Discriminant Analysis Presentation

COM 731

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I. Model

Dataset: National Community Study 2006 (Jeffres)

Independent Variables (0-10):

Q2: Time lived there
Q4: Community QOL
Q5: Neighborhood QOL
Q6: Value Family
Q7: Value Work
Q8: Value Friends
Q9: Value neigh-community
Q10: Value religion
Q11: Value ethnic-racial heritage
Q13: Value hobbies-leisure
Q14: Value organizations
Q15: Value personal-pol philosophy
Q16: Often talk with neighbors on street
Q17: Talk with neighbors more than most
Q18: Greet passersby

DFs

Dependent Variable:

Q103: Marital Status
1="Married"
2="Divorced"
3="Widowed"
5="Never Been Married "
* (the original #4 "Separated" was omitted due to too few responses)

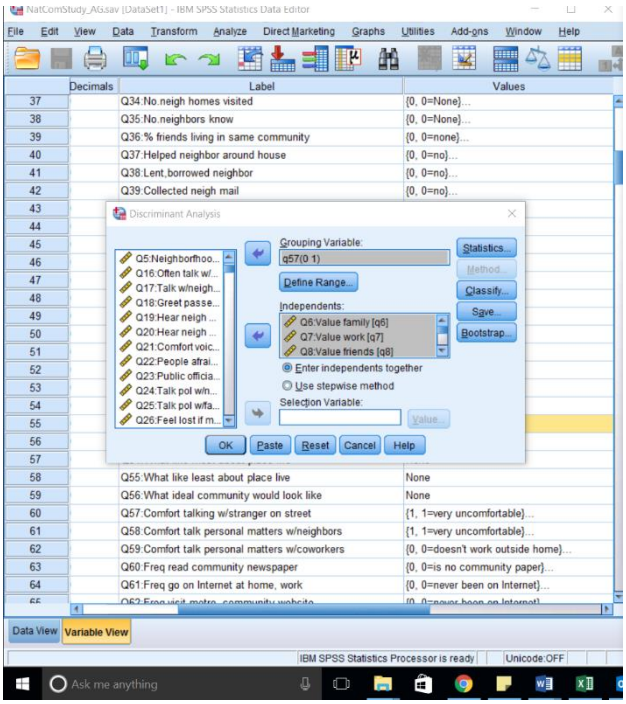
Key:

Q2: Time lived there: Recoded so that answers are 1 year, 3 years, 8 years, 15.5 years, 25.5 years, 35.5 years, 45.5 years, and 50 years
(*Recoded from: 1=less than a year, 2=1-5yr, 3=6-10yr, 4=11-20yr, 5=21-30yr, 6=31-40yr, 7=41-50yr, 8=more than 50yr)
Q4: Community QOL (0=worst, 10=best)
Q5: Neighborhood QOL (0=worst, 10=best)
Q6: Value Family (0=totally unimportant, 10=extremely important)
Q7: Value Work (0=totally unimportant, 10=extremely important)
Q8: Value Friends (0=totally unimportant, 10=extremely important)
Q9: Value neigh-community (0=totally unimportant, 10=extremely important)
Q10: Value religion (0=totally unimportant, 10=extremely important)
Q11: Value ethnic-racial heritage (0=totally unimportant, 10=extremely important)
Q13: Value hobbies-leisure (0=totally unimportant, 10=extremely important)
Q14: Value organizations (0=totally unimportant, 10=extremely important)
Q15: Value personal-pol philosophy (0=totally unimportant, 10=extremely important)
Q16: Often talk with neighbors on street (0=completely disagree, 10=completely agree)
Q17: Talk with neighbors more than most (0=completely disagree, 10=completely agree)
Q18: Greet passersby (0=completely disagree, 10=completely agree)

II. Running SPSS

Analyze -> Classify -> Discriminant

- Place dependent variable into the “Grouping variable” box
- “Define range” is used to enter the minimum and maximum values for your DV (1 to 5 in our case)
- Place the independent variable into the “Independents” box
- Click the “Enter independents together” box



Then, Click on “Statistics”

- Under “Descriptives”, check all - “means”, “univariate ANOVA”, and Box’s M”

- Under “function coefficients” check “Fisher’s”

- Under “Matrices” click “within-group correlation”, “within-groups covariance” and “total covariance”

-Click Continue

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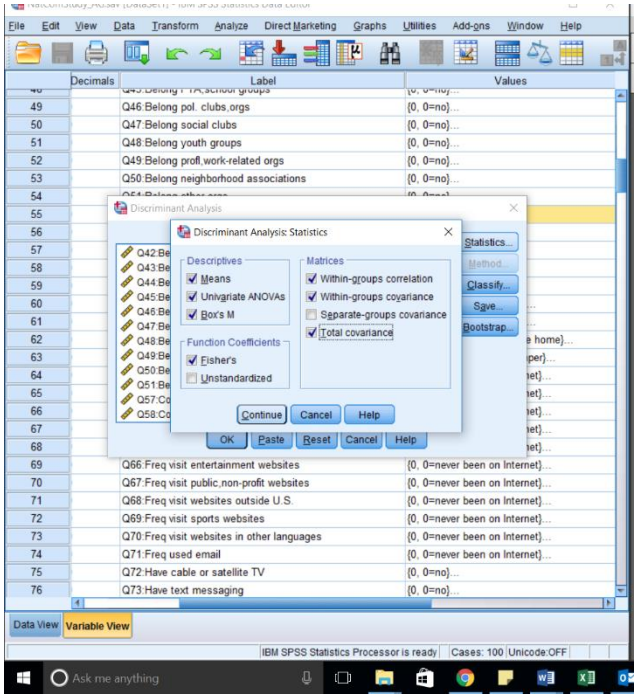


