**RUTGERS UNIVERSITY**

**Bloustein School of Planning and Public Policy**

**Applied Multivariate Methods**

**Fall 2020**

**Dawne Mouzon, Ph.D.**

**Problem Set #9:**

**Multivariate Ordinary Least Squares Regression II**

**NAME: \_\_HASSAN KHURSHID\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**SUBMISSION INSTRUCTIONS: Please upload to Canvas by 11:59 pm next Thursday night.**

**Please be sure to follow all instructions for the problems and submit the specified code and output.**

**Reminder: the output we ask for does not include every consistency check you should be running to check your own work. Generally, what we need to grade you is less than what you should do to check your code throughout the assignment. Please use the Courier New font, size 10 to make your output line up.**

**MULTIVARIATE ORDINARY LEAST SQUARES REGRESSION**

**(100 points)**

**1. (allmidus.dta) Please run a series of nested multivariate ordinary least squares regression models to predict Wave 3 income (*C1SRINC* -> *w3income*, top-coding at $300,000 or more) based on:**

**Model 1: Race/ethnicity (*raceeth;* ref=non-Hispanic White)**

**Model 2: Model 1 + educational attainment in categories (*C1PB1 -> w3educ6cat*; ref=more than bachelor’s degree\*)**

**Model 3: Model 2 + age in years (*C1PRAGE* -> *w3age*) + sex (*woman*; ref=man)**

**\*The new educational attainment variable (*w3educ6cat*) should have categories for: less than high school, high school diploma or GED, some college, 2-year degree, bachelor’s degree, more than bachelor’s degree. The reference group should be “more than bachelor’s degree.”**

**You can handle missing values however you choose in this question but any questionable values must be recoded into system-missing or extended missing.**

**Please edit the table template on page 3 to include the results from your model series, along with a formal write up of the model series. Do not forget to use your analytic flag.**

**For this problem, please submit:**

1. **A small Word table that lists all variables in your model series (include four columns for the model #, variable name, variable description, and categories/values on the variable)**
2. **Univariate analysis of missing data patterns (frequencies for the DV and all categorical IVs, the fre command for all interval-ratio IVs). Make recodes if necessary.**
3. **An analysis of missing data patterns, including output from mdesc and mvpatterns. Do you notice any major fluctuations in your sample (e.g., 10% or more)? If so, how do you plan to investigate further? Use the MIDUS documentation available on the Canvas site to formulate hypotheses about your missing data. Please back-code if necessary and write up your findings in a few sentences.**
4. **A completed multivariate table in Word, based on the output from your models (template below, please do not make major changes to formatting). Please put the table on its own page and make sure it fits on one page.**
5. **A standard write-up of your findings**
6. **Your code for the entire problem**

|  |  |  |  |
| --- | --- | --- | --- |
| **model#** | **variable name** | **variable description** | **categories/values** |
| 1 | raceeth | Race/Ethnicity of respondents | NH White, NH Black, NH Other, Hispanic |
| 2 | w3educ6cat | Wave 3 educational attainment | Less than high school, high school diploma/GED, some college,  2-year degree, bachelor’s degree, more than bachelor’s degree |
| 3 | w3age | Wave 3 Age in years | Values from 39-93 |
|  | w3sex | Wave 3 sex | Male, Female |

. tab1 w3income raceeth w3educ6cat w3sex, miss

-> tabulation of w3income

Wave -3 Income | Freq. Percent Cum.

