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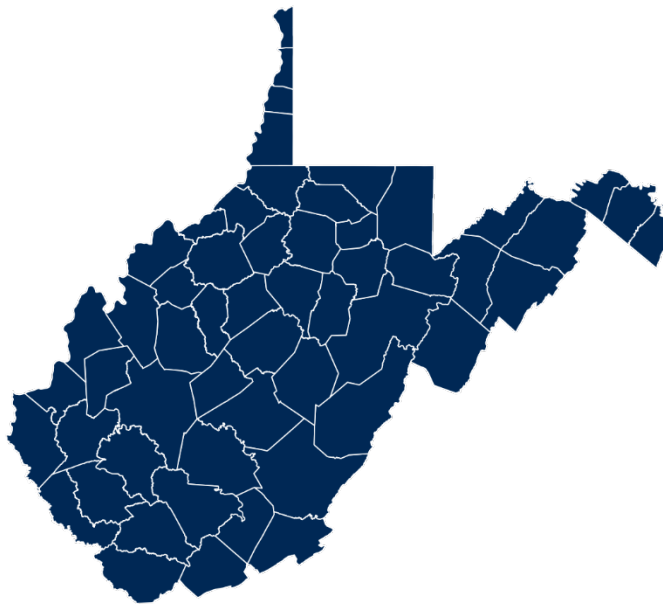INSTITUTE FOR POLICY RESEARCH AND PUBLIC AFFAIRS

Education, Disability, Data

West Virginia's IDEA Data

Developmental Disability in Time and Space

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Acknowledgements and Disclaimers

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3   Executive Summary

This report examines temporal trends and spatial variation in independent educational plans (IEPs) documented in IDEA data in West Virginia. The West Virginia Department of Education (WVDE) delivers the IDEA data as a set of cross-tabulations (i.e., "pivot tables"). From these tables, it was necessary to manually compile a data set addressing the demographics, geography, and trends in the state's children on IEPs. Below, the reader will first find the key takeaways from this analysis. Afterward, the report presents temporal trends in the IDEA data relating to IEPs and standard demographic information. Finally, we present an atlas for IDEA data in West Virginia that addresses spatial variation in the prevalence of IEPs and support staff at the county level.

3.1 Key Findings:

- The data hint at an uptick in IEPs statewide during the global pandemic associated with COVID-19. More research is warranted here.

- A nearly two-thirds majority of students on IEPs are male, while roughly one-third are female.

- Autism, Developmental Delay, Other Health Impairments, and Specific Learning Disabilities have witnessed sharp increases, especially in recent years. Categorization in historical categories for developmental disabilities is on the decline.

- While all racial demographics have witnessed increases in IEPs, Asians, Latinos, and African Americans have risen more sharply.

- The special needs staffing in counties is highly variable in the numbers of certified teachers, service personnel, and para-professionals and the ratio of students to teachers and support staff.

- Staffing levels for students with IEPs are more strained in rural counties than in urban centers.

4   Data Organization and Curation

For background information on the necessity of compiling the IDEA data manually from WVDE's set of cross-tabulations, please see our previous report, "IDEA Data Reporting in West Virginia: Challenges and Opportunities." The following analysis is compiled from multiple years of IDEA data and standardized to assess trends and geospatial variation. This report utilizes the available data from academic years 2017–2018 through 2022–2023. Data categorization is not consistent across years. This is not an error in WVDE's recording but

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reflects changes in categorization schemes and trends in education and medicine. Where data is inconsistent, this report leaves those categories for future analysis.

The work here highlights the need for continued data delivery and recording refinement. In particular, irregular data recording below certain thresholds is problematic in furthering research. Likely, this results from a need to protect the identities of vulnerable populations of students and parents. Standardization along the upper bound for these cases would preserve anonymity and allow systematic compilation of the set of spreadsheets. Also, paying attention to where data is missing or not applicable is necessary. The global pandemic caused by COVID-19 presents challenges in understanding temporal trends in the data. These trends should be considered preliminary and warrant further investigation as the data delivery and recording system stabilizes after the pandemic. Finally, recording NAs or missing data would benefit from a66dopting more modern practices facilitating ease of computation in modern statistical programs.