Then Click on “Classify”

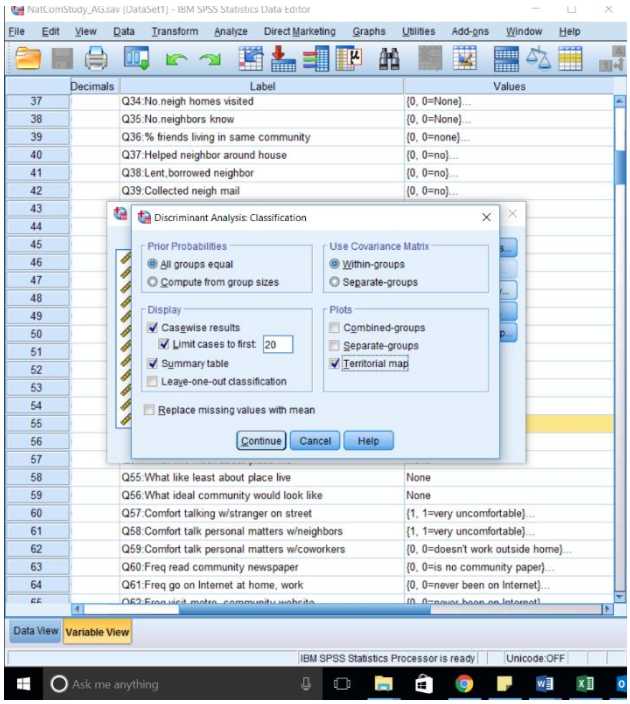
- Under “Prior Probabilities” check “all groups equal”

- Under “Display” check “casewise results”, “limit cases to first 20”, and “summary table”

-Under “Use Covariance Matrix” choose “Within-groups”

-Under “Plots” check “Territorial-map”

-Click Continue



->-> Then click “OK” to run the analysis

(or “Paste”, which will paste the syntax into a syntax file, and you can run from there)

III. SPSS Output

```
Recoding
RECODE q2 (1=1) (2=3) (3=8) (4=15.5) (5=25.5) (6=35.5) (7=45.5) (8=50) INTO
Q2_RecodedTLT.
VARIABLE LABELS  Q2_RecodedTLT 'Q2_RecodedTLT'.
EXECUTE.

DISCRIMINANT
  /GROUPS=q103(1 5)
  /VARIABLES=Q2_RecodedTLT q4 q5 q6 q7 q8 q9 q10 q11 q13 q14 q15 q16 q17 q18
  /ANALYSIS ALL
  /PRIORS EQUAL
  /STATISTICS=MEAN STDDEV UNIVF BOXM COEFF CORR COV TCOV TABLE
  /PLOT=MAP
  /PLOT=CASES(20)
  /CLASSIFY=NONMISSING POOLED.
```

Discriminant

```
[DataSet1] D:\NatComStudy2_AG.sav
```

Analysis Case Processing Summary

Unweighted Cases		N	Percent
Valid		348	73.0
Excluded	Missing or out-of-range group codes	31	6.5
	At least one missing discriminating variable	79	16.6
	Both missing or out-of-range group codes and at least one missing discriminating variable	19	4.0
	Total	129	27.0
Total		477	100.0

Group Statistics

Q103:Marital status		Mean	Std. Deviation	Valid N (listwise)	
				Unweighted	Weighted
1=married	Q2_RecodedTLT	18.2871	14.70401	209	209.000
	Q4:Community QOL	7.8086	1.84018	209	209.000
	Q5:Neighborfhood QOL	8.0383	1.88579	209	209.000
	Q6:Value family	9.5933	1.54489	209	209.000
	Q7:Value work	7.2392	2.76137	209	209.000
	Q8:Value friends	8.0526	2.06670	209	209.000
	Q9:Value neigh-community	7.4450	2.02344	209	209.000
	Ql0:Value religion	7.6938	3.00032	209	209.000
	Q11:Value ethnic-racial heritage	5.9187	3.27697	209	209.000
	Ql3:Value hobbies-leisure	7.2392	2.15509	209	209.000
	Q14:Value organizations	5.5837	3.03250	209	209.000
	Q15:Value personal-pol.philosophy	6.7416	2.52111	209	209.000
	Q16:Often talk w/neighbors on street	6.4880	3.10259	209	209.000
	Q17:Talk w/neighbors more than most	4.7033	3.14979	209	209.000
	Q18:Greet passersby	7.6172	2.84991	209	209.000
2=divorced	Q2_RecodedTLT	14.3452	14.21803	42	42.000
	Q4:Community QOL	7.1905	2.01504	42	42.000
	Q5:Neighborfhood QOL	7.4762	2.07468	42	42.000
	Q6:Value family	9.5952	1.01356	42	42.000
	Q7:Value work	6.5476	2.80420	42	42.000
	Q8:Value friends	8.2143	2.14744	42	42.000
	Q9:Value neigh-community	7.1667	2.10593	42	42.000
	Ql0:Value religion	6.0238	3.92297	42	42.000
	Q11:Value ethnic-racial heritage	5.6667	3.64703	42	42.000
	Ql3:Value hobbies-leisure	7.0952	2.04593	42	42.000
	Q14:Value organizations	4.2143	3.62603	42	42.000
	Q15:Value personal-pol.philosophy	7.1905	2.79580	42	42.000

