

**The Implications of Inadequate Levels of Education for the
Socioeconomic Future of Colorado**

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Introduction

Education is a major predictor of occupation and income, and occupation and income are major determinants of the socioeconomic conditions¹ (National Center for Education Statistics, 2008; US Census Bureau, 2004) of the populations of communities, cities, and states in the United States. Education and related occupational and income differentials are, in turn, key determinants of differentials in state and national competitiveness (Sahlberg, 2006; Hanushek and Kimko, 2000; Bernanke, 2007). Economists and sociologists have long recognized that the skills imparted by the education of the workforce are an important source of economic growth².

On the other hand, decreased levels of education are associated with lower household incomes (Blau, 1999), increased poverty (Pew, 2008), lower levels of public investment in infrastructure, decreased levels of community wealth and private investment, and a large number of other factors related to household and community resources (Sahlberg, 2006; Bernanke, 2007). The increase over-time in the differential returns to education and skill is perhaps the single largest cause of the long-term rise in economic inequality (Portes and MacLeod, 1996) in the United States with those with low levels of education experiencing ever widening gaps between their income and that of those with higher levels of income (Lee and Burkam, 2002). Policies implemented in conjunction with educational programs, such as the Free and Reduced School Lunch Program are broad investments in education and training which help reduce inequality while expanding economic opportunity (Duncan, et al., 2010).

¹ Low education has also been shown to be a strong predictor of a range of physical and health problems: viruses, arthritis, coronary disease many of which result from environmental conditions in lower paying occupational workplaces (Good 2009; Marmot, 2004)

² The Bureau of Labor Statistics estimates that between 1987 and 2006, ongoing improvement in the education and experience of the U.S. workforce contributed 9.4 percentage points per year to the increases in nonfarm business labor productivity (U.S. Department of Labor, 2007), a significant amount. These estimates control for the effects of other factors. The data are weekly earnings of full-time and salary workers aged twenty-one and older and are derived from the Current Population Survey, published by the U.S. Bureaus of Labor Statistics and the Census.

Factors that reduce levels of education attainment, such as reduced educational opportunities resulting from student impairments, such as, inadequate levels of nutrition (Duncan et al., 2010), poverty (Duncan and Brooks-Gunn, 1997, Duncan, Brooks-Gunn, Yeung and Smith, 1998; Murdock et al., 2010), and language limitations (Brooks-Gunn et al., 1996) impact success in the world environment. Similarly, inadequate preparation for school entry, resulting from inadequate or nonexistent pre-school and early child education programs (Brooks-Gunn and Duncan, 1997; Lynch, 2007), and limited educational services resulting from inadequate levels of local and state funding of schools, reduce the probability of student success in competitive workforce environments at local and state levels (Duncan and Brooks-Gunn, 2000; Duncan et al., 2010). Lower levels of parental educational attainment reduce educational attainment of their children and related socioeconomic resources for their children's households as adults and, through such resources, the competitiveness of the communities and states in which they live.

The analysis presented here examines recent growth in enrollment patterns by indicators of student socioeconomic resources such as their free and reduced lunch status, limited English proficiency and similar factors reported by the Colorado Department of Education. It then examines how such factors are associated with general demographic variables. It provides projections of future populations and examines how they may affect alternative socioeconomic indicators. Finally, it examines the impacts of inadequate education on such indicators.

Specifically, the analysis:

1. Presents an overview (using data from the Colorado Department of Education and the American Community Survey) of the growth of student populations in Colorado, and of students' and the general child population's demographic, socioeconomic and other characteristics.

2. Examines the results of the 2010 U. S. Census for Colorado for the total population and the population under 18 and uses data from the 2000 and 2010 Censuses and Colorado State Demographer's Office to prepare a set of projections of the under 18 populations for Colorado and counties in Colorado through 2040 and projections of the total state population through 2040.
3. Presents data on the differentials in income, housing values, and poverty associated with different levels of educational attainment.
4. Provides data on the implications for these socioeconomic factors of failing to provide adequate levels of educational services and the resulting decline in educational attainment levels for currently disadvantaged and less competitive student populations.