-------------------+-----------------------------------

0 | 135 1.83 1.83

1000 | 66 0.90 2.73

2000 | 21 0.29 3.02

3000 | 16 0.22 3.23

4000 | 10 0.14 3.37

5000 | 15 0.20 3.57

6000 | 7 0.10 3.67

7000 | 45 0.61 4.28

8000 | 8 0.11 4.39

9000 | 45 0.61 5.00

10000 | 13 0.18 5.18

11000 | 46 0.62 5.80

12000 | 28 0.38 6.18

13000 | 44 0.60 6.78

14000 | 17 0.23 7.01

15000 | 43 0.58 7.59

16000 | 18 0.24 7.84

17000 | 33 0.45 8.29

18000 | 29 0.39 8.68

19000 | 24 0.33 9.01

20000 | 38 0.52 9.52

21000 | 5 0.07 9.59

21250 | 34 0.46 10.05

22000 | 23 0.31 10.36

22250 | 2 0.03 10.39

23000 | 4 0.05 10.45

23250 | 3 0.04 10.49

23750 | 31 0.42 10.91

24000 | 31 0.42 11.33

24250 | 6 0.08 11.41

24750 | 3 0.04 11.45

25000 | 6 0.08 11.53

26000 | 24 0.33 11.86

26250 | 24 0.33 12.18

26750 | 5 0.07 12.25

27000 | 4 0.05 12.31

27250 | 4 0.05 12.36

27750 | 2 0.03 12.39

28000 | 19 0.26 12.65

28250 | 4 0.05 12.70

28750 | 28 0.38 13.08

29000 | 6 0.08 13.16

29250 | 4 0.05 13.22

30000 | 17 0.23 13.45

30250 | 6 0.08 13.53

30750 | 3 0.04 13.57

31000 | 9 0.12 13.69

31250 | 33 0.45 14.14

31750 | 5 0.07 14.21

32000 | 9 0.12 14.33

32250 | 9 0.12 14.45

32750 | 4 0.05 14.51

33000 | 9 0.12 14.63

33250 | 3 0.04 14.67

33750 | 31 0.42 15.09

34000 | 6 0.08 15.17

34250 | 9 0.12 15.29

34750 | 4 0.05 15.35

35000 | 3 0.04 15.39

35250 | 3 0.04 15.43

35750 | 2 0.03 15.46

36000 | 3 0.04 15.50

36250 | 35 0.48 15.97

36750 | 5 0.07 16.04

37000 | 2 0.03 16.07

37250 | 8 0.11 16.18

37750 | 2 0.03 16.20

38000 | 9 0.12 16.33

38250 | 12 0.16 16.49

38750 | 25 0.34 16.83

39000 | 4 0.05 16.88

39250 | 5 0.07 16.95

39750 | 5 0.07 17.02

40250 | 3 0.04 17.06

40750 | 5 0.07 17.13

41000 | 4 0.05 17.18

41250 | 54 0.73 17.92

41750 | 4 0.05 17.97

42250 | 9 0.12 18.09

42500 | 2 0.03 18.12

42750 | 12 0.16 18.28

43000 | 1 0.01 18.30

43250 | 5 0.07 18.36

43500 | 1 0.01 18.38

43750 | 22 0.30 18.68

44000 | 1 0.01 18.69

44250 | 5 0.07 18.76

44750 | 3 0.04 18.80

45000 | 3 0.04 18.84

45250 | 6 0.08 18.92

45750 | 3 0.04 18.96

46000 | 1 0.01 18.98

46250 | 36 0.49 19.46

46750 | 5 0.07 19.53

47250 | 7 0.10 19.63

47500 | 3 0.04 19.67

47750 | 5 0.07 19.74

48250 | 4 0.05 19.79

48750 | 22 0.30 20.09

49250 | 2 0.03 20.12

49750 | 6 0.08 20.20

50000 | 7 0.10 20.29

50250 | 6 0.08 20.37

50750 | 2 0.03 20.40

51000 | 2 0.03 20.43

51250 | 6 0.08 20.51

51750 | 1 0.01 20.52

52000 | 1 0.01 20.54

52250 | 3 0.04 20.58

52500 | 62 0.84 21.42

52750 | 6 0.08 21.50

53000 | 1 0.01 21.52

53250 | 3 0.04 21.56

53500 | 5 0.07 21.62

53750 | 5 0.07 21.69

54250 | 3 0.04 21.73

54500 | 1 0.01 21.75

54750 | 3 0.04 21.79

55000 | 4 0.05 21.84

55250 | 4 0.05 21.90

55500 | 4 0.05 21.95

55750 | 1 0.01 21.96

56000 | 1 0.01 21.98

56250 | 3 0.04 22.02

56500 | 1 0.01 22.03

56750 | 1 0.01 22.05

57250 | 2 0.03 22.07

57500 | 45 0.61 22.68

57750 | 4 0.05 22.74

58000 | 1 0.01 22.75

58250 | 3 0.04 22.79

58500 | 1 0.01 22.81

58750 | 1 0.01 22.82

59250 | 3 0.04 22.86

59500 | 1 0.01 22.87

59750 | 1 0.01 22.89

60000 | 10 0.14 23.02

60250 | 1 0.01 23.04

60500 | 2 0.03 23.06

60750 | 1 0.01 23.08

61250 | 2 0.03 23.11

61500 | 1 0.01 23.12

61750 | 5 0.07 23.19

