

LOGISTIC REGRESSION

Logistic Regression

Case Processing Summary

| Unweighted Cases ^a | | N | Percent |
|-------------------------------|----------------------|-----|---------|
| Selected Cases | Included in Analysis | 60 | 60.0 |
| | Missing Cases | 0 | .0 |
| | Total | 60 | 60.0 |
| Unselected Cases | | 40 | 40.0 |
| Total | | 100 | 100.0 |

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

| Original Value | Internal Value |
|-----------------------|----------------|
| USA/North America | 0 |
| Outside North America | 1 |

Block 0: Beginning Block

Iteration History^{a,b,c}

| Iteration | | -2 Log likelihood | Coefficients |
|-----------|---|-------------------|--------------|
| | | | Constant |
| Step 0 | 1 | 82.108 | .267 |
| | 2 | 82.108 | .268 |
| | 3 | 82.108 | .268 |

- a. Constant is included in the model.
- b. Initial -2 Log Likelihood: 82.108
- c. Estimation terminated at iteration number 3 because parameter estimates changed by less than .001.

Classification Table^{c,d}

| Observed | | | Predicted | | |
|----------|--------------------|-----------------------|-----------------------------|-----------------------|--------------------|
| | | | Selected Cases ^a | | |
| | | | X4 - Region | | Percentage Correct |
| | | | USA/North America | Outside North America | |
| Step 0 | X4 - Region | USA/North America | 0 | 26 | .0 |
| | | Outside North America | 0 | 34 | 100.0 |
| | Overall Percentage | | | | 56.7 |

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Classification Table^{c,d}

| Observed | | | Predicted | | |
|----------|--------------------|-----------------------|-------------------------------|-----------------------|--------------------|
| | | | Unselected Cases ^b | | |
| | | | X4 - Region | | Percentage Correct |
| | | | USA/North America | Outside North America | |
| Step 0 | X4 - Region | USA/North America | 0 | 13 | .0 |
| | | Outside North America | 0 | 27 | 100.0 |
| | Overall Percentage | | | | 67.5 |

- a. Selected cases Sample Split -- 60/40 EQ 0
- b. Unselected cases Sample Split -- 60/40 NE 0
- c. Constant is included in the model.
- d. The cut value is .500

Variables in the Equation

| | | B | S.E. | Wald | df | Sig. | Exp(B) |
|--------|----------|------|------|-------|----|------|--------|
| Step 0 | Constant | .268 | .261 | 1.060 | 1 | .303 | 1.308 |

Variables not in the Equation

| | | | Score | df | Sig. |
|--------|--------------------|-----|--------|----|------|
| Step 0 | Variables | x6 | 11.925 | 1 | .001 |
| | | x7 | 2.052 | 1 | .152 |
| | | x8 | 1.609 | 1 | .205 |
| | | x9 | .866 | 1 | .352 |
| | | x10 | .791 | 1 | .374 |
| | | x11 | 18.323 | 1 | .000 |
| | | x12 | 8.622 | 1 | .003 |
| | | x13 | 21.330 | 1 | .000 |
| | | x14 | .465 | 1 | .495 |
| | | x15 | .614 | 1 | .433 |
| | | x16 | .090 | 1 | .764 |
| | | x17 | 21.204 | 1 | .000 |
| | | x18 | .157 | 1 | .692 |
| | Overall Statistics | | 42.350 | 13 | .000 |

Block 1: Method = Forward Stepwise (Wald)

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Iteration History^{a,b,c,d,e}

| Iteration | | -2 Log likelihood | Coefficients | | |
|-----------|---|-------------------|--------------|-------|-------|
| | | | Constant | x13 | x17 |
| Step 1 | 1 | 58.793 | -4.920 | .782 | |
| | 2 | 57.040 | -6.589 | 1.058 | |
| | 3 | 56.972 | -6.988 | 1.125 | |
| | 4 | 56.971 | -7.008 | 1.129 | |
| | 5 | 56.971 | -7.008 | 1.129 | |
| Step 2 | 1 | 46.868 | -7.047 | .577 | .798 |
| | 2 | 41.251 | -10.722 | .848 | 1.302 |
| | 3 | 40.073 | -13.089 | 1.009 | 1.664 |
| | 4 | 39.962 | -14.058 | 1.071 | 1.822 |
| | 5 | 39.960 | -14.190 | 1.079 | 1.844 |
| | 6 | 39.960 | -14.192 | 1.079 | 1.844 |
| | 7 | 39.960 | -14.192 | 1.079 | 1.844 |