Throughout this work the intent is to explicate the implications of failing to address educational needs in Colorado. It must be recognized that any attempt to project future events is inherently limited by the fact that events may occur which alter the course of anticipated events. However, despite such limitations, it is essential to attempt to anticipate the future so that plans can be made, in terms of existing knowledge, to better address future educational needs resulting in a better future for Colorado's school children and in turn a better, more competitive, and more prosperous Colorado.

Section 1: Characteristics of Schools and Students in Colorado

The growth in the number of Colorado school children reflects the rapid growth in Colorado's population. As shown in Table 1, enrollment increased by more than 269,000 children in the period from 1990 to 2010. This is a percentage increase of 46.9 percent compared to an increase of 52.7 percent in the total population (the population increased from 3,294,394 in 1990 to 5,029,196 in 2010). Such a pattern in total population growth compared to school age population growth is to be expected in a rapidly growing state where migration plays a major role. This is because households that migrate are more likely to do so before having children or after they are past their childbearing ages. Although slower than overall population

growth, this substantial rate of growth in the number of public education students in Colorado clearly indicates why education has been, and must continue to be, a key component of state government planning in Colorado.

The data in Table 2 show that the change in the number of children in Colorado has also been accompanied by a change in the characteristics of these children. From 1991 to 2010 the percentage of non-Hispanic White children fell from 74.9 to 56.8 percent; simultaneously, the number of minority (largely Hispanic) children increased from 25.1 to 43.2 percent of total enrollment. Particularly rapid increases were evident in the percent of all children who were Hispanic which increased from 16.6 percent in 1991 to 31.6 percent in 2010.

The data in Table 3 show that such a change is reflected in the change in the underlying population. The data in this table indicate that, while the number of nonHispanic White children decreased by 18,740 from 2000 to 2010, the number of Hispanic children in the population increased by 115,503 accounting for 92.5 percent of the total increase of 124,814 children from 2000 to 2010. The data in Table 3, when examined in comparison to the trends in Table 2, suggest that even larger proportions of minority children are likely to be in Colorado schools in the future than in the past.

Table 4 shows large percentages of minority students throughout the State of Colorado in the 2010 school year, particularly in large population counties. For the largest counties in term of student enrollment in descending order from largest to smallest the percentage of students who are minorities are as follows: in Arapahoe County, with nearly 112,000 students, 53.1 percent are minority; in El Paso County, with nearly 110,000 students, 38.8 percent are minority; in Jefferson County, with nearly 86,000 students, 31.6 percent are minority; in Adams County, with

more than 84,500 students, 51.5 percent are minority; and in Denver County, with more than 78,000 students, 80.0 percent are minority.

Minority status in Colorado, and elsewhere in the United States, is associated with greater likelihood of qualifying for enrollment in such school-based federal programs as the Free and Reduced Lunch Program. As shown in Table 5 the number of students in Colorado eligible for the Free and Reduced Lunch Program is substantial, especially in areas with large minority populations. For example, in Arapahoe County 39.6 percent of students were eligible for the Free and Reduced Lunch Program; in El Paso County 34.6 percent are eligible for the Free and Reduced Lunch Program; in Jefferson County 30.1 percent are eligible for the Free and Reduced Lunch Program; in Adams County 46.3 percent are eligible for the Free and Reduced Lunch Program; and in Denver County, 72.1 percent were eligible for the Free and Reduced Lunch Program.

