

Cluster Analysis

Presented by: Lauren Franklin and Maria Bakarman

COM 631

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I. Model

Data Set: Film and TV Usage National Survey 2015 (Jeffres & Neuendorf)

Internal/clustering variables (4 scales from 25 items total):

- Tech Savvy—A 6-item additive scale (alpha = .770) consisting of:
 - Q28A- I often watch videos on my cellphone
 - Q28B- I often search for videos on YouTube to watch
 - Q28C- I often share videos via Facebook
 - Q28D- I often share videos on Instagram
 - Q28E – I like to watch TV shows on laptop/ tablets/ phone
 - Q28F- I like to make short videos that I can share with others
 (All measured on a 7 point response scale, where 1-Not at all like and 7-Very much like)

- Traditionalist—A 4-item additive scale (alpha = .612) consisting of:
 - Q29B- I am more traditionalist preferring to read physical copies
 - Q29C- I like the variety of entertainment available today but sometimes I feel it is too much
 - Q29D – I think that the new technologies have begun to dominate our lives
 - Q29G – I still rather talk to people over the phone than text
 (All measured on a 7 point Likert like response scale, where 1-completely disagree and 7-completely agree.)

- Leisure Tech Savvy—A 6-item additive scale (alpha = .525) consisting of:
 - Q3G- watch a film not at a theater
 - Q3H- surf the internet for pleasure not work
 - Q3I- go to see live musical concert/ events
 - Q3J- go on Facebook
 - Q3K- play video games in some device
 - Q3O- text family and friends rather than calling them on phones
 (All measured on an 8 point response scale, where 1-Never and 8-Several times each day)

- Leisure Traditionalist—A 8-item additive scale (alpha = .695) consisting of:
 - Q3B- listen to the radio
 - Q3C- read a magazine
 - Q3D- read a book
 - Q3E- read a newspaper
 - Q3F- go out to see a film in a theater
 - Q3L- go to see live musical concert/events
 - Q3A- watch television
 - Q3M- go to see live plays perform in the theater

(All measured on an 8 point response scale, where 1-Never and 8-Several times each day)

External Variables/Profiling Variables:

Income:

- 1=1- 15000 or less
- 2=2- 15001 to 20000
- 3=3- 20001 to 30000
- 4=4- 30001 to 40000
- 5=5 – 40001 to 50000
- 6=6- 50001 to 75000
- 7=7 – 75001 to 100000
- 8=8 – 100001 to 125000
- 9=9- 125001 to 150000
- 10=10- 150,001 or more

G1: Male = 0, Female = 1

Q18d: how often watch sci-fi genre

Q18dd: how often watch superhero

Q18q: how often watch chick flicks

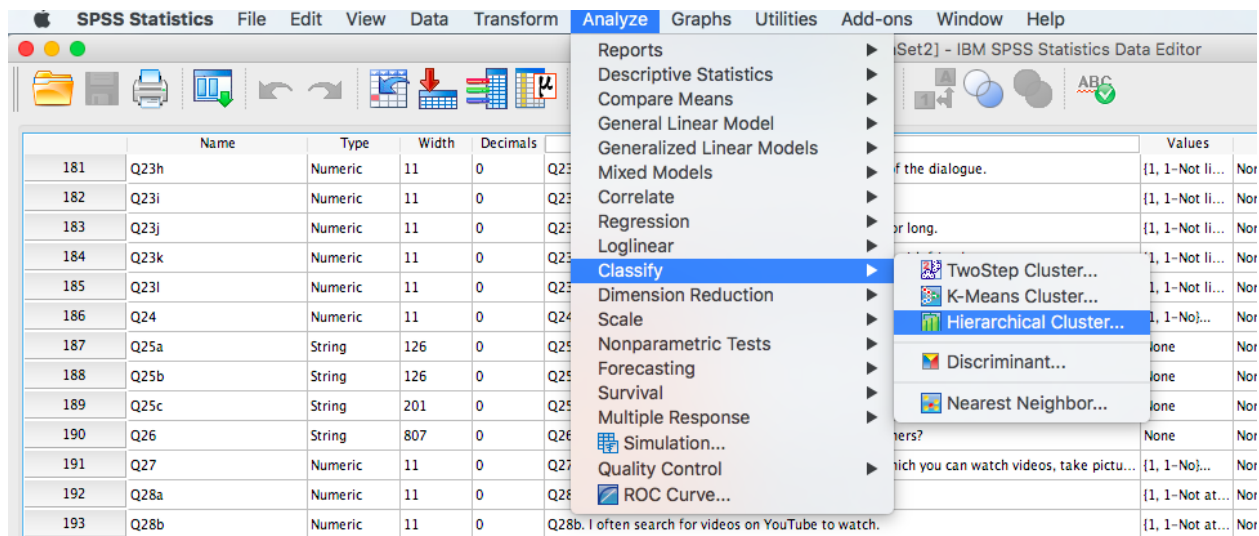
Q18g: how often watch film noir

Q18b: how often watch western

(All measured on an 6 point Likert like response scale, where 1-never 6-All the time)

II. Running SPSS

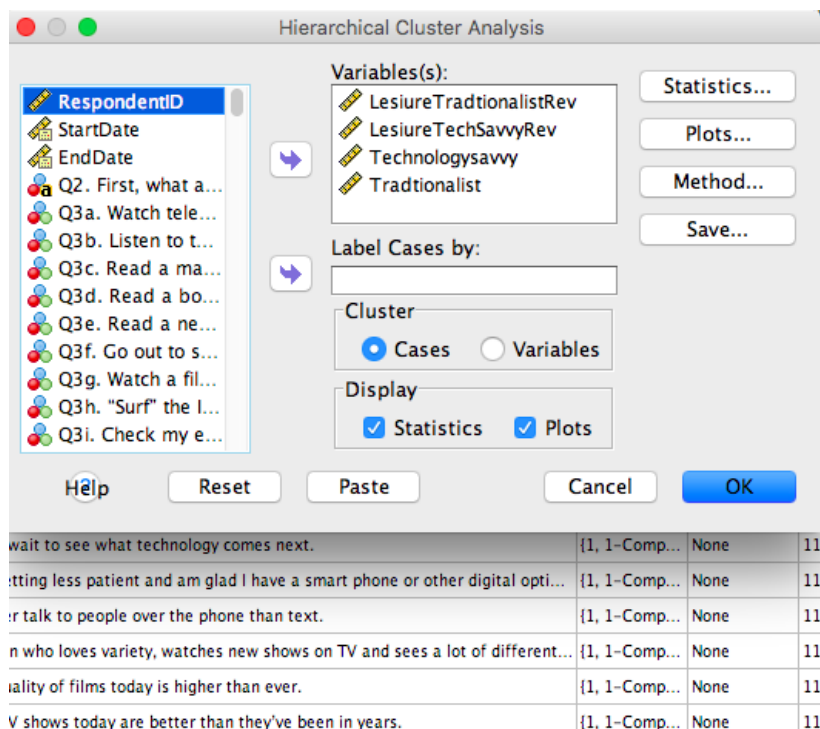
1- Analyze - Classify - Hierarchical Cluster.



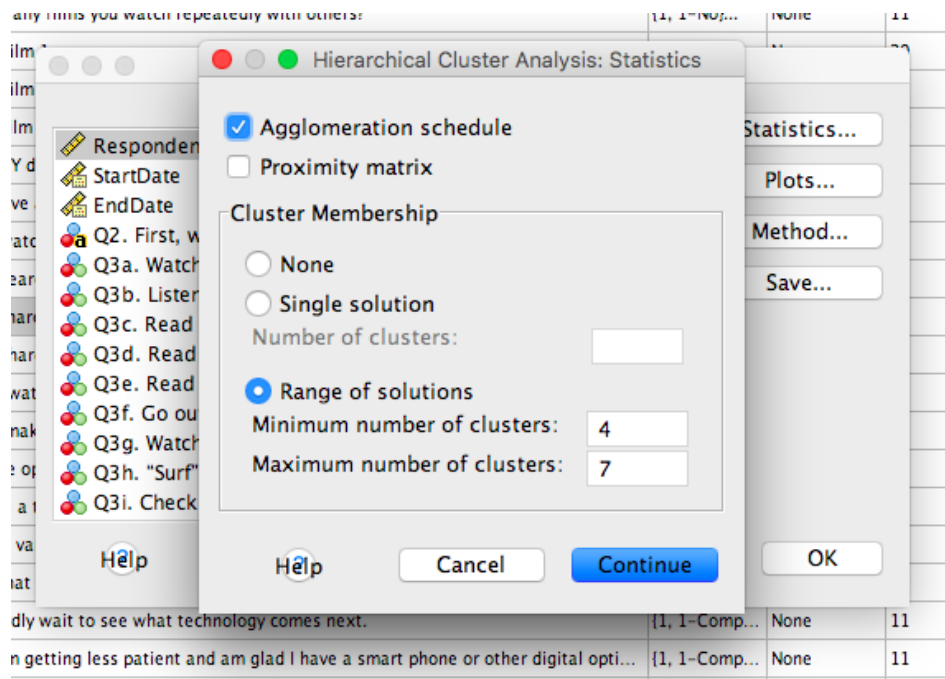
2- Select your Internal Variables for analysis.

