A New Development: The Impacts of State Legislative Reform on Special Education Identification

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Abstract

Understanding economic and educational disparities is crucial for effective policymaking. Special education identification represents a complex intersection among the medical, legal, policy, and education sectors. This study evaluates the national impacts of states adopting developmental delay (DD) as a disability category, alongside Indiana legislation that extended the use of the DD category from Pre-Kindergarten (ages 3-5) to grades K-2 (ages 5-9), effective July 1, 2018. Nationally, including DD as a disability category increases DD rates by 0.1 to 0.6 percentage points (pp). In Indiana, Pre-K DD rates surged by 2.1 pp (from 15.1% to 17.2%) immediately after the bill passed and continued to rise through the 2022-23 school year. Kindergarten DD rates increased from 0% to 2.4%. Overall, special education rates rose in all grades despite the increased DD identification displacing autism, speech, and Other Health Impairments (OHI). Changes among low-income, male students and across various racial groups contributed to the increases in DD rates. The legislation also increased the persistence of DD identification among Pre-K students over the next three years by 48.7 pp and special education identification by 7.9 pp.

Keywords: Special education, legislation, comparative interrupted time series

Author Note

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1. Introduction

Within the United States, disparities in economic and educational outcomes exist between low- and high-income and racial minority and majority groups. These disparities exist in long-term outcomes such as college completion and adult earnings and wealth (Chetty et al., 2018, 2020; Derenoncourt et al., 2024). These disparities also exist in educational outcomes such as disciplinary actions, grade-level retention, advanced course-taking, and gifted and special education identification (Chetty et al., 2018; Reardon et al., 2012; Shores et al., 2020). The causes of these disparities are complex and debated, with explanations ranging from historical issues, such as redlining and school segregation, to modern causes, such as cultural differences, healthcare access, differing neighborhood contexts, and school practices (Acharya et al., 2016; Chyn & Katz, 2021; Derenoncourt, 2022; Markowitz et al., 2023; Owens, 2020; Reardon et al., 2012).

Among the topics highlighted in the ongoing discussions of economic and educational disparities, special education is unique and consequential. The Individuals with Disabilities Education Act (IDEA) includes federal provisions for special education disabilities that are then adopted by states for implementation. The services provided under IDEA amount to approximately 14 billion dollars of investment through the federal government (Dragoo, 2020), and as of 2022, account for 15% of students aged 3-21 in the U.S. public school system (National Center for Education Statistics, n.d.). Special education involves a complex intersection of legal, medical, and educational policy decisions. How policy decisions spill over across social sectors is a core question in economics, especially as it relates to understanding patterns of disparities and impacts of social policies. Among the various disability types reflected in IDEA, DD is a

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unique disability category to examine within the context of spillovers, as under IDEA, it is an optional category for states to use for students ages 3-9.

This study analyzes the spillovers of state legislative decisions into education by providing the first national analysis of how state legislative decisions to include developmental delay (DD) as a disability category for students ages 6-21 contributes to DD and overall special education identification. The study uses difference-in-difference methods to examine changes in DD identification and all disabilities identification for states that adopt DD in ages 6-21. This study uses federal administrative IDEA 618 data from all states from the 2005-06 to 2023-2024 school years. The study primarily examines the impacts of Indiana extending the DD category from ages 3-5 to 3-9 on July 1, 2018 on DD identification, other disabilities identification, the persistence of identification, and outcomes for students with DD. The study leverages interrupted time series and comparative interrupted time series models to examine these outcomes. The study uses administrative data on all PK-2 students in Indiana from the 2011-2012 to 2022-23 school years.

For the national analysis, after adopting DD in ages 6-21, ages 6-21 DD rates increase by 0.1 pp relative to states that never adopt DD. DD rates increase by 0.07 pp for earlier-adopting states relative to states that adopted DD last in 2021. The results comparing DD-adopting states to never-DD or not-yet-DD states do not reflect an increase in the percentage of students with disabilities overall. The results comparing earlier-adopting DD states to those that adopted DD in 2021 show an initial 0.82 pp increase after DD adoption, but this fades after t=0, potentially due to the COVID-19 pandemic.

For the Indiana analysis, In Indiana, Pre-K DD rates surged by 2.1 pp (from 15.1% to 17.2%) immediately after the bill passed and continued to rise through the 2022-23 school year.

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Kindergarten DD rates increased from 0% to 2.4%. Increases in DD identification among low-income, male students and across various racial groups contributed to the increases in DD rates. Overall, special education rates rose in all grades. The increases in overall special education arise despite the increased DD identification displacing autism, speech, and Other Health Impairments (OHI) across grades PK-2. The legislation also increased the persistence of special education identification among Pre-K students over the next three years by 7.9 pp and DD identification by 48.7 pp. There is also evidence that across grades PK-2, after the DD legislation change, the students with DD became increasingly likely to be educated in regular class placements while also experiencing increased absences and grade retention. This study contributes to several important research areas.

First, the study contributes to understanding the concepts of spillovers, crowd out, and and administrative burdens in policy. First, the study highlights issued related to administrative burdens. Administrative burdens are costs and difficulties that individuals and institutions face when interacting with and implementing government programs. For spillovers, there is significant evidence regarding issues such as housing and neighborhood contexts spilling over into education, migration patterns spilling over into education, healthcare policies spilling over into education (Acton et al., 2021; Arbogast et al., 2024; L. Boustan, 2012; L. P. Boustan, 2010; Chyn & Katz, 2021; Cohodes et al., 2015). Second, this paper contributes to the considerations regarding the economic theory of crowd out, in which increased investment or focus in one area limits investment or focus in another area (Acton et al., 2021). In this study, DD identification crowds out identification for other disabilities, such as speech and autism. Therefore, we can understand that there are potential tradeoffs in investments in one disability area relative to another. Broadly, identifying how state legislative decisions that reduce administrative burdens

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to for a particular disability such as DD, and how these legislative decisions spillover into education and cause crowd-out effects in disability identification contributes to this policy literature.

Specifically related to special education, there are ongoing debates regarding the identification rates for different student groups. Evidence has highlighted that students from low-income backgrounds and racial minorities like black students are more likely to be identified for special education (Shores et al., 2019). However, other evidence has suggested that the ability to determine whether these students are under- or over-identified for special education is dependent on understanding other contextual factors, such as the interactions between race and poverty status, student achievement, students' family histories, and school demographics (Daysal et al., 2024; T. Elder et al., 2020; T. E. Elder et al., 2021; Fish, 2019; Hibel & Jasper, 2012; Mandell et al., 2002; Morgan et al., 2017; Winter et al., 2020). This study contributes further evidence regarding patterns of disability identification by student demographic groups.

This study also highlights how medical, legal, and policy decisions influence school practices. There is growing evidence that doctors vary significantly in their diagnosis of disabilities such as autism and ADHD which has implications for schools (Kelli Marquardt, 2022; Worsham et al., 2024). Beyond doctors, the dynamics of healthcare policies across states has influenced the identification and services of students of disabilities, such as autism and emotional disorder (Acton et al., 2021; Coffey, 2025; T. Elder et al., 2020; Stephanie Coffey & Christopher Cleveland, 2024).

This study also contributes to research that highlights how school contexts and practice changes influence the special education process. While IDEA defines fundamental requirements for the provision of special education, states vary significantly regarding which disability

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classifications they use and which methods and measures they use to classify disability (Dragoo, 2020; Georgan et al., 2023; Zablotsky et al., 2023). Evidence has highlighted how Black and Hispanic students are placed in special education more often than their peers when they are in majority-white schools. However, in predominately minority schools, when surrounded by other non-white students, Black and Hispanic students are less likely to be placed in special education (T. E. Elder et al., 2021; Fish, 2019). Additionally, research has highlighted that in the wake of the desegregation of schools, black students experienced increases in special education and suspension rates (Chin, 2024). Some evidence also exists that increased disability identification can stem from efforts to reduce suspensions and expulsions (Khafaji-King, 2024). Some states have used policies to reduce the use of special education, while others have sought to expand the use of special education (Ballis & Heath, 2021, 2023). Additionally, states have explored alternative models for identification, such as Responses to Intervention, that have been to decrease or increase special education identification depending on the research design and context (Ainsworth, Nicholas et al., 2024; Gilmour et al., 2024; Shea, Zhiling Meng & Jenkins, Jade Marcus, 2024). This study highlights these dynamics of states expanding or restricting special education vis-à-vis the use of the DD category.

Lastly, this study also builds on recent work regarding the disruptions caused by the COVID-19 pandemic. The COVID-19 pandemic disrupted many processes in schools such as enrollment, instruction, and achievement (Bacher-Hicks et al., 2024)Nationwide, the share of public K-12 students receiving special education services maintained a slightly increasing trend from 2010 through 2022, including during the pandemic's post-onset 2021 and 2022 school years (National Center for Education Statistics, 2024). Beyond schools, COVID-19 is associated with developmental changes among children and issues in identification (Corrigan et al., 2024;

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Freedman et al., 2024). Analysis of Michigan administrative education data indicates that, despite a historical statewide pattern in special education participation like the national trend, the pandemic was associated with substantial decreases in new special education placements and exits among Michigan students (Hopkins et al., 2024). Moreover, these decreases were disproportionately experienced by student populations who faced the most pronounced educational disadvantages. Similarly, findings from Washington highlight that special education identification rates dropped dramatically in March 2020 through the end of the 2019–20 school year and remained below historical norms through 2020–21 before returning to pre-pandemic levels early in 2021–22. Much of the decline in identification was driven by grades Kindergarten through third grade (Roddy Theobald et al., 2024). This study provides further evidence on patterns of special education identification during the COVID-19 pandemic nationally and within Indiana. It raises how the pandemic disrupted efforts to expand special education through the provision of DD identification and services.

The remainder of this paper provides 2) additional background, 3) the study data, 4) the empirical strategy, 5) results, and 6) a discussion and conclusion.

2. Background

Special Education

Overall

IDEA Part B allows schools to qualify school-age (ages 6-21) students for special education services, while Part C provides for early intervention services for children ages 3-5. IDEA requires 13 disability categories. These disability categories include autism spectrum disorder (ASD), Blind or Low Vision (BLV), Intellectual disability (ID), Deaf or Hard of Hearing (DHH), Deaf-Blind (DB), DD (DD), Emotional Disability (ED), Language or Speech,

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Impairment (LSI), Multiple Disabilities (MD), Other Health Impairment (OHI), Orthopedic Impairment (OI), Specific Learning Disability (SLD), and Traumatic Brain Injury (TBI). A student must be eligible under one or more disability areas to receive special education or related services.

Developmental Delay (DD)

IDEA also allows for DD to be an optional 14th category that states can use for students ages 3-9. Generally, a DD is defined as slow to meet or not reaching milestones in one or more of the areas of development (communication, motor, cognition, social-emotional, or adaptive skills) in the expected way for a child's age. The child's slow development may not be associated with a condition or a specific diagnosis (Assistance to States for the Education of Children with Disabilities, 2006). Under IDEA, a child with a DD may be eligible to receive early intervention or special education and related services if they meet specific federal and/or state criteria. For states that use a definition of DD, children may qualify for special education and related services using a state-determined definition. The delay must be determined by assessing the child using appropriate developmental tests or tools. States often use DD to support children who may not fit neatly into a specific disability category but still need additional support to catch up with their peers; essentially, it acts as a broad umbrella term to identify children who need early intervention without requiring a definitive diagnosis of a specific disability. Additionally, in some cases, families prefer their child to receive a DD classification relative to autism or intellectual disability because of the perceived stigma associated with those terms (Barger et al., 2019; Congressional Research Service, 2024).

Indiana DD Legislation and Early Childhood Context

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Indiana Senate Bill 475 became public law on April 13, 2017. The legislation required the state board of education to amend its rule establishing DD as a disability category to provide that, beginning July 1, 2018, DD is a disability category solely for students who are at least three years of age and less than nine years of age. Previously, DD was a disability category solely for students who were at least three years of age and not more than five years of age. The legislation also added DD as a category for mild and moderate disabilities to determine special education grant amounts (DD, 2018)

The present definition in Indiana for DD is that it is a disability category for students at least three years old and under nine years old. DD means a significant delay in one developmental area (at least 2 standard deviations below the mean) or a moderate delay in at least two developmental areas (at least 1.5 standard deviations below the mean). Developmental areas include gross or fine motor development, cognitive development, receptive or expressive language development, social or emotional development, and self-help or other adaptive development (IEP TA Center, 2022)**.** Figures A1, A2, and A3 provide additional context on the DD legislation, reported student counts after the legislation change, and funding for DD.

Indiana does not have universal Pre-Kindergarten. Preschool options include developmental preschool, Head Start, licensed childcare centers, licensed family childcare homes, public community preschools, Title I preschools, and unlicensed registered ministries. Indiana provides vouchers to eligible low-income four-year-olds that may be used in public schools, licensed or registered childcare programs, or private schools (Indiana Department of Education, 2022). Per Indiana law, a student must be at least five years of age on August 1 of the school year to participate in a kindergarten program at a school corporation unless the student receives a waiver. School corporations must provide kindergarten for all students who turn five

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on or before August 1 of the current school year. Schools may receive funding for students who turn five by October 1 (Indiana Department of Education, 2023).

3. Data

IDEA 618 Data

This study leverages IDEA 618 Data to examine national trends in special education and DD identification. Section 618 of the Individuals with Disabilities Education Act (IDEA) requires that each state submit data about the infants and toddlers, birth through age 2, who receive early intervention services under Part C of IDEA and children with disabilities, ages 3 through 21, who receive special education and related services under Part B of IDEA (Office of Special Education Programs (OSEP), n.d.). This study leverages Part B and Part C public data collections from 2005-06 to 2023-2024: Child Count and Child Count and Educational Environments. These provide the number of students served under IDEA by disability, age, environment, and state. In 2023-2024, this collection changed from reporting ages 3-5 and 6-21 to ages 3-5 and 6-21.

Between 2005-06 and 2023-24, the number of states using DD as a category for students ages 6-21 increased from 26 to 45, highlighting that DD has been a very active state policy issue (Figure 1). Only five states never use DD for students ages 6-21: Arkansas, California, Iowa, New York, and Texas. Appendix Table A1 provides each state's first recorded year with DD for ages 3-5 and 6-21.

[Figure 1]

Indiana Data

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This study leverages Indiana Department of Education data to examine special education and DD identification within Indiana. For this study, the Indiana Department of Education provided data from several sources for school years 2011-12 to 2022-23:

- The student enrollment data includes information on students' district, school, grade, race/ethnicity, gender/sex, poverty status, English learner status, foster/homeless status, and special education status.
- The special education data includes information on students' primary and secondary disabilities, special education placement, and special education location.

The student enrollment and special education data are merged using the student ID and year to create the analysis file for this study. Table 1 describes the study's Indiana sample and provides descriptive statistics before and after the DD legislation change. The study focuses on students in PK-2. Notably, Indiana does not have universal PK, so only 10.1% of students in the pre-legislation period are in PK, whereas K-2 represents 30% of the total students each respectively. PK students have a slightly larger share of PK-2 enrollment after the reform (13.0%). As evident in Table 1, before the DD legislation, 99.7% of DD identification was in PK, while after the DD legislation, only 48.2% of DD identification was in PK. Approximately 30% of students in PK have special education in both periods, relative to approximately 21% in K grade. PK students are likelier to not have a free/reduced-price lunch status. Many of these students are enrolled in private PK. These students are coded to an Unknown FRPL status. Seven students are missing race and gender and are dropped from the analysis. Appendix Figures A4, A5, and A6 provide descriptive trends for enrollment by grade, identification rates by grade, and identification rates for PK students transitioning to kindergarten or in t+1 by school year.

[Table 1]

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4. Empirical Strategy

National

Overall and DD Identification

The first analysis in this study examines how states' adoption of DD for students ages 6-21 affects DD and overall disability identification rates through a staggered difference-in-difference approach that accommodates the potential for heterogeneous treatment effects which generalizes to the following model (Callaway & Sant'Anna, 2021; Roth et al., 2023; Sun & Abraham, 2021):

$$(1)\ ATT_l^w = \sum_g w_g\, ATT(g, g+1)$$

ATT_l^w gives the weighted average of the treatment effect *l* periods after adoption across different adoption cohorts in group *g*. In this case, each state has a centered time variable *l* so the adoption occurs at $l - g = 0$. By convention, the reference (or omitted) period is set to $l = -1$, one period before the event, and all coefficients are interpreted relative to this base period. The Sun & Abraham (2020) estimator uses either the never-treated units or the last-to-be-treated units as the comparison. The Callaway & Sant'anna (2021) estimators compare never-treated or not-yet-treated units. This analysis makes three comparisons: 1) comparing adopting states to states that never adopt DD throughout the panel, 2) comparing states that adopt DD to not-yet adopting states, and 3) comparing earlier adopting states to later adopting states. The state's total ages 6-21 special population weights estimates. Standard errors are clustered at the state level.

Indiana

Developmental Identification

The study next examines the impact of the Indiana DD legislation on DD identification in Indiana through an interrupted time series model of the form:

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$$(2)\ Y_{ist} = \beta_0 + \beta_1 Trend_t + \beta_2 2019_t + \beta_3 2020_t + \beta_4 2021_t + \beta_5 2022_t + \beta_6 2023_t + \delta X_{ist} + \gamma_s + \varepsilon_{ist}$$

Where Y_{ist} is the outcome of individual i in school s in year t. $Trend_t$ is the time elapsed since the first year in the panel (2011-2012). 2019_t, 2020_t, 2021_t are indicators for the DD legislation-affected school years. X_{ist} is a vector of student-level covariates, γ_s is a school fixed effect and ε_{ist} is an idiosyncratic error term clustered on schools. The coefficients of interest are $\beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ which gives the year-specific deviation from the long-term trend in DD identification rates.

