# Appendix B

Excerpts from a sample Defect Analysis Report

**Defect Analysis Report**

**This example is for a different set of graphs from the ones you will be doing. It is also in a slightly different format from the one you are to use. (You should follow the outline in Appendix A and in the template). The only purpose of the sample below is to give you an idea of what the report should look like.**

1. **Introduction**
   1. **Purpose of This Report**

This report shows the results of analyzing why employees leave the company to work elsewhere (employee turnover). We have analyzed the data in six different ways. The goal is to determine whether turnover is a problem, whether it’s a problem for only certain projects or for the company as a whole, and what the likely causes are for undesired levels of turnover.

* 1. **Data Used**

The data necessary to perform these measurements and analyses have been collected monthly for each active software product, over the past three years. The data are stored in the **data spreadsheet**, named INPUTDATA. This spreadsheet has two sections. The first section, which shows actual turnover rates, has four rows for each project, then two rows for each software product developed by that project. Each month a new column is added and data collected for that month are recorded. The second section, which shows the results of exit interviews with departing employees, contains a list of reasons for employee dissatisfaction and the frequency with which each reason is cited.

A typical data collection worksheet looks like this:

*<Picture of worksheet goes here, showing typical situation.>*

* 1. **Analyses and Graphs**

We have analyzed the data in several different ways, resulting in six different metrics and their corresponding graphs. They break down into two categories: turnover data and data gathered from employee exit interviews. The six are:

1. Unplanned Turnover by Project,
2. Unplanned Turnover for the Whole Organization,
3. Turnover by year
4. Reasons most frequently cited for employees leaving
5. Reasons most frequently cited as things disliked about the company
6. Reasons most frequently cited as things liked about the company

These are described in further detail in section 2 of this report.

* 1. **Structure of Analysis Tool**

In order to analyze turnover data, we have created an analysis tool consisting of a Microsoft Excel™ workbook that contains seven worksheets. The first worksheet contains the data collected each month (secton 1.2). The other six worksheets contain the data refinement and graphs corresponding to the six methods of analysis listed in section 1.3.

The other worksheets are: *<list each and describe each in an overview fashion, including a picture of each>.*

Details of each analysis are found in section 2 of this report.

Note that in this example, the six measures are divided into two groups. Section 2.1 describes the first group (turnover) and section 2.2 describes the second group (reasons cited for leaving, etc.)

1. **Measures, Graphs and Analysis**
   1. **Turnover (3 Measures)** 
      1. **Overview**

The turnover measures are used to determine correlation between turnover rates and other factors. *[Note that this sentence states the purpose of the measure or group of measures – the information need that applies to the entire group of measures.]* Three turnover measures are used: unplanned turnover for a project, unplanned turnover for the entire organization, and turnover by year. Unplanned turnover is defined as any turnover that exceeds planned turnover. *[This second sentence defines the measures in words.*] Turnover data are collected monthly starting at the beginning of each project. *[This sentence describes the frequency of data collection.]*

*< Additional descriptive information may also be supplied.>*

* + 1. **Unplanned Turnover for a Project**

Unplanned turnover is defined as any turnover that exceeds planned turnover. *[This sentence defines the measure in words.]* This measure is used to determine whether employee turnover is at a level that is likely to result in cost or schedule problems. *[Note that this sentence states the specific purpose of the measure – the information need.]* In the first measure, this is measured for a specific project.

Unplanned turnover helps understand the stability of the staff on a project. This is important because unexpected departures can affect the cost and schedule of a project. A too-high turnover rate means increased training and "learning curve" costs will be incurred as we replace the people who are leaving. This will usually have a cost and schedule impact.

**2.1.2.1 Graph**

The graph below shows unplanned turnover, as reported in August, for a specific project.



**2.1.2.2 Analysis and Discussion**

The unplanned turnover graph is plotted by month, using a line chart. It shows the rate at which people have left the project, by month, compared with the plan. Two lines are shown: the plan (black line) and the actual turnover (red line). When the red line is higher than the black line, it means more people are leaving than planned.

In the above example, there were minor fluctuations in the first part of the year but a significant increase in unplanned turnover in the summer months. The software manager has evaluated the cause of this high turnover rate and believes that the most probable cause is the failure of the air conditioning system and the resulting employee discontent. *<note that in this example, a possible reason is cited for the observed data. In some cases, all you can do is note what the graph is saying, give a list potential causes, and explain what actions are planned to determine the causes.>* The repair was not completed until late August. Corrective action recommended is to respond much more quickly to situations like this in the future. One approach would be to provide an emergency equipment repair budget for future years instead of relying on approval from the capital equipment vice president (who was on vacation at the time of the A/C failure). *<you can provide suggested solutions to the problem if you have identified a possible cause.>*

**2.1.2.3 Procedure Used to Collect and Refine Data and Produce Graph**

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| 2.1.2.3.1 Data Collection: Base Metrics Collected |
| The data required for computing unplanned turnover by project are:   * **Em** = the total number of employees on the project at the end of month **m** * **Lm** = the total number of employees who left the project during month **m** * **Rm** = the turnover rate expected (planned) for month **m**   The values of **Em** and **Lm** are collected monthly and recorded in separate rows in the data spreadsheet. All employees are counted and the numbers are recorded on the last day of each month.  The Planned turnover rate (**Rm**) is established by the project team leader. It is derived from historical turnover rates with revisions up or down to reflect actual experience (such as higher than average turnover that might be expected at certain times of the year or due to specific circumstances of this project). |

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| 2.1.2.3.2 Compound Metrics (Metrics Computed) |
| The Turnover rate **Tm** is defined for month **m** as follows:  **Tm = Lm / Em-1**  Unplanned turnover occurs any time **Tm > Rm**. |

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| 2.1.2.3.3 Data Refinement (manipulations, extractions, sorting, etc.) |
| The data must be checked for errors, and a spreadsheet row (“actual”) is created to compute the value of **Tm**, but little refinement or analysis is required beyond this. |

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| 2.1.2.3.4 How to Interpret the Graph |
| The horizontal axis of the graph shows the month and the vertical axis shows the turnover rate.  The Planned turnover **Rm** is stored in a "plan" row in the spreadsheet and can be revised as plans change. This generates the “Planned” line (black) in the graph.  The Actual turnover rate **Tm** is computed from **Em** and **Lm** and recorded in the “actual” row of the spreadsheet. This generates the “Actual” line (red) in the graph.  When the Actual line exceeds the Planned line by a significant amount or by more than one or two months, it indicates a problem that must be addressed. There is often a specific reason why so many employees are leaving, and it is important to determine that reason and take appropriate action as soon as possible. The other graphs (below) can often help in identifying the reasons for the high turnover rate. |

* + 1. **Unplanned Turnover for the Organization**

<continue as above>