The four scales:

Techsavvy, Traditionalists, Leisure Techsavvy, and Leisure Traditionalists



3- Click “Statistics” Box



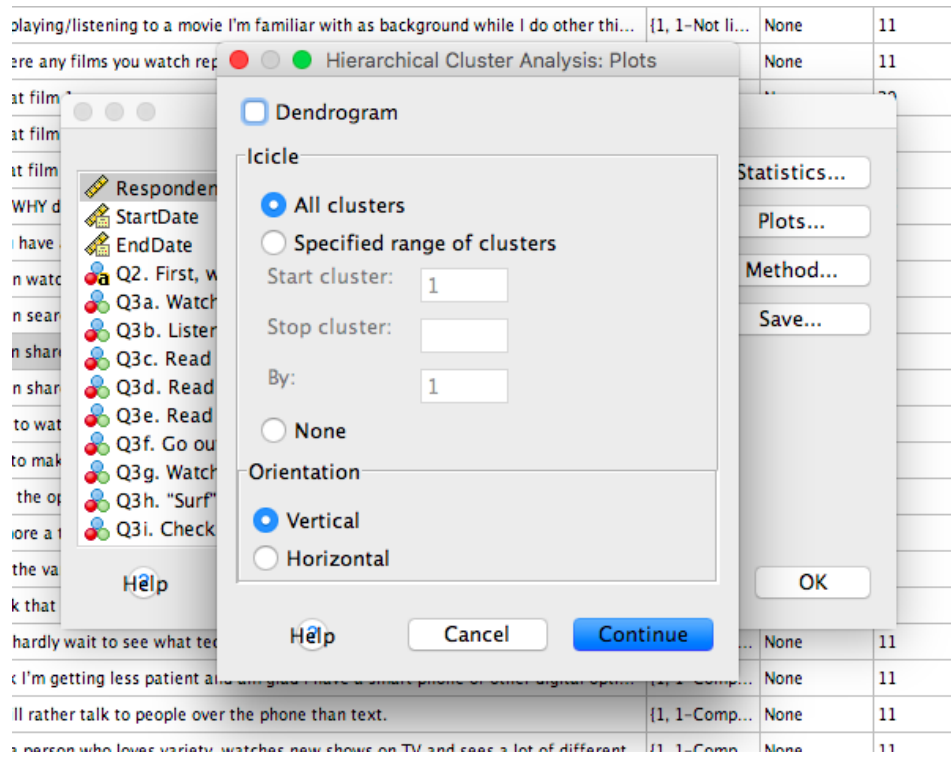
4- Make sure that the “Agglomeration Schedule” box is checked.

5- Then, under Cluster Membership, check the circle “Range of Solutions”.

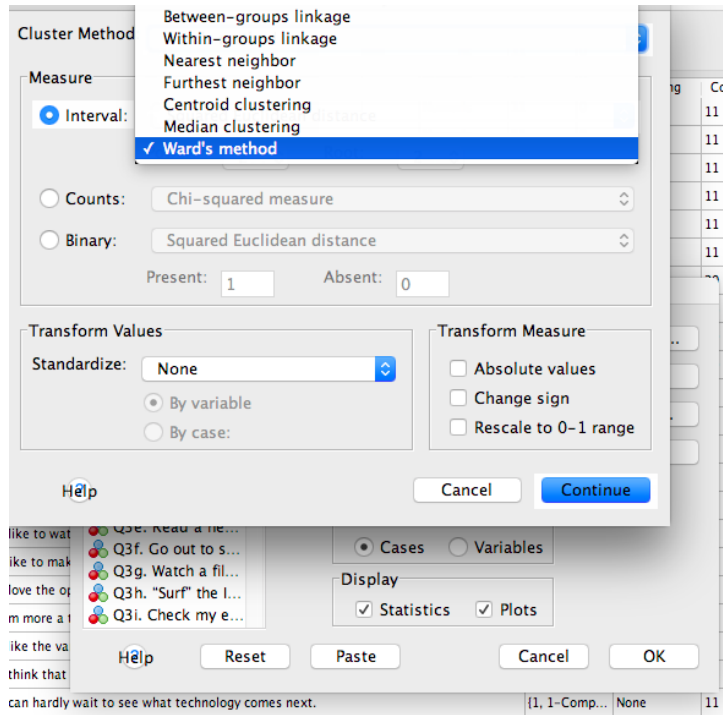
6- Indicate your chosen minimum number of clusters and the maximum number of clusters. (e.g., 3 to 6, or 4 to 7).

7- Then click “Continue”.

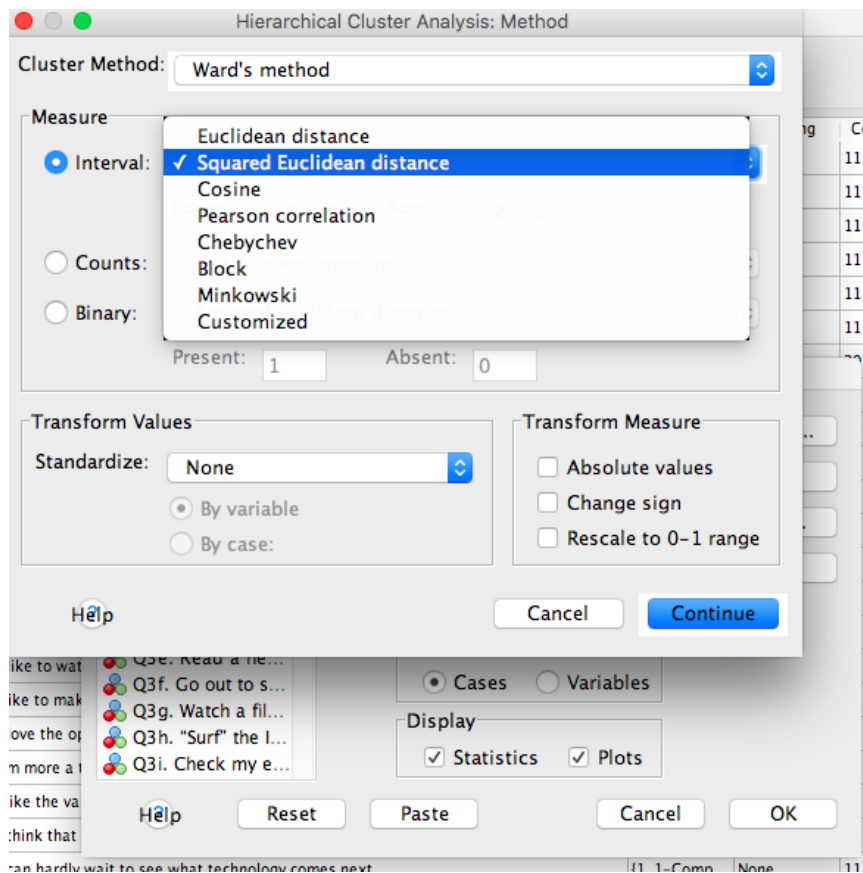
8- Click “Plots” Box



- 9- Note that you must select either the “Dendrogram” box or something under “Icicle”. We ran Icicle, All Clusters.
- 10- Then click “Continue”.
- 11- Click “Method” Box.
- 12- From “Cluster Method” drop down arrow → Select “Ward’s Method”.



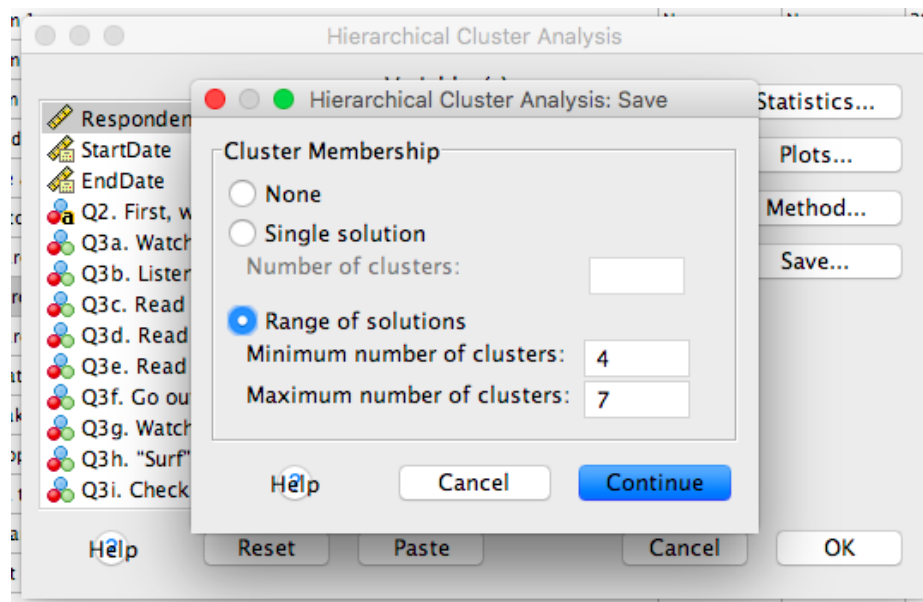
13- Under “Measure”, select “Interval” circle.



14- From drop down arrow select “Squared Euclidean Distance”.

15- Then click “Continue”.

16- Click
Box.
17- Under



“Save”
“Cluster

Membership” select the circle “Range of Solutions”. Type your chosen minimum (e.g., 4) into “Minimum number of clusters” box and type your chosen maximum (e.g., 7) into “Maximum number of clusters” box.

18- Then click “Continue”.

19- Click “OK” Box (or “Paste” to save syntax and then run).

