



1988 Chilean Elections

Voting Intentions in Chile

Team 6
Jason Andrew
Carrie Boyle
Greg Fries
Ramana Reddy



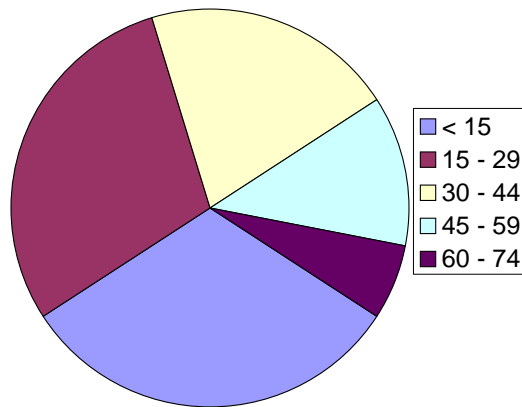
Agenda

- Background information-Carrie
- Data set-Jason
- Results of classification analysis-Ramana
- Implications of observations-Greg

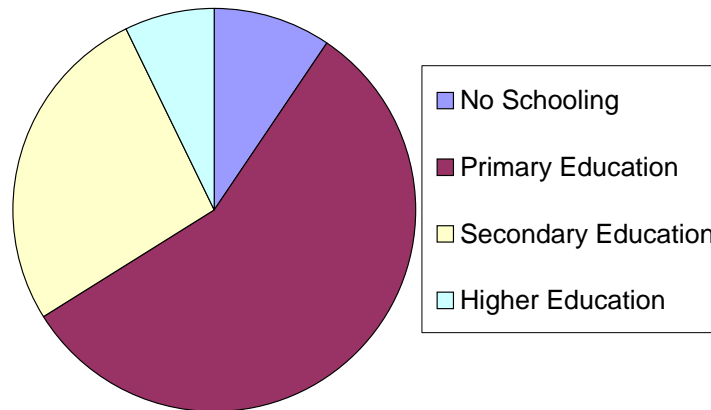
Chile - at a glance

- 1988 Population (Approx 9M):
 - 80.8% Urban
 - 50.6% Female

Age Distribution



Education of citizens > 25 years





Pinochet into power

- 1970 Allende becomes world's first democratically elected Marxist Communist
- 1973 Allende assassinated in CIA backed coup (Operation Condor) => Pinochet into power as a dictator
- Pinochet moves to suppress all opposition
 - banning all other political parties
 - suspending labor unions
 - severe prosecution and abuse of dissident people / groups
- 1981 begins an 8 year term under new constitution : termed a "transition to democracy."



Chile in 1998

- Past economic prosperity due to effects of free market actions (Fastest growing economy in Latin America)
- Assassination attempt wounds Pinochet in 1986
 - Reacts through implementation of heightened repression
 - Active elimination of perceived enemies / threats
- 1988 recession and economic slowdown
- In 1988 there was a plebiscite to determine if Pinochet would be the only candidate on the ballot for the scheduled 1989 presidential elections.



Agenda

- Background information-Carrie
- Data set-Jason
- Results of classification analysis-Ramana
- Implications of observations-Greg



Data Set

- Independent Variables
 - Region-1 of 5 different regions in which voters reside
 - Sex – Either male or female
 - Age- Voter age range 18-70
 - Education-Primary, secondary or college
 - Income- Monthly income in pesos
 - Population- Size of voter's town
 - Scale for support of Status Quo – Distribution showing the interest in electing Pinochet to office
 - Response Variable- Voting Intentions
 - 1 = Vote for Pinochet
 - 0 = Not vote for Pinochet

Data Set-2

Observation	Region	Population	Sex	Age	Education	Monthly Income in Pesos	Scale of Support For Status Quo	Voting Intentions
1	1	175000	1	65	1	35000	1.0082	1
2	1	175000	1	29	3	7500	-1.29617	0
3	1	175000	0	38	1	15000	1.23072	1
4	1	175000	0	49	1	35000	-1.03163	0
5	1	175000	0	23	2	35000	-1.10496	0