- a. Method: Forward Stepwise (Wald)
- b. Constant is included in the model.
- c. Initial -2 Log Likelihood: 82.108
- d. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.
- e. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Omnibus Tests of Model Coefficients

| | | Chi-square | df | Sig. |
|--------|-------|------------|----|------|
| Step 1 | Step | 25.136 | 1 | .000 |
| | Block | 25.136 | 1 | .000 |
| | Model | 25.136 | 1 | .000 |
| Step 2 | Step | 17.011 | 1 | .000 |
| | Block | 42.148 | 2 | .000 |
| | Model | 42.148 | 2 | .000 |

Model Summary

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|------|---------------------|----------------------|---------------------|
| 1 | 56.971 ^a | .342 | .459 |
| 2 | 39.960 ^b | .505 | .677 |

- a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.
- b. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

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Hosmer and Lemeshow Test

| Step | Chi-square | df | Sig. |
|------|------------|----|------|
| 1 | 17.329 | 8 | .027 |
| 2 | 5.326 | 8 | .722 |

Contingency Table for Hosmer and Lemeshow Test

| | | X4 - Region = USA/North America | | X4 - Region = Outside North America | | Total |
|--------|----|------------------------------------|----------|--|----------|-------|
| | | Observed | Expected | Observed | Expected | |
| Step 1 | 1 | 4 | 5.263 | 2 | .737 | 6 |
| | 2 | 6 | 4.900 | 0 | 1.100 | 6 |
| | 3 | 5 | 4.458 | 1 | 1.542 | 6 |
| | 4 | 4 | 3.675 | 2 | 2.325 | 6 |
| | 5 | 0 | 2.876 | 6 | 3.124 | 6 |
| | 6 | 3 | 2.010 | 3 | 3.990 | 6 |
| | 7 | 4 | 1.479 | 3 | 5.521 | 7 |
| | 8 | 0 | .742 | 6 | 5.258 | 6 |
| | 9 | 0 | .483 | 7 | 6.517 | 7 |
| | 10 | 0 | .113 | 4 | 3.887 | 4 |
| Step 2 | 1 | 6 | 5.752 | 0 | .248 | 6 |
| | 2 | 4 | 5.251 | 2 | .749 | 6 |
| | 3 | 5 | 4.927 | 1 | 1.073 | 6 |
| | 4 | 5 | 4.634 | 2 | 2.366 | 7 |
| | 5 | 5 | 3.372 | 1 | 2.628 | 6 |
| | 6 | 1 | 1.554 | 5 | 4.446 | 6 |
| | 7 | 0 | .291 | 6 | 5.709 | 6 |
| | 8 | 0 | .131 | 6 | 5.869 | 6 |
| | 9 | 0 | .084 | 7 | 6.916 | 7 |
| | 10 | 0 | .006 | 4 | 3.994 | 4 |

Classification Table^c

| Observed | | | Predicted | | |
|----------|--------------------|-----------------------|-----------------------------|-----------------------|--------------------|
| | | | Selected Cases ^a | | |
| | | | X4 - Region | | Percentage Correct |
| | | | USA/North America | Outside North America | |
| Step 1 | X4 - Region | USA/North America | 19 | 7 | 73.1 |
| | | Outside North America | 9 | 25 | 73.5 |
| | Overall Percentage | | | | 73.3 |
| Step 2 | X4 - Region | USA/North America | 25 | 1 | 96.2 |
| | | Outside North America | 6 | 28 | 82.4 |
| | Overall Percentage | | | | 88.3 |

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Classification Table^c

| Observed | | | Predicted | | |
|----------|--------------------|-----------------------|-------------------------------|-----------------------|--------------------|
| | | | Unselected Cases ^b | | |
| | | | X4 - Region | | Percentage Correct |
| | | | USA/North America | Outside North America | |
| Step 1 | X4 - Region | USA/North America | 4 | 9 | 30.8 |
| | | Outside North America | 1 | 26 | 96.3 |
| | Overall Percentage | | | | 75.0 |
| Step 2 | X4 - Region | USA/North America | 9 | 4 | 69.2 |
| | | Outside North America | 2 | 25 | 92.6 |
| | Overall Percentage | | | | 85.0 |

- a. Selected cases Sample Split -- 60/40 EQ 0
b. Unselected cases Sample Split -- 60/40 NE 0
c. The cut value is .500

Variables in the Equation

| | | B | S.E. | Wald | df | Sig. | Exp(B) | 95.0% C.I. for EXP(B) | |
|--------|----------|---------|-------|--------|----|------|--------|-----------------------|--------|
| | | | | | | | | Lower | Upper |
| Step 1 | x13 | 1.129 | .287 | 15.471 | 1 | .000 | 3.092 | 1.762 | 5.426 |
| | Constant | -7.008 | 1.836 | 14.570 | 1 | .000 | .001 | | |
| Step 2 | x13 | 1.079 | .357 | 9.115 | 1 | .003 | 2.942 | 1.460 | 5.928 |
| | x17 | 1.844 | .639 | 8.331 | 1 | .004 | 6.321 | 1.807 | 22.110 |
| | Constant | -14.192 | 3.712 | 14.614 | 1 | .000 | .000 | | |

- a. Variable(s) entered on step 1: x13.
b. Variable(s) entered on step 2: x17.