Tables 6 and 7 show both the differentials in poverty rates for families with children by race/ethnicity of the householder (Table 6) and the number of families with children below the 130 and 185 percent of poverty which form the basis for qualifying for free, and reduced lunch status, respectively (Table 7). These data are taken from the American Community Survey for 2005-2009 (U.S. Census Bureau 2010) completed by the United States Census Bureau for a random sample of households in Colorado. Together these data show that a disproportionate share of families in poverty in Colorado are from minority households with 32.2 percent of Black families with children and 30.0 percent of Hispanic families with children living in poverty compared to 8.1 percent of nonHispanic White families with children (see total values in Table 6). These data further indicate (see data in Table 7) that when extended to 185 percent of poverty, the parameter values needed to qualify for reduced lunch status, the percentage of

households with children in the category qualifying in Colorado increases to 14.1 percent of all households with children compared to the 6.5 percent noted earlier when only below poverty level households are examined.

Finally, the data in Table 8 when compared to those in Table 5 suggest that nearly all children receiving free and reduced lunches in Colorado are enrolled in public, rather than private schools. The data in Table 5 showing the number of children in the Free and Reduced Lunch Program in Colorado as reported by the Colorado Department of Education indicate that there were 336,443 children in this category in 2010 while the number of eligible students in Table 8 for the total state was 378,998. Such data make it evident that in the absence of change in factors, such as increases in educational attainment that reduce levels of poverty, increased enrollment of Hispanic, African American and other children who are minorities is likely to lead to increasingly impoverished student populations with high levels of need for specialized programs such as those represented by the Free and Reduced Lunch Program.

Table 9 makes it clear that other factors likely to reduce educational attainment are also disproportionately experienced by minority children. This table, derived from American Community Survey data for Colorado, shows the proportion of the population 5 years of age or older who speak a language other than English at home and speak English less than very well. Although children would be only part of this group it is evident that reduced language skills are related to Hispanic and the Other minority status. Whereas, only 1.1 percent of nonHispanic Whites are in these categories, 29.0 percent of Hispanics and 21.6 percent of those in the “Other” racial/ethnic category (which includes Asians and persons from other racial/ethnic groups) do not speak English at home and speak English less than well.

The data in this section show rapidly growing school enrollment in Colorado with increasing numbers of minority children, particularly Hispanic children, and a large number of children in need. The 2000 to 2010 census data also suggest that the number of minority children is likely to increase in absolute terms and in terms of their proportion of the total number of children in Colorado. The data also indicate that these minority children are likely to come from households that are more likely to have poverty levels of income and are more likely to require services such as the Free and Reduced Lunch Program and programs to improve English proficiency for preschool and K-12 school children.

Section 2: Projections of the Child and the Total Population of the State of Colorado by Race/Ethnicity to 2040

In this section of the analysis, I present projections of the racial/ethnic characteristics of the Colorado population and then present detailed projections of the child population. I begin with an analysis of data from the Office of the Colorado State Demographer's Office.

The Colorado State Demographer's Office provides a wide array of demographic data among which are data on the projected future total populations of the state, regions, counties by year, and by age, gender and race/ethnicity separately. Its projections are produced by combining both the results of an economic-demographic projection model which provides the major input for determining economic related net migration from one year to another and birth and death data from the Colorado Department of Health. These birth and death data were used to produce survival rates and death rates for the State Demographer's projections. Overall the projections produced were only 2.6 percent in error for 2010 meaning that the 5,160,200 projected value for the State of Colorado was only 2.6 percent higher than the 2010 U.S. Bureau of the Census count of 5,029,196 (compare the total population value in Table 12 from the U.S. Bureau of the Census and that in Table 10).

The state demographer also provides projections of age and of race/ethnicity but not of race/ethnicity by age. When examined in terms of the major population of interest in this analysis, the child population (persons <18 years of age), the 2010 Colorado projections are similarly accurate with the number of persons less than 18 years of old in Colorado being 1,225,609 in the 2010 Decennial U.S. Census of population compared to the Colorado State Demographer's projection of 1,257,923, a difference again of only 2.6 percent.

