

1. Weighting procedure

The use of quota sampling may lead to selective samples given that the probability of selecting individuals is unknown. The researcher can employ post-stratification weighting to adjust for differences between a targeted population and the observed sample characteristics. Weighting consists of dividing the sample population into post-stratification groups defined by specific control variables (age, sex, region, etc.) and applying a multiplicative factor so that the distribution of control variables for each subgroup resembles that of the target population. In practice, higher weights are computed and assigned to groups of individuals that are under-represented in the sample and smaller weights are assigned to over-represented groups. There are two common methods for computing sample weights.¹ When the joint probabilities of the target variables are known, *cell-level* weights are calculated for each interlocking cell (e.g. the proportion of women over 65 years old, living in Scotland, and with social grade C1) to achieve the corresponding targets. If the joint probabilities are unknown, an iterative process known as *raking* or *rim weighting* is employed to force the marginal distributions of auxiliary variables (strata) to conform to the joint distribution of the targeted population. Given the non-probabilistic sample design of Kantar Alcovision and the over-representation of targeted categories such as Scotland and 18-24 year old individuals, a raking approach is used in the present analysis.

The general procedure of raking is the following: a weight is applied to each individual in the sample such that the weighted distribution of the first control variable matches the distribution of the same variable in the specified target population. Subsequently, an algorithm readjusts the (weighted) distribution of the second variable to match the target population. This is then repeated for all of the other variables considered. Finally, the adjustment process is reiterated N times until the marginal distribution of all control variables has been perfectly matched with the targets. An advantage of using this raking approach is to reduce bias (i.e. deviation between sample and population means of observed characteristics). However, this may come with a penalty as weight calibration may also lead to an increase in the standard error of sample means.¹ Nevertheless, the benefits of reducing the bias is generally believed to outweigh the cost of an increase in sampling error.²

The present analysis uses raking to match the UK Census population profile on three dimensions: social grade, geographic region, and age-sex groups. To avoid weights with very high values, we follow,³ who suggest collapsing categories of the control variables such that each category adds up to at least 5% of the population units. The raking procedure is conducted in Stata (version 15) with the command *ipfraking* implemented by Kolenikov.¹

2. Latent class model fitting results

Figure A1.1: Latent class model fit statistics for off-trade only models with two to eight classes.

