

Compulsory Attendance Laws and Nineteenth Century Schooling

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This paper uses census and administrative data and difference-in-difference estimation to identify the effects of compulsory attendance laws on attendance of white children outside the South during the period 1860-1920. The previous literature found little effect of the laws. This is somewhat surprising, given that the passage of laws coincided with rising attendance. This paper finds modest average effects of the laws, 2-4 percent increases in enrollment, for the 1880-1900 and 1900-1920 periods. The effects were larger for specific age and demographic groups including thirteen year olds, children of immigrants, urban children, and males.

1. Introduction

The success of the American economy during the nineteenth century and much of the twentieth century is often in part attributed to the high levels of education of the populace. Most white native-born Americans were literate and numerate by 1850, if not earlier. This put them far ahead of their European counterparts. Literacy and numeracy helped make them better farmers, workers, managers, and innovators. As the skill-base grew deeper and extended to more individuals and innovations spread, the economy grew.¹

America's literacy and numeracy was facilitated by widespread locally-provided and locally-controlled primary school systems.² States passed compulsory attendance laws requiring children of specific ages, commonly 8-12 or 8-14, to attend school for a specified length of time per year. Coincident with the passage of these laws, school enrollments and the highest grade attended rose. Yet, the conventional wisdom is that the schooling laws had little effect on schooling in the United States before 1915.³ Although it is possible that the laws had no effect, this conventional wisdom still seems surprising.

This paper uses census and administrative data and difference-in-difference estimation to identify the effects of compulsory attendance laws on attendance of white children outside the South during the period 1860-1920.⁴ The South is excluded, because its educational system differed significantly from the rest of the United States over the entire period of interest. Nonwhites are excluded, because they faced limitations in their access to schools. The analysis examines the effects of the laws in three 20-year periods: 1860-1880, 1880-1900, and 1900-1920. These three periods correspond to the first and second waves of adoption of compulsory attendance laws and a third wave in which a few remaining states adopted laws, and many states revised the age at which children were allowed to leave school.

The two data sets allow examination of different aspects of the compulsory attendance laws. The state administrative data are aggregate but biennial, whereas the census data are disaggregate but decadal. The administrative data make it possible to examine the timing of the effects of the law. Because the administrative data are only available beginning in the 1870s and data quality is a concern in the early years, estimates using administrative data evaluate 1880-1900 and 1900-1920. The census data are available beginning in 1850 and cover all three periods. The disaggregate nature of the census data permits investigation of the effects of the laws on specific ages such as thirteen year olds and on subgroups such as male, urban, and foreign-born children.

¹ Goldin and Katz (2008) review much of the evidence for this.

² See Cubberly (1919) and Fischel (2009) on local schools.

³ See Landes and Solomon (1972). Later scholars such as Lleras-Muney (2002) and Goldin and Katz (2008) refer to this stylized fact.

⁴ The South is used to refer to states in the Confederacy. Border states such as Kentucky and Missouri are in our sample.

This paper finds that the compulsory attendance laws were effective at increasing enrollment during 1880-1900 and 1900-1920, but not during 1860-1880, and that the effects were heterogeneous. The average effect of the passage of a law in Census data for children ages 10-14 was 2-3 percent. The average effect of the passage of a law in administrative data for children ages 5-17 was 2-4 percent. Pre-law enrollments were 60-80 percent of school age children, so these increases represented sizeable reductions in the fraction of children not attending school. In 1880-1900, the effects were larger in counties that had below-median pre-passage enrollments. The effects were also larger for specific subgroups such as thirteen year old children with foreign-born fathers (5.2 percent) and thirteen year olds who did not live on farms (4.6 percent). In 1900-1920 the effects were larger for thirteen year old children living in urban areas (6.5 percent) and thirteen year old males (5.2 percent).

These findings contribute to the literatures in history and economics on the efficacy of compulsory attendance laws. Five previous papers have examined aspects of compulsory attendance during the period 1860-1920.⁵ Two papers, Landes and Solomon (1972) and Eisenberg (1988), used the administrative data for 5-17 year olds that this paper draws on, but used the data at decadal intervals or for just two states. Landes and Solomon (1972) found no effect of laws and Eisenberg (1988) found effects of 2-3 percent in Iowa and Pennsylvania. Three other papers, Margo and Finnegan (1996), Moehling (1999), and Puerta (2009) used Census data to examine attendance in 1900, child labor in manufacturing in 1880-1910, and attendance in 1860-1910. Margo and Finnegan (1996) found positive but insignificant effects of compulsory attendance laws when comparing younger and older 14 year olds in states with and without laws in 1900, and positive and significant effects in six states that also had strong child labor laws. Moehling (1999) found no effect of child labor laws on children's employment in manufacturing or overall.⁶ Both papers were hindered by the small Census samples available at the time. Puerta (2009), using townships on either side of state borders, finds a 7 percent increase in enrollment associated with adoption of compulsory attendance laws in Massachusetts (1852) and Vermont (1867). Using counties on either side of state borders, he does not find any effects of later laws. This may be because of the sample restriction to border counties, the inclusion of southern states, or both.

This paper also extends the literature by investigating the heterogeneous effects of compulsory attendance laws. The only other paper to examine the effects of compulsory attendance laws on different groups is Lleras-Muney (2002), which examines the period 1915-1939.⁷ Using data from the 1960 Census of Population on education attainment, she found that the laws had differential effects on blacks and whites, differential effects on

⁵ A number of other papers in the larger literature examine later periods or examine the South. On the South, see Margo (1990), Greenbaum (2009), Aaronson and Mazumder (2009). On later periods, see Stigler (1950), Edwards (1978), Land and Kropp (1986), Schmidt (1996), Acemoglu and Angrist (2000) and Lleras-Muney (2002).

⁶ Puerta (2007) finds some evidence that child labor laws had an effect child labor between 1900 and 1920. Manacorda (2006) finds evidence that the laws were effective in 1920.

⁷ See also Schmidt (1996), who looks high school attendance 1915-1935 using a case study of New York and national Census data.

white males and females, and differential effects at different points of the education distribution.

2. A Model of Parental Decision-Making About Schooling

A simple model of parental decision-making, adapted from Edmonds (2007), highlights important aspects of parental decision-making about schooling. Consider a family with some exogenous income Y and utility over the family's standard of living and the quality of children. For simplicity, fertility is exogenous and the family is assumed to have one decision maker – the parent – irrespective of the number of parents actually living in the home. The parent's utility function is represented with $u(S, \bar{V}_k)$, where S is the current standard of living, and $\bar{V}_k = V_1 + \dots + V_K$ is the sum of the future welfare \bar{V}_k of each of the K children. In principle, the parent could make a decision in every period, where a period might be a school year or at each child's birthday, regarding schooling. For simplicity, the parent is considered to make the choice at a single point in time.

Each child's time constraint is represented by $E_k + M_k + H_k = 1$, where E_k is time spent on education of child k , M_k is market work, and H_k is household work.

The child's future welfare is a function of education, given by $V_k = R(E_k)$ with $R' > 0$, $R'' < 0$. In other words, education has an increasing but diminishing effect on each child's returns to education and future welfare. In the market each child can earn wage w_k , where the wage is increasing with the age of the child. Each child also has costs the family p_k to support. The household consumes a good c_{\min} , which must be greater than some subsistence level c and faces a budget constraint net of all child income and costs

$$c_{\min} \leq c \leq Y + \sum_k w_k M_k - \sum_k p_k$$

The standard of living S is a function of consumption of c and the sum of home production H , $S = F(c, \sum_k H_k)$.

The parent thus faces the following problem:

$$\max_{E_k, M_k, H_k} u(F(Y + \sum_k w_k M_k - \sum_k p_k, \sum_k H_k), \sum_k R(E_k))$$

subject to the constraint on each child's time use and the budget constraint.

The parent's problem identifies a number of factors likely to affect children's schooling. Parents' perceptions of the value of schooling and their discount rates will be embedded in $V_k = R(E_k)$. These may be influenced by the parent's background. For example foreign-born parents may value education more or less than native-born parents.

Decisions regarding schooling are likely to vary with a child's age and gender. The

value of home and market labor generally increases with age.⁸ Gender will also influence the relative values of market and home production, which has implications for schooling.

Policies may affect children through the change in the costs and benefits of school attendance. For example, decreases in the costs of attending school such as decreases in school fees and decreases in the distance to school are likely to increase the probability of attendance, by decreasing the relative value of market and home work for a child.

Compulsory attendance laws also decrease the relative value of market and home work for a child. The amount depends on the expected punishment. If the expected punishment is low, the marginal effect is likely to be low. Similarly, if the expected punishment is high, the marginal effect is likely to be high.

3. Compulsory Attendance Laws

The International Context

In the United States, passage of compulsory schooling laws was a state affair that occurred between 1852 and 1918. This was the same period that saw adoption of compulsory schooling laws in many countries abroad. Soysal and Strang (1989) date the first compulsory laws in Europe. A number of nations preceded the United States: Prussia in 1763, Spain in 1838, and Sweden in 1842, for example, while many passed laws contemporaneously with the American states. The United Kingdom passed compulsory schooling in 1880, and France followed closely in 1882. The Low Countries, as with the American South, waited until the early 20th century to initiate compulsory education. Canadian provinces, like American states, had individual compulsory schooling laws, beginning with Ontario in 1871 (Oreopoulos, 2006). Countries in South and Central America passed laws during this period, although they were passed “more as utopian projects than as any reflection of reality.” Garrido (1986).

The Pre-Law Period

The period up to 1870 can be thought of as a period in which only a very small share of children were subject to laws.⁹ The first compulsory attendance law was passed in Massachusetts in 1852. Only three states – Massachusetts, Vermont, and the District of Columbia – passed compulsory attendance laws prior to 1870.

Data on schooling up to 1870 comes from the 1850, 1860, and 1870 Censuses of Population. Each of the censuses from 1850 to 1920 contained a question about school attendance. The question was of the form “Did this person attend school during the previous ___ months?”¹⁰ Table 1 provides the time periods over which the question was

⁸ Fishlow (1966) provides evidence on the income foregone by urban and rural children who attended school.

⁹ For a more detailed discussion of schooling in the pre-law period, see Cubberley (1919) and Fischel (2009).

¹⁰ The instructions specifically excluded night school attendance in 1870 and 1880 and older teens may have been missed in 1900. See Carter (2008).

asked. The enumeration dates were constant and involved a constant time period from 1850-1900. The 1900 Census was exceptional in that months of school attendance were recorded. For comparability between years, school enrollment in 1900 is measured as an individual being listed with positive months of attendance and school enrollment in other years as a positive response to the school question. The 1910 and 1920 Censuses were taken at earlier dates and asked about school attendance since September.

The census data have a number of limitations. Census data are self-reported and are only available every ten years. Margo (1990) finds evidence of an undercount of black school attendance in 1900 based on the wording of the attendance question. Because even one day of school attendance could provide a “Yes” to this question, it is closer to a measure of enrollment level than attendance.¹¹ Also, it is impossible to tell from the Census how a child divided his or her time: whether a child went to school full-time or part-time. Each of the censuses recorded children’s occupations, but it is impossible to determine whether those who reported both employment and school attendance engaged in these sequentially or simultaneously. For example, a child may have been employed outside the school term, and thus be listed with an occupation even if the child was in school full time.

Figure 1 provides census enrollment for white children by age for states *without laws* in 1850 and 1870, outside the South. It shows that some type of school attendance was common in 1850, even in the absence of a law. In Figure 1b, attendance rates for the South are included. The South lagged the rest of the country in terms of enrollment, and the gap increased after the Civil War, as attendance rates in the South declined while rates in the North increased. Much of the schooling would have been taking place in one-room school houses for fairly short periods of time. Children would get more and more systematic instruction in later years, but the stage had already been set.

Enrollment for most ages in these states rose between 1850 and 1870, again in the absence of laws. The increase was largest for children ages 10 to 14. Enrollment at the youngest ages declined, as reformers worked to remove young children from school. The common school reform movement that swept across the country around the 1850’s viewed young children as disruptive and likely to derive little benefit from attending school.¹² Later in the century this policy trend reversed. State legislatures gradually lowered the minimum age for school entrance as they revised compulsory attendance laws.

A number of factors may have driven rising enrollment.¹³ Access was improving as population density rose. School fees were falling.¹⁴ Local pressures to send children

¹¹ See Goldin and Katz (2008).

¹² Kaestle and Foner (1983) discuss the efforts and success of reformers in removing young children from schools.

¹³ Go (2008) and Go and Lindert (2010) discuss the provision of education during this general period. They find that education levels were high in the United States because schools were affordable, from relatively high wages and a large supply of female teachers, and suffrage was broad. They also discuss the politics of the abolishment of rate bills which left schools free.

may have increased as more children attended. Part of this may have been changing intergenerational expectations. Adults who attended school as children sent their own children to school. In addition, other adults who did not go to school sent their children. Finally, the perceived value of education may have been rising.

Compulsory Attendance Laws

Compulsory attendance laws became more common after 1870 as popular and legislative attention shifted from the Civil War and Reconstruction to other matters. Attention to and debate about schooling heightened in 1871, as the Republican Party kicked off a “public school crusade”.¹⁵ With the 1870’s and 1880’s came increasing legislation from a number of states, until by 1900 almost all states outside the South had schooling laws. The politics of the passage of these laws are discussed further in the next section.

Compulsory attendance laws commonly stated an age at which students had to begin attending, an age at which they could leave, and a minimum number of weeks that a child had to attend. The first compulsory attendance law, in Massachusetts in 1852, required attendance of 8-14 year olds for 12 weeks. Laws differed widely across states. For example in 1900, New Jersey required 20 weeks of attendance from ages 7 to 12, while Kentucky required 8 weeks of attendance from ages 7 to 14 year olds.¹⁶ The appendix contains the full text of several laws.