What is also clear, however, is that the state's projections of the population by race/ethnicity are less accurate. For example, the projection of nonHispanic Whites in 2010 is 3,759,800 compared to the census count of 3,520,793, a difference of 239,007 or 6.8 percent. The difference between the projected value for Hispanics of 991,100 and the 2010 Census value of 1,038,687 is 47,587 or 4.6 percent. Although the values from the State Demographer's Office are for July 1 whereas the census values are for April 1, it appears that the numbers of nonHispanic Whites, African Americans, American Indians, and Asians are overestimated and the number of Hispanics is underestimated in the Colorado State Demographer's Projections.

This is particularly problematic if one is interested in the under 18 population because of the dramatically different patterns of change for race/ethnicity groups within this population compared to the population in older ages. Although the lack of projection data from the Colorado State Demographer on age by race/ethnicity prevents us from knowing if differences in the racial/ethnic mix within age groups are assumed in Colorado's State Demographer's projections, the actual differences in the 2000 to 2010 Census changes by race/ethnicity within age groups are substantial. For example, if one compares the data on population change from 2000 to 2010 in Table 3 for the population less than 18 to that in Table 13 for the population 18 and older, one finds dramatically different patterns of change. In the population 18 years of age

and older, the nonHispanic White population increased by 336,653 from 2000 to 2010 while the Hispanic population increased by 187,583. As a result, of the total 2000 to 2010 change in the 18+ population in Colorado, 55.8 percent was due to the nonHispanic White population. While in the population less than 18 years of age, the number of nonHispanic Whites **decreased by 18,740** from 2000 to 2010. However, the number of Hispanics **increased by 115,503**. As a result of such changes, the proportion of the population that was nonHispanic White decreased as a proportion of the total population between 2000 and 2010: by 4.5 percent for the total population, by only 3.4 percent for the population 18 years of age and older but by 8.2 percent for the population under 18 years of age. For Hispanics, their proportion of the total population increased from 2000 to 2010 by 3.6 percent for the total population, by only 2.6 percent for the 18 and older population but by 7.0 percent for the under 18 years of age population. Clearly it is essential to examine population change simultaneously in terms of age and race/ethnicity to understand the underlying dynamics of population change in different race/ethnicity and age groups

Given the patterns noted above, I have projected the population under 18 years of age under several conditions. These projections are shown in Table 14. The Scenario 1 projection series takes the total population under 18 years of age as reported in the 2010 U. S. Census and exponentially projects it from 2010 to 2040 based on total population change for the population under 18 years of age from the 2000 and 2010 Censuses.

The Scenario 2 Projection Series takes the population under 18 years of age in each race/ethnicity group and exponentially projects each race/ethnicity group's population from the 2010 Census value to 2040 based on each racial/ethnic group's 2000 to 2010 rate of change (as

indicated in the respective censuses) and then sums the populations in the race/ethnicity groups to obtain the total population under 18 years of age for each time period.

To obtain race/ethnicity for the Scenario 1 projection series, the total population as projected is maintained but the percentage of the population in each racial/ethnic group is assumed to be the same as for the Scenario 2 projection series.

In addition to the two projections completed by me, two additional under 18 projections are provided using data from the Office of the Colorado State Demographer. These are the total value for the number of persons under 18 years of age as projected by the state demographer without any adjustment for 2010 census findings. This is referred to as the Colorado State Demographer's Official Projection in Table 14 while the other is labeled as the Colorado State Demographer's Official Projection Adjusted. This adjustment involved subtracting the actual 2010 Census Count for the under 18 population from the Colorado Demographer's projected value for the population under 18 for 2010 with this difference then being subtracted from the values projected by the State Demographer for each time period from 2020 through 2040.

