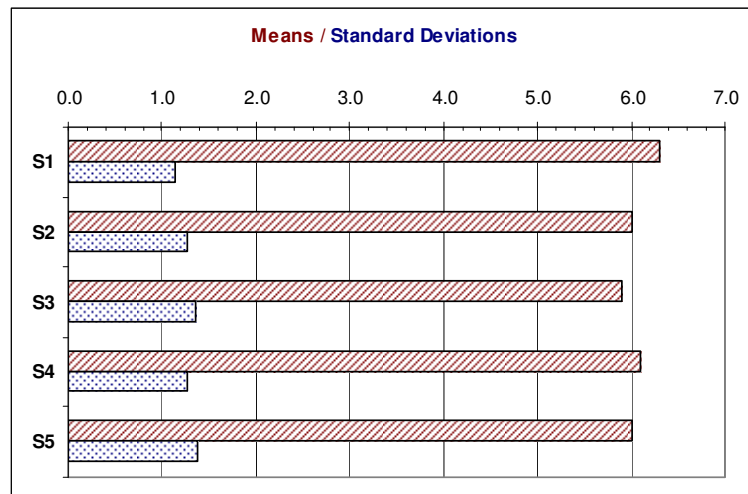
# Findings:

The following section of this report is designed to provide information about the results for each statement on the survey that was rated on the 7-point scale. Both a table and graph of the results are provided for each category of statements.

**Table Description:** The following information is included in the Tables:

<b>Valid N</b>	◆ Refers to the 'Number' of people responding to the statement or question.
<b>Mean</b>	◆ Refers to the 'Average' rating received from all respondents who rated the statement.
<b>Median</b>	◆ Refers to the 'Middlemost' score in a list of rank ordered scores, above and below which 50% of the scores lie.
<b>Standard Deviation</b>	◆ Refers to a measure of the amount of variability there is in the responses above and below the average. For example, a smaller standard deviation indicates less variability, and thus more agreement among respondents than a larger standard deviation indicates. (See Appendix B for more detailed description of the Standard Deviation).

**Graph Description:** Graphs showing the averages and standard deviations for each statement are provided. The longer bar represents the average (or mean) and the shorter bar represents the standard deviation.

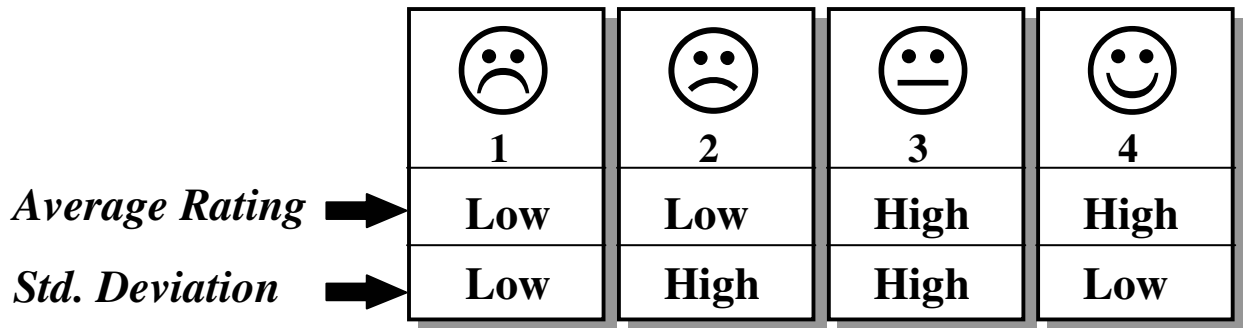


## *Interpreting the Ratings*

Two questions often asked in survey research are; “What is a good score, and how do I know where my real areas for improvement are?”. Although every organization is different, a general theme in the opinion research literature indicates that “good” is not always “good enough”. That is to say, although an average rating of a ‘4’ on a 7-point scale may be perceived to be a “neutral” or even a “good” rating, it actually takes a much higher average rating to increase the likelihood that people are satisfied. Consequently, it is good practice to aim for the highest average possible.

At Insight Research, Inc., we have found it useful to suggest a target average of 5.5 or better for *satisfaction* statements for most industries. Scores lower below the target do not necessarily indicate a problem, but should be considered as areas for potential improvement that are worthy of attention. For local governments, however, achieving an overall satisfaction rating of 5.5 is often difficult; most average closer to 5.2. One reason for this difficulty might be that unlike most organizations in the private sector, a government usually keeps (rather than loses) most of their “unhappy customers”.

In addition, as mentioned earlier, low standard deviations reflect more agreement among respondents. As a result, it is most desirable to have a high “average” rating and a low “standard deviation”. This would indicate that most people agree that the rating should be high. A good rule of thumb suggests that standard deviations of 1.2 or less are desirable. The following diagram illustrates the relationship between the “average” and “standard deviation” with blocks 1 to 4 reflecting “Least Desirable” to “Most Desirable” in that order.



## Section One: (General)

The following table and graph reflect the ratings of the more general statements on the survey.

**Statement 1** is particularly important, since it serves as a general “overall” impression of satisfaction with the services provided by the Division *to which* many other statements contribute. The results indicate that, in general, residential customers are satisfied with the High Point Inspections Division. However, these ratings are lower than those recently given by contractors to essentially the same statement. The **median** (middlemost answer) of ‘6’ tells us at least 50 percent of the respondents rated this statement a ‘6’ or higher on the 7-point scale. The **standard deviation** of 1.82 indicates a higher amount of variability in the answers than is desired. Keep in mind that the less variability in the answers, the better.

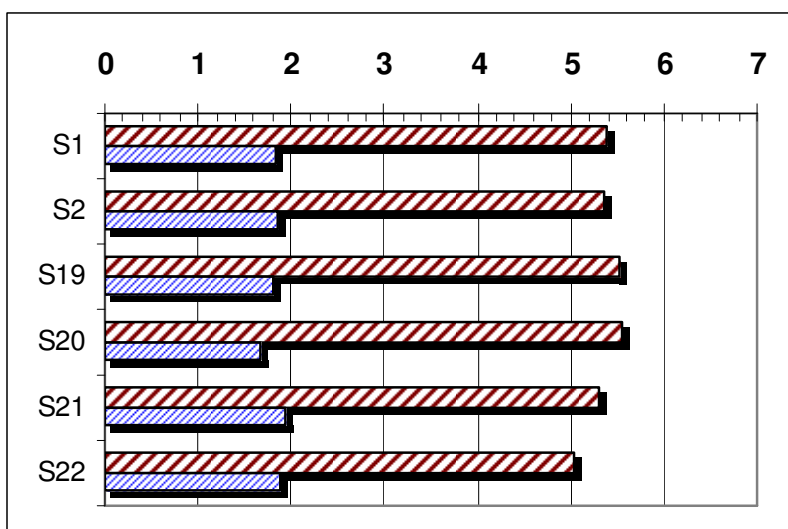
As might be expected, the lowest rated general statement was S22 (The permit fees are reasonable)

*See the Distributions of Ratings, later in this report.*

	<b>Statements</b> 1 = Strongly Disagree; 7 = Strongly Agree	<b>Valid N</b> (Number Responding)	<b>Mean</b> (Average Rating)	<b>Median</b> (Middlemost Score)	<b>Std. Dev.</b> (Amount of Variability)
S1	Overall, I am satisfied with the High Point Inspection Services Division.	131	5.38	6.0	1.82
S2	In general, the Division is easy to work with.	128	5.35	6.0	1.85
S19	The Division provides inspections results to me in a timely manner.	132	5.52	6.0	1.80
S20	The inspection results paperwork was understandable.	129	5.54	6.0	1.67
S21	In general, this division is able to minimize delays in my work.	129	5.30	6.0	1.95
S22	The permit fees are reasonable for the service provided.	131	5.02	5.0	1.87

**1 = Strongly Disagree and 7 = Strongly Agree**

Long bars: mean (average)  
Short bars: standard deviation



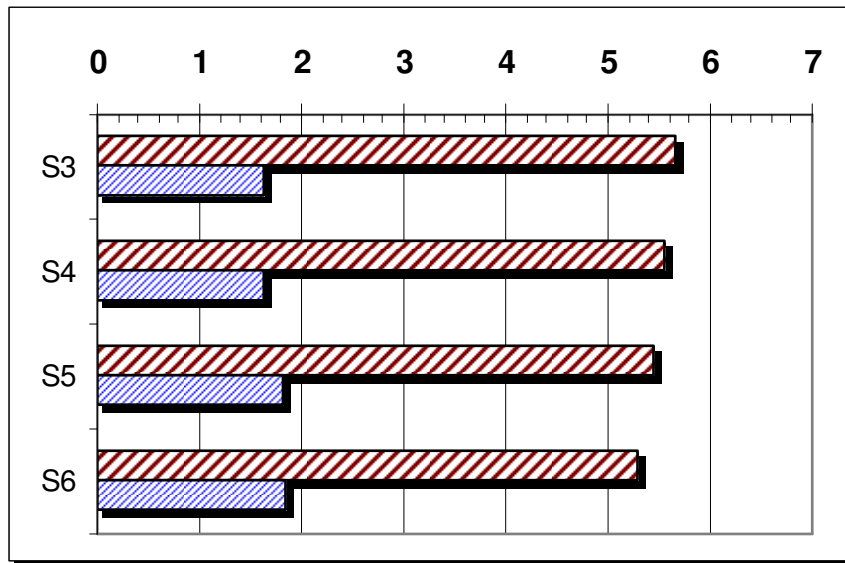
**Section Two: (Plan Reviewers)**

The plan reviewers received generally good ratings from respondents. Two items were rated above our target and two below.