Early laws often had numerous exceptions. Some were related to poverty or distance to school or the mental state of the child. The 1852 Massachusetts schooling law exempted children who “by reason of poverty” were unable to send their children to school.¹⁷ A common clause in later laws excused children whose “physical or mental condition . . . should be such as to make this attendance or instruction inexpedient or impracticable.”¹⁸ Other states made the law optional at the county level, such as North Carolina in 1907. Later laws reduced the exemptions, requiring virtually all children to attend.

In many states, compulsory attendance laws contained an exemption that allowed working children to leave school earlier than other children. The age at which children were allowed to leave school to work was typically 14. Table 2 shows that this age applied in the vast majority of states. A few states had earlier ages, but most of these states later raised the age at which a child was allowed to leave school. The reason for having different work and non-work ages was to prevent children from leaving school simply to spend their time idling on street corners or otherwise getting into trouble. In theory, children who wished to leave at the younger work age had to prove that they were leaving to work.

¹⁴ Goldin and Katz (2008) argue that abolition of rate bills, which typically preceded compulsory attendance laws, had no meaningful impact on school enrollment.

¹⁵ See McAfee (1998).

¹⁶ United States Department of Education, 1901, pp. 2598-2600.

¹⁷ See Appendix for full text.

¹⁸ Report of the Commissioner of Education for the Year 1882-83, page xxxii

Compulsory attendance laws were often complemented with child labor laws. This was necessary, because the minimum term lengths were short, and schooling laws were not always enforced. Thus, children – even young children – could easily be working full time or close to full time for most or all of the year. Child labor laws restricted employment in industries for children under a certain age. Industries likely to be targeted were factories and mercantile establishments. Legislation also removed children from dangerous occupations, such as mining and tight-rope walking, and from morally hazardous occupations, such as jobs in places serving liquor performing messenger duty to brothels.¹⁹ Moehling (1999) finds that child labor laws had little impact over the period 1880-1910. As of 1900, about half of the states with child labor laws had age limits that coincided exactly with the compulsory attendance dropout age.

Data on compulsory attendance laws were gathered from reports of the United States Bureau of Education (various years), Goldin and Katz (2002), and from Eisenberg (1988). Our coding follows Goldin and Katz (2002) in using the first age at which the compulsory attendance law permitted most children to leave school. For states without a separate work age, this was the upper age specified in the law. For states with a separate work age, this work age is used, since this was the age most likely to be binding. Because the child labor age and the compulsory attendance age were often identical, examining the compulsory attendance law captures much of the complementary labor age while maintaining econometric simplicity. Labor laws are also complicated by the fact that early on they typically only limited employment in a subset of industries.

Figure 2 shows the adoption of selected policies related to schooling for states outside the South. The evolution of the proportion of states with compulsory attendance laws was slow up to 1870 and then steadily increased into the early 1900s. Compulsory attendance laws were often adopted around the same time as, and written in conjunction with, child labor laws. Child labor laws were coded as the first time a state imposed an age limit on work in a number of industries outside of mining, dangerous, or immoral work. Restrictions on mining and dangerous work were generally passed first, which would have affected a comparatively small number of children. Later, restrictions were generally extended to factories, mercantile, and manufacturing businesses, and then eventually to more blanket restrictions.²⁰ A second wave of child labor laws were adopted beginning in the late 1890s, which required age certification. Unlike their predecessors, there is some evidence to suggest that these laws were binding.²¹

The South

Throughout the paper, we focus on states outside the South. As seen in Figure 1b, education levels in the South were far below those in the rest of the nation. In 1850, enrollment rates in the South lagged the North by around 20 percentage points at many ages. The difference was especially large at those ages commonly targeted by

¹⁹ See Loughran (1921).

²⁰ The states were behind Britain in this regard. See Nardinelli (1980).

²¹ See Ensign (1921), Brandeis (1966), and Puerta (2007).

compulsory schooling, 7 to 13. This regional split increased in 1870, when enrollment in the South declined at every age while growing at most ages in the North. The Southern states then fail to provide a useful control group when examining the effect of compulsory schooling laws, since the initial, mid 19th century enrollment rates were so different from the North. Tyack (1986), the historian of education, remarks that “[t]he deep South, the statistics show, was in many respects almost a separate country.” The South also lagged the rest of the nation in the adoption of compulsory schooling laws. The first Southern state to adopt a compulsory schooling law was Tennessee, in 1905, thirty years after the first large wave of adoption in Northern states.²² Mississippi, in 1918, was the last state in the nation to pass a law, long after all states in the North had compulsory schooling.

4. State Politics and the Passage of Attendance Laws

This section draws on administrative data to examine state enrollments at the time compulsory attendance laws were passed. States submitted data on enrollment and other measures of schooling to the United States Department of Education beginning in 1870. These data were published in the Report of the Commissioner of Education. We used these data to construct a biennial series on enrollment for 5-17 year olds for the period 1871-1919.

Figure 3 shows a plot of enrollment levels of 5-17 year olds outside of the South calculated using the Census samples and the administrative data. The correlations are initially high and decline somewhat over time. In 1880, 1900, and 1920 they were: 0.82, 0.59, and 0.49. The reasons for the decline may have to do with differences in the administrative data over time or differences in responses to the Census question. Plots of the administrative data, however, do not show any significant discontinuities. The Census is the more likely source of the difference. The timing of the 1920 Census differed from previous Censuses, and it asked about schooling over a different time frame. Further, by 1920, there was considerable social and legal pressure for children to be in school. This may have caused parents to report children as having attended, even if they had not.

Figure 4 shows that enrollment of 5-17 year olds was commonly above 60 percent at the time a compulsory attendance law was passed.²³ This is consistent with Census enrollment levels in Figure 1, which showed high enrollment in the pre-law period. Enrollment was lower in five western states. In every case except Arizona, however, enrollment was above 40 percent at the time of passage.

Waiting to pass a compulsory attendance law until enrollment levels were already fairly high reflects the political reality of state politics. Early on the state legislature had no ability to force school districts to do anything. Legislatures provided almost no funding for schools and so had no effective means of disciplining districts that chose not

²² Some Southern states (Arkansas, South Carolina, and Texas) experimented with compulsory schooling during Reconstruction, but these laws or constitutional provisions were quickly repealed or removed.

²³ See Landes and Solomon (1972) and Eisenberg (1988) for discussion of enrollments causing passage of a compulsory attendance law.

to comply. Moreover, state legislators had to answer to voters and local elites. So if legislation was unpopular, it was unlikely to pass.

Not only did enrollment levels have to be high, but politics had to cooperate as well.²⁴ In 1871 the Republican Party kicked off a “public school crusade”.²⁵ Figure 5 shows the political composition of the state lower house and the party affiliation of the governor at the time of passage. Politics dictated that in most cases a Republican legislature and a Republican governor would be needed to pass a law. New York and New Jersey, which passed their laws in 1874 and 1875, were exceptions in that they passed schooling legislation with Democratic legislatures and Democratic governors.

Legislatures would typically put in place a first (weak) law and then revise the law as needed. The laws had numerous exceptions, left enforcement up to localities, and had no punishment for districts that failed to comply. This type of political compromise appeased various interests, since those in favor of the law could claim victory, while those opposed to the law were unlikely to be affected by it.

Massachusetts illustrates this dynamic. The first compulsory attendance law was passed in 1852. Nothing much appears to have happened, with the possible exception of the city of Boston.²⁶ Truant laws were passed in 1859, but as late as 1866, there was no penalty for not appointing truant officers. By 1873, however, town treasurers were fined for not enforcing the law, suggesting that enforcement had at some point become a priority. In 1876 a child labor law was passed that worked in tandem with the compulsory attendance law. In 1878 a provision was passed that towns could lose funds if they did not comply with the truant law. In 1898 Massachusetts’s child labor, attendance, and truancy laws underwent revision after a study commissioned by the state legislature, after which they were further modified.²⁷

This political strategy accounts for one of the odd features of compulsory attendance. The 1890 Report of the Commissioner of Education of the United States provided summaries of compulsory attendance in many states up to that point. The compulsory attendance law was declared a “dead letter” in many states including California, Kansas, Montana, Nevada, New Hampshire, Washington, Washington D.C., and Wyoming. Many historians have emphasized this point.²⁸ What they failed to note was that putting a law on the books was merely a first step.

Once state legislatures had sufficient political support, they often began to put more emphasis on enforcement. In Massachusetts, efforts at enforcement began to increase in the 1870s, as truancy officers were given authority to prosecute rather than town

²⁴ For a more extensive discussion of the importance of politics, see Eisenberg (1988) and Provasnik (1999, 2006). Preliminary results suggest that having a Republican governor was a key factor in the timing of passage.

²⁵ McAfee (1998)

²⁶ The law is generally considered to be ineffective, yet Shultz (1973) argues it worked in Boston.

²⁷ See Ensign (1921).

²⁸ See Stambler (1968) and Tyack (1987).

treasurers.²⁹ In New York City, enforcement was increasingly successful in the early 1880's, especially for children of Italian immigrants.³⁰ Other cities in the state established truancy officers during the 1880's, and enforcement in the state in general increased with an 1895 revision of the law that withheld public funds from violating districts.³¹ In Connecticut, the 1880's brought both increased enforcement of existing laws and the enactment of stricter measures to compel attendance.³² In Michigan, after a significant revision of the compulsory school law in 1895, the state education report recounts, "In some places enforcement of the law brought in so many pupils that a halt had to be called until more school rooms could be provided."³³ In Colorado, where the first law came in 1889, the state superintendent noted in 1896 that, "compulsory education has been much more effectively enforced".³⁴

In contrast, some states that passed laws towards the end of the 19th century may have been successful from the beginning. In Utah, pressure from the federal government helped make schools both free and compulsory in 1890, and the Governor reported in 1892 that, "In Salt Lake City the number of pupils seeking admission is beyond the capacity of the school buildings, and the trustees are compelled to rent private buildings."³⁵ In Kentucky, the 1894 school report remarked "this largely increased enrollment and attendance . . . were undoubtedly due, in a large measure, to the Hiles' Compulsory Law."³⁶ Pennsylvania, which passed its first law in 1895, quickly revised it in 1897 to some effect. School officers in Philadelphia, over the course of only a few months, visited 13,000 homes and brought 1,600 children to school.³⁷

5. The Effect of Attendance Laws on Enrollment

This section examines the effects of compulsory attendance laws on enrollment. It begins with the econometric specification, proceeds to discussion of the average effects, investigates heterogeneous effects, and ends with a discussion of endogeneity and causality.

²⁹ Ensign (1921), p. 61.

³⁰ Report of the Commissioner of Education for the Year 1882-83, page lxxviii. Attendance grew both from the direct efforts of school officers and from voluntary compliance with the law.

³¹ New York (State) Bureau of Factory Inspection. (1887), p. 15. "First Annual Report of the Factory Inspectors of the State of New York, For the Year Ending December 1st, 1886." Albany, The Argus Company Printers. The 1895 law is found in "Laws of the State of New York, Volume 1." Chapter 988, p. 941.

³² Ensign (1921), p. 100. See also 20th Annual Report of the Board of Education of the State of Connecticut, 1885, page 31 for the effect of compulsory schooling in the 1880's.

³³ Fifty-ninth Annual Report of the Superintendent of Public Instruction of the State of Michigan with Accompanying Documents for the Year 1895, page 5.

³⁴ Commissioner's Report on Education for the Year 1896-97, Volume 2, page 1284. Report on Colorado by state superintendent for 1895-1896

³⁵ Report of the Governor of Utah to the Secretary of the Interior, 1892, page 15

³⁶ Biennial Report of the Superintendent of Public Instruction of Kentucky, with accompanying documents, for the two years beginning July 1, 1895 and ending June 30, 1897, page 17

³⁷ Public Education Association of Philadelphia (1898). P. 20. The law was less effective in the mining regions and slums. United States Industrial Commission (1901) P. 191.

Econometric Specification

The following age specific difference-in-difference specification is estimated to investigate the effect of compulsory attendance laws. It compares growth in enrollment by age in states with and without compulsory attendance laws.

$$y_{asti} = \beta_0 + \beta_1 \Delta Law_{ast} + state_s + year_t + age_a + state_s \times age_a + year_t \times age_a + X_{asti} + u_{asti}$$

where y_{asti} is the school enrollment (0/1) of a child I of age a in state s , at time t . ΔLaw_{ast} indicates whether a compulsory attendance law affecting a child of age a was adopted or changed over the time period.³⁸ While a standard difference-in-difference model would only include state and year fixed effects, we also include age fixed effects, and state and year fixed effects interacted with age to account for the age-specificity of the laws. The estimate is identified by two sources of variation. The first source results from comparing the change in attendance for children of age a in states that passed laws affecting them with the change in rates for children of age a in states that did not pass laws. The second source is due to a comparison of the change in attendance for children of age a in states that passed laws affecting them with the change in rates for children of other ages in the same state that are not affected by the law change. The year by age fixed effect serves as the counterfactual change in attendance, what the treated children of age a would have experienced in the absence of passing a law. The coefficient on ΔLaw_{ast} is then the pooling of a standard difference-in-difference estimate on each age.

Finally, X contains a vector of covariates that might affect school enrollment. Covariates included are dummy variables for county population density, whether the father was an immigrant or an immigrant from a non-English speaking country, the sex of the child, whether the family lived on a farm.³⁹ All covariates are interacted with year to allow their effect to vary over time. Standard errors are clustered at the state level. As shown in Table 1, the above equation is estimated using the 10% 1880 public use sample and the 5% 1900 sample. All regressions are weighted by the IPUMS *perwt* variable.

