

ARE CIVIC RETURNS TO HIGHER EDUCATION DIFFERENT ACROSS SUBPOPULATIONS?
AN ANALYSIS USING PROPENSITY FORESTS
PAPER TABLES AND FIGURES

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Table 1: Predictor names and descriptions

Predictor name	Predictor description
X1SEX	Student's sex
X1RACE	Student's race/ethnicity-composite
X1DUALLANG	Student dual-first language indicator
X1STDOB	Student's date of birth (YYYYMM)
X1TXMTH	Mathematics theta score
X1MACC	Mathematics assessment accommodations
X1PAR1EDU	Parent 1: highest level of education
X1PAREDU	Parents'/guardians' highest level of education
X1MOMRESP	Whether parent questionnaire respondent is mother
X1MOMREL	Mother/female guardian's relationship to 9th grader
X1MOMEDU	Mother's/female guardian's highest level of education
X1MOMEMP	Mother/female guardian's employment status
X1MOMOCC2	Mother/female guardian's current/most recent occupation: 2-digit ONET code
X1MOMRACE	Mother's race/ethnicity
X1DADRESP	Whether parent questionnaire respondent is father
X1DADREL	Father/male guardian's relationship to 9th grader
X1DADEDU	Father's/male guardian's highest level of education
X1DADEMP	Father/male guardian's employment status
X1DADOCC2	Father/male guardian's current/most recent occupation: 2- digit ONET code
X1DADRACE	Father's race/ethnicity
X1HHNUMBER	Number of 2009 household members
X1FAMINCOME	Total family income from all sources 2008
X1POVERTY	Poverty indicator (relative to 100% of Census poverty thresh- old)
X1POVERTY130	Poverty indicator (relative to 130% of Census poverty thresh- old)
X1POVERTY185	Poverty indicator (relative to 185% of Census poverty thresh- old)
X1SES	Socio-economic status composite
X1MTHID	Scale of student's mathematics identity
X1SCIID	Scale of student's science identity
X1SCHOOLENG	Scale of student's school engagement
X1STU30OCC2	Student occupation at age 30: 2-digit ONET code
X1STUEDEXPCT	How far in school 9th grader thinks he/she will get
X1PAREDEXPCT	How far in school parent thinks 9th grader will go
X1IEPFLAG	Individualized Education Plan
X1PQLANG	Parent questionnaire language (English v. Spanish)

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...table 1 continued

Predictor name	Predictor description
X1TMRACE	Math teacher's race/ethnicity-composite
X1TMCERT	Math teacher's math teaching certification
X1TSRACE	Science teacher race/ethnicity-composite
X1TSCERT	Science teacher's science teaching certification
X1CONTROL	School control
X1LOCALE	School locale (urbanicity)
X1REGION	School geographic region
X2ENROLSTAT	Student enrollment status
X2EVERDROP	Ever dropout
X2DROPSTAT	F1 dropout status
X2SAMEPAR1	Same parent 1 as in the base year
X2SAMEPAR2	Same parent 2 as in the base year
X2NUMHS	Number of high schools attended
X2MACC	Mathematics assessment accommodations
X2PAREDU	Parents'/guardians' highest level of education
X2MOMRESP	Whether parent questionnaire respondent is mother
X2MOMREL	Mother/female guardian's relationship to sample member
X2MOMEDU	Mother's/female guardian's highest level of education
X2MOMEMP	Mother/female guardian's employment status
X2MOMOCC2	Mother/female guardian's current/most recent occupation: 2-digit ONET code
X2MOMRACE	Mother's race/ethnicity
X2DADRESP	Whether parent questionnaire respondent is father
X2DADREL	Father/male guardian's relationship to sample member
X2DADEDU	Father's/male guardian's highest level of education
X2DADEMP	Father/male guardian's employment status
X2DADOCC2	Father/male guardian's current/most recent occupation: 2- digit ONET code
X2DADRACE	Father's race/ethnicity
X2HHNUMBER	Number of 2012 household members
X2FAMINCOME	Total family income from all sources 2011
X2POVERTY	Poverty indicator (relative to 100% of Census poverty thresh- old)
X2POVERTY130	Poverty indicator (relative to 130% of Census poverty thresh- old)
X2POVERTY185	Poverty indicator (relative to 185% of Census poverty thresh- old)
X2REPEATG11	Percent of 11th graders repeating 11th grade-categorical
X2RETURNNG11	Percent of 11th graders returning to school-categorical
X2STU30OCC2	Student occupation at age 30: 2-digit ONET code
X2STUEDEXPCT	How far in school sample member thinks he/she will get

