Table of contents provided by Syndetics

- **Preface** (p. xi)
- **1 Introduction** (p. 1)
- **Why Data Visualization?** (p. 1)
- **Why Write Code?** (p. 2)
- **Why Interactive?** (p. 2)
- **Why on the Web?** (p. 3)
- **What This Book Is** (p. 3)
- **Who You Are** (p. 4)
- **What This Book Is Not** (p. 5)
- **Using Sample Code** (p. 5)
- **Thank You** (p. 6)
- **2 Introducing D3** (p. 7)
- **What It Does** (p. 7)
- **What It Doesn't Do** (p. 8)
- **Origins and Context** (p. 9)
- **Alternatives** (p. 10)
- **Easy Charts** (p. 10)
- **Geomapping** (p. 11)
- **Three-Dimensional** (p. 13)
- **Tools Built with D3** (p. 13)
- **3 Technology Fundamentals** (p. 17)
- **The Web** (p. 17)
- **HTML** (p. 19)
- **Content Plus Structure** (p. 20)
- **Adding Structure with Elements** (p. 21)
- **Common Elements** (p. 22)
- **Attributes** (p. 24)
- **Classes and IDs** (p. 24)
- **Comments** (p. 25)
- **DOM** (p. 26)
- **Developer Tools** (p. 26)
- **Rendering and the Box Model** (p. 29)
- **CSS** (p. 30)
- **Selectors** (p. 31)
- **Properties and Values** (p. 32)
- **Referencing Styles** (p. 33)
- **Inheritance, Cascading, and Specificity** (p. 34)
- **JavaScript** (p. 36)
- **Graph Visualizations** (p. 11)
- **Almost from Scratch** (p. 12)
- **Comments** (p. 32)
- **Hello, Console** (p. 36)
- **Variables** (p. 37)
- **Other Variable Types** (p. 37)

- **Arrays** (p. 37)
- **Objects** (p. 39)
- **Objects and Arrays** (p. 39)
- **Mathematical Operators** (p. 42)
- **Comparison Operators** (p. 42)
- **Logical Operators** (p. 42)
- **Control Structures** (p. 43)
- **Functions** (p. 46)
- **Comments** (p. 46)
- **Referencing Scripts** (p. 47)
- **JavaScript Gotchas** (p. 47)
- **SVG** (p. 52)
- **The SVG Element** (p. 53)
- **Simple Shapes** (p. 54)
- **Styling SVG Elements** (p. 56)
- **Layering and Drawing Order** (p. 58)
- **Transparency** (p. 59)
- **A Note on Compatibility** (p. 62)
- **4 Setup** (p. 63)
- **Downloading D3** (p. 63)
- **Referencing D3** (p. 63)
- **Setting Up a Web Server** (p. 64)
- **Terminal with Python** (p. 65)
- **MAMP, WAMP, and LAMP** (p. 66)
- **Diving In** (p. 66)
- **5 Data** (p. 67)
- **Generating Page Elements** (p. 67)
- **Chaining Methods** (p. 70)
- **One Link at a Time** (p. 71)
- **The Handoff** (p. 72)
- **Going Chainless** (p. 72)
- **Binding Data** (p. 72)
- **In a Bind** (p. 73)
- **Data** (p. 73)
- **Please Make Your Selection** (p. 79)
- **Bound and Determined** (p. 80)
- **Using Your Data** (p. 83)
- **High-Functioning** (p. 84)
- **Data Wants to Be Held** (p. 85)
- **Drawing divs** (p. 89)
- **Setting Attributes** (p. 90)
- **A Note on Classes** (p. 91)
- **Setting Styles** (p. 92)
- **The Power of data()** (p. 93)
- **Drawing SVGs** (p. 97)
- **Create the SVG** (p. 97)

- **Data-Driven Shapes** (p. 98)
- **Pretty Colors, Oooh!** (p. 100)
- **Making a Bar Chart** (p. 101)
- **The New Chart** (p. 102)
- **Color** (p. 107)
- **Labels** (p. 108)
- **Making a Scatterplot** (p. 110)
- **The Scatterplot** (p. 111)
- **Labels** (p. 114)
- **Next Steps** (p. 115)
- **7 Scales** (p. 117)
- **Beyond Text** (p. 86)
- **Random Data** (p. 95)
- **6 Drawing with Data** (p. 89)
- **The Old Chart** (p. 101)
- **Size** (p. 112)
- **Back to the Bars** (p. 91)
- **The Data** (p. 110)
- **Apples and Pixels** (p. 117)
- **Domains and Ranges** (p. 118)
- **Normalization** (p. 119)
- **Creating a Scale** (p. 119)
- **d3.min() and d3.max()** (p. 120)
- **Setting Up Dynamic Scales** (p. 122)
- **Incorporating Scaled Values** (p. 122)
- **Other Methods** (p. 127)
- **Other Scales** (p. 127)
- **Square Root Scales** (p. 128)
- **Time Scales** (p. 129)
- **Introducing Axes** (p. 135)
- **Setting Up an Axis** (p. 136)
- **Positioning Axes** (p. 138)
- **Check for Ticks** (p. 141)
- **Y Not?** (p. 143)
- **Final Touches** (p. 144)
- **Scaling the Scatterplot** (p. 120)
- **Refining the Plot** (p. 123)
- **8 Axes** (p. 135)
- **Formatting Tick Labels** (p. 145)
- **Time-Based Axes** (p. 147)
- **9 Updates, Transitions, and Motion** (p. 149)
- **Modernizing the Bar Chart** (p. 149)
- **Ordinal Scales, Explained** (p. 150)
- **Starting Your Own Band** (p. 152)
- **Referencing the Band Scale** (p. 153)
- **Other Updates** (p. 153)

