

Clustering South African Households Based on their Asset Status Using Latent Variable Models.

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**Additional tSSPR sensitivity analysis,
Bayesian latent residual plots
and tables of results.**

1 tSSPR sensitivity analysis

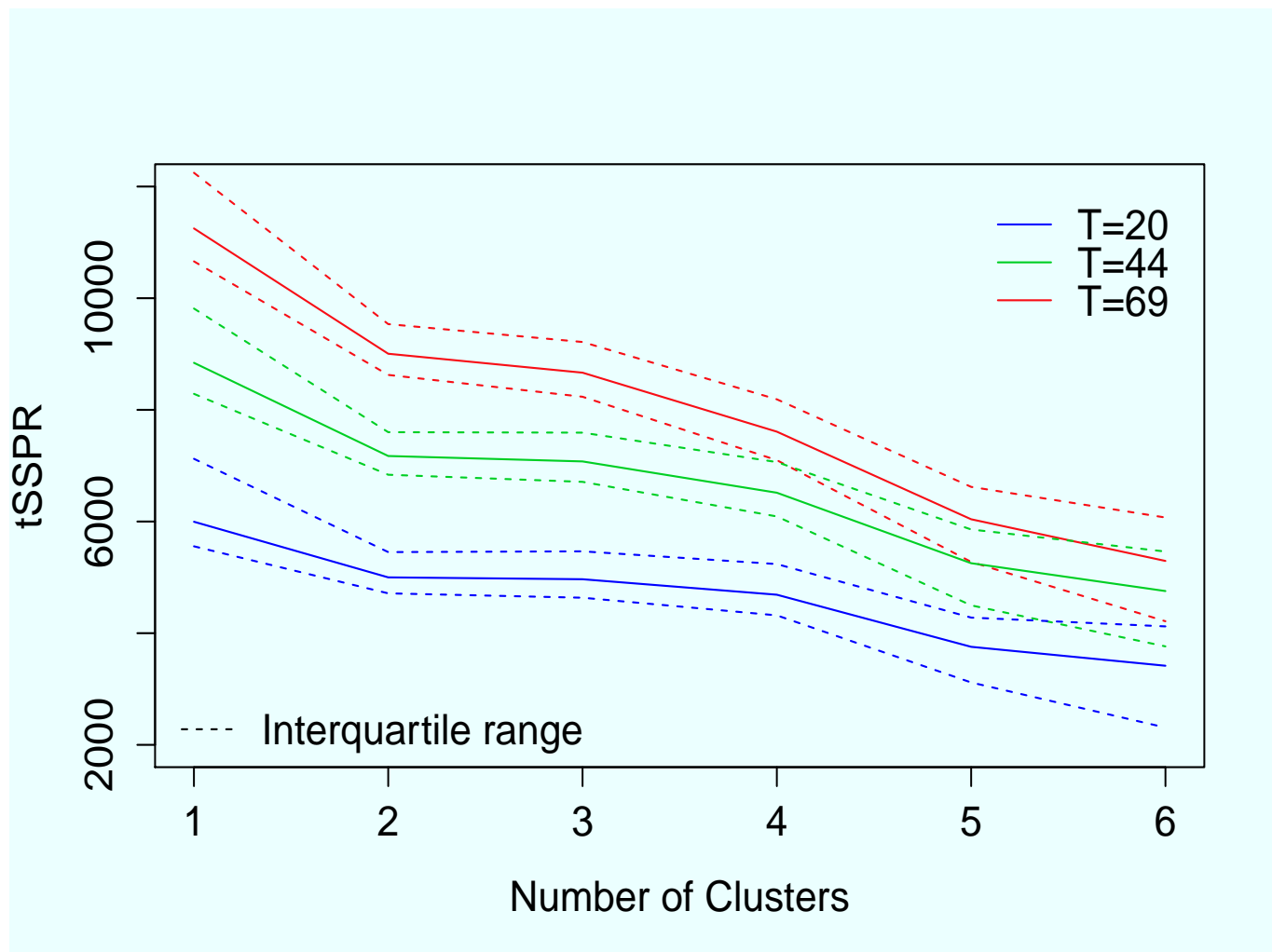


Figure 1: The median tSSPR, for different truncation levels T , across a range of MFA-MD models where $Q = 1$. The associated uncertainty is also illustrated. Truncation level $T = 20$ corresponds to response patterns observed 30 times or more in the observed data set, $T = 44$ corresponds to response patterns observed 20 times or more and $T = 69$ corresponds to response patterns observed 15 times or more. The same model fit message is suggested by all truncation levels, i.e. that models with $G = 2, 3, 4$ fit equally well, and that fit improves as G increases. This suggests the exploratory tSSPR approach is insensitive to the truncation level used in this case.