62250 | 2 0.03 23.21

62500 | 61 0.83 24.04

62750 | 2 0.03 24.07

63000 | 2 0.03 24.10

63250 | 2 0.03 24.12

63500 | 3 0.04 24.16

63750 | 2 0.03 24.19

64750 | 1 0.01 24.21

65000 | 10 0.14 24.34

65250 | 2 0.03 24.37

65500 | 6 0.08 24.45

65750 | 1 0.01 24.46

66500 | 3 0.04 24.50

67250 | 1 0.01 24.52

67500 | 45 0.61 25.13

67750 | 3 0.04 25.17

68500 | 2 0.03 25.20

68750 | 2 0.03 25.22

69250 | 1 0.01 25.24

69500 | 4 0.05 25.29

70000 | 1 0.01 25.31

70500 | 1 0.01 25.32

70750 | 1 0.01 25.33

71250 | 3 0.04 25.37

71500 | 5 0.07 25.44

72500 | 40 0.54 25.98

72750 | 1 0.01 26.00

73500 | 5 0.07 26.07

73750 | 2 0.03 26.09

74500 | 3 0.04 26.13

74750 | 1 0.01 26.15

75000 | 1 0.01 26.16

75500 | 1 0.01 26.17

76000 | 1 0.01 26.19

76250 | 2 0.03 26.22

76500 | 3 0.04 26.26

76750 | 1 0.01 26.27

77500 | 31 0.42 26.69

78000 | 1 0.01 26.70

78500 | 4 0.05 26.76

78750 | 1 0.01 26.77

79500 | 3 0.04 26.81

80000 | 2 0.03 26.84

80500 | 2 0.03 26.87

81250 | 2 0.03 26.89

81500 | 5 0.07 26.96

82500 | 27 0.37 27.33

83500 | 3 0.04 27.37

83750 | 4 0.05 27.42

84000 | 2 0.03 27.45

84500 | 2 0.03 27.48

84750 | 1 0.01 27.49

85000 | 1 0.01 27.51

86250 | 3 0.04 27.55

86500 | 1 0.01 27.56

87000 | 1 0.01 27.57

87500 | 22 0.30 27.87

88500 | 2 0.03 27.90

88750 | 6 0.08 27.98

89000 | 2 0.03 28.01

89500 | 2 0.03 28.04

90500 | 1 0.01 28.05

90750 | 1 0.01 28.06

91250 | 6 0.08 28.14

91500 | 4 0.05 28.20

91750 | 2 0.03 28.23

92500 | 16 0.22 28.44

93500 | 2 0.03 28.47

93750 | 6 0.08 28.55

94500 | 1 0.01 28.57

95000 | 1 0.01 28.58

95500 | 2 0.03 28.61

96000 | 1 0.01 28.62

96250 | 3 0.04 28.66

96500 | 1 0.01 28.67

97500 | 11 0.15 28.82

98500 | 2 0.03 28.85

98750 | 2 0.03 28.88

100500 | 1 0.01 28.89

101250 | 1 0.01 28.91

101500 | 2 0.03 28.93

102500 | 2 0.03 28.96

103750 | 4 0.05 29.01

104250 | 1 0.01 29.03

104500 | 2 0.03 29.05

104750 | 1 0.01 29.07

105000 | 38 0.52 29.58

105500 | 2 0.03 29.61

105750 | 1 0.01 29.63

106000 | 1 0.01 29.64

106500 | 1 0.01 29.65

107250 | 1 0.01 29.67

107500 | 1 0.01 29.68

107750 | 1 0.01 29.69

108000 | 1 0.01 29.71

108500 | 1 0.01 29.72

108750 | 4 0.05 29.77

109750 | 1 0.01 29.79

110000 | 1 0.01 29.80

110750 | 1 0.01 29.82

112000 | 3 0.04 29.86

112250 | 1 0.01 29.87

112500 | 1 0.01 29.88

113250 | 1 0.01 29.90

113750 | 4 0.05 29.95

114250 | 1 0.01 29.96

114500 | 1 0.01 29.98

115000 | 19 0.26 30.24

115750 | 1 0.01 30.25

116000 | 1 0.01 30.26

116250 | 2 0.03 30.29

117000 | 1 0.01 30.30

117750 | 1 0.01 30.32

118000 | 3 0.04 30.36

118750 | 3 0.04 30.40

119000 | 1 0.01 30.41

121250 | 1 0.01 30.43

122000 | 1 0.01 30.44

122500 | 1 0.01 30.45

124750 | 1 0.01 30.47

125000 | 26 0.35 30.82

126000 | 4 0.05 30.87

126750 | 1 0.01 30.89

128000 | 5 0.07 30.96

128250 | 1 0.01 30.97

128750 | 2 0.03 31.00

129250 | 2 0.03 31.02

130250 | 1 0.01 31.04

131250 | 2 0.03 31.06

132000 | 1 0.01 31.08

132500 | 1 0.01 31.09

133750 | 1 0.01 31.11

134000 | 2 0.03 31.13

134250 | 1 0.01 31.15

135000 | 14 0.19 31.34

136000 | 1 0.01 31.35

136250 | 2 0.03 31.38

138000 | 4 0.05 31.43

138750 | 2 0.03 31.46

140000 | 1 0.01 31.47

142000 | 1 0.01 31.49

143750 | 1 0.01 31.50

144000 | 1 0.01 31.51