The study uses a model with specific year intercept terms instead of a generalized post-treatment term in recognition of the potential confounding effects of the COVID-19 pandemic from 2019-20 to 2021-22 (Hopkins et al., 2024; Roddy Theobald et al., 2024). Assuming that DD identification rates were positively affected by the legislation change, we would expect an increase in β_2. The expected impacts for the other $\beta_n$terms is more complicated because of the COVID-19 pandemic. DD identification rates could be negatively affected by the school building closures in the spring of 2020 and the provision of remote and hybrid instruction in the 2020-21 and 2021-22 school years, and any contemporaneous changes in identification practices because of the overall decline in student performance and enrollment demonstrated during and after the COVID-19 pandemic (Bacher-Hicks et al., 2024; Erin Fahle et al., 2024; The National Center for the Improvement of Educational Assessment, 2021)To this end, we might expect a decline in the trend from 2019-20 to 2020-21 and a rebound from 2021-22 to 2022-23 as schools regained enrollment and worked through any backlog of interventions and evaluations.

DD Identification by Student Group

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The study further examines the impacts of the Indiana legislation on different types of students through a modified model (2) that leverages year and student-type interaction terms:

$$(3)\ Y_{ist} = \beta_0 + \beta_1 Trend_t + \beta_2 2019_t + \beta_3 2020_t + \beta_4 2021_t + \varphi_o Trend_t * C_{it} + \varphi_1 2019_t * C_{it} + \varphi_2 2020_t * C_{it} + \varphi_3 2021_t * C_{it} + \varphi_4 2022_t * C_{it} + \varphi_5 2022_t * C_{it} + \varphi_6 2023_t * C_{it} + \rho C_{it} + \delta X_{ist} + \gamma_s + \varepsilon_{ist}$$

Where C_{it} is each student characteristic of interest (e.g., free/reduced price lunch, gender/sex, and ethnicity/race status) and interacts with the trend and each post-legislation year. These interacted models explore only one student/family background characteristic at a time (i.e., one model is run with student race interactions, one with poverty status interactions, etc.) All other parameters are defined as in model (2). The coefficients of interest are $\varphi_1 to\ \varphi_6$, which gives the year-specific deviation for each interest group from the average long-term trend in DD rates.

Other Disability Types Identification

Model (2) is also used to examine changes in the overall special education rate and the rates of other disability types. This analysis informs whether any changes in DD identification crowd out other disabilities' identification rates.

Persistence of Disability Identification

Model (2) is also used to understand the long-term identification trends for students with DD in pre-kindergarten before and after the legislation is enacted. This analysis illuminates whether the Indiana legislation changed how long a student has a disability identification.

Placement Settings, Absences, and Grade Retention

Finally, model (3) is modified to compare changes in special education regular class placement settings, absences, and grade retention between students with DD and other disability

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types over time in model (4). In this case, C_{it} substitutes for a binary variable, DD_{it}, to compare students with DD to those with other disabilities over time.

$$(4)\ Y_{ist} = \beta_0 + \beta_1 Trend_t * D_{it} + \beta_2 2019_t + \beta_3 2020_t + \beta_4 2021_t + \rho_0 Trend_t * C_{it} + \rho_1 2019_t * D_{it} + \rho_2 2020_t * D_{it} + \rho_3 2021_t * D_{it} + \rho_4 2022_t * D_{it} + \rho_5 2022_t * D_{it} + \varphi_6 2023_t * D_{it} + \mu D_{it} + \delta X_{ist} + \gamma_s + \varepsilon_{ist}$$

The coefficients of interest are $\rho_1 to\ \rho_6$, which gives the year-specific deviation for each interest group from the average long-term trends in the outcomes.

5. Results

This study provides results for the national and Indiana analyses. The national analyses are for DD and all disabilities identification while the Indiana results are for DD identification, all disabilities and other disabilities identification, the persistence of identification, and other outcomes related to the experiences of students with DD.

National

DD Identification

The national results for DD identification are provided first in Figure 2 Panel A. This data represents the school years 2015-16 to 2022-23. Based on the Sun & Abraham (2020) estimator, states that adopt DD for ages 6-21 do not have DD in ages 6-21 before adoption. After adopting DD, DD rates increase by 0.1 pp relative to states that never adopt DD. The drop-off in t=4 might be attributed to times that overlap with the COVID-19 pandemic. DD rates increase by 0.07 pp for early-adopting states relative to states that adopted DD in 2021. The Callaway & Sant'anna (2021) estimator provides directionally similar results.

All Disabilities Identification

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Figure 2 Panel B provides results for the identification of all disabilities. The results comparing DD-adopting states to never-DD or not-yet-DD states do not reflect an increase in the percentage of students with disabilities overall. The results comparing earlier-adopting DD states to those that adopted DD in 2021 show an initial 0.82 pp increase after DD adoption, but this fades after t=0, potentially due to the COVID-19 pandemic.

[Figure 2]

Appendix Figure A3 provides the aggregate (Panel A) and individual state trends (Panel B) in all disabilities and DD before and after the adoption of DD for ages 6-21. Panel C provides the individual state trends based on the school year. States that adopted DD before the COVID-19 pandemic, such as Oregon and Indiana, exhibited a rise in their overall identification rates after adopting DD, along with the increase in DD rates. The trend is mixed for states that adopted DD from 2019 onwards, which may be attributed to the disruptions of the COVID-19 pandemic.

The IDEA 618 also allows for a review of whether the Indiana data aligns with expectations based on the DD legislation's July 1, 2018, enactment. Figure A4 further provides counts of students with all disabilities and DD in Indiana from the 618 data for students ages 3-5 and 6-21. Figure A5 provides the percentage of students ages 3-5 and 6-21 with DD in Indiana compared to all other states. These figures show that Indiana reported increases in DD for ages 6-21 as expected relative to the timing of its bill legislation.

Indiana

DD Identification

Overall

The Indiana legislation extended the use of the developmental delay category from grades PK to PK-2. As developmental delay is consistently eligible for PK, it is unclear whether an

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increase in developmental delay identification is expected following the legislation change relative to grades K-2. Figure 3 provides the developmental delay identification interrupted time series estimates for grades PK-2. Appendix Table A.X. provides the point estimates and standard errors. All estimates are statistically different from 0 at the 1% level. Between 2011-12 and 2012-13, 17.2 to 15.1 percent of PK students have DD annually. Beginning in 2018-19, there is a 2.1 percentage point (pp) increase in DD identification within schools for PK relative to the pre-legislation trend. This increase peaks in 2020-21 at a 4.5 pp increase before reducing the following two years but persisting above the pre-legislation change. Grades PK-2 do not have DD before 2018-19, as indicated by their respective trends being close to 0. For K, immediately in 2018-19, there is a 2.4 pp increase in DD that peaks at 4.7 pp in 2022-23. 1st and 2nd grade see more minor shifts in DD identification in 2018-19 but see lagged increases in 2019-20 and 2020-21, respectively. These trends align with students aging up from PK to 2nd grade who can maintain a DD identification. In contrast, before 2018-19, they would not have been able to keep the DD identification when transitioning from PK to K.

[Figure 3]

Heterogeneity by Student Group

The study next examines which types of students contribute to the increases in DD identification across PK-2 by examining outcomes by student free/reduced-price lunch (FRPL), gender/sex, and race status. All estimates are statistically different from 0 at the 1% level. Figure 3 provides interrupted time series figures for each group run separately. Tables A3, A4, and A5 provide estimates from interacted models comparing focal groups to a baseline group.

FRPL

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Figure 3 Panel A provides results by free/reduced-price lunch status. All estimates are statistically different from 0 at the 1% level. In PK, students with and without free/reduced-price lunch had DD identification rates of 15.4 and 12.2 in 2017-18 before the legislation change. In 2019, PK students with FRPL saw a 0.008 pp increase, while students without FRPL saw a 1.6 pp increase. Between 2019-20 and 2022-23, both students see a comparable increase into 2020-21 and then a decline until 2022-23, although the rates are still above the pre-legislation change. The K-grade and 1st-grade results present a comparable picture; in both grades, the increases in DD identification are driven by students with FRPL. The increases persist in both grades from 2018-19 to 2022-23, although the slope flattens during the COVID-19-affected years. By 2022-23, there is a 5.9 pp increase from the trend in DD identification for students with FRPL in K grade and a 5.3 pp increase for students with FRPL in 1st grade. In comparison, students without FRPL see a 2022-23 increase of 3.3 pp in K and 2.7 pp in 1st grades. In 2nd grade, the increases for students with and without FRPL are more muted, as suggested by the primary effects presented. Still, in 2nd grade, students without FRPL see a larger increase after as in 2022-23, the coefficient for students with FRPL is 2.1 pp and the coefficient for students without FRPL is 4.5 pp.

Gender/Sex

Figure 3 Panel B provides results by gender/sex for male and female students. All estimates are statistically different from 0 at the 1% level. In PK, male students historically have a higher rate of DD identification than female students, with 2018 values of 18.5% for males and 10.4% for females. Following the legislation change, both male and female PK students have an increased likelihood of DD identification. Males see a peak of 5.3 pp in 2020-21, while females see a peak of 3.2 pp in 2020-21. Both groups see a decline following 2020-21. In K-2 grades,

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male students drive the increases in DD identification. In K, the increase peaks at 6.4 pp in 2022-23, increasing throughout the post-reform period. Female students see a peak of 2.7 pp in 2022-23. Comparably, in 1st grade, male and female students peak at 5.6 pp and 2.4 pp in 2022-23. In 2nd grade, male and female students peak at 4.5 pp and 2.0 pp in 2022-23. In each grade, male students have higher rates of DD identification.

Race

Figure 3 Panel C presents the results by ethnicity/race for white, Hispanic, and black students. All estimates are statistically different from 0 at the 1% level. In PK, white students had higher rates of DD identification before the reform, with 15.9% in 2017-18, compared to black students, with 12.6%. All three groups see increases in DD identification in the post-reform period, although the increases are most significant for black students. In 2020-21 black students have a 5.0 pp increase relative to white and Hispanic students with 4.2 pp, In K, the student groups progress together after the reform with increases of 4.9 pp, 4.4 p.p, and 3.9 pp for white, black, and Hispanic students in 2022-23, respectively. This pattern is generally repeated in 1st and 2nd grade, although the coefficients for each group are slightly smaller in magnitude.

[Figure 3]

Other Disability Types Identification

The study examines whether the increase in DD identification crowds out identification for other disabilities, looking at special education overall, speech, autism, and other health impairment identification across grades PK-2. All estimates are statistically different from 0 at the 1% level. Figure 4 provides interrupted time series figures for each outcome. Table A6 provides the point estimates and standard errors.

Overall

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Figure 4 Panel A provides results for special education identification in grades PK-2. From 2011-12 to 2017-18, the percentage of students with disabilities in PK declines from 52.5% to 46.0%. In PK, there is an increase of 1 pp in special education propensity in 2018-19. The peak in the rise is in 2020-21 at 2.9 pp. In K, there is an increase in overall identification, starting with 0.04 pp in 2018-19 and rising to 1.4 pp by 2022-23. In 1st grade, there was a 0.06 pp increase in 2018-19, rising to 2.1 pp in 2022-23. In 2nd grade, there is a 0.05 pp increase in 2018-19, rising to 3.0 pp in 2022-23.

Speech

Figure 4 Panel B provides results for speech identification in grades PK-2. In PK, there is a slightly declining trend in speech identification between 2011-12 and 2017-18. Speech identification continues to decline from 2018-19 onward, reaching a minimum of -4.6 pp in 2020-21 before rebounding. K's speech identification trend increases between 2011-12 and 2017-18. Beginning in 2018-19, a decline in speech identification propensity of -1.1 pp continues until a rebound in 2021-22. In 1st grade, there is an initial increase of 0.4 pp in speech propensity in 2018-19 that then declines below the trend line through 2022-23. In contrast, in 2nd grade, there is an increase in the trend in speech propensity beginning in 2018-19 at 0.5 pp that peaks in 2022-23 at 1.3 pp. DD identification appears to crowd out speech identification.

Autism

Figure 4 Panel C provides results for autism identification in grades PK-2. In PK, there is no change from the trend between 2018-19 and 2019-20. Starting in 2020-21, there is an insignificant increase from the trend of 0.2 pp, peaking at 0.4 pp in 2022-23. In K, the autism identification trend decreases from 2018-19 to 2020-21 by -0.1 pp to -0.4 pp before returning to the trend in 2022-23. In 1st grade, there is a slight decline in the trend beginning in 2020-21 of -

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0.1 pp, but by 2022-23 the trend is back to the pre-reform trend. In 2nd grade, there is a slight increase in the trend of 0.1 pp in 2018-19 that generally persists through 2022-23. Overall, only K seems to experience crowding out of autism identification by DD.

Other Health Impairment (OHI)

Figure 4 Panel D provides results for OHI identification in grades PK-2. In PK, as with speech identification, the category was used less annually between 2011-12 and 2017-18. Beginning in 2018-19, there is a slight increase from the trend of 0.1 pp that continues through 2022-23. In K, OHI had been used more frequently annually between 2011-12 and 2017-18. Beginning in 2018-19, there is a -0.3 pp change from the trend that grows to a -0.6 pp change in 2022-23. In 1st and 2nd grade, OHI was also increasingly used between 2011-12 and 2017-18. 1st and 2nd grades see a decline in OHI identification beginning in 2019-20 for 1st grade and 2021-22 for 2nd grade. Overall, DD is a preferred identification category relative to OHI in K-2.

[Figure 4]

Persistence of Disability Identification

The study examines to what extent the DD legislation changed the likelihood that students with DD in PK maintain special education identification in the following three years, conditional on transitioning to K. Figure 5 provides the interrupted time series figures for each outcome. Table A7 provides point estimates and standard errors. This figure has one fewer year of data than the other analyses as it looks forward from T+1 to T+3. The first cohort of DD legislation impacted PK students, which is represented in the 2017-18 school year relative to the 2018-19 school year in the previous figures. These students are in K in 2018-19. Before 2018-19, these students could not have a DD identification in K.

DD T+1 to T+3

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Figure 5 Panel A provides the DD identification persistence results. For the persistence of DD identification, as expected before the DD legislation change, there is a nearly 0% likelihood of a PK student maintaining a DD identification in K (T+1). In the first year after the DD legislation, there is a 62.8 pp increase in the likelihood of keeping a DD identification. The likelihood of keeping a DD identification in T+1 increases by cohort until 82.0 pp in 2022-23. The DD legislation significantly impacts the likelihood of keeping a DD identification in T+2 and T+3, respectively increasing by 55.9 pp and 48.7 in 2018-19 and further increasing in the following years.

Overall T+1 to T+3

Figure 5 Panel B provides the overall results of special education identification persistence. Before the DD legislation change, a student with DD saw an increasing likelihood of maintaining a special education identification after exiting PK (T+1), with a 80.9% likelihood in 2016-17. The T+2 and T+3 identification trends are comparable in their trend, although slightly smaller. After the DD legislation, students see a 10.2 pp increase in the likelihood of having special education identification in T+1 and a 7.9 pp increase in the likelihood for T+3 in 2017-18 and 14.6 pp for T+1 in 2021-22 and 11.4 pp for T+3 in 2019-20.

Speech T+1 to T+3

Figure 5 Panel C provides the speech identification persistence results. PK students with DD who transitioned to K had a 30.2% likelihood of a speech identification in T+1 immediately before the legislation change. After the legislation change, the trend in speech identification decreased by -29.5 pp in 2017-18. The T+2 and T+3 speech identification see similar decreases from the trend following the DD legislation that grow in magnitude for each successive cohort.

Autism T+1 to T+3

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Figure 5 Panel D provides the results of autism identification persistence. PK students who transitioned to K had a 15.6% likelihood of an autism identification in T+1 immediately before the legislation change. After the legislation change, the trend in autism identification decreased by -5.2 pp. The T+2 and T+3 autism identification see similar decreases from the trend following the DD legislation.

OHI T+1 to T+3

Figure 5 Panel E provides the DD identification persistence results. PK students who transitioned to K had a 13.2% likelihood of an OHI identification in T+1 immediately before the legislation change. After the legislation change, the trend in OHI identification decreased by -7.2 pp. The T+2 and T+3 OHI identification see similar decreases from the trend following the DD legislation.

Overall, the ability of PK students to maintain a DD identification in K-2 after the DD legislation change contributed to keeping their DD identification T+1 to T+3, maintaining a special education identification, and reducing the likelihood of transitioning to a speech, autism, or OHI identification.

[Figure 5]

Outcomes for DD Students

The study also provides evidence on how outcomes for students with DD in grades PK-2 change before and after the DD legislation relative to students with other disabilities. Because of the compositional changes in the DD group caused by the DD legislation, these results may arise due to changes in the composition of identified students.

