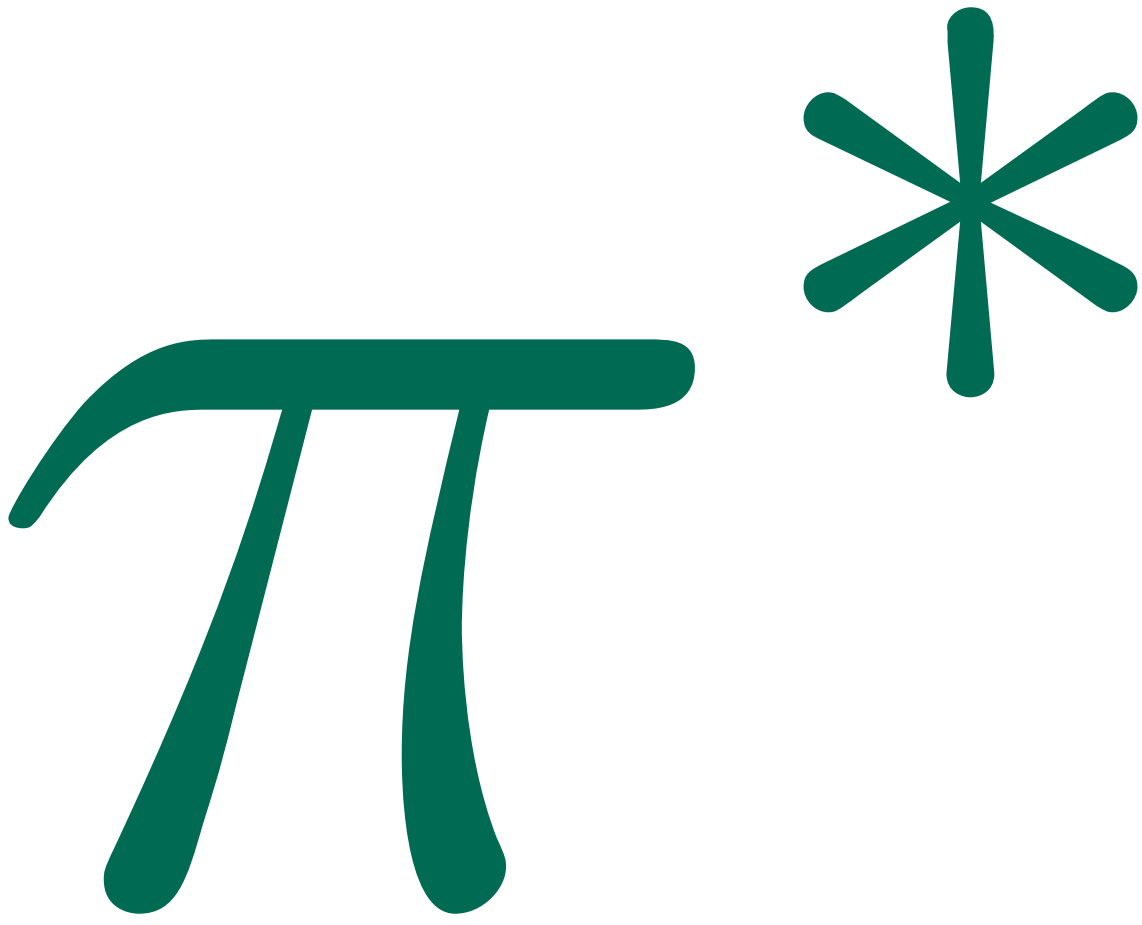
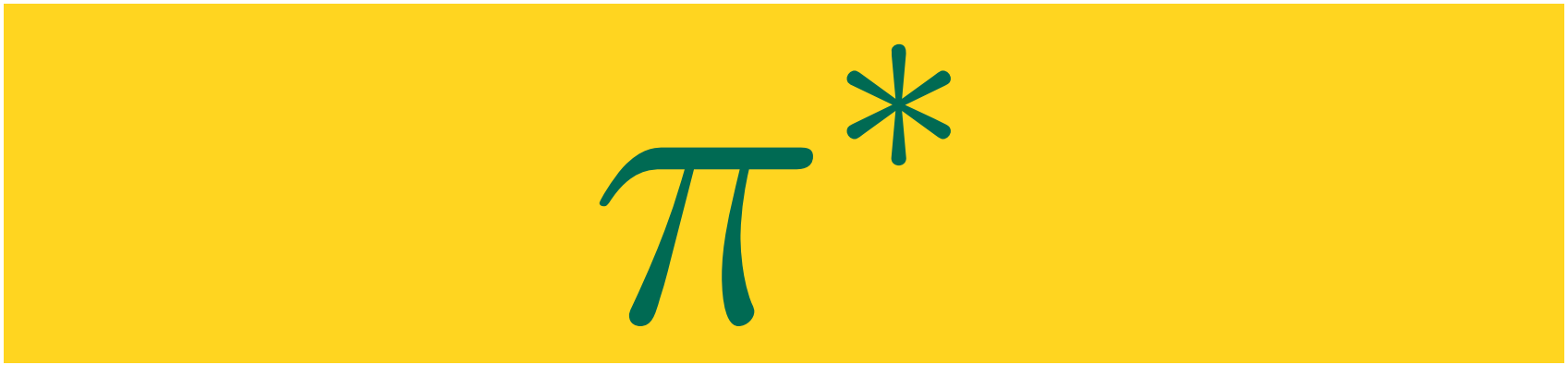




