WHO REALLY VOTED FOR BARACK OBAMA?

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How well (or poorly) did Barack Obama do in the 2008 presidential election among different age and income groups? Exit poll data on four different age groups (18 to 29 years of age, 30 to 44, 45 to 64, and 65 and over) as well as three different categories of family income (under $50000, between $50000 and $99999, and $100000 or more) were collected from Obama voters in each of the fifty states (www.msnbc.msn.com/id/23926593). The purpose of this brief note is to show how simple bilinear regression on these exit poll data in conjunction with the actual percentage of each state's Obama voters can be used to highlight Obama's relative attractiveness across age and income groups.

Figure 1 shows a scatterplot of the actual percentage of Obama votes (expressed as a decimal) versus the percentage of Obama voters between 18 and 29 years of age (also expressed as a decimal). Each circular point represents a state, whose actual percentage of Obama voters can be read on the vertical axis and percentage of Obama voters between 18 and 29 years of age (based on exit polls) can be read on the horizontal axis.[1] What is the relationship between Obama's actual percentage of the total vote [*Obama (actual)*] and his support among voters under 30 years of age [*Obama (18-29)*], on average? The regression equation that summarizes this relationship is given by:

$$Obama\ (actual) = 0.0633 + 0.7365\ Obama\ (18\text{-}29)$$
$$(2.60)\quad (18.40)$$

$$R^2 = .883$$

with *t*-values in parentheses.

If, in all states, the percentage of Obama voters (18 to 29 years of age) were equal to the actual percentage of all voters who cast their ballots for Obama, then all points (squares in

Figure 1) would fall on a 45-degree line, given by:

$$Obama\ (actual) = Obama\ (18\text{-}29)$$

The regression equation and the 45-degree line intersect at a single point, where *Obama (actual)* is equal to *Obama (18-29)* which in turn is equal to .24. That is, the regression analysis predicts that, on average, in states where Obama received 24 percent or more of the state's total vote, he was more popular with 18-to-29 year-olds than he was with the state's general population. In fact, Barack Obama received no less than (Wyoming's) 33 percent of the total vote in any state, a result that underscores his strong popularity among voters under 30 years of age.[2]

Table 1 summarizes the regression results for all four demographic and three income groups. The last column of Table 1 gives the critical point of intersection between the regression line and a 45-degree line.[3] The *negative* entry in the last column of Table 1 for Obama voters with incomes under $50000 shows that however small his support in any state, he was very popular with the poorest voters. Obama was least popular with voters 45 to 64 years of age and voters with family incomes of at least $100000. Among voters 30 to 44 years of age, Obama was more popular than he was with the general electorate (i.e., his actual vote percentage exceeded 53.4 percent) in the states of: California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Hampshire, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, and Wisconsin – all states that he ultimately won. But among voters over 44 years of age and voters from families earning more than $50000 a year, he was more popular than the general electorate (i.e., his actual vote percentage exceeded 68.0 percent) in just the states of Vermont and Hawaii.

