THE EMERGING EDUCATION REVERSAL IN THE UNITED STATES: NATIONAL AND STATE-LEVEL TRENDS[1]

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For over two hundred years, educational attainment in the United States has climbed, with the largest gains occurring recently from 1940 through 1980. Today the adult population is at or near its highest level ever with 88 to 89 percent high school graduates and close to 30 percent college graduates. But there are signs of change. Beginning in the mid-2000s, attainment amongst adults has flattened. A closer look at this educational 'ceiling' reveals that the educational gains of the population have not only stopped but are beginning to decline. Using Census and ACS data, we find that a reversal is underway in Americans' education attainments. This reversal emerged for the newest members of the adult population around 2000. In addition, college completion rates, although not yet reversed, are slowing dramatically. Looking at the problem spatially, no state had an educational reversal in 1990, but, by 2000, in nearly every western state the percentage of high school graduates was lower among young adults (age 25 to 34) than among prime age adults (age 45 to 64). By 2007, the reversal was deepening in several western states, had spread east through Texas and the Great Lakes region, and also appeared along the south Atlantic seaboard and the East Coast.

BACKGROUND

Demographers keep a keen eye on education in the United States, raising red flags whenever issues appear. Researchers tend to focus on vulnerable groups in the U.S. and their educational achievements vis-à-vis other groups or national averages. They point out, for example, deficits in attainment related to welfare receipt (Ku and Plotnick 2003), childhood health (Palloni 2006), gender (Buchmann, DiPrete, and McDaniel 2008) race and ethnicity (Kao and Thompson 2003), and racial segregation (Bankston and Caldas 1996). Others discover alarming drop out rates, for example among second and third generation immigrants (Perreira, Harris, and Dohoon 2004). These alarms have been raised within a positive context, and with the expectation of remediation: For many years, the education literature had the happy task of delivering mainly good news reflecting ongoing increases in educational attainment of the U.S. as a whole, there were plenty of problems, but the strong underlying positive dynamic allowed us to focus on

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understanding and remediation of the problems whilst taking for granted the broad functionality of the system.

For example, the Census Bureau's most recent educational attainment report focuses on Hispanics, gender, regions and immigration as the big news (Crissey, 2009). Using 2007 American Community Survey (ACS) data, the report gives detailed tables of educational attainment by age, gender, race and ethnicity, and nativity. But what the text does not mention is a striking education reversal: The high school completion rate for Americans aged 25 to 29 is 86.1%, compared to 88.1% and 88.0% for the populace aged 50-54 and 55-59 (Crissey 2009: Table 1, p 3). Moreover, a review of major social science journals suggests that this trend slipped in under the social science radar, perhaps in part because our focus on single cohort panel studies distracted attention from trends.

Our purpose here is to examine the trends, in particular drawing attention to the emerging education reversal.

DATA AND METHODS

The data used in this analysis are from the U.S. Census and the American Community Survey (ACS). The "long form" subsample of the decennial Census of the United States provides information on educational attainment from 1940 through 2000. We utilized the Public Use Micro Data representing 5% of the entire Census. The ACS is administered by the Census Bureau and is meant to substitute for the old long form sample, with the advantage of being conducted annually. It provides the information we use here on educational attainment in 2007. The ACS and the Census data are made available through the University of Minnesota's Integrated Public Use Microdata Series (IPUMS)[2].The ACS is now better than the Current Population Survey for measuring educational attainment in the U.S. next to the Census as it has the larger sample size and covers smaller geographic units (Crissey 2009:1).

