**Exercise Sheet 4:** January 26, 2023

Predict and Evaluate Individual Probability Distributions

1. Quantile Regression
   1. quantile regression or individually predict variance under PDF assumption (can also try flow, etc) …
   2. evaluation for predictions of 95 percentile (for subsequent order optimization to avoid out-of-stock situations in 95% of cases): actual sales in test set higher than predictions in 5% of cases …
2. Qualitative and quantitative evaluation (See <https://arxiv.org/abs/2009.07052> for a detailed description.)
   1. Plot a histogram of the CDF values of your predictions for the corresponding actuals.
   2. earth mover’s distance for quantitative evaluation …
3. demand shaping: estimate causal effect of promotion …
4. cannibalization model …

For the discussion of all 4 exercise sheets on February 17, please gather in 4 groups of ~5 students. Each group will present their results of one of the 4 exercise sheets.