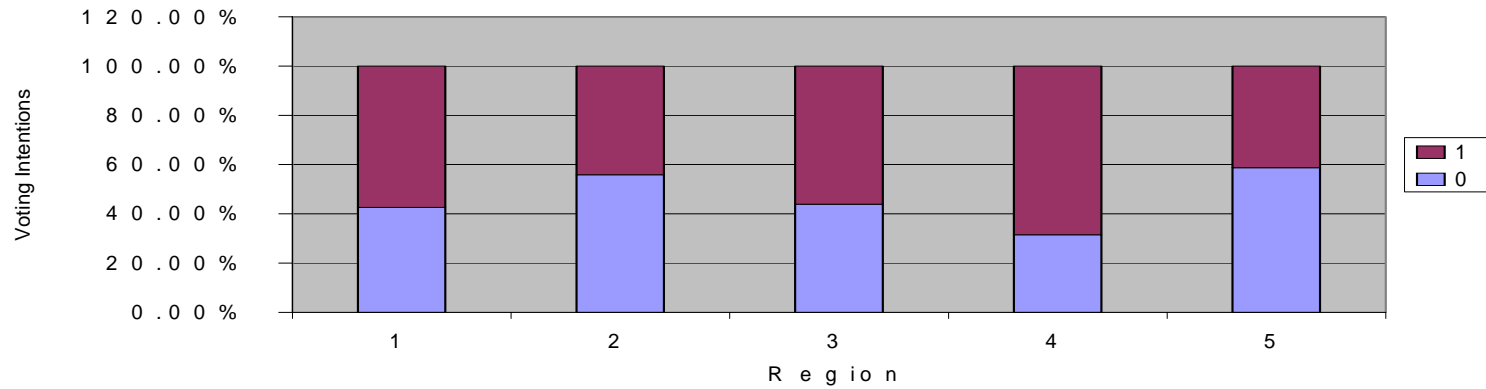
Summary measures for selected variables

	Population	Age	ly Income in Pesos
Count	1703	1703	1703
Mean	150716.383	38.063	36837.933
Median	175000.000	36.000	15000.000
Standard de	101362.843	14.882	42849.858
Variance	10274425903.595	221.485	1836110322.870

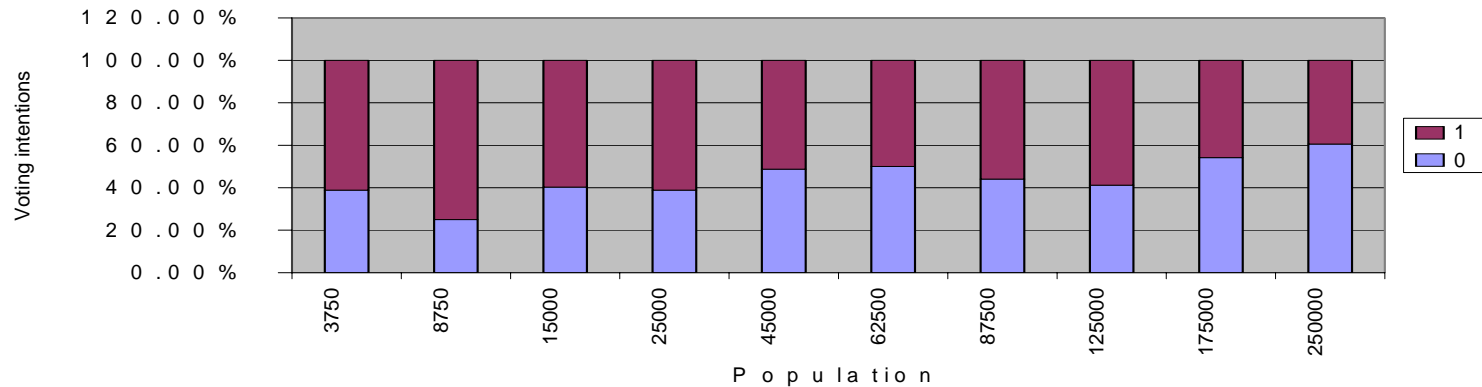
Count of Voting Intentions	Voting Intentions		
	0	1	Grand Total
Total	50.91%	49.09%	100.00%