The effects of attendance laws are estimated over three sub-periods 1860-1880, 1880-1900, and 1900-1920. The decades 1860-1880 and 1880-1900 correspond to the first and

³⁸ The variable is coded as 0 for control states in both years. Control states either had no law, or had an existing law but did not change the age limit. Treated states that passed an initial law or raised an age limit are coded as 0 in the pre-period and as 1 in the later year. If a state lowered a law so that a given age was no longer required to attend, the variable is coded as 1 in the pre-period and 0 in the post-period. A law is counted as affecting a child if their age at the time of the Census was *strictly* less than the age of the law, so that 13 year olds are counted as being under a 14 year old law, while 14 year olds are free to leave school.

³⁹ Population density is calculated using GIS data on county areas available from usa.ipums.org/usa/volii/ICPSR.shtml in each Census year. Population density is divided into 5 categories in each year, the 0-10th percentiles, 10th to 25th percentiles, 25th to 50th, 50th to 75th, and 75th and up. The birthplace of the household member coded as father of the child is used in each census year. If no father was present in the household, the birthplace of the household head is used. If neither existed, the self-reported birthplace of the father was used. Around 200 observations in the 1860 census had none of this information and were dropped.

second waves of initial attendance laws outside the South.⁴⁰ In the decades between 1900 and 1920 the last states outside the South passed their initial law (Delaware, Iowa, Maryland, and Missouri, and Oklahoma), and other states revised their laws by raising or lowering the age limits.

Table 3 presents summary statistics for the Census and administrative samples. In 1860, virtually no children were under a compulsory attendance law, yet large fractions of children – 67 percent of 5-17 year olds and 78 percent of 10-14 year olds – reported attending school at some point during the previous year. By 1880, about one-third of children were under a law, yet enrollment had actually decreased slightly relative to 1860. After 1880, the fraction of children under a law and the fraction of children enrolled rose steadily up to 1920. One thing to note is that the Bureau of Education enrollment data shows a steady increase in the enrollment of 5-17 year olds, while the Census data shows a small increase from 1880-1900 and a large increase from 1900-1920 for both 5-17 year olds and 10-14 year olds. This is consistent with the patterns from Figure 4.

Average Effects

One of the central questions is why this paper finds effects of compulsory attendance laws when previous papers that used aggregate data did not. Table 4 addresses this question using Census data for 1880-1900 for 5-17 year olds.⁴¹ The first column aggregates average enrollment for the 33 states with data for both years and weights by population. The law variable is simply whether or not a state has a compulsory attendance law. With controls for state and year, the coefficient on law is small, positive, and not significant. The second column replicates the specification in the first column with the individual-level data and finds nearly identical results. The remaining columns focus on 10-14 year olds. As the next table will show, laws do not appear to have had much effect on younger children. The third column re-does the specification of the second column, with the restricted ages. The fourth column shows the addition of age fixed effects. This corrects for differences in age distributions across states. The estimate is unchanged.

It is only in the fifth column with the addition of age fixed effects and age-specific laws that one begins to see positive and statistically significant effects of compulsory attendance laws. The previous two regressions compared the growth rate of enrollment in states with and without laws across all ages. In contrast, this regression compares the growth rate of enrollment of a specific age (e.g. 13 year olds) in states with and without laws. This regression focuses specifically on ages covered by laws and accounts for differences in exit ages across states with laws. The sixth column adds age by state fixed effects and age by year fixed effects. This is less restrictive than forcing the age fixed effects to be constant across states and years. In fact, it is a natural expansion of what one would do in a regression on a single age that included year and state fixed effects.

⁴⁰ The period before 1900 is often referred to as the ‘symbolic’ period, while the period after 1900 is referred to as the bureaucratic period. See Tyack (1975).

⁴¹ Children reported as institutional inmates were dropped from the sample.

The seventh column adds individual demographic characteristics as controls. The coefficient changes only slightly, from 2.4 percent to 2.6 percent with the addition of controls.

The main point of Table 4 is that earlier studies did not find effects of compulsory attendance laws, because they were using aggregate data and a dummy variable for whether the state had a law or not. Measuring the effects of the law requires using age-specific laws and age fixed effects.

Table 5 suggests that the laws were generally only effective at older ages. The effects of having a compulsory attendance law for ages 7 to 9 are either negative or statistically insignificant. This suggests that the laws were not effective for younger ages. The effect of a law at age 15 is positive, but insignificant. The problems at older ages are twofold. Very few states had anything other than age 14 laws, so very few states are identifying the effect. Further, at least some 15 year olds may have been attending high school. Our interest is in students who were in primary school. Thus, the remainder of the paper focuses on 10-14 year olds or just on 13 year olds.

Table 6 explores the effects of compulsory attendance laws on 10-14 year olds over the three time periods, 1860-1880, 1880-1900, and 1900-1920.⁴² Panel A presents fixed effects only specifications. The first column suggests that enrollment in states that adopted laws increased more *slowly* than enrollment in control states for the ages covered by the law. This is consistent with the summary statistics in Table 3 and the historical literature that emphasizes the ‘dead letter’ nature of early laws. The second column replicates column 5 from Table 4 for 1880-1900. Enrollment in states that adopted laws increased more *rapidly* than enrollment in control states for the ages covered by the law. This is consistent with the law having had a positive effect on enrollment. The third column indicates that enrollment in states that adopted laws increased more rapidly than enrollment in control states in 1900-1920.

Panel B includes controls for covariates. The results are very similar to the results in Panel A. States that passed compulsory attendance laws saw slower enrollment growth than states without laws in 1860-1880 and faster enrollment growth in 1880-1900 and 1900-1920.

Panel C investigates two issues, whether the effects of laws were coming primarily from their initial adoption or from the additional changes that states made to age limits in later years, and whether the timing of adoption influenced the effect. None of the differential effects were statistically significant, although the point estimates are of interest. In 1860-1880, no states revised their age limits and only two states, Vermont and the District of Columbia, passed laws in the first decade. The baseline effect was extremely negative (-7.0 percent), suggesting that reported enrollment fell in these two

⁴² Appendix E presents the results from Table 4 with the South. The fast growth of education of whites in the south during 1880-1900 reduces the magnitude and significance of the coefficient on law for 1880-1900 and greatly increases it for the period 1900-1920. The latter period was when southern states passed compulsory attendance laws.

early states. The differential effect for states that passed laws in the second decade was positive, although the net effect remained negative. In 1880-1900, the effect of the passage of a law was positive and statistically significant. The effect declined between the first and second decades. This is consistent with older laws being more effective, as enforcement became more stringent. The effect of revising age limits was smaller than the adoption of a new law. In 1900-1920, all of the laws were passed in the first decade. The effect of revising age limits was also smaller than the adoption of a new law.

Overall, Table 6 suggests that the passage of compulsory attendance laws was associated with increased enrollment between 1880 and 1920. Recall that 73 percent of children 10-14 were enrolled in school in 1880 and 80 percent were enrolled in 1900. Thus, the passage of compulsory attendance laws was associated with sizeable increases—2.6-2.8 percent for 1880-1900 and 3.2-3.6 percent for 1900-1920 – in the number of children in school.

Table 7 investigates why previous papers that used aggregate administrative data, such as Landes and Solmon (1972), did not find effects of compulsory attendance laws. The first column use average enrollment for the 35 states with data in 1880 and 1900 and weights by state, following Landes and Solmon. The law variable is simply whether or not a state has a compulsory attendance law. With controls for state and year, the coefficient on law is not significant. The second column replicates the specification in the first column using the biennial data finds a positive and statistically significant effect of the passage of a compulsory attendance law. The remaining two columns show the analogous progression for 1900-1920. There, the coefficient using biannual data is smaller than the 1880-1900 regression, and is insignificant.

The magnitudes of the effects in Table 7 are more difficult to interpret than the magnitudes in Table 6, since they are the effects of a law on all ages, 5-17, whether or not they were covered by a law. The effects for 1880-1900 are larger (7.8 percent vs. 2.8 percent) than the estimates for this age range using Census data in columns (1) and (2) of Table 4. The effects for 1900-1920 are similar (3.7 percent vs. 3.2 percent) to the estimates for 10-14 year olds in states that adopted a new law in column 3 of Table 6, panel C.

Geographic Heterogeneity

One question is which geographic or demographic groups were experiencing the largest growth in enrollment. Table 8 investigates whether the effects were different for individuals living in states above and below the national state median prior to the passage of the law. Similarly, it also investigates whether the effects were different for individuals living in counties above and below the national county median prior to the passage of the law.⁴³ The state medians in 1880 and 1900 were 75 percent and 85 percent of 10-14 year

⁴³ In the table, the indicator variable for low enrollment was calculated in the following way: first, the average attendance level was calculated for each state, then, using the state average for each individual, the median attendance level was found and a dummy variable added indicating whether an individual lived in a state below the median. The dummy variable for county was constructed similarly.

olds. County medians in 1880 and in 1900 were 77 percent and 87 percent. Figure 6 shows the location of the four types of counties – counties above and below the national median in states that changed a law or did not change a law.⁴⁴ Most states, with the exception of a few western states, which were sparsely populated and so did not contribute much to the estimation, contained some counties that were above the median and others that were below the median. For example, Illinois, Indiana, and Pennsylvania all had a mix of above-median and below-median counties.

The results for 1880-1900 suggest that states may have been using compulsory attendance laws to force counties with low attendance to improve. In column (2) states that were below the national median pre-passage and adopted a law did not experience statistically significantly different growth than states that were above the national median and adopted a law. In column (3) the adoption of a law was associated with substantial increases, 2.5 percent, in enrollment in below median counties relative to above median counties. Above median counties in states that did and did not adopt a law experienced similar growth.

In 1900-1920, in contrast, the effect of compulsory attendance laws seems to have been concentrated in states, as opposed to counties, that were below the median. Of the four states adopting a law for the first time, Maryland, Delaware and Missouri were below the state median. Column (5) indicates that these states experienced most of the gains, 4.5 percent, from attendance laws. States that adopted a law and were above the median experienced smaller increases. Column (6) indicates that the effects were similar in counties above and below the national median.

Individual Heterogeneity

This section explores individual heterogeneity further using data on children who were 13 years old in the public use samples. These children were especially likely to have been affected by laws, since they were nearly old enough to leave school in states with laws and had higher labor market value than, say, 10 year olds. In Table 9, the average effect of the law for 13 year olds was 3.8 percent in 1880-1900 and 5.7 percent in 1900-1920. These are higher than the pooled effects for 10-14 year olds.

One could also examine 14 year olds on the grounds that most laws were age 14 laws and so would have applied to these children in the previous year. Two problems arise with this group. The first is that although the question asked about the previous year, children who were nearly 15 may not have attended in the previous 12 months if school was not in session around the time they turned 14. The second is that the timing of enumeration and the interval over which the enumerators asked about school changed. Thus a fourteen year old with the same school history might have had a different response in 1900 and 1920. As a result, the analysis focuses on thirteen year olds.

⁴⁴ The results if counties are ranked relative to their regional median are nearly identical.

The history, sociology and economics literatures have linked schooling to father's occupation.⁴⁵ Poor families have fewer resources to invest in education and a greater need for the money their children will earn, and so their children will tend to leave school earlier. Laws may also be more binding on these families, since the vast majority of children in more affluent families already attended school through 8th grade.

Table 9 explores the differential effect of laws on thirteen year olds by father's occupation. The effect of a law on the children of farmers, the most prevalent occupation, was considerably smaller than it was in the sample as a whole. This likely reflects the fact that children of farmers attended nearby ungraded rural schools that allowed for flexible attendance and were geared to the farm schedule. School was generally held in two sessions, the winter and the summer, allowing children to help with planting in the spring and harvest in the late summer and fall.⁴⁶ The effects of a law appear to have varied considerably across other occupational groups. Relative to the children of farmers, the law had substantially larger effects on the children of salesmen, craftsman, service workers, and men without an occupation in 1880-1900. In 1900-1920, the adoption of a law had substantially larger effects on the children of clerical workers, craftsman, and operatives. Most of these occupations were more urban than farming – urban schools offered less flexibility than rural schools – and were lower on the socioeconomic scale.

The rhetoric around passage indicates that laws were aimed at specific subgroups, such as children of immigrants and urban children.⁴⁷ As noted earlier, the Republican Party kicked off a “public school crusade” in 1871. The stated aim was to promote universal education, but McAfee (1998) argues that it capitalized on anti-Catholicism to promote cultural homogeneity. For example in 1891, D. J. Waller, Jr., the Superintendent of Public Instruction for Pennsylvania, mentioned both when advocating a law: “Dangerous disturbances arising from rapid immigration, and from the crowding of vast numbers of the disorderly and the illiterates into our cities make it one of the most important duties [for the legislature to enact a compulsory attendance law].”⁴⁸

Table 10 examines the effects of the laws for different subgroups. For 1880-1900, the laws appear to have been effective at drawing the children of immigrants and non-farm children into school. In Table 10, the effect of law for children with native born parents was 2.2 percent, while it was 5.2 percent for children with foreign born parents. Consistent with Table 9, the effect of law for farm children was 1.8 percent, while it was

⁴⁵ See Troen (1973) who examined father's occupation and student enrollment in St. Louis in 1860, 1870, and 1880 and Soltow and Stevens (1977) who examine school attendance by wealth and occupation. These are sociology cites. (Blau and Duncan, 1967; Jencks, 1977; Kao and Thompson, 2003; Mare, 1981; Sewell and Hauser, 1975; Sewell et al., 1976). For a study using the effects of compulsory attendance laws to examine intergenerational educational effects and a discussion of the economics literature, see Oreopoulos et al (2006). On intergenerational occupational mobility in the United States and Britain, see Long and Ferrie (2010).