The values of the four scenarios differ within a relatively small range with the differences among the four projections being less than 200,000 (about 10 percent compared to the base population values) over a 30-year projection horizon. Given the similarity in total projected values, I have chosen to use my Scenario 2 projection of the population because it simultaneously takes the effects of different race/ethnicity groups into account by using 2000 to 2010 trends by race/ethnicity. The importance of race/ethnicity in the data on school programs, and for the State's future, make the use of a race/ethnicity based projection highly desirable.

The results of the applications of the percentages by race/ethnicity from Scenario 2 when applied to the alternative scenarios are shown in the bottom four panels of Table 14. These

values indicate that the impacts of the increasing diversity of the youth population will be extensive. The percentages shown for Scenario 2 indicate reductions of 8 to 9 percentage points of proportional representation per decade for nonHispanic Whites and growth in proportions of roughly 6 to 8 percentage points per decade for Hispanics. These figures further reflect increases of 7 percentage points in the total population from 2000 to 2010 for Hispanics and declines of more than 8 percentage points from 2000 to 2010 for nonHispanic Whites. The absolute changes in the numbers in each racial/ethnic group are substantial. In Scenario 2 (the scenario producing the most extensive growth), the number of nonHispanic Whites declines by at least 53,000 from 2010 to 2040. In Scenario 1 (the scenario of least growth) Hispanics increase by at least 534,000. What is evident in these data is that how well youth in Colorado do in the coming years will be increasingly dependent on how well minority youth are doing.

Appendix Table A provides projections for the population under 18 years of age in counties in Colorado for 2020, 2030, and 2040 based on the projections under Scenario 2. In these projections the overall sum of the increase in the population in each race/ethnicity group for all counties is the total state projected value for that group but the number of youth in each race/ethnicity group for each county is based on the proportion that each county's projected value for each race/ethnicity group for that decade period is of the total projected value in that race/ethnicity group for that time period for the State as a whole. The sum of the county values is controlled to the state total for that race/ethnicity group. As one would expect given the differentials in population growth rates by race/ethnicity, relatively rapid increases occur in minority, particularly Hispanic, populations in a large proportion of all counties.

Projections of the total population of the State of Colorado are provided in Table 15. The same four scenarios as used for the projections of the population less than 18 years of age are

employed but the total population is used as the base. These projections use the same underlying assumptions specified for each scenario above. As expected, given the very different patterns of change for the over and under 18 years of age populations noted above, the projections of the total population show changes that reflect the interaction of the two very different patterns of change in the younger and older populations. By 2040, the percent of Hispanics in the total population rises to 33.7 percent of the total population compared to the 53.7 percent of the population under 18 years of age. In contrast, the percentage of nonHispanic Whites in the total population falls to 53.9 percent compared to 31.2 percent in the under 18 years of age projections. These two population groups account for more than 87 percent of the total population by 2040 including nearly 4.7 million nonHispanic Whites and more than 2.9 million Hispanics. It should also be noted that by 2040 those who were under 18 in 2010 will be 30-48 years of age, critical ages of working life. These children (of today) will be major forces in determining the economy of the State of Colorado in 2040 and beyond.

Whether the values shown in Table 14 or those shown in Table 15 prevail in the longer period beyond 2040 is not determinable given the limitations of the timeline in the projections. However, it seems highly likely that the more rapid growth in minority populations than in the nonHispanic White population will continue into the future. This is suggested by the older age structure of the nonHispanic White population that makes a rebound in nonHispanic White births unlikely, while making higher mortality more likely. These birth and death patterns coupled with the fact that the locations likely to provide potential sources of nonHispanic White immigration are states with similarly older nonHispanic White populations makes growth in nonHispanic White populations through domestic migration unlikely to dramatically change the basic patterns of change. Similarly nonHispanic White growth through immigration is unlikely

because of the very low population growth rates in those countries to which the nonHispanic White population traces its heritage. Rather it is more likely that minority population growth will continue to outpace nonHispanic White population growth. In sum, Colorado's population, like that in nearly all other parts of the United States, is likely to become increasingly diverse.

