TALL
SOM FORTELLER

Outlier detection and imputation using ML

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UNECE STATISTICAL DATA EDITING WORKSHOP

Statistisk sentralbyrå
Statistics Norway

Agenda

Earnings statistics in Norway

Outlier detection

Imputation using xgboost

Earnings statistics

- Administrative data
- Published quarterly/yearly

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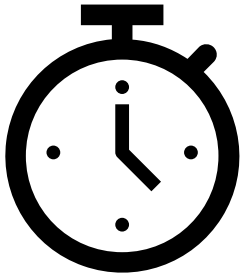
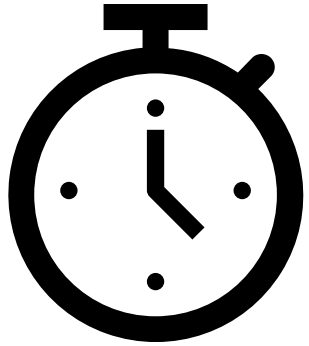
Full-time equivalent earnings

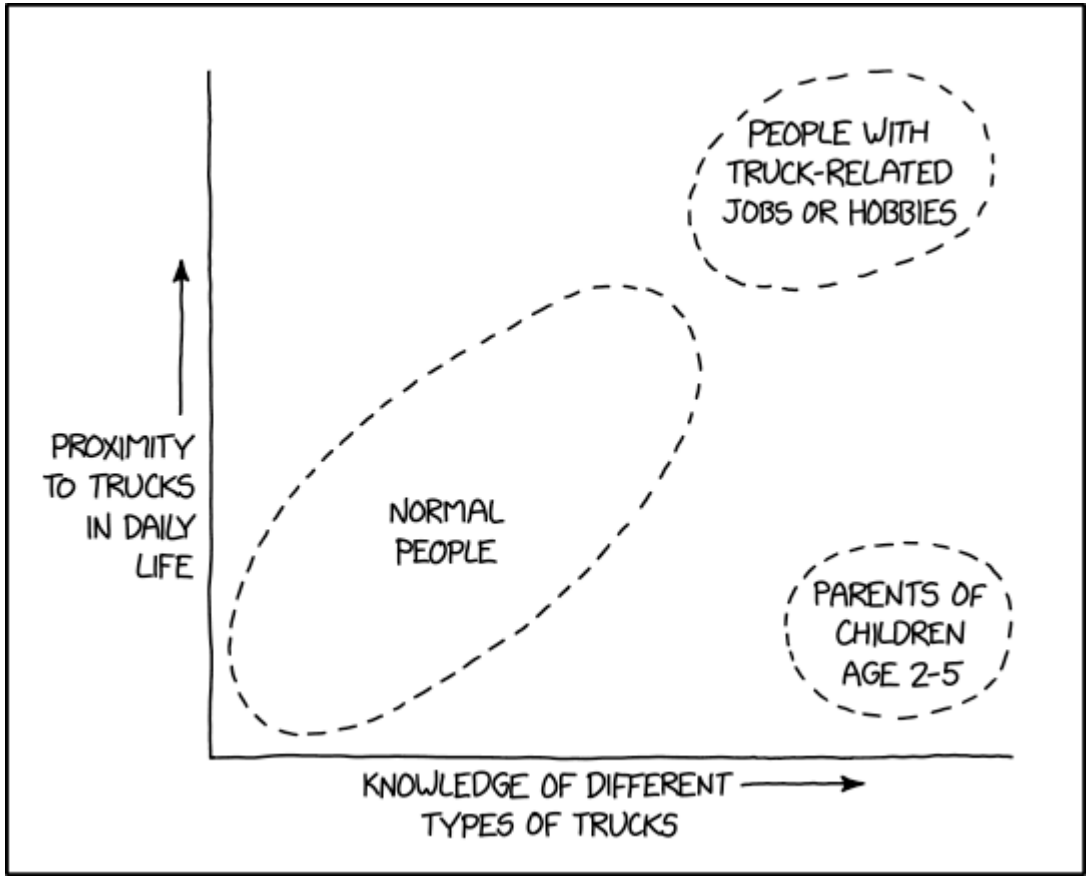
/  =

Outlier detection – contractual working hours

- Hourly based:
  - contractual working hours ~ paid working hours
- Fixed limits
  - FTE earnings
  - Hourly rate
- FTE earnings regression:
  - FTE earnings ~ paid earnings + …



Outliers



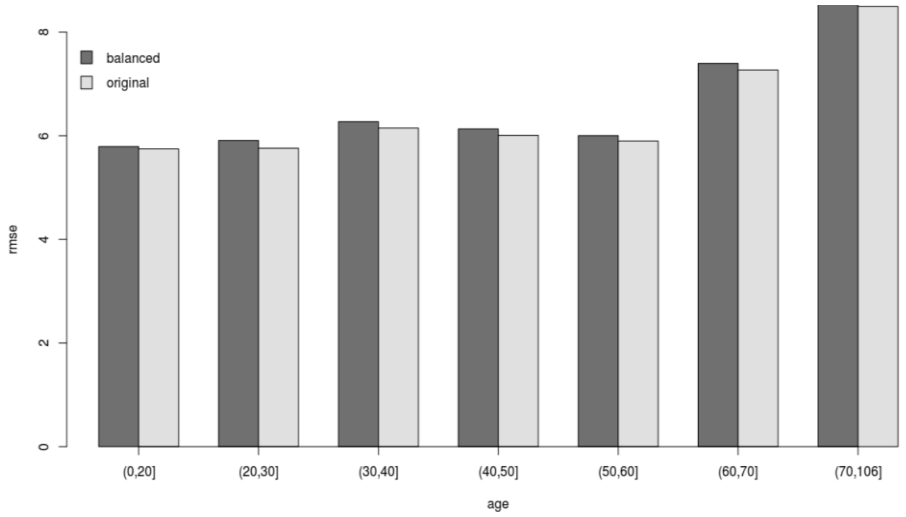
Source: xkcd.com

Imputation

Source: Analytics Vidhya

Results

- Statistics are dependent on training dataset
- We don’t have a benchmark
- Test – «weighted» training dataset



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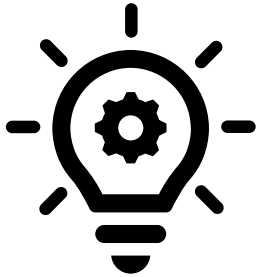
Future ideas

- Continue re-asssessing outlier detection rutines
- Use LFS for benchmarking certain groups



Aknowledgements

- Knut Håkon Grini
- Stine Bakke
- Ingvild Johansen

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Takk!

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