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...table 1 continued

Predictor name	Predictor description
X2PAREDEXPCT	How far in school parent thinks sample member will go
X2S2SSPR12	Teenager taking science/computer science/tech class(es) in spring 2012
X2REQLEVEL	Highest level of education student indicates will meet minimum requirements
X2S2EARNNOHS	Earnings without HS diploma standardized by year
X2S2EARNHS	Earnings with HS diploma standardized by year
X2S2EARNOCC	Earnings with occupational training diploma standardized by year
X2S2EARN2YPUB	Earnings with two year college degree standardized by year
X2S2EARN4Y	Earnings with four year college degree standardized by year
X2PEARNOHS	Parent questionnaire earnings without HS diploma standardized by year
X2PEARNSHS	Parent questionnaire earnings with HS diploma standardized by year
X2PEARNOCC	Parent questionnaire earnings with occupational training diploma standardized by year
X2PEARNS2YPUB	Parent questionnaire earnings with two year college degree standardized by year
X2PEARNS4Y	Parent questionnaire earnings with four year college degree standardized by year
X2PQLANG	Parent questionnaire language (English v. Spanish)
X2CONTROL	School control
X2LOCALE	School locale (urbanicity)
X2REGION	School geographic region

Note. Predictor names and labels come directly from the HSLS 2009 variable list file found at the National Center for Education Statistics website: https://nces.ed.gov/surveys/hsls09/hsls09_data.asp.

Table 2: Predictors used across models

	Voter registration	Volunteering	Job balance	Job contribution
X1SEX*	O	O	O	O
X1RACE*	O	O	O	O
X1DUALLANG*	.	.	.	.
X1STDOB	X	X	X	X
X1TXMTH	X	X	X	X
X1MACC*	.	.	.	.
X1PAR1EDU*	.	.	.	.
X1PAREDU*	.	.	.	.
X1MOMRESP*	.	.	.	.
X1MOMREL*	.	X	.	.
X1MOMEDU*	.	.	.	.
X1MOMEMP*	.	.	.	.
X1MOMOCC2*	.	.	.	.
X1MOMRACE*	.	X	.	.
X1DADRESP*	.	.	.	.
X1DADREL*	.	.	.	.
X1DADEDU*	.	.	.	.
X1DADEMP*	.	.	.	.
X1DADOCC2*	.	.	.	.
X1DADRACE*	.	.	.	.
X1HHNUMBER*	.	.	.	.
X1FAMINCOME*	.	.	.	.
X1POVERTY*	.	.	.	.
X1POVERTY130*	.	.	.	.
X1POVERTY185*	O	O	O	O
X1SES	X	X	X	X
X1MTHID	.	X	X	X
X1SCIID	X	.	X	X
X1SCHOOLENG	X	X	X	X
X1STU30OCC2*	.	X	.	.
X1STUEDEXPCT*	X	.	.	.
X1PAREDEXPCT*	.	.	X	X
X1IEPFLAG*
X1PQLANG*
X1TMRACE*
X1TMCERT*
X1TSRACE*
X1TSCERT*
X1CONTROL*