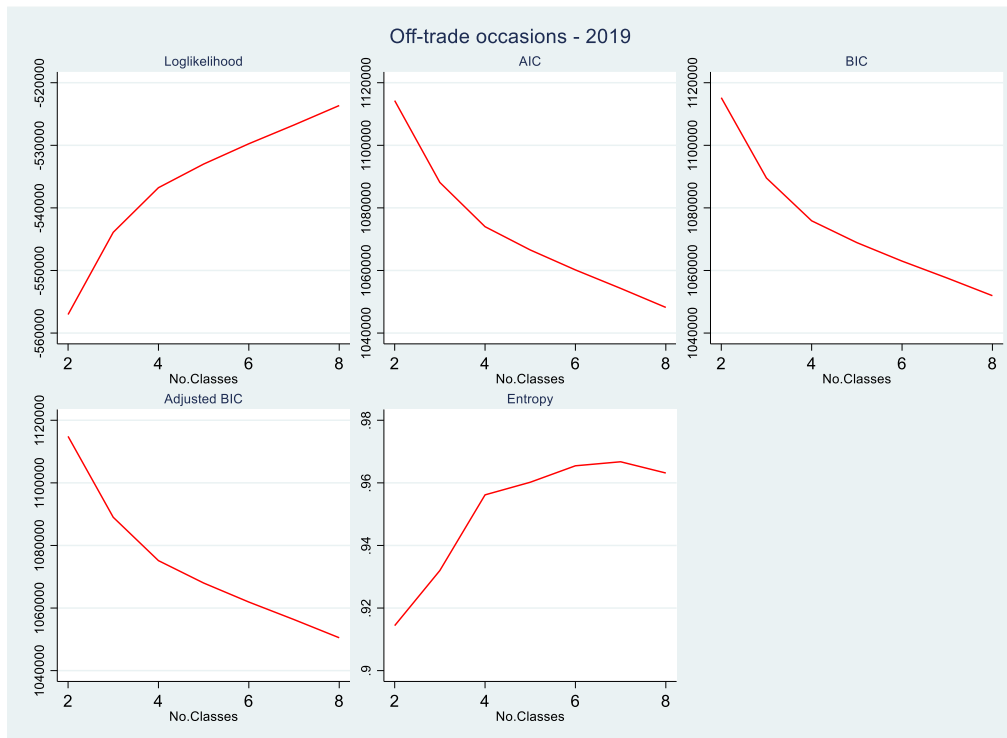


Figure A1.2: Latent class model fit statistics for on-trade only models with two to eight classes.

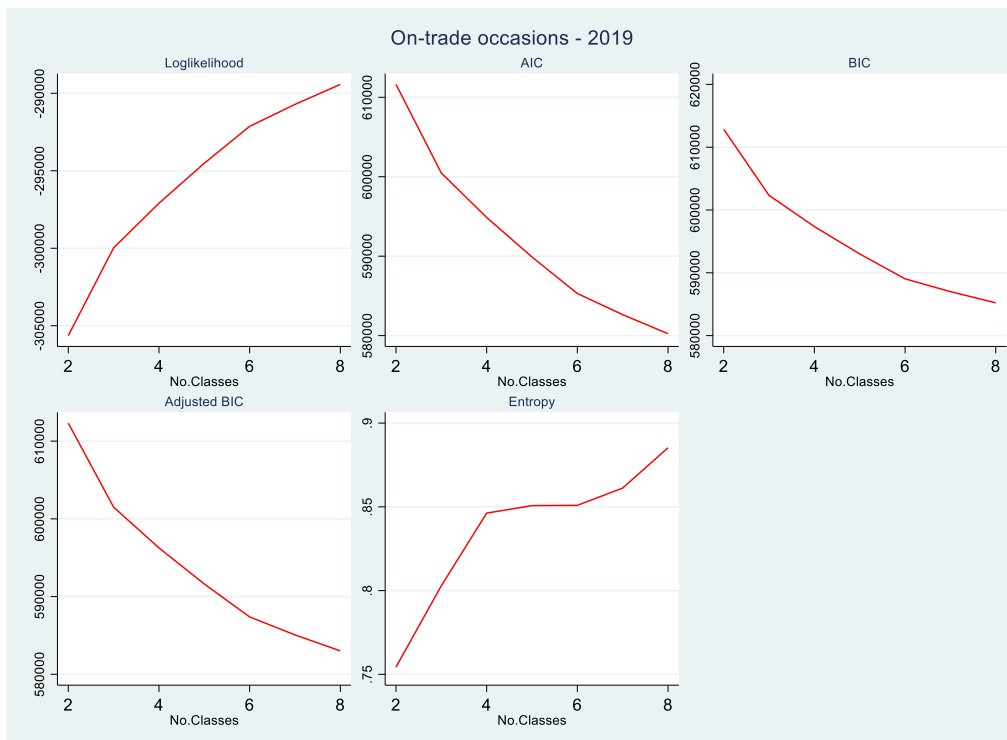


Figure A1.3: Latent class model fit statistics for mixed-trade models with two to eight classes.