*See the Distributions of Ratings, later in this report.*

	<b>Statements</b> 1 = Strongly Disagree; 7 = Strongly Agree	<b>Valid N</b> (Number Responding)	<b>Mean</b> (Average Rating)	<b>Median</b> (Middlemost Score)	<b>Std. Dev.</b> (Amount of Variability)
S3	The plan reviewers are courteous.	124	5.67	6.0	1.62
S4	The plan reviewers are knowledgeable.	125	5.55	6.0	1.62
S5	The plan reviewers are helpful.	122	5.44	6.0	1.82
S6	The plan reviewers reviews plans within the indicated timeframe.	125	5.29	6.0	1.85

**1 = Strongly Disagree and 7 = Strongly Agree**



Long bars: mean (average)  
Short bars: standard deviation

## Section Three: (Other Office Staff)

All three statements in this section were rated above our target of 5.5. Nice work.

The standard deviations are a bit high, indicating that in the spirit of continual improvement, you might strive for more consistency.

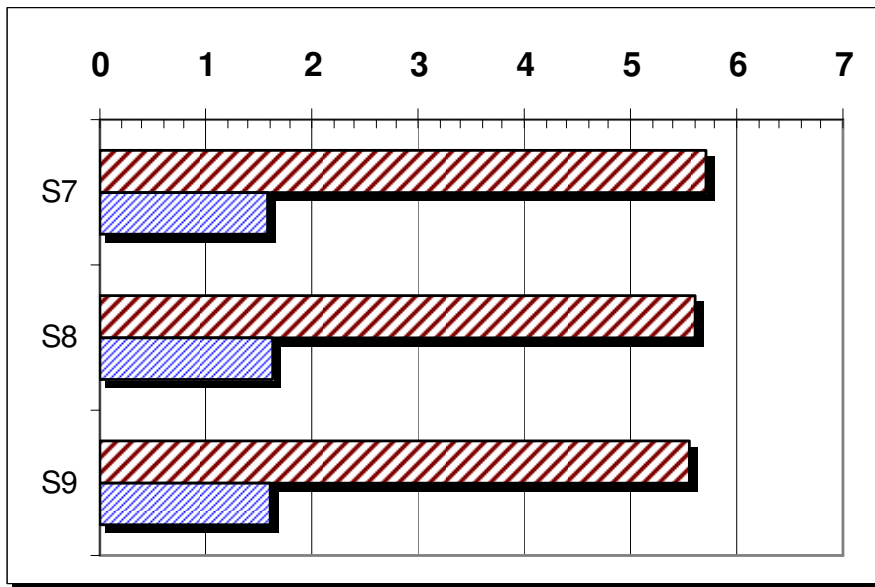
The medians of 6.0 for each statement tells us that at least half of the respondents rated the statement a '6' or higher, while at least half of them rated it a '6' or lower.

*See the Distributions of Ratings, later in this report.*

	<b>Statements</b> 1 = Strongly Disagree; 7 = Strongly Agree	<b>Valid N</b> (Number Responding)	<b>Mean</b> (Average Rating)	<b>Median</b> (Middlemost Score)	<b>Std. Dev.</b> (Amount of Variability)
S7	The other office staff are courteous.	129	5.71	6.0	1.57
S8	The other office staff are helpful.	124	5.61	6.0	1.63
S9	The other office staff are professional.	125	5.55	6.0	1.61

**1 = Strongly Disagree and 7 = Strongly Agree**

Long bars: mean (average)  
Short bars: standard



## Section Four: (Field Inspectors)

The field inspectors received some of the better ratings on the survey. Only three items on this page were rated below our suggested target of 5.5.

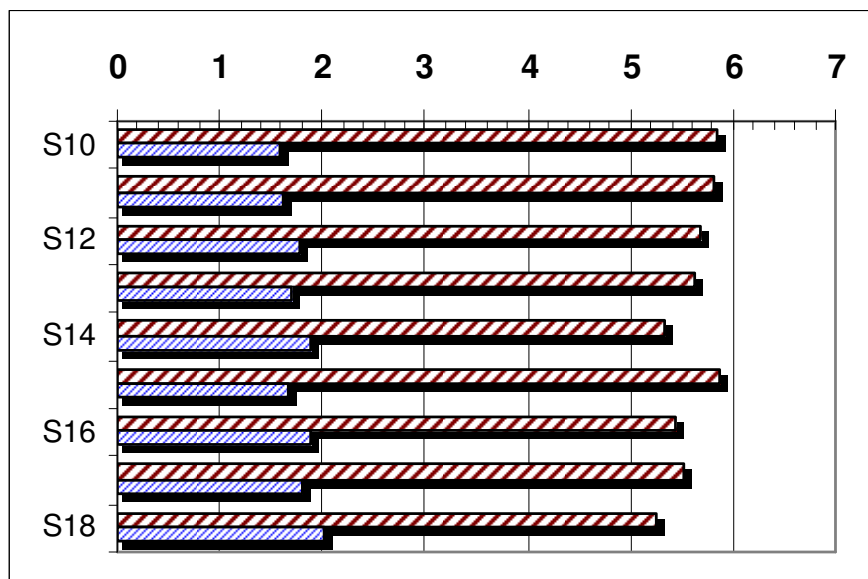
All nine items had medians of 6.0 or higher, telling us that the majority of respondents gave ratings at least this high.

The standard deviations are a bit high, indicating that you might strive for more consistency. This might be partially explained by the fact that you have a number of different field inspectors.

	<b>Statements</b> 1 = Strongly Disagree; 7 = Strongly Agree	<b>Valid N</b> (Number Responding)	<b>Mean</b> (Average Rating)	<b>Median</b> (Middlemost Score)	<b>Std. Dev.</b> (Amount of Variability)
S10	The inspectors are courteous.	133	5.84	6.0	1.59
S11	The inspectors are helpful.	131	5.82	6.0	1.62
S12	The inspectors are knowledgeable.	130	5.68	6.0	1.77
S13	The inspectors arrive on the job site at the indicated time.	132	5.61	6.0	1.71
S14	The inspectors typically let me know if they will be arriving late on a site.	116	5.34	6.0	1.90
S15	The inspectors are <i>thorough</i> with their inspections.	129	5.86	7.0	1.66
S16	The inspectors are <i>fair</i> with their inspections.	131	5.45	6.0	1.89
S17	The inspectors provide <i>timely</i> answers to my questions.	129	5.51	6.0	1.80
S18	The inspectors try to provide <i>options</i> when something needs correcting.	124	5.26	6.0	2.02

Long bars: mean (average)  
Short bars: standard deviation

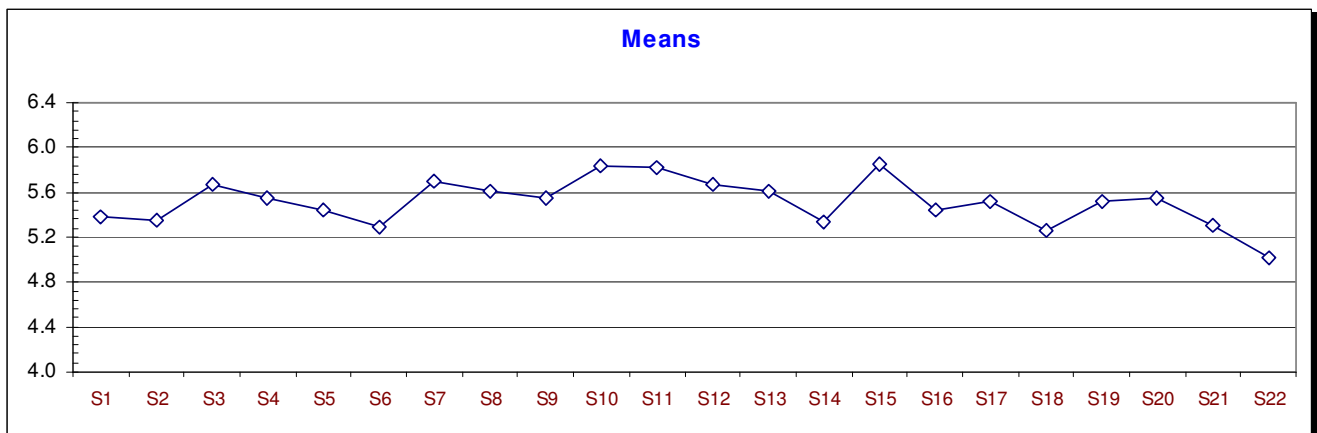
**1 = Strongly Disagree and 7 = Strongly Agree**