Changes in Placement

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Table 2 provides results for changes in regular class placement between students with DD and other disabilities by PK-2. In grades PK-2, students with DD are less likely to be on average in a regular class placement. In PK and K, the interaction terms between the year and DD student status are positive through 2020-21 for PK and 2022-23 for K, indicating an increasing likelihood that students with DD are in a regular class placement. The interaction terms for PK are negative and insignificant in 2021-22 and 2022-23. In 1st and 2nd grade, the interaction terms are insignificant, suggesting no differential changes in regular class placement for DD students relative to students with other disabilities.

[Table 2]

Changes in Absences

Table 3 provides results for changes in absences between students with DD and other disabilities by PK-2. In PK and 2nd grade, students with DD are more likely to be absent than those with other disabilities. Most of the Year and DD interaction terms for PK-2 is insignificant for absences. The interaction term is significant in 2020-21 in 1st and 1st grade, suggesting DD students had more challenges with absences during the COVID-19 pandemic year.

[Table 3]

Changes in Grade Retention

Table 4 provides results for changes in grade retention between students with DD and other disabilities by PK-2. The PK results suggest that students with DD were more likely to be retained in PK between 2017-18 and 2021-22 relative to the historical trend. PK in Indiana includes multiple student ages. This finding could reflect younger PK students being more likely to stay in PK versus leave PK, and PK students less likely to make the K transition over the

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years. It is also unclear whether this is a compositional change in students with DD or reflects an issue related to the pandemic.

[Table 4]

Robustness Checks

The study provides two robustness checks for the main results of DD identification. The first robustness check excludes school-fixed effects; the results are in Table A8. The second robustness check changes the years included from 2011-12 to 2022-23 to 2013-14 to 2022-23; the results are in Table A9. Neither of these robustness checks affects the interpretations of the main results for DD identification.

5. Discussion and Conclusion

This study uses difference-in-difference methods to examine changes in DD identification and all disabilities identification for states that adopt DD in ages 6-21. This study uses federal administrative IDEA 618 data from all states from the 2005-06 to 2023-2024 school years. The study primarily examines the impacts of Indiana extending the DD category from ages 3-5 to 3-9 on July 1, 2018 on DD identification, other disabilities identification, the persistence of identification, and outcomes for students with DD. The study leverages interrupted time series and comparative interrupted time series models to examine these outcomes. The study uses administrative data on all PK-2 students in Indiana from the 2011-2012 to 2022-23 school years.

For the national analysis, after adopting DD in ages 6-21, ages 6-21 DD rates increase by 0.1 pp relative to states that never adopt DD. DD rates increase by 0.07 pp for earlier-adopting states relative to states that adopted DD last in 2021. The results comparing DD-adopting states to never-DD or not-yet-DD states do not reflect an increase in the percentage of students with

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disabilities overall. The results comparing earlier-adopting DD states to those that adopted DD in 2021 show an initial 0.82 pp increase after DD adoption, but this fades after t=0, potentially due to the COVID-19 pandemic.

For the Indiana analysis, In Indiana, Pre-K DD rates surged by 2.1 pp (from 15.1% to 17.2%) immediately after the bill passed and continued to rise through the 2022-23 school year. Kindergarten DD rates increased from 0% to 2.4%. Increases in DD identification among low-income, male students and across various racial groups contributed to the increases in DD rates. Overall, special education rates rose in all grades. The increases in overall special education arise despite the increased DD identification displacing autism, speech, and Other Health Impairments (OHI) across grades PK-2. The legislation also increased the persistence of special education identification among Pre-K students over the next three years by 7.9 pp and DD identification by 48.7 pp. There is also evidence that across grades PK-2, after the DD legislation change, the students with DD became increasingly likely to be educated in regular class placements while also experiencing increased absences and grade retention.

Special education identification represents a complex intersection of legal, policy, medical, and educational processes. Examining special education is helpful to understand economic concepts such as administrative burdens, spillovers, and crowd out. Additionally, this paper provides new evidence on how states vary in their implementation of IDEA and special education services, how states respond to the introduction of new disability categories in legislation, and specific evidence on the range of implications of these policies as evidenced by Indiana.

This study provides important findings but has limitations. For the national analysis, the results for DD identification can be more clearly associated with changes in DD legislation

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across states. Associating overall disability identification changes to DD legislation is more challenging as states explore legislation for specific disabilities over time, along with other practices that might affect the identification of some disabilities more than others. Understanding these patterns requires systematically examining various state policy factors related to disability identification. Hence, the estimates in this paper are conservative relative to a more thorough examination. Additionally, for the national and Indiana analysis, the COVID-19 pandemic presents challenges for discerning the effects of specific legislation relative to the disruptions of the pandemic. As shown in the national findings, some states see declines in identification during the COVID-19 pandemic. In Indiana's findings, many trends have flattened as the COVID-19 pandemic continues. It is hard to discern to what extent these changes represent the equilibrium effects of DD legislation relative to the disruption effects of the pandemic. Additional systematic analysis of states' special education patterns through the pandemic can further bind the contribution of these two effects for these trends.

Analyzing economic and educational disparities is essential to inform theory and policy. Given the complex intersection of legal, policy, medical, and education policies, special education is a valuable area of inquiry. This study provides evidence on administrative burdens, spillovers, and crowd-out effects related to state legislative decisions to include developmental delay (DD) as a disability category for students ages 6-21 contributes to DD and overall special education identification. Policymakers can use the paper's findings to plan for expected effects for states that similarly explore DD-related policies and other education policies associated with identifying students for interventions and support. The paper can also inform future research on these topics in different contexts.

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References

Acharya, A., Blackwell, M., & Sen, M. (2016). Explaining Causal Findings Without Bias: Detecting and Assessing Direct Effects. *American Political Science Review*, *110*(3), 512–529. https://doi.org/10.1017/S0003055416000216

Acton, R., Imberman, S., & Lovenheim, M. (2021). Do Health Insurance Mandates Spillover to Education? Evidence from Michigan's Autism Insurance Mandate. *Journal of Health Economics*, *80*, 102489. https://doi.org/10.1016/j.jhealeco.2021.102489

Ainsworth, Nicholas, Cleveland, Christopher, & Penner, Andrew. (2024). *The Effects of Response to Intervention on Disability Identification and Achievement*. https://doi.org/10.26300/72JM-2M09

Arbogast, I., Chorniy, A., & Currie, J. (2024). Administrative Burdens and Child Medicaid and CHIP Enrollments. *American Journal of Health Economics*, *10*(2), 237–271. https://doi.org/10.1086/728170

Assistance to States for the Education of Children with Disabilities, 20 U.S.C. § 1401 § 34 C.F.R. § 300.8(b) (2006). https://sites.ed.gov/idea/regs/b/a/300.8/b

Bacher-Hicks, A., Musaddiq, T., Goodman, J., & Stange, K. (2024). The stickiness of pandemic-driven disenrollment from public schools. *Economics of Education Review*, *100*, 102527. https://doi.org/10.1016/j.econedurev.2024.102527

Ballis, B., & Heath, K. (2021). The Long-Run Impacts of Special Education. *American Economic Journal: Economic Policy*, *13*(4), 72–111. https://doi.org/10.1257/pol.20190603

DRAFT

Ballis, B., & Heath, K. (2023). *The Long-Run Impacts of Racial Gaps in Special Education*. https://brianaballis.weebly.com/uploads/4/0/3/9/40392931/ballis_heath_manuscript_may2023.pdf

Barger, B., Squires, J., Greer, M., Noyes-Grosser, D., Eile, J. M., Rice, C., Shaw, E., Surprenant, K. S., Twombly, E., London, S., Zubler, J., & Wolf, R. B. (2019). State Variability in Diagnosed Conditions for IDEA Part C Eligibility. *Infants and Young Children*, *32*(4), 231–244. https://doi.org/10.1097/iyc.0000000000000151

Boustan, L. (2012). School Desegregation and Urban Change: Evidence from City Boundaries. *American Economic Journal: Applied Economics*, *4*(1), 85–108. https://doi.org/10.1257/app.4.1.85

Boustan, L. P. (2010). Was Postwar Suburbanization "White Flight"? Evidence from the Black Migration*. *Quarterly Journal of Economics*, *125*(1), 417–443. https://doi.org/10.1162/qjec.2010.125.1.417

Callaway, B., & Sant'Anna, P. H. C. (2021). Difference-in-Differences with multiple time periods. *Journal of Econometrics*, *225*(2), 200–230. https://doi.org/10.1016/j.jeconom.2020.12.001

Chetty, R., Friedman, J., Hendren, N., Jones, M., & Porter, S. (2018). *The Opportunity Atlas: Mapping the Childhood Roots of Social Mobility* (No. w25147; p. w25147). National Bureau of Economic Research. https://doi.org/10.3386/w25147

Chetty, R., Hendren, N., Jones, M. R., & Porter, S. R. (2020). Race and Economic Opportunity in the United States: An Intergenerational Perspective*. *The Quarterly Journal of Economics*, *135*(2), 711–783. https://doi.org/10.1093/qje/qjz042

DRAFT

Chin, M. J. (2024). JUE Insight: Desegregated but still separated? The impact of school integration on student suspensions and special education classification. *Journal of Urban Economics*, *141*, 103389. https://doi.org/10.1016/j.jue.2021.103389

Chyn, E., & Katz, L. F. (2021). Neighborhoods Matter: Assessing the Evidence for Place Effects. *Journal of Economic Perspectives*, *35*(4), 197–222. https://doi.org/10.1257/jep.35.4.197

Coffey, S. (2025). The Academic and Behavioral Impacts of an Autism Health Insurance Mandate: Evidence from Massachusetts. *Education Finance and Policy*, *20*(1), 110–136. https://doi.org/10.1162/edfp_a_00420

Cohodes, S. R., Grossman, D. S., Kleiner, S. A., & Lovenheim, M. F. (2015). The Effect of Child Health Insurance Access on Schooling: Evidence from Public Insurance Expansions. *Journal of Human Resources*. https://doi.org/10.3368/jhr.51.3.1014-6688R1

Congressional Research Service. (2024). *The Individuals with Disabilities Education Act (IDEA), Part B: Key Statutory and Regulatory Provisions* (No. R41833). https://crsreports.congress.gov/product/pdf/R/R41833

Corrigan, N. M., Rokem, A., & Kuhl, P. K. (2024). COVID-19 lockdown effects on adolescent brain structure suggest accelerated maturation that is more pronounced in females than in males. *Proceedings of the National Academy of Sciences*, *121*(38), e2403200121. https://doi.org/10.1073/pnas.2403200121

Daysal, N. M., Elder, T. E., Hellerstein, J. K., Imberman, S. A., & Orsini, C. (2024). Parental Skills, Assortative Mating, and the Incidence of Autism Spectrum Disorder. *American Journal of Health Economics*, *10*(3), 322–356. https://doi.org/10.1086/724794

Derenoncourt, E. (2022). Can You Move to Opportunity? Evidence from the Great Migration. *American Economic Review*, *112*(2), 369–408. https://doi.org/10.1257/aer.20200002

DRAFT

Derenoncourt, E., Kim, C. H., Kuhn, M., & Schularick, M. (2024). Wealth of Two Nations: The U.S. Racial Wealth Gap, 1860–2020. *The Quarterly Journal of Economics*, *139*(2), 693–750. https://doi.org/10.1093/qje/qjad044

Developmental Delay, Pub. L. No. 75, SB 475 (2018). https://iga.in.gov/legislative/2017/bills/senate/475/details

Dragoo, K. E. (2020). *The Individuals with Disabilities Education Act: A Comparison of State Eligibility Criteria* (No. R46566). Congressional Research Service. https://crsreports.congress.gov/product/pdf/R/R46566

Elder, T. E., Figlio, D. N., Imberman, S. A., & Persico, C. L. (2021). School Segregation and Racial Gaps in Special Education Identification. *Journal of Labor Economics*, *39*(S1), S151–S197. https://doi.org/10.1086/711421

Elder, T., Figlio, D., Imberman, S., & Persico, C. (2020). The Role of Neonatal Health in the Incidence of Childhood Disability. *American Journal of Health Economics*, *6*(2), 216–250. https://doi.org/10.1086/707833

Erin Fahle, Thomas J. Kane, Sean F. Reardon, & Douglas O. Staiger. (2024). *The First Year of Pandemic Recovery: A District-Level Analysis*. Education Recovery Scorecard. https://educationrecoveryscorecard.org/wp-content/uploads/2024/01/ERS-Report-Final-1.31.pdf

Fish, R. E. (2019). Standing Out and Sorting In: Exploring the Role of Racial Composition in Racial Disparities in Special Education. *American Educational Research Journal*, *56*(6), 2573–2608. https://doi.org/10.3102/0002831219847966

DRAFT

Freedman, S., Marquardt, K., Salcedo, D., Simon, K., & Wing, C. (2024). Societal Disruptions and Childhood ADHD Diagnosis during the COVID-19 Pandemic. *Journal of Human Resources*, *59*(S), S187–S226. https://doi.org/10.3368/jhr.1222-12708R2

Georgan, W. C., Archibald, L. M. D., & Hogan, T. P. (2023). Speech/Language Impairment or Specific Learning Disability? Examining the Usage of Educational Categories. *Journal of Speech, Language, and Hearing Research : JSLHR*, *66*(2), 656–667. https://doi.org/10.1044/2022_JSLHR-21-00636

Gilmour, A. F., Harper, J., Lloyd, B., & Van Camp, A. (2024). Response to Intervention and Specific Learning Disability Identification: Evidence From Tennessee. *Journal of Learning Disabilities*, *57*(3), 168–180. https://doi.org/10.1177/00222194231215013

Hibel, J., & Jasper, A. D. (2012). Delayed special education placement for learning disabilities among children of immigrants. *Social Forces*, *91*(2), 503–530. https://doi.org/10.1093/sf/sos092

Hopkins, B. G., Guzman, M., Imberman, S. A., Truckenmiller, A. J., Strunk, K. O., & Fisher, M. H. (2024). Trends in Special Education Identification During the COVID-19 Pandemic: Evidence From Michigan. *Educational Evaluation and Policy Analysis*, 01623737241274799. https://doi.org/10.3102/01623737241274799

IEP TA Center. (2022). *Eligibility Categories in Special Education: A Resource for Parents and Teachers*. https://padlet.com/IEPTA/evaluations-cj84f31pjq7qqaj/wish/jpoxajeyOlwKWbPE

Indiana Department of Education. (2022). *Early Learning Guidebook for Indiana Schools*.

DRAFT

Indiana Department of Education. (2023, May 19). *Kindergarten Entrance and Average Daily Membership (ADM) Funding*. https://www.in.gov/doe/files/Memo-Kindergarten-Entrance-and-ADM-Funding-5-16-23.pdf

Kelli Marquardt. (2022). *Mis(sed) Diagnosis: Physician Decision Making and ADHD*. Federal Reserve Bank of Chicago. https://www.chicagofed.org/-/media/publications/working-papers/2022/wp2022-23-pdf.pdf?sc_lang=en

Khafaji-King, J. A. (2024). Disability as Discipline? Effects of the New York City Suspension Ban on Identification of Students with Disabilities. In *EdWorkingPapers.com*. Annenberg Institute at Brown University. https://edworkingpapers.com/index.php/ai24-902

Mandell, D. S., Listerud, J., Levy, S. E., & Pinto-Martin, J. A. (2002). Race differences in the age at diagnosis among medicaid-eligible children with autism. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*(12), 1447–1453. https://doi.org/10.1097/00004583-200212000-00016

Markowitz, D. M., Kittelman, A., Girvan, E. J., Santiago-Rosario, M. R., & McIntosh, K. (2023). Taking Note of Our Biases: How Language Patterns Reveal Bias Underlying the Use of Office Discipline Referrals in Exclusionary Discipline. *Educational Researcher*, *52*(9), 525–534. https://doi.org/10.3102/0013189X231189444

Morgan, P. L., Farkas, G., Cook, M., Strassfeld, N. M., Hillemeier, M. M., Pun, W. H., & Schussler, D. L. (2017). Are black children disproportionately overrepresented in special education? A best-evidence synthesis. *Exceptional Children*, *83*(2), 181–198. https://doi.org/10.1177/0014402916664042

DRAFT

National Center for Education Statistics. (2024). *Students with Disabilities* (Condition of Education). U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/programs/coe/indicator/cgg

Office of Special Education Programs (OSEP). (n.d.). *IDEA Section 618 Data Products* [Dataset]. IDEA Section 618 Data Products

Owens, A. (2020). Unequal Opportunity: School and Neighborhood Segregation in the USA. *Race and Social Problems*, *12*(1), 29–41. https://doi.org/10.1007/s12552-019-09274-z

Reardon, S. F., Grewal, E. T., Kalogrides, D., Erica Greenberg, & Greenberg, E. (2012). Brown Fades: The End of Court-Ordered School Desegregation and the Resegregation of American Public Schools. *Journal of Policy Analysis and Management*, *31*(4), 876–904. https://doi.org/10.1002/pam.21649

Roddy Theobald, Dan Goldhaber, & Andrew Katz. (2024). *Special Education Identification Throughout the COVID-19 Pandemic* (Nos. 37–0624; CALDER Policy Brief). https://caldercenter.org/publications/special-education-identification-throughout-covid-19-pandemic

Roth, J., Sant'Anna, P. H. C., Bilinski, A., & Poe, J. (2023). What's trending in difference-in-differences? A synthesis of the recent econometrics literature. *Journal of Econometrics*, *235*(2), 2218–2244. https://doi.org/10.1016/j.jeconom.2023.03.008

