The Effects of Poverty on Education in Colorado

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The Effects of Poverty on Education Performance in Colorado

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Abstract
This paper examines the effect of poverty on the performance of k-12 public schools in Colorado. It employs ordinary least squares on tabulated, panel data in Colorado from 2003 through 2014. Through its use of a variety of school performance outcomes and independent variable groupings, this paper finds that (i) poverty has a significant and substantial effect on public school performance, and (ii) Black and Hispanic students in Colorado are significantly more greatly affected by poverty than White students when it comes to their performance in school.

Introduction

As of 2016 about 15 million children in the United States – 21% of all children – live below the federal poverty threshold. Furthermore, 31.4 million children – 44% – live in low-income households (defined as under twice the federal poverty threshold) (Jiang, Ekono, & Skinner, 2016). While 17% of Colorado’s children live below the federal poverty threshold, 91% of these children are minorities (National Center for Children in Poverty, 2017). This is an overwhelming racial disparity for childhood poverty, and it is one of the most dramatic cases of this racial gap in poverty in the country. Thus, Colorado presents itself as an interesting case for studying poverty’s effects on education performance. So, the primary question that this paper attempts to answer is: How does poverty affect public k-12 school performance in Colorado?

Furthermore, given the racial disparity gap for children in poverty mentioned previously, secondary goals will be to answer: How does race/ethnicity alter the effect of poverty on school performance? And, how does gender alter this effect of poverty on school performance?

While extensive work has been done on the effects of poverty on childhood development and education, this paper’s unique contribution is that it is the first to analyze the effects of poverty at the state level in Colorado.

The paper will employ an ordinary least squares, dummy variable fixed effects model on tabulated panel data from 2003 through 2014, on all public k-12 schools in Colorado, to analyze poverty’s effect on educational performance at the student level.
Key findings conclude that poverty does have a substantial and significant effect on education performance, and that this effect is more pronounced for Black and Hispanic students when compared to White students.

**Literature Review**

Greg J. Duncan & Brooks-Gunn (1999) establishes many connections between children growing up poor or in poverty and their early development. Duncan and Brooks-Gunn establishes a widely-expected result that children that grow up in impoverished households score lower than children from affluent families on a wide range of assessments of mental health, cognitive ability and development, educational achievement, and emotional wellbeing. During early childhood (defined as age five and younger), children are set on developmental trajectories that, while they are variable, become increasingly difficult to change going forward (Carnegie Task Force on Meeting the Needs of Young Children & Carnegie Corporation of New York, 1994; Knudsen, Heckman, Cameron, & Shonkoff, 2006). Thus, young children are at significant risk to the effects of poverty (Axinn & Duncan, 1997). These cognitive gaps between young children in poverty and those not in poverty start to appear at around twenty-four months, and these effects are exhibited long into elementary school, where an achievement gap grows between these children that have grown up in poverty and those that have not (Brooks-Gunn & Duncan, 1997).

This gap continues into middle and high school. Children in poverty have higher rates of placement into special education programs and are more likely to drop out than those not in poverty (Greg J. Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Votruba-Drzal, 2006). Furthermore, Brooks-Gunn & Duncan (1997) concludes that the age at which a child is in a household in poverty also affects the child’s development. Children who experience poverty in early school years have lower rates of school completion than those that enter poverty as adolescents. G. J. Duncan, Ziol-Guest, & Kalil (2010) finds that “family income in the first five years of life, but not after, strongly
predicted the level of earnings and hours worked in adulthood for children with annual family incomes below $25,000.”

In addition to a lack of basic financial resources, children in poverty also suffer from associated privations including lack of proper food and nutrition, clothing, housing, and healthcare (Haveman & Wolfe, 1994). These have serious consequences for childhood development.

The benefits of providing better education to children in poverty far outweigh their costs, and government investment in all levels of childhood education helps improve the long-term academic success and cognitive development of children in poverty (Barnett, 1998). For children in poverty, programs that focus on their early development (from 3-5 years old) are worthwhile investments (Barnett, Frede, & Mobasher, 1988; Reynolds, Temple, Robertson, & Mann, 2001).