The data underlying the following analyses were organized in a "long" format to facilitate the following descriptive analyses. The analyses use graphical methods as much as possible. The reader should exercise caution in causal reasoning from the analyses to follow. The report is an exercise in descriptive inference from which causal analyses can reasonably be developed. The report addresses the state of IDEA data. It offers some comparisons across time and space to provide a better understanding of the dynamics of developmental disabilities in young people in West Virginia. Proper causal reasoning will proceed from researchers working more deeply in public policy, public administration, education, and healthcare, integrating public health data with that presented here. In addition to these limitations, the WVDE lists numerous cautions in several footnotes attached to the Section 618 data largely owed to the unique educational environment around COVID-19.

We primarily use data on the "student count" spreadsheets in the following analyses. The data for performance and exits could be more sparse, heavily limiting the options for analysis. The WVDE makes this data available in detail, and we encourage the reader to visit their website for this information.

5 Statewide Trends in IDEA Data

The initial step in the IDEA data is understanding statewide trends with the available demographic data. In what follows, we assess trends in IDEA data related to student sex, age, race, and disability category. A key question moving forward is how COVID-19 will influence the dynamics of special education. Social isolation, in particular, is expected to have a lasting effect on school-age children who endured the pandemic at home.

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Figure 1 displays the statewide count of the total number of students on IEPs across West Virginia in the top panel. The bottom panel displays the percent increase in plans for each year. The American Community Survey estimates West Virginia's school-age (K-12th Grade) population to be 254,556 students for the 2022 academic year. West Virginia's 43,416 students needing special assistance in the same year means roughly 17 percent of the state's students are on independent education plans for developmental disabilities.
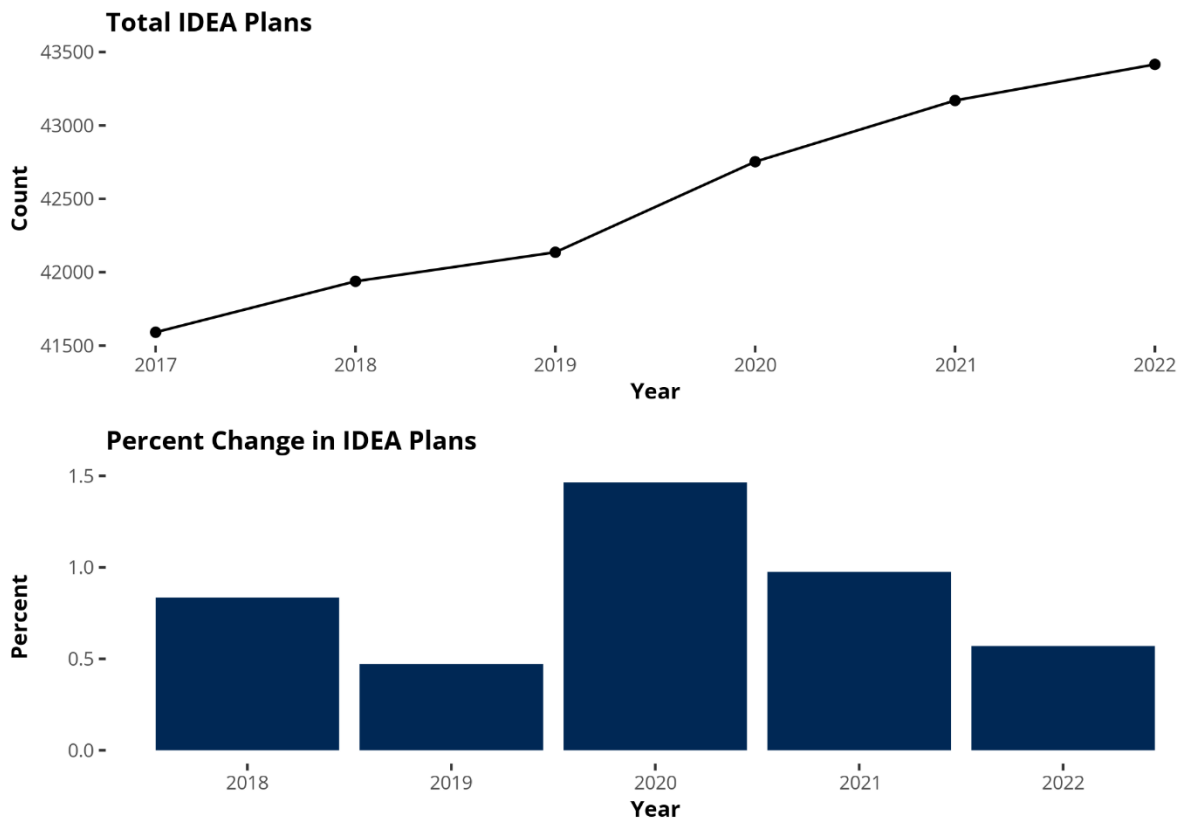
Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 1: Growth in IEPs in West Virginia, 2017–2023