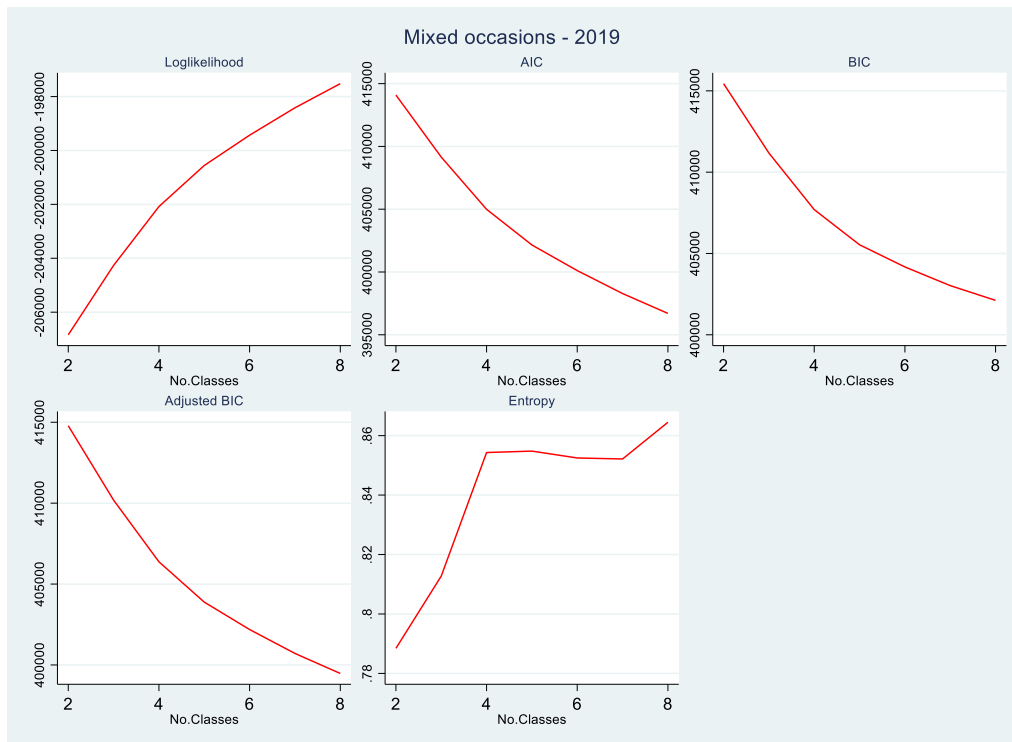


Table A1.1 - statistical tests of model restrictions for k vs $k-1$ classes

Trade sector	Number of Classes	Number of free parameters	Loglikelihood	AIC	BIC	Adjusted-BIC	Entropy	Test type (p-value)		
								Vuong-Lo-Mendell-Rubin	Lo-Mendell-Rubin adjusted LRT ¹	Bootstrapped LRT ¹
Off-trade only	2	113	-557031	1114289	1115222	1114863	0.914	0.333	0.333	<0.001
Off-trade only	3	170	-543902	1088145	1089549	1089009	0.932	<0.001	<0.001	<0.001
Off-trade only	4	227	-536775	1074003	1075878	1075156	0.956	<0.001	<0.001	<0.001
Off-trade only	5	284	-532998	1066565	1068910	1068008	0.960	<0.001	<0.001	<0.001
Off-trade only	6	341	-529753	1060189	1063005	1061921	0.965	<0.001	<0.001	<0.001
Off-trade only	7	398	-526748	1054291	1057578	1056313	0.967	<0.001	<0.001	<0.001
Off-trade only	8	455	-523643	1048196	1051954	1050508	0.963	<0.001	<0.001	<0.001
On-trade only	2	173	-305640	611625	612866	612316	0.754	<0.001	<0.001	<0.001
On-trade only	3	260	-299976	600472	602336	601510	0.803	<0.001	<0.001	<0.001
On-trade only	4	347	-297094	594882	597370	596267	0.846	<0.001	<0.001	<0.001
On-trade only	5	434	-294514	589896	593008	591629	0.851	<0.001	<0.001	<0.001
On-trade only	6	521	-292132	585305	589041	587385	0.851	<0.001	<0.001	<0.001
On-trade only	7	608	-290714	582644	587003	585071	0.861	<0.001	<0.001	<0.001
On-trade only	8	695	-289426	580241	585224	583015	0.885	<0.001	<0.001	<0.001
Mixed-trade	2	207	-206840	414094	415443	414785	0.788	<0.001	<0.001	<0.001
Mixed-trade	3	311	-204265	409152	411179	410191	0.813	<0.001	<0.001	<0.001
Mixed-trade	4	415	-202081	404993	407697	406379	0.854	<0.001	<0.001	<0.001
Mixed-trade	5	519	-200558	402153	405536	403887	0.855	<0.001	<0.001	<0.001
Mixed-trade	6	623	-199433	400113	404173	402193	0.852	0.533	0.534	<0.001
Mixed-trade	7	727	-198416	398287	403025	400715	0.852	0.768	0.768	<0.001
Mixed-trade	8	831	-197520	396703	402119	399478	0.864	0.819	0.819	<0.001