145000 | 22 0.30 31.81

146000 | 3 0.04 31.85

146250 | 2 0.03 31.88

147500 | 1 0.01 31.89

148750 | 2 0.03 31.92

149250 | 1 0.01 31.93

149500 | 1 0.01 31.95

150000 | 1 0.01 31.96

152000 | 1 0.01 31.98

152500 | 1 0.01 31.99

153750 | 2 0.03 32.02

156750 | 1 0.01 32.03

157500 | 1 0.01 32.04

160000 | 1 0.01 32.06

160250 | 1 0.01 32.07

162500 | 21 0.29 32.36

164250 | 1 0.01 32.37

165000 | 1 0.01 32.38

165500 | 1 0.01 32.40

166500 | 1 0.01 32.41

167500 | 1 0.01 32.42

168750 | 1 0.01 32.44

173750 | 1 0.01 32.45

175500 | 1 0.01 32.46

176250 | 1 0.01 32.48

177500 | 2 0.03 32.50

178500 | 1 0.01 32.52

179500 | 1 0.01 32.53

181500 | 1 0.01 32.55

182250 | 1 0.01 32.56

183750 | 1 0.01 32.57

184500 | 1 0.01 32.59

185000 | 1 0.01 32.60

186250 | 1 0.01 32.61

187500 | 15 0.20 32.82

188500 | 1 0.01 32.83

190500 | 1 0.01 32.84

193250 | 1 0.01 32.86

195250 | 1 0.01 32.87

196750 | 1 0.01 32.89

197500 | 1 0.01 32.90

200500 | 1 0.01 32.91

201250 | 1 0.01 32.93

208750 | 1 0.01 32.94

218750 | 1 0.01 32.95

223750 | 1 0.01 32.97

225000 | 11 0.15 33.12

226000 | 1 0.01 33.13

227750 | 1 0.01 33.14

230000 | 1 0.01 33.16

231000 | 1 0.01 33.17

236000 | 1 0.01 33.18

242000 | 1 0.01 33.20

253750 | 1 0.01 33.21

263250 | 1 0.01 33.22

265250 | 1 0.01 33.24

266250 | 1 0.01 33.25

267500 | 1 0.01 33.27

275000 | 11 0.15 33.41

277500 | 1 0.01 33.43

281250 | 1 0.01 33.44

284000 | 1 0.01 33.46

284500 | 1 0.01 33.47

295000 | 1 0.01 33.48

300000 | 45 0.61 34.09

. | 4,068 55.26 89.35

.i. No SAQ Data | 576 7.82 97.17

.n. Not calculated | 208 2.83 100.00

-------------------+-----------------------------------

Total | 7,362 100.00

-> tabulation of raceeth

adding Hispanic race into Race |

variable | Freq. Percent Cum.

--------------------------------+-----------------------------------

1. NH White | 4,392 59.66 59.66

2. NH Black/ Afr Amer | 225 3.06 62.71

3. Hispanic/Latino (any kind) | 151 2.05 64.77

4. NH Native Amer/Alask Nat | 68 0.92 65.69

5. NH Asian | 26 0.35 66.04

6. NH Nat Hawaiian or Pacif Isl | 7 0.10 66.14

7. NH Other (Specify) | 63 0.86 66.99

. | 2,430 33.01 100.00

--------------------------------+-----------------------------------

Total | 7,362 100.00

-> tabulation of w3educ6cat

recode of C1PB1 | Freq. Percent Cum.

-------------------------------+-----------------------------------

1. less than high school | 170 2.31 2.31

2. high school diploma or GED | 785 10.66 12.97

3. some college | 615 8.35 21.33

4. 2-year degree | 338 4.59 25.92

5. bachelor’s degree | 718 9.75 35.67

6. more than bachelor’s degree | 657 8.92 44.59

. | 4,068 55.26 99.85

.d. Don't Know | 10 0.14 99.99

.r. Refused | 1 0.01 100.00

-------------------------------+-----------------------------------

Total | 7,362 100.00

-> tabulation of w3sex

Respondent' |

s sex | Freq. Percent Cum.

------------+-----------------------------------

1. MALE | 1,484 20.16 20.16

2. FEMALE | 1,810 24.59 44.74

. | 4,068 55.26 100.00

------------+-----------------------------------

Total | 7,362 100.00

. fre w3age, tab(6)

w3age -- Respondent's age

-----------------------------------------------------------

| Freq. Percent Valid Cum.

