# Data Analysis & Visualization for IT & Information Security Professionals

# Introduction

## Who Was the Book Designed for?

## What Technologies Are Covered?

### Microsoft Excel

### R

### D3

### SQL/MySQL/Oracle

### NoSQL/MongoDB

# Chapter 1: Fundamentals of Data Visualization

## Communicating Visually

## Signal Detection & Magnitude Estimation:

### Weber’s Law

### Steven’s Power Law

## Comparing & Ranking Elementary Perceptual Tasks:

### Cleveland & McGill

### Mackinlay

## Encoding Multiple Attributes

### Shape & Lightness

### Size & Value

### Orientation & Size

### Shape & Size

### Length & Length

### Angle & Angle

## Understanding Gestalt

### Figure/Ground

### Proximity

### Similarity

### Connectedness

### Continuity

### Closure

### Common Fate

### Transparency

## Visual Processing

### Pre-attentive vs Attentive

### Eye Tracking

### Using Color Well

## Delivering Your Visualizations

### Designing for the Desktop

### Designing for the Screen

### Designing for Print

## Case Study/Interview: (Nathan Yau?)

# Chapter 2: Analyzing Data

## The Role of Analysis in IT & Security

### How to approach data analysis

### Proactive vs Reactive Analysis

#### Understanding “Normal”

#### Implementing New Technologies

#### Capacity Planning

#### Analyzing Incidents

### Instilling a Culture of Analysis

## Data Sourcing & Handling

### Cataloging Your Data Sources

### What Information Does It Provide?

### What Information Doesn’t It Provide?

### Data Cleansing

## Data Analysis Basics

### Continuous Variables

#### Operations On Continuous Variables

##### Finding the Center

###### Mean

###### Median

###### Mode

###### Range

###### Standard Deviation & Variance

###### Distribution & Percentiles

### Categorical Variables

#### Operations on Categorical Data

##### Distributions

##### Tabular Inspection

## Inferential Statistics

### Formulating Hypotheses & The Null Hypothesis

### Correlation & Regression

### Significance Testing

## Analyzing At Scale

### Choosing the Right Tools

### Choosing the Right Techniques

## Case Study/Interview: (?)

# Chapter 3: Visually Communicating for Analysis

## The Analyst as an Audience

### Management

### Architecture

### Engineering

### Operations

## Core Design Principles

### Sensible Simplification

### Telling The Truth

### Reducing “Chart Junk”

## Selecting the Right Visualization

### Bar Charts

### Line Charts

### Scatterplots

### Box & Whiskers

### Dot Plot

### Histogram

### Quantiles

### Choropleths

## Iterative Exploration

### Determining the Right Questions to Ask

### Performing Analysis & Visualization

### Inspecting the Answer & Reassessing Questions

## Case Study/Interview: (?)

# Chapter 4: Visualizing Complexity

## Complexity In IT & Security

### Data Volume

### Data Diversity

### The “Interconnectedness of Things”

## Visualizing Networks

### Radial Graphs

### Force Directed Graphs

### Chord Diagram

### Hive Plots

## Exploring Multivariate Data

### Trellis Plots

### Scatterplot Matrices

### Small Multiples

### Parallel Coordinate Plots

## Case Study/Interview: (?)

# Chapter 5:Designing for Monitoring

## The Evolution & Elevation of the Dashboard in IT & Security

## Dashboard Data Selection

### What Are You Monitoring For?

### Determining if the Data You Have is the Data You Need

## Creating Effective Dashboards

### Focusing on Speed of Inference

### Highlighting Critical Differences

### Applying Visualization Fundamentals to Your Design

### Knowing When To Use Words & Numbers vs Pictures

## Presenting Dashboards

### Producing the Printed Dashboard

### Designing Dashboards for the Big Screen

### Avoiding “Gotchas” in Mobile Dashboards

### Knowing When to Add Interaction

## Case Study/Interview: (?)