	Q16:Often talk w/neighbors on street	6.9524	2.87930	42	42.000
	Q17:Talk w/neighbors more than most	4.4286	3.40117	42	42.000
	Q18:Greet passersby	7.6429	2.66707	42	42.000
3=widowed	Q2_RecodedTLT	25.5200	15.58878	25	25.000
	Q4:Community QOL	8.5200	1.73494	25	25.000
	Q5:Neighborfhood QOL	8.2000	1.65831	25	25.000
	Q6:Value family	8.2800	2.79165	25	25.000
	Q7:Value work	5.7200	3.91067	25	25.000
	Q8:Value friends	8.7200	1.67133	25	25.000
	Q9:Value neigh-community	8.8400	1.86369	25	25.000
	Ql0:Value religion	8.8000	1.97906	25	25.000
	Q11:Value ethnic-racial heritage	7.9600	2.22636	25	25.000
	Ql3:Value hobbies-leisure	8.5200	1.66132	25	25.000
	Q14:Value organizations	6.1200	3.91918	25	25.000
	Q15:Value personal-pol.philosophy	7.9200	2.10000	25	25.000
	Q16:Often talk w/neighbors on street	6.8800	2.78867	25	25.000
	Q17:Talk w/neighbors more than most	4.8400	2.95353	25	25.000
	Q18:Greet passersby	7.9600	3.15542	25	25.000
5=never been married	Q2_RecodedTLT	16.9653	15.16141	72	72.000
	Q4:Community QOL	7.3472	1.88515	72	72.000
	Q5:Neighborfhood QOL	7.4444	1.88313	72	72.000
	Q6:Value family	8.9306	2.31545	72	72.000
	Q7:Value work	7.7361	2.49503	72	72.000
	Q8:Value friends	7.8194	2.33363	72	72.000
	Q9:Value neigh-community	6.9583	2.04483	72	72.000
	Ql0:Value religion	6.8333	3.65405	72	72.000
	Q11:Value ethnic-racial heritage	6.0139	3.55041	72	72.000
	Ql3:Value hobbies-leisure	7.5139	2.31342	72	72.000
	Q14:Value organizations	4.7500	3.47932	72	72.000
	Q15:Value personal-pol.philosophy	6.5694	2.97324	72	72.000

	Q16:Often talk w/neighbors on street	6.0000	3.42320	72	72.000
	Q17:Talk w/neighbors more than most	3.8194	3.12791	72	72.000
	Q18:Greet passersby	6.9306	3.09168	72	72.000
Total	Q2_RecodedTLT	18.0575	14.94277	348	348.000
	Q4:Community QOL	7.6897	1.88616	348	348.000
	Q5:Neighborfhood QOL	7.8592	1.90714	348	348.000
	Q6:Value family	9.3621	1.83024	348	348.000
	Q7:Value work	7.1494	2.84581	348	348.000
	Q8:Value friends	8.0718	2.11159	348	348.000
	Q9:Value neigh-community	7.4109	2.06678	348	348.000
	Ql0:Value religion	7.3937	3.27204	348	348.000
	Q11:Value ethnic-racial heritage	6.0546	3.34989	348	348.000
	Ql3:Value hobbies-leisure	7.3707	2.16414	348	348.000
	Q14:Value organizations	5.2845	3.30262	348	348.000
	Q15:Value personal-pol.philosophy	6.8448	2.63955	348	348.000
	Q16:Often talk w/neighbors on street	6.4713	3.12594	348	348.000
	Q17:Talk w/neighbors more than most	4.4971	3.17001	348	348.000
	Q18:Greet passersby	7.5029	2.90632	348	348.000

Pooled Within-Groups Matrices[a]

		Q2_	Q4:	Q5:	Q6:	Q7:	Q8:	Q9:	Ql0:	Q11:	Ql3:	Q14:	Q15:	Q16:	Q17:	Q18:
Covariance	Q2_	219.222	3.520	2.867	.734	1.229	5.577	6.126	7.317	7.655	4.201	6.929	4.804	6.996	6.692	1.881
	Q4	3.520	3.475	2.497	.843	.350	1.170	1.978	.797	.362	1.169	1.222	.820	1.443	.957	1.372
	Q5:	2.867	2.497	3.587	.855	.357	1.211	2.050	.954	.773	1.140	1.769	.827	1.894	1.335	1.423

