



Agenda

- How we got here
- Changing Vendors for Tracking Studies
- Basic Concepts – Latent Variables
- Typing Tool Case Study
- Q&A



Introduction

Who am I? (Not Jean Valjean)

46 years building models for market research

Most recently – EVP of Marketing and Data Science for GfK North America (now NIQ).

Chief Methodologist for MarketTools (now MetrixLab/Toluna)

SVP Advanced Analytics for Custom Research Inc (bought by GfK)

In sum: I've worked on this S*!\$ for a long time



“Yay! We won the project to take over
HUGE CLIENT’s Tracking Study”

“Oh...and we promised to preserve
trending on all of their KPIs”

Now what?





How do we go about preserving trends?

Ideally

- We maintain the previous vendors tracking for another wave and we run our first wave at the same time.

The results will be different

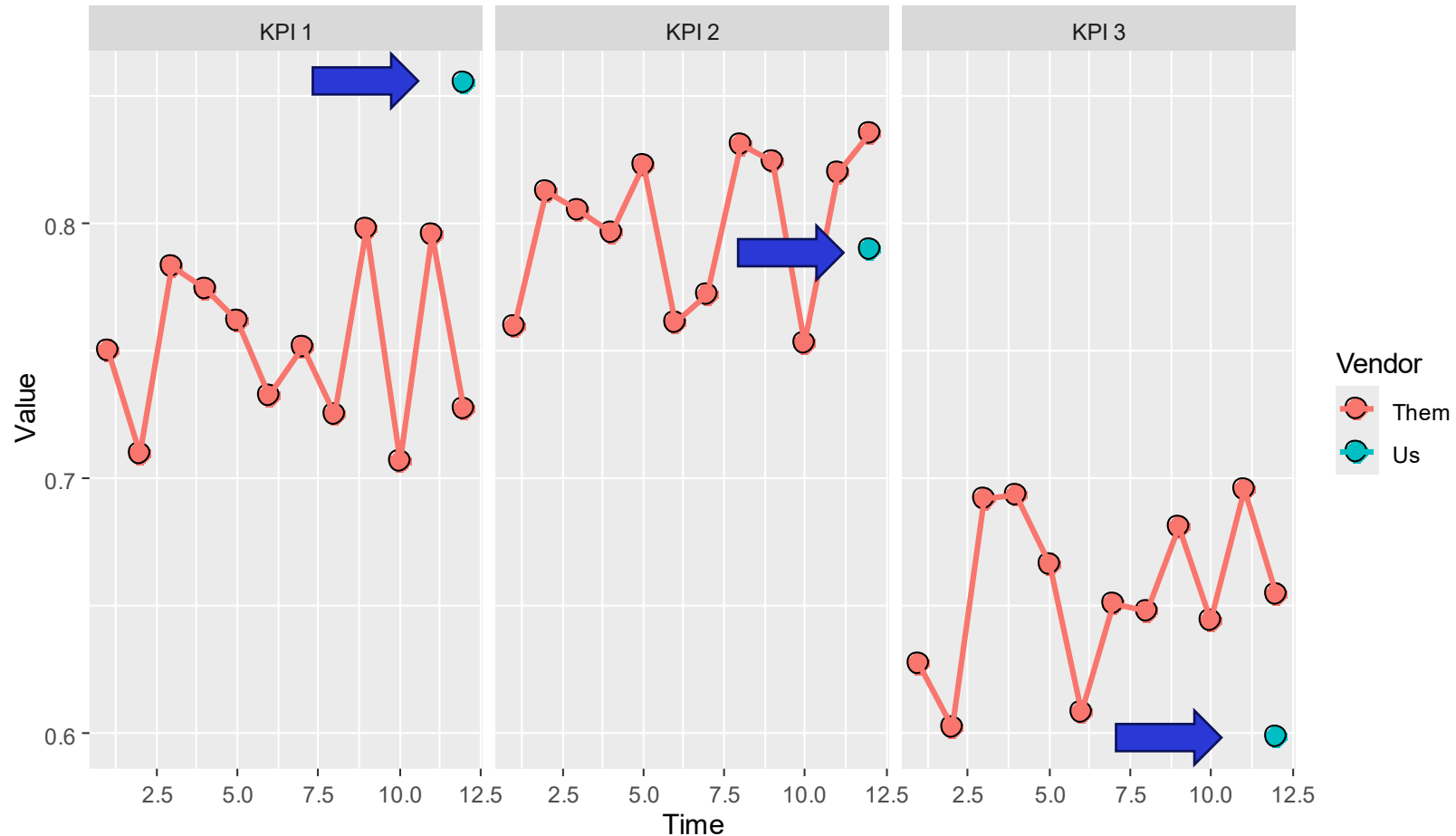
- New questionnaire
- Different sample sources
- Different layout of questions

We need something better than just looking at the raw differences in the KPIs in the side by side study



First – we have only one observation of the new KPIs

Trend and Side by Side Result





How do we go about preserving trends?