⁴⁶ See Fischel (2009) on

⁴⁷ See Tyack (1974) pp 69-71, Collins (1977); Carlson (1975)

⁴⁸ Pennsylvania (1891) Department of Education. Annual Report 58 p. x. Quoted in Eisenberg (1988), p. 75.

4.6 percent for non-farm children. In 1900-1920, the law appears to have been particularly binding on urban children. In Table 10, the effect for rural children was 4.9 percent and the effect for urban children was 6.5 percent. Consistent with this, the effect for farm children was 4.0 percent and for non-farm children was 6.4 percent.

Overall, Tables 8-10 suggest that the laws were to some degree successful in reaching their target groups. Low performing counties, children whose fathers were in occupations that were lower on the socioeconomic scale, children of immigrants, and urban children all saw increased enrollment in states that passed laws.

Causality

Before analyzing causality, it is useful to review the previous literature on endogeneity and causality. Stigler (1950) argued that in 1940 "that the influence of legislation is a relatively weak factor, whose presumptive significance comes largely from the correlation of maximum age in the statute with incomes and racial composition."⁴⁹ Folger and Nam (1967), as a result of Stigler's findings, examined growth in enrollments before and after adoption of laws for fifteen mostly southern states that enacted attendance laws between 1900 and 1919. They conclude that their evidence supported Stigler.

Landes and Solomon (1972) continued the discussion of endogeneity, focusing on the period 1870-1890. In cross section using data on 38 states including the 11 states that formed the Confederacy, they find positive effects of compulsory schooling laws in 1880. The effect is the same, however, in 1870 for states with laws in 1880, despite the fact that only two of the states had laws at the time. Landes and Solomon turn to growth rates for 1870-1880, finding negative but insignificant effects of laws on growth rates. Based on this evidence, Landes and Solomon "conclude that compulsory school legislation was not the cause of the higher schooling levels observed in 1880 in states with laws."⁵⁰ A similar analysis for 1880-1890 yielded a positive but insignificant effect of law on growth.

This paper finds negative and significant effects of law for the 1860-1880 period, which is consistent with what Landes and Solomon (1972) found. Presumably compulsory schooling laws did not literally *cause* slower growth rates in school enrollment. It may, however, have been a response to slower growth rates. As the previous literature has argued and Figure 4 shows, most of the states that passed laws up to 1880 had high enrollment levels. Other states with the exception of Massachusetts were – in the absence of a law – growing more rapidly off of lower enrollment bases.

Despite allegations that laws were not causal in the post-1880 period, there is remarkably little evidence either way to support this point. We offer several pieces of evidence related to the issue of causality. The first is that preliminary analysis of the data (not presented here) regarding timing suggests that the key factor in the passage of a

⁴⁹ Stigler (1950), p. 70.

⁵⁰ Landes and Solomon (1972), p. 77.

law was not growth in enrollment, but rather the presence of a Republican governor. The second is the coincidence between the goals of the law and the enrollment of targeted groups. If other factors were causal, one would not expect these groups to experience faster growth in enrollment.

The third piece of evidence is an event history, presented in Figure 7 and derived from analysis of the biennial administrative data similar to columns (2) and (4) of Table 7. It plots the coefficients associated with law at four-year intervals spanning the years around passage for the periods 1880-1900 and 1900-1920. If passage were endogenous, one would expect to see rising enrollment prior to passage and no change in trend around passage. Instead, enrollment is insignificantly different from zero prior to passage and then increases in the years after passage. This pattern suggests that the passage of the law caused the increased enrollment.

The fourth piece of evidence is placebo tests with Census data. Table 11 examines the pre-passage growth in enrollment of states that would pass laws in future years. Column (1) compares growth in enrollment during 1860-1880 of states that would pass laws in 1880-1900 with states that did not pass laws in 1860-1880, i.e., Massachusetts and the states that would pass laws in 1900-1920. States that would pass laws in 1880-1900 were growing more slowly than comparison states during the pre-passage period. This suggests that the effect of the law may well have been causal. Column (2) compares growth in enrollment during 1880-1900 of states that would pass laws in 1900-1920 with states that did not pass laws in 1880-1900, i.e., Massachusetts and the states that had passed laws in 1860-1880. The growth of the two groups was very similar. Again, this suggests that the increases observed in the period in which the law was passed may well have been causal.

The fifth piece of evidence is placebo tests using the biennial administrative data. In columns (3)-(6) of Table 11, the date of the passage for each of the original time periods was shifted to a placebo date five or ten years earlier. None of the effects are statistically or economically significant. Indeed, only one of the four coefficients is even positive.

The foregoing evidence suggests that the laws were causing increases in enrollment in the 1880-1900 and 1900-1920 periods. In the 1860-1880 period, the laws appear to have had no effect on enrollment, which is consistent with findings in the previous literature.

6. Conclusion

This paper re-examined the old debate regarding the efficacy of compulsory attendance laws in the pre-1915 period. It presented new evidence based on larger Census samples and higher frequency administrative data that these laws were effective at increasing enrollments and that the effects were causal. The estimated effects of 2-3 percent for Census data and 2-7 percent for administrative data may seem modest. Given that pre-passage enrollments were typically 60-80 percent, the laws had a sizeable effect on the number of children not attending school. This effect also seems large in light of the negative effect of early compulsory schooling laws found in Europe from the same

period (Soysal and Strang, 1989). The effects of the law were heterogeneous. Groups and counties targeted by the laws experienced larger increases in enrollment than other groups and counties.

More work remains to be done to understand schooling in the nineteenth century. The local provision of schooling and parents' decisions to send children to school in the pre-law period are not well-understood. The dynamics behind passage of schooling legislation and what legislators expected the legislation would achieve is unclear. Finally, compulsory attendance laws may have affected other dimensions of schooling such as attendance and term length and other individual outcomes such as educational attainment and earnings. A firmer understanding of these issues will provide insight into the development of human capital, which has implications for technology and growth.

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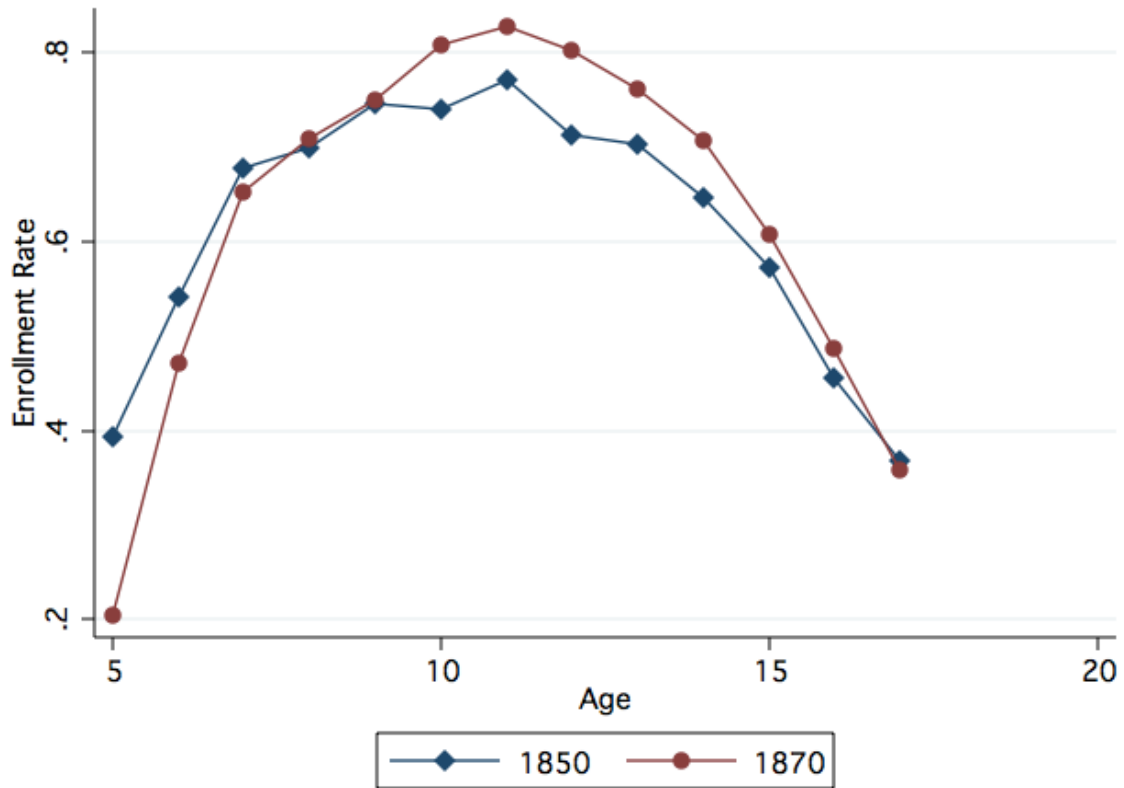
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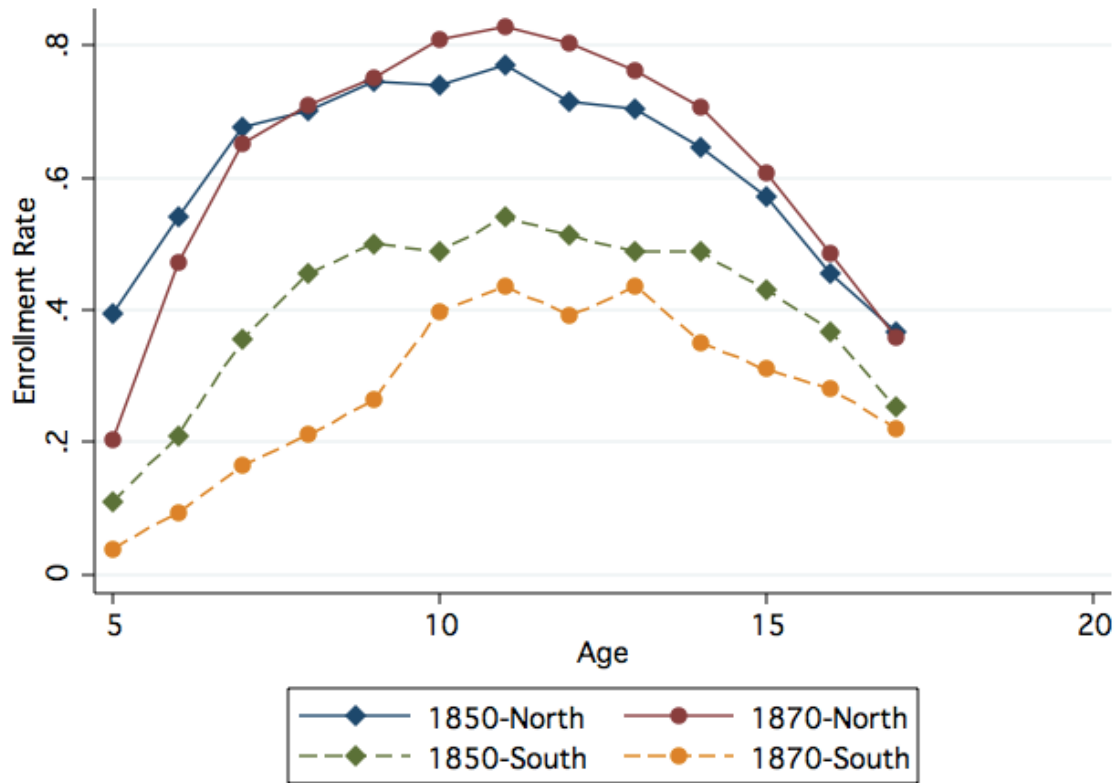
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Figure 1: Enrollment of White Children by Age in 1850 and 1870, Outside the South



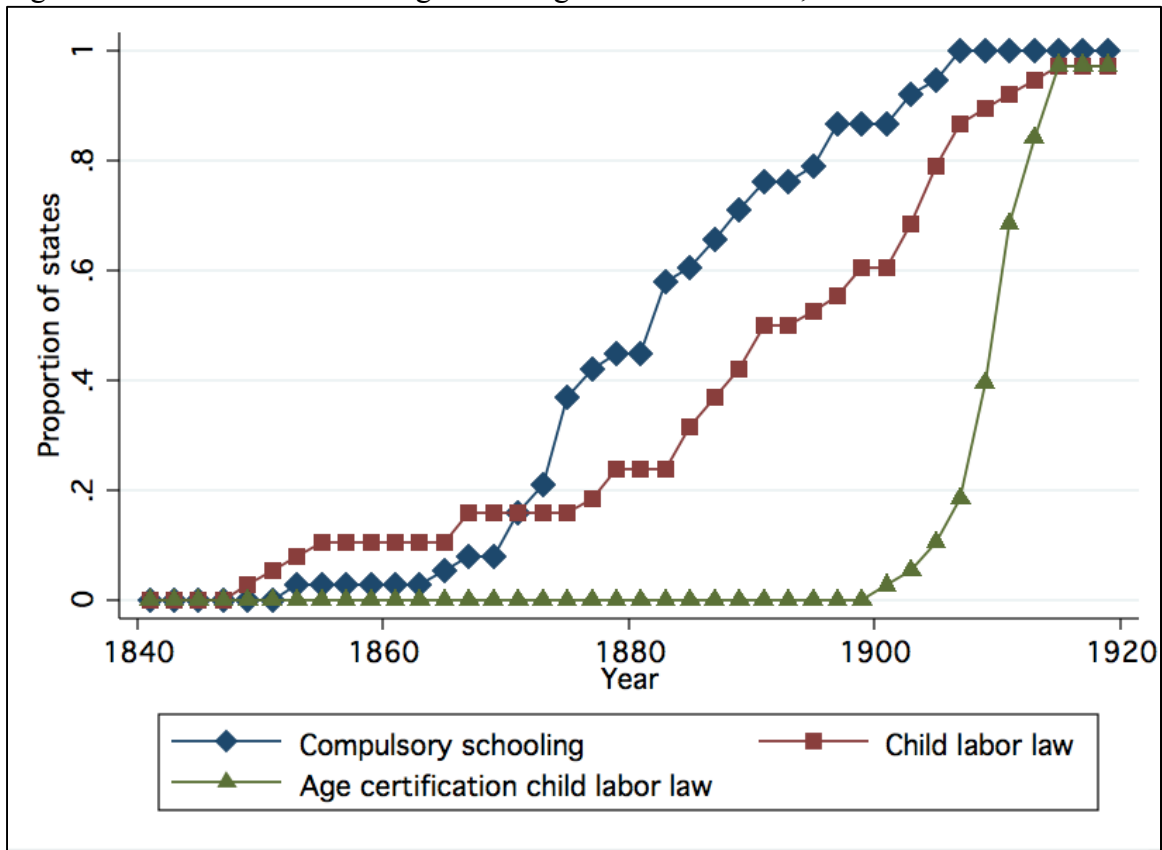
Notes: States with laws in 1870 are omitted (Massachusetts, Vermont, and the District of Columbia).
Source: IPUMS public use samples of the United States Census (Ruggles *et al.*, 2010)

