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WWC Review of the Report "Looking Beyond Enrollment: The Causal Effect of Need-Based Grants on College Access, Persistence, and Graduation"[1]

The findings from this review do not reflect the full body of research evidence on need-based grants for higher education.

What is this study about?

The study examined whether eligibility for the Florida Student Access Grant (FSAG), a need-based grant for low-income students in Florida, affects college enrollment, credit accumulation, persistence over time in college, and, eventually, graduation from public 2-year or 4-year institutions or private colleges in the state of Florida.

The sample for this study included over 45,000 seniors in Florida public high schools in 1999–2000 who submitted a Free Application for Federal Student Aid (FAFSA). Students whose family's ability to pay (known as Estimated Family Contribution) was less than $1,590 were eligible for the $1,300 Florida Student Access Grant. Students whose Estimated Family Contribution was greater than $1,590 were not eligible for the grant.

Intervention and comparison groups were selected from the larger sample and created within narrow income bandwidths on either side of the $1,590 eligibility cutoff for the grant. For most comparisons, a bandwidth of +/– $1,000 around the cutoff was used. That is, students whose family's ability to pay was between $590 and $1,590 comprised the intervention group, and students whose expected family contribution was between $1,590 and $2,590 comprised the comparison group.

Features of Florida Student Access Grants

The Florida Student Access Grant (FSAG) program is a need-based grant program for low-income students in Florida. Students who qualify receive a grant of $1,300, an amount sufficient to cover 57% of the average cost of tuition and fees for 1 year at a public 4-year university in Florida.

Students in Florida may qualify for federal and state grants based on their families' ability to pay for college. Families must complete the Free Application for Federal Student Aid (FAFSA), which is used to determine each family's Estimated Family Contribution (or ability to pay). Students may then qualify for federal financial aid like the Pell Grant and state need-based grants like the Florida Student Access Grant.

The study examined the impact of eligibility for the Florida Student Access Grant on several outcomes, including any college enrollment in the 7 years after high school, college credit accumulation up to 4 years after high school, associate degree attainment up to 5 years after high school, and bachelor's degree attainment up to 7 years after high school.[2]

What did the study find?

The study authors reported that eligibility for the Florida Student Access Grant (FSAG) did not significantly increase the likelihood of ever enrolling in postsecondary institutions in Florida up to 7 years after high school graduation (enrollment rates were approximately 81% for grant-eligible students and 79% for students who were not eligible for the grant). However, grant-eligible students had accumulated statistically significantly more college-level credits 4 years after high school (approximately 47 credits) than students who were not eligible for the grant (approximately 43 credits). The authors reported that grant eligibility did not increase the probability that students earned an associate degree within 5 years (approximately 17% in both groups), but did have a statistically significant positive impact on earning a bachelor's degree within seven years after high school (increasing the rate from approximately 24% in the non-grant eligible group to 28% in the grant-eligible group).[3] These findings were confirmed by the WWC.

WWC Rating

The research described in this report meets WWC pilot regression discontinuity standards without reservations

This study employs a well-executed regression discontinuity design.

This study focuses on a narrow subgroup of low socioeconomic status high school students from Florida who submitted Free Applications for Federal Student Aid. Student outcomes were only measured at public 2-year or 4-year institutions or private colleges in the state of Florida. The study, therefore, only includes a subset of college-bound seniors and may not be generalizable to students at other income levels or those from other states. However, the findings from this study may be relevant in other contexts to the degree that students from other states are demographically or socioeconomically similar to students from Florida.