Histogram-Region, Population

Histogram - Region and Voting intentions

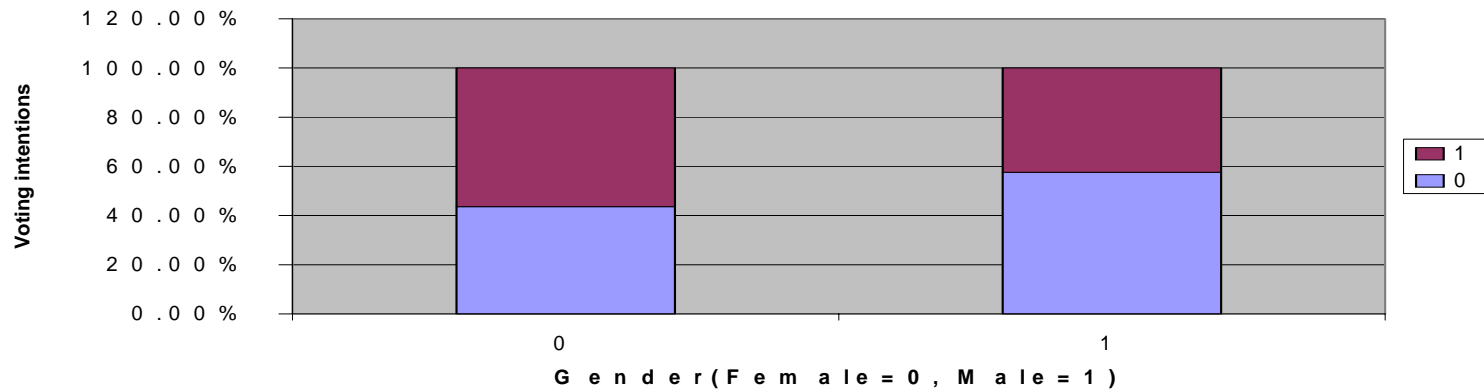


Histogram - Size of town and Voting intentions

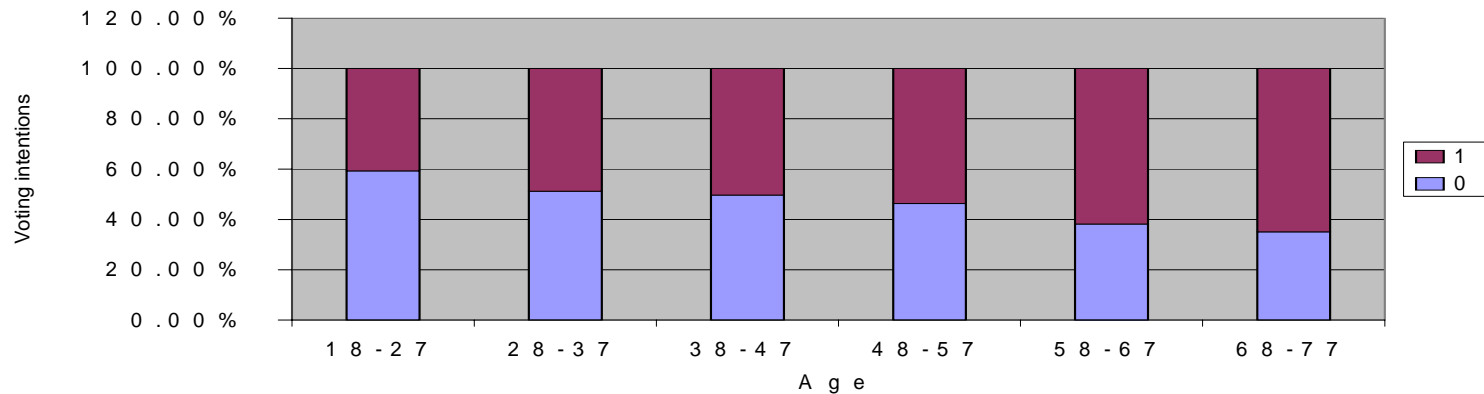