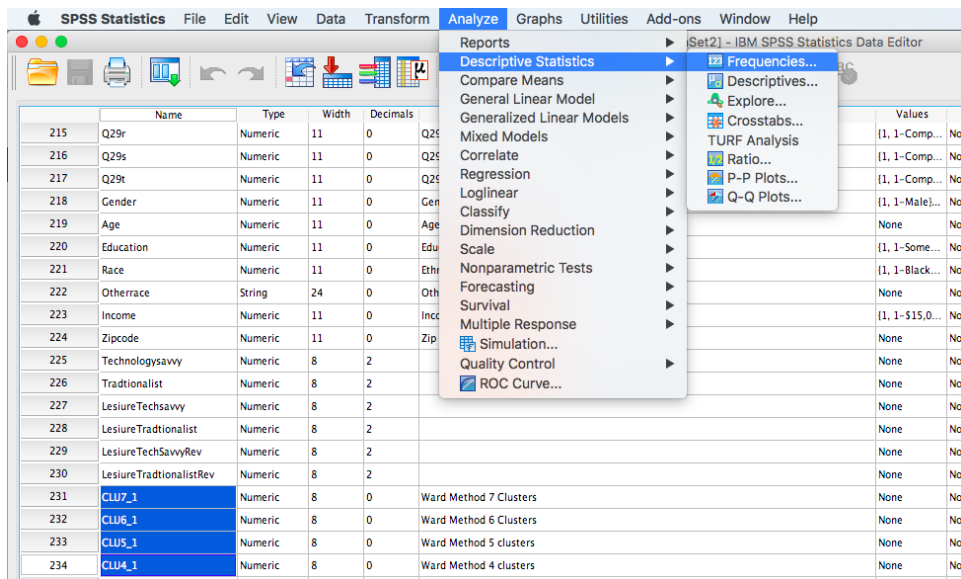
Note: This point marks the end of the actual Cluster procedure in SPSS. The Hierarchical Cluster Analysis procedure has produced an Agglomerative Schedule and a Cluster Membership Table in SPSS output. This procedure has also created and saved at the end of the dataset new nominal variables. In our specific example, a 4-cluster variable, a 5-cluster variable, a 6-cluster variable, and a 7-cluster variable have all been produced and added to the end of the data set.

Next:

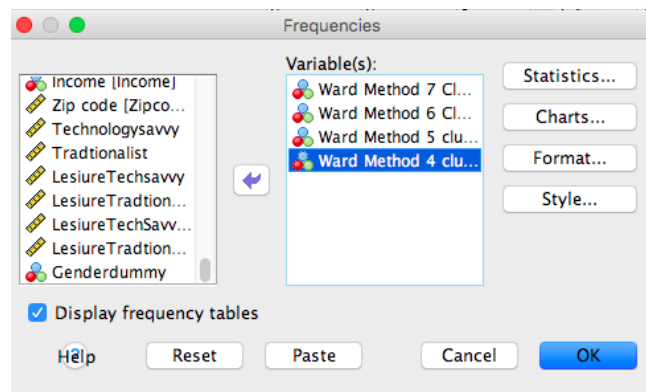
Further Frequencies and ANOVA analysis procedures will help decide which cluster solution to ultimately select.

Now we examine the cluster groupings.

1- Analyze → Descriptive Statistics → Frequencies



2- Select the cluster variables. These are the newly created variables that will be at bottom of SPSS list.



“Ward Method [Clus7_1]” (Note we changed name in label to Ward Method 7 Cluster so easier to identify distinctions in SPSS output charts)

“Ward Method [Clus6_1]” (Note we changed name in label to Ward Method 6 Cluster so

easier to identify distinctions in SPSS output charts)

“Ward Method [Clus5_1]” (Note we changed name in label to Ward Method 5 Cluster so

easier to identify distinctions in SPSS output charts)

“Ward Method [Clus4_1]” (Note we changed name in label to Ward Method 4 Cluster so

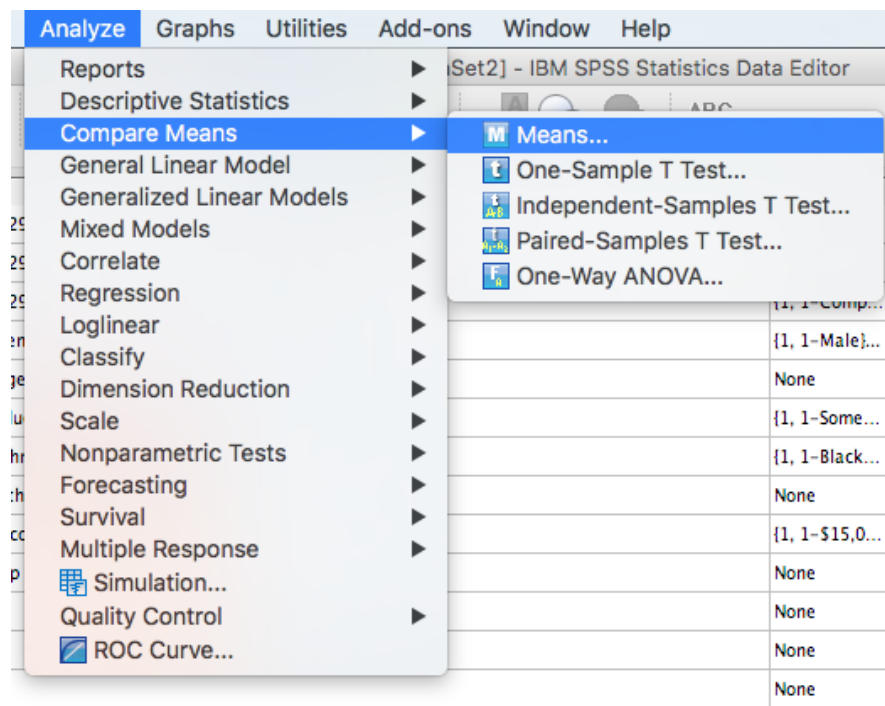
easier to identify distinctions in SPSS output charts).

3- Click “OK” Box.

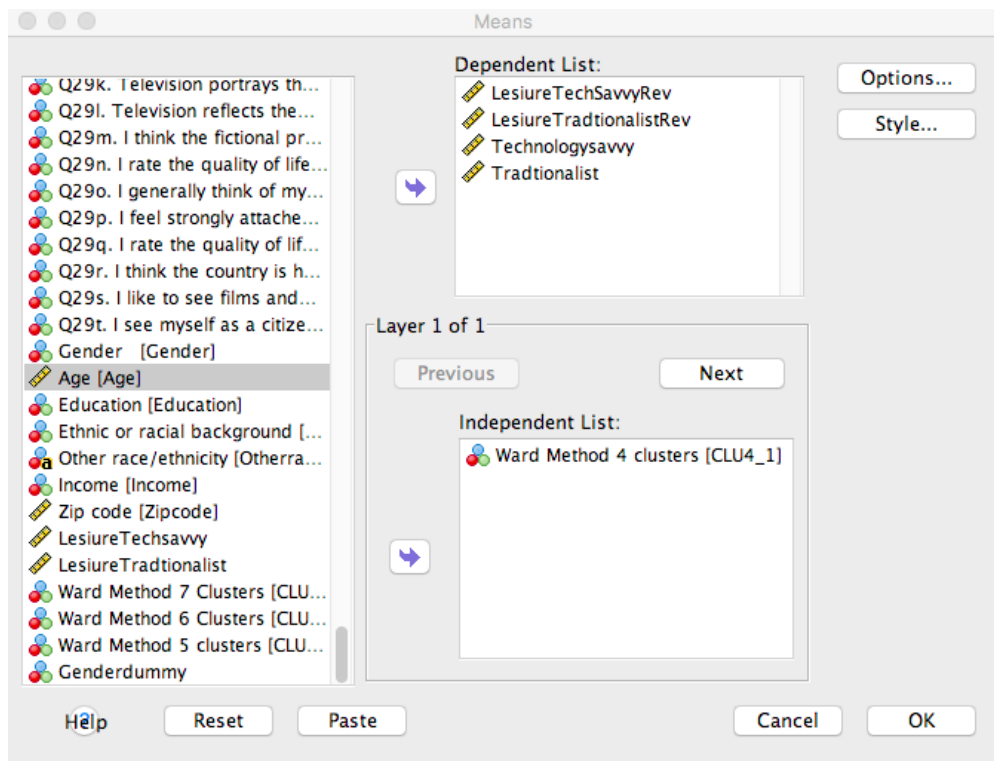
Next:

Run Means (with ANOVA tests) to compare means among the clusters.

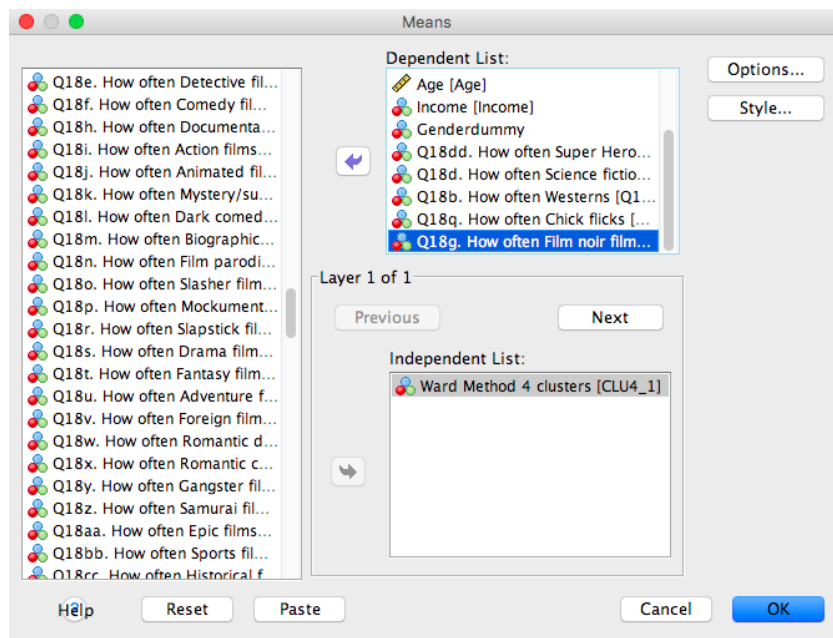
Analyze → Compare Means → Means



4- Select the four scales (Internal Variables) and enter into the “Dependent List”.