- If we simply take the difference between our survey and theirs, and apply that difference to the previous waves of KPIs we can easily result in transformed results that are out of range.

A better approach

- Treat the two side by side observations as measures of the same latent variable.
- The differences between the two observations represent different cutpoints in the latent variable.
- If we calculate the shift in cutpoints we can ensure that the KPIs cannot go out of range.
- This approach also allows transformations of entire scales between the studies.



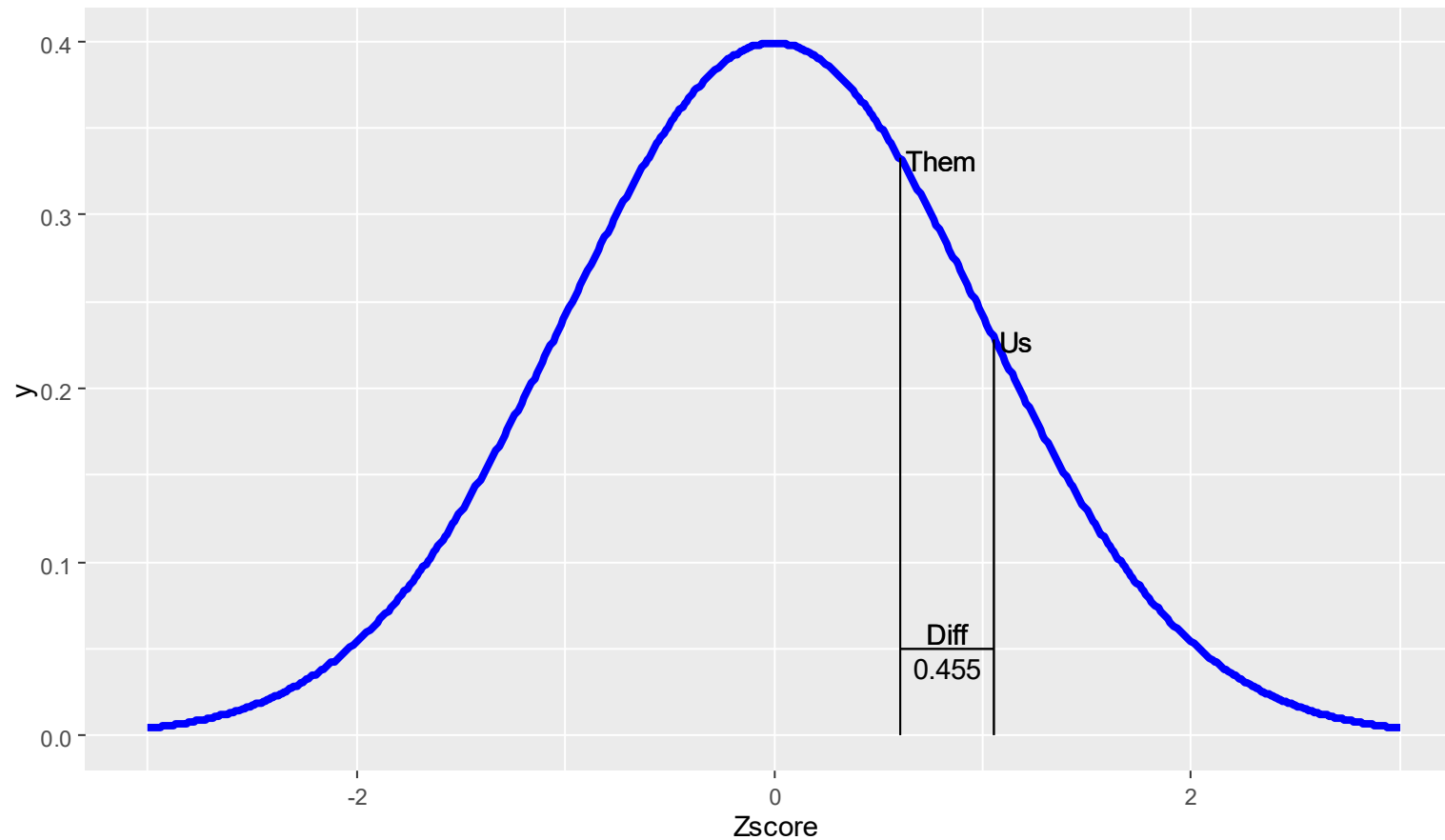
Let's look at an example

The vertical lines show the cutpoints that cutoff the 85.5% that we get in the side by side for KPI 1 and the 72.7% that the previous vendor showed for the side by side period.