--------------+--------------------------------------------

Valid 39 | 1 0.01 0.03 0.03

42 | 3 0.04 0.09 0.12

43 | 30 0.41 0.91 1.03

44 | 47 0.64 1.43 2.46

45 | 59 0.80 1.79 4.25

46 | 46 0.62 1.40 5.65

: | : : : :

88 | 15 0.20 0.46 98.51

89 | 20 0.27 0.61 99.12

90 | 16 0.22 0.49 99.61

91 | 8 0.11 0.24 99.85

92 | 4 0.05 0.12 99.97

93 | 1 0.01 0.03 100.00

Total | 3294 44.74 100.00

Missing . | 4068 55.26

Total | 7362 100.00

-----------------------------------------------------------

. sum w3income raceeth w3educ6cat w3sex w3age

Variable | Obs Mean Std. Dev. Min Max

-------------+---------------------------------------------------------

w3income | 2,510 56100.5 58395.49 0 300000

raceeth | 4,932 1.253041 .8988833 1 7

w3educ6cat | 3,283 3.798051 1.609038 1 6

w3sex | 3,294 1.549484 .4976209 1 2

w3age | 3,294 63.64117 11.34978 39 93

. . mdesc w3income raceeth w3educ6cat w3sex w3age

Variable | Missing Total Percent Missing

----------------+-----------------------------------------------

w3income | 4,852 7,362 65.91

raceeth | 2,430 7,362 33.01

w3educ6cat | 4,079 7,362 55.41

w3sex | 4,068 7,362 55.26

w3age | 4,068 7,362 55.26

----------------+-----------------------------------------------

. mvpatterns w3income raceeth w3educ6cat w3sex w3age

Variable | type obs mv variable label

-------------+------------------------------------------------------------

w3income | long 2510 4852 Wave -3 Income

raceeth | float 4932 2430 adding Hispanic race into Race variable

w3educ6cat | int 3283 4079 recode of C1PB1

w3sex | int 3294 4068 Respondent's sex

w3age | int 3294 4068 Respondent's age

--------------------------------------------------------------------------

Patterns of missing values

+------------------------+

| \_pattern \_mv \_freq |

|------------------------|

| +++++ 0 2492 |

| ..... 5 2415 |

| .+... 4 1653 |

| .++++ 1 776 |

| +.+++ 1 10 |

|------------------------|

| ++.++ 1 8 |

| ..+++ 2 5 |

| .+.++ 2 3 |

+------------------------+

Since all the variables have more than 10 percent missing data so it behooves to investigate the possibility of back-coding by scrutinizing the relevant variables.

Upon investigation, most of the missing values were system missing values and the possibility of erroneous data entry was quite low. So, no back-coding was done and an analytic flag was created using the same unmodified variables.

**Table 1. Nested Multivariate Ordinary Least Squares Regression Models Predicting Wave 3 Income Based on Sociodemographic Characteristics, ALLMIDUS (N = 2,492)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Model 1** | | **Model 2** | | **Model 3** | |
|  | **B** | **β** | **B** | **β** | **B** | **β** |
| **Race/Ethnicity (ref= NH White)** |  | | | | | |
| NH Black | -17217.08 \* | -0.051\* | -11025.44+ | -.0327204+ | -8230.228 | -0.024425 |
| Hispanic | 101.62 | 0.00028 | 5554.98 | 0.0155211 | 7827.529 | 0.0218707 |
| NH Native Am. Or AK Native | -10678.85 | -0.02 | -7407.18 | -0.0140802 | -6478.053 | -0.012314 |
| NH Asian | 2708.24 | 0.003 | -13297.39 | -0.0136802 | -9346.047 | -0.0096151 |
| NH Nat. HI & Pacific Islander | 708.24 | 0.0002 | 21480.15 | 0.0073781 | 5359.836 | 0.001841 |
| NH Other | -12037.2 | 0.018 | 6469.42 | 0.009651 | 4009.685 | 0.0059816 |
| **Educational Attainment (ref=more than bachelor’s degree)** |  | | | | | |
| Less than high school | --- | --- | -62242.61\*\*\* | -.2134713\*\*\* | -52735.81\*\*\* | -.1808662\*\*\* |
| High school diploma or GED | --- | --- | -51827.54\*\*\* | -.3760596\*\*\* | -46041.64\*\*\* | -.3340772\*\*\* |
| Some college | --- | --- | -46168.21\*\*\* | -.3107497\*\*\* | -42560.51\*\*\* | -.2864669\*\*\* |
| 2-year degree | --- | --- | -35757.34 \*\*\* | -.1852125\*\*\* | -30244.81\*\*\* | -.1566593\*\*\* |
| Bachelor’s degree | --- | --- | -18727.13\*\*\* | -.1343104\*\*\* | -20571.83\*\*\* | -.1475405\*\*\* |
| **Age** | --- | --- | --- | --- | -671.6\*\*\* | -0.13\*\*\* |
| **Sex (ref = man)** |  | | | | | |
| Female | --- | --- | --- | --- | -33908.45\*\*\* | -0.29\*\*\* |
| **Model Significance (p)** | 0.2136 | | < 0.001 | | p< 0.001 | |
| **Adjusted R2** | 0.0009 | | 0.1223 | | 0.2167 | |
| **N** | 2492 | |

\*\*\* *p* < 0.001; \*\* *p* < 0.01; \* *p <* 0.05; + *p* < 0.10.