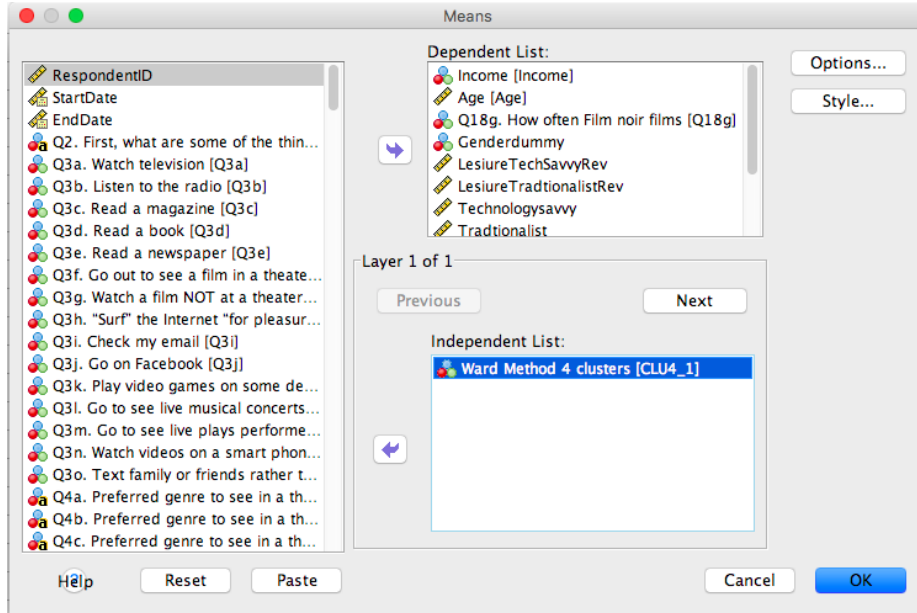


5- Select the 7 total External Variables and enter into the “Dependent List”.

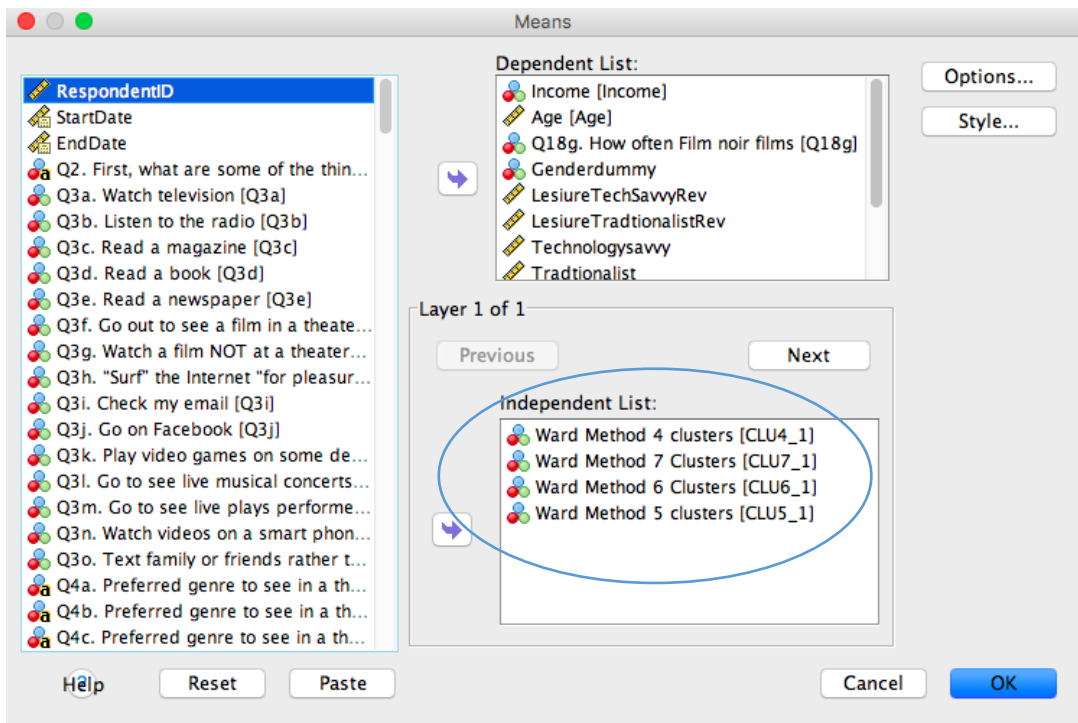


NOTE: Actions that follow are based on the decision to use only the 4-cluster solution for further analyses.

6- Select “Ward Method 4 Cluster” and enter into “Independent List”.



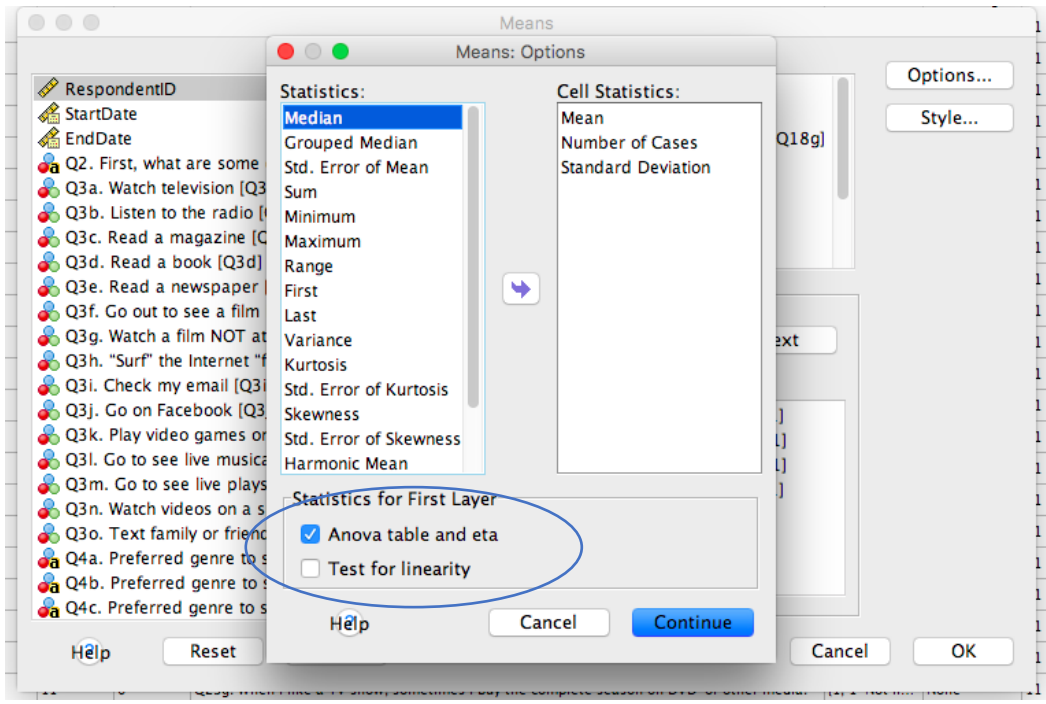
NOTE: You could run all the cluster-created variables, by also including “Ward Method 5”, “Ward Method 6” and “Ward Method 7” in the Independent List to see ANOVA means comparison based upon various cluster solutions.



7-

Click "Options" Box.

8- Click "Anova table and eta" to make sure you get an F-test comparing the means.



III. SPSS Output

```

COMPUTE LesiureTechSavvyRev=63 - LesiureTechsavvy.
EXECUTE.
COMPUTE LesiureTradtionalistRev=72 - LesiureTradtionalist.
EXECUTE.
CLUSTER LesiureTradtionalistRev LesiureTechSavvyRev Technologysavvy Tradtionalist
/METHOD WARD
/MEASURE=SEUCLID
/PRINT SCHEDULE CLUSTER(4,7)
/PLOT VICICLE
/SAVE CLUSTER(4,7).