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...table 2 continued

	Voter registration	Volunteering	Job balance	Job contribution
X1LOCALE*	.	.	X	.
X1REGION*	.	X	.	.
X2ENROLSTAT*
X2EVERDROP*
X2DROPSTAT*
X2SAMEPAR1*
X2SAMEPAR2*
X2NUMHS
X2MACC*
X2PAREDU*
X2MOMRESP*
X2MOMREL*	X	.	.	.
X2MOMEDU*
X2MOMEMP*	.	.	X	.
X2MOMOCC2*	.	.	.	X
X2MOMRACE*
X2DADRESP*
X2DADREL*
X2DADEDU*
X2DADEMP*
X2DADOCC2*	X	.	.	.
X2DADRACE*
X2HHNUMBER*
X2FAMINCOME*
X2POVERTY*	X	.	.	.
X2POVERTY130*	X	.	.	.
X2POVERTY185*
X2REPEATG11*
X2RETURNNG11*
X2STU30OCC2*
X2STUEDEXPCT*
X2PAREDEXPCT*
X2S2SSPR12*
X2REQLEVEL*	.	.	.	X
X2S2EARNNOHS*
X2S2EARNHS*
X2S2EARNOCC*
X2S2EARN2YPUB*
X2S2EARN4Y*
X2PEARNOHS*
X2PEARNS*

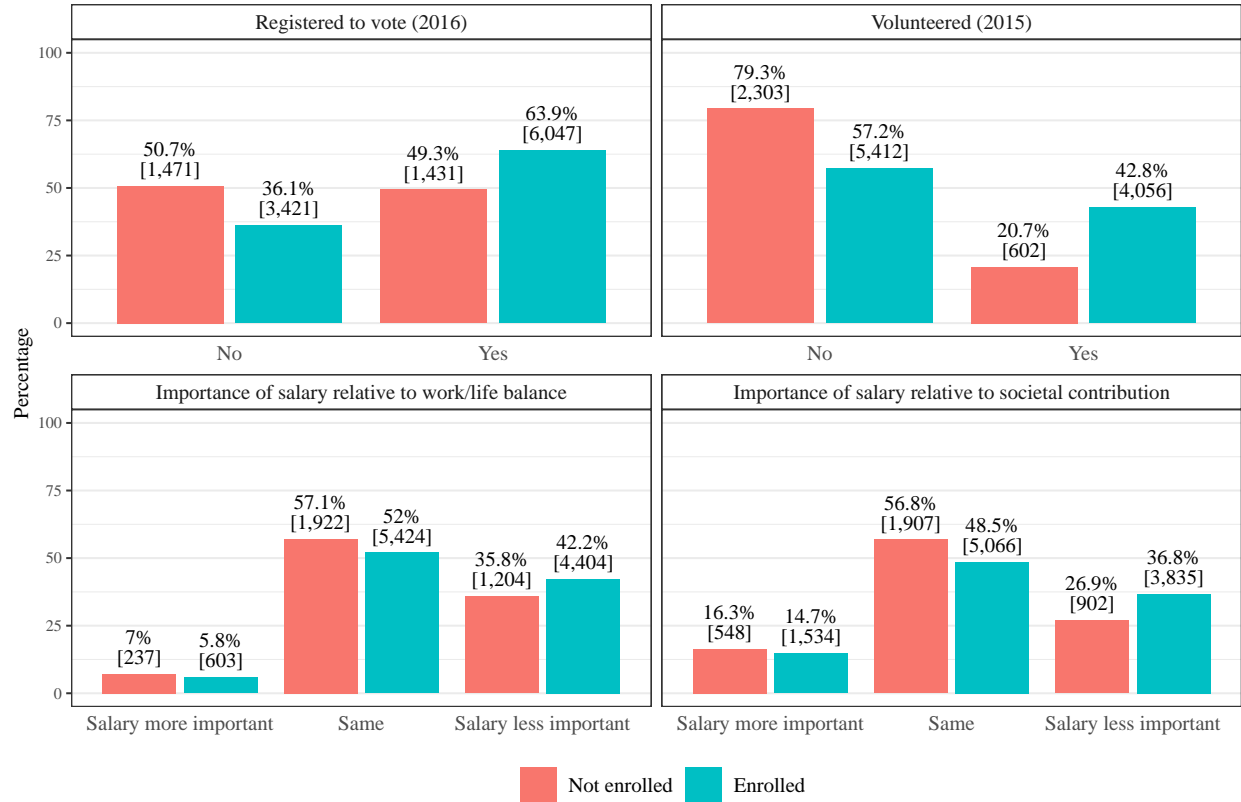
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...table 2 continued

	Voter registration	Volunteering	Job balance	Job contribution
X2PEARNOCC*
X2PEARN2YPUB*
X2PEARN4Y*
X2PQLANG*
X2CONTROL*
X2LOCALE*	.	.	X	.
X2REGION*	.	X	.	X