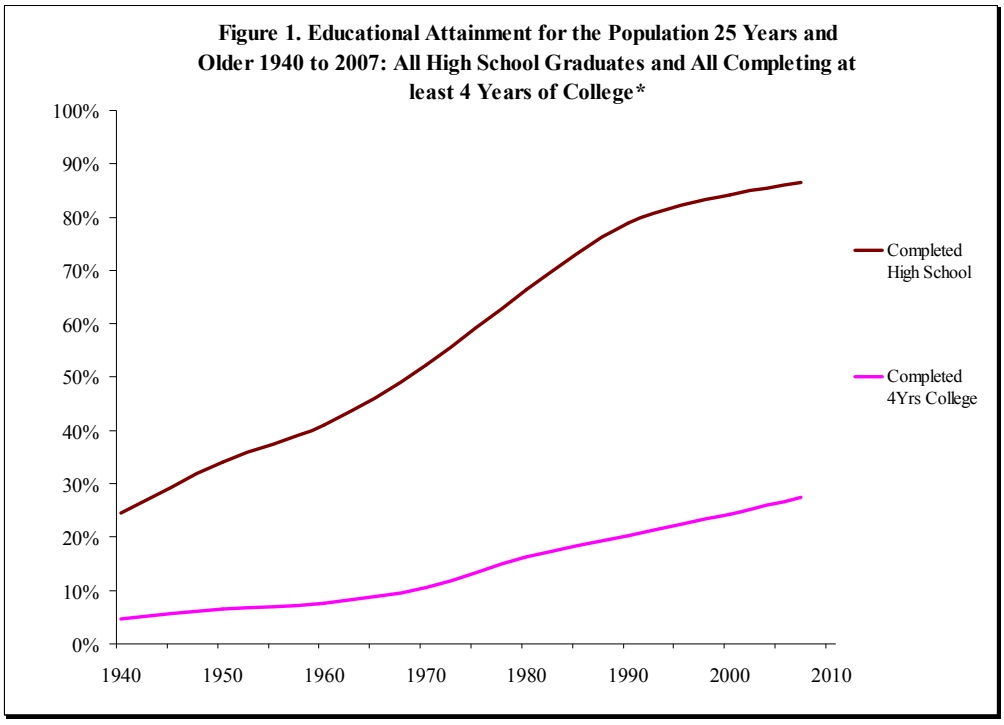
The methods for presenting education reversal here are descriptive. We utilized the weighted Census and ACS data to construct tables of educational attainment by age for the nation and then by state. Using these percentages we made graphical representations including the shaded maps showing reversal trends from 1990 through 2007.

The measurement of educational attainment was highest grade completed for the 1940 through 1990 Census data. For the 2000 Census and the 2007 ACS, attainment includes specific degree attained. Thus, to mesh the series, we need to make these assumptions: (1) that completing 12 grades from 1940 through 1990 is the equivalent of attainment of a high school diploma and (2) completing 16 years of school from 1940 through 1990 is assumed to be the equivalent of a bachelor's degree.

[2] Available at www.usa.ipums.org/usa/

NATIONAL EDUCATIONAL TRENDS IN AMERICAN ADULTS

It is true that Americans are more educated than ever. Indeed the prevalence of high school graduates in the adult population has risen every year since the Census Bureau began measuring educational attainment in 1940. In 1940, less than 25% of American adults had completed high school and only 5% were college graduates (Figure 1). Since then, every cohort in the United States on average achieved more education than the cohorts their parents belonged to.

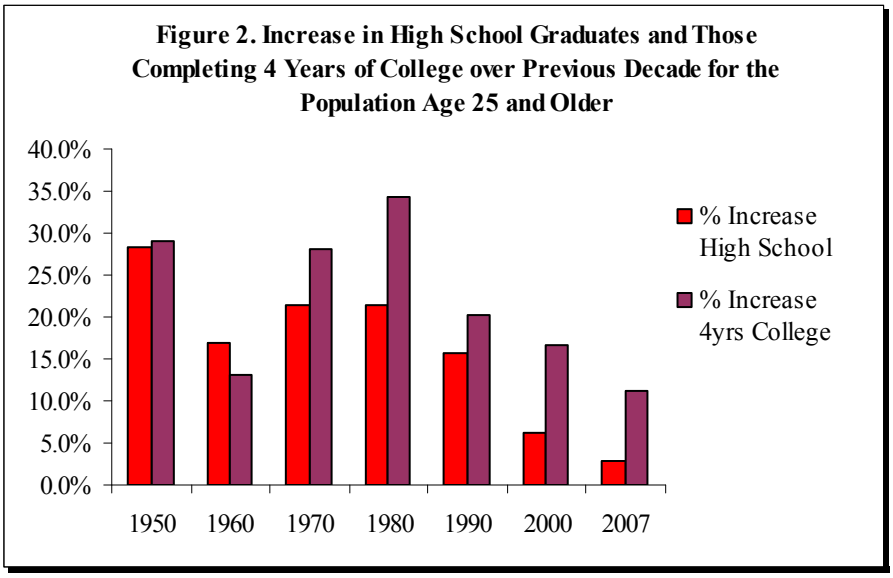


*The 1940 through 2000 data are from the U.S. Census available as Public Use Micro Samples available through Integrated Public Use Microdata Series (IPUMS) at www.usa.ipums.org/usa/, syntax available upon request from the authors. The 2007 data are from the American Community Survey also available through IPUMS.

This strong educational growth across the decades has generated a very highly educated population. By 2007, over 85% of adults age 25 and older had a high school diploma and almost 30% had completed college (Figure 1). Thus, the American adult population has changed from one in which about 1 person in 4 was a high school graduate to a population in which more than 3 persons in 4 are high school graduates, a tremendous shift in cognitive skills.