```

Cluster:

Case Processing Summary^{a,b}

Cases					
Valid		Missing		Total	
N	Percent	N	Percent	N	Percent
326	60.0	217	40.0	543	100.0

a. Squared Euclidean Distance used

b. Ward Linkage

Ward Linkage

Agglomeration Schedule

Stage	Cluster Combined		Coefficient s	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	255	498	.500	0	0	40
2	417	499	1.500	0	0	43
3	276	398	2.500	0	0	32
4	31	323	3.500	0	0	174
5	150	306	4.500	0	0	73
6	148	273	5.500	0	0	168
7	55	216	6.500	0	0	153
8	441	504	8.000	0	0	36
9	496	502	9.500	0	0	95
10	153	330	11.000	0	0	217

11	71	221	12.500	0	0	45
12	32	211	14.000	0	0	108
13	76	204	15.500	0	0	15
14	22	24	17.000	0	0	133
15	76	119	18.833	13	0	73
16	13	510	20.833	0	0	101
17	245	503	22.833	0	0	127
18	373	400	24.833	0	0	196
19	179	281	26.833	0	0	162
20	97	203	28.833	0	0	92
21	53	96	30.833	0	0	78
22	230	433	33.333	0	0	218
23	27	408	35.833	0	0	103
24	66	347	38.333	0	0	145
25	110	259	40.833	0	0	119
26	481	542	43.833	0	0	141
27	412	474	46.833	0	0	93
28	340	451	49.833	0	0	74
29	158	362	52.833	0	0	153
30	30	288	55.833	0	0	149
31	180	284	58.833	0	0	236
32	151	276	61.833	0	3	102
33	70	250	64.833	0	0	121
34	163	234	67.833	0	0	128
35	164	219	70.833	0	0	124
36	141	441	74.000	0	8	91
37	365	500	77.500	0	0	86
38	300	477	81.000	0	0	96
39	156	292	84.500	0	0	197
40	177	255	88.000	0	1	110
41	342	429	92.000	0	0	117
42	261	333	96.000	0	0	100
43	338	417	100.333	0	2	138
44	176	541	104.833	0	0	135
45	71	524	109.333	11	0	247
46	82	463	113.833	0	0	108
47	140	437	118.333	0	0	165
48	75	405	122.833	0	0	118
49	58	241	127.333	0	0	180
50	47	49	131.833	0	0	180

51	531	536	136.833	0	0	122
52	251	527	141.833	0	0	137
53	402	509	146.833	0	0	162
54	196	471	151.833	0	0	166
55	270	457	156.833	0	0	184
56	264	454	161.833	0	0	165
57	212	444	166.833	0	0	104
58	266	440	171.833	0	0	90
59	64	414	176.833	0	0	173
60	271	387	181.833	0	0	175
61	233	269	186.833	0	0	231
62	113	256	191.833	0	0	105
63	94	225	196.833	0	0	205
64	380	539	202.333	0	0	154
65	192	484	207.833	0	0	169
66	224	446	213.333	0	0	192
67	413	445	218.833	0	0	109
68	257	381	224.333	0	0	132
69	138	227	229.833	0	0	185
70	386	424	235.833	0	0	189
71	85	344	241.833	0	0	138
72	51	314	247.833	0	0	134
73	76	150	253.900	15	5	196
74	340	388	260.233	28	0	121
75	112	491	266.733	0	0	202
76	382	476	273.233	0	0	102
77	114	372	279.733	0	0	176
78	53	260	286.400	21	0	144
79	217	472	293.400	0	0	233
80	438	439	300.400	0	0	168
81	160	392	307.400	0	0	252
82	62	363	314.400	0	0	156
83	73	325	321.400	0	0	203
84	34	324	328.400	0	0	245
85	108	165	335.400	0	0	193
86	365	468	342.567	37	0	115
87	79	442	350.067	0	0	126
88	135	358	357.567	0	0	193
89	44	305	365.067	0	0	215
90	265	266	372.733	0	58	161

91	141	416	380.567	36	0	164
92	97	404	388.567	20	0	222
93	412	507	396.900	27	0	254
94	178	514	405.400	0	0	261
95	403	496	413.900	0	9	221
96	262	300	422.400	0	38	220
97	172	235	430.900	0	0	170
98	104	199	439.400	0	0	190
99	154	159	447.900	0	0	199
100	133	261	456.567	0	42	183
101	13	231	465.233	16	0	145
102	151	382	473.933	32	76	174
103	27	174	482.767	23	0	235
104	212	513	491.767	57	0	176
105	113	464	500.767	62	0	219
106	308	462	509.767	0	0	142
107	23	313	518.767	0	0	212
108	32	82	527.767	12	46	237
109	317	413	536.933	0	67	188
110	161	177	546.183	0	40	188
111	274	459	555.683	0	0	186
112	93	396	565.183	0	0	187
113	205	385	574.683	0	0	194
114	186	190	584.183	0	0	164
115	353	365	594.017	0	86	246
116	240	357	604.017	0	0	220
117	287	342	614.017	0	41	192
118	75	237	624.183	48	0	243
119	110	171	634.350	25	0	128
120	170	352	644.850	0	0	221
121	70	340	655.717	33	74	250
122	302	531	666.717	0	51	238
123	285	528	677.717	0	0	155
124	164	197	688.717	35	0	182
125	232	456	700.217	0	0	210
126	45	79	712.050	0	87	187
127	145	245	724.050	0	17	225
128	110	163	736.383	119	34	258
129	118	505	748.883	0	0	204
130	378	479	761.383	0	0	235

131	200	370	773.883	0	0	228
132	257	289	786.383	68	0	198
133	22	99	798.883	14	0	230
134	51	130	811.550	72	0	242
135	176	220	824.383	44	0	249
136	63	523	837.383	0	0	213
137	251	252	850.383	52	0	185
138	85	338	863.850	71	43	198
139	173	517	877.350	0	0	223
140	124	291	890.850	0	0	233
141	447	481	904.517	0	26	257
142	275	308	918.183	0	106	251
143	384	426	932.183	0	0	210
144	53	434	946.267	78	0	258
145	13	66	960.700	101	24	226
146	195	520	975.200	0	0	184
147	2	319	989.700	0	0	244
148	341	490	1004.700	0	0	186
149	30	482	1019.700	30	0	259
150	78	475	1034.700	0	0	197
151	126	316	1049.700	0	0	199
152	134	280	1064.700	0	0	228
153	55	158	1079.700	7	29	236
154	379	380	1095.533	0	64	177
155	215	285	1111.867	0	123	273
156	62	111	1128.200	82	0	240
157	326	436	1144.700	0	0	289
158	26	525	1161.700	0	0	167
159	198	263	1178.700	0	0	229
160	48	107	1196.200	0	0	231
161	265	518	1213.783	90	0	232
162	179	402	1232.283	19	53	246
163	142	183	1250.783	0	0	167
164	141	186	1269.617	91	114	225
165	140	264	1288.867	47	56	216
166	15	196	1308.533	0	54	226
167	26	142	1328.283	158	163	284
168	148	438	1348.783	6	80	237
169	35	192	1369.283	0	65	213
170	172	394	1390.117	97	0	218

171	246	522	1411.117	0	0	253
172	419	453	1432.117	0	0	216
173	64	146	1453.117	59	0	211
174	31	151	1474.345	4	102	205
175	271	497	1496.012	60	0	238
176	114	212	1517.912	77	104	266
177	379	516	1540.079	154	0	266
178	207	431	1562.579	0	0	248
179	60	307	1585.079	0	0	270
180	47	58	1607.579	50	49	249
181	299	534	1630.579	0	0	224
182	164	322	1653.579	124	0	242
183	133	489	1676.662	100	0	265
184	195	270	1699.912	146	55	222
185	138	251	1723.212	69	137	274
186	274	341	1747.462	111	148	245
187	45	93	1771.829	126	112	285
188	161	317	1796.483	110	109	254
189	152	386	1821.150	0	70	265
190	104	214	1845.983	98	0	275
191	315	369	1870.983	0	0	260
192	224	287	1896.683	66	117	219
193	108	135	1922.433	85	88	201
194	131	205	1948.267	0	113	280
195	98	137	1974.267	0	0	280
196	76	373	2000.724	73	18	250
197	78	156	2027.474	150	39	275
198	85	257	2054.424	138	132	257
199	126	154	2081.674	151	99	283
200	89	501	2110.174	0	0	267
201	108	187	2138.724	193	0	215
202	25	112	2168.224	0	75	241
203	73	393	2198.557	83	0	247
204	118	282	2230.724	129	0	262
205	31	94	2263.184	174	63	278
206	69	92	2295.684	0	0	299
207	88	515	2328.684	0	0	261
208	318	410	2362.684	0	0	230
209	54	194	2397.684	0	0	229
210	232	384	2432.934	125	143	227

211	64	155	2468.434	173	0	281
212	23	84	2504.767	107	0	273
213	35	63	2542.967	169	136	251
214	37	376	2581.967	0	0	297
215	44	108	2621.953	89	201	255
216	140	419	2662.037	165	172	260
217	153	399	2702.537	10	0	288
218	172	230	2743.103	170	22	278
219	113	224	2784.153	105	192	268
220	240	262	2825.353	116	96	244
221	170	403	2866.853	120	95	243
222	97	195	2908.389	92	184	286
223	173	540	2951.556	139	0	276
224	128	299	2995.222	0	181	272
225	141	145	3041.944	164	127	277
226	13	15	3088.803	145	166	252
227	232	364	3136.453	210	0	286
228	134	200	3185.203	152	131	289
229	54	198	3234.703	209	159	239
230	22	318	3284.703	133	208	296
231	48	233	3335.453	160	61	268
232	191	265	3387.203	0	161	294
233	124	217	3438.953	140	79	272
234	309	533	3491.453	0	0	264
235	27	378	3544.819	103	130	288
236	55	180	3598.486	153	31	267
237	32	148	3652.236	108	168	287
238	271	302	3706.569	175	122	269
239	54	57	3761.469	229	0	297
240	62	460	3817.636	156	0	271
241	18	25	3874.136	0	202	291
242	51	164	3932.184	134	182	263
243	75	170	3990.892	118	221	282
244	2	240	4053.763	147	220	291
245	34	274	4117.513	84	186	274
246	179	353	4182.013	162	115	279
247	71	73	4247.013	45	203	295
248	109	207	4312.513	0	178	256
249	47	176	4378.537	180	135	276
250	70	76	4445.730	121	196	277