- **Updating Data** (p. 154)
- **Interaction via P/vent Listeners** (p. 154)
- **Changing the Data** (p. 155)
- **Updating the Visuals** (p. 156)
- **Transitions** (p. 158)
- **Duration(), or How Long Is This Going to Take?** (p. 159)
- **Ease()-y Does It** (p. 161)
- **Please Do Not delay()** (p. 162)
- **Randomizing the Data** (p. 164)
- **Updating Scales** (p. 167)
- **Updating Axes** (p. 169)
- **On() Transition Starts and Ends** (p. 171)
- **Other Kinds of Data Updates** (p. 178)
- **Adding Values (and Elements)** (p. 178)
- **Removing Values (and Elements)** (p. 183)
- **Data Joins with Keys** (p. 186)
- **Add and Remove: Combo Platter** (p. 192)
- **Recap** (p. 193)
- **10 Interactivity** (p. 195)
- **Binding Event Listeners** (p. 195)
- **Introducing Behaviors** (p. 196)
- **Hover to Highlight** (p. 197)
- **Grouping SVG Elements** (p. 202)
- **Click to Sort** (p. 203)
- **Tooltips** (p. 207)
- **Default Browser Tooltips** (p. 208)
- **SVG Element Tooltips** (p. 209)
- **HTML div Tooltips** (p. 211)
- **Consideration for Touch Devices** (p. 214)
- **Moving Forward** (p. 214)
- **11 Using Paths** (p. 217)
- **LineCharts** (p. 218)
- **Data Preparation** (p. 219)
- **Scale Setup** (p. 221)
- **Line 'em Lip** (p. 222)
- **Dealing with Missing Data** (p. 224)
- **Refining the Visuals** (p. 226)
- **Area Charts** (p. 227)
- **12 Selections** (p. 231)
- **A Closer Look at Selections** (p. 231)
- **Getting More Specific** (p. 235)
- **Storing Selections** (p. 238)
- **Enter, Merge, and Exit** (p. 239)
- **The Enter Selection** (p. 240)
- **Merging Selections** (p. 244)
- **The Exit Selection** (p. 248)

- **Filtering Selections Based on Data** (p. 249)
- **To each() Their Own** (p. 255)
- **13 Layouts** (p. 259)
- **Pie Layout** (p. 260)
- **Stack Layout** (p. 264)
- **A New Order** (p. 268)
- **Anchoring Those Bars** (p. 269)
- **Stacked Areas** (p. 270)
- **Force Layout** (p. 273)
- **Preparing the Network Data** (p. 273)
- **Defining the Force Simulation** (p. 274)
- **Creating the Visual Elements** (p. 275)
- **Draggable Nodes** (p. 278)
- **14 Geomapping** (p. 281)
- **JSON, Meet GeoJSON** (p. 281)
- **Projections** (p. 285)
- **Choropleth** (p. 287)
- **Adding Points** (p. 291)
- **Panning** (p. 295)
- **Transitioning the Map** (p. 299)
- **Dragging the Map** (p. 299)
- **Border Problems** (p. 302)
- **Zooming** (p. 302)
- **Fixing the Pan Buttons** (p. 307)
- **Zoom-y Buttons** (p. 307)
- **Constraining Panning and Zooming** (p. 308)
- **Preset Views** (p. 310)
- **Value Labels** (p. 311)
- **Find Shapefiles** (p. 314)
- **Updating Visuals over Time** (p. 276)
- **Paths** (p. 283)
- **Acquiring and Preparing Raw Geodata** (p. 313)
- **Choose a Resolution** (p. 315)
- **Simplify the Shapes** (p. 316)
- **Convert to GeoJSON** (p. 318)
- **Choose a Projection** (p. 321)
- **15 Exporting** (p. 323)
- **Bitmaps** (p. 323)
- **PDF** (p. 324)
- **SVG** (p. 325)
- **16 Project Walk-Through** (p. 331)
- **Prepare the Data** (p. 331)
- **Load and Parse the Data** (p. 334)
- **Render the Initial View** (p. 337)
- **Add Interactivity** (p. 341)
- **Refine Styling** (p. 351)

- **Provide Context** (p. 352)
- **Dancing Versus Gardening** (p. 356)
- **A Case Studies** (p. 359)
- **B What's New in 4.0** (p. 405)
- **C Further Study** (p. 411)
- **D Sharing Your Code** (p. 417)
- **E Quick Reference** (p. 429)
- **Index** (p. 439)