

# Latent Class Analysis: Technical settings

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# Introduction

- In this video I will discuss technical settings (in Latent GOLD) which may be relevant when running LC models
- Starting values (most important one!)
- Convergence and iteration limits of algorithms
- Bayes constants
- Missing values
- Bootstrap
- Threads

# Technical tab in Latent GOLD 6.0

<b>Convergence Limits</b> EM Tolerance <input type="text" value="0.01"/> Tolerance <input type="text" value="1e-008"/>	<b>Bayes Constants</b> Latent Variables <input type="text" value="1"/> Categorical Variables <input type="text" value="1"/> Poisson Counts <input type="text" value="1"/> Error Variances <input type="text" value="1"/>
<b>Iteration Limits</b> EM <input type="text" value="250"/> Newton-Raphson <input type="text" value="50"/>	<b>Missing Values</b> Exclude Cases <input checked="" type="radio"/> Include Indicators/Dependent <input type="radio"/> Include All <input type="radio"/>
<b>Start Values</b> Random Sets <input type="text" value="16"/> Iterations <input type="text" value="50"/> Seed <input type="text" value="0"/> Tolerance <input type="text" value="1e-005"/>	<b>Bootstrap</b> Replications <input type="text" value="500"/> Seed <input type="text" value="0"/> Random Start Sets <input type="text" value="0"/>
<b>Threads</b> Maximum Threads <input type="text" value="8"/>	<b>Continuous Factors</b> Number of Nodes <input type="text" value="10"/>

# Starting values (local maxima)

- Problem: when running a LC model, you may obtain a local maximum solution (a lower LL value than the maximum LL value)
- Solution: use multiple random starts
- Latent GOLD default settings:
  - 16 random start sets
  - 50 iterations per start set (+ 2\*50 for best 10%)
- It may be a good idea to increase this to say 160 and 250, respectively, especially if rerunning a certain model gives different results
- Seed: allows reproducing earlier results (Latent GOLD saves model with the best seed)

# Other technical settings

- Convergence/Iteration limits: rather strict defaults are usually okay
- Bayes Constants: “smoothing” priors for model probabilities to prevent “boundary” estimates and convergence problems
- Missing values: “include indicators” is a good option if you have observations with missing values. Yields ML estimates under MAR missingness.
- Bootstrap: replications (determines precision) and startsets (mainly in -2LLdiff)
- Threads: multiple processing is used to speed up computations