There's no lyin' in statistics
TamStat History

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dyalog.tv

- Dyalog ‘14  Taming Statistics with Limited Domain Operators
- Dyalog ‘15  TamStat, a Statistical Package
- Dyalog ‘18  Taming Statistics with TamStat
TamStat: Why another statistical package?
Data naturally comes in array form:

<table>
<thead>
<tr>
<th>Marriage</th>
<th>Pot</th>
<th>HealthCare</th>
<th>State</th>
<th>Sex</th>
<th>Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>2</td>
<td>PA</td>
<td>M</td>
<td>R</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>1</td>
<td>PA</td>
<td>F</td>
<td>D</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>3</td>
<td>MD</td>
<td>M</td>
<td>D</td>
</tr>
<tr>
<td>1</td>
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<td>M</td>
<td>D</td>
</tr>
</tbody>
</table>
Taming Statistics with TamStat: Operators

R, Excel, Minitab

Many functions for each probability distribution

TamStat

Each probability distribution has a single function
Mensa is the largest and oldest high IQ society in the world.[3][4][5] It is a non-profit organization open to people who score at the 98th percentile or higher on a standardised, supervised IQ or other approved intelligence test.[6][7] Mensa formally comprises national groups and the umbrella organisation Mensa International, with a registered office in London, UK.
So what IQ do I need?

Let’s tame this question!
Taming Statistics with TamStat: Operators

\[ \mu = 100 \]
\[ \sigma = 15 \]
\[ P = 98 \]

**Critical Value**

Excel: 
=\text{NORM.INV}(0.98,100,15)

TamStat: 
100 15 normal criticalValue \geq 0.98
130.8

**Probability**

Excel: 
=1-\text{NORM.DIST}(131,100,15,1)

TamStat: 
100 15 normal probability \geq 131
0.019

“at the 98th percentile or higher”
Cross-platform GUI

- MiServer-based cross-platform GUI
  - Now with HTMLRenderer/DUI
Confidence intervals

- Sample
- Population
What is the true population mean height?

Let’s tame this question!
<table>
<thead>
<tr>
<th>Step</th>
<th>TamStat Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate the sample mean: $\bar{x} = \frac{\sum x}{n}$</td>
<td>$XBAR$←mean D.Height 68.776</td>
</tr>
<tr>
<td>Estimate the standard error: $s_{\bar{x}} = \frac{s}{\sqrt{n}}$</td>
<td>SX ← (sdev D.Height) div sqrt count D.Height 0.72614</td>
</tr>
<tr>
<td>Find the critical Value: $t_{\alpha/2}$</td>
<td>T ← (N-1) tDist criticalValue &lt; 0.05 div 2 2.0262</td>
</tr>
<tr>
<td>Find the Margin of Error: $E = t_{\alpha/2}s_p$</td>
<td>E ← SX times T 1.4713</td>
</tr>
<tr>
<td>Calculate the confidence interval: $\bar{x} \pm E$</td>
<td>XBAR(-,+)E 67.305 70.247</td>
</tr>
</tbody>
</table>