Juraj Medzihorsky

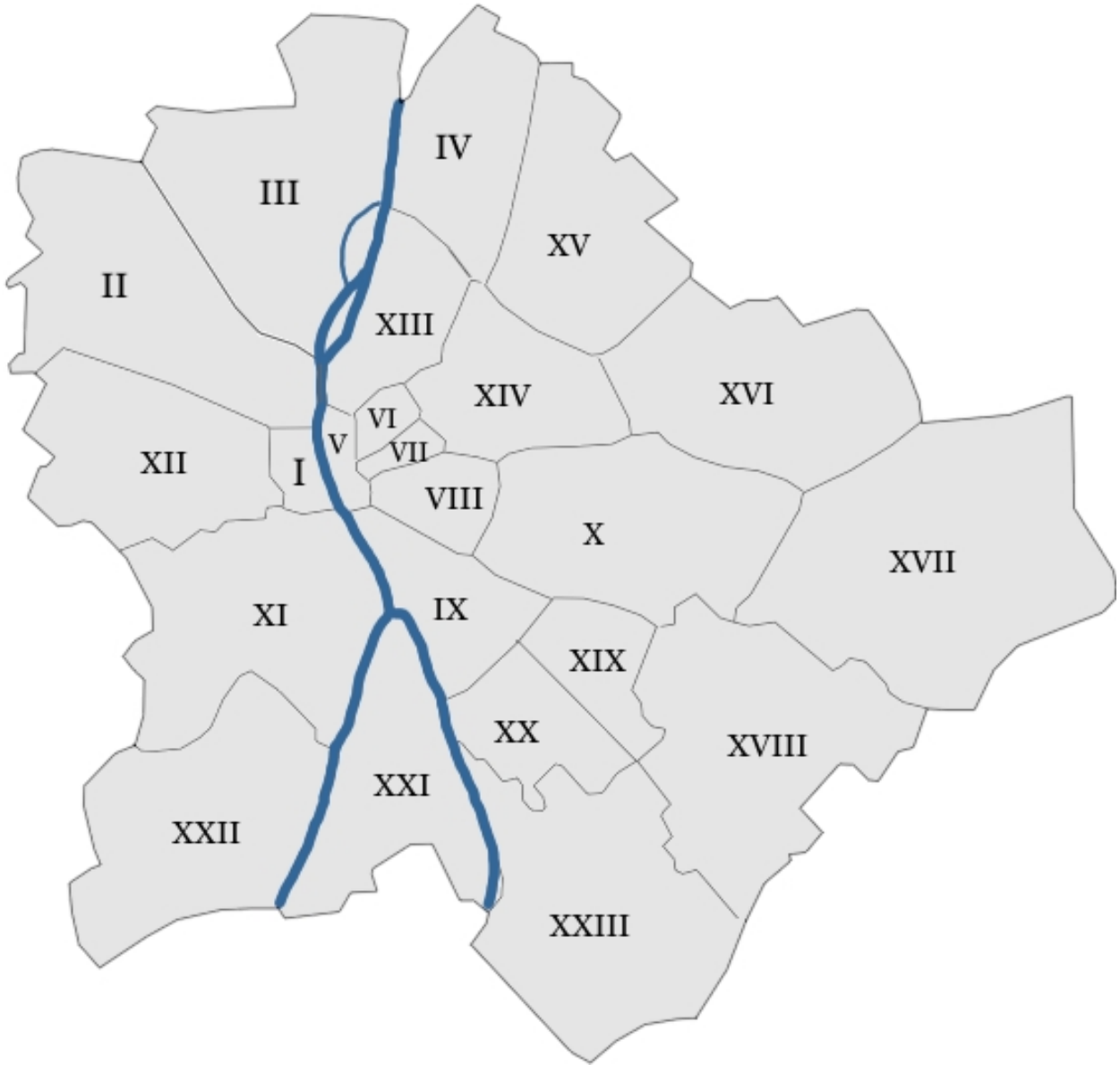
@ ELTE TÁTK
29 January 2014

Outline

What is π^*

Analysis with `pistar`

There's more


IV
III
