Stata provides an easy-to-use and comprehensive suite of tools for SEM—everything you need for fitting your model, evaluating model fit, and interpreting results. And all of this is integrated in a complete package for data management, graphics, and statistics.

- **Easy model specification**
  - Path diagram builder
  - Intuitive command syntax

- **Types of models**
  - Path analysis
  - Mediation analysis
  - Confirmatory factor analysis
  - Multiple indicators and multiple causes (MIMIC) models
  - Latent growth curve models
  - Hierarchical confirmatory factor models
  - Multiple-group models
  - Models with binary, ordinal, count, nominal, and survival-time outcomes
  - Multilevel models
  - And many more

- **Interpretation**
  - Direct, indirect, and total effects
  - Standardized and unstandardized estimates

- **Model fit**
  - Model chi-squared
  - RMSEA
  - CFI
  - TLI
  - SRMR
  - Likelihood-ratio and Wald tests
  - Modification indices

- **Estimation methods**
  - Maximum likelihood
  - Maximum likelihood with missing values, sometimes called FIML
  - Asymptotic distribution free (ADF)

- **Standard errors**
  - Satorra–Bentler
  - Robust–Huber/White/sandwich estimator
  - Cluster–robust
  - Bootstrap
  - And more

- **Survey data support**
  - Sampling weights
  - Stratification and poststratification
  - Multistage cluster sampling
Use **sem** to fit linear models

Here we fit a two-factor CFA model with four measurements of depression and four measurements of post-traumatic stress disorder (PTSD). The results are the same whether we use the straightforward command syntax,

```
  . sem (Depression -> d1 d2 d3 d4) (PTSD -> p1 p2 p3 p4)
```

or draw the path diagram,

![Path diagram of the CFA model](image1)

**Report model fit statistics**

Many commands are available for evaluating the fit of our model. For instance,

```
  . estat gof, stats(all)
```

```
<table>
<thead>
<tr>
<th>Fit statistic</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Likelihood ratio</td>
<td>19.255</td>
<td>model vs. saturated</td>
</tr>
<tr>
<td>chi^2 (1)</td>
<td>19.255</td>
<td>model vs. saturated</td>
</tr>
<tr>
<td>chi^2 (1)</td>
<td>19.255</td>
<td>baseline vs. saturated</td>
</tr>
<tr>
<td>95% CI, lower bound</td>
<td>0.000</td>
<td>Probability NRMSEA &lt; 0.05</td>
</tr>
<tr>
<td>95% CI, upper bound</td>
<td>0.000</td>
<td>Probability NRMSEA &lt; 0.05</td>
</tr>
<tr>
<td>Information criteria</td>
<td>AIC: 13345.320, BIC: 13385.524</td>
<td>Akaike’s information criterion</td>
</tr>
<tr>
<td>Baseline comparison</td>
<td>CFI: 0.995, TLI: 0.992</td>
<td>Comparative fit index, Tucker-Lewis index</td>
</tr>
<tr>
<td>Size of residuals</td>
<td>SRMR: 0.013, CD: 0.990</td>
<td>Standardized root mean squared residual, Close fit to measurement</td>
</tr>
</tbody>
</table>

Learn more about SEM and other Stata features at [stata.com/features](http://stata.com/features).