Shea, Zhiling Meng & Jenkins, Jade Marcus. (2024). *Impact of States' Adoption of Response to Interventions (RTI) on the Identification and Placement of Students in Special Education*. https://doi.org/10.26300/SE4T-2Y83

DRAFT

Shores, K., Eun Kim, H., & Still, M. (2019). *Categorical Inequality in Black and White: Linking Disproportionality across Multiple Educational Outcomes* (19). Annenburg Institute at Brown Institute. http://www.edworkingpapers.com/ai19-168

Shores, K., Kim, H. E., & Still, M. (2020). Categorical Inequality in Black and White: Linking Disproportionality Across Multiple Educational Outcomes. *American Educational Research Journal*, *57*(5), 2089–2131. https://doi.org/10.3102/0002831219900128

Stephanie Coffey & Christopher Cleveland. (2024). IncreasED: How Court Rulings Impact Special Education Identification. *EdWorkingPapers*. https://doi.org/10.26300/JCQ4-C790

Sun, L., & Abraham, S. (2021). Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. *Journal of Econometrics*, *225*(2), 175–199. https://doi.org/10.1016/j.jeconom.2020.09.006

The National Center for the Improvement of Educational Assessment. (2021). *Education in Indiana During a Year of Disruptions*. Submitted to Indiana Department of Education, Indiana, IN. https://iga.in.gov/publications/agency_report/2021-education-in-indiana-during-a-year-of-distruptions-report-hea-1514-2021.pdf

Winter, A. S., Fountain, C., Cheslack-Postava, K., & Bearman, P. S. (2020). The social patterning of autism diagnoses reversed in California between 1992 and 2018. *Proceedings of the National Academy of Sciences*, *117*(48), 30295–30302. https://doi.org/10.1073/pnas.2015762117

Worsham, C., Bray, C., & Jena, A. (2024). *Halloween, ADHD, and Subjectivity in Medical Diagnosis* (Working Paper No. 33232). National Bureau of Economic Research. https://doi.org/10.3386/w33232

DRAFT

Zablotsky, B., Ng, A., Black, L., & Blumberg, S. (2023). *Diagnosed Developmental Disabilities in Children Aged 3–17 Years: United States, 2019–2021*. National Center for Health Statistics (U.S.). https://doi.org/10.15620/cdc:129520

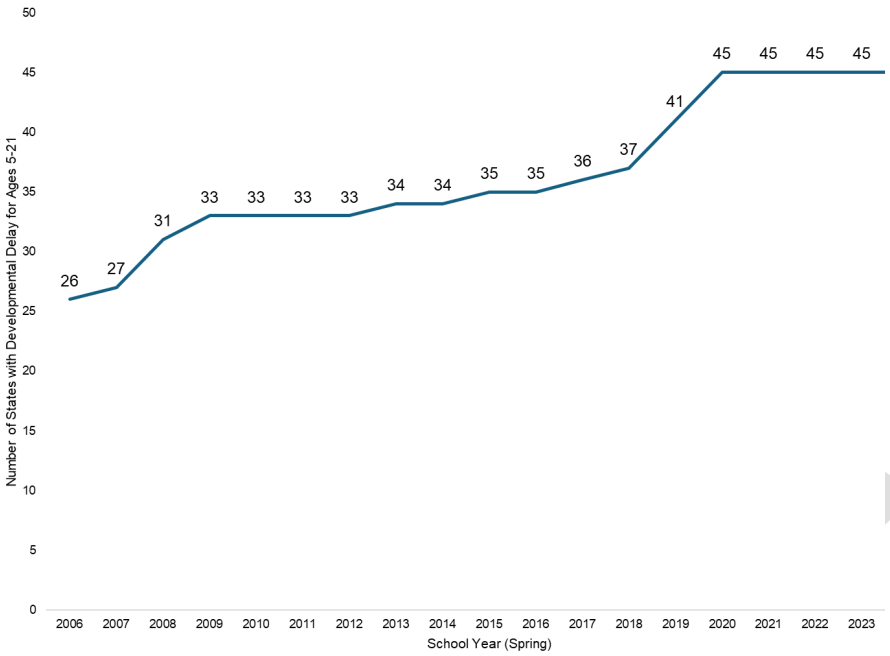
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Tables & Figures

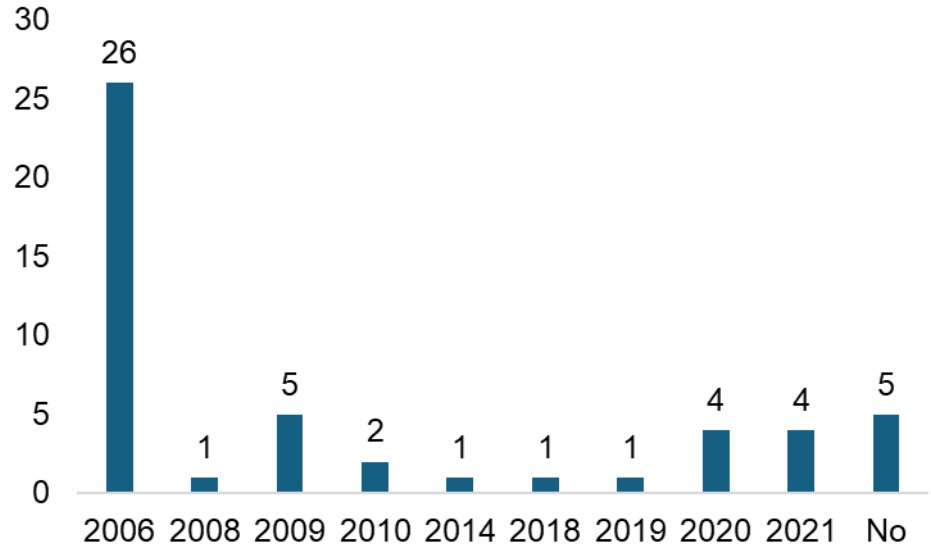
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Figure 1. DD Ages 6-21 Across States, 2005-06 to 2022-23

A. Number of States with DD Ages 6-21



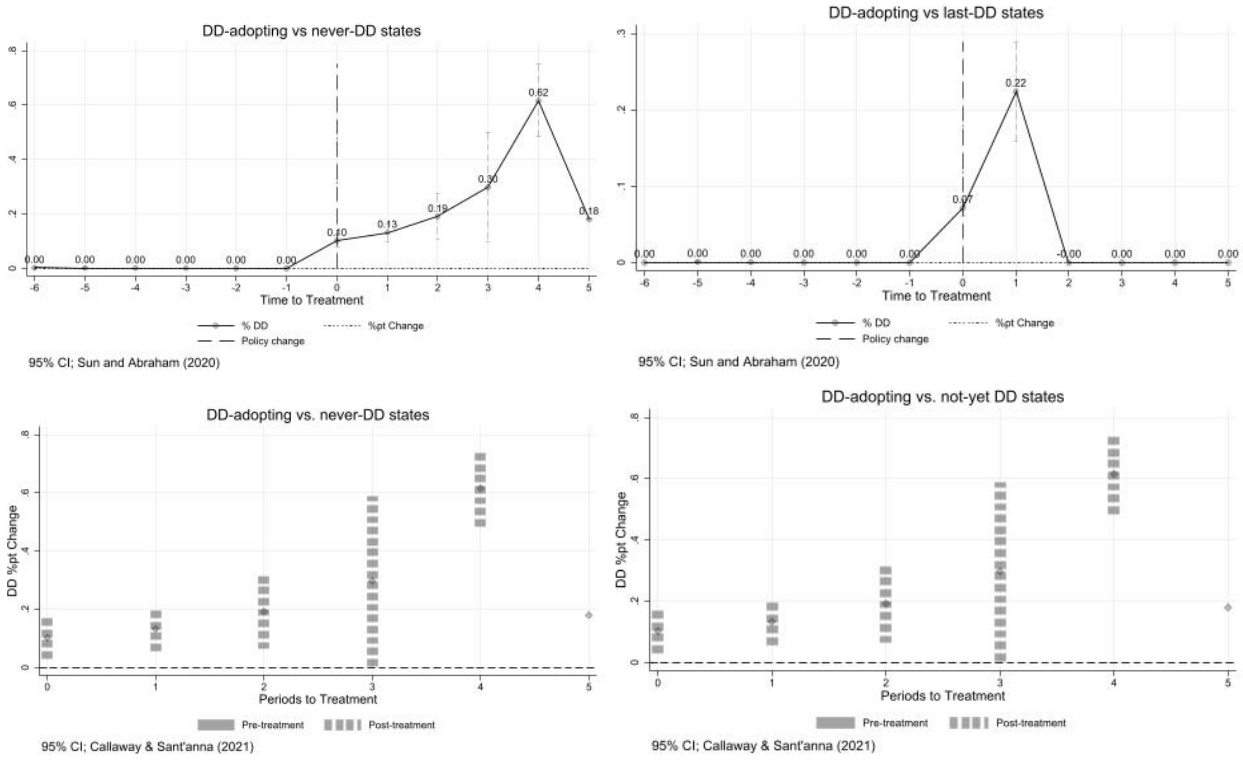
B. States First Year with DD Ages 6-21 in IDEA 618 Data



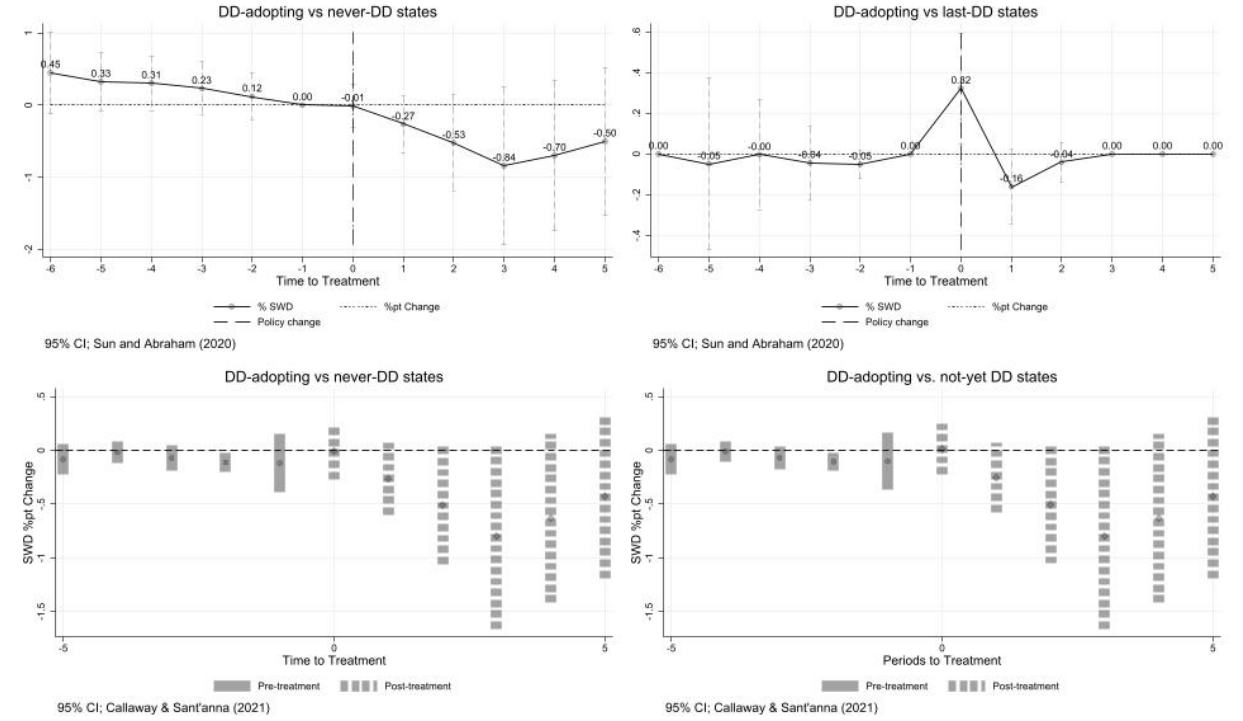
Notes: A provides the number of states with DDs ages 6-21 from 2005-06 to 2022-23. B provides the first year states have DDs ages 6-21 in IDEA 618 Data.

Figure 2. Impacts of DD Ages 6-21 Adoption on States

A. DD %



B. All Disabilities %



Notes: A provides model (1) DD identification estimates, Sun & Abraham (2020) and Callaway & Sant'anna (2021). B provides all disability identification estimates.

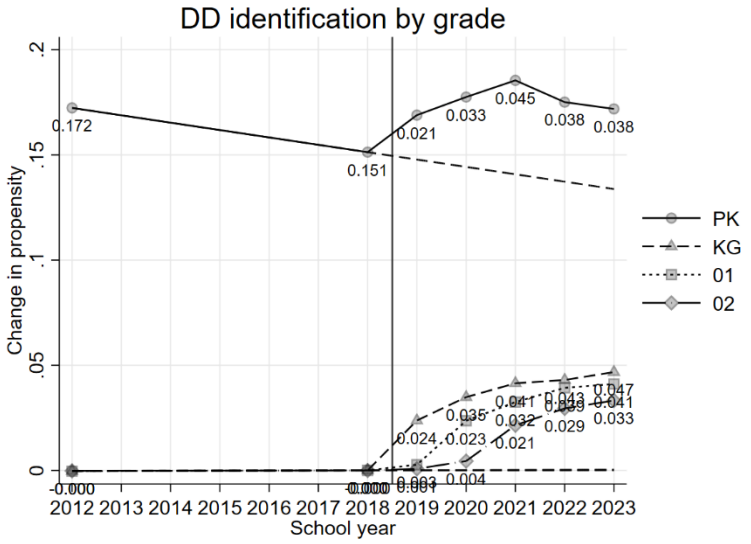
Table 1. Indiana Data Descriptive Statistics

	Before July 1, 2018 (2011-12 to 2017-18)				After July 1, 2018 (2018-19 to 2022-23)			
	All	DD	SPED	Non-DD SPED	All	DD	SPED	Non-DD SPED
Grade								
Pre-K	0.101	0.997	0.304	0.230	0.130	0.482	0.296	0.236
K Grade	0.300	0.003	0.213	0.236	0.292	0.236	0.218	0.213
1st Grade	0.300	-	0.229	0.253	0.291	0.173	0.234	0.254
2nd Grade	0.298	-	0.254	0.281	0.287	0.109	0.252	0.297
Ethnicity								
White	0.670	0.693	0.717	0.720	0.640	0.637	0.673	0.685
Black	0.123	0.104	0.102	0.102	0.122	0.111	0.097	0.092
Hispanic	0.124	0.116	0.104	0.102	0.128	0.110	0.104	0.102
Asian	0.022	0.017	0.012	0.011	0.029	0.023	0.017	0.015
Other	0.061	0.070	0.065	0.065	0.081	0.119	0.110	0.107
Gender								
Male	0.520	0.701	0.672	0.669	0.511	0.672	0.640	0.629
FRPL Status								
FRPL	0.471	0.210	0.463	0.490	0.444	0.455	0.450	0.448
Disability								
SPED	0.178				0.191			
DD	0.017				0.046			
Autism	0.012				0.014			
SLD	0.013				0.009			
SLI	0.103				0.096			
Placement								
Regular	0.624				0.668			
Resource	0.041				0.034			
Separate	0.175				0.162			
N	2,053,932	35,148	365,166	330,018	1,461,492	67,432	278,959	211,527

Notes: Descriptive statistics for the Indiana sample before July 1, 2018, and after July 1, 2018.

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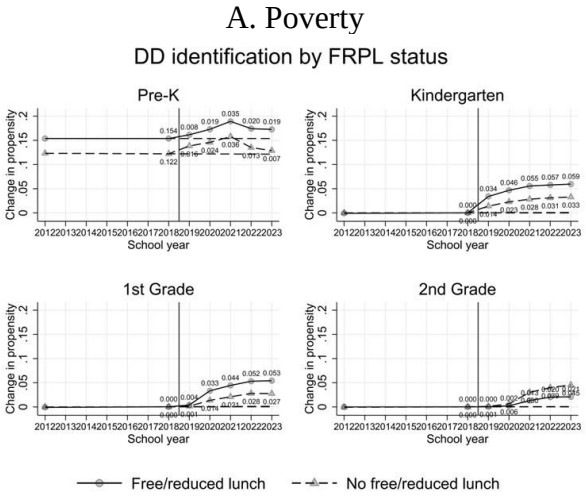
Figure 2. The Effect of DD Legislation on DD Identification

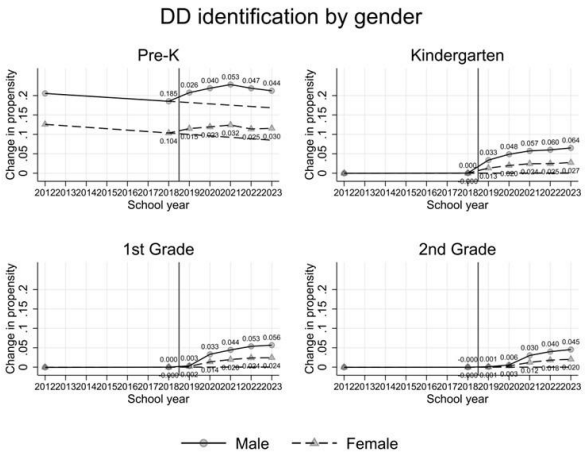


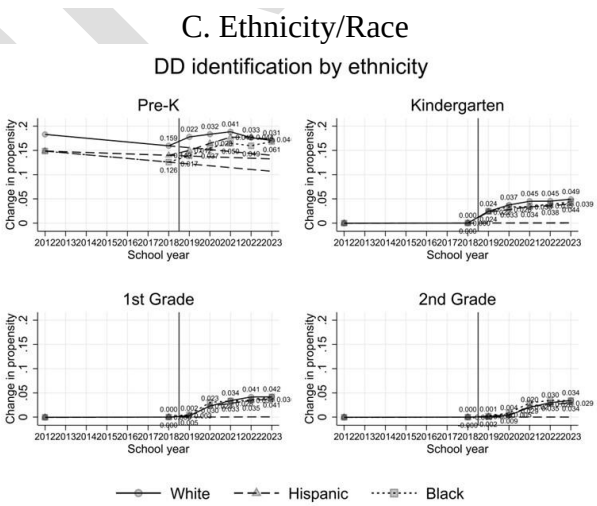
Notes: Model (2) estimates for disability identification.