## All Statements in One Table (All Respondents)

	<b>Statements</b>	<b>Valid N</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>
	1 = Strongly Disagree; 7 = Strongly Agree	(Number Responding)	(Average Rating)	(Middlemost Score)	(Amount of Variability)
S1	Overall, I am satisfied with the High Point Inspection Services Division.	131	5.38	6.0	1.82
S2	In general, the Division is easy to work with.	128	5.35	6.0	1.85
S3	The plan reviewers are courteous.	124	5.67	6.0	1.62
S4	The plan reviewers are knowledgeable.	125	5.55	6.0	1.62
S5	The plan reviewers are helpful.	122	5.44	6.0	1.82
S6	The plan reviewers reviews plans within the indicated timeframe.	125	5.29	6.0	1.85
S7	The other office staff are courteous.	129	5.71	6.0	1.57
S9	The other office staff are helpful.	124	5.61	6.0	1.63
S9	The other office staff are professional.	125	5.55	6.0	1.61
S10	The inspectors are courteous.	133	5.84	6.0	1.59
S11	The inspectors are helpful.	131	5.82	6.0	1.62
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S18	The inspectors try to provide <i>options</i> when something needs correcting.	124	5.26	6.0	2.02
S19	The Division provides inspections results to me in a timely manner.	132	5.52	6.0	1.80
S20	The inspection results paperwork was understandable.	129	5.54	6.0	1.67
S21	In general, this division is able to minimize delays in my work.	129	5.30	6.0	1.95
S22	The permit fees are reasonable for the service provided.	131	5.02	5.0	1.87

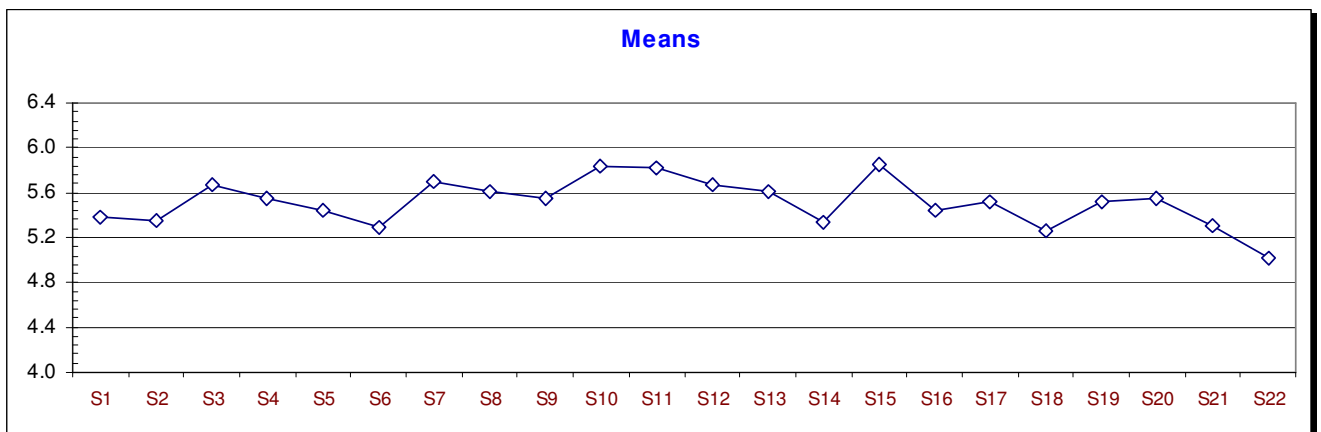
### Averages (Means) for All 22 Statements



## All Statements in One Table (Ranked - Highest to Lowest)

	<b>Statements</b>	<b>Valid N</b>	<b>Mean</b>	<b>Median</b>	<b>Std. Dev.</b>
	1 = Strongly Disagree; 7 = Strongly Agree	(Number Responding)	(Average Rating)	(Middlemost Score)	(Amount of Variability)
S15	The inspectors are <i>thorough</i> with their inspections.	129	5.86	7.0	1.66
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S11	The inspectors are helpful.	131	5.82	6.0	1.62
S7	The other office staff are courteous.	129	5.71	6.0	1.57
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S3	The plan reviewers are courteous.	124	5.67	6.0	1.62
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S4	The plan reviewers are knowledgeable.	125	5.55	6.0	1.62
S9	The other office staff are professional.	125	5.55	6.0	1.61
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S6	The plan reviewers reviews plans within the indicated timeframe.	125	5.29	6.0	1.85
S18	The inspectors try to provide <i>options</i> when something needs correcting.	124	5.26	6.0	2.02
S22	The permit fees are reasonable for the service provided.	131	5.02	5.0	1.87

### Averages (Means) for All 22 Statements

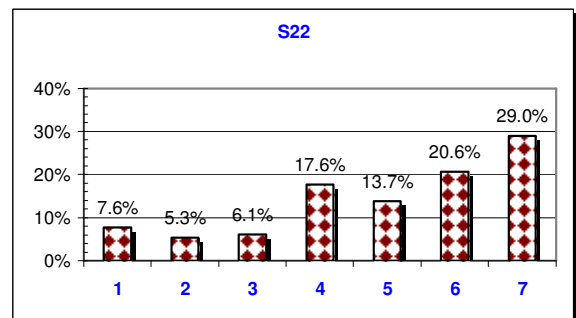
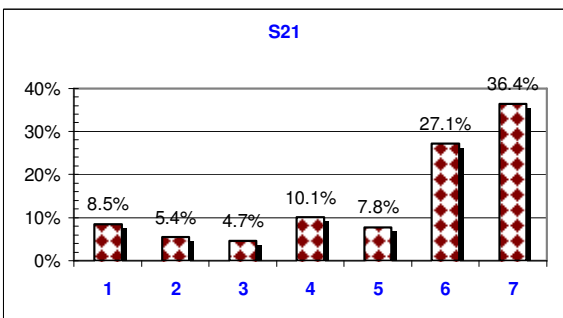
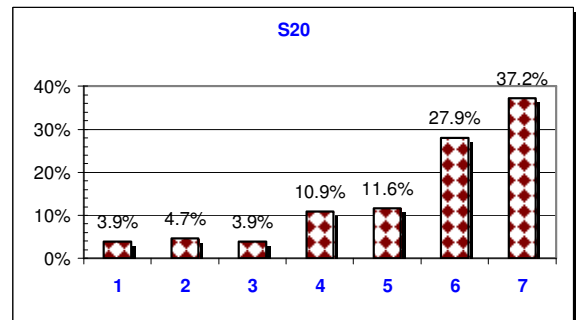
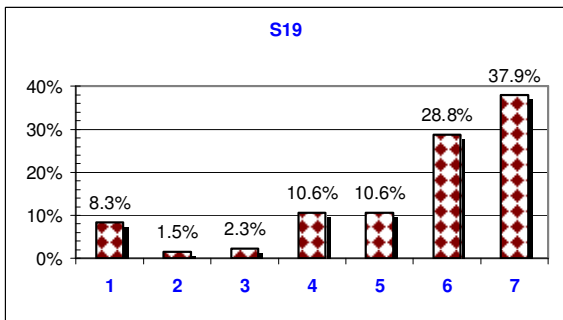
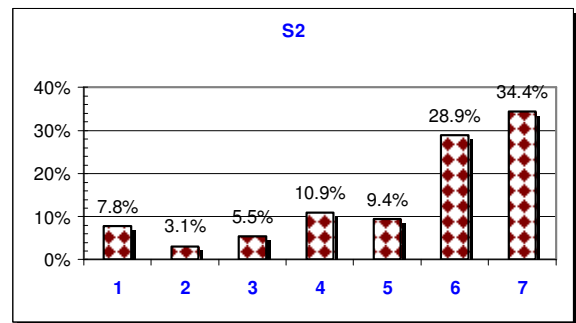
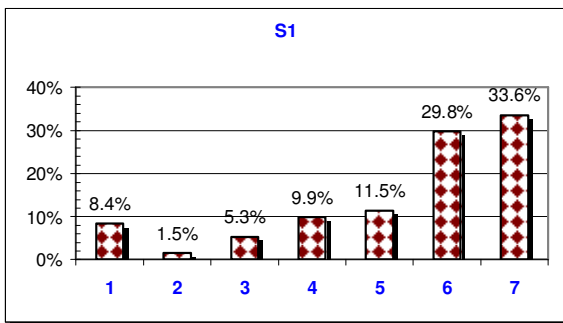


## Distributions of Ratings (A Different View of the Data):

The following graphs are presented to show the percentage of respondents who rated each statement a 1, 2, 3, 4, 5, 6, or 7. By showing the distributions of responses in this manner, you can gain a better appreciation for the 'standard deviation' associated with each statement. Thus, for example, the distribution of ratings for a statement with a smaller standard deviation will show a lot of respondents rating that statement similarly (within a point or two). The distribution will be more spread out across the 1 to 7 scale when a statement has a *large* standard deviation.