	Q6:	.734	.843	.855	3.216	1.428	1.314	.973	1.921	.790	.747	.669	.775	.720	-.057	.632
	Q7:	1.229	.350	.357	1.428	7.900	1.006	1.029	1.216	1.226	.602	.105	.720	-.166	.112	.232
	Q8:	5.577	1.170	1.211	1.314	1.006	4.451	1.913	1.621	1.639	1.540	2.097	1.119	1.445	1.046	1.713
	Q9:	6.126	1.978	2.050	.973	1.029	1.913	4.110	1.712	1.717	1.467	1.634	1.090	1.888	1.365	1.264
	Ql0:	7.317	.797	.954	1.921	1.216	1.621	1.712	10.306	4.864	1.233	3.206	1.496	1.694	1.412	1.156
	Q11:	7.655	.362	.773	.790	1.226	1.639	1.717	4.864	11.026	1.946	2.949	1.192	1.339	1.642	.513
	Ql3:	4.201	1.169	1.140	.747	.602	1.540	1.467	1.233	1.946	4.604	1.662	1.192	2.056	1.369	1.516
	Q14:	6.929	1.222	1.769	.669	.105	2.097	1.634	3.206	2.949	1.662	10.698	2.521	2.108	2.138	2.328
	Q15:	4.804	.820	.827	.775	.720	1.119	1.090	1.496	2.072	1.192	2.521	6.907	.475	.400	.418
	Q16:	6.996	1.443	1.894	.720	-.166	1.445	1.888	1.694	1.339	2.056	2.108	.475	9.770	6.333	4.094
	Q17:	6.692	.957	1.335	-.057	.112	1.046	1.365	1.412	1.642	1.369	2.138	.400	6.333	10.006	3.182
	Q18:	1.881	1.372	1.423	.632	.232	1.713	1.264	1.156	.513	1.516	2.328	.418	4.094	3.182	8.426
Correlation	Q2_	1.000	.128	.102	.028	.030	.179	.204	.154	.156	.132	.143	.123	.151	.143	.044
	Q4:	.128	1.000	.707	.252	.067	.298	.524	.133	.059	.292	.200	.167	.248	.162	.253
	Q5:	.102	.707	1.000	.252	.067	.303	.534	.157	.123	.280	.286	.166	.320	.223	.259
	Q6:	.028	.252	.252	1.000	.283	.347	.268	.334	.133	.194	.114	.164	.128	-.010	.121
	Q7:	.030	.067	.067	.283	1.000	.170	.181	.135	.131	.100	.011	.098	-.019	.013	.028
	Q8:	.179	.298	.303	.347	.170	1.000	.447	.239	.234	.340	.304	.202	.219	.157	.280

Q9:	.204	.524	.534	.268	.181	.447	1.000	.263	.255	.337	.246	.205	.298	.213	.215
Ql0:	.154	.133	.157	.334	.135	.239	.263	1.000	.456	.179	.305	.177	.169	.139	.124
Q11:	.156	.059	.123	.133	.131	.234	.255	.456	1.000	.273	.271	.237	.129	.156	.053
Ql3:	.132	.292	.280	.194	.100	.340	.337	.179	.273	1.000	.237	.211	.307	.202	.243
Q14:	.143	.200	.286	.114	.011	.304	.246	.305	.271	.237	1.000	.293	.206	.207	.245
Q15:	.123	.167	.166	.164	.098	.202	.205	.177	.237	.211	.293	1.000	.058	.048	.055
Q16:	.151	.248	.320	.128	-.019	.219	.298	.169	.129	.307	.206	.058	1.000	.641	.451
Q17:	.143	.162	.223	-.010	.013	.157	.213	.139	.156	.202	.207	.048	.641	1.000	.347
Q18:	.044	.253	.259	.121	.028	.280	.215	.124	.053	.243	.245	.055	.451	.347	1.000

a. The covariance matrix has 344 degrees of freedom.

Tests of Equality of Group Means

	Wilks' Lambda	F	df1	df2	Sig.
Q2_RecodedTLT	.973	3.144	3	344	.025
Q4:Community QOL	.968	3.751	3	344	.011
Q5:Neighborfhood QOL	.978	2.616	3	344	.051
Q6:Value family	.952	5.819	3	344	.001
Q7:Value work	.967	3.914	3	344	.009
Q8:Value friends	.990	1.200	3	344	.310
Q9:Value neigh-community	.954	5.560	3	344	.001
Ql0:Value religion	.954	5.488	3	344	.001
Q11:Value ethnic-racial heritage	.974	3.055	3	344	.029
Ql3:Value hobbies-leisure	.975	2.990	3	344	.031
Q14:Value organizations	.972	3.267	3	344	.022
Q15:Value personal-pol.philosophy	.983	2.008	3	344	.113

Q16:Often talk w/neighbors on street	.991	1.022	3	344	.383
Q17:Talk w/neighbors more than most	.987	1.502	3	344	.214
Q18:Greet passersby	.989	1.280	3	344	.281

Covariance Matrices[a]