251	35	275	4513.613	213	142	292
252	13	160	4586.588	226	81	281
253	246	343	4659.588	171	0	264
254	161	412	4733.184	188	93	300
255	44	488	4807.523	215	0	301
256	109	120	4883.023	248	0	312
257	85	447	4960.606	198	141	259
258	53	110	5038.523	144	128	287
259	30	85	5121.094	149	257	294
260	140	315	5205.636	216	191	306
261	88	178	5290.386	207	94	282
262	118	415	5376.219	204	0	303
263	51	470	5463.380	242	0	270
264	246	309	5552.080	253	234	299
265	133	152	5643.663	183	189	298
266	114	379	5739.097	176	177	285
267	55	89	5837.805	236	200	283
268	48	113	5937.055	231	219	292
269	239	271	6036.341	0	238	290
270	51	60	6137.966	263	179	293
271	62	228	6240.466	240	0	308
272	124	128	6356.121	233	224	311
273	23	215	6493.454	212	155	302
274	34	138	6630.790	245	185	279
275	78	104	6773.064	197	190	303
276	47	173	6919.040	249	223	296
277	70	141	7069.187	250	225	301
278	31	172	7230.613	205	218	284
279	34	179	7395.003	274	246	313
280	98	131	7559.669	195	194	290
281	13	64	7740.855	252	211	307
282	75	88	7927.397	243	261	310
283	55	126	8114.938	267	199	298
284	26	31	8304.141	167	278	305
285	45	114	8495.464	187	266	304
286	97	232	8686.945	222	227	295
287	32	53	8883.735	237	258	306
288	27	153	9081.535	235	217	315
289	134	326	9283.451	228	157	293
290	98	239	9486.916	280	269	300

291	2	18	9693.662	244	241	304
292	35	48	9908.112	251	268	302
293	51	134	10170.821	270	289	308
294	30	191	10434.776	259	232	307
295	71	97	10732.609	247	286	309
296	22	47	11052.576	230	276	314
297	37	54	11379.461	214	239	311
298	55	133	11707.031	283	265	315
299	69	246	12049.903	206	264	312
300	98	161	12416.380	290	254	313
301	44	70	12817.975	255	277	305
302	23	35	13227.371	273	292	316
303	78	118	13702.378	275	262	309
304	2	45	14180.222	291	285	317
305	26	44	14674.096	284	301	317
306	32	140	15186.015	287	260	310
307	13	30	15706.249	281	294	314
308	51	62	16249.017	293	271	321
309	71	78	16848.595	295	303	322
310	32	75	17477.348	306	282	320
311	37	124	18184.062	297	272	316
312	69	109	18930.718	299	256	318
313	34	98	19748.318	279	300	318
314	13	22	20591.472	307	296	321
315	27	55	21486.847	288	298	319
316	23	37	22965.354	302	311	319
317	2	26	24495.107	304	305	320
318	34	69	26225.796	313	312	323
319	23	27	28399.454	316	315	322
320	2	32	30769.893	317	310	323
321	13	51	33222.076	314	308	324
322	23	71	36315.960	319	309	325
323	2	34	41621.114	320	318	324
324	2	13	50902.145	323	321	325
325	2	23	64472.301	324	322	0

Cluster membership

Cluster Membership				
Case	7 Clusters	6 Clusters	5 Clusters	4 Clusters
2	1	1	1	1
13	2	2	2	2
15	2	2	2	2
18	1	1	1	1
22	2	2	2	2
23	3	3	3	3
24	2	2	2	2
25	1	1	1	1
26	1	1	1	1
27	3	3	3	3
30	2	2	2	2
31	1	1	1	1
32	4	1	1	1
34	5	4	4	4
35	3	3	3	3
37	3	3	3	3
44	1	1	1	1
45	1	1	1	1
47	2	2	2	2
48	3	3	3	3
49	2	2	2	2
51	6	5	2	2
53	4	1	1	1
54	3	3	3	3
55	3	3	3	3
57	3	3	3	3
58	2	2	2	2
60	6	5	2	2
62	6	5	2	2
63	3	3	3	3
64	2	2	2	2
66	2	2	2	2

69	5	4	4	4
70	1	1	1	1
71	7	6	5	3
73	7	6	5	3
75	4	1	1	1
76	1	1	1	1
78	7	6	5	3
79	1	1	1	1
82	4	1	1	1
84	3	3	3	3
85	2	2	2	2
88	4	1	1	1
89	3	3	3	3
92	5	4	4	4
93	1	1	1	1
94	1	1	1	1
96	4	1	1	1
97	7	6	5	3
98	5	4	4	4
99	2	2	2	2
104	7	6	5	3
107	3	3	3	3
108	1	1	1	1
109	5	4	4	4
110	4	1	1	1
111	6	5	2	2
112	1	1	1	1
113	3	3	3	3
114	1	1	1	1
118	7	6	5	3
119	1	1	1	1
120	5	4	4	4
124	3	3	3	3
126	3	3	3	3
128	3	3	3	3
130	6	5	2	2
131	5	4	4	4
133	3	3	3	3
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135	1	1	1	1

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138	5	4	4	4
140	4	1	1	1
141	1	1	1	1
142	1	1	1	1
145	1	1	1	1
146	2	2	2	2
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151	1	1	1	1
152	3	3	3	3
153	3	3	3	3
154	3	3	3	3
155	2	2	2	2
156	7	6	5	3
158	3	3	3	3
159	3	3	3	3
160	2	2	2	2
161	5	4	4	4
163	4	1	1	1
164	6	5	2	2
165	1	1	1	1
170	4	1	1	1
171	4	1	1	1
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173	2	2	2	2
174	3	3	3	3
176	2	2	2	2
177	5	4	4	4
178	4	1	1	1
179	5	4	4	4
180	3	3	3	3
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187	1	1	1	1
190	1	1	1	1
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192	3	3	3	3
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198	3	3	3	3
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200	6	5	2	2
203	7	6	5	3
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205	5	4	4	4
207	5	4	4	4
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212	1	1	1	1
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215	3	3	3	3
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219	6	5	2	2
220	2	2	2	2
221	7	6	5	3
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225	1	1	1	1
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232	7	6	5	3
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241	2	2	2	2
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246	5	4	4	4
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252	5	4	4	4
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261	3	3	3	3
262	1	1	1	1
263	3	3	3	3
264	4	1	1	1
265	2	2	2	2
266	2	2	2	2
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271	5	4	4	4
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276	1	1	1	1
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285	3	3	3	3
287	3	3	3	3
288	2	2	2	2
289	2	2	2	2
291	3	3	3	3
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299	3	3	3	3
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302	5	4	4	4
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306	1	1	1	1
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314	6	5	2	2
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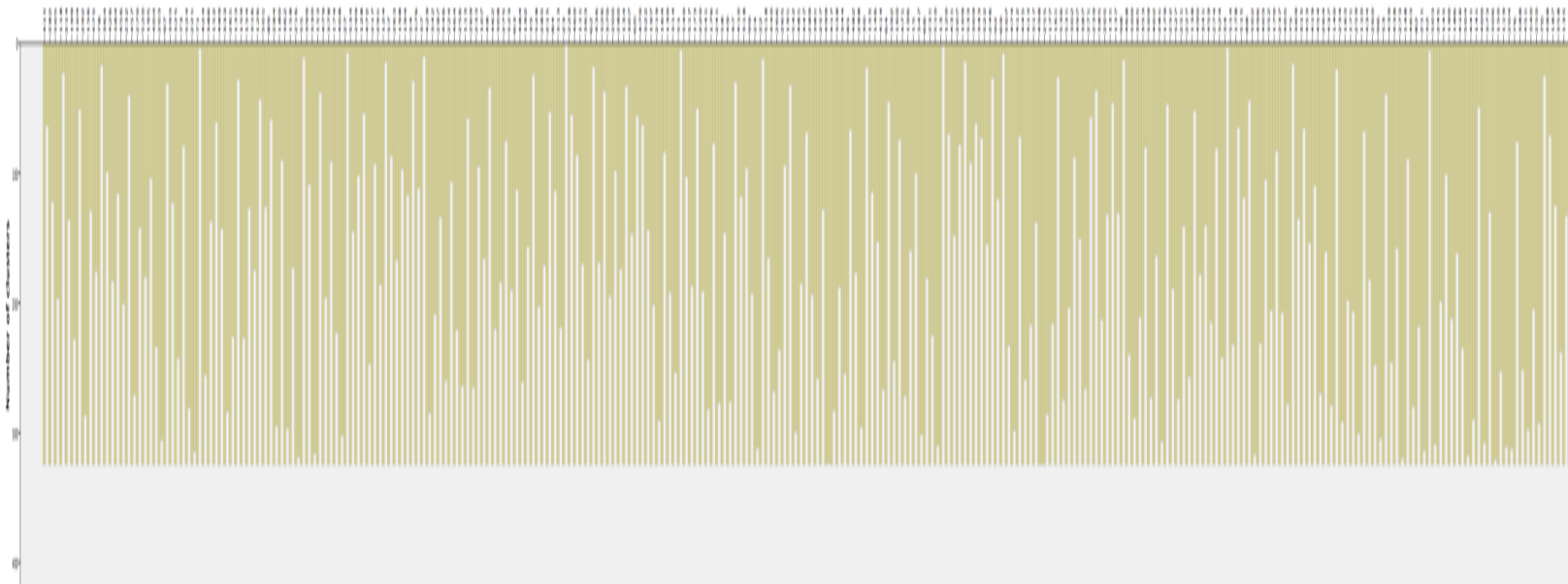
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364	7	6	5	3
365	5	4	4	4
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385	5	4	4	4
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387	5	4	4	4
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404	7	6	5	3
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413	5	4	4	4
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419	4	1	1	1
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426	7	6	5	3
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500	5	4	4	4
501	3	3	3	3
502	4	1	1	1
503	1	1	1	1
504	1	1	1	1
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518	2	2	2	2
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524	7	6	5	3
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534	3	3	3	3
536	5	4	4	4
539	1	1	1	1
540	2	2	2	2
541	2	2	2	2
542	2	2	2	2

CM



FREQUENCIES VARIABLES=CLU7_1 CLU6_1 CLU5_1 CLU4_1
 /STATISTICS=STDDEV VARIANCE MEAN MEDIAN MODE SKEWNESS SESKEW KU
 RTOSIS SEKURT
 /ORDER=ANALYSIS.

