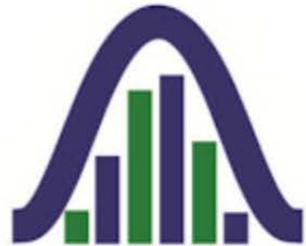# Things achieved so far by STRATOS

- Overview in Biometric Bulletin 40(1), 8-10

- Papers:
  - Lee et al (2021 JCE): Framework for handling missing values
  - Baillie et al (2022 PlosCompBiol): Ten simple rules for initial data analysis
  - Wallace (2020, Significance): Analysis in an imperfect world
  - Gail et al (2019, BMJOpen): Design choices for observational studies
  - Wynants et al (2019 BMC Med): Three myths about risk thresholds
  - Van Calster et al (2019 BMC Med): Calibration the Achilles heel
  - Boulesteix et al (2020 BMJOpen): Introduction to simulation studies

Besides papers: videos, shiny apps

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⬚ ‹ ›   🔒 clinicalbiometrics.shinyapps.io   ↻   ⬇ ⬆ + ⧉

▮ ⬇ ⬇ Data Analysi 🅟 Center for S... www.lorentz... www.lorentz... ⓢ Performance... Ⓜ 404 Not Fou...   how do I typ... Ⓜ DigiEdit-ML... ☁ The STRATO... ✕ Bend your (s...

BEND YOUR (SP)LINE!   HOME   **METHODS**   EXPLANATORY COMMENTS   ABOUT

DATA OPTIONS   ⓘ

Fractional Polynomials   B-Splines

Natural Splines

INPUT PARAMETERS   ⓘ

Powers

First

-2 [3]
●———

Second

-2 [1]
●—

Coefficients   •••

− [-1] [-0.59] [1] +
   ———●————

− [-1] [0.5] [1] +
   ———●—

Reset inputs

RESPONSE FUNCTION   ⓘ
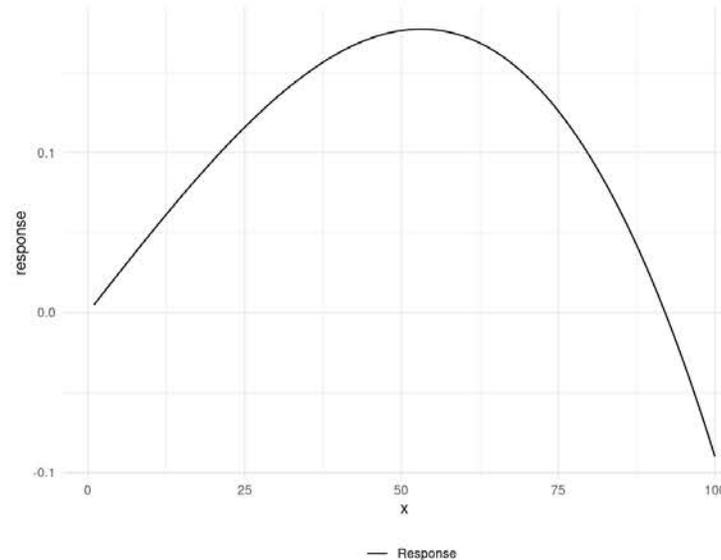

— Response

BASIS FUNCTIONS   ⓘ

EXERCISE   ⓘ

Start

FORMULA: ⓘ

$$0 - 0.59 \cdot \left(\frac{x+0}{100}\right)^3 + 0.5 \cdot \frac{x+0}{100}$$

CODE

Show R code   ⬇ Download

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AA mem-explorer.shinyapps.io

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STRATOS   Home   Overview   Exploration ▾   Help
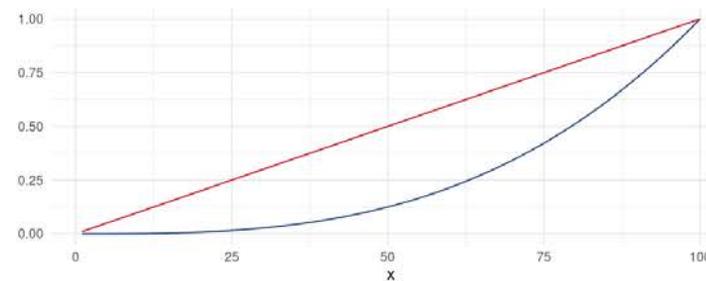
Theoretical overview of Measurement Error and Misclassification

This page serves as an overview about the fundamentals of MEM theory and is mainly based on the guidance document (part 1, part 2) developed by STRATOS-Initiative.

Main Types of Error   Impact on Regression   Error Adjustment   Sources

This section describes the main types of error that occur in measurements during observational studies.

Terminology

Two seperate terms for errors in variables are distinguished:

- **measurement error** for error in continuous variables and
- **misclassification** for error in categorical variables.

Aim

The aim is to learn the regression relationship between a scalar outcome variable Y and covariates X.

Basic situation

X is measured with error, with the true value of X being unobserved. The error-prone observed variable is denoted by X^*.

Note: Mismeasurement can occur not only in covariates but also in the outcome variable Y. This is currently not considered in MEM-Explorer.

Main Types of Error

Random vs. Systematic   Classical vs. Linear vs. Berkson   Additive vs. Multiplicative

Differential vs. Non-differential

Random Error

Random or stochastic error occurs when X^* differs randomly from X. The following figure shows an example for random error.
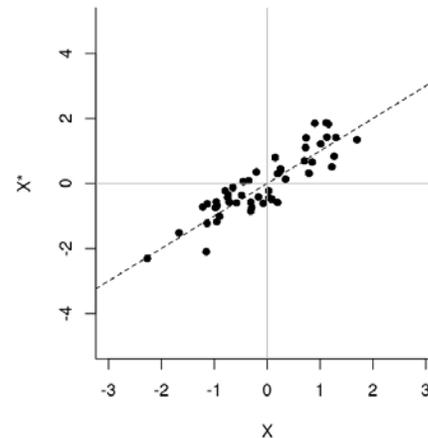
Systematic Error

Systematic error occurs when X^* differs systematically from X. The following figure shows an example for systematic error with linear structure.