Figure 1b: Enrollment of White Children by Age in 1850 and 1870



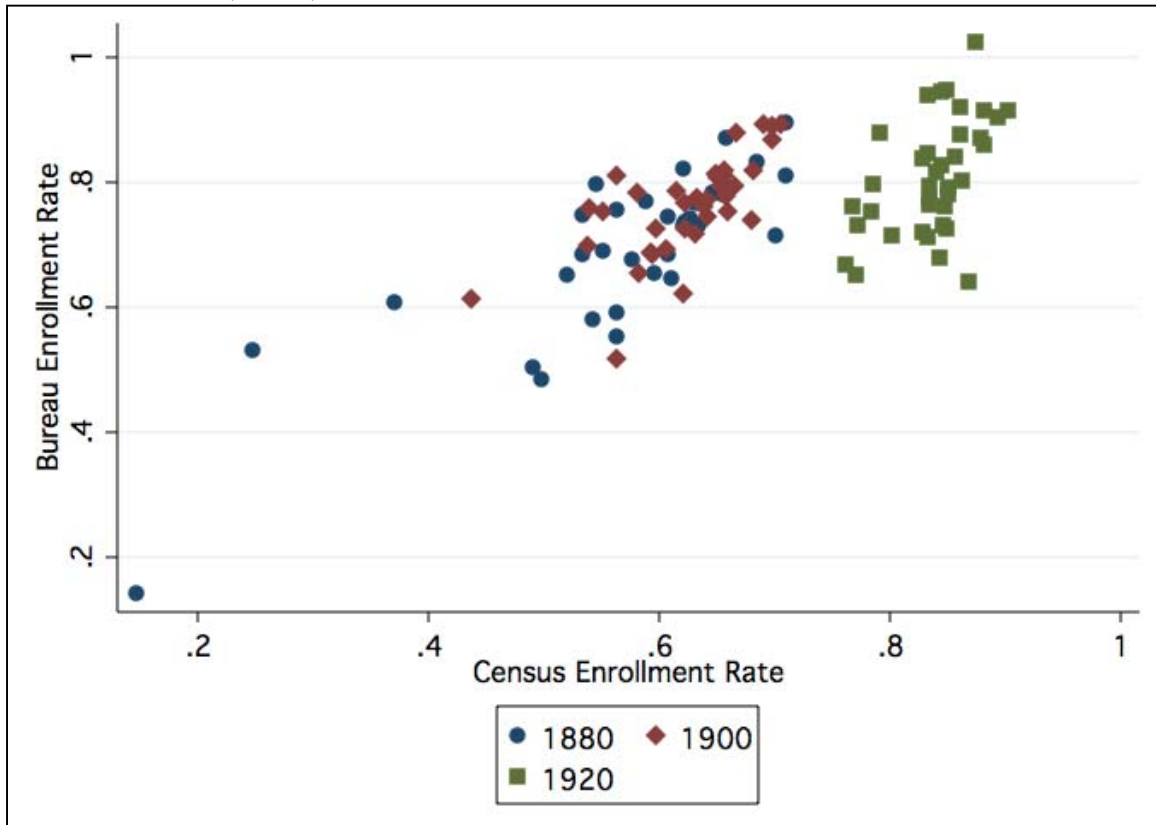
Notes: States with laws in 1870 are omitted (Massachusetts, Vermont, and the District of Columbia).
 Source: IPUMS public use samples of the United States Census (Ruggles *et al.*, 2010)

Figure 2: State Policies Affecting Schooling outside the South, 1840-1920



Notes: Compulsory attendance laws specified ages and numbers of weeks that children were required to attend school (see Appendix for sources). Child labor laws restricted ages and occupations of workers. Restrictions on mining, dangerous, and immoral work were passed first and affected a small number of children. Later, restrictions were generally extended to factories, mercantile, and manufacturing businesses, and then eventually to more blanket restrictions. Child labor laws were coded as the first time a state imposed an age limit on work in a number of industries outside of mining, dangerous, or immoral work (Loughran, 1921). A second wave of child labor laws were adopted beginning in the late 1890s, which required age certification (Puerta, 2007).

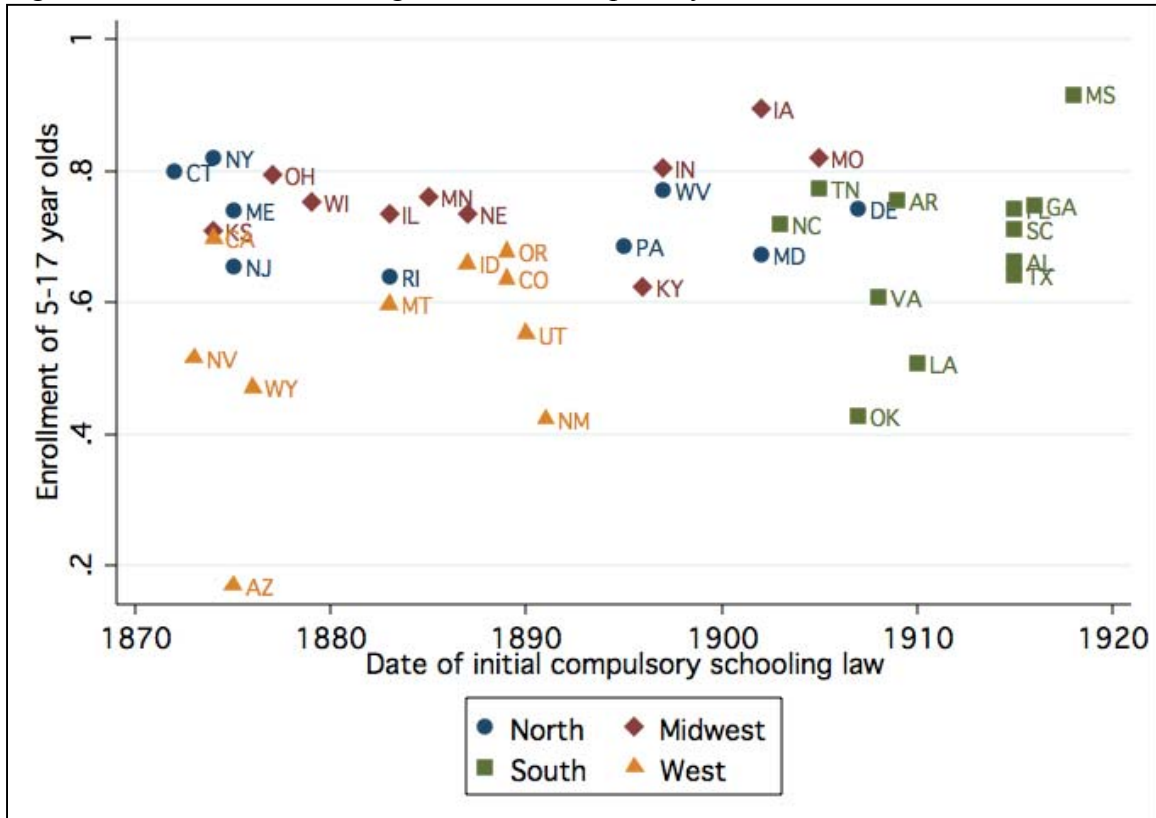
Figure 3: Correlation of Bureau and Census Enrollment Data for 5-17 Year Olds outside the South in 1880, 1900, and 1920



Notes: Data is for states outside the South. Enrollment for the bureau data is calculated as total enrollment over the number of 5-17 year olds in each year, giving the possibility of a rate greater than 1.0. Census enrollment data is for white children.

Source: IPUMS public use samples of the United States Census (Ruggles *et al.*, 2010), Report of the Commissioner of Education for the Year 1879-1880, 1899-1900, 1919-1920

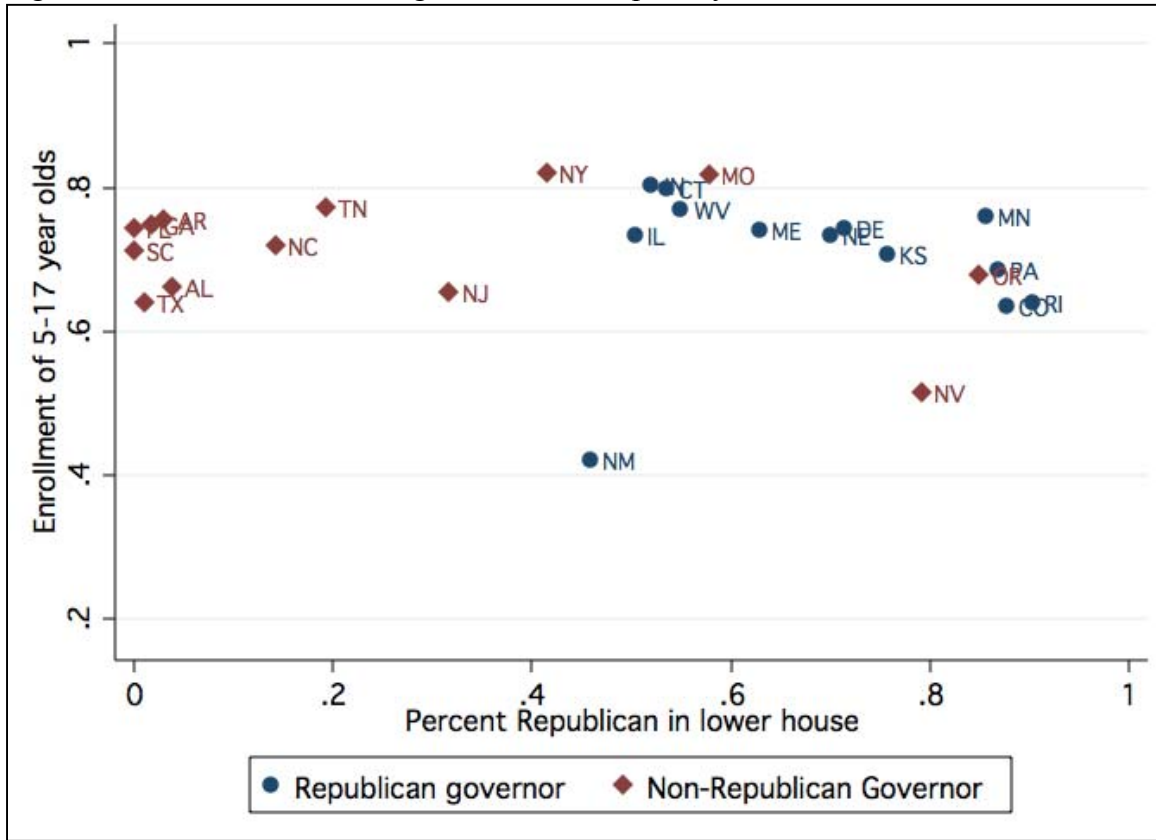
Figure 4: Enrollment at Passage of Initial Compulsory Attendance Law, 1870-1920



Notes: States that passed laws prior to 1870 (Massachusetts, Vermont, and Washington, DC) are not shown.