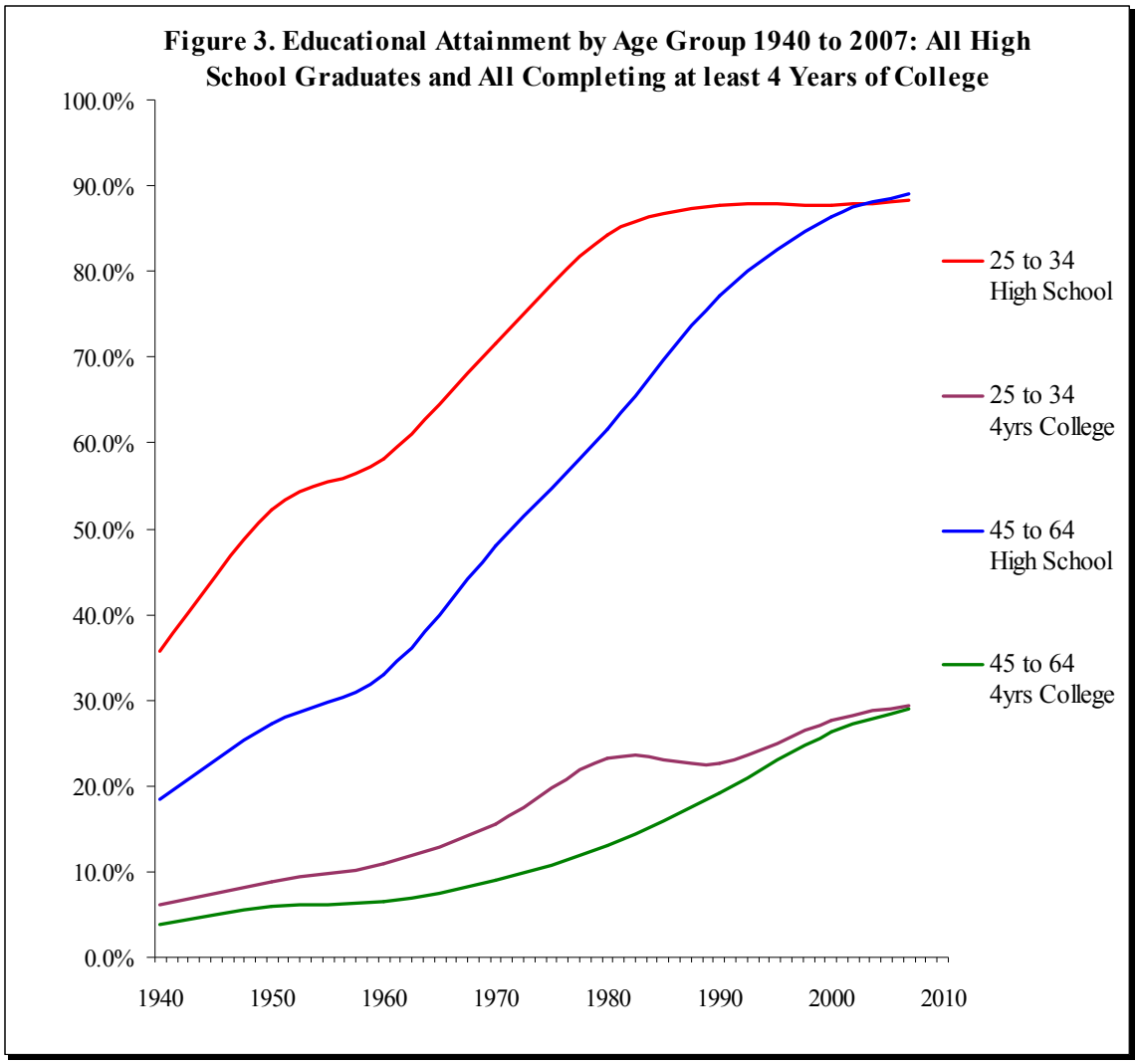
This winning streak appears to have slowed a bit around 1990, and slowed further around the turn of the millennium (Figure 1). This pattern is even clearer if we focus on inter-decade changes: for the population age 25 and over, the percentage increase in the

prevalence of high school graduates has been dropping steadily since 1980 (Figure 2). The same is true for college graduates.



The process of cohort replacement, with each succeeding cohort being more highly educated than its predecessors, is the dominant process generating the changes in the prevalence of high school graduates. The changing educational qualifications of the workforce is of great interest, so we focus here on the comparison between young adults age 25 to 34 and prime age adults 45 to 64. Historically, the 25 to 34 year old population has had a high school completion 15 to 20 percentage points higher than the 45 to 64 years olds (Figure 3, top two lines). The gap in the prevalence of completion of 4 years of college has traditionally run about 2 to 5 percentage points (Figure 3, bottom two lines). Around 1990 this long-standing separation began to shrink, and the rates converged between the two age groups with the new millennium.

