

Topics by Group

- 1) Group C: Background and recommendations overview paragraph.
- 2) Group B: Composite Index Weighting via PCA
- 3) Group D: Weighting via (Exploratory, Confirmatory) Factor Analysis
- 4) Group A: Structural Equation / Path Models (SEMs/PMs) to Estimate Latent Composite Indicators
- 5) Group E: Operational Issues: Variable Choice, Transformation, Evaluation

Writing Style & Format

Be concise. Rely on client-accessible references to support statements and *cite these liberally* in your text using the appropriate LaTeX commands. Focus your writing style and content on the client; leave all mathematical details and descriptions to the references. Again, be as concise as possible.

Outline of Report

1 *Background.* One paragraph (Group C).

2 *Recommendations*

Overview of recommendations/roadmap (Group C). One paragraph.

2.1 Composite Index Weighting via PCA (Group B).

- 2.1.1 High-level description of principal components analysis.
- 2.1.2 Guidelines for using PCA to determine variable weights in a composite index.
- 2.1.3 Advantages and potential pitfalls/disadvantages to using PCA as a tool to construct a composite index.

Focus on the references used in your presentation. These are:

- [VyasAndKumaranayake.PCAforSocioEconIndices.HPP2006.pdf](#)
- [Ram.DevelopmentIndicesPCA.JDE1982.pdf](#)
- [MazziottaAndPareto.IndexesByPCAvsFacAnalysis.RIEDS2016.pdf](#)
- [NardoEtAl.ToolsForCompositeIndices.EU2005.pdf](#) (sections 3.1.1 and 6.1.1)
- [Budaev.PCAandFAcaveatsAndGuidelines.Ethology10.pdf](#)

I'd like you to focus on the content in these (*they should all be referenced and cited in your text*), however you may utilize other resources that fill gaps in your narrative, but always provide citations/references when drawing directly on published material, whether in print or online.

2.2 Weighting via (Exploratory, Confirmatory) Factor Analysis (Group D).

- 2.2.1 High-level description of exploratory and confirmatory factor analysis.
- 2.2.2 Guidelines for using FA to determine variable weights in a composite index.
- 2.2.3 Advantages and potential pitfalls/disadvantages to using FA as a tool to construct a composite index.

Focus on the references used in your presentation. These are:

- [FloydAndWidaman.FactorAnalysis.PsychAssess1995.pdf](#)
- [NardoEtAl.ToolsForCompositeIndices.EU2005.pdf](#) (sections 3.1.2 and 6.1.1)
- [PreacherAndMacCallum.FAPitfalls.US2003.pdf](#)
- [Budaev.PCAandFAcaveatsAndGuidelines.Ethology10.pdf](#)

I'd like you to focus on the content in these (*they should all be referenced and cited in your text*), however you may utilize other resources that fill gaps in your narrative, but always provide citations/references when drawing directly on published material, whether in print or online.

2.3 *Structural Equation / Path Models (SEMs/PMs) for Composite Indicators/Indexes* (Group A).

- 2.3.1 High-level description of structural equation and path models.
- 2.3.2 Guidelines for using SEMs/PMs for the construction of composite indicators, i.e. for deriving a hierarchical weighting scheme for a latent, composite index.
- 2.3.3 Strengths and weakness of this approach to creating composite indicators/indexes.

Focus on the content of the following references:

- [BartholomewEtAl.MultivarSocSciDataCh11.pdf](#)
- [BeranAndViolato.primerOnSEM.BMCRN2010.pdf](#)
- [LauroEtAl.PathModelsForIndicators.SIR2018.pdf](#)
- [Grace.SEMforObsData.WM2008.pdf](#)

I'd like you to focus on the content in these (*they should all be referenced and cited in your text*), however you may utilize other resources that fill gaps in your narrative, but always provide citations/references when drawing directly on published material, whether in print or online.

2.4 *Operational Issues When Constructing a Composite Index: Variable Choice, Transformation, Evaluation.* (Group E).

- 2.4.1 Choice of informative variables
- 2.4.2 Variable transformation (normalization, scaling)
- 2.4.3 Techniques for index evaluation (sensitivity analysis, variable importance, quality assessment)

Focus on the references used in your presentation, namely:

- [Booyesen.EvalCompositeIndices.SIR2002.pdf](#)
- [SchlossarekEtAl.VariableWeighting.SIR2019.pdf](#)
- [SaisanaEtAl.CompIndexAssessment.JRSSA2005.pdf](#)
- [NardoEtAl.ToolsForCompositeIndices.EU2005.pdf](#) (sections 5 and 7)

I'd like you to focus on the content in these (*they should all be referenced and cited in your text*), however you may utilize other resources that fill gaps in your narrative, but always provide citations/references when drawing directly on published material, whether in print or online.