Appendix A: Study details

Castleman, B. L., & Long, B. T. (2013). *Looking beyond enrollment: The causal effect of need-based grants on college access, persistence, and graduation* **(NBER Working Paper 19306). Cambridge, MA: National Bureau of Economic Research. Retrieved from http://www.nber.org**

Setting	The study used administrative records from the state of Florida to evaluate the impact of eligibility for the Florida Student Access Grant. All study participants were high school seniors attending Florida high schools at the beginning of the study.
Study sample	Subjects were 45,727 high school seniors during the 1999–2000 school year who submitted a Free Application for Federal Student Aid (FAFSA). Analytic samples were created within narrow income bandwidths on either side of the $1,590 Expected Family Contribution eligibility cutoff for the Florida Student Access Grant. Depending on bandwidths, sample sizes varied between 6,917 (+/– $1,000 bandwidth) and 9,501 (+/– $1,400 bandwidth) students. On average, students in the primary analytic sample of 6,917 were 60% female and averaged 17.9 years of age. The primary sample was 45% White, 30% Black, and 21% Hispanic, and had an average senior year grade point average of 2.8 on a weighted 4.5 scale. Students were from homes with an average parent Adjusted Gross Income of $28,035.
Intervention group	Intervention and comparison groups were selected from the larger sample and created within narrow income bandwidths on either side of the $1,590 eligibility cutoff for the grant. For most comparisons, a bandwidth of +/– $1,000 around the cutoff was used. That is, students whose Expected Family Contribution was between $590 and $1,590 comprised the intervention group.
Comparison group	Intervention and comparison groups were selected from the larger sample and created within narrow income bandwidths on either side of the $1,590 eligibility cutoff for the grant. For most comparisons, a bandwidth of +/– $1,000 around the cutoff was used. That is, students whose Expected Family Contribution was between $1,590 and $2,590 comprised the comparison group.
Outcomes and measurement	The study had four primary outcomes: 1) enrollment at any 2-year or 4-year institution in Florida up to 7 years after high school, 2) credit accumulation at any 2-year or 4-year institution in Florida up to 4 years after high school, 3) associate degree attainment at a Florida institution up to 5 years after high school, and 4) bachelor's degree attainment at a Florida institution up to 7 years after high school. Outcome data came from the Florida Department of Education K–20 Data Warehouse (KDW), which maintains longitudinal student-level records from primary school through postsecondary study at Florida public colleges and universities. Enrollment data on private 4-year colleges and universities within the state of Florida were obtained from the Florida Resident Assistance Grant (FRAG) database. Eligible secondary outcome data were also obtained from the KDW and FRAG databases. Secondary outcomes included post-secondary enrollment, credit accumulation, and degree attainment for various spans of time post high school.

Support for implementation
Students whose family's ability to pay for college (Estimated Family Contribution) was less than $1,590 were eligible for the $1,300 Florida Student Access Grant. Students whose Estimated Family Contribution was greater than $1,590 were not eligible for the grant. Institutions were prohibited from awarding grants to students whose families exceeded this maximum, making this a sharp eligibility cutoff.

Reason for review
This study was identified for review by the WWC by receiving media attention.

Appendix B: Outcome measures for each domain

Postsecondary enrollment	
Postsecondary enrollment	To measure postsecondary enrollment, study authors used the Florida Department of Education K–20 Data Warehouse (KDW) and the Florida Resident Assistance Grant (FRAG) databases. The KDW maintains longitudinal student-level records from primary school through postsecondary study at Florida public colleges and universities. Enrollment data on private 4-year colleges and universities within the state of Florida were obtained from the FRAG database. Postsecondary enrollment was a binary (y/n) variable indicating whether students were ever enrolled in any public 2-year or 4-year institutions or private colleges in the state of Florida. The follow-up period varied, with outcomes being assessed immediately and 1, 2, and 7 years post-high school.

Credit accumulation	
Credit accumulation	To measure credit accumulation, study authors used the KDW and the FRAG databases. The KDW maintains longitudinal student-level records from primary school through postsecondary study at Florida public colleges and universities. Enrollment data on private 4-year colleges and universities within the state of Florida were obtained from the FRAG database. Credit accumulation was a continuous variable indicating the number of credits students obtained from any public 2-year or 4-year institutions or private colleges in the state of Florida. The follow-up period varied, with outcomes being assessed 1 semester post-high school and 1, 2, 3, and 4 years post-high school.