Frequencies

Statistics

		Ward Method 7 Clusters	Ward Method 6 Clusters	Ward Method 5 clusters	Ward Method 4 clusters
N	Valid	326	326	326	326
	Missing	217	217	217	217
Mean		3.39	2.74	2.46	2.28
Median		3.00	3.00	2.00	2.00
Mode		1	1	1	1
Std. Deviation		1.908	1.626	1.332	1.092
Variance		3.642	2.643	1.775	1.193
Skewness		.373	.548	.438	.170
Std. Error of Skewness		.135	.135	.135	.135
Kurtosis		-.955	-.797	-1.031	-1.322
Std. Error of Kurtosis		.269	.269	.269	.269

Ward Method 7 Clusters

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	72	13.3	22.1	22.1
	2	48	8.8	14.7	36.8
	3	67	12.3	20.6	57.4
	4	37	6.8	11.3	68.7
	5	52	9.6	16.0	84.7
	6	21	3.9	6.4	91.1
	7	29	5.3	8.9	100.0
	Total	326	60.0	100.0	
Missing	System	217	40.0		
	Total	543	100.0		

**Frequency
Table:**

Ward Method 6 Clusters

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	109	20.1	33.4	33.4
	2	48	8.8	14.7	48.2
	3	67	12.3	20.6	68.7
	4	52	9.6	16.0	84.7
	5	21	3.9	6.4	91.1
	6	29	5.3	8.9	100.0
	Total	326	60.0	100.0	
Missing	System	217	40.0		
	Total	543	100.0		

Ward Method 5 clusters

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	109	20.1	33.4	33.4
	2	69	12.7	21.2	54.6
	3	67	12.3	20.6	75.2
	4	52	9.6	16.0	91.1
	5	29	5.3	8.9	100.0
	Total	326	60.0	100.0	
Missing	System	217	40.0		
Total		543	100.0		

Ward Method 4 clusters

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	109	20.1	33.4	33.4
	2	69	12.7	21.2	54.6
	3	96	17.7	29.4	84.0
	4	52	9.6	16.0	100.0
	Total	326	60.0	100.0	
Missing	System	217	40.0		
Total		543	100.0		

MEANS TABLES=LesiureTechSavvyRev LesiureTradtionalistRev Technologysavvy
 Tradtionalist BY CLU7_1 CLU6_1 CLU5_1 CLU4_1
 /CELLS=MEAN COUNT STDDEV
 /STATISTICS ANOVA.

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
LesiureTechSavvyRev * Ward Method 7 Clusters	326	60.0%	217	40.0%	543	100.0%
LesiureTradtionalistRev * Ward Method 7 Clusters	326	60.0%	217	40.0%	543	100.0%
Technologysavvy * Ward Method 7 Clusters	326	60.0%	217	40.0%	543	100.0%
Tradtionalist * Ward Method 7 Clusters	326	60.0%	217	40.0%	543	100.0%
LesiureTechSavvyRev * Ward Method 6 Clusters	326	60.0%	217	40.0%	543	100.0%
LesiureTradtionalistRev * Ward Method 6 Clusters	326	60.0%	217	40.0%	543	100.0%
Technologysavvy * Ward Method 6 Clusters	326	60.0%	217	40.0%	543	100.0%
Tradtionalist * Ward Method 6 Clusters	326	60.0%	217	40.0%	543	100.0%

LesiureTechSavvyRev * Ward Method 5 clusters	326	60.0%	217	40.0%	543	100.0%
LesiureTradionalistRev * Ward Method 5 clusters	326	60.0%	217	40.0%	543	100.0%
Technologysavvy * Ward Method 5 clusters	326	60.0%	217	40.0%	543	100.0%
Tradionalist * Ward Method 5 clusters	326	60.0%	217	40.0%	543	100.0%
LesiureTechSavvyRev * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
LesiureTradionalistRev * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Technologysavvy * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Tradionalist * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%

**LesiureTechSavvyRev LesiureTradtionalistRev Technologys
avvy Tradtionalist * Ward Method 4 clusters**

Report

Ward Method 4 clusters		LesiureTech SavvyRev	LesiureTradt ionalistRev	Technologys avvy	Tradtionalis t
1	Mean	43.8807	29.9083	12.5596	16.1193
	N	109	109	109	109
	Std. Deviation	4.93049	5.28720	3.72537	4.65022
2	Mean	34.3188	35.9130	11.4493	18.5652
	N	69	69	69	69
	Std. Deviation	5.49998	5.78980	4.27901	4.86427
3	Mean	46.3750	39.2813	25.2292	18.0729
	N	96	96	96	96
	Std. Deviation	6.66846	5.88254	6.71131	4.67748
4	Mean	47.0769	27.1923	23.9038	14.0192
	N	52	52	52	52
	Std. Deviation	5.50880	6.26236	4.37578	4.95664
Total	Mean	43.1012	33.5061	17.8650	16.8773
	N	326	326	326	326
	Std. Deviation	7.37848	7.37386	8.04029	4.99141

Anova Table

		Sum of Squares	df	Mean Square	F	Sig.
LesiureTechSavvyRev	Between Groups (Combined)	7239.032	3	2413.011	74.320	.000
* Ward Method 4 clusters	Within Groups	10454.627	322	32.468		
	Total	17693.660	325			
LesiureTradionalistRev	Between Groups (Combined)	7085.444	3	2361.815	71.840	.000
* Ward Method 4 clusters	Within Groups	10586.044	322	32.876		
	Total	17671.488	325			
Technologysavvy *	Between Groups (Combined)	13010.649	3	4336.883	174.572	.000
Ward Method 4 clusters	Within Groups	7999.412	322	24.843		
	Total	21010.061	325			
Tradionalist * Ward Method 4 clusters	Between Groups (Combined)	821.216	3	273.739	12.115	.000
	Within Groups	7275.876	322	22.596		
	Total	8097.092	325			

Measures of Association

	Eta	Eta Squared
LesiureTechSavvyRev * Ward Method 4 clusters	.640	.409
LesiureTradionalistRev * Ward Method 4 clusters	.633	.401

Technologysavvy * Ward Method 4 clusters	.787	.619
Tradtionalist * Ward Method 4 clusters	.318	.101

MEANS TABLES=Income Age Q18g Genderdummy LesiureTechSavvyRev LesiureTradtionalistRev Technologysavvy Tradtionalist Q18d Q18dd Q18b Q18q BY CLU4_1
 /CELLS=MEAN COUNT STDDEV
 /STATISTICS ANOVA.

Case Processing Summary

	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Income * Ward Method 4 clusters	325	59.9%	218	40.1%	543	100.0%
Age * Ward Method 4 clusters	325	59.9%	218	40.1%	543	100.0%
Q18g. How often Film noir films * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Genderdummy * Ward Method 4 clusters	325	59.9%	218	40.1%	543	100.0%
LesiureTechSavvyRev * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
LesiureTradtionalistRev * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%

Technology savvy * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Traditionalist * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Q18d. How often Science fiction * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Q18dd. How often Super Hero films * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Q18b. How often Westerns * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%
Q18q. How often Chick flicks * Ward Method 4 clusters	326	60.0%	217	40.0%	543	100.0%

Ward Method 4 clusters		Income	Age	Q18g. How often Film noir films	Genderdummy
1	Mean	4.54	34.68	1.76	.6667
	N	108	108	109	108
	Std. Deviation	2.285	11.438	1.026	.47360
2	Mean	5.38	40.52	2.09	.5652
	N	69	69	69	69
	Std. Deviation	2.527	11.565	1.222	.49936
3	Mean	5.06	32.71	2.45	.5833
	N	96	96	96	96
	Std. Deviation	2.180	10.791	1.421	.49559
4	Mean	4.17	30.71	1.69	.6538
	N	52	52	52	52
	Std. Deviation	2.194	8.997	1.001	.48038
Total	Mean	4.81	34.70	2.02	.6185
	N	325	325	326	325
	Std. Deviation	2.322	11.363	1.226	.48651

Ward Method 4 clusters		LesiureTechS avvyRev	LesiureTradti onalistRev	Technologys avvy	Tradtionalist
1	Mean	43.8807	29.9083	12.5596	16.1193
	N	109	109	109	109
	Std. Deviation	4.93049	5.28720	3.72537	4.65022
2	Mean	34.3188	35.9130	11.4493	18.5652
	N	69	69	69	69
	Std. Deviation	5.49998	5.78980	4.27901	4.86427
3	Mean	46.3750	39.2813	25.2292	18.0729
	N	96	96	96	96
	Std. Deviation	6.66846	5.88254	6.71131	4.67748
4	Mean	47.0769	27.1923	23.9038	14.0192
	N	52	52	52	52
	Std. Deviation	5.50880	6.26236	4.37578	4.95664
Total	Mean	43.1012	33.5061	17.8650	16.8773
	N	326	326	326	326
	Std. Deviation	7.37848	7.37386	8.04029	4.99141