Q103: Marital status		Q2_RecodedTLT	Q4:Community QOL	Q5:Neighborhood QOL	Q6: Value family	Q7: Value work	Q8: Value friends	Q9: Value neigh-community	Ql0: Value religion	Q11:Value ethnic-racial heritage	Ql3: Value hobbies-leisure	Q14: Value organizations	Q15:Value personal-pol.philosophy	Q16: Often talk w/neighbors on street	Q17: Talk w/neighbors more than most	Q18:Greet passersby
Total	Q2_	223.286	4.254	3.316	.171	.599	5.868	7.058	8.794	8.778	4.856	7.962	5.234	7.048	7.032	2.193
	Q4:	4.254	3.558	2.561	.804	.263	1.207	2.096	1.019	.490	1.225	1.385	.868	1.461	1.037	1.427
	Q5:	3.316	2.561	3.637	.872	.306	1.229	2.121	1.125	.820	1.145	1.902	.843	1.908	1.416	1.477
	Q6:	.171	.804	.872	3.350	1.470	1.277	.891	1.848	.608	.612	.658	.705	.740	.004	.662
	Q7:	.599	.263	.306	1.470	8.099	.888	.838	1.108	1.035	.509	.047	.539	-.298	.009	.109
	Q8:	5.868	1.207	1.229	1.277	.888	4.459	1.982	1.675	1.711	1.570	2.124	1.181	1.485	1.085	1.751
	Q9:	7.058	2.096	2.121	.891	.838	1.982	4.272	1.942	1.911	1.565	1.793	1.205	1.944	1.458	1.352
	Ql0:	8.794	1.019	1.125	1.848	1.108	1.675	1.942	10.706	5.059	1.344	3.556	1.548	1.699	1.562	1.257
	Q11:	8.778	.490	.820	.608	1.035	1.711	1.911	5.059	11.222	2.109	3.068	2.196	1.363	1.667	.560

Ql3:	4.856	1.225	1.145	.612	.509	1.570	1.565	1.344	2.109	4.684	1.713	1.259	2.041	1.351	1.510
Q14:	7.962	1.385	1.902	.658	.047	2.124	1.793	3.556	3.068	1.713	10.907	2.531	2.108	2.262	2.401
Q15:	5.234	.868	.843	.705	.539	1.181	1.205	1.548	2.196	1.259	2.531	6.967	.549	.446	.482
Q16:	7.048	1.461	1.908	.740	-.298	1.485	1.944	1.699	1.363	2.041	2.108	.549	9.772	6.353	4.137
Q17:	7.032	1.037	1.416	.004	.009	1.085	1.458	1.562	1.667	1.351	2.262	.446	6.353	10.049	3.259
Q18:	2.193	1.427	1.477	.662	.109	1.751	1.352	1.257	.560	1.510	2.401	.482	4.137	3.259	8.447

a. The total covariance matrix has 347 degrees of freedom.

Analysis 1

Box's Test of Equality of Covariance Matrices

Log Determinants

Q103:Marital status	Rank	Log Determinant
1=married	15	25.710
2=divorced	15	25.843
3=widowed	15	19.442
5=never been married	15	28.012
Pooled within-groups	15	27.482

The ranks and natural logarithms of determinants printed are those of the group covariance matrices.

Test Results

Box's M		591.380
F	Approx.	1.389
	df1	360
	df2	26167.007
	Sig.	.000

Tests null hypothesis of equal population covariance matrices.

Summary of Canonical Discriminant Functions

Eigenvalues

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.178[a]	51.3	51.3	.389
2	.095[a]	27.5	78.7	.295
3	.074[a]	21.3	100.0	.262

a. First 3 canonical discriminant functions were used in the analysis.

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 3	.721	110.227	45	.000
2 through 3	.850	54.855	28	.002
3	.931	24.073	13	.030

Standardized Canonical Discriminant Function Coefficients

	Function		
	1	2	3
Q2_RecodedTLT	.192	.196	-.028
Q4:Community QOL	.349	.218	-.125
Q5:Neighborfhood QOL	-.265	.295	.027
Q6:Value family	-.701	.166	.530
Q7:Value work	-.266	.174	-.708
Q8:Value friends	.035	-.326	.065
Q9:Value neigh-community	.409	-.100	.406
Ql0:Value religion	.369	.553	-.073
Q11:Value ethnic-racial heritage	.165	-.300	-.019
Ql3:Value hobbies-leisure	.268	-.129	-.407
Q14:Value organizations	-.049	.472	-.099
Q15:Value personal-pol.philosophy	.103	-.366	.287
Q16:Often talk w/neighbors on street	-.132	-.500	-.035

Q17:Talk w/neighbors more than most	-.120	.370	.319
Q18:Greet passersby	.026	.013	.259

Structure Matrix

	Function		
	1	2	3
Q9:Value neigh-community	.450*	.142	.378
Q6:Value family	-.432*	.258	.389
Q11:Value ethnic-racial heritage	.386*	-.024	.024
Ql3:Value hobbies-leisure	.371*	-.075	-.113
Q2_RecodedTLT	.360*	.207	.052
Ql0:Value religion	.341	.522*	.123
Q14:Value organizations	.207	.452*	.134
Q5:Neighborfhood QOL	.131	.385*	.276
Q4:Community QOL	.315	.348*	.215
Q7:Value work	-.264	.195	-.495*
Q18:Greet passersby	.072	.086	.359*
Q17:Talk w/neighbors more than most	.052	.196	.348*
Q16:Often talk w/neighbors on street	.040	-.070	.332*
Q15:Value personal-pol.philosophy	.226	-.170	.276*
Q8:Value friends	.171	-.054	.259*