Section 3: Education and Other Socioeconomic Conditions of the Population

As noted in the introduction, education is a key factor determining the likely socioeconomic resources possessed by both individuals, and the communities and states in which these individuals reside. In this section we provide findings which relate educational attainment to other socioeconomic indicators including poverty, income, and housing values for different racial/ethnic groups.

Tables 16, 17 and 18 provide data on 2009 income, poverty and housing values by educational level by race/ethnicity in Colorado derived from the 2005-2009 American Community Survey. As shown in Table 16, the median household income for nonHispanic Whites increases from \$25,287 for those with less than a high school education to \$101,047 for those with a graduate or professional level of education and from \$38,580 for Asians with less than a high school education to \$115,140 for Asians with a graduate or professional degree. By contrast, median household income for Hispanics increased from \$24,187 for households with a householder with less than a high school degree to \$69,964 for those with graduate and professional degrees and for African-Americans the median household income changes from \$18,390 for householders with less than a high school degree to \$81,558 for those with a graduate or professional degree. Similarly, the values range from \$20,989 for American Indians with less than a high school education to \$93,152 for American Indians with a graduate or professional degree. Increased education pays relative to household income.

The data in Table 17 show that just as income increases with increased education so there are large declines in levels of household poverty as the level of education of householders in Colorado increases. For example, whereas 23.9 percent of nonHispanic Whites, 39.0 percent of Hispanics, 42.1 percent of nonHispanic Blacks, 28.8 percent of nonHispanic American Indians, and 14.8 percent of nonHispanic Asian householders who had less than a high school level of education had poverty incomes, only 2.6 percent of nonHispanic Whites, 10.8 percent of Hispanics, 4.9 percent of nonHispanic Blacks, and 2.8 percent of nonHispanic Asian householders with graduate or professional degrees had poverty level incomes. The data in Table 17 indicate that in Colorado higher levels of education are major deterrents to living in poverty.

Table 18 provides data on housing values by the level of education of householders in Colorado. As educational levels of the householder increase from less than high school to graduate and professional levels of education median housing values increase from \$167,000 to \$315,000 for nonHispanic Whites, from \$125,000 to \$242,000 for Hispanics, from \$169,000 to \$260,000 for nonHispanic Blacks, from \$19,000 to \$173,000 for nonHispanic American Indians, and from \$170,000 to \$340,000 for nonHispanic Asian householders. The property values of households increase with income making it apparent that revenue sources such as property tax (often used to support education) are increased by increased levels of education in the population.

Overall, then, the data in Tables 16-18 show that additional education pays in increased income, reduced poverty, and increased housing values. In fact, in general, as noted in the introduction, increased education is not only good for the individuals who obtain it but also for the communities, states and nation in which they live.

Section 4: The Implications of Failing to Provide Adequate Educational Opportunities for Colorado's Most Vulnerable School Children

In the discussion to this point, I have shown that the school population of Colorado is increasing with the number of poor and minority students increasing more rapidly in numbers and as a percent of the total school population than nonHispanic White children. Data has also been presented that indicate that recent population patterns are likely to continue and will result in increasing numbers of minority children and disadvantaged children in programs such as the Free and Reduced Lunch Programs and English as a Second Language (ESL) Programs. Data have also been provided showing that education pays with household income and housing values increasing with increased education while the likelihood of being in poverty decreases.

In this final section, I address the issue of what is at stake for Colorado if it fails to adequately address the educational needs of those with limited socioeconomic and language resources. I examine these issues by delineating how alternative patterns of change in several parameters may change levels of educational attainment and through such a change the aggregate value of household income, levels of poverty and housing values in Colorado. The effects on levels of educational attainment are examined as they are affected by two different conditions for each of the parameters of:

1. The extent of change in the educational attainment of race/ethnicity groups between now and 2040;
2. The distribution of the Colorado population by racial/ethnic group in 2040;
3. The average size of households in each racial/ethnic group in 2040.