In turn, a review of the literature leads to a hypothesis that poverty will have a significant negative effect on school performance. Furthermore, the effect of poverty on school performance is expected to be more pronounced for traditionally underprivileged minorities – predominantly Blacks and Hispanics – when compared to White students.

Data

The data used for this analysis are from 2003 through 2014. Test score outcomes are sourced from the Colorado Department of Education’s SchoolView database. Educational performance, the dependent variable, will be determined by two variables calculated from Colorado Measures of Academic Success (CMAS) standardized tests. They are scaled scores and percent proficient and advanced.

Scaled scores take raw scores from CMAS assessments and are scaled by the Colorado Department of Education by grade. Scaled scores range from 650 to 850 for English-language arts and math and range from 300 to 900 for science.

Percent proficient and advanced are calculated from scaled scores as the percent of students scoring above the proficient and advanced thresholds that the Colorado Department of Education
sets. A student is considered to be proficient if the student succeeds with the challenging content of the Colorado Model Content Standards; advanced students go beyond this standard.

The key independent variable is poverty as determined by eligibility for free and reduced meals (FARM), and it also comes from the SchoolView database.

Key controls will come from the federal government’s EDGE database and the U.S. Census Bureau and are the following: race/ethnicity percentages for the school for each year, Title 1 status, gender makeup percentages for the school for each year, population size of district in the year 2010, population size of school area in 2010, and number of students in the school for each year.

Discussion on Free and Reduced Meal Eligibility

There are many reasons that FARM eligibility is used to determine poverty as opposed to others, such as the federal poverty level. First, it sets a threshold for the independent variable that lends itself well to dummy variable analysis set forth in the following section, and which in turn allows for an analysis of the achievement gap between students in poverty and those not. This is something that using only household income, without establishing a threshold for poverty, does not not allow. Second, FARM eligibility is calculated on the state level, so it is a Colorado-specific number, not a national one. Third, the federal poverty threshold is based on outdated assumptions on family expenditures and does not establish an accurate threshold for poverty (Cauthen & Fass, 2008). It fails to paint the full picture of how serious poverty is in America (Wight, Chau, & Aratani, 2010).

Additionally, it is important to note that FARM eligibility can only be determined if students (or their families) apply for the consideration. Thus, there will be an under-reporting of those eligible for FARM, where otherwise eligible students do not apply.
Summary Statistics

In order to understand better the context of the analysis below, a set of summary statistics is used to inform on the landscape of childhood poverty and school performance in Colorado.

<table>
<thead>
<tr>
<th>Free and Reduced Meal Eligibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>FARM Eligible</td>
</tr>
<tr>
<td>46.62%</td>
</tr>
</tbody>
</table>

Figure 1

Figure 1 shows that there is a roughly similar number of children in Colorado who are FARM eligible and not FARM eligible. This is important as both sets are of large populations.

<table>
<thead>
<tr>
<th>American Indian or Alaska Native</th>
<th>Asian</th>
<th>Black</th>
<th>Hawaiian or Pacific Islander</th>
<th>Hispanic</th>
<th>Two or More Races</th>
<th>White</th>
<th>Unreported</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.77%</td>
<td>12.41%</td>
<td>13.24%</td>
<td>0.14%</td>
<td>29.99%</td>
<td>1.15%</td>
<td>36.29%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Figure 2

Figure 2 depicts the average racial/ethnic makeup of children in Colorado for the sampled years. It is important in the analysis that follows, in which the models are broken down by racial/ethnic classifications, that the largest racial group is White, with Hispanics close behind.

Figures 3 and 4 show the distributions of the two performance outcomes, average scaled scores and percent proficient and advanced, respectively. Given that average scaled scores range from 300 to 900, a 600-point range, and the 1st and 3rd quartiles are separated by only 110.7 points with the median and mean close together, these are centered and concentrated metrics. Percent proficient and advanced show a wider spread in Figure 4.

<table>
<thead>
<tr>
<th>Average Scaled Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>300</td>
</tr>
</tbody>
</table>

Figure 3
Figures 5 and 6 exhibit the two outcome measures, scaled scores and percent proficient and advanced, broken down by poverty status. First, in Figure 5, all portions of the distribution of scaled scores for not FARM eligible students are higher than those that are FARM eligible, as would be expected. Figure 6 confirms this trend for percent proficient and advanced, but with greater disparity. Here, the median percent proficient and advanced for students not in poverty (Not FARM Eligible) is almost at the 3\textsuperscript{rd} quantile for percent proficient and advanced for students coming from poverty. The magnitude of this performance gap is depicted here and, in both cases, lends itself well to further regression analysis.
Methodology

The model used will be a tabulated dummy variable, panel-data ordinary least squares analysis.