XV
II
XIII
XIV
XVI
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VII
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I
VIII
X
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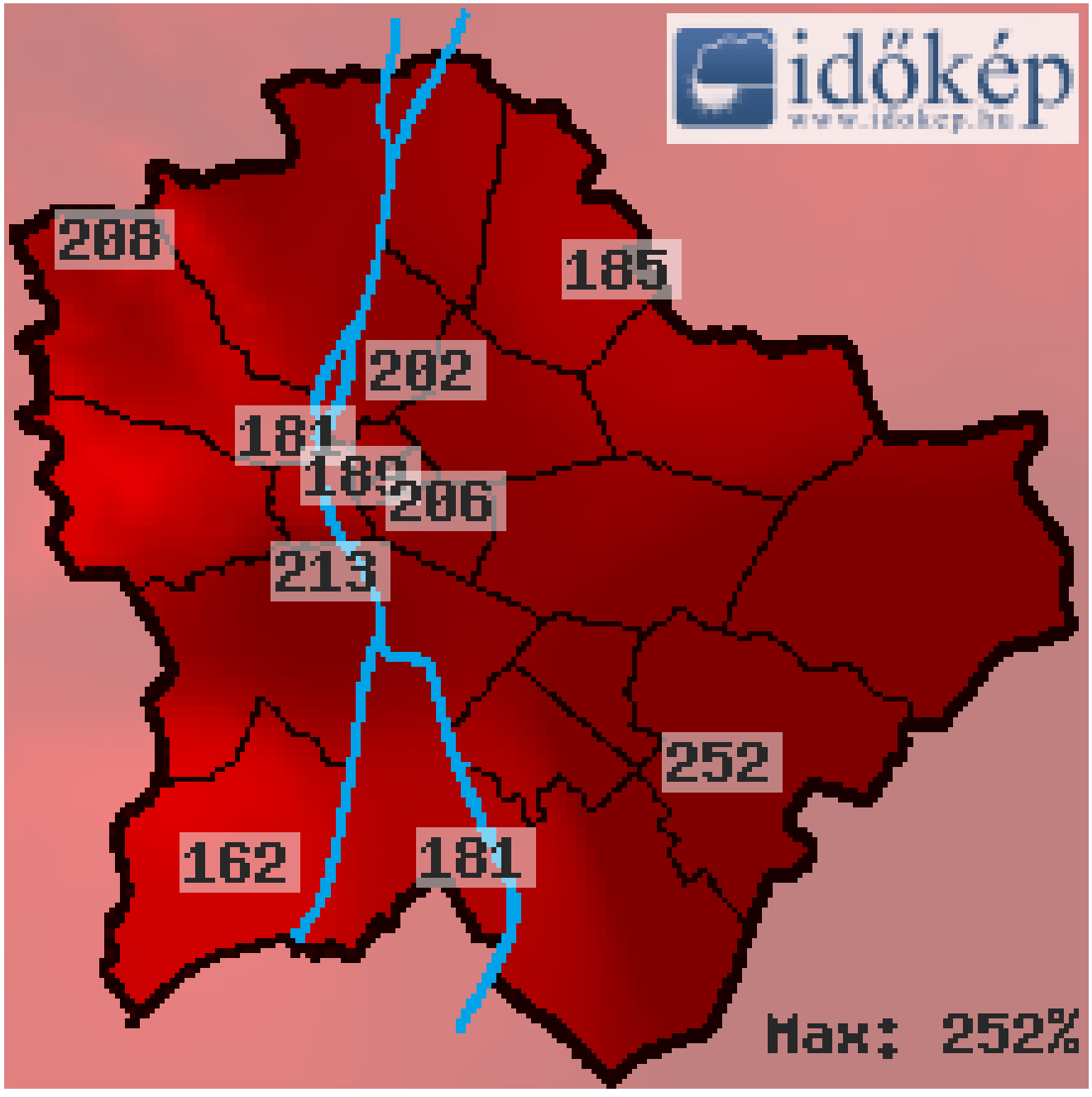
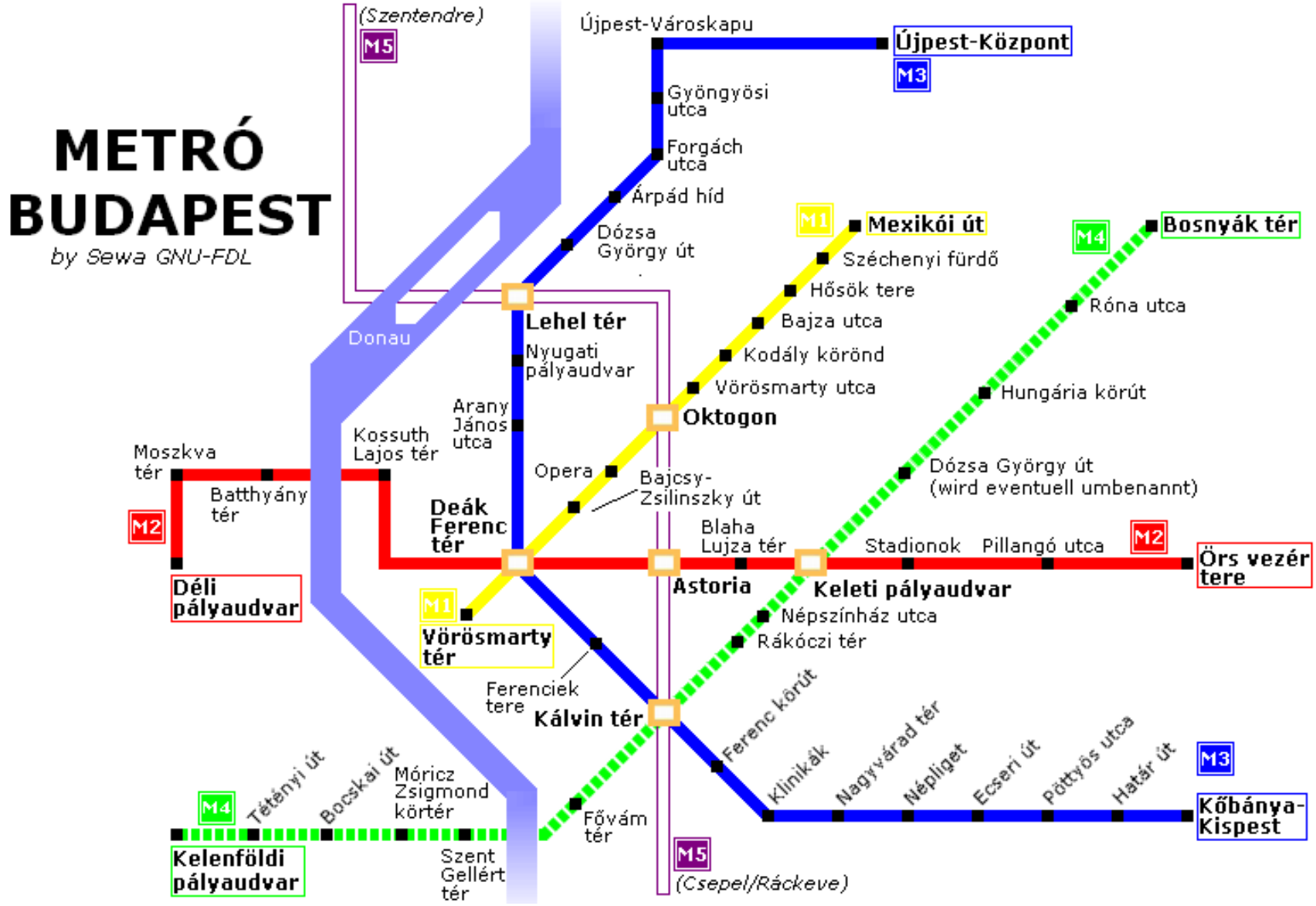
XI
IX
XIX
XX
XVIII
XXI
XXII
XXIII