The difference between them on the Z-score scale is 0.455

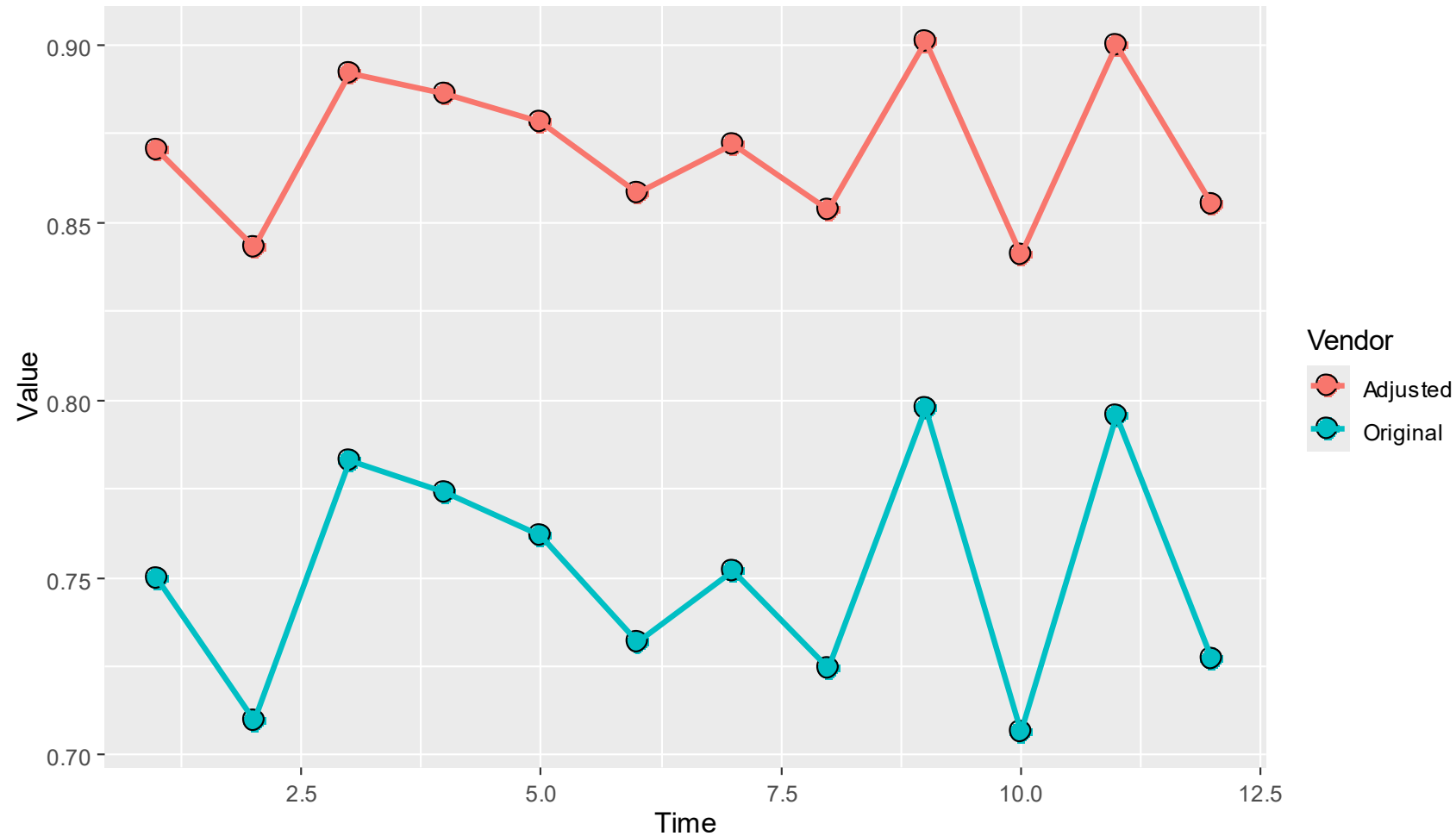
The procedure is to then add that difference to Z-scores derived from the previous waves of research by the other vendor and retransform them to equivalent KPI values.

Latent Variable for KPI 1



Trends are preserved but no adjusted estimates go out of bounds.

Original and Adjusted KPI 1 Results





What have we learned from this?

- This is a relatively simple way of transforming some historical results so they align with future measures collected under different conditions (e.g. sample source, layout, questionnaire content).
- There is no danger of producing out of bounds historical results.
- **Caveats**
 - The transform is still based on one period of side by side surveys. Future waves could also use a different mix of sample sources, sometimes without you knowing.
 - This is inherently an aggregate analysis. If KPIs are reported for subgroups, the procedure would need to be repeated for each subgroup. Smaller subgroup sample sizes would mean that the estimated cutpoints would be less reliable.
 - And most importantly...



What does this
have to do with
typing tools?