The initial model will be as follows:

\[
AvgScaleScore_{tnsf} = \beta_f NotFARMelig_{tnsf} + X\bar{\beta}_{\text{controls}} + \delta_{\text{School}} + \gamma_{\text{Grade}} + \theta_{\text{Year}} + \varphi_{\text{Subject}} + \epsilon_{tnsf} \tag{1}
\]

Equation (1) assesses the effect of poverty on average scaled scores. \(AvgScaleScore_{tnsf}\) is tabulated on the t (year), n (subject name), s (school), g (grade), and f (FARM eligibility) level.

\(NotFARMelig_{tnsf}\) is a dummy variable that takes the value of 1 if the given row is not free and reduced meal eligible students and 0 if it is free and reduced meal eligible. Its coefficient thus represents the additional points in average scaled scores that an average student not FARM eligible will score over an average student that is FARM eligible – i.e., it is the performance gap in points of average scaled scores between students in poverty and those not. \(X\) is the set of control variables discussed in the Data section. \(\delta_{\text{School}}, \gamma_{\text{Grade}}, \theta_{\text{Year}}, \text{and} \ \varphi_{\text{Subject}}\) are school, grade, year, and subject fixed effects, respectively.
While having average scaled scores as the dependent variable helps to establish whether there is a performance gap between students in poverty and those not, it is a raw variable that does not allow for the best interpretation of magnitudes. In order to understand better this disparity between students in poverty and those not, percent proficient and advanced replaces average scaled scores in equation (1) as follows:

$$\text{PercentProfAdv}_{\text{tnsgf}} = \beta_0 \text{NotFARMelig}_{\text{tnsgf}} + X\hat{\beta}_{\text{controls}} + \delta_{\text{School}} + \gamma_{\text{Grade}} + \theta_{\text{Year}} + \phi_{\text{Subject}} + \epsilon_{\text{tnsgf}} \ (2)$$

In equation (2), the coefficient on NotFARMelig_{tnsgf}, $\beta_f$, is the average percentage point increase in percent proficient and advanced for students not FARM eligible over those that are FARM eligible. For example, if $\beta_f$ were to equal 0.07, it would mean that on average a student not FARM eligible is 7 percentage points more likely to score proficient or advanced than a student that is FARM eligible. Thus, $\beta_f$ is the performance gap in percent proficient and advanced between students in poverty and those not.

Additional auxiliary regressions were run in which the poverty term is interacted with variables of race/ethnicity and gender. These will determine if the effect of poverty on test score outcomes for these individual demographic groups is significant, and how this effect compares to that of other demographic groups. To do so, an interaction term is introduced between the targeted demographic grouping and free and reduced meal eligibility. Doing so, for race/ethnicity, to equation (2) yields:
\[ \text{PercentProfAdv}_{\text{tnsgf}} = \beta_{f,\text{Black}} \text{NotFARMelig}_{\text{tnsgf}} \times \text{Black}_{\text{tnsgf}} + \beta_{f,\text{Hispanic}} \text{NotFARMelig}_{\text{tnsgf}} \times \text{Hispanic}_{\text{tnsgf}} + \beta_{f,\text{Asian}} \text{NotFARMelig}_{\text{tnsgf}} \times \text{Asian}_{\text{tnsgf}} + \beta_{f,\text{AmIndian}} \text{NotFARMelig}_{\text{tnsgf}} \times \text{AmIndian}_{\text{tnsgf}} + \beta_{f,\text{Hawaiian}} \text{NotFARMelig}_{\text{tnsgf}} \times \text{Hawaiian}_{\text{tnsgf}} + \beta_{f,\text{mult}} \text{NotFARMelig}_{\text{tnsgf}} \times \text{mult}_{\text{tnsgf}} + \beta_{f,\text{other}} \text{NotFARMelig}_{\text{tnsgf}} \times \text{other}_{\text{tnsgf}} + \beta_{f,\text{NotFARMelig}} + \beta_{\text{Black}} \text{Black}_{\text{tnsgf}} + \beta_{\text{Hispanic}} \text{Hispanic}_{\text{tnsgf}} + \beta_{\text{Asian}} \text{Asian}_{\text{tnsgf}} + \beta_{\text{AmIndian}} \text{AmIndian}_{\text{tnsgf}} + \beta_{\text{Hawaiian}} \text{Hawaiian}_{\text{tnsgf}} + \beta_{\text{mult}} \text{mult}_{\text{tnsgf}} + \beta_{\text{other}} \text{other}_{\text{tnsgf}} + \beta_{\text{Male}} \text{Male}_{\text{tnsgf}} + \beta_{\text{unreported}} \text{unreported}_{\text{tnsgf}} + \bar{X}_{\text{controls}} + \delta_{\text{School}} + \gamma_{\text{Grade}} + \theta_{\text{Year}} + \varphi_{\text{Subject}} + \varepsilon_{\text{tnsgf}} \] (3)