időkép
www.időkép.hu
208
185
202
181
189
206
213
252
162
181
Max: 252%


METRÓ
BUDAPEST
by Sewa GNU-FDL
(Szentendre)
M5
Újpest-Városkapu
Újpest-Központ
M3
Gyöngyösi utca
Forgách utca
Árpád híd
Dózsa György út
M1
Mexikói út
Széchenyi fürdő
Hősök tere
Bajza utca
Kodály körönd
Vörösmarty utca
M4
Bosnyák tér
Róna utca
Hungária körút
Dózsa György út (wird eventuell umbenannt)
Lehel tér
Nyugati pályaudvar
Donau
Arany János utca
Oktogon
Kossuth Lajos tér
Moszkva tér
Batthyány tér
M2
Opera
Bajcsy-Zsilinszky út
Deák Ferenc tér
Blaha Lujza tér
Stadionok
Pillangó utca
M2
Örs vezér tere
Déli pályaudvar
Astoria
Keleti pályaudvar
M1
Vörösmarty tér
Népszínház utca
Rákóczi tér
Ferenciek tere
Kálvin tér
Ferenc körút
Klinikák
Nagyvárad tér
Népliget
Ecseri út
Pöttyös utca
Határ út
M3
Kőbánya-Kispest
M4
Tétényi út
Bocskai út
Móricz Zsigmond körtér
Fővám tér
Kelenföldi pályaudvar
Szent Gellért tér
M5
(Csepel/Ráckeve)

Model fit

π^*: the RCL mixture index of fit

The fraction of the population that could not possibly be described by the model.