Correlation Matrix

| | | Constant | x13 | x17 |
|--------|----------|----------|-------|-------|
| Step 1 | Constant | 1.000 | -.984 | |
| | x13 | -.984 | 1.000 | |
| Step 2 | Constant | 1.000 | -.750 | -.808 |
| | x13 | -.750 | 1.000 | .231 |
| | x17 | -.808 | .231 | 1.000 |

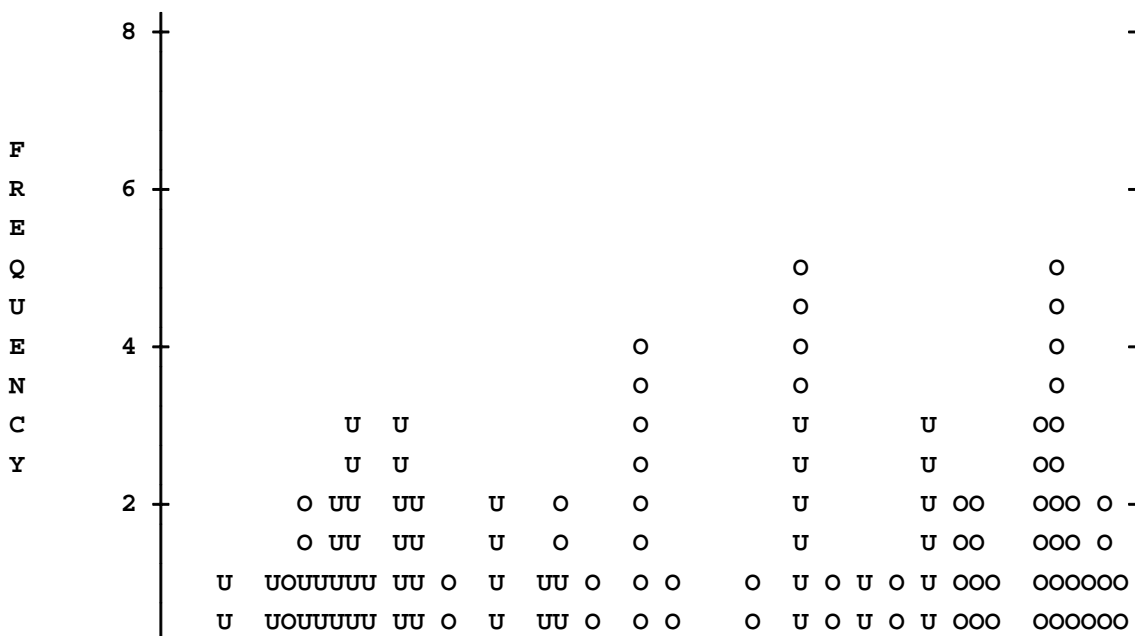
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Variables not in the Equation

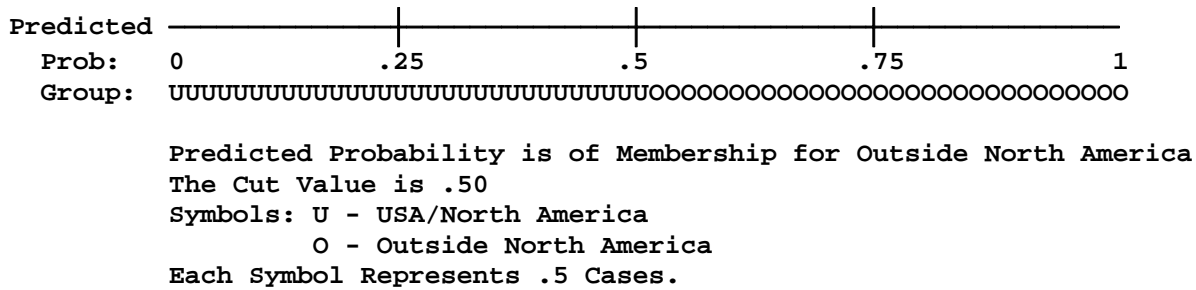
| | | | Score | df | Sig. |
|--------|--------------------|-----|--------|----|------|
| Step 1 | Variables | x6 | 4.859 | 1 | .028 |
| | | x7 | .132 | 1 | .716 |
| | | x8 | .007 | 1 | .931 |
| | | x9 | 1.379 | 1 | .240 |
| | | x10 | .129 | 1 | .719 |
| | | x11 | 6.154 | 1 | .013 |
| | | x12 | 2.745 | 1 | .098 |
| | | x14 | .640 | 1 | .424 |
| | | x15 | .344 | 1 | .557 |
| | | x16 | 2.528 | 1 | .112 |
| | | x17 | 13.723 | 1 | .000 |
| | | x18 | 1.206 | 1 | .272 |
| | Overall Statistics | | 27.315 | 12 | .007 |
| Step 2 | Variables | x6 | .656 | 1 | .418 |
| | | x7 | 3.501 | 1 | .061 |
| | | x8 | .006 | 1 | .937 |
| | | x9 | .693 | 1 | .405 |
| | | x10 | .091 | 1 | .762 |
| | | x11 | 3.409 | 1 | .065 |
| | | x12 | .849 | 1 | .357 |
| | | x14 | 2.327 | 1 | .127 |
| | | x15 | .026 | 1 | .873 |
| | | x16 | .010 | 1 | .919 |
| | | x18 | 2.907 | 1 | .088 |
| | Overall Statistics | | 20.216 | 11 | .042 |