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions

Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

Functions at Group Centroids

Q103:Marital status	Function 1	Function 2	Function 3
1=married	-.097	.225	.075
2=divorced	-.367	-.664	.367
3=widowed	1.466	-.162	.183
5=never been married	-.014	-.208	-.496

Unstandardized canonical discriminant functions evaluated at group means

Classification Statistics

Classification Processing Summary

Processed		477
Excluded	Missing or out-of-range group codes	0
	At least one missing discriminating variable	98
Used in Output		379

Prior Probabilities for Groups

Q103:Marital status	Prior	Cases Used in Analysis	
		Unweighted	Weighted
1=married	.250	209	209.000
2=divorced	.250	42	42.000
3=widowed	.250	25	25.000
5=never been married	.250	72	72.000
Total	1.000	348	348.000

Classification Function Coefficients

	Q103:Marital status			
	1=married	2=divorced	3=widowed	5=never been married
Q2_RecodedTLT	.027	.011	.042	.023
Q4:Community QOL	.644	.470	.884	.648
Q5:Neighborfhood QOL	.839	.742	.561	.751
Q6:Value family	2.088	2.197	1.473	1.846
Q7:Value work	.328	.225	.129	.437
Q8:Value friends	.358	.500	.447	.409
Q9:Value neigh-community	-.038	.010	.318	-.114
Ql0:Value religion	-.012	-.203	.099	-.064
Q11:Value ethnic-racial heritage	.066	.132	.178	.113
Ql3:Value hobbies-leisure	.528	.492	.726	.673
Q14:Value organizations	-.178	-.312	-.261	-.225
Q15:Value personal-pol.philosophy	.396	.541	.522	.397
Q16:Often talk w/neighbors on street	-.188	-.037	-.193	-.116
Q17:Talk w/neighbors more than most	.197	.133	.104	.086
Q18:Greet passersby	.368	.387	.390	.315
(Constant)	-24.174	-23.736	-24.460	-22.225

Fisher's linear discriminant functions

Casewise Statistics

			Highest Group					Second Highest Group			Discriminant Scores		
				P(D>d | G=g)									
	Case Number	Actual Group	Predicted Group	p	df	P(G=g | D=d)	Squared Mahalanobis Distance to Centroid	Group	P(G=g | D=d)	Squared Mahalanobis Distance to Centroid	Function 1	Function 2	Function 3
Original	3	3	3	.005	3	.985	12.875	5	.012	21.674	4.441	-.767	-1.730
	5	1	5**	.925	3	.396	.472	1	.344	.751	.193	.407	-.721