¹Loglikelihood ratio test

Table A1.2: Analysis of misclassification error

Occasion type	N	Probability that occasion belongs to assigned class			
		Mean	SD	Min	Max
Quiet drink at home alone	7,700	0.99	0.06	0.44	1.00
Family time at home	3,946	0.94	0.11	0.45	1.00
Evening at home with partner	8,498	0.99	0.04	0.45	1.00
Off-trade get together	8,351	0.96	0.10	0.50	1.00
Meeting friends at the pub	1,679	0.86	0.15	0.36	1.00
Male friends at the pub	1,080	0.93	0.13	0.31	1.00
Quiet drink at the pub	1,310	0.92	0.13	0.39	1.00
Big night out	824	0.91	0.15	0.28	1.00
Extended occasion (on-trade)	1,658	0.89	0.16	0.27	1.00
Family meal	1,013	0.90	0.14	0.37	1.00
Meal with friends	966	0.85	0.17	0.35	1.00
Going out with partner	1,065	0.98	0.07	0.36	1.00
Big night out with pre-drinking	1290	0.91	0.13	0.40	1.00
Quiet drink at home and with friends...	1735	0.93	0.13	0.36	1.00
Extended occasion (mixed trade)	1974	0.91	0.14	0.38	1.00

Table A1.3: Levels and distribution of alcohol consumption and heavy drinking occasions across occasion types (latent classes) for women.

Trade sector	Occasion type	% of occasions			Units consumed in occasion									% of total consumption			Heavy drinking occasions (HDOs)	
		All	In trade sector	Total			Off-trade			On-trade			Total	Off-trade	On-trade	% of type ¹	% of all HDOs	
				Mean	SD	Median	Mean	SD	Median	Mean	SD	Median						
Off-trade only	Quiet drink at home alone	17.8	24.2	12.5	7.1	9.8	12.5	7.1	9.8	-	-	-	7.5	10.6	-	25.4	12.5	
	Family time at home	9.4	12.8	14.0	7.6	10.8	14.0	7.6	10.8	-	-	-	6.7	9.5	-	32.3	8.4	
	Evening at home with partner	28.6	39	11.6	6.4	9.7	11.6	6.4	9.7	-	-	-	11.3	16.1	-	25.6	20.4	
	Off-trade get together	17.5	23.9	16.5	10.0	12.9	16.5	10.0	12.9	-	-	-	31.0	44.0	-	49.0	23.9	
On-trade only	Meeting friends at the pub	3.1	17.8	11.0	5.7	9.5	-	-	-	11.0	5.7	9.5	2.2	-	7.4	32.2	2.8	
	Male friends at the pub	0.1	0.7	12.7	3.2	12.3	-	-	-	12.7	3.2	12.3	0.1	-	0.5	57.1	0.2	
	Quiet drink at the pub	0.9	5.1	9.9	3.2	9.5	-	-	-	9.9	3.2	9.5	0.3	-	1.1	16.3	0.4	
	Big night out	1.6	8.9	14.2	7.3	12.0	-	-	-	14.2	7.3	12.0	3.7	-	12.4	58.8	2.6	
	Extended occasion (on-trade)	2.3	13.0	20.3	10.9	17.1	-	-	-	20.3	10.9	17.1	8.8	-	29.6	73.7	4.7	
	Family meal	3.1	17.6	10.5	5.1	9.5	-	-	-	10.5	5.1	9.5	1.0	-	3.4	17.6	1.5	
	Meal with friends	3.4	19.4	11.0	5.7	9.7	-	-	-	11.0	5.7	9.7	1.7	-	5.6	25.4	2.4	
Going out with partner	3.1	17.6	10.9	5.1	9.4	-	-	-	10.9	5.1	9.4	1.1	-	3.7	21.9	1.9		
Mixed-trade	Big night out with pre-drinking	2.4	26.1	18.3	9.6	15.3	9.3	7.0	7.5	9.0	6.7	7.5	8.8	6.6	14.3	82.3	5.5	
	Quiet drink at home and with friends...	2.6	27.7	13.7	7.5	11.1	7.6	6.3	5.7	6.1	4.5	5.0	3.5	2.8	5.3	62.7	4.5	
	Extended occasion (mixed trade)	4.3	46.2	19.7	11.1	15.9	11.6	9.5	8.2	8.1	6.7	6.0	12.3	10.4	16.8	69.8	8.3	