Source: Report of the Commissioner of Education for the Year [various years], United States Bureau of Education

Figure 5: Politics and the Passage of Initial Compulsory Attendance Law, 1870-1920



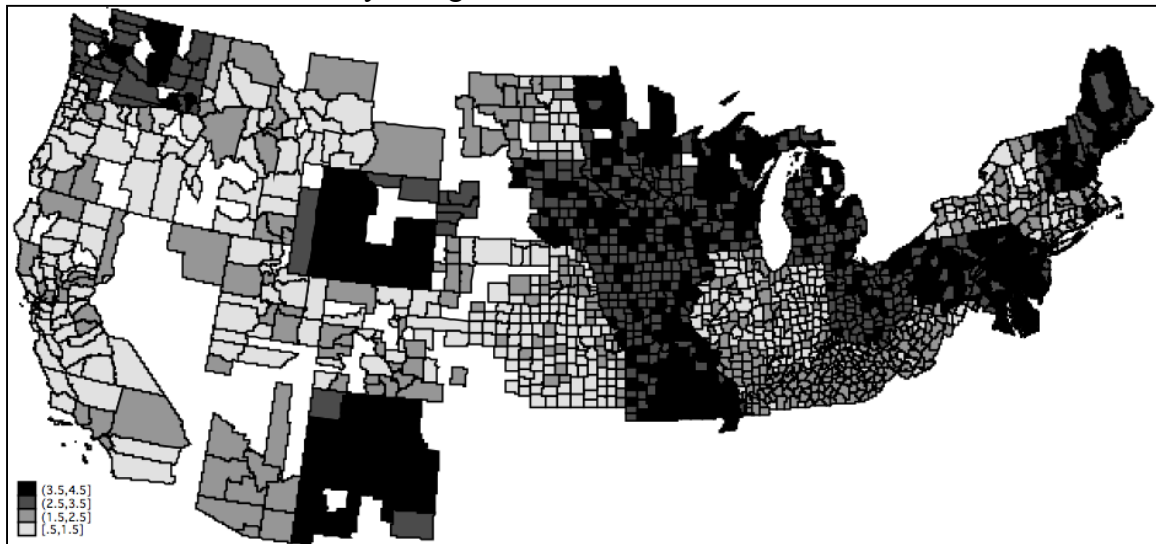
Notes: Figure does not match Figure 5 exactly, as some states lack political data at time of passage
 Source: Report of the Commissioner of Education for the Year [various years], United States Bureau of Education; Burnham, W. Dean. Partisan Division of American State Governments, 1834-1985.

Figure 6: County enrollment in states that passed / amended laws between 1880 and 1920

Panel A: Counties in 1880 by changes to laws between 1880 and 1900



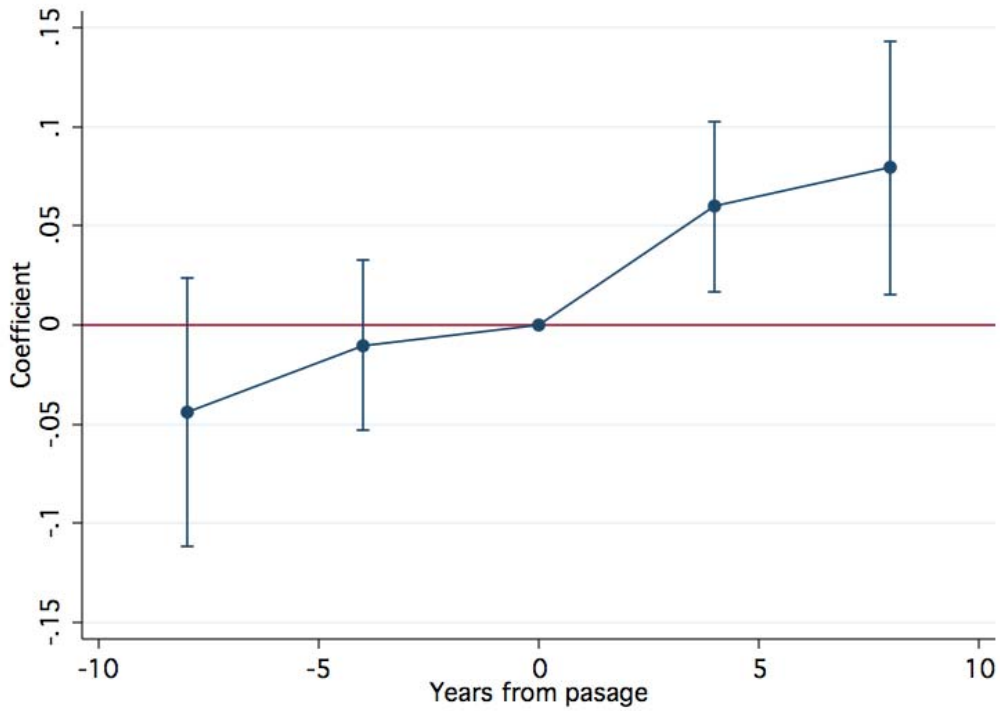
Panel B: Counties in 1900 by changes to laws between 1900 and 1920



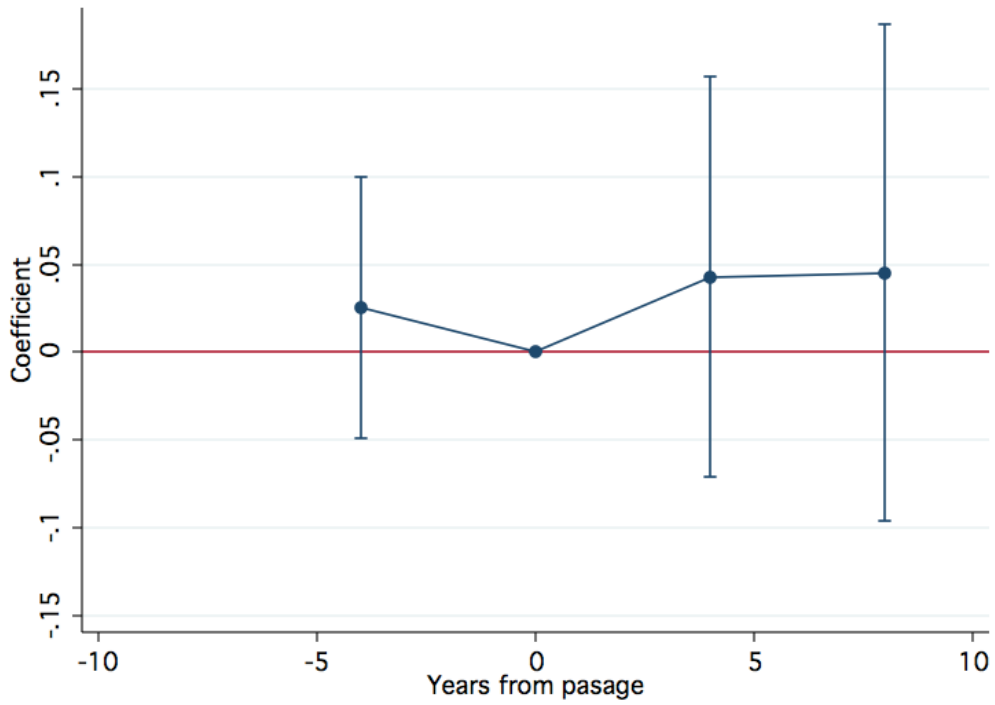
Notes: Black shows counties with enrollment below the national median in a state that changed a law over the two decades considered. Dark gray is enrollment above the (national) median in a state that changed a law. Light gray shows enrollment below the median in a state that did not change a law. White shows counties where enrollment was above the median in a state that didn't change a law. Counties in the South, counties with less than 15 children in the IPUMS sample, and counties whose ICPSR county codes are not matched in the NHGIS data are omitted.

Figure 7: Coefficients from Event History Study of Initial Compulsory schooling Laws

Panel A: 1880-1900



Panel B: 1900-1920



Notes: Figure shows the coefficients on the initial compulsory attendance law over four year intervals, using bureau enrollment data from 1880 to 1900 and from 1900 to 1920.

Table 1: Schooling and Work in the Census

<i>Year</i>	<i>Enumeration Date</i>	<i>Reference Period</i>	<i>Occupation</i>
1850	June	June to June	Males over 15
1860	June	June to June	All over 15
1870	June	June to June	All children
1880	June	June to June	Children over 9
1900	June	June to June	Children over 9
1910	April	Sept to April	All children
1920	January	Sept to January	All children

Notes: Census data are from the IPUMS samples of the United States Census (Ruggles *et al.* 2010). Enumeration dates and details are available from the IPUMS site at <http://usa.ipums.org/usa/voliii/tEnumForm.shtml>

Table 2: Age at Which Children Were Permitted to Leave School to Work outside the South

<i>Year</i>	<i>1860</i>	<i>1870</i>	<i>1880</i>	<i>1900</i>	<i>1910</i>	<i>1920</i>
None	37	35	21	5		
12				1	4	
13				2		1
14	1	3	13	23	33	32
15			2	3		4
16			2	4	1	1

Notes: Each cell shows the number of states with the given age of compulsory attendance law or school dropout age, as described in the text.

Sources: See sources for compulsory attendance laws in the Appendix.

Table 3: Summary Statistics for Census and Bureau Samples, 1860-1920

	1860	1880	1900	1920
Law	0.04	0.39	0.67	0.84
Enrollment of 10-14 year olds (Census)	0.78	0.77	0.84	0.97
Enrollment of 5-17 year olds (Census)	0.67	0.61	0.62	0.83
Enrollment of 5-17 year olds (Bureau)		0.65	0.73	0.78
Urban (City population > 2500)	0.21	0.33	0.43	0.52
Parents Immigrant	0.26	0.38	0.36	0.34
Parents Non-English Immigrant	0.10	0.19	0.24	0.27
Farm	0.51	0.44	0.37	0.29
Number of observations	23,292	403,299	278,515	72,624
Number of states identifying changes	11/25	17/35	19/38	
	<i>Occupation of Household Head</i>			
Professionals	0.02	0.02	0.03	0.03
Farmers	0.50	0.42	0.35	0.26
Managers	0.06	0.07	0.08	0.09
Clerical Workers	0.00	0.01	0.02	0.03
Salesman	0.01	0.02	0.03	0.03
Craftsman	0.14	0.14	0.16	0.19
Operatives	0.07	0.10	0.12	0.14
Service Workers	0.01	0.01	0.03	0.04
Laborers	0.11	0.12	0.12	0.13
No Occupation	0.08	0.09	0.07	0.06

Notes: Statistics are for white children ages 10-14 outside the South, except where noted. “Number of observations” shows the number of observations used in the regression where that year is the base year, with the exception of 1920 which shows the number of observations used in the 1900-1920 regressions. The “number of states identifying changes” similarly indicates the number of states passing or modifying a law affecting 10-14 year olds during the decades beginning in the given base year. Statistics are weighted by the IPUMS perwt variable.

Sources: IPUMS public use samples of the United States Census (Ruggles et al., 2010); Report of the Commissioner of Education for the Year [various years], U.S. Bureau of Education.

Table 4: Effects of Compulsory Attendance Laws, Census Data, 1880-1900

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Years	1880-1900	1880-1900	1880-1900	1880-1900	1880-1900	1880-1900	1880-1900
Ages	5-17	5-17	10-14	10-14	10-14	10-14	10-14
Age Specific Laws	N	N	N	N	Y	Y	Y
Law	0.014 (0.029)	0.014 (0.020)	0.015 (0.023)	0.015 (0.023)	0.024** (0.009)	0.028** (0.014)	0.026** (0.012)
State Fixed Effects	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y
Age Fixed Effects	N	N	N	Y	Y	Y	Y
Age by State Fixed Effects	N	N	N	N	N	Y	Y
Age by Year Fixed Effects	N	N	N	N	N	Y	Y
Covariates	N	N	N	N	N	N	Y
Observations	70	1776775	673573	673573	673573	673573	673573
R-squared	0.785	0.008	0.018	0.045	0.045	0.050	0.057
Identifying States	14/35	14/35	14/35	14/35	17/35	17/35	17/35
<i>(Pennsylvania omitted)</i>							
Law	0.038* (0.022)	0.038** (0.015)	0.042** (0.017)	0.043** (0.017)	0.021** (0.009)	0.040*** (0.011)	0.039*** (0.007)
Observations	68	1570428	595949	595949	595949	595949	595949
R-squared	0.837	0.009	0.021	0.046	0.045	0.050	0.056
Identifying States	13/34	13/34	13/34	13/34	16/34	16/34	16/34

Notes: “Law” refers to the coefficient on ΔLaw_{ast} from the regression specification in the text. Regressions are for children of the given ages outside the South. Columns (1) through (4) use a state-level dummy indicating whether a law existed. The remaining columns using age-specific changes in laws. For identifying the effect of a law, 14 of 35 states in columns 1 through 4 enact an initial law. Then, 17 of 35 states in columns 5 to 7 changed a law affecting one of the ages shown. The following states are dropped to match the bureau data: North and South Dakota, and Oklahoma. Standard errors are clustered by state. Sources: Enrollment data is from the IPUMS public use samples of the United States Census (Ruggles et al., 2010). Data on compulsory attendance laws is described in the Appendix.

Table 5: Age Specific Effects of Laws, 7-15 year olds 1880-1900

	(1)	(2)
Years	1880-1900	1880-1900
Law * Age = 7	-0.157*** (0.023)	-0.118* (0.063)
Law * Age = 8	-0.040 (0.031)	-0.026 (0.030)
Law * Age = 9	0.021 (0.019)	0.019 (0.017)
Law * Age = 10	0.032 (0.023)	0.032 (0.021)
Law * Age = 11	0.023 (0.020)	0.023 (0.017)
Law * Age = 12	0.020 (0.017)	0.019 (0.015)
Law * Age = 13	0.033** (0.013)	0.028*** (0.009)
Law * Age = 14	0.041** (0.020)	0.043** (0.016)
Law * Age = 15	0.030 (0.042)	0.027 (0.029)
Fixed Effects	Y	Y
Covariates	N	Y
Observations	1224626	1224626
R-squared	0.070	0.084

Notes: Regressions are for children ages 7-15 (ages affected by changes in law between 1880 and 1900) outside the South. Age, state, year, age by state, and age by year fixed effects are included. In this table, due to the addition of law interacted with a wide range of ages, each covariate is also interacted with age. 19 of 35 states change a law affecting at least one of the ages shown in the table. School entry ages are used for children under age 10. The following states are dropped to match the bureau data: North and South Dakota, and Oklahoma. Standard errors are clustered by state.

Sources: Enrollment data is from the IPUMS public use samples of the United States Census (Ruggles *et al.*, 2010). Data on compulsory schooling laws is described in the Appendix.