Histogram-Gender, Age

Histogram - Gender and Voting intentions

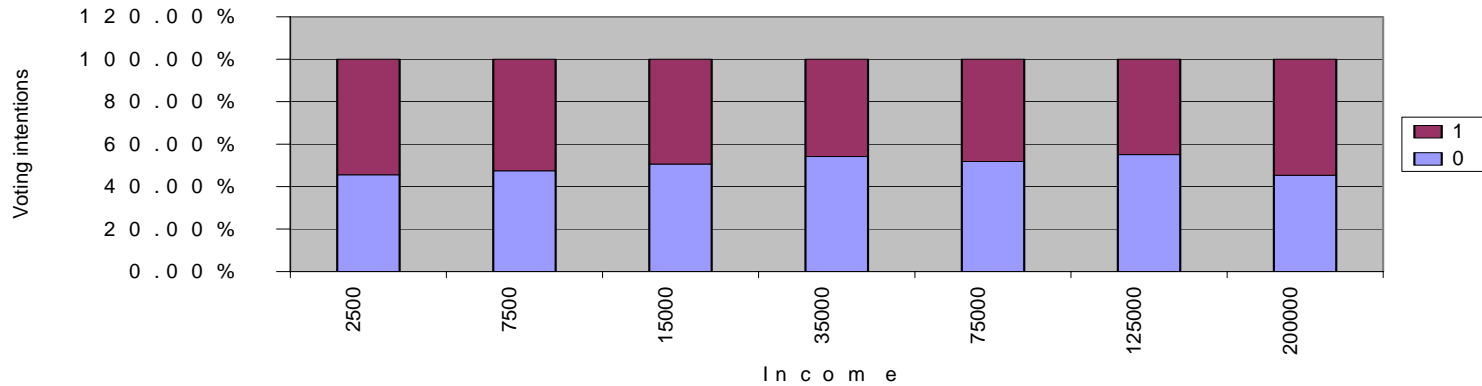


Histogram - Age and Voting intentions