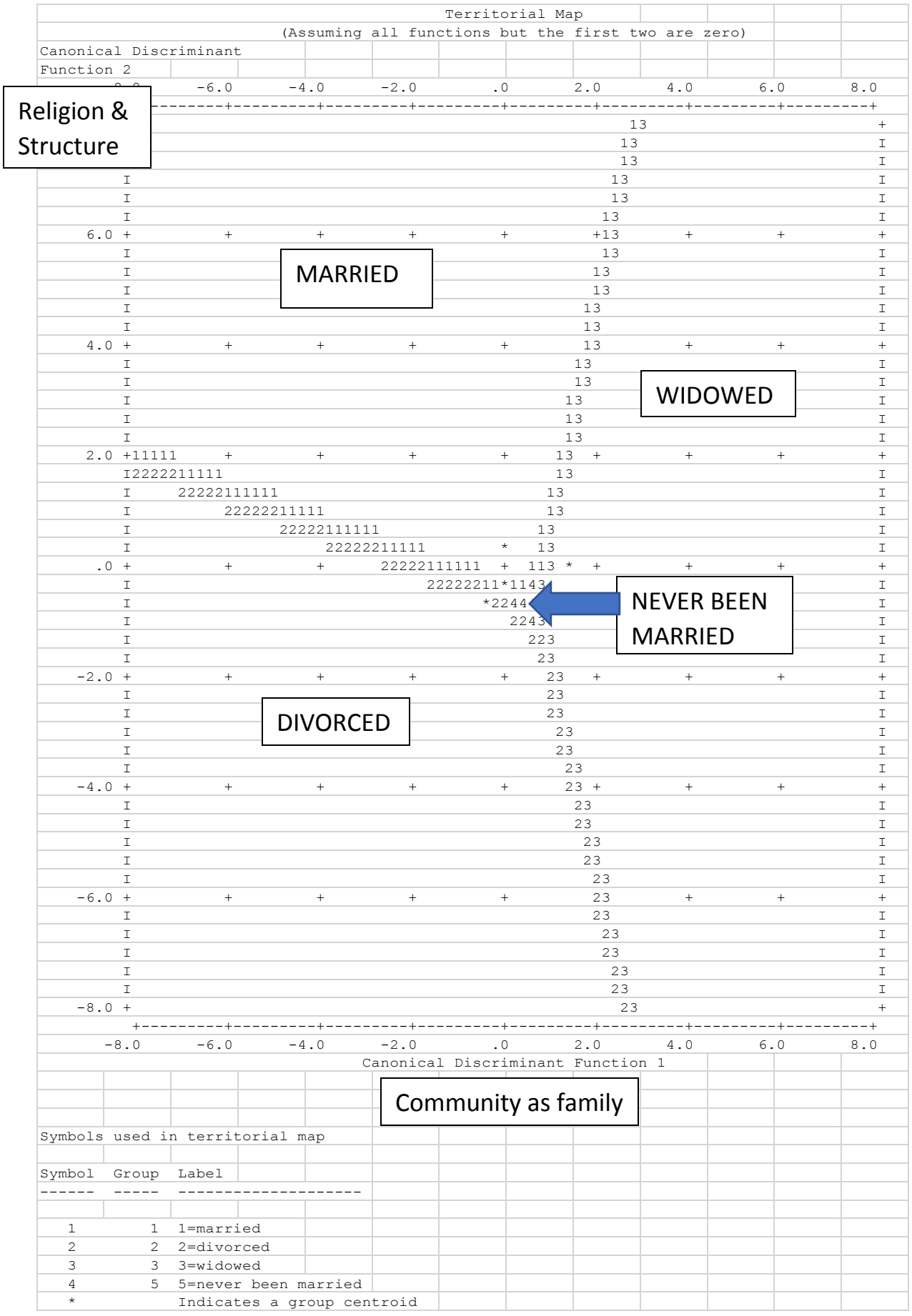
6	2	3**	.106	3	.424	6.124	1	.271	7.019	.869	.290	2.542
7	5	5	.331	3	.621	3.422	1	.200	5.684	-1.092	-.470	-1.976
11	5	5	.868	3	.416	.723	1	.362	.997	.055	.561	-.852
12	1	1	.682	3	.398	1.503	2	.276	2.230	.185	.401	1.256
13	1	2**	.965	3	.409	.272	5	.232	1.404	.086	-.906	.456
14	1	1	.930	3	.463	.449	5	.270	1.529	-.555	.710	.130
15	1	3**	.913	3	.506	.526	1	.203	2.347	1.171	-.160	.845
16	5	3**	.025	3	.625	9.364	5	.271	11.033	2.089	-2.459	-1.741
18	1	2**	.048	3	.458	7.910	1	.424	8.064	-.549	.652	2.846
20	2	2	.364	3	.714	3.186	5	.109	6.938	-.057	-2.193	1.234
22	1	2**	.867	3	.388	.727	5	.338	1.002	-.856	-.722	-.329
23	1	1	.959	3	.438	.308	5	.308	1.008	-.396	.644	-.130
24	3	3	.860	3	.544	.755	5	.237	2.417	1.499	-.553	-.592
25	1	1	.895	3	.395	.604	5	.333	.947	-.779	.350	-.275
26	1	3**	.933	3	.444	.434	1	.247	1.609	1.156	.360	-.073
27	ungrouped	5	.900	3	.478	.583	1	.262	1.783	-.512	-.347	-1.058
28	1	1	.657	3	.567	1.611	5	.239	3.339	-.586	1.392	.176
29	2	2	.969	3	.427	.250	5	.295	.991	-.584	-.878	-.030

**. Misclassified case

Classification Results[a]

			Predicted Group Membership				
		Q103:Marital status	1=married	2=divorced	3=widowed	5=never been married	Total
Original	Count	1=married	109	40	22	38	209
		2=divorced	3	23	4	12	42
		3=widowed	6	2	16	1	25
		5=never been married	18	13	10	31	72
		Ungrouped cases	12	6	4	9	31
	%	1=married	52.2	19.1	10.5	18.2	100.0
		2=divorced	7.1	54.8	9.5	28.6	100.0
		3=widowed	24.0	8.0	64.0	4.0	100.0
		5=never been married	25.0	18.1	13.9	43.1	100.0
		Ungrouped cases	38.7	19.4	12.9	29.0	100.0

a. 51.4% of original grouped cases correctly classified.


Territorial Map
(Assuming all functions but the first two are zero)
Canonical Discriminant Function 2
Religion & Structure
MARRIED
WIDOWED
NEVER BEEN MARRIED
DIVORCED
Community as family
Canonical Discriminant Function 1
Symbols used in territorial map
Symbol Group Label
1 1 1=married
2 2 2=divorced
3 3 3=widowed
4 5 5=never been married
* Indicates a group centroid

IV. Tabled Results

Table 1. Discriminant Functions

	Standardized canonical coefficients			Structure coefficients/Discrim loadings		
Independent Variables	DF1	DF2	DF3	DF1: Community as family	DF2: Religion and structure	DF3: Socially assertive
Q9:Value neigh-community	.409	-.100	.406	**.450***	.142	.378
Q6:Value family	-.701	.166	.530	**-.432***	.258	.389
Q11:Value ethnic-racial heritage	.165	-.300	-.019	**.386***	-.024	.024
Q13:Value hobbies-leisure	.268	-.129	-.407	**.371***	-.075	-.113
Q2:RecodedTLT	.192	.196	-.028	**.360***	.207	.052
Q10:Value religion	.369	.553	-.073	.341	**.522***	.123
Q14:Value organizations	-.049	.472	-.099	.207	**.452***	.134
Q5:Neighborfhood QOL	-.265	.295	.027	.131	**.385***	.276
Q4:Community QOL	.349	.218	-.125	.315	**.348***	.215
Q7:Value work	-.266	.174	-.708	-.264	.195	**-.495***
Q18:Greet passersby	.026	.013	.259	.072	.086	**.359***
Q17:Talk w/neighbors more than most	-.120	.370	.319	.052	.196	**.348***
Q16:Often talk w/neighbors on street	-.132	-.500	-.035	.040	-.070	**.332***
Q15:Value personal-political philosophy	.103	-.366	.287	.226	-.170	**.276***
Q8:Value friends	.035	-.326	.065	.171	-.054	**.259***