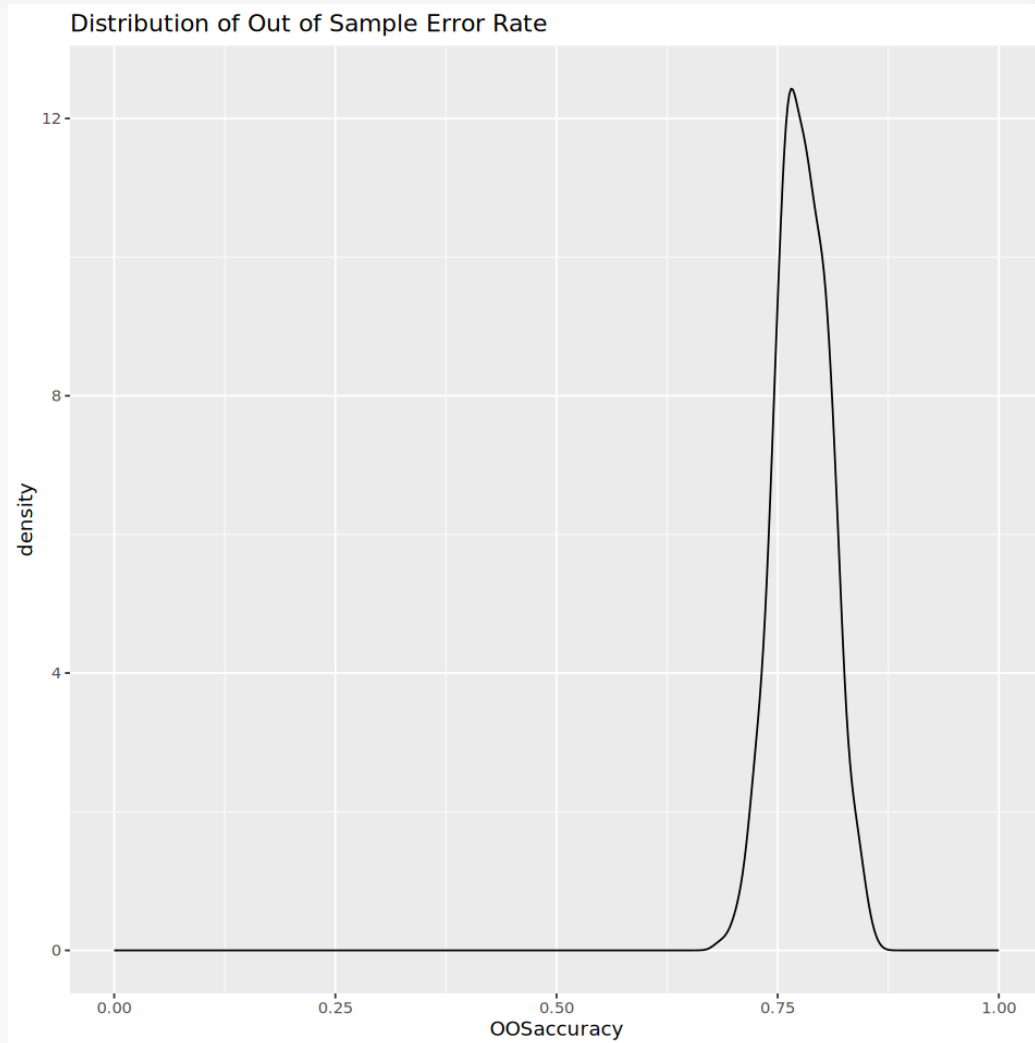


Case Study

- Client had conducted a large segmentation study among people who had the potential to be their customers.
- Questionnaire covered a wide variety of attitudes, behaviors and demographics.
- Client wished to tag people in their customer database to understand the mix of segments among their customers to help in developing marketing and messaging plans.
- Database contained mostly demographics and behavioral data.
- Typing tools based on just the questions that could be matched between the database and the survey were no better than chance.