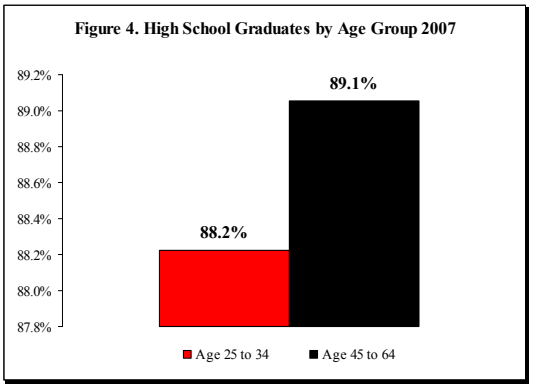
The convergence seems unlikely to reflect a ceiling effect. Necessarily a ceiling effect would set in if the overall rate were to approach 100%: the prevalence of high school graduates in the two age groups would then forcibly converge. Yet, with almost 20% of the population still lacking a high school diploma, there is still somewhere around 60 million people who could attain a high school diploma before the cohort paths forcibly converge. Instead they have already converged, crossed and appear to be headed in separate directions.

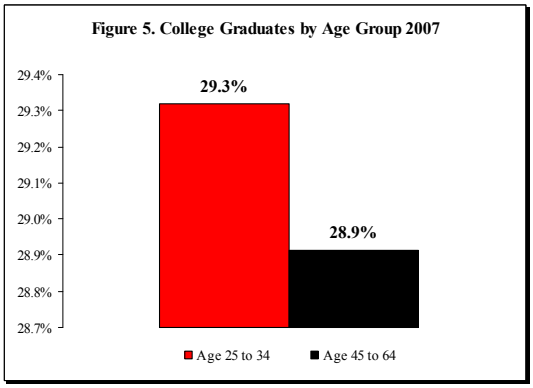


As shown in Figure 3, around 1980, the prevalence of high school graduates amongst the younger members of the adult population, those 25 to 34 years old, leveled off and held steady or declined slowly since. By contrast, the rate of increase in the prevalence of high school completion among prime age adults has held fairly steady, with the prevalence of high school graduates in this age group continuing to increase strongly throughout this series. As a result, just after the millennium, the prevalence of high school graduates in the two groups converged, and then, for the first time since we have had data on the topic, the prevalence of high school graduates in the older age group was higher than among their juniors. A broadly similar pattern is evident in the percentages who completed college in the two age groups. Thus, shortly after the turn of the millennium, attainment of the older age group began to exceed the younger one[3]. If this continues, succeeding cohorts of Americans will eventually no longer be more educated than ever.

[3] According to the ACS this first occurred in 2004 and according to the Current Population Survey in 2002 (see Appendix 1 & 2).

The size of the reversals is not yet large. In terms of the prevalence of high school graduates in the 25 to 34 year old cohort, there is about a 1 percent less attainment in 2007 than the 45 to 64 year olds (Figure 4). For those who attained 4 years of college or more, the 25 to 34 year olds retain only a 0.4 percent greater rate (Figure 5). In both cases it is clear that the national rates of attainment have converged for the age groups.





Does this pattern hold throughout the US, or is it a product of conflicting regional trends? To find out, we turn to an assessment of state-level patterns for 1990-2007.

REGIONAL TRENDS

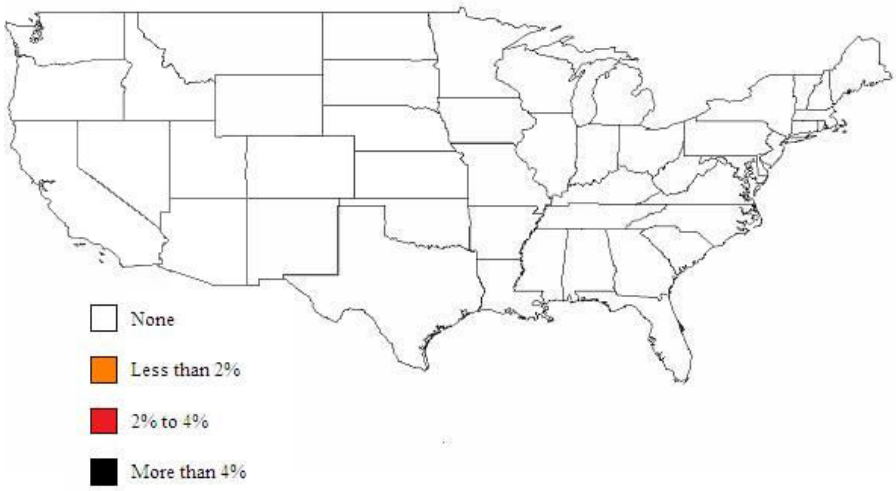
In 1990, the traditional pattern of higher attainments in the 25-34 year old group than in the 45-64 year old group held in every single American state. But in 2000, the new reversal trend appeared first in the western states. In 2000, a handful of states became the first ever to have a population of young adults, aged 25 to 34, who were less educated than people approximately their parents' age, 45 to 64 (Maps 1-3, details in Appendix 3, Table 1).

