Quantitative Data

- What? Weight (g) of contents.

368, 351, 355, 367, 352, 369, 370, 369
370, 355, 354, 357, 366, 353, 373, 365
355, 356, 362, 354, 353, 378, 368, 349

Weight of Contents
Weight of Contents

♦ Who?
  – Cans of cola.

♦ What?
  – Weight of contents (g)
  – Type of cola (Regular or Diet)

Weight of Contents

♦ Regular Cola            ♦ Diet Cola
  36 | 2
  36* 5678999
  37 003
  37* 8

Comparing Distributions

♦ How do the distributions compare in terms of
  – Shape?
  – Center?
  – Spread?
Comparing Groups

- **Regular**
  - Min: 362 g
  - QL: 366.5 g
  - Med: 368.5 g
  - QU: 370 g
  - Max: 378 g

- **Diet**
  - Min: 349 g
  - QL: 352.5 g
  - Med: 354 g
  - QU: 355 g
  - Max: 357 g

Comparing Groups

```
Type of Cola

<table>
<thead>
<tr>
<th>Weight (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>345</td>
</tr>
</tbody>
</table>
```

Comparing Groups

- **Regular**
  - Med: 368.5 g
  - Mean: 368.8 g
  - Range: 16 g
  - IQR: 3.5 g
  - Std dev: 4.03 g

- **Diet**
  - Med: 354 g
  - Mean: 353.7 g
  - Range: 8 g
  - IQR: 2.5 g
  - Std dev: 2.23 g
The data table is arranged so that rows are cases (Who?) and columns are variables (What?). Before entering data into JMP answer the questions Who? and What?

### JMP – Data Table

<table>
<thead>
<tr>
<th>Weight</th>
<th>Type of Cola</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>368 R</td>
</tr>
<tr>
<td>2</td>
<td>367 R</td>
</tr>
<tr>
<td>11</td>
<td>378 R</td>
</tr>
<tr>
<td>12</td>
<td>368 R</td>
</tr>
<tr>
<td>13</td>
<td>351 D</td>
</tr>
<tr>
<td>14</td>
<td>355 D</td>
</tr>
<tr>
<td>23</td>
<td>353 D</td>
</tr>
<tr>
<td>24</td>
<td>349 D</td>
</tr>
</tbody>
</table>

### JMP – Analyze

- Analyze – Distribution
  - Y, Columns: Weight
JMP – Output

- Distribution
  - Stack
- Weight
  - Display Options: Horizontal Layout
  - Histogram Options: Count Axis

JMP – Output

- JMP will automatically select the bins. You can change these by
  - Right click on Weight axis;
  - Axis Settings
    - Minimum: 340
    - Maximum: 380
    - Increment: 10

<table>
<thead>
<tr>
<th>Quantiles</th>
<th>Moments</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.0%–maximum</td>
<td>378.00 Mean 361.2086</td>
</tr>
<tr>
<td>99.5%</td>
<td>378.00 Std Dev 8.335253</td>
</tr>
<tr>
<td>97.5%</td>
<td>378.00 Std Err Mean 1.70428</td>
</tr>
<tr>
<td>90.0%</td>
<td>371.50 upper 95% Mean 364.72</td>
</tr>
<tr>
<td>75.0% quartile</td>
<td>369.75 lower 95% Mean 357.6886</td>
</tr>
<tr>
<td>50.0% median</td>
<td>359.50 N 25</td>
</tr>
<tr>
<td>25.0% quartile</td>
<td>354.50</td>
</tr>
<tr>
<td>10.0%</td>
<td>351.50</td>
</tr>
<tr>
<td>2.5%</td>
<td>349.00</td>
</tr>
<tr>
<td>0.5%</td>
<td>349.00</td>
</tr>
<tr>
<td>0.0% minimum</td>
<td>349.00</td>
</tr>
</tbody>
</table>
JMP – Analyze

- Analyze – Distribution
  - Y, Columns: Weight
  - By: Type of Cola

JMP – Output

- Distribution
  - Uniform Scaling
  - Stack
- Weight
  - Display Options: Horizontal Layout
  - Histogram Options: Count Axis
Stat 101L: Lecture 6

JMP – Analyze

- Analyze – Fit Y by X
  - Y, Response: Weight
  - X, Factor: Type of Cola
- Note: Y is numerical/continuous
  X is character/nominal

JMP – Output

- One way analysis of Weight by Type of Cola
  - Display Options – Box Plots, Mean Lines, Grand Mean
  - Highlight (click on, hold down shift if more than one) potential outliers
  - Means and Std Dev

Means and Std Deviations

<table>
<thead>
<tr>
<th>Level</th>
<th>Number</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Std Err Mean</th>
<th>Lower 95%</th>
<th>Upper 95%</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>12</td>
<td>353.667</td>
<td>2.22926</td>
<td>0.6436</td>
<td>352.25</td>
<td>355.08</td>
</tr>
<tr>
<td>R</td>
<td>12</td>
<td>368.750</td>
<td>4.02549</td>
<td>1.1211</td>
<td>360.19</td>
<td>371.31</td>
</tr>
</tbody>
</table>