Table A1.4: Levels and distribution of alcohol consumption and heavy drinking occasions across occasion types (latent classes) for men.

Trade sector	Occasion type	% of occasions			Units consumed in occasion									% of total consumption			Heavy drinking occasions (HDOs)	
		All	In trade sector	Total			Off-trade			On-trade			Total	Off-trade	On-trade	% of type ¹	% of all HDOs	
				Mean	SD	Median	Mean	SD	Median	Mean	SD	Median						
Off-trade only	Quiet drink at home alone	21.1	32.2	15.7	7.8	13.2	15.7	7.8	13.2	-	-	-	14.0	21.2	-	28.6	15.2	
	Family time at home	9.2	14.1	15.0	7.5	12.3	15.0	7.5	12.3	-	-	-	6.4	9.7	-	32.3	7.5	
	Evening at home with partner	19.4	29.7	14.6	6.6	12.0	14.6	6.6	12.0	-	-	-	11.5	17.3	-	29.4	14.4	
	Off-trade get together	15.7	24.0	19.1	9.7	16.0	19.1	9.7	16.0	-	-	-	21.8	32.9	-	47.3	18.6	
On-trade only	Meeting friends at the pub	4.3	18.2	13.6	6.0	11.4	-	-	-	13.6	6.0	11.4	3.6	-	10.6	45.2	4.8	
	Male friends at the pub	4.7	20.2	14.6	6.0	12.5	-	-	-	14.6	6.0	12.5	4.9	-	14.4	55.7	6.6	
	Quiet drink at the pub	4.4	19.0	12.4	4.6	11.2	-	-	-	12.4	4.6	11.2	1.9	-	5.6	24.7	2.8	
	Big night out	1.0	4.4	18.9	9.4	17.2	-	-	-	18.9	9.4	17.2	1.7	-	5.1	57.7	1.5	
	Extended occasion (on-trade)	3.6	15.2	22.0	10.8	19.2	-	-	-	22.0	10.8	19.2	8.1	-	23.9	66.4	5.9	
	Family meal	1.7	7.5	13.4	6.3	11.1	-	-	-	13.4	6.3	11.1	0.5	-	1.6	16.1	0.7	
	Meal with friends	1.4	5.8	15.3	7.6	12.2	-	-	-	15.3	7.6	12.2	0.6	-	1.9	21.5	0.7	
Going out with partner	2.3	9.9	13.4	5.9	11.4	-	-	-	13.4	5.9	11.4	1.0	-	3.0	23.1	1.3		
Mixed-trade	Big night out with pre-drinking	2.3	20.4	21.9	9.8	19.6	10.5	8.1	8.0	11.3	7.3	10.0	6.5	4.9	9.7	84.6	4.9	
	Quiet drink at home and with friends...	5.2	46.8	16.8	8.1	14.6	8.2	6.6	6.4	8.6	5.5	7.4	8.2	6.1	12.2	66.2	8.7	
	Extended occasion (mixed trade)	3.7	32.9	23.3	10.7	21.2	13.1	9.4	10.7	10.2	7.7	8.5	9.4	8.0	12.2	69.4	6.4	

Appendix references

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3. Battaglia MP, Hoaglin DC, Frankel MR. Practical considerations in raking survey data. *Survey Practice* 2009; **2**(5): 2953.