Pooled within-groups correlations between discriminating variables and standardized canonical discriminant functions
Variables ordered by absolute size of correlation within function.

*. Largest absolute correlation between each variable and any discriminant function

Table 2. Group Statistics

	DF1: Community as family	DF2: Religion and structure	DF3: Socially assertive
1. Married	-.097	.225	.075
2. Divorced	-.367	-.664	.367
3. Widowed	1.466	-.162	.183
5. Never Been Married	-.014	-.208	-.496
Wilk's Lambda	.721	.850	.931
Chi-Square	110.227	54.855	24.073
Sig.	.000	.002	.030
Eigenvalue	.178[a]	.095[a]	.074[a]
Canonical Correlation	.389	.295	.262

a. First 3 canonical discriminant functions were used in the analysis.

Table 3.
Classification Results

		Predicted Group Membership			
Observed Group	Size	1. Married	2. Divorced	3. Widowed	5. Never Been Married
1. Married	209	**109**	40	22	38
2. Divorced	42	3	**23**	4	12
3. Widowed	25	6	2	**16**	1
5. Never Been Married	72	18	13	10	**31**
Total	348	136	78	52	82

*51.4% of original grouped cases reported correctly

Press' $Q = \frac{[N-(nK)]^2}{N(K-1)}$

Where N=total sample size
n=number of observations correctly classified
K=number of groups

N=348
n=179
K=4

$=\frac{[348-(179*4)]^2}{348(4-1)}$

$=\frac{[348-716]^2}{1044}$

=129.7

Chi-squared Critical Value Table (df=1)	
.10 significance	2.706
.05 significance	3.841
.01 significance	6.635
.005 significance	7.879
.001 significance	10.83

➔ Press' Q of 129.7 far exceeds the chi-square at $p<.001$ level (critical value is 10.83)

V. Write-Up

This project applied a discriminant function analysis to assess whether one's marital status (dependent variable) could be predicted from a set of the individuals' values and perceptions about their communities and various relationships (independent variables). It seems probable that the nature and importance of one's living environment and types of relationships would be affected by marital status. A total of 15 discriminating variables were used, including time lived at current location, community QOL, neighborhood QOL, value family, value work, value friends, value neighborhood/community, value religion, value ethnic-racial heritage, value hobbies/leisure, value organizations, value political/personal philosophy, often talk with neighbors on street, talk with neighbors more than most, and greet passersby. The dependent variable, marital status, was divided into four groups, including married, divorced, widowed, and never been married. One marital status group, separated, was omitted due to small sample size (4 responses); Hair et al recommends at least 20 per group.

The analysis produced three discriminant functions, all of which were statistically significant at $p<.05$ (DF1<.001, DF2=.002, DF3=.030). The first discriminant function was labeled "Community as family" because the variables that loaded highly on this function were thought to indicate a strong reliance on the community and community-related bonds (value in neighborhood-community, value in ethnic-racial heritage, time lived there, value in hobbies-leisure), paired with a negative relationship with value of actual family. The group centroid of this function is notably much higher for the Widowed group than for any other group, so it makes sense that this group may display a tendency to form bonds outside of the actual family. The Wilks' Lambda, which examines how much the groups differ on the set of independent variables is .721 for this discriminant function.

The second discriminant function is labeled "Religion and structure", because the independent variables that loaded highly on this function are thought to represent a relatively high value towards religions and organizations; the Wilks' Lambda for this function is .850, and the Divorced group has a relatively low group centroid on this function, indicating that this group is not disposed to value religion and organizations. Additionally, the only positive centroid on this function is for the Married group, which also conforms with expectations.

The third discriminant function is labeled "Socially assertive", because the independent variables that loaded highly on this function indicate and assertiveness about talking with

neighbors and passers-by, along with a strong negative loading of valuing work. The Wilks' Lambda for this function is .931 and the group centroid is lowest for the "Never Been Married" group, indicating possibly that these individuals do not place a high value on interacting with neighbors and passers-by and tend to value work more. These results are summarized in Table 2.

Table 3 shows the classification results, including that 51.4% of results were classified correctly into the four groups using this discriminant analysis. The Press' Q is 129.7, which is greater than the chi-square at $p<.001$ level, which has a critical value of 10.83. This indicates that using the independent variables in this analysis to predict group membership produces a prediction that is significantly better than chance. It is worth noting that one assumption of discriminant analysis was violated, as there is a statistically significant Box's M. The significant F indicates that the homogeneity of variances/covariances of the DV groups show substantial group differences.