The year 2040 is used because the Colorado State Demographer's Office has used this as a period for examination and thus it is familiar base date for governmental planning entities in

Colorado. It also provides a period sufficiently in the future so as to clearly demonstrate the effects of long-term trends.

The use of these three parameters represents an attempt to take factors into account which may directly or indirectly affect educational attainment levels. Similarly changes in the population seem likely to occur in regard to several key characteristics. As shown above we expect that the population of Colorado will become more diverse and hence evaluations of the effects of different levels of diversity are examined relative to the racial/ethnic composition of the population.

In addition, Household size has been declining and, even for groups with historically large household sizes decreases are occurring as populations adjust to economic and familial patterns and trends. From the mid-1990s through 2009 (Mathew and Ventura, 1994, updated online 2009) it has been well established and reaffirmed by the National Center for Health Statistics, of the Center for Disease Control and Prevention (CDC) that parents' educational levels are the best predictor of how many children they will have and that the highest birth rates are among those with the least education. That is, parents with one or two years of college have sharply lower life time fertility than less educated parents, regardless of race/ethnicity. In addition, women with college degrees can be expected to complete their child bearing with 1.6 to 2 children depending on ethnicity: 1.7 for nonHispanic Whites, 1.6 for nonHispanic Blacks, and 2.0 for Hispanic women. For women with less education the total expected average number of children are 3.2 children for those with 0-8 years of education; 2.3 for those with 9-11 year of education, and 2.7 for high school graduates. Mother's education pervasively and dramatically affects their future outcomes (McLanahan, 2004). The authors noted above attribute these disparities to changes in the U.S. labor market opportunities of these mothers and to changing

governmental policies including Free and Reduced Lunch Programs for those children in poverty. Clearly then household size merits attention.

Thus for each of the three parameters the implications for educational attainment and in turn for income, poverty and housing values under two different conditions are examined. These combinations result in eight projection scenarios. For educational attainment I examine one condition in which the continuation of current differentials in attainment levels between racial/ethnic groups are assumed to continue through 2040 and a second condition in which I assume that differentials between racial/ethnic groups close so that all groups by 2040 have the same levels of educational attainment as nonHispanic Whites in 2009 (as reported in the American Community Survey data for Colorado). For the size of the racial/ethnic groups within the population in 2040, I assume under one condition that the distribution by race/ethnicity in 2040 is as indicated in the projections of the total population in (panel 2 of) Table 15 while under the second condition I assume that the total population is of the size projected in 2040 but has the racial/ethnic distribution projected to exist in the less than 18 years of age population in 2040. This second condition assumes more rapid minority population growth. For the size of households I examine one condition under which the average household size differentials by race/ethnicity are as indicated in 2009 (and reported in the American Community Survey for 2009 for Colorado) continue through 2040 while under a second condition I assume that all racial/ethnic groups come to have the same average household size in 2040 as Anglos had in 2009. Appendix B shows the distribution of the number of households in each race/ethnic group by education attainment level under each scenario.

Appendix B shows the projection scenarios which lead to alternative overall, total population levels of educational attainment and related socioeconomic implications. In general

scenarios combining assumptions that assume the 2040 population composition as projected in Population Projection Scenario 2 described in Section 2 of this report (and shown in Tables 14 and 15), 2040 levels of educational attainment equal to those of nonHispanic White households in 2009, and those assuming the household size of nonHispanic White households in 2009 produce larger values for income and housing values and lower rates of overall poverty. Those assuming the 2040 population but distributed by race/ethnicity as the less than 18 years of age population in 2040, 2009 levels of educational attainment for individual racial/ethnic groups, and 2009 household sizes have the lowest values. The two scenarios which bound the highest and lowest values are Projection Scenario 7 (generally the largest income, housing values and lowest poverty) and Scenario 2 (generally the lowest incomes, lowest housing values and highest poverty) respectively. All other scenarios fall between these two.