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Figure 3. Heterogeneity of the Effect of DD Legislation on Special Education Identification



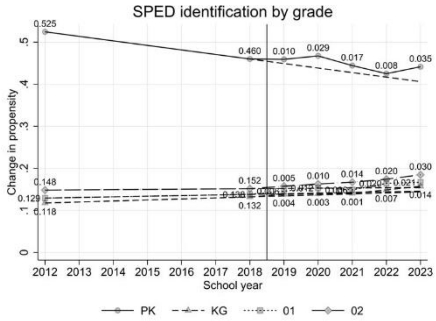




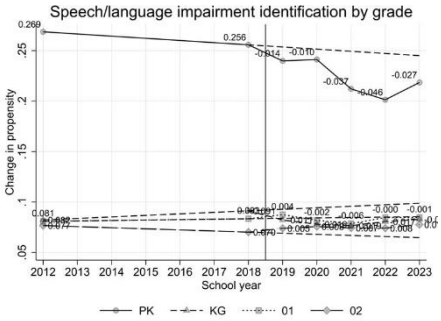
Notes: Model (2) estimates for DD identification by student groups.

Figure 4. Effect of DD Legislation on Other Disability Types

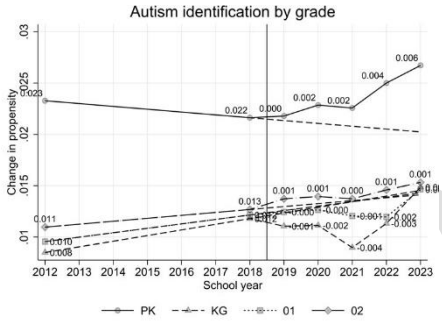
A. SPED Overall



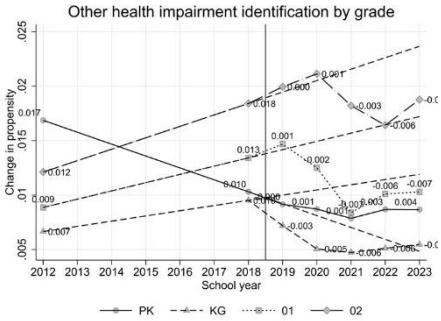
B. Speech



C. Autism



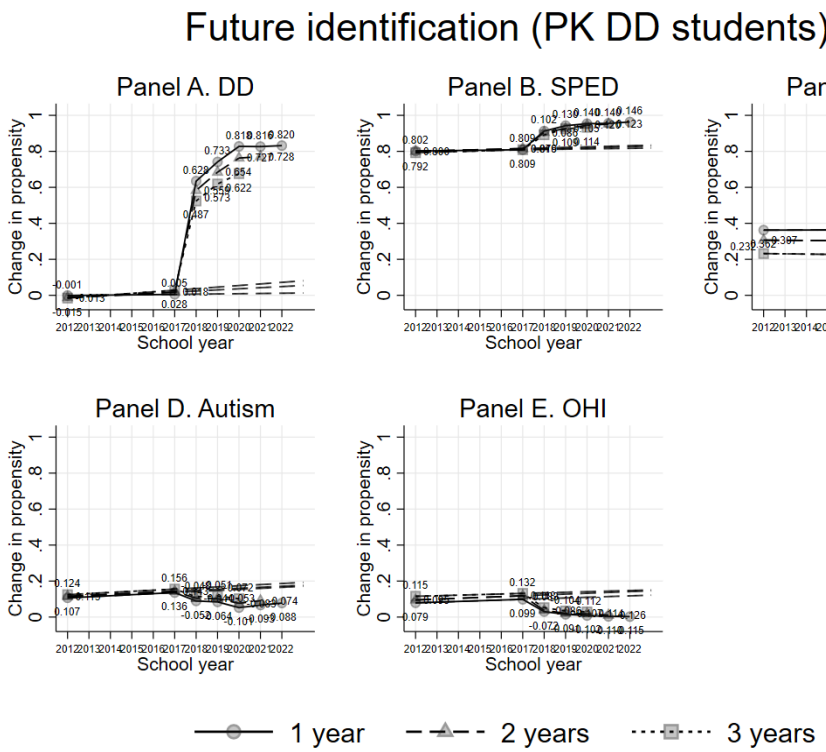
D. OHI



Notes: Model (2) estimates for disability identification.

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Figure 5. Persistence of Special Education and DD Identification for PK Students with DD Transitioning to K Grade



Notes: Model (2) estimates the persistence of special identification for PK students with DD transitioning to K grade.

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Table 2. Change in Regular Class Setting for DD

	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
DD Student	-0.038*	-0.169**	-0.022*	-0.007
	(0.016)	(0.054)	(0.010)	(0.010)
Trend	-0.003	-0.001	0.001	0.002*
	(0.004)	(0.001)	(0.001)	(0.001)
2019	0.004	0.008	0.008	0.017***
	(0.009)	(0.006)	(0.005)	(0.005)
2020	-0.006	-0.022**	0.008	0.014*
	(0.014)	(0.008)	(0.005)	(0.005)
2021	-0.027	0.098***	0.018**	0.017**
	(0.015)	(0.010)	(0.006)	(0.006)
2022	0.217***	0.095***	0.013*	0.017*
	(0.023)	(0.011)	(0.007)	(0.007)
2023	0.236***	0.052***	-0.027**	-0.020*
	(0.029)	(0.013)	(0.010)	(0.010)
2019 X DD Student	0.038*	0.144**	-0.025	0.024
	(0.018)	(0.056)	(0.027)	(0.051)
2020 X DD Student	0.070***	0.175**	-0.004	0.013
	(0.017)	(0.055)	(0.013)	(0.021)
2021 X DD Student	0.096***	0.138*	-0.006	-0.012
	(0.022)	(0.054)	(0.012)	(0.014)
2022 X DD Student	-0.037	0.119*	-0.006	-0.011
	(0.022)	(0.055)	(0.011)	(0.012)
2023 X DD Student	-0.042	0.133*	0.000	0.000
	(0.024)	(0.055)	(.)	(.)
Cons.	0.313***	0.751***	0.803***	0.770***
	(0.018)	(0.004)	(0.003)	(0.004)
N	177038	137496	147793	161836

*Notes: Model (4) estimates for changes in regular class setting. Only includes students with disabilities. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table 3. Change in Absences for DD

	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
DD Student	0.175***	0.055	0.020	0.040*
	(0.038)	(0.093)	(0.017)	(0.019)
Trend	0.033*	0.023***	0.017***	0.023***
	(0.014)	(0.002)	(0.002)	(0.002)
2019	-0.098	0.019	0.055***	0.055***
	(0.059)	(0.013)	(0.013)	(0.012)
2020	-0.129	-0.117***	-0.088***	-0.093***
	(0.074)	(0.015)	(0.014)	(0.014)
2021	-0.058	-0.239***	-0.097***	-0.072***
	(0.097)	(0.025)	(0.022)	(0.021)
2022	0.329**	0.234***	0.283***	0.262***
	(0.106)	(0.022)	(0.020)	(0.020)
2023	0.339**	0.215***	0.277***	0.261***
	(0.116)	(0.025)	(0.022)	(0.021)
2019 X DD Student	-0.079	0.013	0.078	0.091
	(0.053)	(0.095)	(0.059)	(0.122)
2020 X DD Student	-0.074	-0.001	0.016	0.052
	(0.052)	(0.095)	(0.026)	(0.049)
2021 X DD Student	0.041	0.084	0.097***	0.119***
	(0.056)	(0.096)	(0.029)	(0.034)
2022 X DD Student	0.044	-0.021	0.041	0.009
	(0.051)	(0.094)	(0.025)	(0.027)
2023 X DD Student	-0.049	0.027	0.000	0.000
	(0.056)	(0.094)	(.)	(.)
Cons.	1.050***	1.856***	1.753***	1.652***
	(0.062)	(0.009)	(0.007)	(0.007)
N	51543	134338	145722	159691

*Notes: Model (4) estimates for changes in absences. Only includes students with disabilities. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table 4. Change in Grade Retention

	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
DD Student	0.091***	-0.031***	-0.003*	-0.001
	(0.005)	(0.004)	(0.001)	(0.001)
Trend	-0.030***	-0.011***	-0.007***	-0.003***
	(0.002)	(0.000)	(0.000)	(0.000)
2018	0.112***	0.039***	0.009***	0.001
	(0.007)	(0.004)	(0.002)	(0.001)
2019	0.140***	0.019***	0.014***	0.002
	(0.009)	(0.003)	(0.002)	(0.001)
2020	0.174***	0.034***	0.011***	0.004***
	(0.011)	(0.004)	(0.002)	(0.001)
2021	0.173***	0.040***	0.027***	0.012***
	(0.012)	(0.004)	(0.003)	(0.003)
2022	0.159***	0.046***	0.026***	0.012***
	(0.024)	(0.004)	(0.002)	(0.001)
2018 X DD Student	0.085***	0.581*	0.000	0.000
	(0.011)	(0.261)	(.)	(.)
2019 X DD Student	0.082***	0.077***	0.033	0.059
	(0.010)	(0.009)	(0.018)	(0.034)
2020 X DD Student	0.056***	0.045***	0.020***	0.011
	(0.009)	(0.007)	(0.006)	(0.009)
2021 X DD Student	0.095***	0.044***	-0.001	0.000
	(0.010)	(0.007)	(0.005)	(0.004)
2022 X DD Student	0.115***	0.032***	0.006	0.004
	(0.011)	(0.006)	(0.004)	(0.003)
Cons.	0.540***	0.143***	0.079***	0.036***
	(0.004)	(0.002)	(0.001)	(0.001)
N	177038	137496	147793	161836

*Notes: Model (4) estimates for changes in grade retention. Only includes students with disabilities. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Appendix Tables & Figures

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Table A1. States and DD Adoption Years

State	DD Ages 3-5	DD Ages 6-21	State	DD Ages 3-5	DD Ages 6-21
Alabama	2006	2006	Wisconsin	2006	2006
Alaska	2006	2006	Delaware	2006	2008
Georgia	2006	2006	Illinois	2006	2009
Hawaii	2006	2006	Maine	2006	2009
Idaho	2006	2006	Rhode Island	2006	2009
Kansas	2006	2006	South Carolina	2006	2009
Kentucky	2006	2006	Wyoming	2006	2009
Louisiana	2006	2006	Arizona	2006	2010
Maryland	2006	2006	Pennsylvania	2006	2010
Massachusetts	2006	2006	Colorado	2006	2014
Michigan	2006	2006	South Dakota	2006	2018
Minnesota	2006	2006	Indiana	2006	2019
Mississippi	2006	2006	Connecticut	2006	2020
Missouri	2006	2006	Montana	2006	2020
Nebraska	2006	2006	New Jersey	2006	2020
New Hampshire	2006	2006	Oregon	2006	2020
New Mexico	2006	2006	Florida	2006	2021
North Carolina	2006	2006	Nevada	2006	2021
North Dakota	2006	2006	Ohio	2008	2021
Oklahoma	2006	2006	West Virginia	2006	2021
Tennessee	2006	2006	Arkansas	2006	No
Utah	2006	2006	California	No	No
Vermont	2006	2006	Iowa	No	No
Virginia	2006	2006	New York	2006	No
Washington	2006	2006	Texas	No	No

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Figure A1. DD Legislation Change to Timeline and Reporting Information

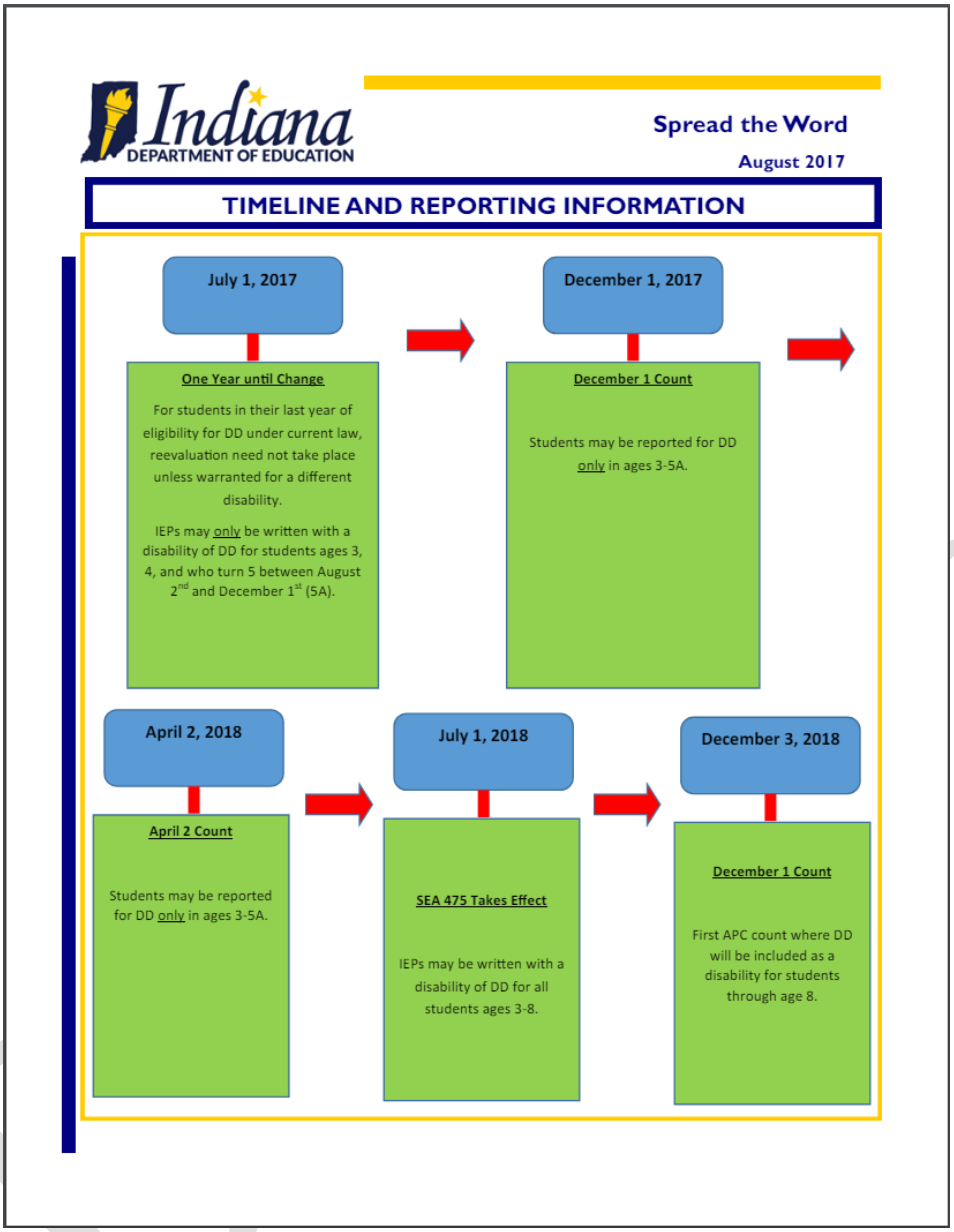


Figure A2. Indiana Unduplicated State Totals by Disability

Indiana
DEPARTMENT OF EDUCATION

Dr. Jennifer McCormick
Superintendent of Public Instruction

Working Together for Student Success

MEMORANDUM

To: Indiana State Board of Education
From: Dr. Nancy Holsapple, Director of Special Education
Date: January 23, 2019
Re: Special Education Child Count

Indiana Code 20-43-4-4 provides that the State Board shall monitor changes that occur in the number of students enrolled in programs for students with disabilities. The State Superintendent shall certify the December special education child count to the State Budget Committee no later than February 5.

This memo provides the count of students by primary disability in the tables below. The first table lists the unduplicated special education child count taken from the DOE-SE and DOE-SV data reported on November 30, 2018. The second table lists the preschool child count taken from the DOE-SE reported on November 30, 2018. Both tables provide comparisons to the totals between this year's counts and the counts taken on December 1, 2017.