π^*

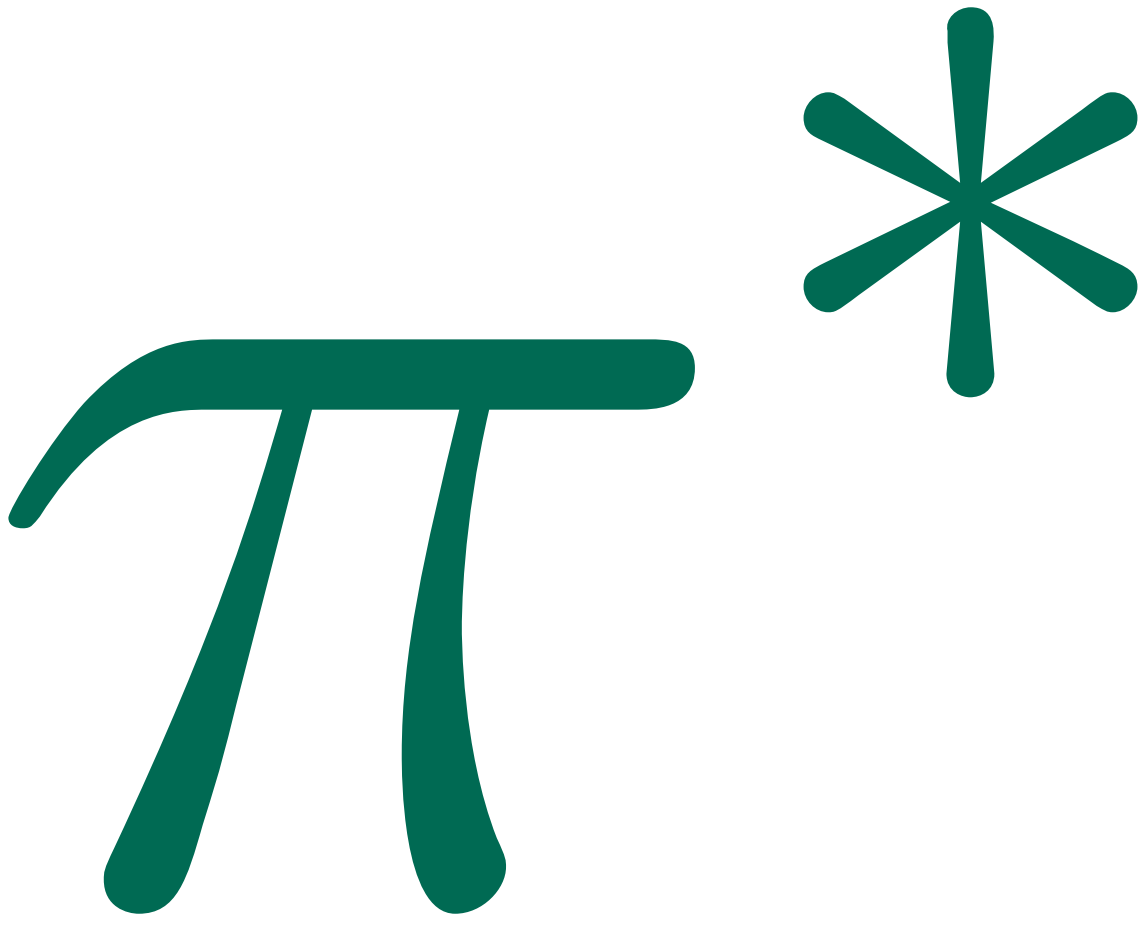
$$\pi^*(\tau, \mathcal{M}) = \inf\{\pi : \quad \tau = (1-\pi)m + \pi u, \; m \in \mathcal{M}, \; u \text{ unspecified}\}$$

π^*

- Underlying assumptions always true.
- Straightforward interpretation.
- Does not depend on sample size.
- Uncertainty represented by confidence intervals.
- Applicable to population data.
- Model comparisons.