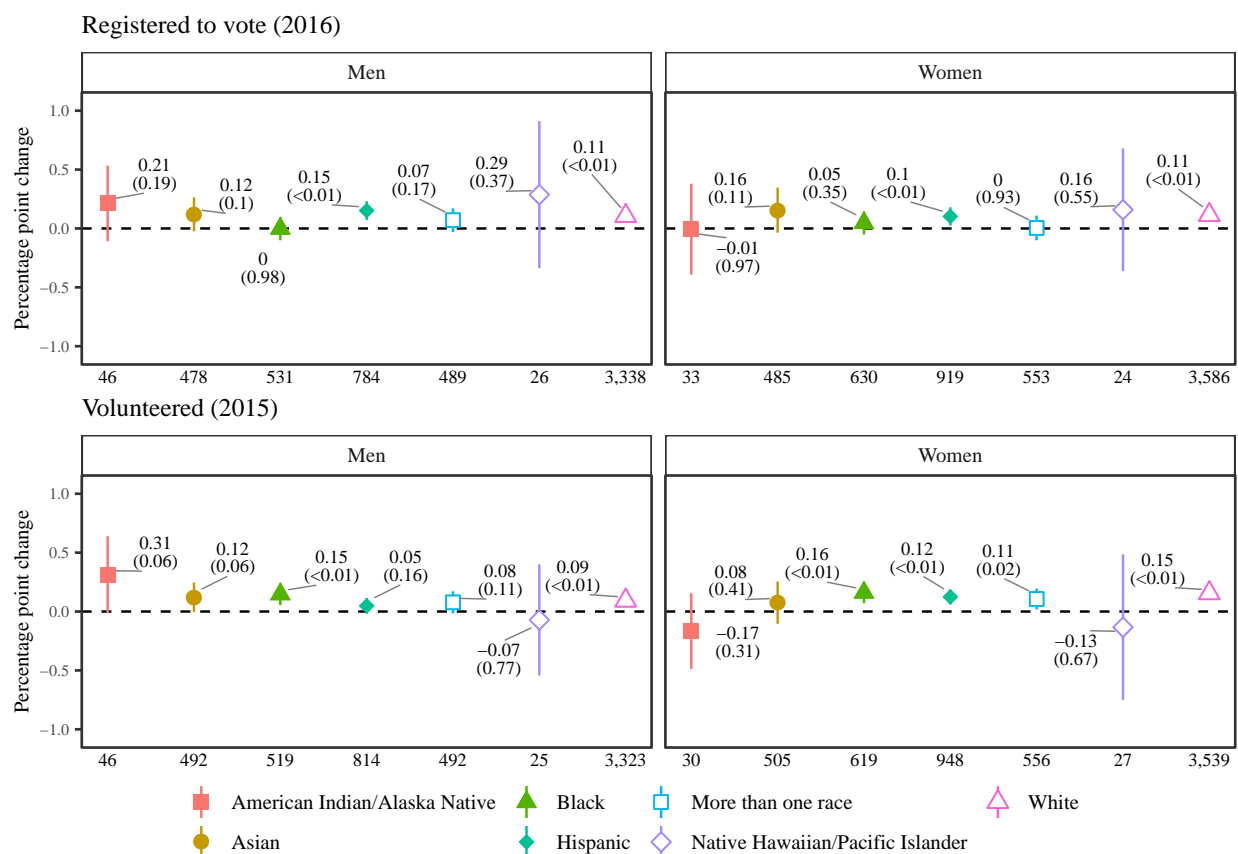
Note. Initial propensity forest models for each outcome included all predictors listed in the table. Factor predictors, which were converted to sets of binary indicators, are marked with an asterisk. *O*s represent subgroup predictors; *X*s are the ten most important predictors (exclusive of subgroup predictors) from each initial estimation. Results presented in the paper come from propensity forest estimations using only these two sets of predictors for each outcome.