**Standard write-up:**

A series of ordinary least squares regression models was conducted to determine whether race/ethnicity, educational level, age in years, and sex were significant linear predictors of income in dollars for wave 3. Model 1 included race/ethnicity, Model 2 added educational attainment, and Model 3 added age in years and sex. In Model 1, race/ethnicity of respondents was not significantly related to their income level; relative to those who identified as NH Whites, those who were NH Blacks had an income 17217 dollars less (*p=0.011*). Those identifying as Hispanic, Native American or Pacific Islander, Asian, Native Hawaiian and Pacific Islander, and Others did not have a significant difference in income compared to NH Whites. Model 1 was not significant *(p = 0.2136)* and accounted for less than 0.1% of the variation in income.

In Model 2, the difference in NH Blacks’ income with respect to NH Whites’ dropped to marginal significance (*p = 0.083)*, while controlling for the educational level of respondents. While the NH black’s earned on average $11025 less than NH Whites, the rest of the ethnicities’ salary retained their insignificant difference with income of NH Whites. On the other hand, after controlling for race, the educational level of respondents turned out to be a significant predictor of their income. Compared to those with an educational level “more than bachelor’s degree”, those having a “less than high school” level earned $62242 less (*p<0.001*), those having “High School Diploma or GED” level earned $51827 less (*p<0.001*), those having “some college” level earned $46168 less (*p<0.001*), those having “2-year degree” level earned $35757 less (*p<0.001*), and those having a “Bachelors Degree” level earned $18727 less (*p<0.001*), on average, while controlling for race. In Model 2, Educational Attainment was the strongest predictor of wave 3 income (β = -0.376 for high school/GED, β = -0.310 for some college, β = -0.21 for less than high school, β=-0.19 for 2 year degree, and β=-0.13 for bachelor’s degree). Model 2 was significant *(p<0.001)* and explained 12.23% of the variation in income.

In Model 3, after adding for age and sex variables of the respondents, the relationship between race/ethnicity and income became statistically insignificant, with no ethnic group having any significant differences in income, while controlling for educational status, sex and age. In Model 3, educational status remained as a strong predictor of wave 3 income, with a reduction in the level of education leading to an increase in the difference of income, with respect to those with educational level “More than Bachelors”, whilst controlling for race/ethnicity, sex and age. Those with less than a high school education had an income 52735 dollars lower than those with more than a bachelors degree (*p<0.001*). Those with a high school education or GED had an income 46041 dollars lower than those with more than a bachelors degree (*p<0.001*). Those with some college had an income 42560 dollars lower than those with more than a bachelors degree (*p<0.001*). Those with a 2-year degree education had an income 30244 dollars lower than those with more than a bachelors degree (*p<0.001*). Those with a bachelor’s degree had an income 20571 dollars lower than those with more than a bachelors degree (*p<0.001*). Model 3 also found age to be a significant predictor of income while controlling for educational status, race/ethnicity and sex, with an addition of 1 year in respondent’s age decreasing their income by 672 dollars (*p<0.001*). Sex is also a significant predictor of income controlling for age, educational status and race/ethnicity; relative to males, females earn 33908 dollars less (*p<*0.001), controlling for the rest of the variables in the model. In model 3, educational attainment (β = -0.33 for High School Diploma or GED, β = -0.29 for some college, β = -0.18 for less than high school, β=-0.16 for 2 year degree), sex (β=-0.290 for Females), and Age(β = -0.13) were the strongest predictors of income. Model 3 was significant (*p<0.001*) and explained 21.67% of the variation in income.