pistar

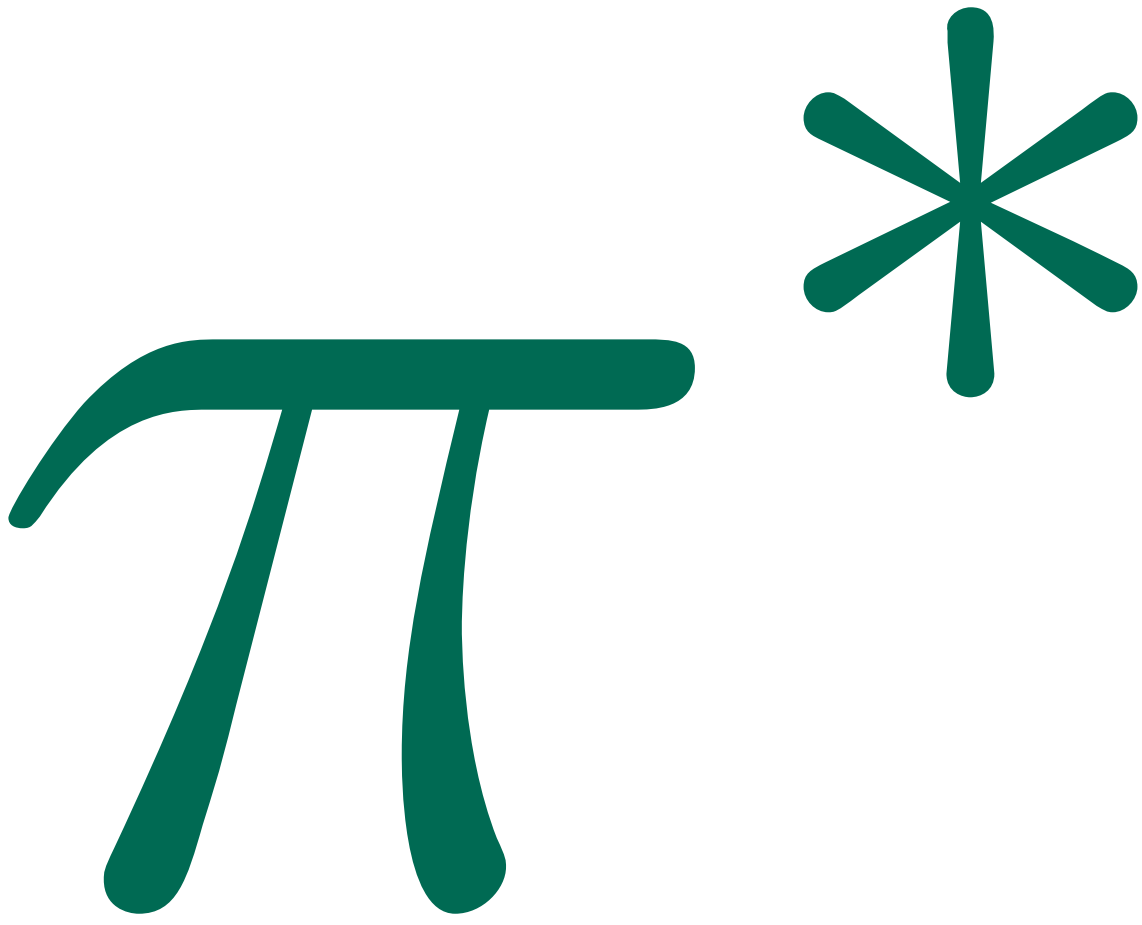
- An R package for estimating π^*.
- Available on GitHub.



There's more

- Generalization to missing data.

  (Rudas 2005, Rudas & Verdes 2012)
- Bayesian version.



References

- Rudas, T., Clogg. C., Lindsay, B. (1994) 'A New Index of Fit Based on Mixture Methods for the Analysis of Contingency Tables.' *JRSS(b)*. 56(4): 623–639.
- Rudas, T. Zwick, R. (1997) 'Estimating the Importance of Differential Item Functioning.' *Journal of Educational and Behavioral Statistics*. 22(1): 31–45.
- Rudas, T. (1999) 'The mixture index of fit and minimax regression.' *Metrika*. 50: 163–172.
- Rudas, T. (2005) 'Mixture Models of Missing Data.' *Quality & Quantity*. 39: 19–36.
- Verdes, E., Rudas, T. (2003), 'The π^* Index as a New Alternative for Assessing Goodness of Fit of Logistic Regression'.

References

- Revuelta, J. (2008) 'Estimating the π^* goodness of fit index for finite mixtures of item response models.' *BJMSP*. 61: 93–113.
- Dayton, C.M. (2003) 'Applications and computational strategies for the two-point mixture index of fit.' *BJMSP*. 56: 1–13.
- Dayton, C.M. (2007) 'Applications and extensions of the two-point mixture index of fit.' in: *Advances in Latent Variable Mixture Models*.
- Knott, M. (2005) 'A measure of independence for a multivariate normal distribution and some connections with factor analysis'. *Journal of Multivariate Analysis*. 96(2): 374–383.
- Langeheine, R. (2012) 'Konsequenzen des Ignorierens von globalen Modelltests in Studien wie TIMSS, PISA und PIRLS'. in *Item-Response-Modelle in der sozialwissenschaftlichen Forschung*.