



## Paired Comparison Preference Models

### Practicals and Home work II

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## CAR FEATURES data set

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▷ Data file: "carfeat.dat"

Vor dem Kauf eines Autos wurden 435 Personen mittels Paarvergleichen befragt, welche Merkmale ihnen jeweils wichtiger wären. Die Merkmale waren:

label	item	description
P	1	<b>PREIS</b>
A	2	<b>AUSSEN</b> Aussendesign
M	3	<b>MARKE</b>
T	4	<b>TECHNIK</b> technische Ausstattung
H	5	<b>HERKUNFT</b> Land in dem das Fahrzeug erzeugt wird
I	6	<b>INNEN</b> Innenausstattung

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Drei Subjektvariablen wurden erhoben:

SEX (1... weiblich, 2... männlich)

ALTER (1... 17-29, 2... 30-49, 3... 50+)

TYP (1... untere, 2... obere Mittelklasse)

### Questions:

- 1 fit a sequence of models using backward selection
- 2 find a (minimal) fitting model
- 3 plot the worth for this model
- 4 interpret the results
- 5 does the model allow for interpreting single covariates?
- 6 if yes, plot the worth for the corresponding groups separately



## MUSIC data set

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▷ Data file: "music.dat"

This is a complex data set:

object		object	
BIGB	bigband music	LATI	latin music
BLUG	bluegrass music	MOOD	easy listening music
COUN	country western music	NEWA	new age music
BLUE	blues music	OPER	opera
MUSI	broadway musicals	RAP	rap music
CLAS	classical music	REGG	reggae music
FOLK	folk music	CONR	contemporary rock music
GOSP	gospel music	OLDI	oldies rock music
JAZZ	jazz	HVYM	heavy metal music

Subject variables:

MARITAL (marital status)	SEX (respondents sex)	RACE (race of respondent)
1 MARRIED	1 MALE	1 WHITE
2 WIDOWED	2 FEMALE	2 BLACK
3 DIVORCED		3 OTHER
4 SEPARATED		
5 NEVER MARRIED		



XNORCSIZ (size of living location)

- |   |                  |    |                |
|---|------------------|----|----------------|
| 1 | CITY GT 250000   | 6  | UNINC,MED CITY |
| 2 | CITY,50-250000   | 7  | CITY,10-49999  |
| 3 | SUBURB, LRG CITY | 8  | TOWN GT 2500   |
| 4 | SUBURB, MED CITY | 9  | SMALLER AREAS  |
| 5 | UNINC,LRG CITY   | 10 | OPEN COUNTRY   |

AGE (in years)

EDUC (highest year of school completed)

## Questions:

- 1 select some objects (4 – 6) and the corresponding comparisons
- 2 select some subject covariates (and recode them)
- 3 from 1 and 2 generate an new data file
- 4 find a (minimal) fitting model using subject covariates
- 5 plot the worth for this model
- 6 define some object covariates (e.g. easy listening / not easy listening)
- 7 fit a model just with object specific covariates
- 8 find a model for both subject and object specific covariates

## for nerds only:

- 1 use the function `llbt.fit` to fit a model to (a subset of) the data
- 2 fit continuous covariates (if necessary quadratic terms etc)
- 2 use `llbt.design` to generate the design matrix (hint: casewise)