Table 6: Effects of Compulsory Attendance Laws, 10-14 year olds, Census Data, 1860-1920

Panel A: Fixed Effects Only

	(1)	(2)	(3)
Years	1860-1880	1880-1900	1900-1920
Law	-0.036* (0.019)	0.028** (0.014)	0.032** (0.015)
Fixed Effects	Y	Y	Y
Covariates	N	N	N
Observations	398604	673573	351139
R-squared	0.040	0.050	0.103
Identifying States	11/25	17/35	19/38

Panel B: Covariates

	(1)	(2)	(3)
Years	1860-1880	1880-1900	1900-1920
Law	-0.039** (0.019)	0.026** (0.012)	0.036** (0.014)
Fixed Effects	Y	Y	Y
Covariates	Y	Y	Y
Observations	398604	673573	351139
R-squared	0.050	0.057	0.107
Identifying States	11/25	17/35	19/38

Panel C: Adoption of Initial Law Versus Amendment of Existing Age Limits

	(1)	(2)	(3)
Years	1860-1880	1880-1900	1900-1920
Law	-0.070** (0.031)	0.045*** (0.010)	0.045* (0.024)
Law * I(Passed in 2nd Decade)	0.032 (0.031)	-0.028 (0.021)	
Law * I(Revised Age Limit)		-0.033 (0.024)	-0.018 (0.027)
Fixed Effects	Y	Y	Y
Covariates	Y	Y	Y
Observations	398604	673573	351139
R-squared	0.050	0.057	0.107
Identifying States	11/25	17/35	19/38

Notes: Regressions are for children ages 10 to 14 outside the South, using age-specific changes in laws. Age, state, year, age by state, and age by year fixed effects are included. For 1860-1880 the following states are dropped for sample size issues or lack of county area information: Arizona, Colorado, Kansas, Montana, Nebraska, West Virginia, Nevada, Idaho, North Dakota, Oklahoma, South Dakota, Washington, and Wyoming. For 1880-1900, the following states are dropped to match the bureau data: North and South Dakota, and Oklahoma. From 1860-1880, 11 of 25 states passed an initial compulsory attendance law. From 1880-1900, 17 of 35 states changed or adopted a law. From 1900-1920, 19 of 38 states modified or passed a law. The Appendix contains a table showing coefficients on covariates. Standard errors are clustered by state.

Sources: Enrollment data is from the IPUMS public use samples of the United States Census (Ruggles et al., 2010). Data on compulsory attendance laws is described in the Appendix.

Table 7: Effects of Initial Compulsory Attendance Laws on 5-17 year olds, Administrative Data, 1880-1920

	(1)	(2)	(3)	(4)
Year	1880-1900	1880-1900	1900-1920	1900-1920
Law	0.089 (0.069)	0.078** (0.031)	-0.048 (0.047)	0.037 (0.055)
State Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Observations	70	385	76	418
R-squared	0.742	0.785	0.722	0.720
Identifying States	14/35	14/35	5/38	5/38

Notes: Regressions use biennial administrative data for 5-17 year olds outside the South. For the 1880-1900 regressions, North and South Dakota and Oklahoma are dropped due to many years of missing data. Standard errors are clustered by state.

Sources: Report of the Commissioner of Education for the Year [various years], U.S. Bureau of Education.

Table 8: Effects of Compulsory Attendance with Law Interacted with Baseline Enrollment Rate, Census Data, 1880-1920

	(1)	(2)	(3)	(4)	(5)	(6)
Years	1880-1900	1880-1900	1880-1900	1900-1920	1900-1920	1900-1920
Law	0.026** (0.012)	0.026 (0.016)	-0.004 (0.012)	0.036** (0.014)	0.010* (0.005)	0.033** (0.013)
Law * I(State below national median)		-0.013 (0.020)			0.035** (0.017)	
Law * I(County below national median)			0.025** (0.010)			-0.009 (0.010)
Fixed Effects	Y	Y	Y	Y	Y	Y
Covariates	Y	Y	Y	Y	Y	Y
Observations	673573	673573	673573	351139	351139	351139
R-squared	0.057	0.058	0.05	0.107	0.109	0.107

Notes: These regressions follow Table 4, except Law is interacted with a dummy for whether enrollment in the initial year was below median. Age, state, year, age by state, and age by year fixed effects are included. The dummy for enrollment below the median is also included as a main effect and interacted with year. Standard errors are clustered by state. 1860 is omitted, as around 20% of counties have fewer than 20 observations for 10 to 15 year olds.

Table 9: Differential Effects of Law on Thirteen Year Olds by Father's Occupation, Census Data, 1880-1920

	(1)	(2)	(3)	(4)
Year	1880-1900	1880-1900	1900-1920	1900-1920
Age	13	13	13	13
Law	0.038*** (0.012)	0.017* (0.009)	0.057*** (0.021)	0.042** (0.018)
Law * Professionals		0.028 (0.017)		-0.003 (0.016)
Law * Managers		0.004 (0.013)		0.018* (0.011)
Law * Clerical		-0.040 (0.031)		0.042*** (0.013)
Law * Sales		0.052*** (0.018)		0.021 (0.013)
Law * Craftsman		0.037*** (0.013)		0.023** (0.009)
Law * Operatives		0.028 (0.029)		0.022** (0.010)
Law * Service Workers		0.048** (0.019)		0.012 (0.019)
Law * Laborers (Farm also)		0.016 (0.016)		0.021 (0.015)
Law * No occupation		0.048** (0.020)		0.004 (0.007)
State Fixed Effects	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y
Covariates	Y	Y	Y	Y
Joint F-test on Law				
Observations	129249	129249	67700	67700
R-squared	0.031	0.041	0.095	0.103

Note: "Farmers," the most numerous occupation in 1880, is the omitted category of occupation.

Table 10: Differential Effects of Laws on Thirteen Year Olds, Census Data, 1880-1920

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Year	1880- 1900	1880- 1900	1880- 1900	1880- 1900	1880- 1900	1900- 1920	1900- 1920	1900- 1920	1900- 1920	1900- 1920
Law	0.027*** (0.009)	0.028*** (0.009)	0.022** (0.010)	0.028*** (0.009)	0.046*** (0.013)	0.052*** (0.017)	0.049** (0.019)	0.057*** (0.019)	0.057*** (0.019)	0.064*** (0.018)
Law * Male	0.015 (0.009)					0.010 (0.006)				
Law * Urban		0.016 (0.012)					0.016*** (0.005)			
Law * Father Foreign Born			0.030** (0.013)					-0.001 (0.007)		
Law * Father Non-English				0.022 (0.016)					-0.002 (0.007)	
Law * Farm					-0.028* (0.014)					-0.024** (0.009)
State Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Covariates	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Observations	129249	129249	129249	129249	129249	67700	67700	67700	67700	67700
R-squared	0.034	0.034	0.034	0.034	0.034	0.097	0.097	0.097	0.097	0.097

Notes: Regressions are for 13 year olds outside the South. “Urban” is defined as living in a city of at least 2500 people. Standard errors are clustered by state.

Sources: Enrollment data is from the IPUMS public use samples of the United States Census (Ruggles *et al.*, 2010). Data on compulsory attendance laws is described in the Appendix.

Table 11: Placebo Tests for Tables 6 and 7

	(1)	(2)	(3)	(4)	(5)	(6)
Year	1860-1880	1880-1900	1875-1895	1895-1915	1872-1890	1890-1910
Laws	1880-1900	1900-1920	5 years prior	5 years prior	10 years prior	10 years prior
Law	-0.039** (0.017)	0.002 (0.012)	0.012 (0.015)	-0.018 (0.016)	0.000 (0.020)	-0.018 (0.020)
State Fixed Effects	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y
Covariates	Y	Y	Y	Y	Y	Y
Observations	266454	415361	315	355	343	415
R-squared States	0.073	0.106	0.936	0.935	0.935	0.884

Notes: Columns (1) and (2) use laws passed in the future two decades as the dependent variable. States that actually passed laws during the decade are omitted. For 1860-1880; Illinois, Indiana, Kentucky, Minnesota, New Mexico, Oregon, Pennsylvania, Rhode Island, and Utah are treated states and Delaware, Iowa, Maryland, Massachusetts, and Missouri are control states. For 1880-1900; Delaware, Iowa, Maine, Maryland, Michigan, Missouri, Ohio, and Vermont are treated states and Arizona, California, Washington DC, Massachusetts, Nevada, and New York are control states. In columns (3) and (4), a law is treated as passed five years prior to the actual date of passage. Observations for treated states after the actual date of passage are omitted. In columns (5) and (6), a law is treated as passed ten years prior to the actual date of passage. Standard errors are clustered by state.

Appendix A: Examples of compulsory attendance laws

*Massachusetts's law of 1852, as amended to 1859*⁵¹

SECTION 1. Every person having under his control a child between the ages of eight and fourteen years shall annually during the continuance of his control send such child to some public school in the city or town in which he resides at least twelve weeks, if the public schools of such city or town so long continue, six weeks of which time shall be consecutive; and for every neglect of such duty the party offending shall forfeit to the use of such city or town a sum not exceeding twenty dollars; but if it appears upon the inquiry of the truant officers or school committee of any city or town, or upon the trial of any prosecution, that the party so neglecting was not able, by reason of poverty, to send such child to school, or to furnish him with the means of education, or that such child has been otherwise furnished with the means of education for an equal period of time, or has already acquired the branches of learning taught in the public schools, or that his bodily or mental condition has been such as to prevent his attendance at school or application to study for the period required, the penalty before mentioned shall not be incurred.

SEC. 2. The truant officers and the school committees of the several cities and towns shall inquire into all cases of neglect of the duty prescribed in the preceding section, and ascertain from the persons neglecting the reasons, if any, therefore; and shall forthwith give notice of all violations, with the reasons, to the treasurer of the city or town; and if such treasurer willfully neglects or refuses to prosecute any person liable to the penalty provided for in the preceding section, he shall forfeit the sum of twenty dollars.

*Michigan's 1895 law*⁵²

An Act to provide for the COMPULSORY EDUCATION of children, for the PUNISHMENT OF TRUANCY, and to repeal all acts or parts of acts conflicting with the provisions of the same.

(4847) SECTION 1. *The People of the State of Michigan enact*, That every parent, guardian or other person in the state of Michigan having control and charge of any child or children between the ages of eight and sixteen years and in cities between the ages of seven and sixteen years, shall be required to send such child or children to the public school for a period of at least four months in each school year, except that in cities having a duly constituted police force, the attendance at school shall not be limited to four months beginning on the first Monday of the first term commencing in his or her district after September first of each year. And such attendance, in cities, shall be consecutive until each and every pupil between the ages of seven and sixteen years shall have attended school the entire school year previous to the thirtieth day of June in each school year: Provided, If it be shown that any such child or children are being taught in a private school in such branches as are usually taught in the public schools, or have

⁵¹ Reported in *Report of the Commissioner of Education for the Year 1888-89*, page 472

⁵² Act 95, 1895, page 203. Compiled in *The General School Laws of Michigan with Appendix*, 1899.

already acquired the ordinary branches of learning taught in public schools, or if the person or persons in parental relation to such child or children present a written statement that such child or children is or are physically unable to attend school, the truant officer or district board may employ a reputable physician to examine such child or children, and if such physician shall certify that such child or children is or are physically unable to attend school, such child or children shall be exempt from the provisions of this act: Provided further, That the school boards in cities may on the recommendation of the superintendent of schools and of the truant officer, exempt children over fourteen years of age from attendance at school for either a part or for the whole of the time until they shall severally reach the age of sixteen years, for any reason that said boards may deem sufficient: And further provided, That in case a public school shall not be taught for four months during the time herein specified, within two miles by the nearest traveled road, of the residence of any such child or children, such child or children shall not be liable to the provisions of this act.

(4848) SEC. 2. The district board or board of education in each school district in the state which has been organized as a truant officer, graded school district, or as a township district according to the laws of the state, shall, at its first meeting, after this law goes into effect, and previous to the tenth day of September of each year, appoint a truant officer for the term of one year from and after the first Monday of September of each year. In townships whose districts have been organized under the primary school law, the chairman of the township board of school inspectors shall be the truant officer and shall perform all the duties of truant officer, as provided for in this act, so far as the provisions of this law apply to the territory over which he has jurisdiction: Provided, That in cities having a duly organized police force, it shall be the duty of the police authority, at the request of the school authorities, to detail one or more members of said force to perform the duties of truant officer. The compensation of the truant officer shall be fixed in graded school districts by the board which appoints, and in townships by the township board and in no case shall such compensation be less than one dollar and fifty cents per day for time actually employed under direction of the school board in performance of his official duties. The compensation of truant officers shall be allowed and paid in the same manner as incidental expenses are paid by such boards.

(4849) SEC. 3. It shall 'be the duty of the truant officer to Duties of investigate all cases of truancy or non-attendance at school and render all service within his power to compel children to attend school and when informed of continued non-attendance toy any teacher or resident of the school district he shall immediately notify the persons having control of such children that, on the following Monday, such children shall present themselves with the necessary text-books for instruction in the proper school or schools of the district. The notice shall inform said parent or guardian that attendance at school must be consecutive at least eight half days of each week until the end of that term, except in cities having a duly constituted police force, attendance in school shall be continuous. In case any parent, guardian or other person shall fail to comply with the provisions of this act, he shall be deemed guilty of a misdemeanor and shall, on conviction, be liable to a fine of not less than five dollars, nor more than fifty dollars, or by imprisonment in the county or

city jail for not less than two nor more than ninety days, or by both such fine and imprisonment in the discretion of the court.