The harbingers were the 10, mostly Western, States of Arizona, California, Colorado, Idaho, Kansas, Nebraska, Nevada, Oregon, Utah, and Washington. The trend spread widely: By 2007, 26 States showed this reversal. It had spread to every single western state except Montana, had spread into the Western Great Lakes region, and had emerged on the southern Atlantic seaboard (See Map 1-3).

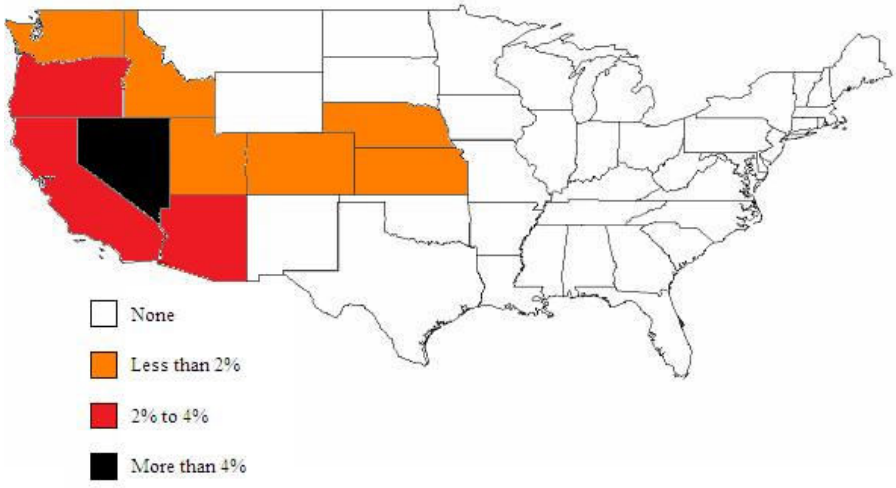
Moreover, the reversal is deepening. In 2000, only one state (Nevada) had a deep reversal of more than 4 percentage points. By 2007, the deep reversal in Nevada persisted, and deep reversal had also emerged in Oregon, Arizona, and Nebraska. So the reversal is both spreading and deepening.

Maps 1-3. Education Reversal by State.