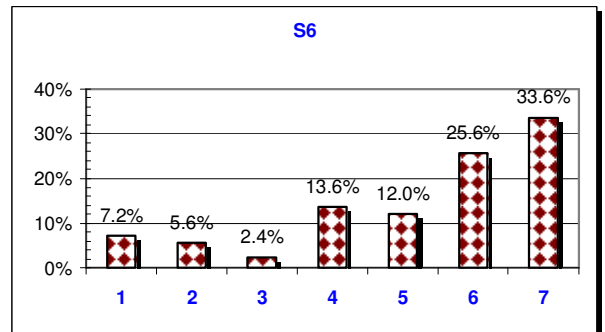
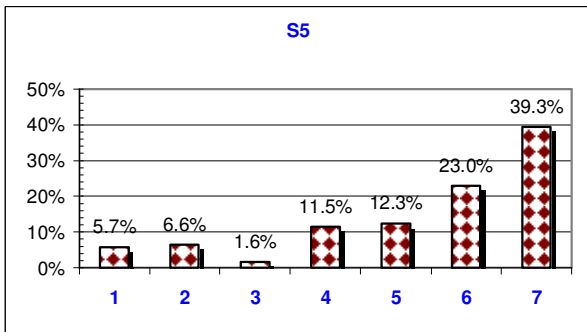
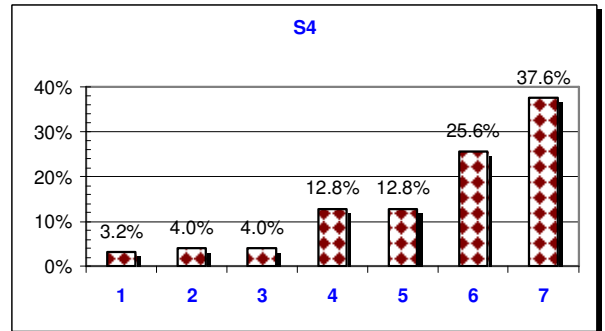
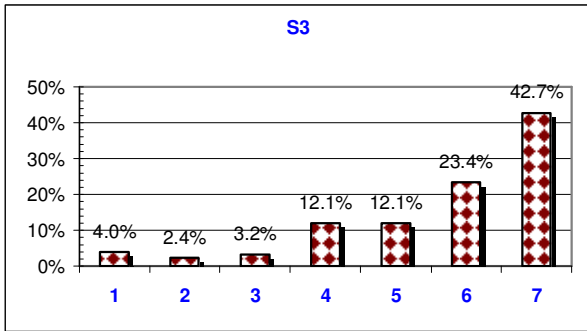
### General:

	Statements	Ave.
S1	Overall, I am satisfied with the High Point Inspection Services Division.	5.38
S2	In general, the Division is easy to work with.	5.35
S19	The Division provides inspections results to me in a timely manner.	5.52
S20	The inspection results paperwork was understandable.	5.54
S21	In general, this division is able to minimize delays in my work.	5.30
S22	The permit fees are reasonable for the service provided.	5.02



## Plan Reviewers:

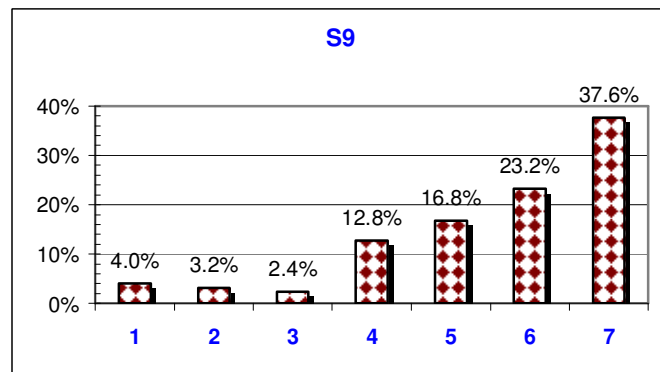
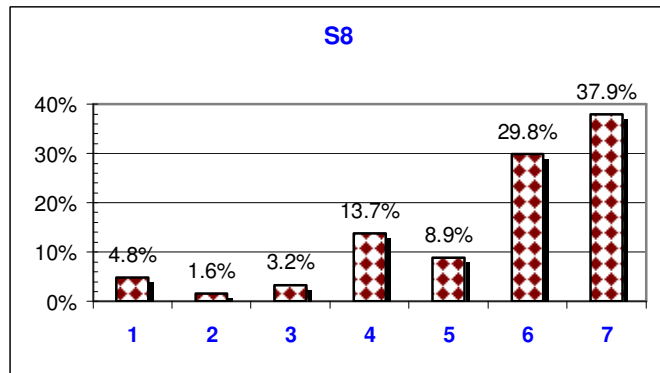
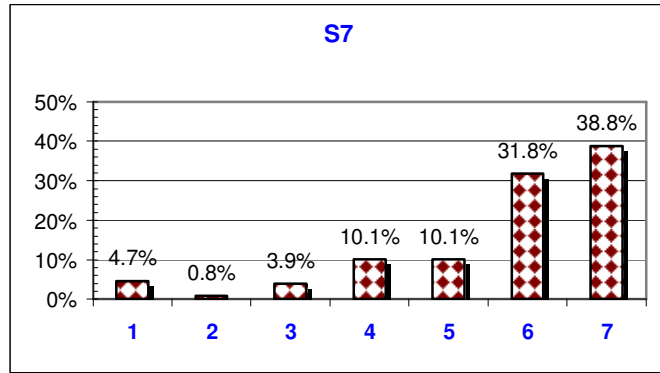
	Statements	Ave.
S3	The plan reviewers are courteous.	5.67
S4	The plan reviewers are knowledgeable.	5.55
S5	The plan reviewers are helpful.	5.44
S6	The plan reviewers reviews plans within the indicated timeframe.	5.29



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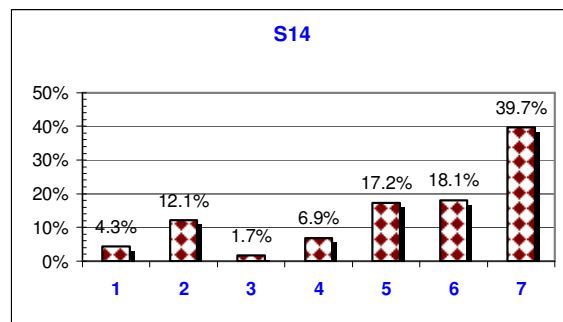
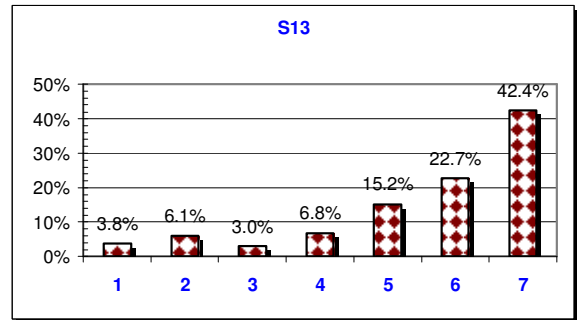
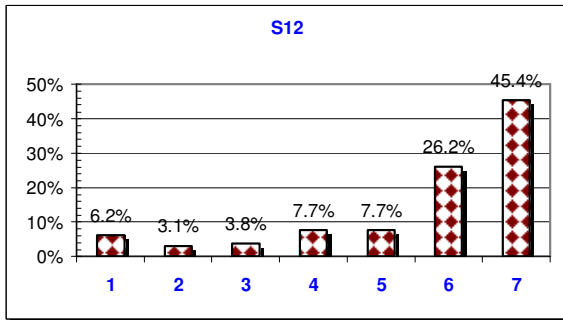
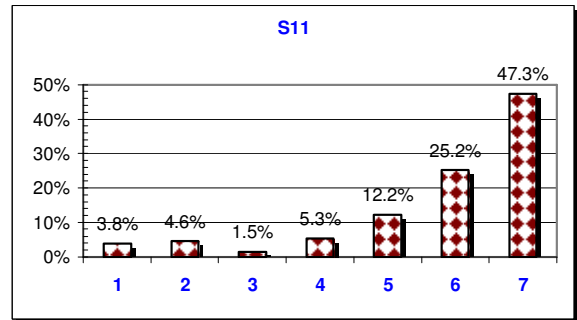
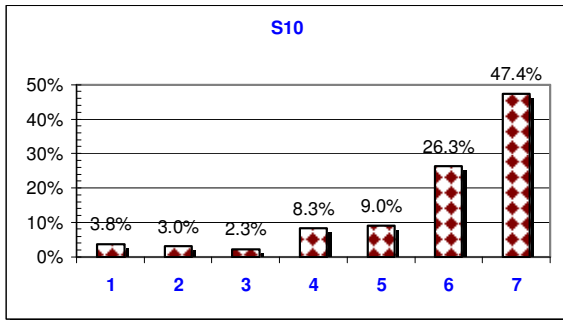
**Other Office Staff:**