CHILD COUNT COMPARISONS (DECEMBER 1, 2017 AND NOVEMBER 30, 2018)
SOURCE: DOE-SE AND DOE-SV
AGES 5B-22
UNDUPLICATED STATE TOTALS BY DISABILITY

Primary Exceptionality Category	12-1-17 Count	11-30-18 Count	Increase/Decrease
Multiple Disability	2,055	2,020	-35
Orthopedic Impairment	1,431	1,404	-27
Blind or Low Vision	927	938	11
Deaf or Hard of Hearing	2,277	2,268	-9
Emotional Disability – Full Time	6,595	6,804	209
Emotional Disability – All Other	6,334	6,107	-227
Specific Learning Disability	55,068	54,739	-329
Developmental Delay (Ages 5B-8)	N/A[1]	2,171	2,171
Language/Speech Impairment	34,225	33,443	-782
Mild Cognitive Disability	10,102	9,773	-329
Moderate Cognitive Disability	3,560	3,435	-125
Severe Cognitive Disability	381	342	-39
Deaf-Blind	26	31	5
Autism Spectrum Disorder	15,721	16,057	336
Traumatic Brain Injury	458	459	1
Other Health Impairment	24,526	25,921	1,395
Total Unduplicated Count	**163,686**	**165,912**	**2,226 (+1.36%)**

[1] Public Law 75-2017 extended the Developmental Delay disability eligibility through age eight on July 1, 2018.

Figure A3. Indiana Funding Amount by Disability Category, 2019-20



Per Pupil Allocation for Special Education (State Funds only)

State of Indiana; 2019-2020 (December 2, 2019); IC 20-43-7-6

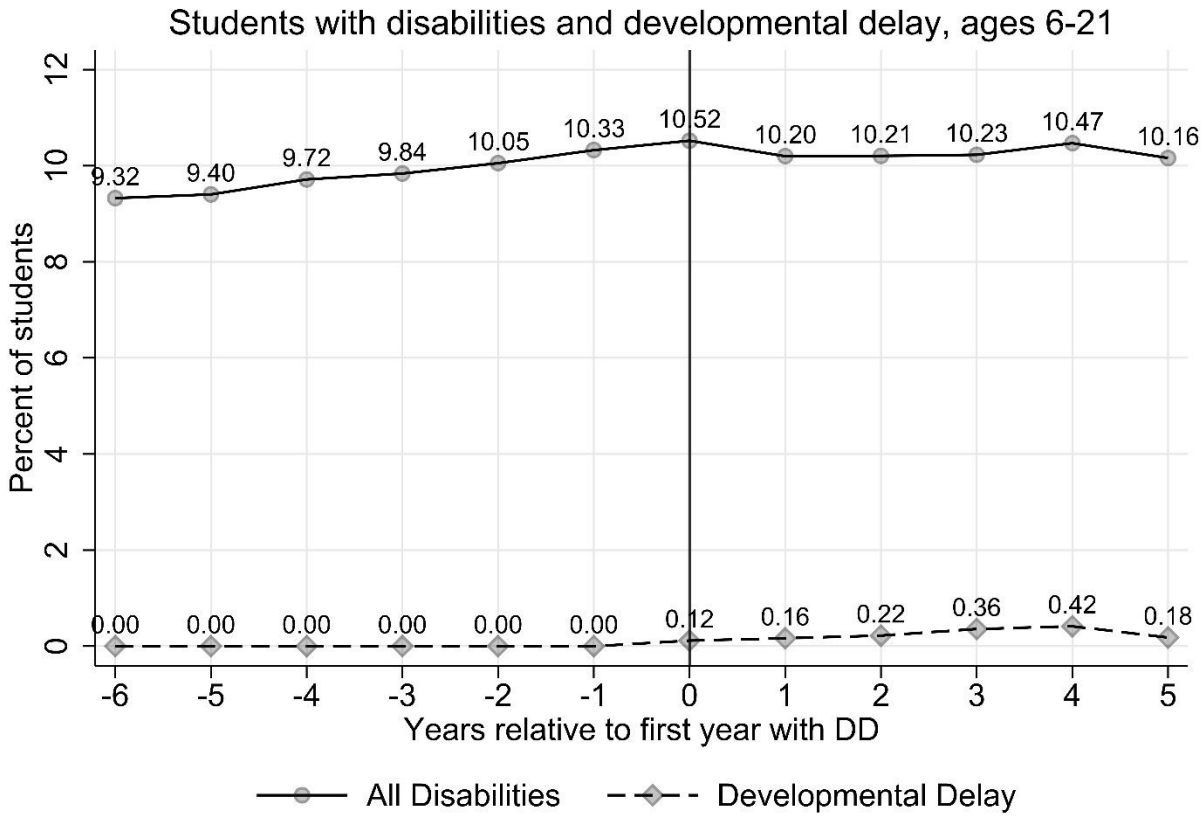
ADJUSTED PUPIL COUNT (AGES 5B-22)*		
APC Level I: Severe Disabilities **$9,156**	**APC Level II: Mild and Moderate Disabilities** **$2,300**	**APC Level III: Communication Disorders** **$500**
Multiple Disabilities Orthopedic Impairment Blind or Low Vision Deaf or Hard of Hearing Emotional Disability/Full Time Placement Severe Cognitive Disability Deaf-Blind Autism Spectrum Disorder Traumatic Brain Injury	Emotional Disability/All Other Placements Specific Learning Disability Developmental Delay (Ages 5B-8 only) Mild Cognitive Disability Moderate Cognitive Disability Other Health Impairment	Language or Speech Impairment
* Students aged 5B turned five between December 2, 2018 up to and including August 1, 2019 (kindergarten eligible). Per pupil allocation is based on the primary disability and a duplicated count of students with a secondary disability of Language or Speech Impairment.		

PRESCHOOL COUNT (AGES 3-5A)†
All Disabilities **$2,875**
† Students aged 5A turned five between August 2, 2019 up to and including December 1, 2019.

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Figure A3. State Trends in Disability Identification Before and After DD Adoption, IDEA 618 Data, 2014-15 to 2022-23

A. Combined

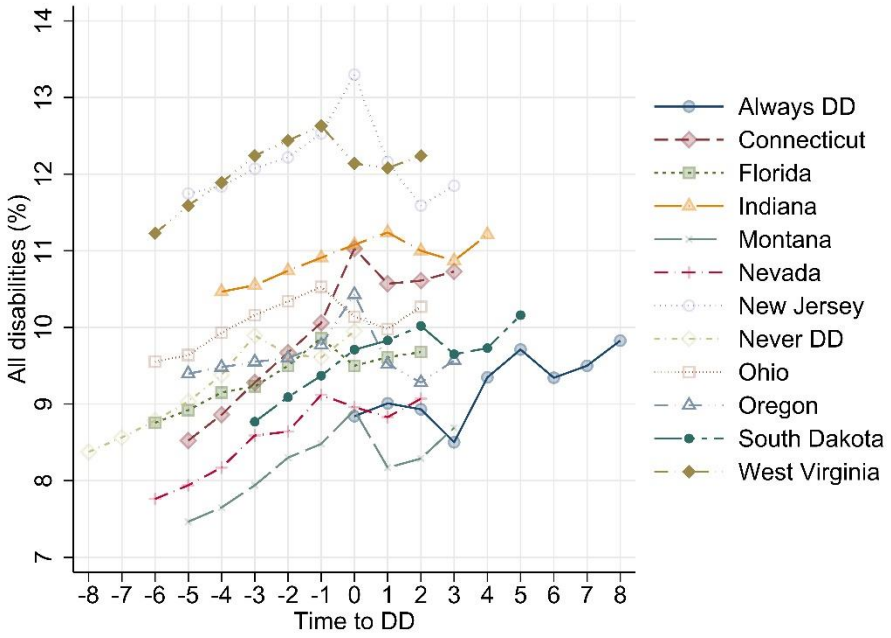


Note: Provides all disabilities % and DD %. Includes data from the following states that added DD in ages 6-21 between 2014-15 and 2022-23: South Dakota, Indiana, Connecticut, Montana, New Jersey, Oregon, Florida, Nevada, Ohio, and West Virginia.

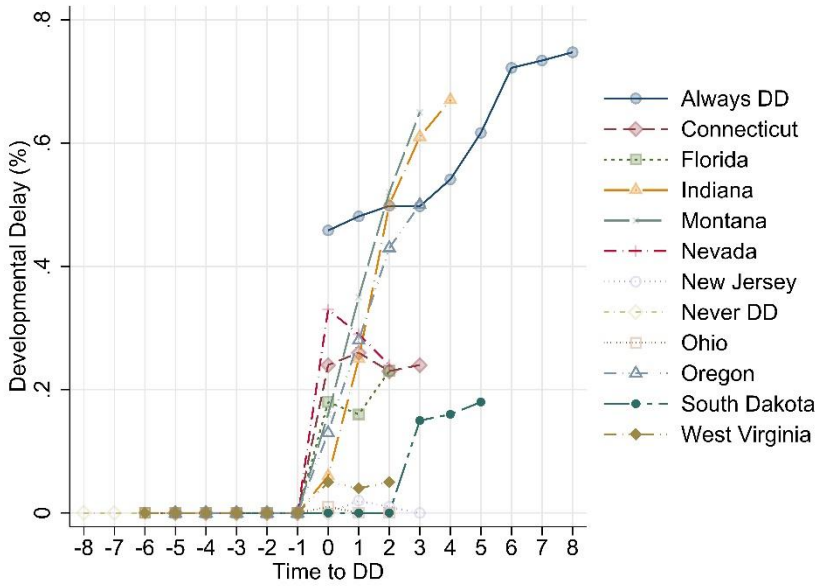
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B. By State and Time to Adoption

B1. All Disabilities



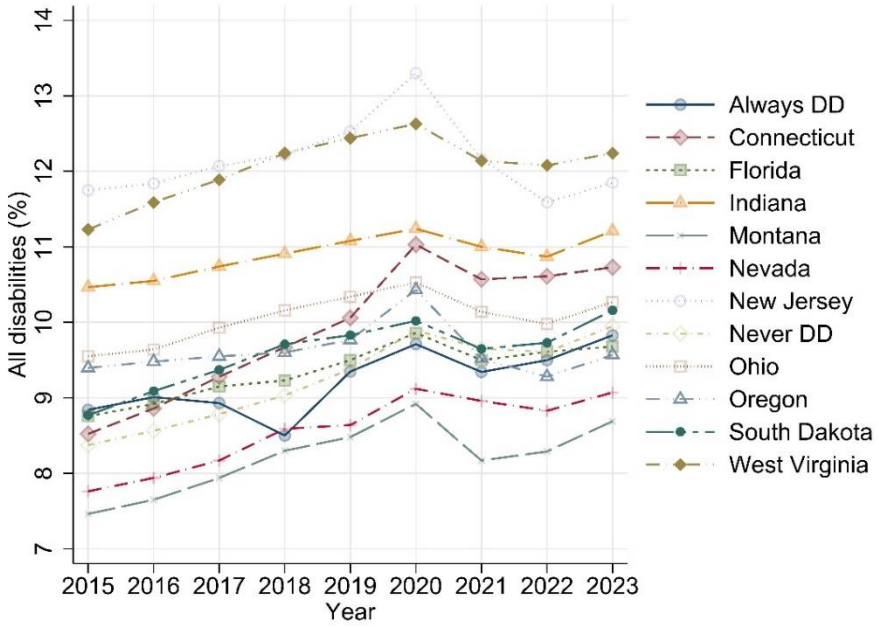
B2. DD



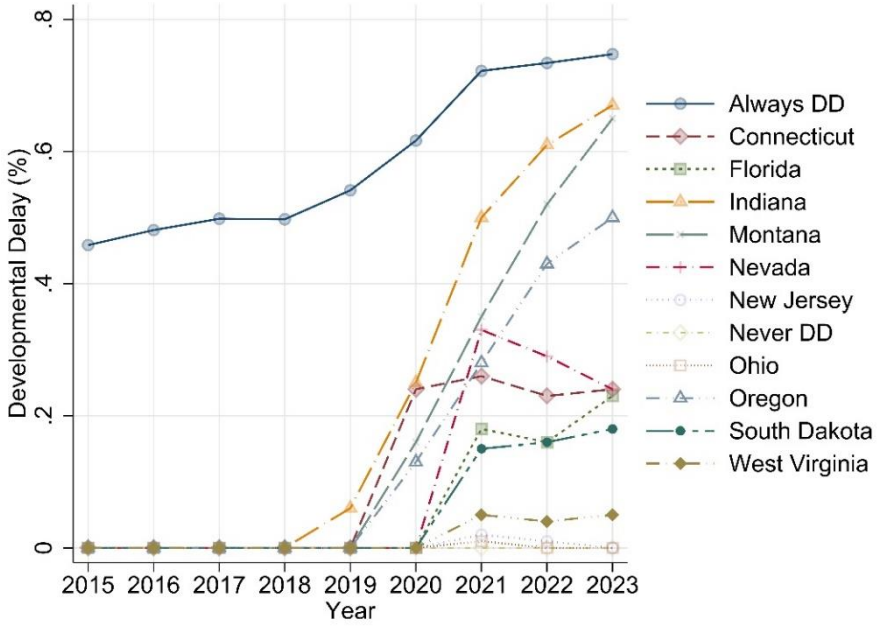
Note: B1 provides all disabilities % and B2 provides the DD %. Never DD includes the following states that do not have DD in ages 6-21: Arkansas, California, Iowa, New York, Texas. All other states not explicitly listed above are included in Always DD.

C. By State and Academic Year, 2014-15 to 2022-23

C1. All Disabilities



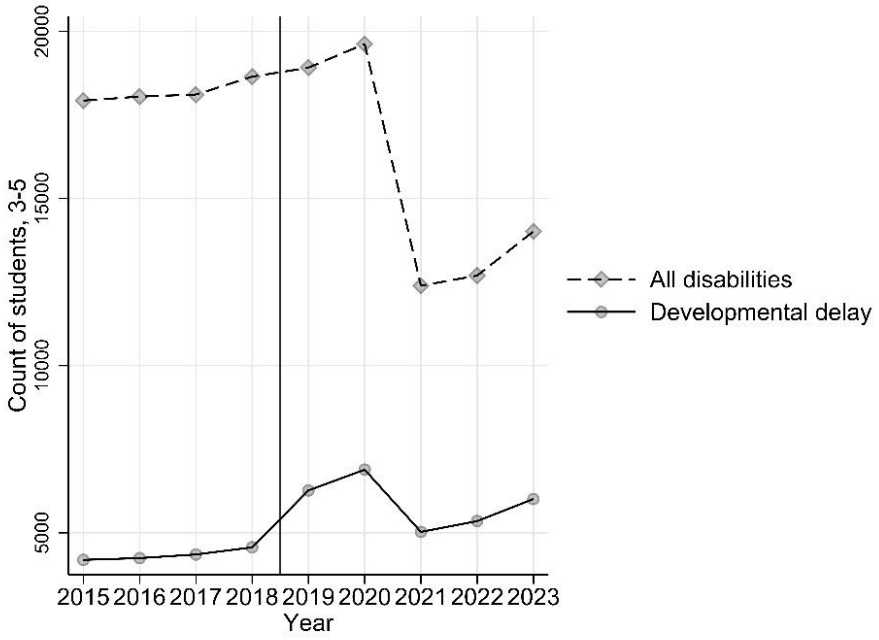
C2. DD



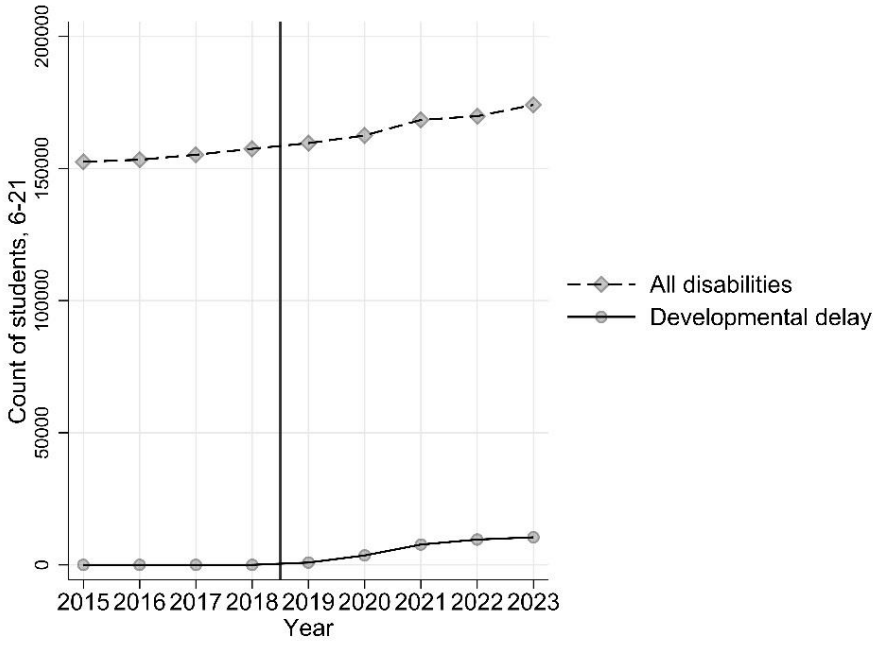
Note: C1 provides all disabilities % and C2 provides the DD %. Never DD includes the following states that do not have DD in ages 6-21: Arkansas, California, Iowa, New York, and Texas. All other states not explicitly listed above are included in Always DD.