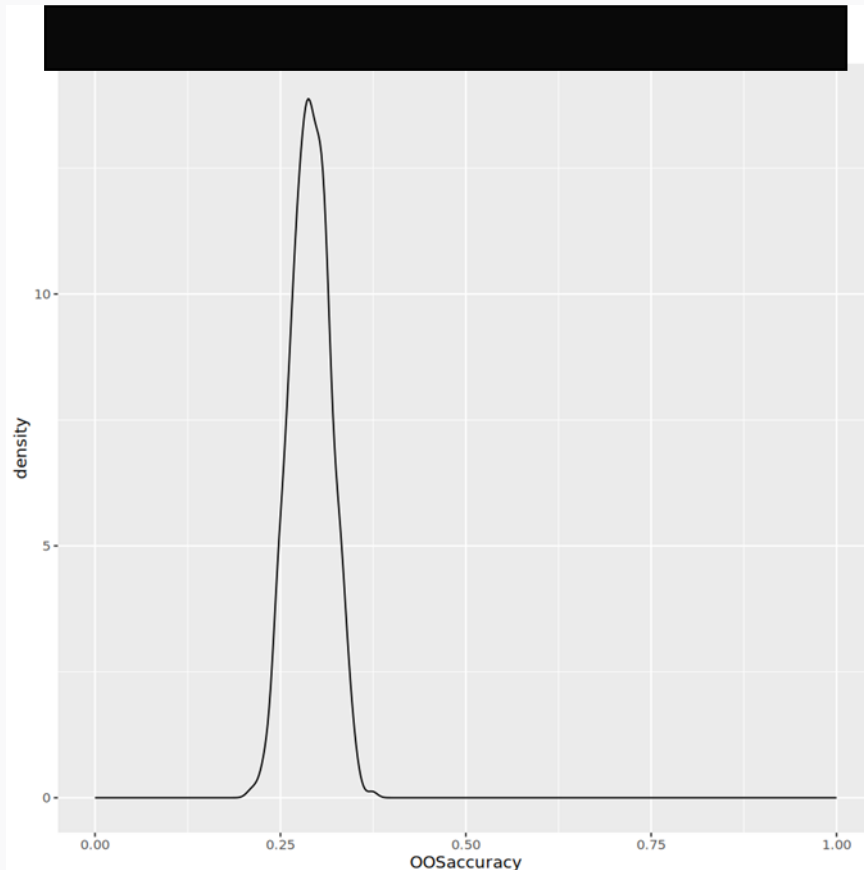
Strawman – if we had everything used to construct the segments, the model would have very good accuracy

- Resulting out of sample distribution of segment accuracy: approximately 80%



Limiting a model only to metrics that were available in the database was a different story.

- Resulting out of sample distribution of segment accuracy: approximately 29%
- Importantly, the no information rate of accuracy was 36%