Ward Method 4 clusters		Q18d. How often Science fiction	Q18dd. How often Super Hero films	Q18b. How often Westerns	Q18q. How often Chick flicks
1	Mean	3.43	2.87	2.00	2.73
	N	109	109	109	109
	Std. Deviation	1.363	1.434	.953	1.345
2	Mean	3.45	3.22	2.23	2.90
	N	69	69	69	69
	Std. Deviation	1.409	1.305	.910	1.487
3	Mean	3.55	3.44	2.30	3.29
	N	96	96	96	96
	Std. Deviation	1.329	1.360	1.087	1.465
4	Mean	3.81	3.38	1.81	3.06
	N	52	52	52	52
	Std. Deviation	1.597	1.705	1.049	1.577
Total	Mean	3.53	3.19	2.11	2.98
	N	326	326	326	326
	Std. Deviation	1.402	1.447	1.013	1.460

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Income * Ward	Between Groups (Combined)	57.429	3	19.143	3.636	.013
Method 4 clusters	Within Groups	1690.122	321	5.265		
	Total	1747.551	324			
Age * Ward	Between Groups (Combined)	3546.668	3	1182.223	9.912	.000
Method 4 clusters	Within Groups	38285.381	321	119.269		
	Total	41832.049	324			
Q18g. How often	Between Groups (Combined)	30.757	3	10.252	7.206	.000
Film noir films *	Within Groups	458.093	322	1.423		
Ward Method 4 clusters	Total	488.850	325			
Genderdummy *	Between Groups (Combined)	.630	3	.210	.886	.448
Ward Method 4 clusters	Within Groups	76.059	321	.237		
	Total	76.689	324			
LesiureTechSavvy	Between Groups (Combined)	7239.032	3	2413.011	74.320	.000
Rev * Ward	Within Groups	10454.627	322	32.468		
Method 4 clusters	Total	17693.660	325			
LesiureTradionalist	Between Groups (Combined)	7085.444	3	2361.815	71.840	.000
Rev * Ward	Within Groups	10586.044	322	32.876		
Method 4 clusters	Total	17671.488	325			
Technologysavvy	Between Groups (Combined)	13010.649	3	4336.883	174.572	.000
* Ward Method 4 clusters	Within Groups	7999.412	322	24.843		
	Total	21010.061	325			
Tradionalist *	Between Groups (Combined)	821.216	3	273.739	12.115	.000
Ward Method 4 clusters	Within Groups	7275.876	322	22.596		
	Total	8097.092	325			
Q18d. How often	Between Groups (Combined)	5.570	3	1.857	.944	.420
Science fiction *	Within Groups	633.623	322	1.968		
Ward Method	Total	639.193	325			
Q18dd. How often	Between Groups (Combined)	18.951	3	6.317	3.073	.028
Super Hero films *	Within Groups	661.874	322	2.056		
Ward Method 4 clusters	Total	680.825	325			
Q18b. How often	Between Groups (Combined)	10.636	3	3.545	3.539	.015
Westerns * Ward	Within Groups	322.606	322	1.002		
Method 4 clusters	Total	333.242	325			
Q18q. How often	Between Groups (Combined)	16.689	3	5.563	2.649	.049
Chick flicks *	Within Groups	676.235	322	2.100		
Ward Method 4	Total	692.923	325			

clusters					
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Measures of Association

	Eta	Eta Squared
Income * Ward Method 4 clusters	.181	.033
Age * Ward Method 4 clusters	.291	.085
Q18g. How often Film noir films * Ward Method 4 clusters	.251	.063
Genderdummy * Ward Method 4 clusters	.091	.008
LesiureTechSavvyRev * Ward Method 4 clusters	.640	.409
LesiureTraditionalistRev * Ward Method 4 clusters	.633	.401
Technologysavvy * Ward Method 4 clusters	.787	.619
Traditionalist * Ward Method 4 clusters	.318	.101

Q18d. How often Science fiction * Ward Method 4 clusters	.093	.009
Q18dd. How often Super Hero films * Ward Method 4 clusters	.167	.028
Q18b. How often Westerns * Ward Method 4 clusters	.179	.032
Q18q. How often Chick flicks * Ward Method 4 clusters	.155	.024

IV. Tabling

Table 1. Cluster Profiling

Cluster name (Cluster 4)→	1: Average	2: Traditionalist	3: Yea- Sayers	4: Tech Savvy	Total	F	Sig.
Variables	1 (109)	2 (69)	3 (96)	4 (52)	326		
4 Internal variables							
Tech Savvy	12.5596	11.4493	25.2292	23.9038	17.8650	174.572	<.001
Traditionalist	16.1193	18.5652	18.0729	40.0192	16.8773	12.115	<.001
Leisure Tech Savvy	43.8807	34.3188	46.3750	47.0769	43.1012	74.320	<.001
Leisure Traditionalist	29.9083	35.9130	39.2813	27.1923	33.5061	71.840	<.001
8 External Variables							
Q34: What is your annual income?	4.54	5.38	5.06	4.17	4.81	3.636	.013
Q30: Male=0, Female=1	.6667	.5652	.5833	.6538	.6185	.886	.448
Q3e1: Age	34.68	40.52	32.71	30.71	34.70	9.912	<.001
Q18b: How often western	2.00	2.23	2.30	1.81	2.11	3.539	.015
Q18d: How often sci-fi	3.43	3.45	3.55	3.81	3.53	.944	.420
Q18dd: How often superhero	2.87	3.22	3.44	3.38	3.19	3.073	.028
Q18g: How often film noir	1.76	2.09	2.45	1.69	2.02	7.206	<.001
Q18q: How often chick flicks	2.73	2.90	3.29	3.06	2.98	2.699	.049

Note. Post hoc tests were not run, so differences in means across the four clusters should be interpreted with caution.

V. Write-up

The Film and TV Usage National Survey 2015 (Jeffres & Neuendorf) was chosen for cluster analysis. Four internal or independent variables were made into additive scales. Scale one, named Tech savvy, includes six items all measured on a 7 point response scale where 1-Not at all like and 7-Very much like: I often watch videos on my cellphone (Q28a), I often search videos on YouTube to watch (Q28b), I often share videos via Facebook (28c), I often share videos on Instagram (Q28d), I like to watch TV shows on a laptop/tablet/phone when I'm stuck somewhere (Q28e), and I like to make short videos that I can share with others (29f) ($\alpha=.770$). Scale two, named Traditionalist, includes four items all measured on a 7 point Likert response scale where 1-completely disagree and 7-completely agree: I'm more a traditionalist, preferring to read physical copies of books (Q29b), I like the variety of entertainment available today, but sometimes feel it's too much (Q29c), I think that the new technology have begun to dominate our lives (Q29d), and I would still rather talk to people over the phone than text (Q29g) ($\alpha=.612$). Scale three, named Tech Savvy Leisure, includes six items all measured on an 8 point response scale where 1=never and 8=several times a day: Watch film not at a theater (Q3g), Surf the internet for pleasure, not work (Q3h), Check my email (Q3i), Go on Facebook (Q3j), Play video games on some device (Q3k), and Text family and friends rather than call them (Q3o) ($\alpha=.525$). Scale four, named Traditionalist Leisure, includes eight items measured on an 8 point response scale where 1=never and 8=several times each day: Listen to the radio (Q3b), read a magazine (Q3c), read a book (Q3d), read a newspaper (Q3e), go out to see a film in a theater (Q3f), go to see live musical concert/ events (Q3L), watch television (Q3a), go to see a live play preformed in a theater (Q3m) ($\alpha=.695$).

The eight external or “profiling” variables include: Income, age, gender (femaleness), how often film noir (Q18g), how often sci-fi (Q18d), how often superhero (Q18dd), how often western (Q18b), and how often chick flicks (Q18a) (the Q18 items are all measured on a 6 point response scale, where 1-never [watch] and 6-[watch] all the time).

A hierarchical agglomerative cluster analysis was performed to discover the natural grouping of the participants. A four cluster solution was chosen using Ward’s Method (with squared Euclidian distances). The choice of four clusters was supported by examination of changes in the agglomeration coefficients from the agglomeration table. Dendrogram and icicle plots were run to give a visual representation of the data clusters. MEANS with ANOVA analyses were conducted (a) to examine the cluster sizes to make sure all clusters had a reasonable n , and (b) to examine the differences among the four clusters with regard to all four internal variables. As expected, all internal/clustering variables were significantly different among the four clusters. The four clusters have been named: “Average”, “Traditional”, “Yea-sayers”, and “Tech Savvy” (See Table 1). To further profile the four clusters, a complementary set of ANOVA analyses was conducted to test the significance of the differences among the four clusters against the eight demographic/external variables. All four of the internal variables showed highly significant differences across the four clusters ($p < .001$). Of the external variables, all showed significant differences ($p < .05$) across the four clusters, but gender (femaleness) and sci-fi were not significant.

Cluster 1 ($n=109$) is labeled “Average” because this group appeared to be average for each variable. Cluster 2 ($n=69$) is labeled “Traditional” because of the high means for the traditional leisure and traditional media scales. This cluster also tends to be rich, older, and likes film noir. Cluster 3 ($n=96$) is labeled “yea-sayers” because of the high means for all variables.

This group tends to report liking everything, but not the western genre. Cluster 4 ($n=52$) is labeled “Tech Savvy” because of the high means for technology use and technology leisure scales. This group also tends to be the youngest, lowest income, and does not like film noir or sci-fi genres.