Associate degree attainment	
Associate degree attainment	To measure associate degree attainment, study authors used the KDW and the FRAG databases. The KDW maintains longitudinal student-level records from primary school through postsecondary study at Florida public colleges and universities. Enrollment data on private 4-year colleges and universities within the state of Florida were obtained from the FRAG database. Attainment of an associate degree was a binary (y/n) variable indicating whether students obtained an associate degree from any public 2-year institutions in the state of Florida. The follow-up period varied, with outcomes being assessed 3, 4, and 5 years post-high school.

Bachelor's degree attainment	
Bachelor's degree attainment	To measure bachelor's degree attainment, study authors used the KDW and the FRAG databases. The KDW maintains longitudinal student-level records from primary school through postsecondary study at Florida public colleges and universities. Enrollment data on private 4-year colleges and universities within the state of Florida were obtained from the FRAG database. Attainment of a bachelor's degree was a binary (y/n) variable indicating whether students obtained an bachelor's degree from any public 4-year institutions or private colleges in the state of Florida. The follow-up period varied, with outcomes being assessed 4, 5, 6, and 7 years post-high school.

Table Notes: Three other outcomes were reported by the authors but not included in this report: enrollment in Florida 4-year public institutions immediately after high school, enrollment in Florida 4-year private institutions immediately after high school, and enrollment in Florida 2-year institutions immediately after high school. For these outcomes, the authors dichotomized essentially ordinal variables in ways that resulted in successful outcomes (e.g., enrollment) and nonsuccessful outcomes (e.g., not enrolled) being combined in the reference group (e.g., for enrollment in 4-year public institutions, enrollment in private and 2-year institutions were combined with no enrollment for the comparison).

Appendix C: Study findings for each domain

Domain and outcome measure	Study sample	Sample size	Mean		WWC calculations			p-value
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	
Postsecondary enrollment								
Postsecondary enrollment up to 7 years post-high school	Sample defined at +/– $1,200 around the cutoff	8,161 students	81%	79%	2%	0.03	+1	> 0.10
Domain average for postsecondary enrollment						**0.03**	**+1**	**Not statistically significant**
Credit accumulation								
Credit accumulation up to 4 years post-high school	Sample defined at +/– $1,000 around the cutoff	6,917 students	47.3	43.0	4.4	0.05	+2	< 0.05
Domain average for credit accumulation						**0.05**	**+2**	**Statistically significant**
Associate degree attainment								
Associate degree attainment up to 5 years post-high school	Sample defined at +/– $1,400 around the cutoff	9,501 students	17%	17%	0%	0.00	0	> 0.10
Domain average for associate degree attainment						**0.00**	**0**	**Not statistically significant**
Bachelor's degree attainment								
Bachelor's degree attainment up to 7 years post-high school	Sample defined at +/–$1,000 around the cutoff	6,917 students	28%	24%	4%	0.06	+2	< 0.05
Domain average for bachelor's degree attainment						**0.06**	**+2**	**Statistically significant**

Table Notes: For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on student outcomes, representing the average change expected for all students who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average student's percentile rank that can be expected if the student is given the intervention. Some numbers may not add exactly due to rounding.

Study Notes: The effect sizes presented here were computed from regression coefficients and robust standard errors reported in the study. The WWC estimated the mean values for the intervention and comparison groups shown in the table by adding or subtracting half of the regression coefficient for the intervention effect from the grand means reported by the authors in Table 4. The mean differences for the outcomes were reported in Table 4 of the study report. No corrections for multiple comparisons were required. The p-values presented here were reported in the original study and confirmed by the WWC.