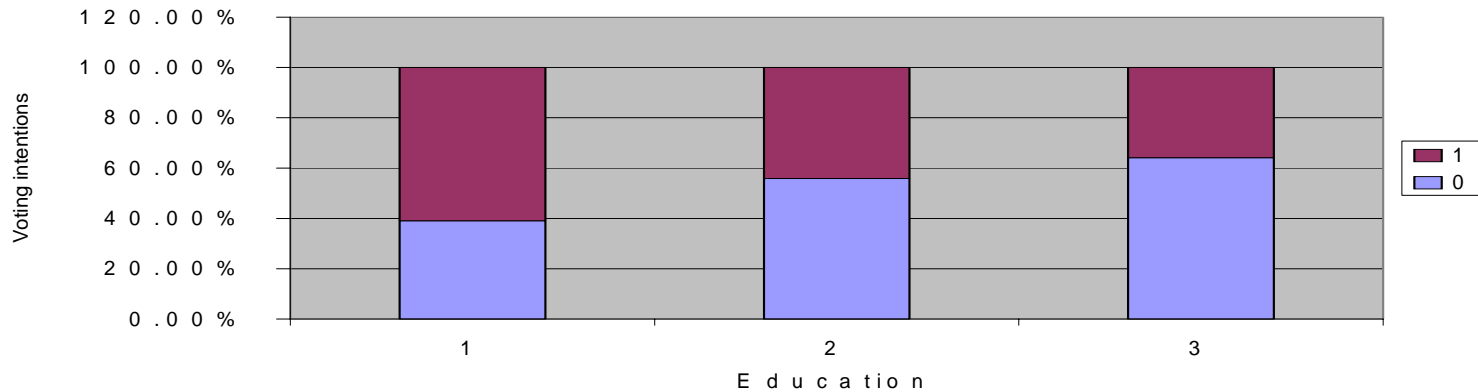


Histogram- Education, Income

Histogram - Income and Voting intentions



Histogram - Education and Voting intentions

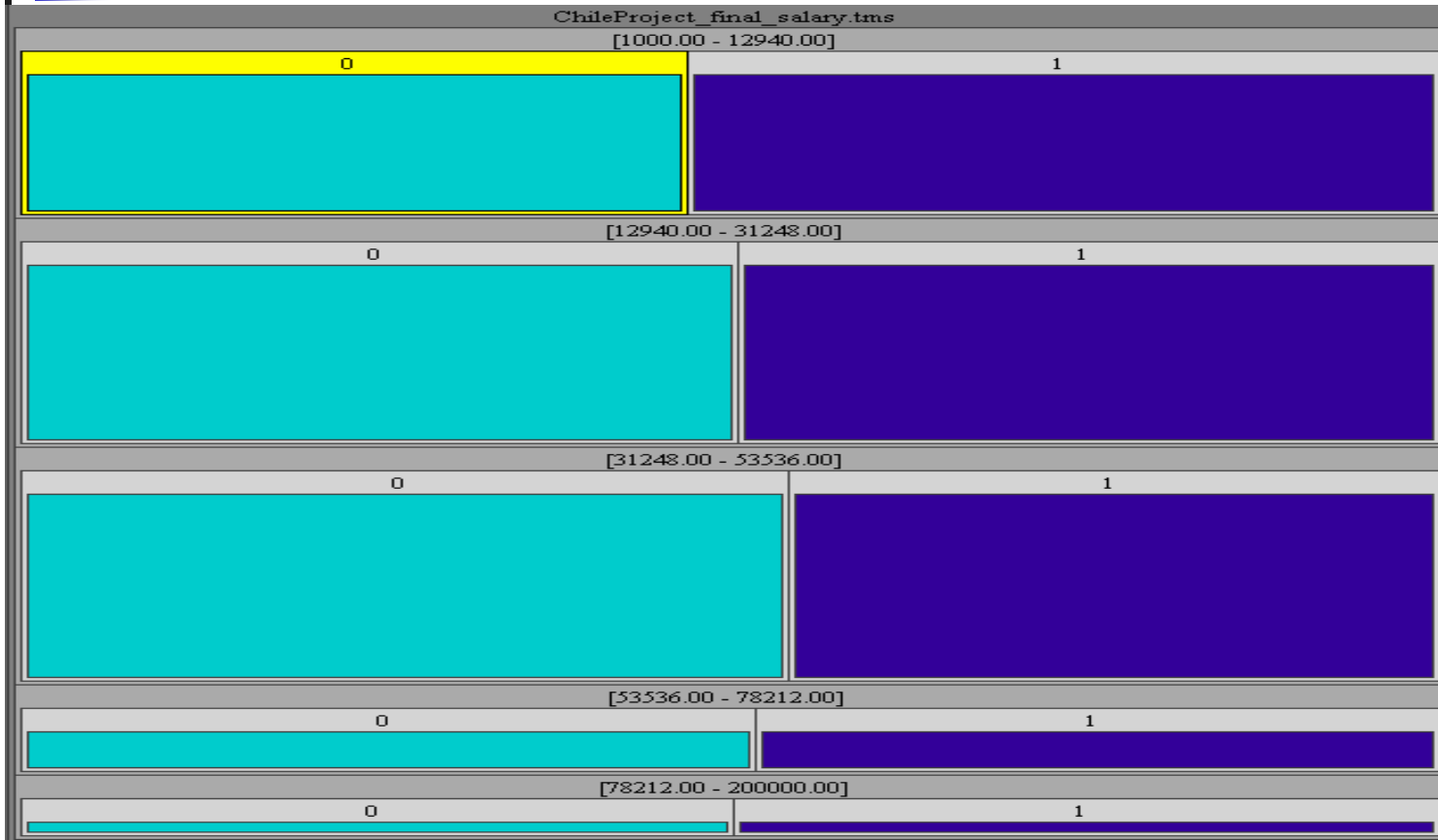