In equation (3), Black\(_{\text{tnsgf}}\), Hispanic\(_{\text{tnsgf}}\), Asian\(_{\text{tnsgf}}\), AmIndian\(_{\text{tnsgf}}\), Hawaiian\(_{\text{tnsgf}}\), mult\(_{\text{tnsgf}}\), and Other\(_{\text{tnsgf}}\) take a value of 1 if the given row is Black, Hispanic, Asian, American Indian or Alaska Native, Hawaiian or Pacific Islander, Two or More races, and Unreported, respectively, and a value of 0 otherwise. Male\(_{\text{tnsgf}}\) takes the value of 1 if the row is of the male gender and 0 if not, and unreported\(_{\text{tnsgf}}\) takes the value of 1 if the row is neither male nor female; female is the gender group omitted.

The coefficient of NotFARMelig\(_{\text{tnsgf}}\) assumes a different interpretation than in equation (2). As White is the omitted racial/ethnic group, the coefficient of NotFARMelig\(_{\text{tnsgf}}\) is now the average percentage point increase in percent proficient and advanced for students not FARM eligible over those that are FARM eligible for White students only. The coefficients on the interaction terms represent the average effects of poverty on percent proficient and advanced for these race/ethnicity groups versus the omitted racial group, White. For example, the coefficient on the first term on the
right-hand side of equation (3), the interaction between poverty and Black, can be interpreted as
the average additional effect of not being in poverty on percent proficient and advanced for Black
students verses that of White students. Thus, a positive coefficient on the interaction term implies
that racial/ethnic group is more effected on percent proficient and advanced by being in poverty,
and a negative coefficient implies that racial/ethnic group is less effected on percent proficient and advanced by being in poverty. In short, the coefficient on an interaction term is how much larger
or smaller the percent proficient and advanced performance gap is for the given racial/ethnic group
than White students.

To assess whether gender also has an effect on this same performance gap, we replace these
race/ethnicity variables in equation (3) with gender variables as follows:

\[
\text{PercentProfAdv}_{tnsgf} = \beta_{f,Male,NotFARMelig_{tnsgf}} * \text{Male}_{tnsgf} + \beta_{f,unreported,NotFARMelig_{tnsgf}} * \text{Unreported}_{tnsgf} + \beta_{f,NotFARMelig_{tnsgf}} + \beta_{Male,Male_{tnsgf}}
\]

\[
+ \beta_{unreported,unreported_{tnsgf}} + \beta_{Black,Black_{tnsgf}} + \beta_{Hispanic,Hispanic_{tnsgf}}
\]

\[
+ \beta_{Asian,Asian_{tnsgf}} + \beta_{AmIndian,AmIndian_{tnsgf}} + \beta_{Hawaiian,Hawaiian_{tnsgf}}
\]

\[
+ \beta_{mult,mult_{tnsgf}} + \beta_{other,other_{tnsgf}} + X\bar{\beta}_{controls} + \delta_{School} + \gamma_{Grade} + \theta_{Year}
\]

\[
+ \varphi_{Subject} + \epsilon_{tnsgf} \quad (4)
\]