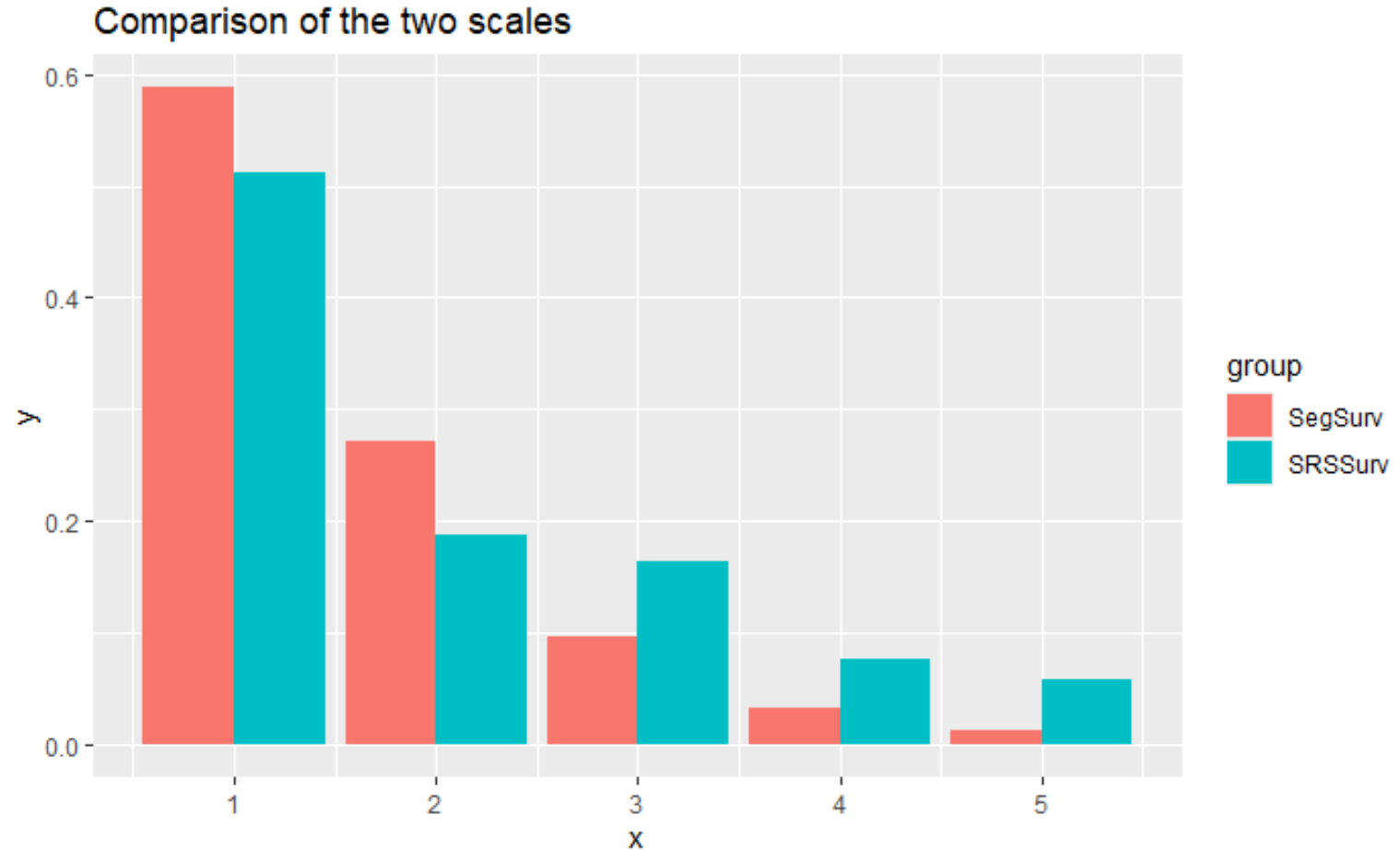
Case Study

- Discussions with the client revealed that a number of people in the database had been administered an “intake” survey that included a small number of attitudinal questions that covered similar concepts to items in the segmentation survey.
- Using the concepts we covered in the tracking study example we set out to make these survey responses compatible with a typing tool.

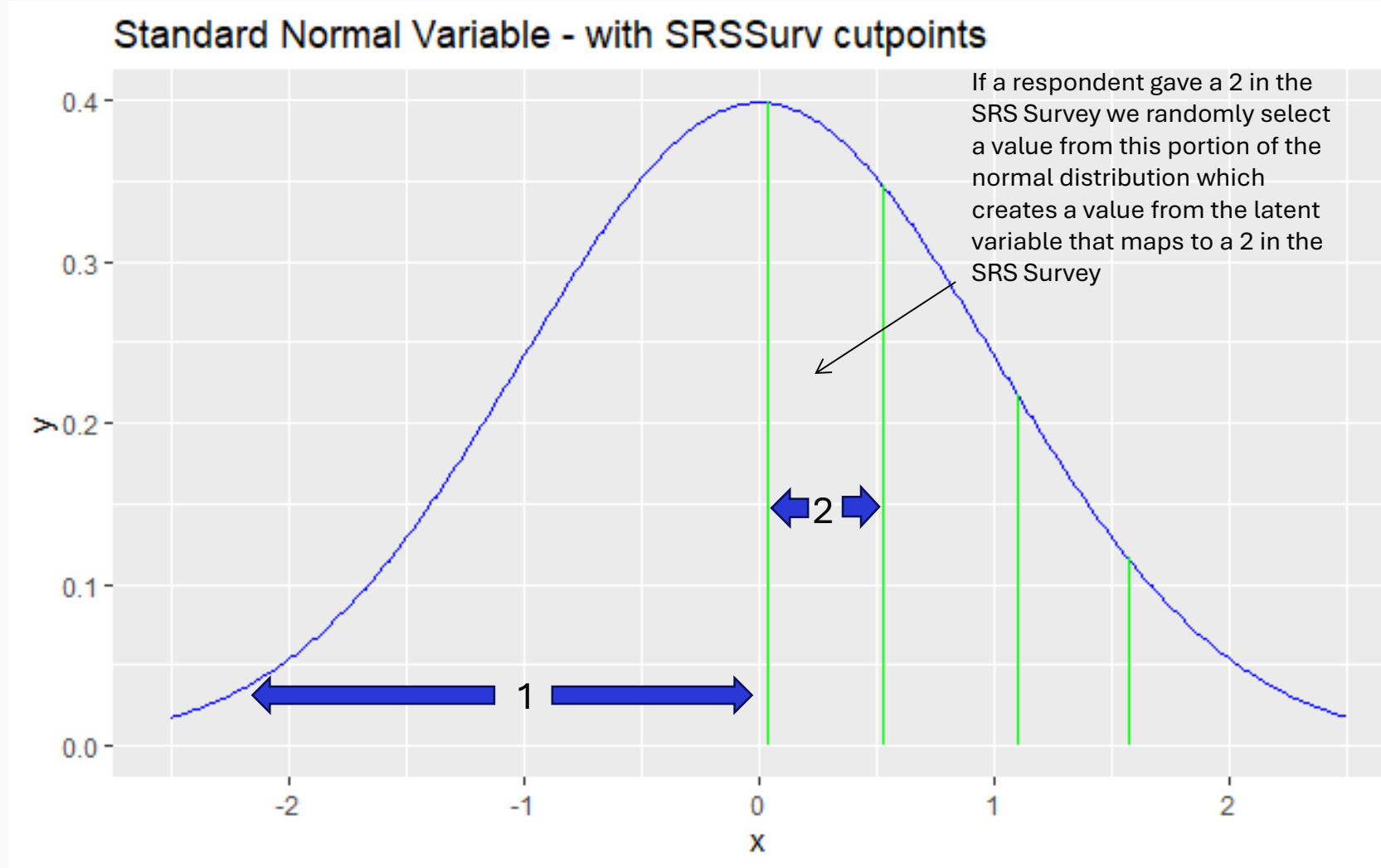


We compare the raw distributions from the 2 surveys

- The intake survey is labeled SRSSurv while the segmentation survey is labeled SegSurv
- There are some clear differences in how people use the scales in the 2 surveys