The data in Table 19 show that substantial differences in the socioeconomic conditions of Colorado will occur depending on whether increased educational efforts to improve the overall educational attainment levels of disadvantaged students in Colorado are implemented. Given the fact that the fastest growing segments of the population of Colorado (and for the United States population as a whole) are minority populations (U.S. Bureau of the Census, 2011) and such populations (due to a variety of historical, discriminatory and other factors) are likely to be poorer and have higher levels of need for educational programs for the disadvantaged such as the Free and Reduced Lunch, English as a Second Language and similar programs, it is evident that steps to overcome such disadvantages must be taken. The data in Table 19 indicate some of the effects of failing to take sufficient steps to ensure improved educational attainment. All dollar values shown in Table 19 are in 2009 constant dollars.

Scenario 7 represents a scenario in which the disadvantages of minority populations have been assumed to be substantially mitigated by 2040. In this scenario, education attainment levels are assumed to be the same for all racial/ethnic groups and are at the higher levels of nonHispanic Whites in 2009. The smaller household size of nonHispanic White households that are associated with increased socioeconomic resources are assumed to prevail resulting in a larger number of educated minority as well as nonHispanic White households and the 2040 race/ethnicity structure that assumes a continuation of 2000 to 2010 patterns of racial/ethnic change from 2010 to 2040 are assumed to prevail. Scenario 2 by contrast has none of these characteristics. As a result, Scenario 7's aggregate household income shows an increase of \$180 billion dollars from 2009 to 2040 compared to \$92 billion for Scenario 2, an increase of nearly \$609 billion in housing values compared to \$303 billion for Scenario 2 and shows a poverty rate that is 2.6 percent lower than that for Scenario 2.

If one assumes that the 2040 population will have the larger amount of minority growth assumed in those scenarios that use the pattern of racial/ethnic distribution of the under 18 population in 2040, the strong relationships between increased educational attainment and reduced household size suggest the use of Scenario 5. When Scenario 5 is compared to Scenario 1 (which assumes no closure in educational attainment or related decrease in household size) the differences are substantial. Aggregate household income in Scenario 5 increases by nearly \$161 billion, aggregate housing values increase by nearly \$556 billion while poverty declines by 1.7 percent from 2009 to 2040, compared to changes of \$133 billion in household income, \$457 billion in housing values, and a poverty decrease of 1.0 percent from 2009 to 2040 for Scenario 1. Although smaller than those for Scenarios 2 and 7 the differences between these scenarios are nevertheless substantial.

The data on average values present another way of examining the potential effects of failing to improve educational attainment levels for students with limited socioeconomic, language, and other resources. For example, average household income was \$80,081 in 2009 but that level of average income in 2009 would not be attained (in terms of 2009 constant dollars) in any of the scenarios in 2040 and would be reduced by more than 14,000 dollars under the conditions noted in Scenario 6. Similarly, when average house values are compared, the \$300,634 value of 2009 would not be obtained in any of the scenarios and would decline from \$18,000 to \$66,000 depending on the scenario. Finally, although poverty rates would remain stable under the conditions in Scenario 3, they would increase under all other scenarios. These are substantial impacts that would have implications for numerous private and public sector issues in Colorado.

Summary

The analyses in this report establish that Colorado schools and the general population of Colorado are changing rapidly becoming more diverse with a population that requires substantial assistance to ensure its competitiveness. As indicated in data for Free and Reduced Lunch, English as a Second Language and similar programs, the rapidly growing minority, particularly Hispanic, populations will need assistance to become better educated. Although the costs of improving their educational success may be substantial the results provided here suggest that the costs of failing to do so are even more extensive resulting in a poorer and less competitive Colorado. In sum, it is evident that the future of Colorado is increasingly tied to its minority populations, that their economic future is tied to their educational attainment, and that how well they do socioeconomically is increasingly how well Colorado will do.

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