	<b>Statements</b>	<b>Ave.</b>
S7	The other office staff are courteous.	5.71
S8	The other office staff are helpful.	5.61
S9	The other office staff are professional.	5.55



## Field Inspectors:

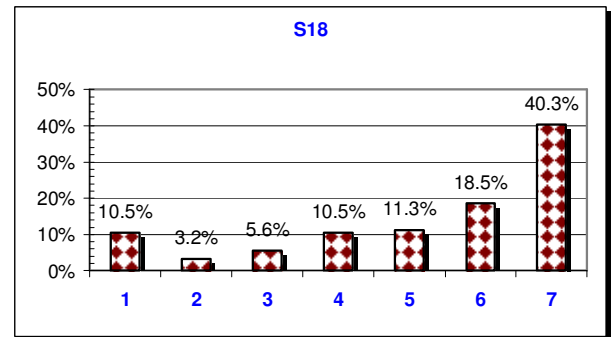
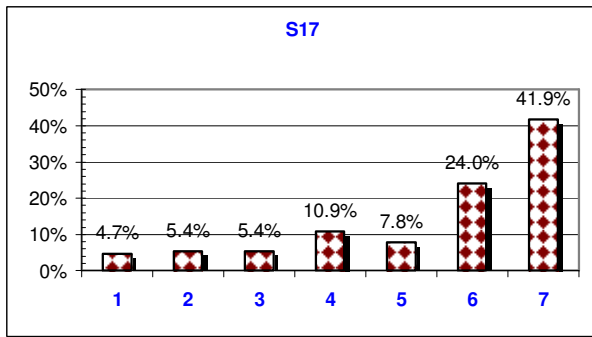
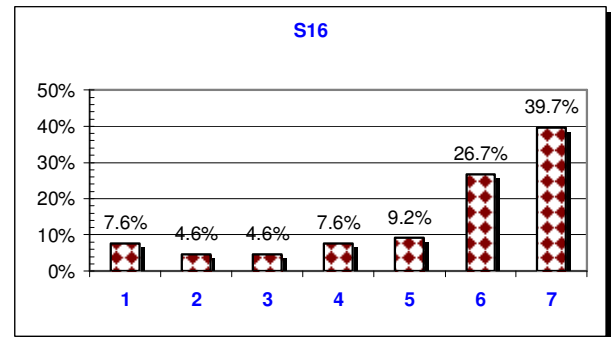
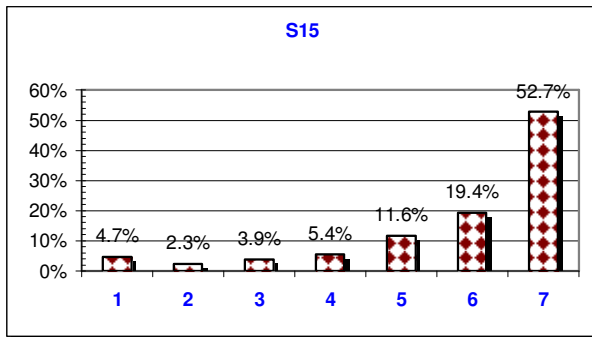
	Statements	Ave.
S10	The inspectors are courteous.	5.84
S11	The inspectors are helpful.	5.82
S12	The inspectors are knowledgeable.	5.68
S13	The inspectors arrive on the job site at the indicated time.	5.61
S14	The inspectors typically let me know if they will be arriving late on a site.	5.34



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## Field Inspectors (Continued):

	Statements	Ave.
S15	The inspectors are <i>thorough</i> with their inspections.	5.86
S16	The inspectors are <i>fair</i> with their inspections.	5.45
S17	The inspectors provide <i>timely</i> answers to my questions.	5.51
S18	The inspectors try to provide <i>options</i> when something needs correcting.	5.26



## ***The Search for Significant Differences: (Ratings for Different Groups)***

Although the findings presented thus far are revealing, it is often helpful to perform more fine-grained analyses of the data to determine if any particular groups of respondents rate the statements significantly different from other groups. Consequently, additional analyses called “Analyses of Variance” were performed on the data, to determine if any differences could be found among respondents based on:

- Which best describes the type of work that you had done at your house?

If analyses of this type show significant differences along one or more of these dimensions, then the City should consider taking these differences in customer responses into account when deriving plans for continuous improvement.

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[Continued on Next Page →](#)

Differences based on their answer to:

Which best describes the type of work that you had done at your house?  
(Check ALL that apply)

<input type="checkbox"/> Electric	<input type="checkbox"/> Plumbing
<input type="checkbox"/> Mechanical	<input type="checkbox"/> Building

➤ Since respondents could answer more than one “type of construction”, the groups are not *mutually exclusive*. Thus we are providing the ratings for all respondents who checked Electric, Mechanical, Plumbing or Building.

	<b>Statements</b>	<b>ALL</b>	<b>Elec.</b>	<b>Mech.</b>	<b>Plumb.</b>	<b>Build</b>
	1 = Strongly Disagree; 7 = Strongly Agree	(Average Rating)	(Average Rating)	(Average Rating)	(Average Rating)	(Average Rating)
S1	Overall, I am satisfied with the High Point Inspection Services Division.	<b>5.38</b>	5.24	5.04	4.90	5.36
S2	In general, the Division is easy to work with.	<b>5.35</b>	5.25	5.11	4.92	5.36
S3	The plan reviewers are courteous.	<b>5.67</b>	5.43	5.31	5.20	5.69
S4	The plan reviewers are knowledgeable.	<b>5.55</b>	5.33	5.23	5.04	5.58
S5	The plan reviewers are helpful.	<b>5.44</b>	5.24	5.04	4.98	5.45
S6	The plan reviewers reviews plans within the indicated timeframe.	<b>5.29</b>	5.24	5.09	5.02	5.31
S7	The other office staff are courteous.	<b>5.71</b>	5.55	5.46	5.35	5.70
S9	The other office staff are helpful.	<b>5.61</b>	5.44	5.38	5.32	5.59
S9	The other office staff are professional.	<b>5.55</b>	5.43	5.34	5.24	5.55
S10	The inspectors are courteous.	<b>5.84</b>	5.66	5.53	5.48	5.86
S11	The inspectors are helpful.	<b>5.82</b>	5.61	5.45	5.44	5.85
S12	The inspectors are knowledgeable.	<b>5.68</b>	5.46	5.32	5.21	5.70
S13	The inspectors arrive on the job site at the indicated time.	<b>5.61</b>	5.37	5.12	5.24	5.61
S14	The inspectors typically let me know if they will be arriving late on a site.	<b>5.34</b>	5.18	4.98	5.06	5.33
S15	The inspectors are <i>thorough</i> with their inspections.	<b>5.86</b>	5.65	5.50	5.48	5.89
S16	The inspectors are <i>fair</i> with their inspections.	<b>5.45</b>	5.15	5.06	4.85	5.45
S17	The inspectors provide <i>timely</i> answers to my questions.	<b>5.51</b>	5.24	5.19	5.04	5.52
S18	The inspectors try to provide <i>options</i> when something needs correcting.	<b>5.26</b>	5.00	5.06	4.88	5.27
S19	The Division provides inspections results to me in a timely manner.	<b>5.52</b>	5.36	5.34	5.28	5.51
S20	The inspection results paperwork was understandable.	<b>5.54</b>	5.29	5.33	5.10	5.57
S21	In general, this division is able to minimize delays in my work.	<b>5.30</b>	5.14	5.00	5.00	5.29
S22	The permit fees are reasonable for the service provided.	<b>5.02</b>	4.83	4.51	4.50	5.04

## Correlations and Regression (Predictors of Satisfaction)

### Multiple Regression

Another type of analysis (Multiple Regression Analysis) was also performed to determine which statements are most highly correlated with, and/or have the *greatest predictive value* when considering key general statements.

Another way of thinking about what this analysis means is, "Which *specific* items account for the most variability in a given *general* item?"

This type of analysis can be quite useful when you wish to prioritize areas for improvement and/or identify which areas of strength are most highly linked to satisfaction.

Key General Statements	
S1	Overall, I am satisfied with the High Point Inspection Services Division.
S2	In general, the Division is easy to work with.
S22	The permit fees are reasonable for the service provided.

- When significant predictors are discovered, you can take these into account when planning for improvement and/or satisfaction retention programs.

**Using Multiple Regression Analysis, we found that two statements were significant predictors of Statement 1.**

General Item	
S1	Overall, I am satisfied with the High Point Inspection Services Division.
<b>Predictors Listed Below (95% confidence)</b>	
S2	In general, the Division is easy to do business with.
S19	The Division provides inspection results to me in a timely manner.

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## Multiple Regression (Continued)

The tables below show general items and their statistically significant predictors.