Figure 1: Descriptive measures of civic participation or beliefs by college enrollment



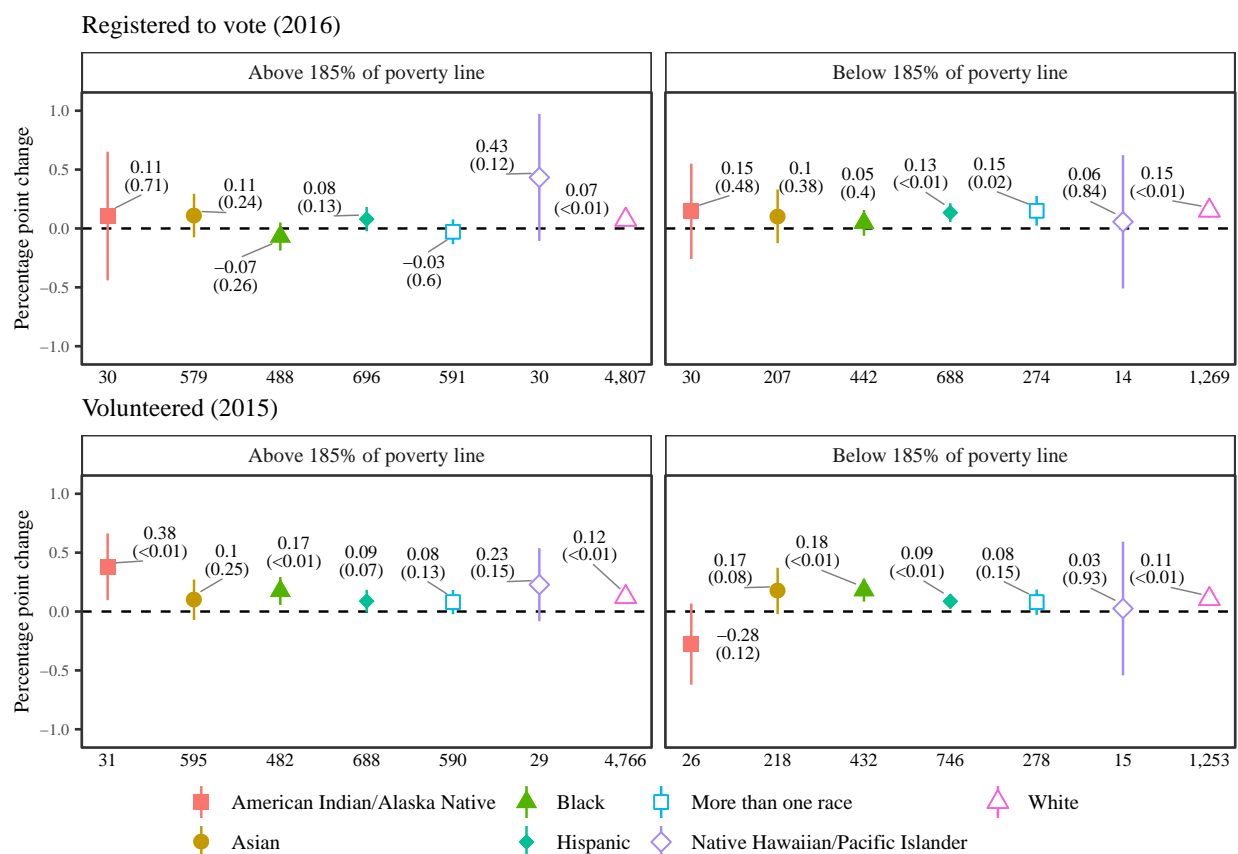
Note. All values represent unweighted averages by subgroup. Percentages in each facet are relative within enrollment condition.

Figure 2: Average treatment effect estimate of college enrollment on voting and volunteering behavior across gender and race / ethnicity.