Appendix D: Supplemental findings by domain

Domain and outcome measure	Study sample	Sample size	Mean		WWC calculations			
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	*p*-value
Postsecondary enrollment								
Postsecondary enrollment immediately post-high school	Sample defined at +/– $1,000 around the cutoff	6,917 students	63%	59%	3%	0.03	+1	> 0.10
Postsecondary enrollment up to 1 year post-high school	+/– $1,000 around the cutoff	6,917 students	57%	53%	4%	0.04	+2	< 0.10
Postsecondary enrollment up to 2 years post-high school	+/– $1,100 around the cutoff	7,553 students	48%	46%	3%	0.03	+1	> 0.10
Credit accumulation								
Credit accumulation up to 1 semester post-high school	Sample defined at +/– $1,000 around the cutoff	6,917 students	6.2	5.8	0.4	0.03	+1	> 0.10
Credit accumulation up to 1 year post-high school	+/– $1,000 around the cutoff	6,917 students	12.8	11.7	1.1	0.05	+2	< 0.05
Credit accumulation up to 2 years post-high school	+/– $1,000 around the cutoff	6,917 students	25.2	22.6	2.7	0.07	+3	< 0.01
Credit accumulation up to 3 years post-high school	+/– $1,000 around the cutoff	6,917 students	37.3	33.5	3.9	0.06	+3	< 0.01
Associate degree attainment								
Associate degree attainment up to 3 years post-high school	Sample defined at +/– $1,300 around the cutoff	8,846 students	9%	9%	0%	0.00	0	> 0.10
Associate degree attainment up to 4 years post-high school	+/– $1,200 around the cutoff	8,161 students	14%	14%	1%	0.01	0	> 0.10

Domain and outcome measure	Study sample	Sample size	Mean		WWC calculations			
			Intervention group	Comparison group	Mean difference	Effect size	Improvement index	*p*-value
Bachelor's degree attainment								
Bachelor's degree attainment up to 4 years post-high school	Sample defined at +/− $1,200 around the cutoff	8,161 students	7%	7%	0%	0.01	0	> 0.10
Bachelor's degree attainment up to 5 years post-high school	+/− $1,000 around the cutoff	6,917 students	18%	14%	3%	0.04	+2	< 0.10
Bachelor's degree attainment up to 6 years post-high school	+/− $1,000 around the cutoff	6,917 students	23%	19%	5%	0.06	+2	< 0.05

Table Notes: The supplemental findings presented in this table are additional findings that do not factor into the determination of the evidence rating. For mean difference, effect size, and improvement index values reported in the table, a positive number favors the intervention group and a negative number favors the comparison group. The effect size is a standardized measure of the effect of an intervention on student outcomes, representing the average change expected for all students who are given the intervention (measured in standard deviations of the outcome measure). The improvement index is an alternate presentation of the effect size, reflecting the change in an average student's percentile rank that can be expected if the student is given the intervention. Some numbers may not add exactly due to rounding.

Study Notes: The effect sizes presented here were computed from regression coefficients and robust standard errors reported in the study. The *p*-values presented here were reported in the original study. The WWC estimated the mean values for the intervention and comparison groups shown in the table by adding or subtracting half of the regression coefficient for the intervention effect from the grand means reported by the authors in Table 4. The mean differences for the outcomes were reported in Table 4 of the study report. A correction for multiple comparisons was needed and resulted in a WWC-computed critical *p*-value of 0.02 for enrollment through 1 year after high school; therefore, the WWC does not find the result to be statistically significant. A correction for multiple comparisons was needed for credit accumulation but did not affect whether any of the contrasts were found to be statistically significant. A correction for multiple comparisons was needed and resulted in a WWC-computed critical *p*-value of 0.03 for bachelor's degree attainment after 5 years and a WWC-computed critical *p*-value of 0.02 for bachelor's degree attainment after 6 years; therefore, the WWC does not find these results to be statistically significant.

Endnotes

[1] Single study reviews examine evidence published in a study (supplemented, if necessary, by information obtained directly from the author[s]) to assess whether the study design meets WWC pilot regression disontinuity design standards. The review reports the WWC's assessment of whether the study meets WWC pilot regression disontinuity design standards and summarizes the study findings following WWC conventions for reporting evidence on effectiveness. This study was reviewed using the Postsecondary Education topic area review protocol, version 2.0. A quick review of this study was released on November 8, 2013, and this report is the follow-up review that replaces that initial assessment.