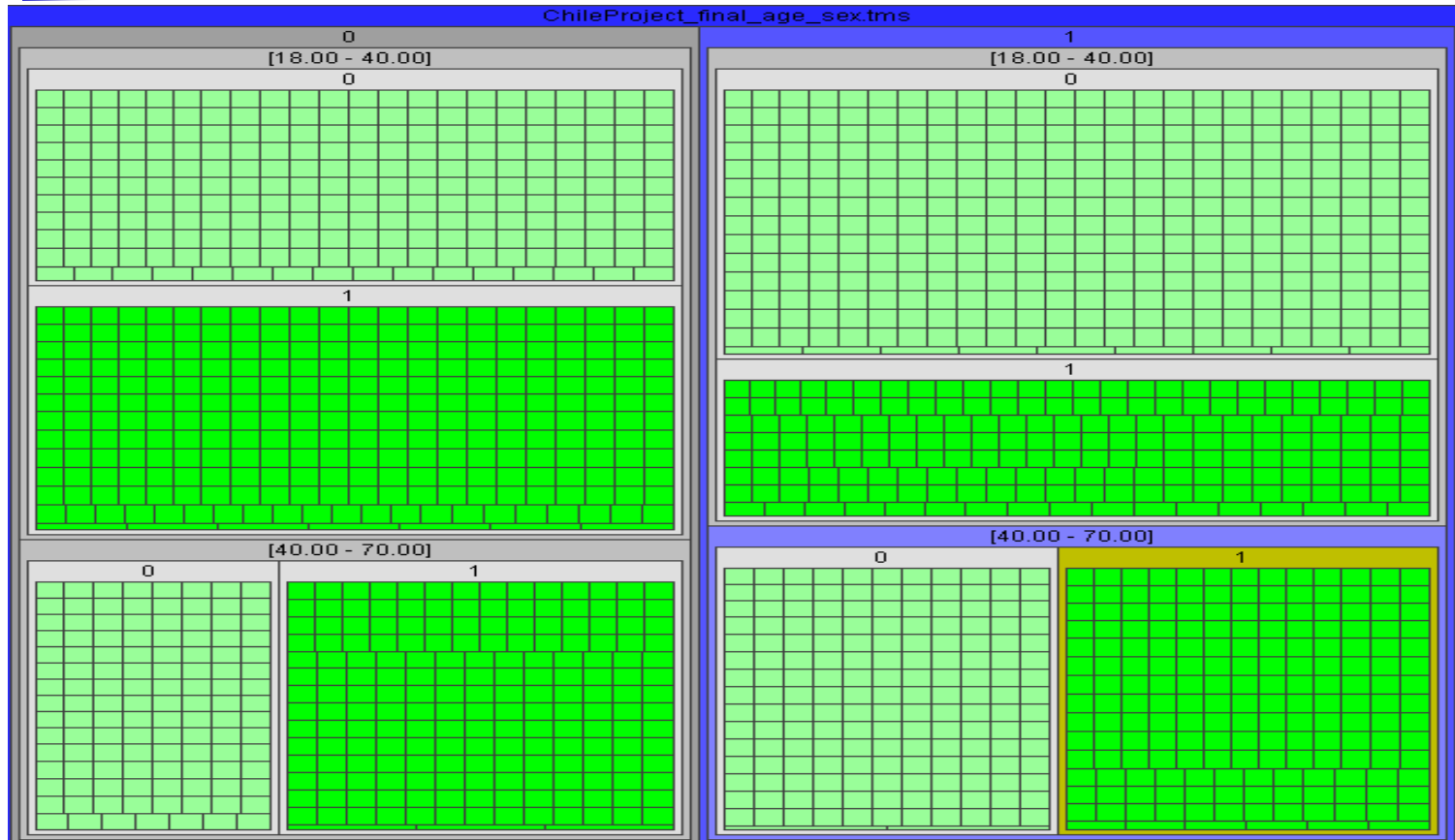
Agenda

- Background information-Carrie
- Data set-Jason
- Results of classification analysis-Ramana
- Implications of observations-Greg

