# Similar Consumer Clustering Based on Smart Meter Data: Suggestion of Electricity Consumption Settings

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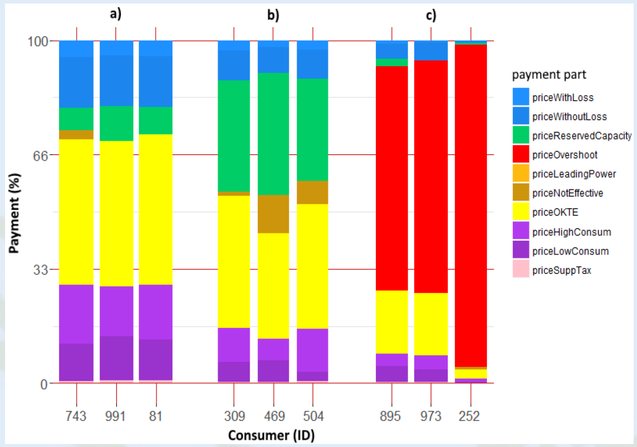
**Smart meters** enable report electricity consumption in 15 minutes measurements:
- higher information value then previous total month consumption only
- enable to understand user consumption process
- enable optimize consumption agreement settings to reduce payment

Monthly electricity consumption fee is complex result of multiple particular subsumes:
- **active** consumption fee
- regular fees
- **reserved** consumption fee

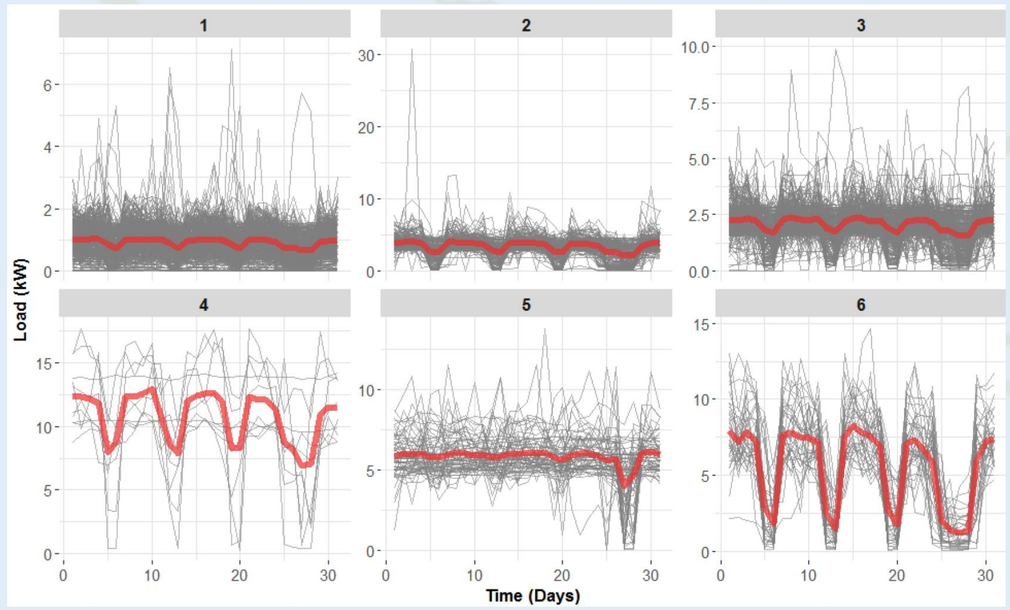
We propose **personalized method** for setting the consumption agreement parameters optimally for a consumer based on similar consumers.
- **centroid based** => allows anonymous representor of the cluster
- k-means => computationally effective
- optimal # of clusters determined by Davies-Bouldin index




Sample of electricity consumption payments divided by different variants of **reserved cap.** setting: a) optimal b) over- c) underestim.

Colored segments show payments for specific parts:
- active cons. - blue and purple
- regular fees – yellow
- reserved capacity – green
- capacity overshoot - red

| Reserved capacity | Occurrence | Users exceeded | Users not exceeded |
|---|---|---|---|
| 18 | 4.33% | 0.00% | 100.00% |
| 28 | 7.94% | 0.00% | 100.00% |
| 35 | 24.55% | 1.47% | 98.53% |
| 42 | 13.00% | 0.00% | 100.00% |




Similar users finding
- **clustering** based on **maximums of daily consumption**
- this reduces noise, dimensionality and emphasizes characteristic in comparison to 15 minutes consumption logs

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