The interpretation of the coefficients on the interaction terms for equation (4) is similar to
that of equation (3). As Female is the omitted gender group, the coefficient of NotFARMelig_{tnsgf} is
now the average percentage point increase in percent proficient and advanced for students not
FARM eligible over those that are FARM eligible for Female students only. Here, the coefficients
on the interaction terms represent the average effects of poverty on percent proficient and advanced
for these gender groups versus the omitted gender group, females. The coefficient on an interaction
term is how much larger or smaller the percent proficient and advanced performance gap is for the
given gender group than female students.
## Results

<table>
<thead>
<tr>
<th></th>
<th>Equation (1) Basic Average Scaled Scores</th>
<th>Equation (2) Basic Percent Proficient &amp; Advanced</th>
<th>Equation (3) Percent Proficient and Advanced w/ Race/Ethnicity Interactions</th>
<th>Equation (4) Percent Proficient and Advanced w/ Gender Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>552.69501*** (0.24376)</td>
<td>0.2408205*** (0.0017218)</td>
<td>0.223109*** (0.0024424)</td>
<td>0.2355504*** (0.0021046)</td>
</tr>
<tr>
<td>NotFARMelig</td>
<td>31.36978*** (0.09655)</td>
<td>0.1906225*** (0.0006832)</td>
<td>0.2058745*** (0.0025407)</td>
<td>0.1825294*** (0.0009408)</td>
</tr>
<tr>
<td>NotFARMelig * Black</td>
<td></td>
<td></td>
<td>0.0248393*** (0.0031223)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * Hispanic</td>
<td></td>
<td></td>
<td>0.0224481*** (0.0028122)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * Asian</td>
<td></td>
<td></td>
<td>0.0312766*** (0.0032118)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * AmIndian</td>
<td></td>
<td></td>
<td>0.0414178*** (0.0027676)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * Hawaiian</td>
<td></td>
<td></td>
<td>0.0425658 (0.0176576)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * mult</td>
<td></td>
<td></td>
<td>0.0446041 (0.0067282)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * other</td>
<td></td>
<td></td>
<td>0.0962276 (0.1168125)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * Male</td>
<td></td>
<td></td>
<td>−0.0018803 (0.0013242)</td>
<td></td>
</tr>
<tr>
<td>NotFARMelig * unreported</td>
<td></td>
<td></td>
<td>−0.0777998 (0.0816315)</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>−0.1620378*** (0.0022483)</td>
<td>−0.1490599*** (0.0015628)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>−0.1627605*** (0.0020235)</td>
<td>−0.1510595*** (0.0014092)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0.0086508* (0.0024209)</td>
<td>0.0268351** (0.0015828)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AmIndian</td>
<td>−0.1404458*** (0.0019982)</td>
<td>−0.1188289*** (0.0013862)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawaiian</td>
<td>−0.0750135 (0.0132032)</td>
<td>−0.0517844 (0.0088442)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mult</td>
<td>−0.0413864 (0.0052086)</td>
<td>−0.0162571 (0.0035024)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>0.153545 (0.0896270)</td>
<td>−0.2035726 (0.0620992)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>−0.0753077*** (0.0006605)</td>
<td>−0.0743336*** (0.0009675)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unreported</td>
<td>−0.1598127*** (0.0434741)</td>
<td>−0.1228376* (0.0584894)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significance Codes: (***) 0.001 (**) 0.01 (*) 0.05 (.) 0.1

*Figure 7*
Figure 7 displays the results broken down by regression, on top, with coefficient values and their corresponding standard errors.

**Equation 1**

As with all the regressions run, the key takeaways do not center around the value of the intercept, as we are only interested in how poverty affects performance. So, in equation (1), the key coefficient of analysis is that on the NotFARMelig variable. This coefficient takes a value of 31.36978, and it is significant at the 0.001 level. In this regression, the independent variable is average scaled scores. Thus, this coefficient can be interpreted to mean that, on average, students not in poverty will score 31.36978 points higher on average scaled scores than students in poverty. Given this figure’s significance, there is a clear performance gap on average scaled scores between students in poverty and those not. In order to gain a greater understanding as to what the magnitude of this performance gap is, however, look to equation (2).

