Using Data Analytics to Detect Fraud

Effectively Communicating the Results of Data Analytics
Introduction

- Graphical representation of data, results, or other information
- Blend of art and science
- Requires communication skills and design skills
Objectives

- Provide clarity
- Provide context

Source: www.thisisindexed.com
COMMUNICATION PRINCIPLES
Principle 1: Focus on the Purpose

- Common purposes:
  - Analyze
  - Educate
  - Persuade
  - Entertain

- What is the analyst trying to accomplish?
Principle 2: The Audience Is More Important Than Data

- Audience considerations
  - Internal versus external
  - Emotional versus rational
  - Agreeable versus confrontational
  - Novice versus expert
Principle 3: Be Selective—Not All Data Is Equal

- No rule requiring that everything be presented
- What is relevant?
Example 1

<table>
<thead>
<tr>
<th>Transaction Date</th>
<th>Number of Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunday</td>
<td>459</td>
</tr>
<tr>
<td>Monday</td>
<td>5,295</td>
</tr>
<tr>
<td>Tuesday</td>
<td>7,515</td>
</tr>
<tr>
<td>Wednesday</td>
<td>8,150</td>
</tr>
<tr>
<td>Thursday</td>
<td>8,648</td>
</tr>
<tr>
<td>Friday</td>
<td>6,662</td>
</tr>
<tr>
<td>Saturday</td>
<td>1,204</td>
</tr>
</tbody>
</table>
Example 2

Transaction Date

Sunday
459

Saturday
1,204
Principle 4: Think Visually

- Visuals can complement other elements of a report.
- Narratives can be supplemented with a visual.
- Data tables can be replaced with a visual.
- Each situation is unique.
Principle 5: Determine the Data’s Role

- Detailed data is not required.
- Ease of use is a consideration.
- Data can be requested later for deeper analysis.
Element 1: Message

- Determine the overall message the data viz is trying to communicate.
- Data itself is neutral.
Element 2: Simplicity

- Carefully consider all elements of the design.
- Remove unnecessary chart junk.
- Ask: “Is there anything else that can be removed?”
Element 3: Accessories

- Includes all the extras on a visualization:
  - Shapes
  - Position
  - Axis titles
  - Data tables
  - Trend lines

- Not always necessary
Element 4: Color Selection

- Key considerations:
  - Color blindness
  - Printing of visualization (color or black and white)
  - Predefined meaning
  - Complementary or divergent

- Color directly impacts readability of visualization.
Element 5: Visual Type

- Specific types have specific purposes.
- Choosing a chart because it is “fun” might detract from the message.
- Be intentional about the visual type.
Application to Fraud Examiners

- Visualizations are used throughout a fraud examination:
  - Planning
  - The examination itself
  - Reporting
  - Trial and testimony

- All uses require slightly different approaches.