**tab C1SRINC, miss**

**recode C1SRINC (-1 = .i) (999998 =.n), gen(w3income)**

**label variable w3income "Wave -3 Income"**

**codebook C1SRINC**

**label define incum .i "No SAQ Data" .n "Not calculated", add**

**label values w3income incum**

**numlabel incum, add force**

**tab w3income, miss**

**tab C1PB1, miss**

**recode C1PB1 (1/3 = 1) (4/5 =2) (6/7 =3) (8 =4) (9 =5) (10/12 =6) (97 = .d) (98 =.r), gen(w3educ6cat)**

**label variable w3educ6cat "recode of C1PB1"**

**label define educat 1 "less than high school" 2 "high school diploma or GED" 3 "some college" 4 "2-year degree" 5 "bachelor’s degree" 6 "more than bachelor’s degree" .d "Don't Know" .r "Refused"**

**label values w3educ6cat educat**

**numlabel educat, add**

**tab w3educ6cat, miss**

**tab C1PRAGE, miss**

**clonevar w3age = C1PRAGE**

**clonevar w3sex = C1PRSEX**

**fre w3age, tab(6)**

**tab1 w3income raceeth w3educ6cat w3sex, miss**

**sum w3income raceeth w3educ6cat w3sex w3age**

**mdesc w3income raceeth w3educ6cat w3sex w3age**

**mvpatterns w3income raceeth w3educ6cat w3sex w3age**

**\*after checking for possible back-coding we make the analytical flag**

**mark w3income\_flag**

**markout w3income\_flag w3income i.raceeth ib6.w3educ6cat i.w3sex w3age**

**label variable w3income\_flag "analytic flag for wave 3 income - w3income(N =2492)"**

**tab w3income\_flag, miss**

**regress w3income i.raceeth if w3income\_flag==1, beta**

**regress w3income i.raceeth ib6.w3educ6cat if w3income\_flag==1, beta**

**regress w3income i.raceeth ib6.w3educ6cat w3age i.w3sex if w3income\_flag==1, beta**

. regress w3income i.raceeth if w3income\_flag==1, beta

Source | SS df MS Number of obs = 2,492

-------------+---------------------------------- F(6, 2485) = 1.39

Model | 2.8398e+10 6 4.7330e+09 Prob > F = 0.2136

Residual | 8.4442e+12 2,485 3.3981e+09 R-squared = 0.0034

-------------+---------------------------------- Adj R-squared = 0.0009

Total | 8.4726e+12 2,491 3.4013e+09 Root MSE = 58293

--------------------------------------------------------------------------------------------------

w3income | Coef. Std. Err. t P>|t| Beta

---------------------------------+----------------------------------------------------------------

raceeth |

1. NH White | 0 (base) 0

2. NH Black/ Afr Amer | -17217.08 6754.001 -2.55 0.011 -.0510954

3. Hispanic/Latino (any kind) | 101.6246 7173.378 0.01 0.989 .0002839

4. NH Native Amer/Alask Nat | -10678.85 10540.44 -1.01 0.311 -.0202992

5. NH Asian | 2708.242 19469.17 0.14 0.889 .0027862

6. NH Nat Hawaiian or Pacif Isl | 708.2422 58305.66 0.01 0.990 .0002433

7. NH Other (Specify) | 12037.19 13428.75 0.90 0.370 .0179569

|

\_cons | 56791.76 1218.941 46.59 0.000 .

--------------------------------------------------------------------------------------------------

. regress w3income i.raceeth ib6.w3educ6cat if w3income\_flag==1, beta

Source | SS df MS Number of obs = 2,492

-------------+---------------------------------- F(11, 2480) = 32.56

Model | 1.0691e+12 11 9.7192e+10 Prob > F = 0.0000

Residual | 7.4035e+12 2,480 2.9853e+09 R-squared = 0.1262

-------------+---------------------------------- Adj R-squared = 0.1223

Total | 8.4726e+12 2,491 3.4013e+09 Root MSE = 54638

--------------------------------------------------------------------------------------------------

w3income | Coef. Std. Err. t P>|t| Beta

---------------------------------+----------------------------------------------------------------

raceeth |

1. NH White | 0 (base) 0

2. NH Black/ Afr Amer | -11025.44 6350.903 -1.74 0.083 -.0327204

3. Hispanic/Latino (any kind) | 5554.982 6732.904 0.83 0.409 .0155211

4. NH Native Amer/Alask Nat | -7407.18 9884.679 -0.75 0.454 -.0140802

5. NH Asian | -13297.39 18275.13 -0.73 0.467 -.0136802

6. NH Nat Hawaiian or Pacif Isl | 21480.15 54685.68 0.39 0.695 .0073781

7. NH Other (Specify) | 6469.42 12615.35 0.51 0.608 .009651

|

w3educ6cat |

1. less than high school | -62242.61 5890.265 -10.57 0.000 -.2134713

2. high school diploma or GED | -51827.54 3309.61 -15.66 0.000 -.3760596

3. some college | -46168.21 3485.158 -13.25 0.000 -.3107497

4. 2-year degree | -35757.34 4197.998 -8.52 0.000 -.1852125

5. bachelor’s degree | -18727.13 3333.912 -5.62 0.000 -.1343104

6. more than bachelor’s degree | 0 (base) 0

|

\_cons | 87847.39 2426.377 36.21 0.000 .