<b>General Item</b> (95% confidence)	
S2	In general, the Division is easy to work with.
<b>Predictors Listed Below</b>	
S1	Overall, I am satisfied with the High Point Inspection Division.

<b>General Item</b> (90% confidence)	
S22	The permit fees are reasonable for the service provided.
<b>Predictors Listed Below</b>	
S15	The field inspectors are thorough with their inspections.

## Correlations:

In addition to Multiple Regression, another measure of how closely two or more items relate is called Correlation. A “positive correlation” indicates that the answers to two or more items tend to move in the same direction (E.g., *shoe size* and *body weight* are likely to be positively correlated, since people with bigger feet tend to be bigger overall, and thus typically weigh more).

On the other hand, a “negative correlation” exists when two or more items are related in opposite directions. A finding of “no correlation” means there is no relationship between the two items.

Correlation measures can be extremely useful in survey analysis. Thus, knowing how a person responds to one item can give insight about how they will respond to another correlated item. Although these relationships do not necessarily represent “cause and effect” relationships, they may provide further insight into what is important to these respondents.

The strength of the relationship is measured by the Coefficient of Correlation. **Larger numbers here indicate stronger relationships.** Here we see how each item relates to certain general items on the survey.

General Item	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11
<b>S1</b>	NA	0.95	0.80	0.82	0.83	0.77	0.74	0.80	0.78	0.85	0.85
<b>S2</b>	0.95	NA	0.81	0.82	0.84	0.74	0.77	0.81	0.81	0.86	0.86
<b>S22</b>	0.63	0.64	0.64	0.71	0.69	0.67	0.61	0.59	0.62	0.61	0.61

General Item	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22
<b>S1</b>	0.86	0.76	0.77	0.73	0.83	0.80	0.78	0.87	0.81	0.88	0.63
<b>S2</b>	0.87	0.75	0.72	0.74	0.82	0.79	0.76	0.82	0.79	0.86	0.64
<b>S22</b>	0.61	0.68	0.63	0.71	0.68	0.72	0.64	0.64	0.70	0.65	NA

<b>S1</b>	<b>Overall, I am satisfied with the High Point Inspection Services Division.</b>
<b>S2</b>	<b>In general, the Division is easy to work with.</b>
<b>S3</b>	The plan reviewers are courteous.
S4	The plan reviewers are knowledgeable.
S5	The plan reviewers are helpful.
S6	The plan reviewers reviews plans within the indicated timeframe.
S7	The other office staff are courteous.
S8	The other office staff are helpful.
S9	The other office staff are professional.
S10	The inspectors are courteous.
S11	The inspectors are helpful.
S12	The inspectors are knowledgeable.
S13	The inspectors arrive on the job site at the indicated time.
S14	The inspectors typically let me know if they will be arriving late on a site.
S15	The inspectors are <i>thorough</i> with their inspections.
S16	The inspectors are <i>fair</i> with their inspections.
S17	The inspectors provide <i>timely</i> answers to my questions.
S18	The inspectors try to provide <i>options</i> when something needs correcting.
S19	The Division provides inspections results to me in a timely manner.
S20	The inspection results paperwork was understandable.
S21	In general, this division is able to minimize delays in my work.
<b>S22</b>	<b>The permit fees are reasonable for the service provided.</b>

# Written Comments

## Symbols

- ◆ NR - This stands for Name Reference, which means that a person's name was mentioned. Each Name Reference includes the survey's case and/or ID number.
- ◆ (?) - This denotes an illegible word.

## Notes about the comment table

- An individual respondent's complete answer to an open-ended question appears in one cell.
- Each line in the table tell you the type(s) of work done for the respondent (electric, mechanical, plumbing, building)

## Comments Contents

Topic	Page
What do you think the Inspections Services Division does well?	26
What obstacles or undue delays, if any, did you encounter with the Division?	28
Suggestions or comments:	30
Names Mentioned	34

Case	Elec.	Mech.	Plumb	Build.	What do you think the Inspections Services Division does well?
1				B	They offered suggestions & advice.
3					Cooperation.
8	E	M	P	B	The inspection division does a great & accurate job in pointing out energy efficient problems & updates that need to be done to the home as well as other repairs.
10				B	<b>NR-1</b> was very helpful. <b>NR-1</b> was very thorough. Thanks.
11	E	M	P	B	Almost everything.
17	E			B	Keeps work up to code.
23	E	M		B	They look out for the homeowner.
25	E	M	P	B	Skilled & professional.
30	E	M	P	B	Field inspectors are helpful.
32	E	M		B	Knowledgeable.
35	E	M	P	B	Prompt return of paperwork.
36				B	Intimidate people. They are arrogant & disdainful toward tax payers.
41	E	M	P	B	Cause delays & confusion.
42	E	M	P	B	Very unhappy with electrical inspector.
43	E	M	P	B	Nothing. Reminds me of controlling issues & loving that power.
44				B	They are courteous.
45				B	All services expected.
48	E	M	P	B	Get home by 5:00 p.m.
49	E	M	P	B	Communication.
51	E		P	B	Initial application smooth.
54	E	M	P	B	Overall they try to accommodate us & understand dilemmas.
55	E		P	B	So courteous & works with homeowner.
56	E	M	P		Makes sure everything is up to code.
60	E	M	P	B	Collect money to be used to pay the department salary.
62				B	Accept appointments.
63				B	Inspectors get to inspections in a timely manner.
67	E	M	P	B	I am still thinking on this one.
71				B	Keeping to code.
73				B	All items.
76				B	<b>NR-2</b> is very professional & most courteous.
78	E	M	P	B	Collects their paychecks timely.

80	E			B	Outstanding. I comment many times how helpful & smooth the build process was with their help. They even offered improvement suggestions. Great!
88	E	M	P	B	They stay in a temperature controlled truck very well! Looks for tall grass when turning their heads on crack houses or brothels.
96	E			B	The electrical inspector, <b>NR-3</b> creates or made some objections unnecessarily.
97	E		P	B	Explain the entire process.
98	E			B	Great job!
99		M		B	All services provided.
100	E	M	P	B	I'm not a contractor. I want the inspectors to tell me what is wrong & how I can fix the problem.
101	E	M	P	B	Review all plans with homeowner & make homeowners feel they are on our side!
104	E	M	P		Send a bill (invoice).
105				B	Services the people.
106				B	Customer interaction.
112				B	Very reputable.
113	E	M	P	B	Provide helpful information that you can do to avoid problems later.
114					Everything.
115	E	M		B	Everything.
118				B	Respond to problems well.
126	E	M	P	B	Most field inspectors are very good. Some need to work elsewhere.
128				B	I like the automated inspection system - very user friendly.
129	E	M	P	B	Write (?) violation letters.
131				B	Very knowledgeable & took time to make suggestions improving my plans.
133				B	The inspector had the builders remove cement blocks that would hold up wood support beams in the ground - now it is just wood in the ground?
135	E	M	P	B	Timely inspections.
137	E			B	Answers questions, arrives in a timely manner.
138	E	M	P	B	Being prompt.
140	E	M	P	B	Lackamy Owens Construction Company can best make comments on the above questions. He was the contractor for two houses & all services required. I had no interaction with the inspection department, however I was not made aware of any problems.
141	E	M	P	B	Makes it difficult to do business in High Point.
142				B	The plan reviewer was extremely helpful & willing.

Case	Elec.	Mech.	Plumb.	Build.	What obstacles or undue delays, if any, did you encounter with the Division?
17	E			B	There was a lack of communication between electric & builders which caused delays.
21	E		P		Did not understand the type of job that was being done.
26				B	After turning in everything require of me I was told I could pick up my permit in 5 working days - it took 5 WEEKS!!
30	E	M	P	B	Plans not reviewed timely. Indefinite delay & dragging out. No timely communication or support.
33		M		B	Too many rules. Had to have all steps at putting a building up.
35	E	M	P	B	Commitment to appointments.
36				B	3 month delay on permit. They lost important documents & gave no apology.
41	E	M	P	B	Often late for appointments. Cited unnecessary issues.
44				B	Plan review takes way too long. 1-2 day turnaround would be great.
47				B	Understanding what is required.
48	E	M	P	B	Too much red tape! Policies & regulations are dysfunctional.
49	E	M	P	B	Took ten days to approve plan.
51	E		P	B	Multiple visits for 10'x14' kitchen remodel. Delayed job by approximately 10 days.
54	E	M	P	B	Inspector required me to get a Port-A-John. I learned it was not necessary after it had already cost me \$200.
60	E	M	P	B	Made me get an engineer to verify that my addition was 5' from my garage. Inspector would not read the ruler & see that it was 5'! Why?
62				B	Inspection delays.
66	E	M	P	B	Waiting for availability of inspector.
67	E	M	P	B	Having to schedule plumbing, sewer & water lines the day before due to weather can be difficult.
78	E	M	P	B	They never show up.
83	E	M	P	B	The office staff should give you the right information to give out to the customers.
89				B	Never had an inspection date, they just showed up.
91				B	Left hand does not know what the right hand is doing!
92	E				Not getting back with me.
104	E	M	P		Communications.
112				B	Prompt.
113	E	M	P	B	Framer missed something that created a delay that could have been prevented if the inspector had informed the builder.