[2] Three other outcomes were reported by the authors but are not included in this report: enrollment in Florida 4-year public institutions immediately after high school, enrollment in Florida 4-year private institutions immediately after high school, and enrollment in Florida 2-year institutions immediately after high school. For these outcomes, the authors dichotomized essentially ordinal variables in ways that resulted in successful outcomes (e.g., enrollment) and non-successful outcomes (e.g., not enrolled) being combined in the reference group (e.g., for enrollment in 4-year public institutions, enrollment in private and 2-year institutions were combined with no enrollment for the comparison). Based on the supposition that higher-achieving, high-need students might be more responsive to reductions in college costs, the authors also examined whether FSAG eligibility benefitted high-achieving students more than lower-achieving students. These results are not described in this report because high-achieving students are not identified as an eligible subgroup in the Postsecondary Education review protocol.

[3] The study authors used an optimal bandwidth framework for analysis. All results reported in this single study review are based on students falling within the optimal bandwidth around the cutoff for each outcome.

Recommended Citation

U.S. Department of Education, Institute of Education Sciences, What Works Clearinghouse. (2014, April). *WWC review of the report: Looking beyond enrollment: The causal effect of need-based grants on college access, persistence, and graduation*. Retrieved from http://whatworks.ed.gov

Glossary of Terms

Attrition	Attrition occurs when an outcome variable is not available for all participants initially assigned to the intervention and comparison groups. The WWC considers the total attrition rate and the difference in attrition rates across groups within a study.
Clustering adjustment	If intervention assignment is made at a cluster level and the analysis is conducted at the student level, the WWC will adjust the statistical significance to account for this mismatch, if necessary.
Confounding factor	A confounding factor is a component of a study that is completely aligned with one of the study conditions, making it impossible to separate how much of the observed effect was due to the intervention and how much was due to the factor.
Design	The design of a study is the method by which intervention and comparison groups were assigned.
Domain	A domain is a group of closely related outcomes.
Effect size	The effect size is a measure of the magnitude of an effect. The WWC uses a standardized measure to facilitate comparisons across studies and outcomes.
Eligibility	A study is eligible for review if it falls within the scope of the review protocol and uses either an experimental or matched comparison group design.
Equivalence	A demonstration that the analysis sample groups are similar on observed characteristics defined in the review area protocol.
Improvement index	Along a percentile distribution of students, the improvement index represents the gain or loss of the average student due to the intervention. As the average student starts at the 50th percentile, the measure ranges from –50 to +50.
Multiple comparison adjustment	When a study includes multiple outcomes or comparison groups, the WWC will adjust the statistical significance to account for the multiple comparisons, if necessary.
Quasi-experimental design (QED)	A quasi-experimental design (QED) is a research design in which subjects are assigned to intervention and comparison groups through a process that is not random.
Randomized controlled trial (RCT)	A randomized controlled trial (RCT) is an experiment in which investigators randomly assign eligible participants into intervention and comparison groups.
Single-case design (SCD)	A research approach in which an outcome variable is measured repeatedly within and across different conditions that are defined by the presence or absence of an intervention.
Standard deviation	The standard deviation of a measure shows how much variation exists across observations in the sample. A low standard deviation indicates that the observations in the sample tend to be very close to the mean; a high standard deviation indicates that the observations in the sample are spread out over a large range of values.
Statistical significance	Statistical significance is the probability that the difference between groups is a result of chance rather than a real difference between the groups. The WWC labels a finding statistically significant if the likelihood that the difference is due to chance is less than 5% ($p < 0.05$).
Substantively important	A substantively important finding is one that has an effect size of 0.25 or greater, regardless of statistical significance.

Please see the WWC Procedures and Standards Handbook (version 3.0) for additional details.