--------------------------------------------------------------------------------------------------

. regress w3income i.raceeth ib6.w3educ6cat w3age i.w3sex if w3income\_flag==1, beta

Source | SS df MS Number of obs = 2,492

-------------+---------------------------------- F(13, 2478) = 54.00

Model | 1.8705e+12 13 1.4388e+11 Prob > F = 0.0000

Residual | 6.6021e+12 2,478 2.6643e+09 R-squared = 0.2208

-------------+---------------------------------- Adj R-squared = 0.2167

Total | 8.4726e+12 2,491 3.4013e+09 Root MSE = 51617

--------------------------------------------------------------------------------------------------

w3income | Coef. Std. Err. t P>|t| Beta

---------------------------------+----------------------------------------------------------------

raceeth |

1. NH White | 0 (base) 0

2. NH Black/ Afr Amer | -8230.228 6014.948 -1.37 0.171 -.024425

3. Hispanic/Latino (any kind) | 7827.529 6363.194 1.23 0.219 .0218707

4. NH Native Amer/Alask Nat | -6478.053 9338.38 -0.69 0.488 -.012314

5. NH Asian | -9346.047 17270.84 -0.54 0.588 -.0096151

6. NH Nat Hawaiian or Pacif Isl | 5359.836 51680.14 0.10 0.917 .001841

7. NH Other (Specify) | 4009.685 11925.64 0.34 0.737 .0059816

|

w3educ6cat |

1. less than high school | -52735.81 5605.945 -9.41 0.000 -.1808662

2. high school diploma or GED | -46041.64 3145.829 -14.64 0.000 -.3340772

3. some college | -42560.51 3299.187 -12.90 0.000 -.2864669

4. 2-year degree | -30244.81 3982.265 -7.59 0.000 -.1566593

5. bachelor’s degree | -20571.83 3155.074 -6.52 0.000 -.1475405

6. more than bachelor’s degree | 0 (base) 0

|

w3age | -671.5988 95.52138 -7.03 0.000 -.126776

|

w3sex |

1. MALE | 0 (base) 0

2. FEMALE | -33908.45 2104.089 -16.12 0.000 -.289692

|

\_cons | 146536.9 6606.073 22.18 0.000 .

--------------------------------------------------------------------------------------------------

**Multivariate Regression Table Template**

**Please use the following table as a guide for what your table should look like. Make sure to update all relevant information in the table (like the title) to be relevant to each model series. The order of your final submission should be table, followed by write-up for each series.**

**Table X. Nested Multivariate Ordinary Least Squares Regression Models Predicting Support of Abortion Rightsa Based on Marital Status and Sociodemographic Characteristics, 2016 General Social Survey (N = 1,844)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Model 1** | | **Model 2** | | **Model 3** | |
|  | **B** | **β** | **B** | **β** | **B** | **β** |
| **Marital Status**  **(ref=Married)** |  |  |  |  |  |  |
| Separated/divorced/ widowed | 0.17 | 0.03 | 0.22 | 0.04 | 0.15 | 0.03 |
| Never married | 0.67\*\*\* | 0.12\*\*\* | 0.62\*\*\* | 0.11\*\*\* | 0.46\*\* | 0.08\*\* |
|  |  |  |  |  |  |  |
| **Age in Years** | --- | --- | -0.01 | -0.02 | -0.01 | -0.02 |
|  |  |  |  |  |  |  |
| **Male (ref=female)** | --- | --- | 0.22+ | 0.04+ | 0.31\*\* | 0.06\*\* |
|  |  |  |  |  |  |  |
| **Political Party Affiliation**  **(ref=Republican)** |  |  |  |  |  |  |
| Democrat | --- | --- | --- | --- | 1.34\*\*\* | 0.25\*\*\* |
| Independent | --- | --- | --- | --- | 0.85\*\*\* | 0.17\*\*\* |
| Other |  |  |  |  | 1.49\*\*\* | 0.09\*\*\* |
|  |  | |  | |  | |
| **Model Significance (*p*)** | < 0.001 | | < 0.001 | | <0.001 | |
| **Adjusted R2** | 0.010 | | 0.012 | | 0.050 | |
| **N** | 1,844 | | 1,844 | | 1,844 | |

\*\*\* *p* < 0.001; \*\* *p* < 0.01; \* *p <* 0.05; + *p* < 0.10.

a The summed 7-item “Support of Abortion Rights” scale ranges from 0/lowest support– 7/highest support.