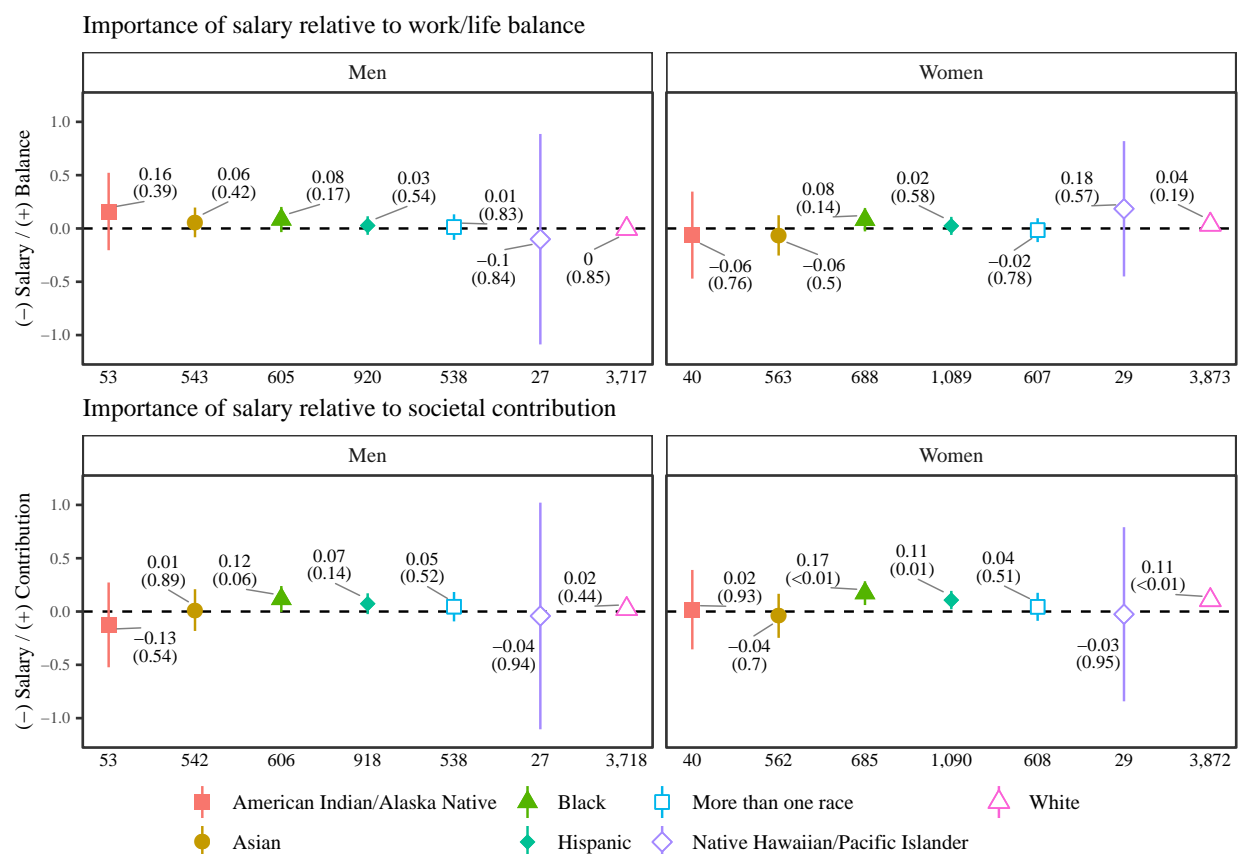
Note. Center points represent the average treatment effect estimate for each subgroup, with vertical lines plotting the 95% confidence interval. Each point is labeled with its estimate as well as the p -value from the test of its difference from zero.

Figure 3: Average treatment effect estimate of college enrollment on voting and volunteering behavior across poverty level and race / ethnicity.



Note. Center points represent the average treatment effect estimate for each subgroup, with vertical lines plotting the 95% confidence interval. Each point is labeled with its estimate as well as the p -value from the test of its difference from zero.

Figure 4: Average treatment effect estimate of college enrollment on beliefs about relative importance of salary across gender and race / ethnicity.



Note. Center points represent the average treatment effect estimate for each subgroup, with vertical lines plotting the 95% confidence interval. Each point is labeled with its estimate as well as the p -value from the test of its difference from zero.

Figure 5: Average treatment effect estimate of college enrollment on beliefs about relative importance of salary across poverty level and race / ethnicity.



Note. Center points represent the average treatment effect estimate for each subgroup, with vertical lines plotting the 95% confidence interval. Each point is labeled with its estimate as well as the p -value from the test of its difference from zero.