2 Bayesian latent residual plots

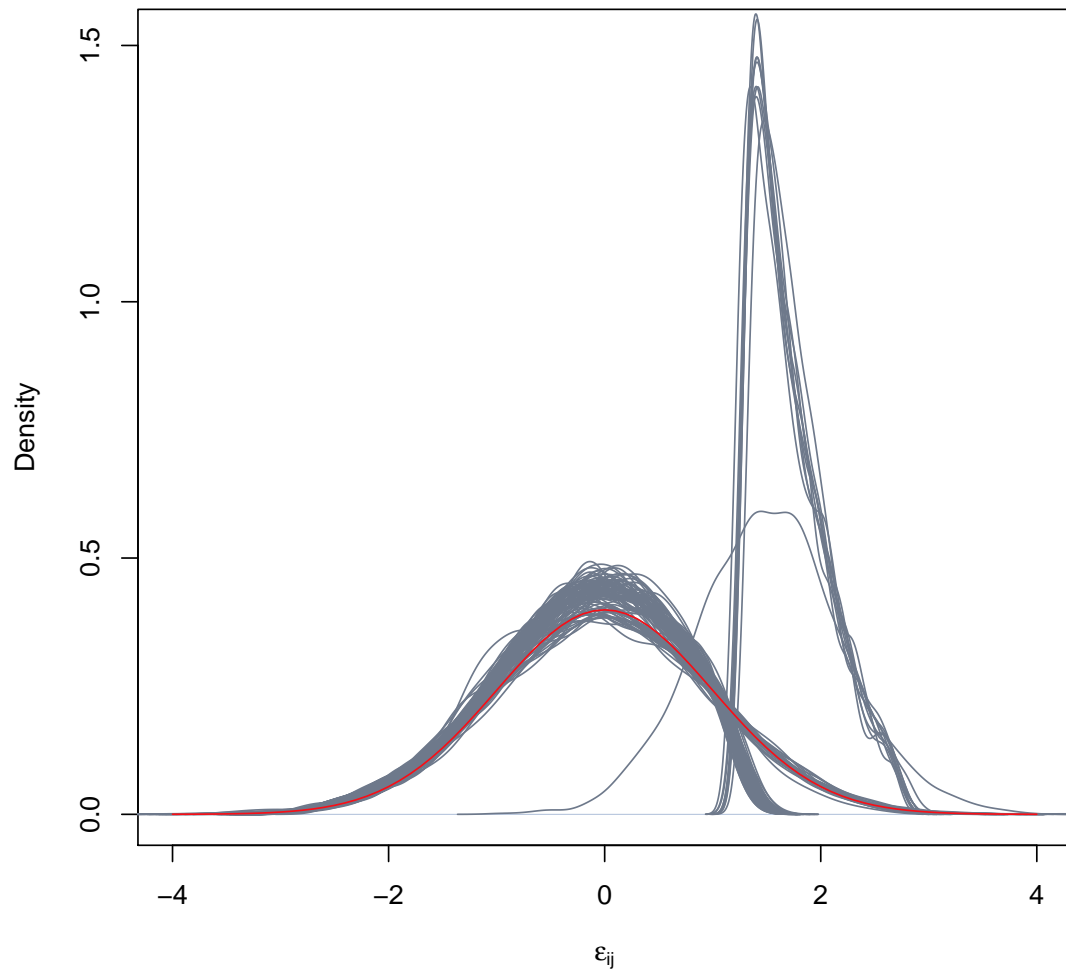
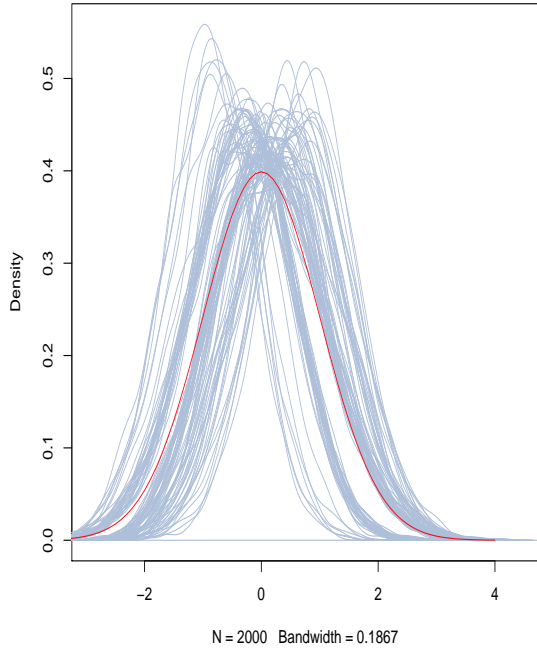
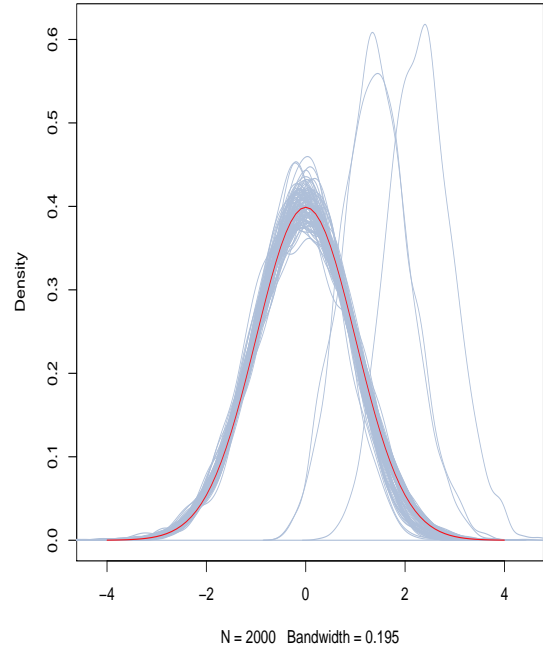