**Equation 2**

As previously set forth in the methodology section of the paper, equations (1) and (2) differ only in their selection of the dependent variable. In equation (2) the dependent variable is percent proficient and advanced. The coefficient on the NotFARMelig variable takes a value of 0.1906225, and it is significant at the 0.001 level. As the dependent variable has changed, so has the interpretation of the coefficient of the NotFARMelig variable. Its interpretation now is that, on average, students not in poverty will score 19.06225 percentage points greater percent proficient and advanced than students in poverty. For example, in a given school, if 35% of students in poverty are scoring at the proficient or advanced level, it is expected that 54.06225% of students not in poverty are scoring at the proficient or advanced level. It is clear that this is a substantial performance gap between students in poverty and those not. In order to gain a greater understanding into which racial/ethnic groups are most substantially affected by being in poverty, look to equation (3)’s results.
Equation (3) introduces interaction terms between poverty and different race/ethnicity groupings. Here, the coefficients of interest are those of the interaction terms. Again, they represent the effect of poverty on percent proficient and advanced for the given racial/ethnic group. The variables of greatest interest are those for Black students and Hispanic students, as these are the two most represented minorities in Colorado. Their respective coefficients on their interaction terms are 0.0248393 and 0.0224481, and both are significant at the 0.001 level. The specific interpretation of the coefficient on the Black interaction term, 0.0248393, is that the effect of poverty on percent proficient and advanced for Black students is 2.48393 percentage points greater than that for White students. This ultimately means that the performance gap of percent proficient and advanced from poverty for Black students is 2.48393 percentage points greater than the performance gap for White students. Similarly, for Hispanic students, this gap is 2.24481 percentage points greater than the gap for White students.

Furthermore, the coefficients on the non-interacted Black and Hispanic terms, –0.1620378 and –0.1627605, respectively, imply that Black and Hispanic students are already scoring 16.20378 and 16.27605 percentage points less on percent proficient and advanced when compared to White students. So, not only are these two minority groups scoring substantially less than White students, but their performance gap from poverty is also greater.

This model concludes that Black and Hispanic students are substantially and significantly more affected by poverty, when it comes to their school performance, than White students.

Equation (4)

Equation (4) operates similarly to equation (3), except gender grouping variables are now interacted with poverty as opposed to race/ethnicity variables. Results for equation (4), however, are not quite as robust. The coefficients on the interaction terms for Male students and unreported gender students are not significant, meaning that there is no significant effect of poverty on percent
proficient and advanced for Male or unreported gender students compared to this effect for Female students.

An interesting observation is that independent of poverty designation, Male students score 7.43336 (the coefficient on the non-interacted Male term) fewer percentage points percent proficient or advanced than female students but, again, poverty has no significant effect on this performance gap.

Limitations

The first limitation of this paper comes from the relatively short time range for the data. The Colorado Department of Education does not publish performance data prior to 2003, so the panel has limited variation. If performance outcomes had already changed drastically before 2003, then the effect of poverty on educational performance could be analyzed further for those years prior. Second, the available data do not allow for the analysis of the potential effect of private schools to decrease the performance gap between students in poverty and those not.

Bias

As previously discussed in the Data section of this paper, because FARM eligibility can only be determined for students that apply for the program, there are going to be fewer students classified into the poverty group than would be if students did not have to actively apply for FARM. Thus, since the effect of poverty on school performance has been found to be significantly negative, the effect of poverty on school performance is underreported due to this aforementioned bias.

Key Findings and Conclusions

Results confirm the initial hypothesis that poverty will have a significant negative effect on school performance. Between both performance metrics, average scaled scores and percent
proficient and advanced, poverty significantly lowered the performance of students, and this effect is of substantial magnitude.

The effect of poverty on school performance for Colorado’s two largest minority groups, Blacks and Hispanics, is substantially greater than its effect for Whites. Additionally, given that these two demographic groups are both lower performing and have a greater performance gap from poverty, policies should target minority groups for the most substantial effect.

Further research could be conducted to investigate how private schools alter the effect of poverty on school performance. Additionally, funding structures could also be investigated for their effect in changing the performance gap for students in poverty. These methods could also be expanded to include country-wide data, and this could allow for analysis for policy at the federal level.
Bibliography