124				B	Getting permit.
128				B	The planning department took longer than estimated, one week to be exact.
130	E		P	B	Worked with our contractor. Do not believe there were any problems.
133				B	Almost 2 months to get my screen porch built because one property stake was hard to find. I had to pay \$350 for a survey of my property.
141	E	M	P	B	It was absolutely ridiculous.
148				B	It took over a month to approve the plans. Then, when they called to say they were ready I arrived & it took them an hour to locate them.

Case	Elec.	Mech.	Plumb.	Build.	Suggestions or comments:
5				B	We had a general contractor. When he told me an inspector was coming they did. That part went smoothly.
8	E	M	P	B	Inspection division does a great job. Just continue doing the good work.
9				B	We hired a contractor to build a porch & deck. I did not observe any problems or delays.
10				B	Remember that women can be knowledgeable. Buying a permit, if you are new to the policies & procedures, was difficult.
15	E	M	P	B	Very good service.
16				B	Why has it taken 2 years to send this survey?
18					Sorry, can't help you out!
19				B	I have not had any contact with inspection department in several years.
20					We have not had any direct contact with your office, therefore we cannot offer an evaluation.
21	E		P		Learn to understand that is being done on the job.
22	E		P	B	It has been almost 2 years since we had work done at our house. At this point it is hard to remember whether the inspectors were on time, etc & how thorough or knowledgeable they were! For this reason we have only been able to give you an average rating. In the future you should send out surveys soon after the work is completed.
24	E	M	P	B	This was over a year ago. The inspectors were working with my contractor so I really had no dealings with them. I do remember we were help up several days while waiting for the inspectors.
25	E	M	P	B	Good job!
30	E	M	P	B	Plans/applications must be reviewed & replied to in five (5) working days.
36				B	Dismiss <b>NR-4</b> & replace her with someone who understands how to treat tax paying citizens. My neighbors concur. I am moving out of High Point as a result of my treatment at the hands of inspection division. Thank you for finally investigating this division.
37		M	P		Our contracted plumbers/HVAC folks did all setup of inspections so I only know what they told me. I was not present but contractors reported no concerns & reported favorably.
38	E	M	P	B	I wish I could be more help to you but my contractor took care of the inspectors. It has been 2-3 years since our work. My best recollection is that the inspectors were fair & pleasant.

41	E	M	P	B	Hire people who are knowledgeable & respond in a timely manner.
43	E	M	P	B	Hire people with kind spirit.
44				B	Require us to build to code versus how "you" would build it.
48	E	M	P	B	Problem is probably with top level management.
51	E		P	B	Obviously unhappy inspector <b>NR-5</b> should find other occupation.
54	E	M	P	B	All inspectors should have a minimum requirement that they should have the experience as a general contractor in their area of inspection. Also use common sense whenever possible.
60	E	M	P	B	In my review of the department I see that they are more difficult than departments in the county & other counties. I have several tradesmen who chose to stop working in High Point due to the excessive difference from the inspectors when compared to other departments. I know you don't have any control over how this all works but I think all department inspectors should be made to pay the fee to the tradesmen when they are incorrect in their judgment. All of us who work in the man-Government world pay for our errors & I think it's time that the city & county officials pay when they are wrong. This one change would bring a new day in the department & government in general. Codes are for safety & I am for that but some of the issues cited are in the less-than-important areas, in my opinion!
62				B	Better matching of appointment times with inspection times to help with productivity.
67	E	M	P	B	Do away with plan reviews, get permit same day regardless of what the plans say. The project has to be built by state code.
71				B	Email to resident that it has passed final inspection.
72				B	I am curious in being asked to evaluate a process that took place around 20 months ago. The process of inspections seemed appropriate. This survey process is unsatisfactory.
73				B	Please Keep up the good work.
74			P	B	I did not deal with the inspector, my contractor did.
75	E	M	P	B	The plan reviewers are very dumb!!
76				B	Need online features other jurisdictions have.
77				B	Some inspectors do not fall within the comments above! Code enforcement in High Point has the attitude that small business should consider it a a privilege to do business here in High Point. Code enforcement doesn't promote new business in High Point! I have never had a situation!
78	E	M	P	B	Retire the staff & "elect" the new staff.

80	E			B	Continue to hire these kind of people. Great to work with.
83	E	M	P	B	Some inspectors need to get the facts together from customers before calling them liars.
84	E	M	P	B	Everyone seemed professional & very courteous.
88	E	M	P	B	Get real. Look at all the junk & shack houses, junk in yards, vacant lots. Clean up away from (?) show places & look at my neighborhood! Some of the field inspectors don't like themselves.
89				B	Make a real-time appointment.
90					If I had received this 8 months ago when the project was completed I could honestly answer. Too much time has elapsed to respond.
91				B	Put the customer first & not the city.
96	E			B	I request that my house is in the limit of city of High Point. The sewage & water line is seeping in my front yard but I am still deprived of this facility due to huge amount of connection charges by city of High Point. I am paying about \$950.00 a year tax on this house. If some relaxation is available in this connection fee that will get me to hook up with water & sewage lines.
97	E		P	B	Organized & professional groups of people.
98	E			B	Have some great staff such as <b>NR-6</b>
99		M		B	The services provided were above average.
103					I have not had an inspection.
104	E	M	P		Could be more up-front about possible problems.
105				B	Develop website with prices & types of inspections needed for different areas.
110					This was a screened in deck. Didn't need the extra outlet - already had one on my deck. Did not like having to remove deck rail.
113	E	M	P	B	Give a better overall framing inspection at the 1st framing inspection.
114					Lower the fee.
116					We have not yet worked with the inspection personnel.
123		M	P	B	I may not do any more work in High Point!
128				B	Great staff. Continue to hire great people!
129	E	M	P	B	Good folks, tough job, mostly fair-minded.
130	E		P	B	We were satisfied.
131				B	All staff were very helpful with this project from start to finish.
133				B	I think the property owner needs to be included in this transaction of getting a builders permit & during inspections of finished product & during building.

135	E	M	P	B	High Point has a reputation of being difficult to work with. I only encountered one electrical inspector who proved to have a chip on his shoulder. Everyone else was very helpful, especially <b>NR-7</b> .
139					We had no real contact with the inspectors. They basically dealt with the contractor.
141	E	M	P	B	Try to make it where you would want to do business with them again & remember that they are their customer, not their subject. Don't stop inspections at first problem. Do a thorough inspection with all problems that need to be addressed instead of your current philosophy of "fix this & I'll be back" only to find one more problem & come back & find another, an so on & so on until infinity!
142				B	Inspector said very little & didn't even measure my footings.
149				B	Thank you for your help.
152					Never had any interactions with the city.
153				B	All I had was a room addition. I hired a contractor to take care of this therefore I cannot properly evaluate. This should be directed to builders/contractors or those with large projects.

## SUMMING UP – AN EXECUTIVE SUMMARY

Although this list is not exhaustive, here are some of the items from your recent survey that we thought were interesting and/or important. Please review the entire report, and read from your many written comments to gain additional insight.

### Items of Note:

- 153 surveys were returned of about 600 that were delivered. This good 25% response rate and is more than sufficient in order for us to achieve the goals of the survey.
- 50% of respondents had electric work done; 35% had mechanical; 39% had plumbing and 85% had building. (p. 6).
- Overall, customer satisfaction was good, though some items had lower ratings or more variability than would be desired (see tables below).
- Among the 22 rated statements, the highest rated were:

S15	The inspectors are <i>thorough</i> with their inspections. (highest rated item)
S10	The inspectors are courteous.
S11	The inspectors are helpful.
S7	The other office staff are courteous.
S12	The inspectors are knowledgeable.
S3	The plan reviewers are courteous.

- The lowest rated statements were:

S2	In general, the Division is easy to work with.
S14	The inspectors typically let me know if they will be arriving late on a site.
S21	In general, this division is able to minimize delays in my work.
S6	The plan reviewers reviews plans within the indicated timeframe.
S18	The inspectors try to provide <i>options</i> when something needs correcting.
S22	The permit fees are reasonable for the service provided. (lowest rated item)

- We found what appear to be some significant differences of opinion, based on the type of work done at the respondents' homes. (See page 21)
- We also found a few significant predictors of general satisfaction items. These analyses could provide assistance in planning for the future. (See pages 22ff)
- Your received a number of thoughtful and candid comments which should be of help as you continue to strive for improvement.

We hope this information will help you make good decisions. If you have any questions at any time, please let me know. We look forward to working with you in the future.

Tollie Mitchell, Program Director  
**Insight Research, Inc.**



# City of High Point Residential Inspections Survey

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Please help the Inspection Services Division of the Planning & Development Department serve you and other customers better. This anonymous survey is being conducted by an independent research firm. Your name is not required, and your responses will only appear as summarized with other people's ratings and comments.