Concluding Remarks

Regression analysis on election exit poll data can be used to gauge a candidate's relative popularity among different demographic and socioeconomic groups.
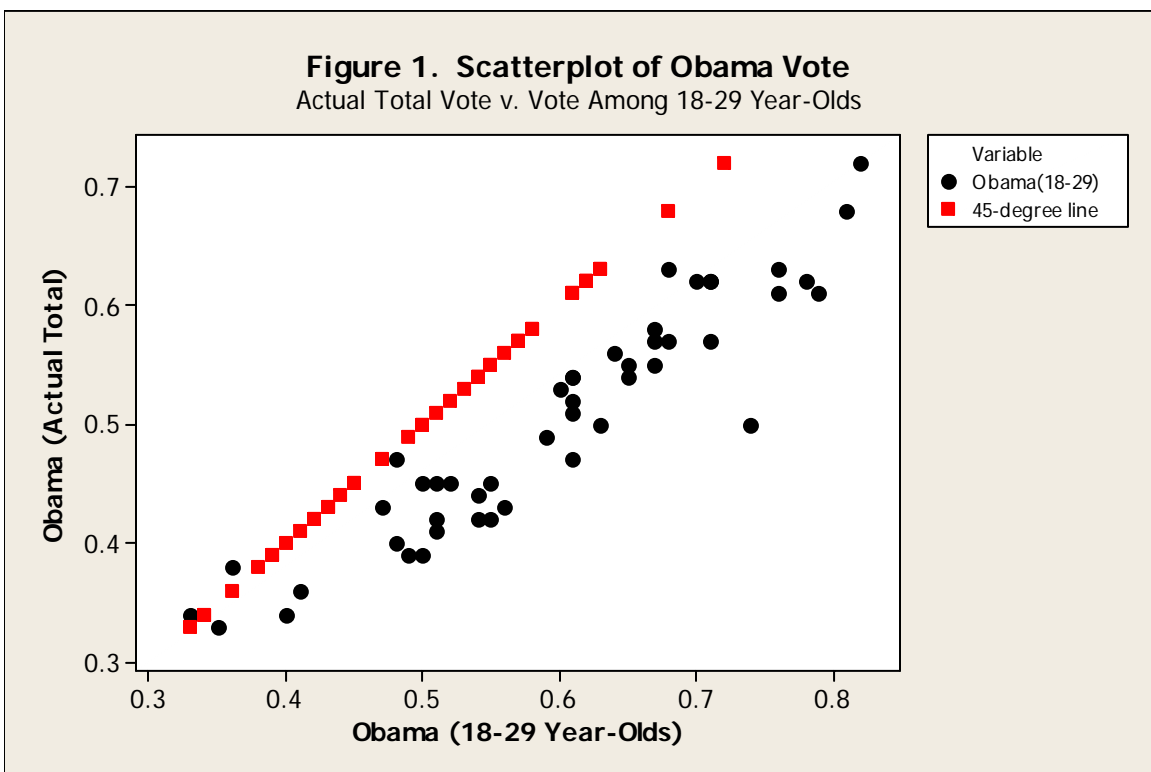
In 2008, the youngest and poorest voters played a decisive role in electing the first-ever African-American U.S. president. For voters over 44 years of age and voters from families earning more than $50000, Obama's support was no greater than (and, in some instances, substantially less than) his support from all voters.

Table 1. Regression Results
for Selected Age and Income Groups of
Obama Voters in the 2008 Presidential Election

Group	Constant	Slope	R^2	Critical point of intersection with 45-degree line
Age				
18-29 year olds	.0633 (2.60)[a]	.7365 (18.40)[b]	.883	.240
30-44 year olds	.0970 (3.36)	.8184 (14.48)	.814	.534
45-64 year olds	.0482 (2.16)	.9443 (20.91)	.901	.866
65 years and over	.1783 (5.61)	.7378 (10.74)	.757	.680
Income				
Under $50000	-.0177 (-0.60)	.8998 (17.98)	.871	-.177
$50000 - $100000	.1119 (6.14)	.8367 (22.20)	.911	.686
$100000 and over	.1679 (7.45)	.7583 (15.62)	.838	.695

[a] *t*-values in parentheses
[b] All slope coefficients are significant at better than the .001 level.

Figure 1. Scatterplot of Obama Vote
Actual Total Vote v. Vote Among 18-29 Year-Olds

Footnotes

1.   *MSNBC* did not report the breakdown between Obama and John McCain, his Republican

      opponent, for 18-29 year-olds in the states of Colorado, Oregon, and Washington. There

      were observations on all fifty states for 30-44 and 45-64 year-olds. Among voters 65

      years of age and over, there were missing observations on Obama for Connecticut,

      Delaware, Idaho, Maryland, Massachusetts, Mississippi, North Dakota, Oklahoma,

      Rhode Island, Utah, and Wyoming. Insofar as the three income categories were

      concerned, there was no observation on Utah for voters from families earning $100000

      or more; otherwise, the exit poll data on Obama voters by income was complete.

2.   Figure 1 shows just two states (Alaska and Utah) where Obama's percentage of the

      actual vote exceeded his percentage of the vote among voters under 30 years of age

      [Alaska, 38 percent *v.* 36 percent and Utah, 34 percent *v.* 33 percent].

3.   A series of paired *t*-tests across the fifty states between Obama's actual percentage of

      the state's total vote and the state's corresponding Obama support for each of the four

      age groups was significant for 18-29 year-olds ($p < .001$, in Obama's favor),

      not significant for 30-44 year-olds ($p = .338$), significant for 45-64 year-olds ($p < .001$,

      in John McCain's favor), and significant for voters 65 years of age or older ($p < .001$,

      again, in John McCain's favor). All three paired *t*-tests involving income groups were

      statistically significant ($p < .001$), with only the poorest income group (i.e., families

      earning less than $50000) favoring Obama.