(4850) SEC. 4. In all city school districts in this state having a school Census of five hundred or more pupils, the school board or officers having in charge the schools of such districts may establish one or more ungraded schools for the instruction of certain children, as defined and set forth in the following section. They may, through their truant officer and superintendent of schools, require such children to attend said ungraded schools, or any department of their graded schools, as said board of education may direct. public instruction to send a printed list of said examination questions to each county commissioner of schools.

(4851) Sec. 5. The following classes of persons between the ages of eight and fourteen years, and in cities between the ages of seven and sixteen years, shall be deemed juvenile disorderly persons, and shall, in the judgment of the proper school authorities, be assigned to the ungraded school or schools as provided in section four of this act: Class one, habitual truants from any school in which they are enrolled as pupils; class two, children who, while attending any school, are incorrigibly turbulent, disobedient or insubordinate, or are vicious or immoral in conduct; class three, children who are not attending any school and who habitually frequent streets and other public places, having no lawful business, employment or occupation.

(4852) Sec. 6. It shall be the duty of the truant officer, in case of a violation of this law, within one week after having given the notice to the parent or guardians as specified in section three, to make a complaint against said parent, guardian or other person having the legal charge and control of such child, before a justice of the peace in the city, village or township where the party resides, except in cities having recorder's or police court, for such refusal or neglect; and said justice of the peace, police judge, or recorder's court shall issue a warrant upon said complaint and shall proceed to hear and determine the same, and upon conviction thereof said parent, guardian or other person, as the case may be, shall be punished according to provisions of section three of this act. It shall be the duty of all school officers, superintendents or teachers, to render such assistance and furnish such information as they have at their command, to aid said truant officer in the fulfillment of his official duties.

(4853) Sec. 7. When, in the judgment of school boards of primary and township school districts or the superintendent of city schools and the truant officer, it becomes certain that all legal means have been exhausted in their attempts to compel the attendance at school of a juvenile disorderly person, the truant officer shall, in case the person in parental relation to the child neglects or refuses to do so, make a complaint against such juvenile disorderly person before a court of competent jurisdiction that said child is a juvenile disorderly person as described in section five of this act. The justice of the peace or court shall issue a warrant and proceed to hear such complaint; and if said justice of the peace or court shall determine that said child is a juvenile disorderly person within the meaning of this act, then said justice of the peace or court shall thereupon, and after consultation with the county agent of corrections and charities, sentence such child, if a boy, to the industrial school for boys at Lansing for a term not extending beyond the time

when said child shall arrive at the age of seventeen years unless sooner discharged by the board of control of said industrial school for boys; or, if a girl, to the industrial home for girls at Adrian, for a term not extending beyond the time when said child shall arrive at the age of seventeen years, unless sooner discharged by the board of control of said industrial home for girls: Provided, however, That such sentence shall, in case of the first offense, be suspended.

*Utah's 1897 law*⁵³

SECTION 1. Every parent, guardian, or other person having control of any child between eight and fourteen years of age, shall be required to send such child to a public, district, or private school in the district in which he resides, at least twenty weeks in each school year, ten weeks of which shall be consecutive; Provided, that in each year such parent, guardian, or other person having control of any child shall be excused from such duty by the school board of the district or the board of education of the city, as the case may be, whenever it shall be shown to their satisfaction that one of the following reasons exists:

1st. That such child is taught at home in the branches prescribed by law for the same length of time as children are required by law to be taught in the district schools.

2nd. That such child has already acquired the branches of learning taught in the district schools.

3rd. That such child is in such physical or mental condition (which may be certified by a competent physician if required by the board) as to render such attendance inexpedient or impracticable. If no such school is taught the requisite length of time within two and one-half miles of the residence of such child by the nearest road, such attendance shall not be enforced.

4th. That such child is attending some public, district, or private school.

5th. That the services of such child are necessary to the support of a mother or an invalid father.

The evidence of the existence of any of these reasons for non-attendance must be in each case sufficient to satisfy the superintendent of the county or city in which the child resides, and the superintendent, upon the presentation of such evidence, shall issue a certificate stating that the holder is exempted from attendance during the time therein specified.

Sec. 2. Any such parent, guardian, or other person having control of any child between eight and fourteen years of age who willfully fails to comply with the requirements of the last preceding section, shall be guilty of a misdemeanor.

Sec. 3. It shall be the duty of the president of the board of education of any city, and the chairman of the school trustees of any district, within their respective jurisdictions, to inquire into all cases of misdemeanor defined in this act and to report the same and the offenders concerned, when known, to the city or county attorney of the city or county

⁵³ State of Utah (1899) School Law 1897, page 54

within which the offenses shall have been committed, and it is hereby made the duty of either of said officers to proceed immediately to prosecute such offenders.

Sec. 4. All children in the district between the ages of eight and sixteen years, who, in defiance of earnest and persistent efforts on the part of their parents or teachers, are habitual truants from school, or while in attendance at school are vicious, immoral, or ungovernable in conduct, shall be deemed incorrigible, and it is the duty of the president of the board of education or the chairman of the board of trustees of each school district to inquire into all such cases within his district and report them to the county attorney acting for such district, whose duty it shall be to prosecute such cases as incorrigible and fit candidates for the State reform school.

*Wyoming 1876 Law*⁵⁴

Sec. 3949. The district schools established under the provisions of this title shall at all times be equally free and accessible to all children resident therein, over six and under the age of twenty -one years, subject to such regulations as the district Board in each district may prescribe. And it shall be the duty of all parents and guardians or other persons having the control of children between the ages above mentioned, to send such children to some school, at least three months in each and every year, except in case of invalids, and others to whom the school room would be injurious. In such cases, the district Board shall, upon receipt of a physician's certificate, excuse such children: and the district Board may, in its discretion, excuse children from attendance when a compliance with this title would work great hardship. In all such case the Clerk of the Board shall state the reason for excuse, and the name of the child or person excused, and the length of time for which excused, at large in the minutes of the proceedings of the Board; Provided, That in all cases the applicant may appeal from the decision of the Board to the County Superintendent, whose decision shall be final. (C. L. 1876, ch. 103, sec. 36.)

⁵⁴ Reel, Esther (1895) *School Laws of the State of Wyoming in Force March 31, 1895*. Sun-Leader Book Publishing House, page 28

Appendix B: Data Appendix

Sources for laws

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Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]. Minneapolis: University of Minnesota, 2010.

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Political data

Burnham, W. Dean. PARTISAN DIVISION OF AMERICAN STATE GOVERNMENTS, 1834-1985 [Computer file]. Conducted by Massachusetts Institute of Technology. ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 198?. doi:10.3886/ICPSR00016

⁵⁵ Due to difficulty obtaining the complete set of reports, the data were entered from the printed volumes, scans from the Hathi Trust Digital Library, Google Books, and reprints of the data in the Statistical Abstracts of the United States Census. In some cases, when data in later years of the Commissioner's Report varied from the data in the original report, the later data were assumed to be more accurate.

GIS data

Population density is calculated using GIS data on county areas available from usa.ipums.org/usa/volii/ICPSR.shtml in each Census year. Country boundary information was matched using ICPSR state and county codes to the IPUMS data. In some cases, IPUMS data existed without corresponding boundary information: specifically, NHGIS county codes and historical borders existed in the GIS data without corresponding ICPSR counties.⁵⁶ States missing information were prominently in the West. Oklahoma is also missing information until after 1900. For these states in these time periods, state population density was used instead of county population density. These mismatched counties accounted for less than one percent of total observations in the Census, from 1860 to 1920.

⁵⁶ . For the District of Columbia, as a special case, the later area is used when the NHGIS and ICSPR codes were not coincidental.

Appendix C

Identifying changes in laws, by decade, with date of the first law

1860-1880

<i>State</i>	<i>Date of First Law</i>	<i>Age in 1860</i>	<i>Age in 1880</i>
Arizona	1875	0	14
California	1874	0	14
Connecticut	1872	0	14
District of Columbia	1864	0	14
Kansas	1874	0	14
Maine	1875	0	15
Michigan	1871	0	14
Nevada	1873	0	14
New Hampshire	1871	0	14
New Jersey	1875	0	14
New York	1874	0	14
Ohio	1877	0	14
Vermont	1867	0	14
Washington	1871	0	16
Wisconsin	1879	0	15
Wyoming	1876	0	16

1880-1900

<i>State</i>	<i>Date of First Law</i>	<i>Age in 1880</i>	<i>Age in 1900</i>
Colorado	1889	0	14
Idaho	1887	0	14
Illinois	1883	0	14
Indiana	1897	0	14
Kentucky	1896	0	14
Minnesota	1885	0	16
Montana	1883	0	14
Nebraska	1887	0	14
New Hampshire	1871	14	16
New Jersey	1875	14	12
New Mexico	1891	0	16
North Dakota	1883	0	14
Oregon	1889	0	14
Pennsylvania	1895	0	13
Rhode Island	1883	0	15
South Dakota	1883	0	14
Utah	1890	0	14
Washington	1871	16	15
West Virginia	1897	0	14
Wisconsin	1879	15	13

1900-1920

<i>State</i>	<i>Date of First Law</i>	<i>Age in 1900</i>	<i>Age in 1920</i>
Delaware	1907	0	14
Iowa	1902	0	14
Maine	1875	15	14
Maryland	1902	0	13
Michigan	1871	14	15
Minnesota	1885	16	14
Missouri	1905	0	14
New Hampshire	1871	16	14
New Jersey	1875	12	14
New Mexico	1891	16	14
Ohio	1877	14	15
Oklahoma	1907	0	14
Pennsylvania	1895	13	14
Rhode Island	1883	15	14
South Dakota	1883	14	15
Vermont	1867	14	15
Washington	1871	15	14
Wisconsin	1879	13	14
Wyoming	1876	16	14

Appendix D: Table 6, Panel B, with coefficients on covariates shown

	(1)	(2)	(3)
Years	1860-1880	1880-1900	1900-1920
Law	-0.039** (0.019)	0.026** (0.012)	0.036** (0.014)
Male	0.014* (0.007)	-0.000 (0.002)	-0.011*** (0.003)
Male * Year	-0.014 (0.009)	-0.010*** (0.003)	0.011** (0.004)
Parents Immigrant	-0.076*** (0.013)	-0.031*** (0.011)	-0.001 (0.009)
Parents Immigrant * Year	0.042*** (0.008)	0.022*** (0.007)	-0.005 (0.009)
Parents Non-English	-0.051* (0.025)	-0.022*** (0.008)	-0.045*** (0.007)
Parents Non-English * Year	0.042* (0.022)	-0.021** (0.009)	0.037*** (0.008)
Farm	0.039*** (0.006)	0.037*** (0.004)	0.010** (0.005)
Farm * Year	0.002 (0.008)	-0.023*** (0.006)	-0.018*** (0.006)
Fixed Effects	Y	Y	Y
Covariates	Y	Y	Y
Observations	398604	673573	351139
R-squared	0.050	0.057	0.107
Identifying States	11/25	17/35	19/38

Notes: Regressions are for children ages 10 to 14, using age-specific changes in laws. Age, state, year, age by state, and age by year fixed effects are included. For 1860-1880 the following states are dropped for sample size issues or lack of county area information: Arizona, Colorado, Kansas, Montana, Nebraska, West Virginia, Nevada, Idaho, North Dakota, Oklahoma, South Dakota, Washington, and Wyoming. For 1880-1900, the following states are dropped to match the bureau data: North and South Dakota, and Oklahoma

Sources: Enrollment data is from the IPUMS public use samples of the United States Census (Ruggles et al., 2010). Data on compulsory attendance laws is described in the Appendix.

Appendix E: Effects of Compulsory Attendance Laws with the South, Census Data, 1860-1920

Panel A: Fixed Effects Only

	(1)	(2)	(3)
Years	1860-1880	1880-1900	1900-1920
Law	-0.019 (0.019)	0.006 (0.016)	0.071*** (0.016)
Fixed Effects	Y	Y	Y
Covariates	N	N	N
Observations	503802	844910	443700
R-squared	0.074	0.072	0.109
Identifying States	11/49	17/49	30/49

Panel B: Covariates

	(1)	(2)	(3)
Years	1860-1880	1880-1900	1900-1920
Law	-0.028 (0.018)	0.005 (0.013)	0.075*** (0.016)
Fixed Effects	Y	Y	Y
Covariates	Y	Y	Y
Observations	503802	844910	443700
R-squared	0.080	0.078	0.113
Identifying States	11/49	17/49	30/49

Panel C: Adoption of Initial Law Versus Amendment of Existing Age Limits

	(1)	(2)	(3)
Years	1860-1880	1880-1900	1900-1920
Law	-0.049* (0.027)	0.018* (0.011)	0.077*** (0.028)
Law * I(Passed in 2nd Decade)	0.022 (0.028)	-0.029 (0.019)	0.056 (0.040)
Law * I(Revised Age Limit)		0.007 (0.025)	-0.052 (0.031)
Fixed Effects	Y	Y	Y
Covariates	Y	Y	Y
Observations	503802	844910	443700
R-squared	0.080	0.078	0.114
Identifying States	11/49	17/49	30/49

Notes: Regressions are for children ages 10 to 14, using age-specific changes in laws. Age, state, year, age by state, and age by year fixed effects are included. For 1860-1880 the following states are dropped for sample size issues or lack of county area information: Arizona, Colorado, Kansas, Montana, Nebraska, West Virginia, Nevada, Idaho, North Dakota, Oklahoma, South Dakota, Washington, and Wyoming. For 1880-1900, the following states are dropped to match the bureau data: North and South Dakota, and Oklahoma

Sources: Enrollment data is from the IPUMS public use samples of the United States Census (Ruggles et al., 2010). Data on compulsory attendance laws is described in the Appendix.