Figure A4. Count of Disabilities in Indiana, IDEA 618 Data, 2014-15 to 2022-23

A. Ages 3-5



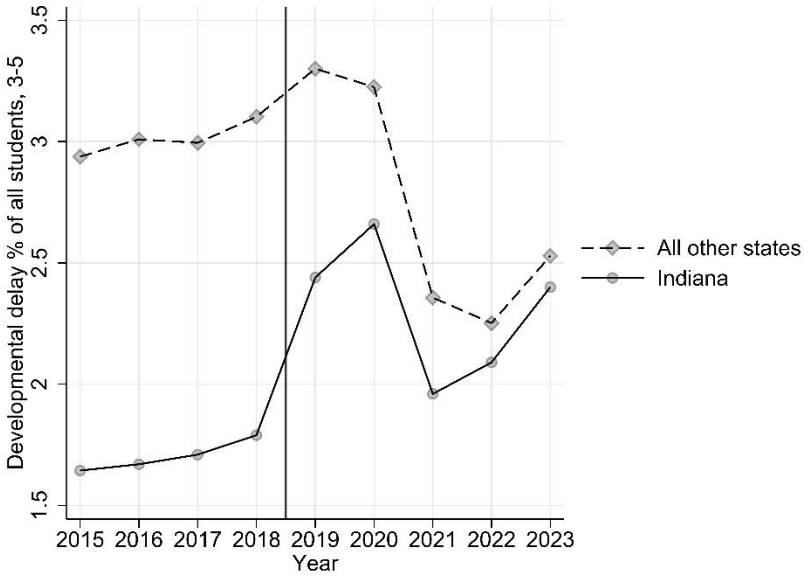
B. Ages 6-21



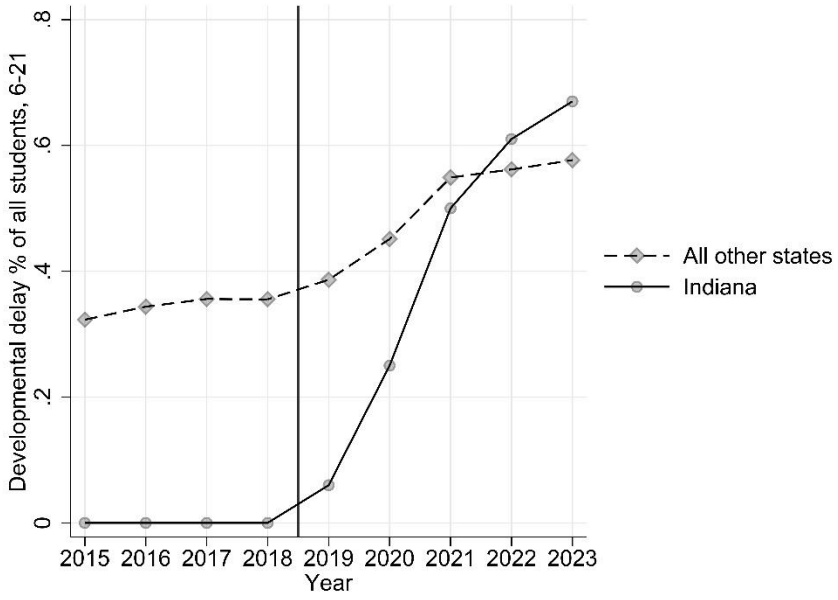
Notes: The figure provides counts of students in Indiana with all disabilities and developmental delays from the IDEA 618 data. A provides ages 3-5, and \B provides ages 6-21.

Figure A3. DD Rates Indiana vs. Rest of US States, 2014-15 to 2022-23

A. Ages 3-5



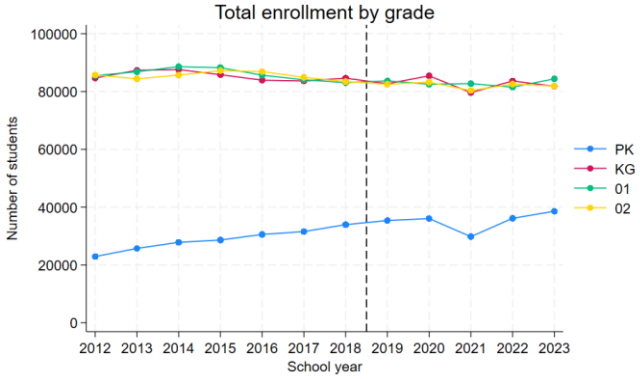
B. Ages 6-21



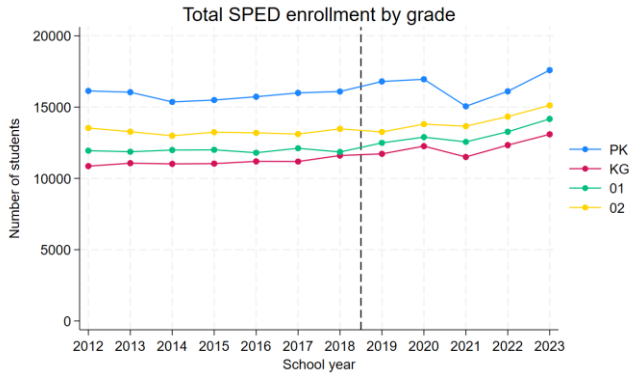
Notes: The figure provides the percentage of students in Indiana and all other states with developmental delay from the IDEA 618 data. A provides ages 3-5, and B provides ages 6-21.

Figure A4. Enrollment by Grade, 2012 – 2023

A. Total



B. Special Education



C. DD

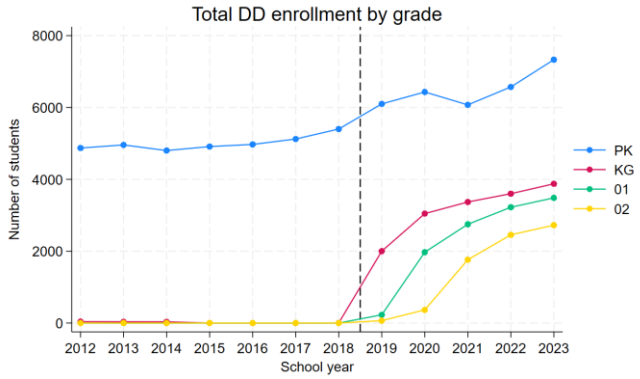
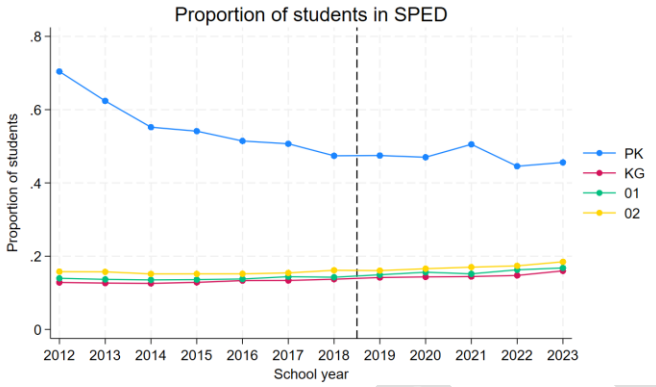
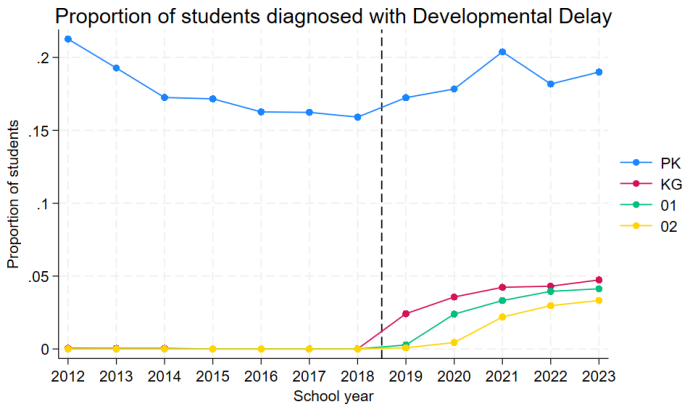


Figure A5. Identification Rates by Grade, 2012 – 2023

A. Special Education



B. DD



C. DD, Language/Speech, Autism, Other

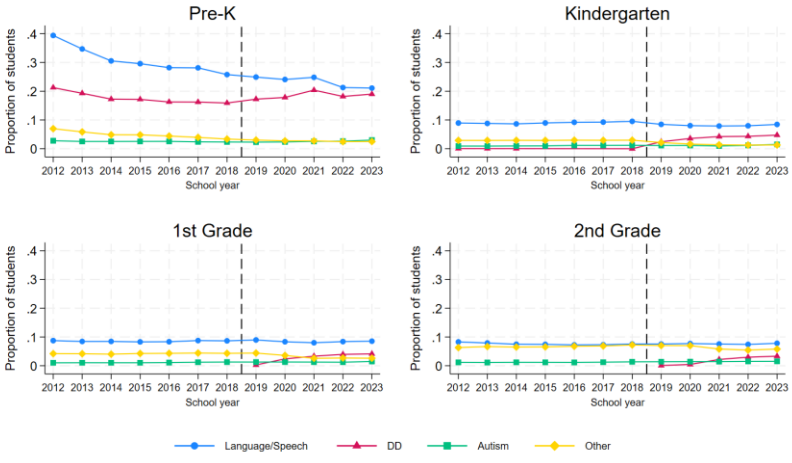
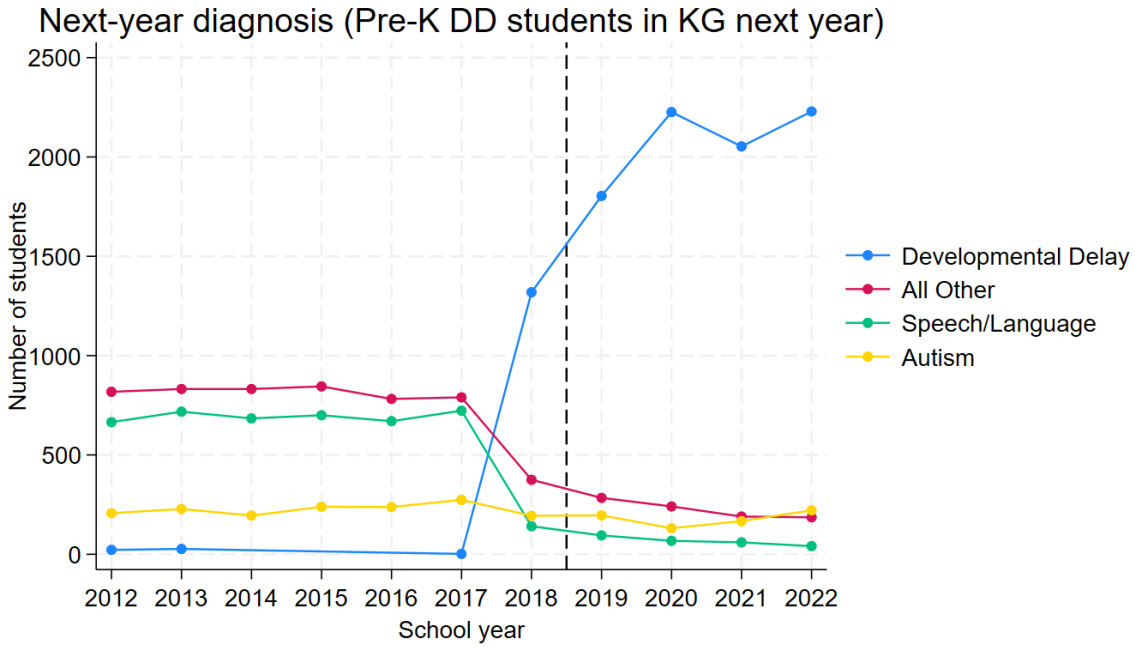


Figure A6. Count of Next Year Diagnosis for Pre-K DD Students

A. PK DD students in KG Next Year



B. PK DD Students

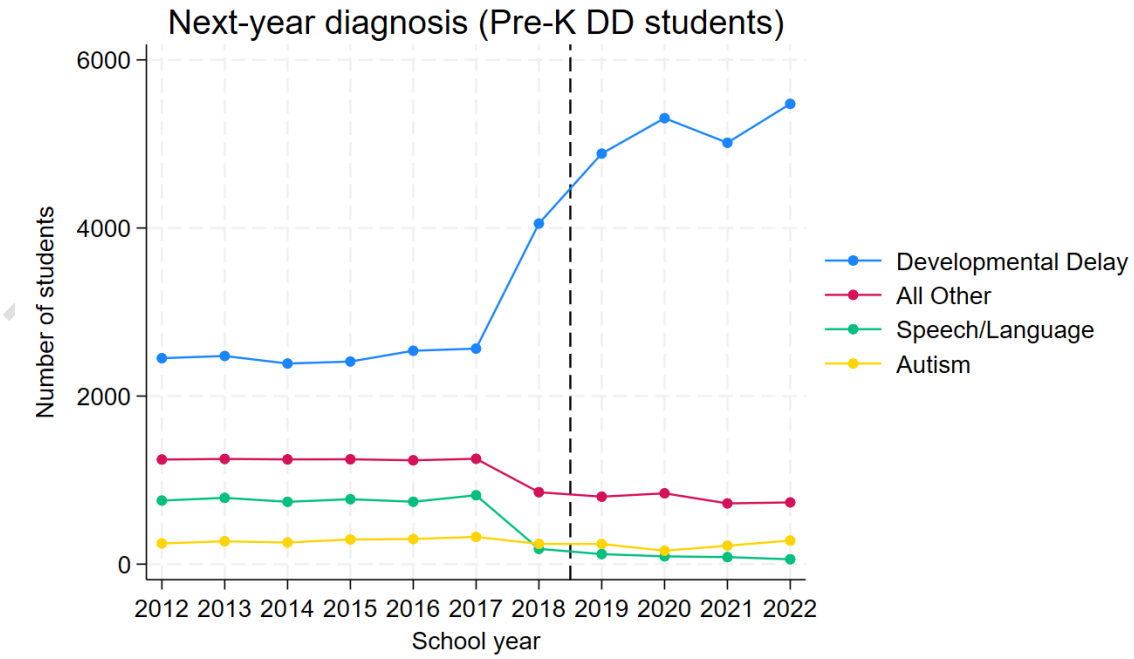


Table A2. The Effect of DD Legislation on DD Identification

	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
Trend	-0.004**	0.000	0.000***	0.000***
	(0.001)	(0.000)	(0.000)	(0.000)
2019	0.021***	0.024***	0.003***	0.001***
	(0.004)	(0.001)	(0.000)	(0.000)
2020	0.033***	0.035***	0.023***	0.004***
	(0.006)	(0.001)	(0.001)	(0.000)
2021	0.045***	0.041***	0.032***	0.021***
	(0.008)	(0.001)	(0.001)	(0.001)
2022	0.038***	0.043***	0.039***	0.029***
	(0.008)	(0.001)	(0.001)	(0.001)
2023	0.038***	0.047***	0.041***	0.033***
	(0.010)	(0.001)	(0.001)	(0.001)
Cons.	0.172***	-0.000	-0.000	-0.000
	(0.005)	(0.000)	(0.000)	(0.000)
N	376253	1033890	1035251	1025562

*Notes: Model (2) estimates for DD identification. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table A3. Effect of DD Legislation on Special Education by FRPL Status

	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
FRPL # Trend	-0.000	0.000	0.000***	0.000***
	(0.002)	(0.000)	(0.000)	(0.000)
Unknown # Trend	-0.010**	-0.001***	-0.001***	-0.001***
	(0.004)	(0.000)	(0.000)	(0.000)
FRPL X 2019	0.009	0.034***	0.004***	0.001***
	(0.006)	(0.001)	(0.000)	(0.000)
Unknown X 2019	0.031**	0.023***	0.009***	0.010***
	(0.010)	(0.003)	(0.002)	(0.002)
FRPL X 2020	0.020*	0.046***	0.033***	0.006***
	(0.008)	(0.001)	(0.001)	(0.000)
Unknown X 2020	0.049***	0.044***	0.029***	0.014***
	(0.014)	(0.005)	(0.004)	(0.003)
FRPL X 2021	0.043***	0.055***	0.044***	0.030***
	(0.011)	(0.002)	(0.001)	(0.001)
Unknown X 2021	0.047**	0.047***	0.034***	0.023***
	(0.018)	(0.012)	(0.009)	(0.004)
FRPL X 2022	0.025*	0.057***	0.052***	0.039***
	(0.011)	(0.002)	(0.001)	(0.001)
Unknown X 2022	0.083***	0.044***	0.039***	0.031***
	(0.020)	(0.007)	(0.006)	(0.006)
FRPL X 2023	0.026	0.059***	0.053***	0.045***
	(0.014)	(0.002)	(0.001)	(0.001)
Unknown X 2023	0.141***	0.199***	0.066***	0.056***
	(0.035)	(0.021)	(0.009)	(0.009)
Trend	0.001	0.000	0.000***	0.000**
	(0.002)	(0.000)	(0.000)	(0.000)
FRPL	0.022*	-0.000	-0.001***	-0.001***
	(0.010)	(0.000)	(0.000)	(0.000)
Unknown	0.052***	0.005***	0.004***	0.003***
	(0.014)	(0.001)	(0.001)	(0.000)
Cons.	0.108***	-0.006***	-0.004***	-0.002***
	(0.007)	(0.000)	(0.000)	(0.000)
N	376351	1033958	1035309	1025616

*Notes: Model (3) estimates for DD identification by FRPL status. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table A4. Effect of DD Legislation on Special Education by Race/Ethnicity