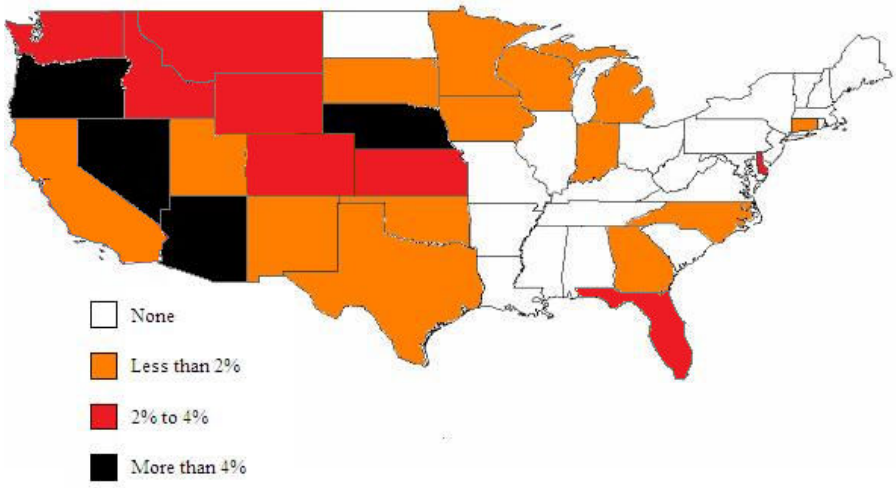
1990



2000



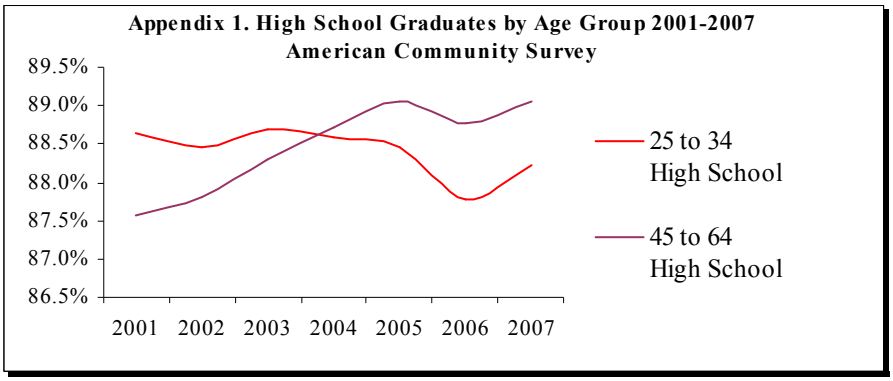
2007

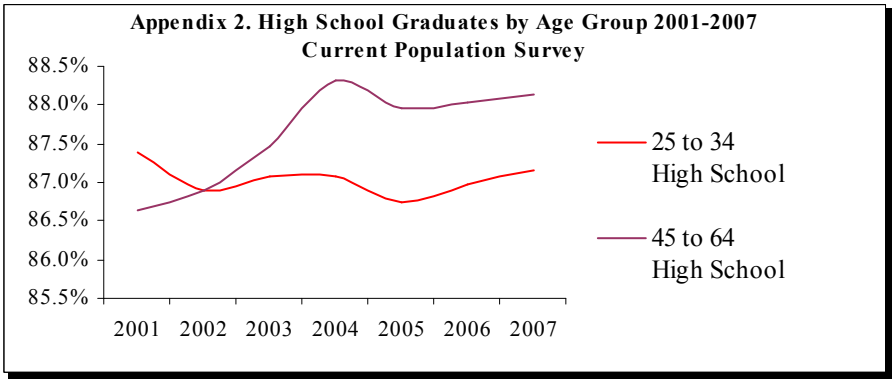


CONCLUSION

In sum, America's working age population displayed a long trend of substantial increase in the prevalence of high school graduates and college graduates, although the increases have slowed in recent years. The traditional trend generated a working age population in which the attainments of the young adults at any point in time; considerably exceeded the attainments of their seniors. But the prevalence of secondary school completion in the young adult age group hit a plateau followed by a gentle decline beginning in 1980. By contrast, prevalence continued to climb for the 45-64 year old age group, so that the traditional gap between them vanished and, by the end of the series had actually reversed so that the prevalence of high school graduates was higher in the older group in the last few years. Probing more deeply to find out if the trend holds everywhere, we investigated educational attainments of the adult population by state. The reversal emerged first in 10 western states, especially Nevada in 2000. By 2007, reversals were evident throughout the west and emerged across the western Great Lakes region, and appeared sporadically in the southern Atlantic seaboard and the East Coast.

APPENDIX


Appendix 1. High School Graduates by Age Group 2001-2007
American Community Survey
89.5%
89.0%
88.5%
88.0%
87.5%
87.0%
86.5%
2001 2002 2003 2004 2005 2006 2007
25 to 34 High School
45 to 64 High School


Appendix 2. High School Graduates by Age Group 2001-2007
Current Population Survey
88.5%
88.0%
87.5%
87.0%
86.5%
86.0%
85.5%
2001 2002 2003 2004 2005 2006 2007
25 to 34 High School
45 to 64 High School