Step number: 1

Observed Groups and Predicted Probabilities

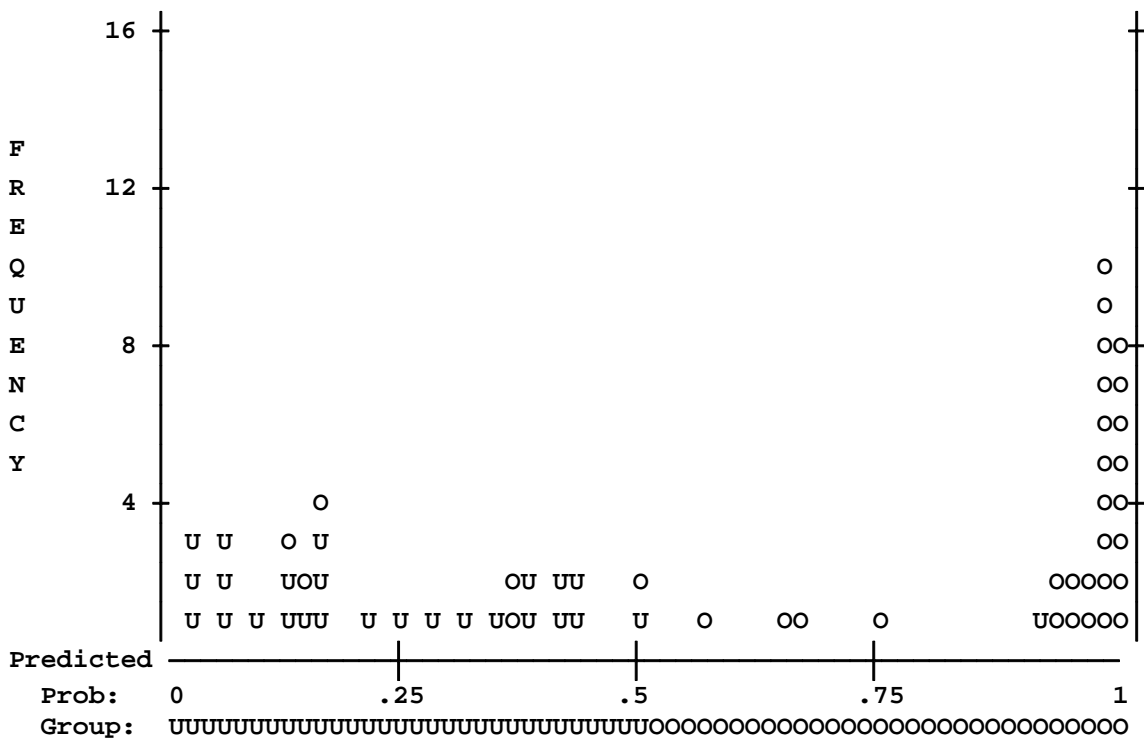


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Step number: 2

Observed Groups and Predicted Probabilities



Predicted Probability is of Membership for Outside North America
The Cut Value is .50
Symbols: U - USA/North America
 O - Outside North America
Each Symbol Represents 1 Case.

LOGISTIC REGRESSION

Casewise List^b

| Case | Selected Status ^a | Observed | Predicted | Predicted Group | Temporary Variable | |
|------|------------------------------|-------------|-----------|-----------------|--------------------|--------|
| | | X4 - Region | | | Resid | ZResid |
| 3 | S | O** | .123 | U | .877 | 2.664 |
| 34 | S | O** | .144 | U | .856 | 2.441 |
| 71 | S | U** | .907 | O | -.907 | -3.120 |

a. S = Selected, U = Unselected cases, and ** = Misclassified cases.

b. Cases with studentized residuals greater than 2.000 are listed.