➤ Please return your completed survey in the postage-paid envelope by December 1<sup>st</sup> 2010.

*Your participation is greatly appreciated!*

Please indicate how strongly you disagree or agree with the following statements.

Leave any statement BLANK that you find unclear or that does not apply.

	Strongly Disagree						Strongly Agree
	1	2	3	4	5	6	7
<b>General Items:</b>							
1. Overall, I am satisfied with the High Point Inspection Services Division.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. In general, the Division is easy to work with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-----							
3. <b>The plan reviewers</b> ... are courteous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. ... are knowledgeable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. ... are helpful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. ... review plans within the indicated timeframe.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-----							
7. <b>The other office staff</b> ... are courteous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. ... are helpful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. ... are knowledgeable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-----							
10. <b>The field inspectors</b> ... are courteous.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. ... are knowledgeable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. ... are helpful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. ... arrive on the job site at the indicated time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. ... typically let me know if they will be arriving late on a site.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-----							
15. ... are <i>thorough</i> with their inspections.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. ... are <i>fair</i> with their inspections.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. ... provide <i>timely</i> answers to my questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. ... try to provide <i>options</i> when something needs correcting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
-----							
<b>Other General Items:</b>							
19. The Division provides inspection results to me in a timely manner.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. The inspection results paperwork was understandable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. In general, this Division is able to minimize delays in my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. The permit fees are reasonable for the service provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. Which best describes the type of work that you had done at your house? (Check ALL that apply)

<input type="checkbox"/> Electric	<input type="checkbox"/> Plumbing
<input type="checkbox"/> Mechanical (Heat/AC)	<input type="checkbox"/> Building

What do you think the Inspection Services Division does well?

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What obstacles or undue delays, if any, did you encounter with the Division?

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Suggestions or comments:

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**Thank you once again for your participation!**

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## Appendix B Measurements and Statistical Analyses

The following section provides a general description of each of the measurements and statistical analyses applied to the responses received to this survey. Much more detailed descriptions of the measures and analyses are available in a variety of statistics books available to the public through local libraries or bookstores.

### Average (Mean):

The average is a single measure used to represent a group of numbers or scores. It can be thought of as a point of balance where the sum of all of the numbers falling above it is the same as the sum of all of the numbers falling below it. Mathematically, the average is expressed as the sum of all of the scores divided by the total number of scores.

It is important to note that the average is sensitive to extreme scores. That is, if most of the scores being averaged fall very close to one another with the exception of one score which is far higher or lower than the rest, that one score can have considerable influence on the average. In some cases the influence of the extreme score is so great that the resulting average could be a misleading representation of the total group of numbers.

### Median:

The median is another single measure that can be used to represent a group of numbers or scores. It can be thought of as the middlemost score in a series of rank ordered scores. That is, the median can be calculated by rank ordering all of the scores of interest from lowest to highest, and finding the score that is exactly half-way down the rank-ordered list (or the 50th percentile). Thus, for example, the median of the series of scores (2, 3, 6, 8, 9) is '6'.

In contrast with the average, the median is NOT sensitive to extreme scores. By simply being the middlemost score in a rank ordered list of scores, the median is not influenced by extremely high or low scores. It can therefore be a useful measure, which may present a more accurate representation of the total group of numbers under certain conditions.

Consider the following example. Suppose you wanted to find a number that would best represent the value of houses in a particular community. Further suppose that there are 5 houses in the community appraised at the following values:

Home 1	\$85,000
Home 2	\$90,000
Home 3	\$110,000
Home 4	\$115,000
Home 5	\$340,000

As can be seen from the table, 4 out of the 5 houses fall between \$85,000 and \$115,000. Thus, you might expect that a single number used to represent the 'general' value of homes in that community would fall somewhere in that range. Indeed, the Median score for the values listed is \$110,000 as expected. In short, the Median is not impacted by the fact that 1 of the 5 houses has a much higher value than any of the others. By contrast, the AVERAGE value of the homes in this community would be calculated as \$148,000 since the one extreme score impacts it.

The differences between the average and the median as seen in this example generally diminishes as the number of scores being evaluated increases.

## Standard Deviation:

The standard deviation reflects the amount of variability that exists in a set of scores around the average. In short, if most of the scores in a group of scores are close to one another, there is little variability in the scores around the average so the standard deviation is small. By contrast, if the scores vary wildly from one extreme to the other, then the standard deviation is large. By understanding the standard deviation, you can get a sense of how 'tight' or 'spread out' the scores in a group are around the average.

For example, consider these two distributions of numbers:

11	<b>Average = 14</b>	
12		
14		
16		<b>Std. Dev. = 2.3</b>
17		

2	<b>Average = 14</b>	
8		
14		
20		<b>Std. Dev. = 8.5</b>
26		

Notice that the average in both cases is the same. However, the numbers are clustered much more tightly around the average for the first group of scores (i.e. have a smaller standard deviation) than the scores in the second group which are much more spread out (i.e. have a much larger standard deviation).

## T-Tests:

The T-test is a useful statistical test which compares the responses from two groups (which are treated differently in one way or another) to see if the scores generated by the 2 groups are essentially the same, or whether they are significantly different from one another. If the test shows the responses from the two groups are significantly different, then you can conclude that the different treatments the 2 groups received had an impact on their responses. If however, there is no significant difference found, then you conclude the different treatments had no effect on the groups' scores.

As an example; if a class of students was broken into 2 groups, and one group learned math using Book 'A' while the other group learned math using Book 'B', a T-test could be calculated to determine if Book 'A' or Book 'B' did a better job of helping the students learn math. A significant difference between the two would indicate that the book yielding the highest student scores on a math test served as the better text for students to learn from. A finding of no significant difference would indicate both books are equally effective in teaching math.

## ANOVA - (Analysis of Variance):

Similar to the simpler T-Test, the ANOVA enables you to compare more than 2 groups against each other to see if a treatment had any significant effect on the responses. Extending the example given under T-Tests, the ANOVA could be used to compare the impact of 3 or more different books on students learning math. If no significant difference is found, then you conclude that none of the 3 books is any better or worse at helping teach math to students. If a significant difference is found, then additional analyses (called Post Hoc analyses) need to be conducted to determine the source of the difference. Thus for example if Book 'A', Book 'B' and Book 'C' are being tested, and a significant difference is found, then it is important to determine if scores on a math test for students using Book 'A' are better than, worse than, or the same as Books (B&C). Similarly, we would want to test to see if differences existed between Books 'B' & 'C' as well.

## MANOVA - (Multivariate Analysis of Variance):

The Multivariate Analysis of Variance (MANOVA) is a simple extension of the ANOVA with the primary difference being that of having more than one Dependent measure (or measure of performance) to be evaluated. Continuing with the example provided in the ANOVA description, a MANOVA would be computed if the 3 or more different math books were evaluated in terms of their impact on more than one measure of a student's learning such as 1) their scores on an in-class math test, and 2) their scores on the math portion of an achievement test or SAT test. Thus, for example, it is possible that books A, B, and C are found to have a significant impact on in-class math test scores, but have no significant impact on achievement or SAT scores. If a significant difference is found for any of the Dependent Measures taken, then further analysis must be conducted to determine where the significant differences exist. Specifically, in this example, it would be important to determine which book or books are better or worse at helping teach math to students as reflected by in-class math test scores. By contrast, no additional computations are required regarding the books' impact on achievement or SAT scores since no significant effects were found.

## Correlation:

The correlation is a measure of how closely related 2 or more items are. A "positive" correlation indicates that 2 or more items are closely related (e.g., height and weight are positively correlated since in general, the taller someone gets, the more they weigh). A "negative" correlation exists when two or more items are related in opposite directions (e.g., number of children in a family, and amount of money available to save each month might be negatively correlated. That is, the more children you have in the family, the more expenses you have to pay each month, which reduces the amount of money left to put in savings.) A finding of no correlation means there is no relationship between the two items. For example, no correlation exists between shoe size and eye color. That is, neither item depends on or is in any way related to the other item.

Correlation measures can be extremely useful in survey analysis. Specifically, correlation analyses help identify those items which are related to one another. Thus, knowing how a person responds to one item can help predict how they will respond to another correlated item.

## Multiple Regression Analysis:

Where-as the Correlation is a measure of how closely related 2 or more items are, Multiple Regression Analysis techniques use correlations to analyze the relationships between **many** 'predictor' variables and a Dependent measure. Thus, for example, a car salesman may want to determine which attributes of a car (color, style, name, size, etc.) are most highly related to (or serve as the best predictor of) the price the purchaser is willing to pay for a car. In this case, color, style, name, and size are considered to be potential predictors, while the price paid is the dependent measure of interest. A multiple regression analysis might reveal that style and name are the best predictors of price, while the predictive value of color and size is negligible.

Similarly, multiple regression analysis can be extremely useful in survey analysis where the investigators are most interested in determining which items being rated are the best predictors of an item of interest such as "overall satisfaction", or "willingness to be a repeat customer", etc.