Treemaps- Income in pesos



Tree maps-Age and Gender



Logistic Regression-1

The Regression Model

Input variables	Coefficient	Std. Error	p-value	Odds
Constant term	1.20883727	0.6810559	0.07590684	*
Population	0.00000025	0.00000176	0.88888592	1.00000024
Sex	-0.84168178	0.26564637	0.00153265	0.43098509
Age	0.00971053	0.00952775	0.30811548	1.00975788
Education	-0.47152871	0.20924494	0.02422907	0.62404758
Monthly Income in Pesos	-0.00000131	0.00000374	0.7259686	0.99999869
Scale of Support For Status Quo	3.24181342	0.19877215	0	25.58006859
Region_2	0.14804177	0.47848025	0.75701731	1.15956128
Region_3	-0.07577381	0.44338658	0.86430407	0.92702585
Region_4	0.98764652	0.76263785	0.19530642	2.68490815
Region_5	-0.26828936	0.49202079	0.58556062	0.76468647

Residual df	1011
Residual Dev.	418.1387634
% Success in training data	48.8258317
# Iterations used	9
Multiple R-squared	0.70475203

Training Data scoring - Summary Report

Cut off Prob.Val. for Success (Updatable)	0.5
---	------------

Classification Confusion Matrix		
	Predicted Class	
Actual Class	1	0
1	461	38
0	38	485

Error Report			
Class	# Cases	# Errors	% Error
1	499	38	7.62
0	523	38	7.27
Overall	1022	76	7.44

Logistic Regression-2

The Regression Model

Input variables	Coefficient	Std. Error	p-value	Odds
Constant term	1.68979692	0.35876304	0.00000248	*
Sex	-0.84613621	0.26405361	0.00135339	0.42906958
Education	-0.57141918	0.176743	0.00122476	0.56472343
Scale of Support For Status Quo	3.20752907	0.19033186	0	24.71793175

Residual df	1018
Residual Dev.	422.4872437
% Success in training data	48.8258317
# Iterations used	9
Multiple R-squared	0.70168161

Training Data scoring - Summary Report

Cut off Prob.Val. for Success (Updatable)	0.5
---	-----

Classification Confusion Matrix		
	Predicted Class	
Actual Class	1	0
1	462	37
0	35	488

Error Report			
Class	# Cases	# Errors	% Error
1	499	37	7.41
0	523	35	6.69
Overall	1022	72	7.05



Agenda

- Background information-Carrie
- Data set-Jason
- Results of classification analysis-Ramana
- Implications of observations-Greg



Summary of the results

- Correlation tables showed:
 - Strong relationship between:
 - Education and Income
 - Population and Income
 - Weak relationship between:
 - Age and Income
 - Income and Gender
- Logistic Regression
 - Education and gender most useful predictors of voting intentions
 - The odds of a female voting for Pinochet is 2.33 times the odds of a male voting for Pinochet of the same age and education.
 - If an individual's education increases by 1 (primary to secondary, secondary to post-secondary) the odds that they will vote against Pinochet will increase by 1.77 times holding everything else constant.



Interpretations of Results

- Higher income educated individuals tended to live on more populated cities.
- Suggestions of middle class factor:
 - Relationship between Income, Education, and Vote
 - Lack of utility in using Income in regression model.
- Educated Females seemed to be the swing factor
- No one clear model can completely explain voter intentions.



Historical results

- 54.7% to 43% voters reject extension
- 1989 election results:
 - 7.1 M votes
 - Patricio Aylwin 55.3%
 - Hernan Buchi 29.4%
 - Francisco Errazuriz 15.4%
- Pinochet retains control over Army
- 1998 Pinochet arrested in UK on crimes against humanity.



Historical Interpretations

- The effect on women during early Pinochet regime:
 - “Mothers of the disappeared” – children taken from prisoners
- Pinochet and Chicago Boys “shock treatment” began in 1975. Chile experienced a short lasting economic turnaround until mid 1980s.
- During recession Pinochet reinstated repressive measures
- Many historians cite:
 - Economic recovery in late 80s as reason vote allowed
 - Recent government repressive actions caused a middle class backlash



Logistic Regression-2

Validation Data scoring - Summary Report

Cut off Prob.Val. for Success (Updatable)	0.5
---	-----

Classification Confusion Matrix		
	Predicted Class	
Actual Class	1	0
1	307	30
0	25	319

Error Report			
Class	# Cases	# Errors	% Error
1	337	30	8.90
0	344	25	7.27
Overall	681	55	8.08