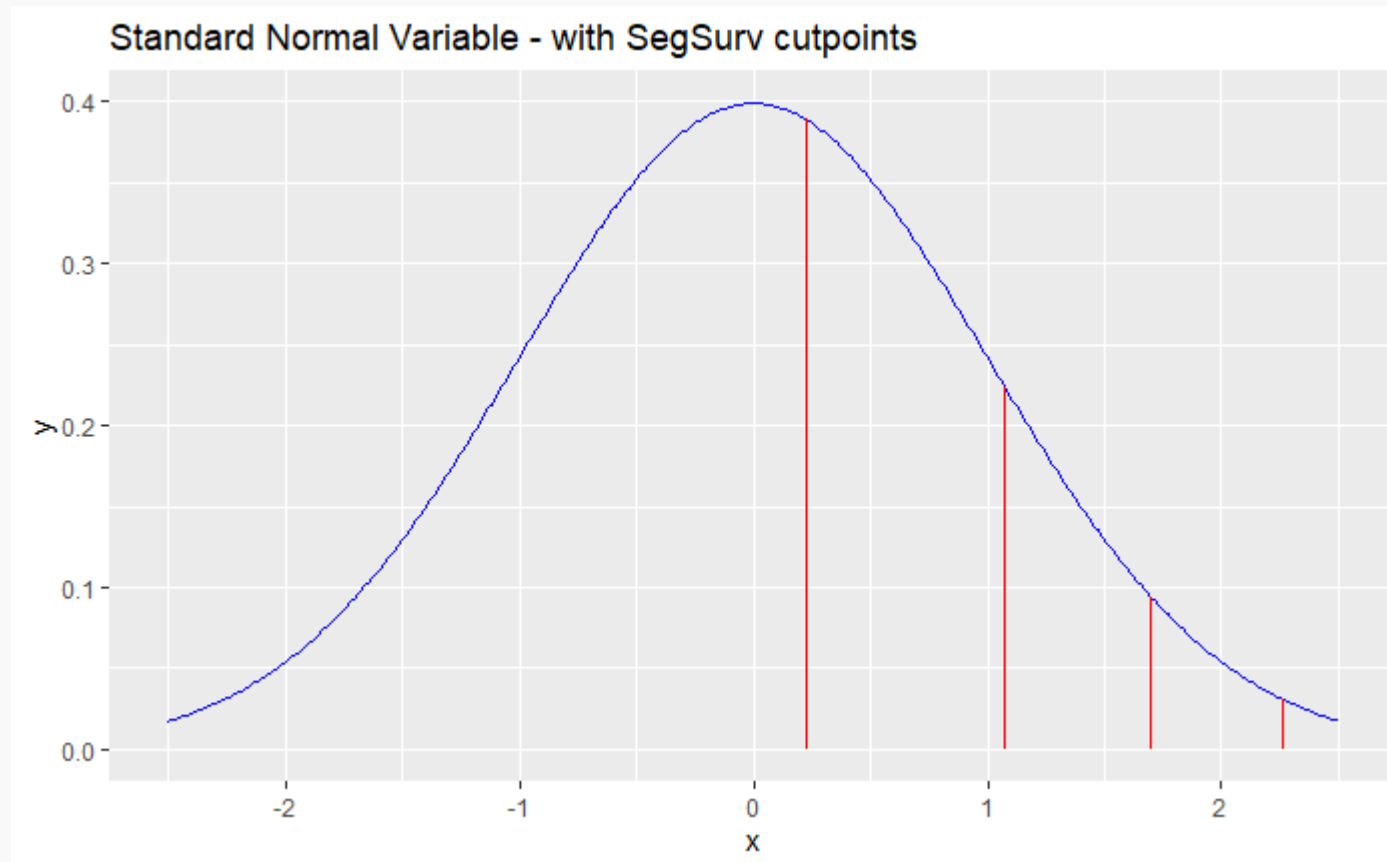


Mapping the SRS Survey on to the latent variable

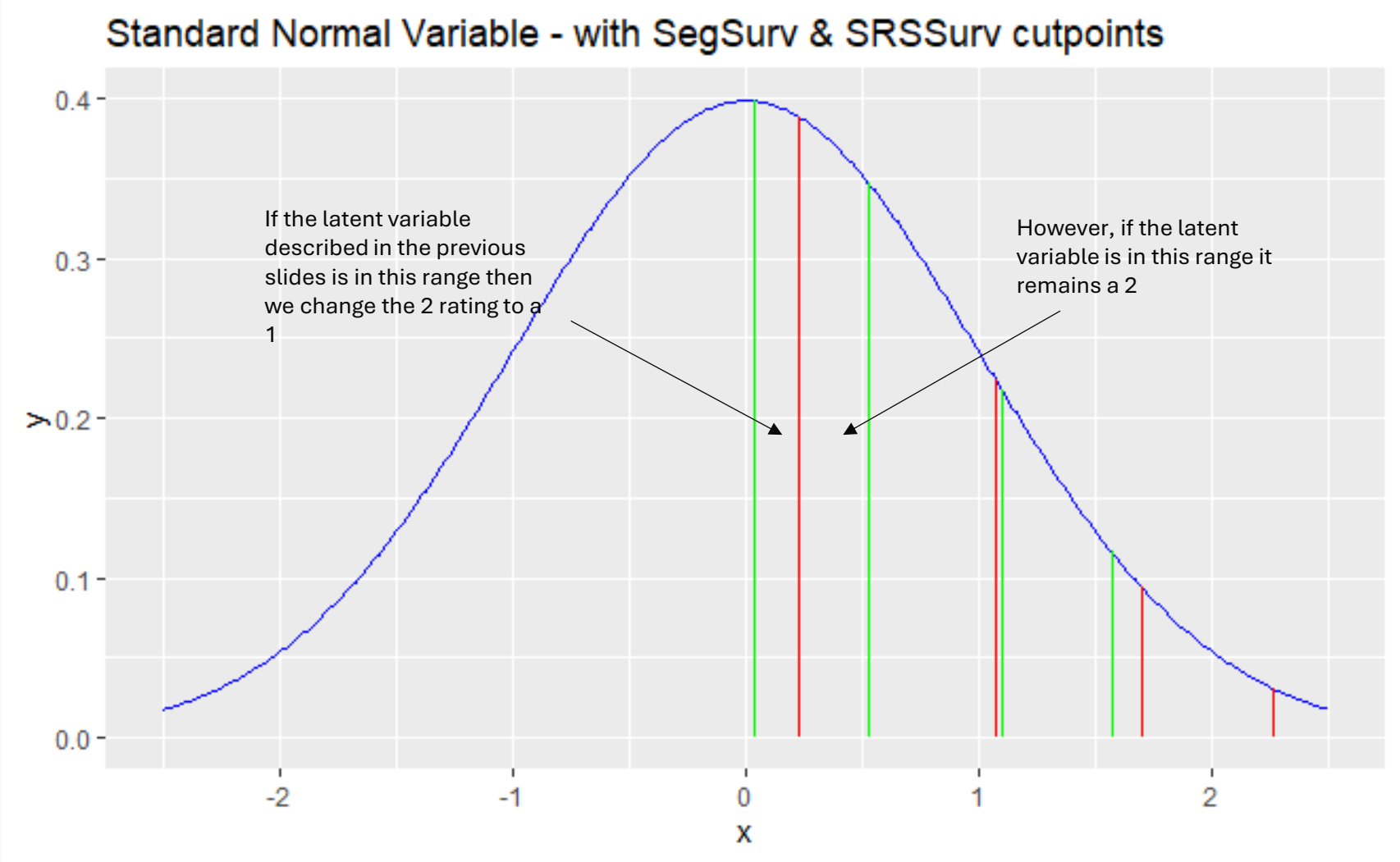


Mapping the Segmentation Survey on to the latent variable

Segmentation Survey cut points are slightly different from the SRS Cut points



Translating the latent variable to the Segmentation Survey





Does this work?

- No way to definitively know....BUT model with the attitudes was substantially better than the model without.
- Differences in the distribution of segments in the database versus in the segmentation study were explainable by known differences between customers and the general addressable population.





Caveats

- Evaluation is primarily based on aggregate results.
- The procedure depends on the analyst identifying items from the two surveys that “seem” to measure the same concept.
- It is clear from the procedure that an individual response of the transformed variable has a random component in it.
- Fortunately, we know exactly how that random component is introduced so we can, if necessary, understand how much it affects the assigned segment.
- In many ways, this is similar to AI generated synthetic data. The evaluation looks good on an aggregate basis but confidence in the individual respondent data is unknown. In our case though, we know the exact process used to create the data.



Conclusion

It is possible, without AI, to convert attitudinal items from a one survey and make them useful for inferring insights in another.



Q & A