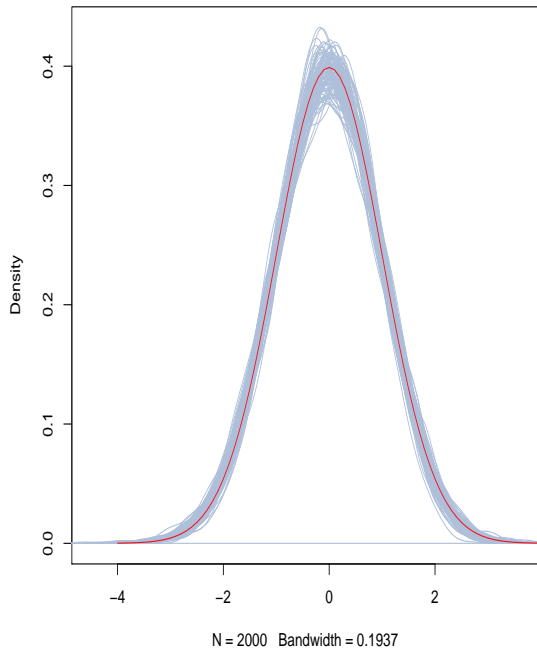
Figure 2: Bayesian latent residuals for the ordinal *ToiletType* item under the $G = 3$ and $q = 1$ model.



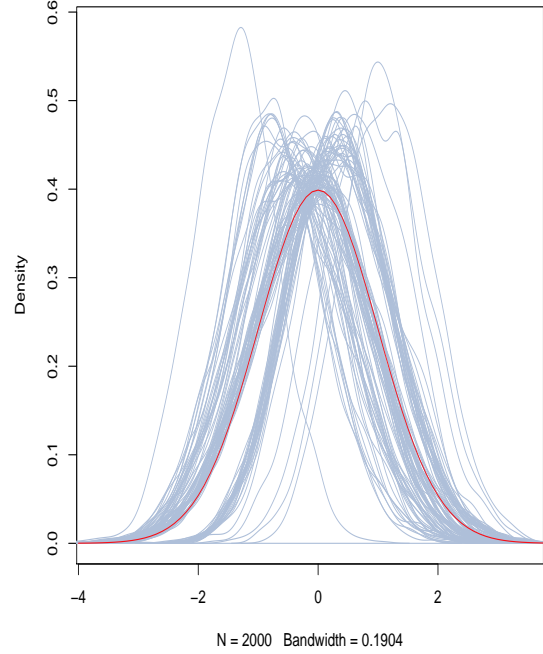
(a) Bayesian latent residuals for the first latent dimension.



(b) Bayesian latent residuals for the second latent dimension.



(c) Bayesian latent residuals for the third latent dimension.



(d) Bayesian latent residuals for the fourth latent dimension.

Figure 3: Bayesian latent residuals for the nominal *PowerCook* item under the $G = 3$ and $q = 1$ model.

3 Modal responses under the $G=4$ and $G=2$ MFA-MD models (with $q=1$).

Table 1: The cardinality of each group under the 4 component model and the modal response to items on which the modal response differs across groups.

G	1	2	3	4
#	6862	6505	2259	1991
Dwelling Under Construct	No	No	Yes	No
# Bedrooms	2	2	1	1
Separate Kitchen	Yes	Yes	No	Yes
Separate Living Area	Yes	Yes	No	No
Toilet Facilities	Yard	Yard	Bush	Bush
Toilet Type	Pit	Pit	None	None
Power for Cooking	Electric	Wood	Wood	Wood
Power for Lighting	Electric	Electric	Electric	Candles
Stove	Yes	No	Yes	No
Fridge	Yes	Yes	Yes	No
TV	Yes	Yes	Yes	No
Video	Yes	No	Yes	No
CellPhone	Yes	Yes	Yes	No
Poultry	No	Yes	No	No

Table 2: The cardinality of each group under the 2 component model and the modal response to items on which the modal response differs across groups.

G	1	2
#	9261	8356
Separate Living Area	Yes	No
Power for Cooking	Electric	Wood
Stove	Yes	No
Fridge	Yes	No
TV	Yes	No
Video	Yes	No