Appendix 3. Percent High School Graduates by Age Group and State, 1970-2007

	1970				1980				1990				2000				2007			
State	25+	25-34	45-64	Diff.	25+	25-34	45-64	Diff.	25+	25-34	45-64	Diff.	25+	25-34	45-64	Diff.	25+	25-34	45-64	Diff.
Arizona	57%	70%	55%	14.8%	72%	85%	69%	16.2%	82%	87%	80%	6.8%	85%	84%	87%	-3.0%	85%	83%	89%	-5.4%
Nevada	65%	75%	61%	13.7%	75%	86%	71%	15.4%	84%	88%	82%	5.6%	86%	84%	89%	-4.7%	86%	84%	89%	-5.3%
Nebraska	59%	82%	56%	26.1%	74%	92%	71%	20.9%	84%	94%	84%	10.2%	89%	92%	92%	-0.4%	92%	90%	95%	-4.5%
Oregon	60%	78%	58%	20.3%	76%	90%	72%	18.1%	85%	89%	85%	4.5%	88%	88%	92%	-3.9%	90%	89%	93%	-4.4%
Colorado	64%	79%	61%	17.5%	79%	91%	74%	16.4%	87%	92%	86%	6.0%	90%	90%	92%	-2.2%	91%	89%	93%	-3.7%
Wyoming	61%	79%	59%	19.7%	78%	89%	74%	15.5%	86%	92%	84%	8.6%	90%	93%	93%	0.3%	93%	92%	96%	-3.7%
Delaware	53%	73%	47%	25.7%	68%	85%	63%	22.5%	81%	90%	78%	11.7%	86%	90%	88%	2.7%	89%	89%	92%	-2.7%
Kansas	60%	79%	59%	20.5%	73%	90%	72%	18.4%	84%	92%	84%	7.6%	89%	91%	92%	-1.0%	90%	90%	93%	-2.7%
Idaho	59%	75%	57%	18.2%	73%	88%	69%	18.8%	83%	88%	83%	5.6%	88%	90%	90%	-0.7%	90%	90%	92%	-2.7%
Washington	63%	80%	62%	17.9%	77%	91%	74%	16.8%	87%	91%	86%	5.2%	90%	90%	93%	-2.2%	91%	91%	94%	-2.5%
Montana	60%	79%	56%	23.0%	74%	91%	71%	19.9%	84%	92%	83%	9.2%	90%	94%	93%	1.2%	91%	92%	94%	-2.2%
Florida	52%	67%	51%	16.3%	67%	83%	65%	18.0%	79%	87%	78%	9.4%	85%	88%	86%	1.4%	87%	88%	90%	-2.0%
Oklahoma	51%	73%	47%	25.7%	66%	85%	61%	23.1%	78%	88%	77%	10.4%	84%	89%	87%	1.8%	87%	87%	89%	-1.9%
Utah	68%	81%	65%	16.8%	80%	91%	76%	14.2%	88%	92%	87%	4.9%	91%	91%	93%	-1.8%	92%	92%	94%	-1.5%
Iowa	59%	81%	58%	23.5%	72%	91%	69%	22.0%	82%	93%	82%	11.3%	88%	93%	92%	1.3%	91%	93%	94%	-1.5%
Minnesota	57%	83%	52%	31.2%	73%	93%	68%	25.8%	85%	95%	84%	11.1%	90%	95%	93%	1.6%	93%	94%	95%	-1.3%
North Carolina	39%	61%	26%	34.8%	55%	78%	42%	36.0%	73%	86%	68%	17.9%	81%	88%	83%	4.9%	85%	86%	88%	-1.3%
California	63%	77%	60%	16.6%	74%	84%	71%	12.7%	81%	83%	80%	3.0%	82%	81%	84%	-3.2%	83%	84%	85%	-1.1%
Wisconsin	54%	79%	49%	30.1%	70%	90%	65%	25.2%	81%	92%	81%	11.0%	88%	93%	92%	1.3%	91%	93%	94%	-0.8%
Texas	47%	65%	40%	25.1%	63%	79%	55%	24.3%	75%	83%	73%	10.1%	79%	81%	81%	0.0%	81%	82%	83%	-0.7%
South Dakota	53%	77%	50%	27.3%	68%	90%	65%	25.9%	79%	92%	77%	15.2%	87%	93%	90%	2.4%	90%	93%	93%	-0.7%
New Mexico	55%	67%	53%	13.4%	69%	84%	63%	20.9%	79%	86%	75%	11.2%	82%	86%	85%	0.4%	84%	86%	87%	-0.6%
Indiana	53%	70%	50%	20.8%	66%	83%	61%	22.4%	79%	88%	76%	12.7%	85%	90%	87%	2.5%	88%	90%	90%	-0.6%
Michigan	53%	73%	47%	26.4%	68%	86%	61%	24.4%	80%	90%	78%	12.4%	87%	91%	89%	2.0%	89%	91%	92%	-0.6%
Georgia	40%	61%	31%	29.7%	56%	78%	44%	33.7%	74%	86%	70%	15.8%	82%	87%	83%	4.2%	85%	86%	87%	-0.5%
Connecticut	56%	75%	51%	24.0%	70%	87%	67%	20.3%	83%	92%	81%	10.4%	87%	92%	89%	3.0%	90%	92%	92%	-0.4%
Rhode Island	46%	67%	40%	26.7%	61%	83%	55%	28.3%	76%	88%	74%	13.5%	81%	88%	84%	3.2%	84%	88%	88%	0.0%
Ohio	53%	71%	50%	21.6%	67%	85%	62%	23.2%	79%	90%	76%	14.1%	86%	92%	88%	4.2%	89%	91%	91%	0.0%
New Jersey	52%	72%	47%	25.3%	67%	86%	64%	22.3%	81%	91%	79%	11.7%	86%	91%	88%	2.9%	89%	91%	91%	0.1%
Maryland	52%	71%	46%	24.6%	67%	85%	59%	25.8%	82%	91%	78%	12.3%	87%	92%	89%	3.3%	89%	92%	91%	0.2%
