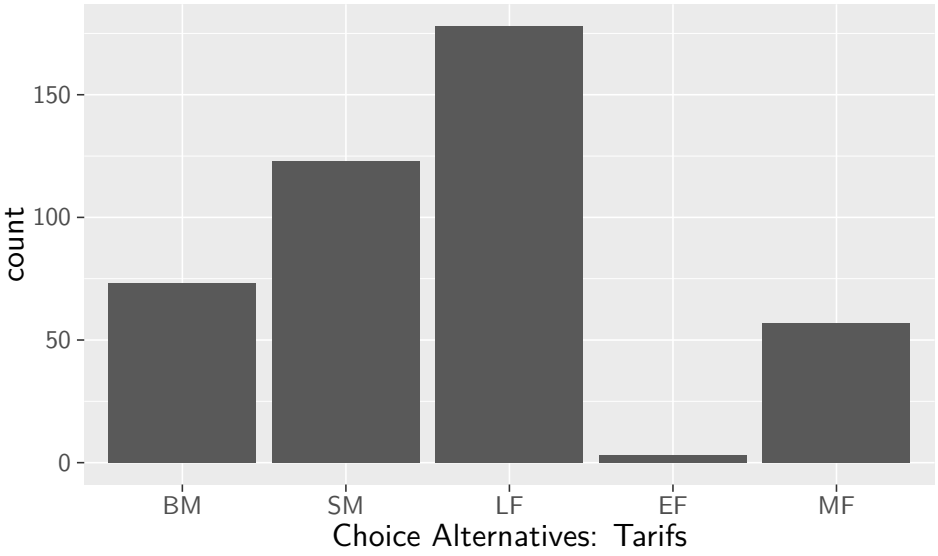
Telephone Service Provider

- general choice between flat (unlimited calls) and measured (limited no. of calls)
- flat rates vary in terms of geographical area and / or services
- measured services vary in terms of no. of calls, $ per call etc.
- simultaneous choice of service and usage pattern (number of calls made): discrete-continous choice models
- here: service choice only!

Data

- household survey in Pennsylvania 1984 by regional telephone company
- land line services
- availability of services depend on household location: flat rates only available in some metropolitan areas
- alternative 4 (extended area flat) has too few observations for rich set of dummies for this alternative.

Frequencies



Variable Description

Name	Description
age0	number of household members under age 6
age1	number of household members age 6-12
age2	number of household members age 13-19
age3	number of household members age 20-29
age4	number of household members age 30-39
age5	number of household members age 40-54
age6	number of household members age 55-64
age7	number of household members 65 and older
area	location of household residence 1=metro, 2=suburban, 3=perimeter with extended, 4=perimeter without extended, 5=non-metro
avail1, avail2, avail3, avail4, avail5	binary indicators of availability of each option. availX=0 if alternative X is not available to the household, availX=1 if alternative X is available to the household
choice	chosen alternative (dependent variable) 1=budget measured, 2=standard measured, 3=local flat, 4=extended flat, 5=metro flat
cost1, cost2, cost3, cost4, cost5	costX = monthly cost (in $) of alternative X.
employ	number of household members employed
inc	annual household income 1=under $10,000, 2=$10,000-20,000, 3=$20,000-30,000, 4=$30,000-40,000, 5=0ver $40,000
ones	ones = 1 for all observations
status	marital status 1=single, 2=married, 3=widowed, 4=divorced, 5=other
users	number of phone users in household

Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
choice	434	2.650	1.170	1	2	3	5
area	434	2.931	1.645	1	2	5	5
users	434	2.302	1.278	1	1	3	6
inc	434	2.528	1.281	1	1	3	5
age0	434	0.210	0.526	0	0	0	4
age1	434	0.226	0.576	0	0	0	3
age2	434	0.242	0.669	0	0	0	4
age3	434	0.406	0.711	0	0	1	3
age4	434	0.435	0.727	0	0	1	2
age5	434	0.362	0.670	0	0	1	2
age6	434	0.311	0.614	0	0	0	3
age7	434	0.380	0.652	0	0	1	2
status	434	2.221	0.910	1	2	3	5
employ	434	1.074	0.886	0	0	2	3
cost1	434	11.725	24.128	3.280	4.822	11.660	433.500
cost2	434	11.491	23.899	5.780	5.780	10.165	432.800
cost3	434	14.815	23.562	7.030	10.180	13.058	435.500
cost4	434	970,047.900	170,646.300	10	1,000,000	1,000,000	1,000,000
cost5	434	354,856.400	479,003.400	23.280	28.280	1,000,000.000	1,000,000.000
avail1	434	1.000	0.000	1	1	1	1
avail2	434	1.000	0.000	1	1	1	1
avail3	434	1.000	0.000	1	1	1	1
avail4	434	0.030	0.171	0	0	0	1
avail5	434	0.645	0.479	0	0	1	1
es	434	1.000	0.000	1	1	1	1

Exercise

1. Start by implementing a simple model that considers only the alternatives' costs. For ease of comparing results please choose "Standard Measured" as your reference alternative.
2. Determine the actual market shares.
3. Predict the market shares using your model from question 1 based on an average individual. Be aware that not all alternatives are available for all observations
4. Assume the telephone service provider considers to change the costs charged for the alternative "Budget measured". Determine the impact of changes between -50% and $+50\%$ of the current prices on the market share of the different alternatives. How does the price change influence the revenue the telephone service provider can expect to generate with the different alternatives. Try to visualize your results.