	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
American Indian X Trend	0.026*	0.000	0.000	0.000
	(0.012)	(0.000)	(0.000)	(0.000)
Asian X Trend	-0.003	-0.000*	-0.000**	-0.000***
	(0.004)	(0.000)	(0.000)	(0.000)
Black X Trend	-0.002	0.000*	0.000	0.000
	(0.002)	(0.000)	(0.000)	(0.000)
Hispanic X Trend	-0.000	0.000**	0.000**	0.000*
	(0.002)	(0.000)	(0.000)	(0.000)
Multiracial X Trend	-0.004	0.000	0.000	0.000
	(0.002)	(0.000)	(0.000)	(0.000)
Native Hawaiian or Other Pacific Islander X Trend	0.008	-0.001*	-0.000	-0.000
	(0.016)	(0.000)	(0.000)	(0.000)
American Indian X 2019	0.012	0.007	0.000	-0.001
	(0.062)	(0.008)	(0.001)	(0.001)
Asian X 2019	0.038	0.014***	0.002*	0.000
	(0.021)	(0.002)	(0.001)	(0.000)
Black X 2019	0.023**	0.024***	0.004***	0.002***
	(0.008)	(0.002)	(0.001)	(0.000)
Hispanic X 2019	0.015	0.023***	0.003***	0.001***
	(0.008)	(0.002)	(0.001)	(0.000)
Multiracial X 2019	0.027*	0.025***	0.003**	0.001
	(0.011)	(0.002)	(0.001)	(0.000)
Native Hawaiian or Other Pacific Islander X 2019	-0.063	0.034	0.000	0.001
	(0.091)	(0.023)	(0.001)	(0.001)
American Indian X 2020	-0.043	0.033*	0.016	0.007
	(0.077)	(0.016)	(0.012)	(0.007)
Asian X 2020	0.069*	0.020***	0.014***	0.004***
	(0.027)	(0.003)	(0.002)	(0.001)
Black X 2020	0.041***	0.033***	0.030***	0.008***
	(0.011)	(0.003)	(0.002)	(0.001)
Hispanic X 2020	0.032**	0.028***	0.023***	0.005***
	(0.010)	(0.002)	(0.002)	(0.001)
Multiracial X 2020	0.050***	0.032***	0.024***	0.004***
	(0.014)	(0.002)	(0.002)	(0.001)
Native Hawaiian or Other Pacific Islander X 2020	-0.056	0.026	0.033	0.000
	(0.101)	(0.017)	(0.022)	(0.001)
American Indian X 2021	-0.050	0.029*	0.043*	0.017
	(0.094)	(0.014)	(0.019)	(0.012)
Asian X 2021	0.109***	0.027***	0.021***	0.015***
	(0.030)	(0.003)	(0.003)	(0.002)
Black X 2021	0.060***	0.034***	0.033***	0.029***
	(0.014)	(0.002)	(0.002)	(0.002)
Hispanic X 2021	0.048***	0.034***	0.028***	0.021***
	(0.013)	(0.002)	(0.002)	(0.001)
Multiracial X 2021	0.075***	0.042***	0.030***	0.024***
	(0.018)	(0.003)	(0.002)	(0.002)
Native Hawaiian or Other Pacific Islander X 2021	-0.037	0.033	0.023	0.044

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	(0.134)	(0.021)	(0.017)	(0.025)
American Indian X 2022	-0.017	0.028*	0.012	0.044*
	(0.107)	(0.013)	(0.009)	(0.020)
Asian X 2022	0.073*	0.036***	0.025***	0.016***
	(0.034)	(0.004)	(0.003)	(0.003)
Black X 2022	0.060***	0.039***	0.035***	0.034***
	(0.016)	(0.002)	(0.002)	(0.002)
Hispanic X 2022	0.051***	0.037***	0.035***	0.026***
	(0.014)	(0.002)	(0.002)	(0.001)
Multiracial X 2022	0.060***	0.044***	0.041***	0.029***
	(0.016)	(0.003)	(0.003)	(0.002)
Native Hawaiian or Other Pacific Islander X 2022	-0.115	0.043*	0.015	0.023
	(0.132)	(0.022)	(0.014)	(0.016)
American Indian X 2023	-0.094	0.058**	0.015	0.011
	(0.106)	(0.020)	(0.011)	(0.009)
Asian X 2023	0.073	0.035***	0.033***	0.025***
	(0.039)	(0.004)	(0.004)	(0.003)
Black X 2023	0.065**	0.044***	0.041***	0.034***
	(0.022)	(0.003)	(0.002)	(0.002)
Hispanic X 2023	0.039*	0.039***	0.037***	0.029***
	(0.017)	(0.002)	(0.002)	(0.002)
Multiracial X 2023	0.062***	0.048***	0.044***	0.034***
	(0.018)	(0.003)	(0.003)	(0.003)
Native Hawaiian or Other Pacific Islander X 2023	-0.057	0.042*	0.053*	-0.001
	(0.159)	(0.019)	(0.026)	(0.002)
Trend	-0.003*	-0.000	0.000**	0.000**
	(0.001)	(0.000)	(0.000)	(0.000)
American Indian	-0.121**	-0.001	-0.001	-0.001**
	(0.044)	(0.001)	(0.001)	(0.000)
Asian	0.018	0.003***	0.002***	0.002***
	(0.021)	(0.000)	(0.000)	(0.000)
Black	0.014	-0.001	-0.001***	-0.002***
	(0.013)	(0.001)	(0.000)	(0.000)
Hispanic	0.010	-0.001**	-0.001***	-0.002***
	(0.013)	(0.000)	(0.000)	(0.000)
Multiracial	0.020*	-0.001***	-0.001***	-0.001***
	(0.010)	(0.000)	(0.000)	(0.000)
Native Hawaiian or Other Pacific Islander	0.005	0.001	-0.001	-0.001
	(0.068)	(0.001)	(0.001)	(0.001)
Cons.	0.125***	-0.011***	-0.008***	-0.005***
	(0.006)	(0.001)	(0.000)	(0.000)
N	376351	1033958	1035309	1025616

*Notes: Model (3) estimates for DD identification by race/ethnicity. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table A5. Effect of DD Legislation on Special Education by Sex

	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
Male X Trend	0.001	0.000	-0.000	0.000
	(0.001)	(0.000)	(0.000)	(0.000)
Male X 2019	0.025***	0.033***	0.003***	0.001***
	(0.005)	(0.001)	(0.000)	(0.000)
Male X 2020	0.039***	0.049***	0.033***	0.006***
	(0.007)	(0.001)	(0.001)	(0.000)
Male X 2021	0.052***	0.057***	0.044***	0.030***
	(0.010)	(0.002)	(0.001)	(0.001)
Male X 2022	0.046***	0.059***	0.053***	0.040***
	(0.010)	(0.002)	(0.001)	(0.001)
Male X 2023	0.045***	0.065***	0.056***	0.045***
	(0.012)	(0.002)	(0.001)	(0.001)
Trend	-0.004***	0.000	0.000***	0.000***
	(0.001)	(0.000)	(0.000)	(0.000)
Male	0.043***	-0.000*	-0.000***	-0.000***
	(0.005)	(0.000)	(0.000)	(0.000)
Cons.	0.132***	-0.004***	-0.004***	-0.002***
	(0.005)	(0.000)	(0.000)	(0.000)
N	376351	1033958	1035309	1025616

*Notes: Model (3) estimates for DD identification by sex. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table A6. Effect of DD Legislation on Other Disability Types

	A. SPED Overall				B. Speech/Language			
	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
Trend	-0.011***	0.002***	0.001***	0.001	-0.002	0.002***	0.000	-0.001***
	(0.002)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
2019	0.010	0.004*	0.006***	0.005**	-0.014**	-0.011***	0.004**	0.005***
	(0.005)	(0.002)	(0.002)	(0.002)	(0.005)	(0.001)	(0.001)	(0.001)
2020	0.029**	0.003	0.012***	0.010***	-0.010	-0.016***	-0.002	0.008***
	(0.009)	(0.002)	(0.002)	(0.002)	(0.006)	(0.002)	(0.002)	(0.001)
2021	0.017	0.001	0.006**	0.014***	-0.037***	-0.019***	-0.006***	0.007***
	(0.012)	(0.002)	(0.002)	(0.002)	(0.008)	(0.002)	(0.002)	(0.002)
2022	0.008	0.007**	0.020***	0.020***	-0.046***	-0.017***	-0.000	0.008***
	(0.013)	(0.003)	(0.003)	(0.003)	(0.009)	(0.002)	(0.002)	(0.002)
2023	0.035*	0.014***	0.021***	0.030***	-0.027**	-0.016***	-0.001	0.013***
	(0.017)	(0.003)	(0.003)	(0.003)	(0.010)	(0.003)	(0.002)	(0.002)
Cons.	0.525***	0.118***	0.129***	0.148***	0.269***	0.082***	0.081***	0.077***
	(0.008)	(0.001)	(0.001)	(0.001)	(0.005)	(0.001)	(0.001)	(0.001)
N	376253	1033890	1035251	1025562	376253	1033890	1035251	1025562

Notes: Model (2) estimates for persistence of special education identification for PK students in K in T+1. Standard errors clustered on schools in parentheses.
** p<0.05 ** p<0.01 *** p<0.00*

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	C. Autism				D. Other Health Impairment			
	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade	(1) Pre-K	(2) K Grade	(3) 1st Grade	(4) 2nd Grade
Trend	-0.000	0.001***	0.000***	0.000***	-0.001***	0.000***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
2019	0.000	-0.001**	-0.000	0.001	-0.000	-0.003***	0.001	0.000
	(0.002)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
2020	0.002	-0.002**	-0.000	0.001	0.001	-0.005***	-0.002***	0.001
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
2021	0.002	-0.004***	-0.001*	0.000	0.001	-0.006***	-0.007***	-0.003***
	(0.003)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
2022	0.004	-0.003***	-0.002**	0.001	0.003	-0.006***	-0.006***	-0.006***
	(0.003)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
2023	0.006	0.000	0.000	0.001	0.004	-0.006***	-0.007***	-0.005***
	(0.004)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Cons.	0.023***	0.008***	0.010***	0.011***	0.017***	0.007***	0.009***	0.012***
	(0.002)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
N	376253	1033890	1035251	1025562	376253	1033890	1035251	1025562

*Notes: Model (2) estimates for other disabilities identification. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table A7. Persistence of Special Education Identification for PK students in K T+1

	A. DD			B. Special Education			C. Speech		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
	1 year	2 years	3 years	1 year	2 years	3 years	1 year	2 years	3 years
Trend	0.001	0.006***	0.009***	0.002	0.003	0.003	0.000	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
2018	0.628***	0.559***	0.487***	0.102***	0.086***	0.079***	-0.295***	-0.230***	-0.157***
	(0.020)	(0.021)	(0.020)	(0.014)	(0.013)	(0.013)	(0.018)	(0.017)	(0.014)
2019	0.733***	0.654***	0.573***	0.130***	0.105***	0.109***	-0.322***	-0.255***	-0.175***
	(0.016)	(0.016)	(0.015)	(0.015)	(0.014)	(0.014)	(0.018)	(0.017)	(0.014)
2020	0.818***	0.727***	0.622***	0.140***	0.120***	0.114***	-0.338***	-0.272***	-0.185***
	(0.014)	(0.015)	(0.014)	(0.016)	(0.016)	(0.016)	(0.022)	(0.020)	(0.017)
2021	0.816***	0.728***	0.000	0.140***	0.123***	0.000	-0.341***	-0.265***	0.000
	(0.014)	(0.015)	(.)	(0.018)	(0.018)	(.)	(0.024)	(0.022)	(.)
2022	0.820***	0.000	0.000	0.146***	0.000	0.000	-0.346***	0.000	0.000
	(0.015)	(.)	(.)	(0.021)	(.)	(.)	(0.026)	(.)	(.)
Cons.	-0.001	-0.013*	-0.015**	0.802***	0.800***	0.792***	0.362***	0.307***	0.232***
	(0.006)	(0.005)	(0.006)	(0.008)	(0.008)	(0.008)	(0.011)	(0.010)	(0.008)
N	23559	20272	17529	23559	20272	17529	23559	20272	17529

Notes: Model (2) estimates for persistence of special education identification for PK students in K in T+1. Standard errors clustered on schools in parentheses.
** p<0.05 ** p<0.01 *** p<0.001*

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	D. Autism			E: OHI		
	(1) 1 year	(2) 2 years	(3) 3 years	(1) 1 year	(2) 2 years	(3) 3 years
Trend	0.006*	0.006*	0.006*	0.004*	0.005*	0.003
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
2018	-0.052***	-0.044***	-0.048***	-0.072***	-0.086***	-0.083***
	(0.010)	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)
2019	-0.064***	-0.053***	-0.051***	-0.091***	-0.107***	-0.104***
	(0.012)	(0.013)	(0.014)	(0.010)	(0.011)	(0.011)
2020	-0.101***	-0.083***	-0.072***	-0.102***	-0.114***	-0.112***
	(0.013)	(0.014)	(0.015)	(0.011)	(0.012)	(0.012)
2021	-0.093***	-0.074***	0.000	-0.110***	-0.126***	0.000
	(0.014)	(0.016)	(.)	(0.013)	(0.014)	(.)
2022	-0.088***	0.000	0.000	-0.115***	0.000	0.000
	(0.018)	(.)	(.)	(0.015)	(.)	(.)
Cons.	0.107***	0.115***	0.124***	0.079***	0.095***	0.115***
	(0.007)	(0.008)	(0.007)	(0.005)	(0.005)	(0.005)
N	23559	20272	17529	23559	20272	17529

Notes: Model (2) estimates for persistence of special education identification for PK students in K in T+1. Standard errors clustered on schools in parentheses.
** p<0.05 ** p<0.01 *** p<0.001*

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Table A8. Robustness Check: DD Identification With and Without School-Fixed Effects

	School Fixed-Effects				No School Fixed-Effects			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pre-K	K Grade	1st Grade	2nd Grade	Pre-K	K Grade	1st Grade	2nd Grade
Trend	-0.004**	0.000	0.000***	0.000***	-0.004**	0.000	0.000***	0.000***
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
2019	0.021***	0.024***	0.003***	0.001***	0.019***	0.024***	0.003***	0.001***
	(0.004)	(0.001)	(0.000)	(0.000)	(0.005)	(0.001)	(0.000)	(0.000)
2020	0.033***	0.035***	0.023***	0.004***	0.031***	0.035***	0.023***	0.004***
	(0.006)	(0.001)	(0.001)	(0.000)	(0.006)	(0.001)	(0.001)	(0.000)
2021	0.045***	0.041***	0.032***	0.021***	0.044***	0.041***	0.032***	0.022***
	(0.008)	(0.001)	(0.001)	(0.001)	(0.009)	(0.001)	(0.001)	(0.001)
2022	0.038***	0.043***	0.039***	0.029***	0.039***	0.043***	0.039***	0.029***
	(0.008)	(0.001)	(0.001)	(0.001)	(0.010)	(0.001)	(0.001)	(0.001)
2023	0.038***	0.047***	0.041***	0.033***	0.043***	0.046***	0.041***	0.033***
	(0.010)	(0.001)	(0.001)	(0.001)	(0.011)	(0.001)	(0.001)	(0.001)
Cons.	0.172***	-0.000	-0.000	-0.000	0.175***	-0.000	-0.000***	-0.000***
	(0.005)	(0.000)	(0.000)	(0.000)	(0.009)	(0.000)	(0.000)	(0.000)
N	376253	1033890	1035251	1025562	376351	1033958	1035309	1025616

*Notes: Provides model (2) estimates without school fixed effects. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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Table A9. Robustness Check: DD Identification Different Years Included

	2012-2023				2014-2023			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pre-K	K Grade	1st Grade	2nd Grade	Pre-K	K Grade	1st Grade	2nd Grade
Trend	-0.004**	0.000	0.000***	0.000***	-0.002	0.000*	0.000***	0.000*
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
2019	0.021***	0.024***	0.003***	0.001***	0.017***	0.024***	0.003***	0.001***
	(0.004)	(0.001)	(0.000)	(0.000)	(0.004)	(0.001)	(0.000)	(0.000)
2020	0.033***	0.035***	0.023***	0.004***	0.027***	0.035***	0.023***	0.004***
	(0.006)	(0.001)	(0.001)	(0.000)	(0.005)	(0.001)	(0.001)	(0.000)
2021	0.045***	0.041***	0.032***	0.021***	0.036***	0.041***	0.032***	0.021***
	(0.008)	(0.001)	(0.001)	(0.001)	(0.008)	(0.001)	(0.001)	(0.001)
2022	0.038***	0.043***	0.039***	0.029***	0.027**	0.043***	0.039***	0.029***
	(0.008)	(0.001)	(0.001)	(0.001)	(0.008)	(0.001)	(0.001)	(0.001)
2023	0.038***	0.047***	0.041***	0.033***	0.023*	0.046***	0.041***	0.033***
	(0.010)	(0.001)	(0.001)	(0.001)	(0.010)	(0.001)	(0.001)	(0.001)
Cons.	0.172***	-0.000	-0.000	-0.000	0.158***	-0.000	-0.000	-0.000
	(0.005)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)
N	376253	1033890	1035251	1025562	327514	857213	859749	852616

*Notes: Provides model (2) estimates with an alternative baseline year of 2013-14 instead of 2011-12. Standard errors clustered on schools in parentheses. * p<0.05 ** p<0.01 *** p<0.001*

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