Illinois	52%	73%	47%	25.2%	67%	84%	62%	21.8%	80%	89%	78%	10.6%	85%	89%	87%	1.4%	88%	90%	90%	0.4%
Pennsylvania	50%	73%	45%	28.6%	65%	87%	60%	26.9%	78%	91%	77%	14.5%	85%	92%	88%	3.9%	89%	92%	92%	0.5%
Missouri	49%	72%	44%	28.7%	63%	85%	58%	27.0%	77%	89%	76%	13.1%	85%	91%	87%	3.4%	87%	91%	90%	0.9%
New Hampshire	57%	74%	54%	20.1%	72%	88%	67%	20.8%	85%	92%	82%	10.4%	90%	94%	91%	3.0%	92%	95%	94%	0.9%
Louisiana	42%	63%	34%	29.0%	58%	79%	47%	32.1%	72%	83%	69%	14.6%	79%	86%	81%	4.7%	82%	86%	85%	1.0%
Alabama	41%	62%	34%	28.6%	56%	77%	49%	28.6%	71%	85%	68%	16.7%	79%	87%	81%	5.7%	83%	87%	85%	1.0%
Mississippi	41%	57%	35%	22.1%	54%	73%	48%	25.1%	69%	82%	65%	16.4%	78%	86%	78%	8.3%	81%	85%	84%	1.1%
New York	53%	71%	49%	22.5%	66%	84%	63%	20.5%	80%	89%	78%	11.2%	84%	88%	85%	3.6%	86%	89%	88%	1.5%
Vermont	57%	73%	55%	18.4%	71%	89%	63%	26.3%	83%	92%	80%	12.0%	89%	95%	90%	4.6%	92%	95%	93%	1.5%
Maine	54%	69%	52%	16.9%	69%	86%	63%	23.5%	81%	91%	77%	15.0%	88%	94%	89%	4.5%	91%	95%	93%	1.7%
South Carolina	37%	56%	27%	29.7%	54%	76%	40%	35.2%	72%	85%	65%	19.1%	80%	88%	80%	7.5%	84%	88%	86%	1.7%
North Dakota	51%	78%	44%	34.0%	66%	92%	58%	33.8%	79%	95%	76%	19.0%	86%	96%	91%	5.5%	90%	96%	95%	1.7%
Alaska	67%	76%	61%	15.7%	82%	91%	72%	19.5%	89%	93%	84%	9.4%	91%	94%	92%	2.1%	92%	94%	92%	1.8%
Arkansas	40%	62%	34%	27.9%	55%	78%	49%	29.0%	70%	85%	69%	16.5%	80%	88%	83%	4.9%	84%	88%	86%	1.9%
Virginia	48%	65%	41%	24.3%	63%	81%	52%	29.1%	78%	88%	73%	15.0%	84%	90%	85%	5.3%	88%	91%	89%	2.1%
Tennessee	42%	61%	36%	25.5%	56%	77%	48%	29.7%	71%	84%	66%	18.7%	80%	88%	81%	7.2%	83%	88%	86%	2.4%
Massachusetts	58%	76%	56%	20.2%	72%	88%	69%	19.4%	83%	92%	81%	11.1%	88%	93%	89%	4.2%	90%	94%	91%	2.5%
West Virginia	41%	61%	36%	25.6%	56%	78%	49%	28.9%	69%	84%	65%	18.3%	78%	88%	80%	7.7%	83%	88%	85%	2.9%
Hawaii	62%	84%	48%	36.0%	74%	91%	65%	25.2%	83%	94%	82%	11.9%	88%	95%	90%	5.2%	91%	96%	93%	3.2%
Kentucky	38%	57%	33%	23.2%	53%	74%	45%	29.4%	68%	83%	62%	21.2%	77%	87%	78%	8.9%	82%	88%	84%	4.0%
District of Columbia	55%	70%	50%	19.4%	67%	84%	58%	25.8%	79%	86%	75%	11.5%	84%	89%	85%	4.2%	88%	95%	88%	6.7%

REFERENCES

Bankston, C.L. III and S.J. Caldas. 1996. "Majority African American Schools and Social Injustice: The Influence of De Facto Segregation on Academic Achievement." *Social Forces* 75:535-55.

Buchmann, C., T.A. DiPrete, and A. McDaniel. 2008. "Gender Inequalities in Education". *Annual Review of Sociology* 34:319-37.

Crissey, S.R. 2009. "Educational Attainment in the United States: 2007". *U.S. Census Bureau*. Accessed online, March 2nd, 2009 through www.census.gov.

Kao, G. and J. Thompson. 2003. "Racial and Ethnic Stratification in Educational Attainment and Achievement". *Annual Review of Sociology* 29:417-42.

Ku, I. and R. Plotnick. 2003. "Do Children from Welfare Families Obtain Less Education?" *Demography* 40: 151-70.

Palloni, A. 2006. "Reproducing Inequalities: Luck, Wallets, and the Enduring Effects of Childhood Health". *Demography* 43: 587-615.

Perreira, K.M., K.M. Harris, and L. Dohoon. 2004. "Making it in America: High School Completion by Immigrant and Native Youth". *Demography* 43: 511-46.