The bottom panel of Figure 1 shows that the onset of COVID-19 for students in 2019–2020 was associated with the largest increase in independent educational plans. Systematic data for student counts began in 2017, which is not a long period for judging trends or an intervention on the scale of COVID-19. Still, the percentage data for 2020–2022 look like a classic intervention and dissipation of the effects of a large shock to the system.

5.1   IEPs for Males and Females

One of the key findings in the data is that males represent a much larger proportion of IEPs than females by a consistent margin of around two to one. Figure 2 displays the trends in counts of independent educational plans for males (top left) and females (top right). The

series for males displays a sharp increase associated with the onset of COVID-19. In part, Figure 2 shows that the increases associated with COVID-19 in Figure 1 are disproportionately from male students. The series for females increases, but steadily so throughout.
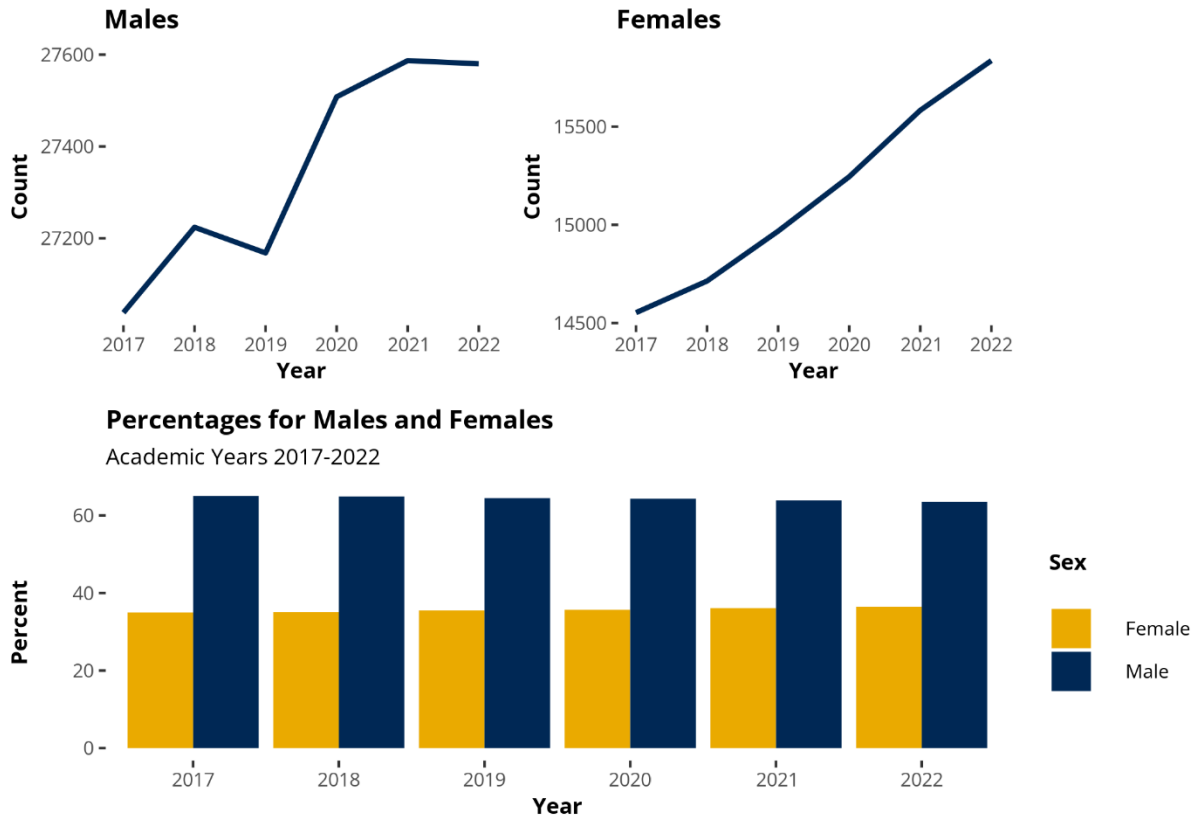
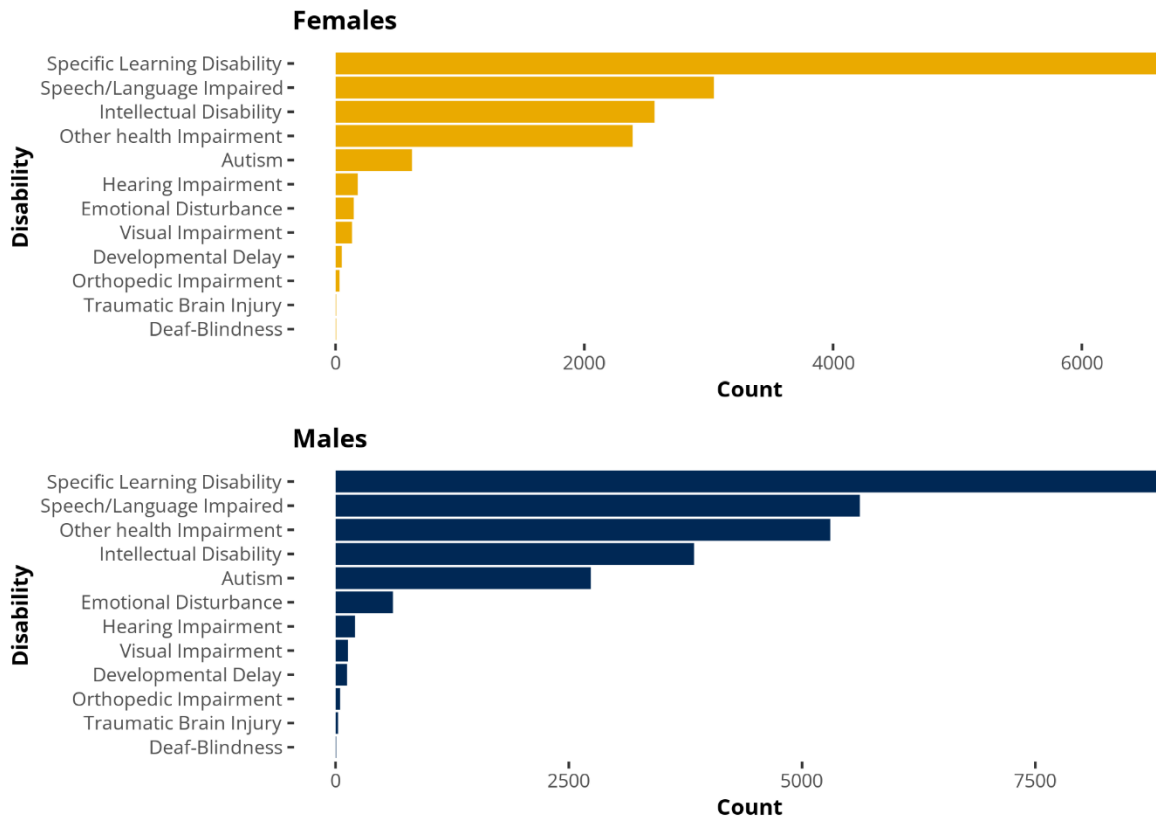Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 2: IEPs for Male and Female Students

Figure 2's bottom panel displays the yearly percentage of males and females on IEPs. Consistently, males make up around two-thirds of IEPs, while females make up around one-third. This is consistent throughout the series. Work should assess whether this discrepancy relates to real features of public health or the social science of diagnosis and categorization in the context of the educational system.

Figure 3 displays the counts for disability categories for females (top) and males (bottom) for the 2022–2023 academic year. A persistent theme in the IDEA data is a rise in the number of IEPs based on specific learning disabilities. Specific learning disabilities (SLDs) are psychological disorders that directly affect the ability to use or understand language.[1] Specific learning disabilities are the top disability categorization for both females and males and by quite a wide margin. Specific learning disabilities are followed in prevalence by speech or language impairments. These involve motor or physical impairments in these systems. These categorizations are on top for both males and

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[1] See the US Department of Education's definition here: https://sites.ed.gov/idea/regs/b/a/300.8.

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females. The data show differences moving to the third most prevalent categorization. For males, other health impairments are the third-ranked categorization, while for females, intellectual disabilities rank third. These disabilities switch places in the fourth spot.
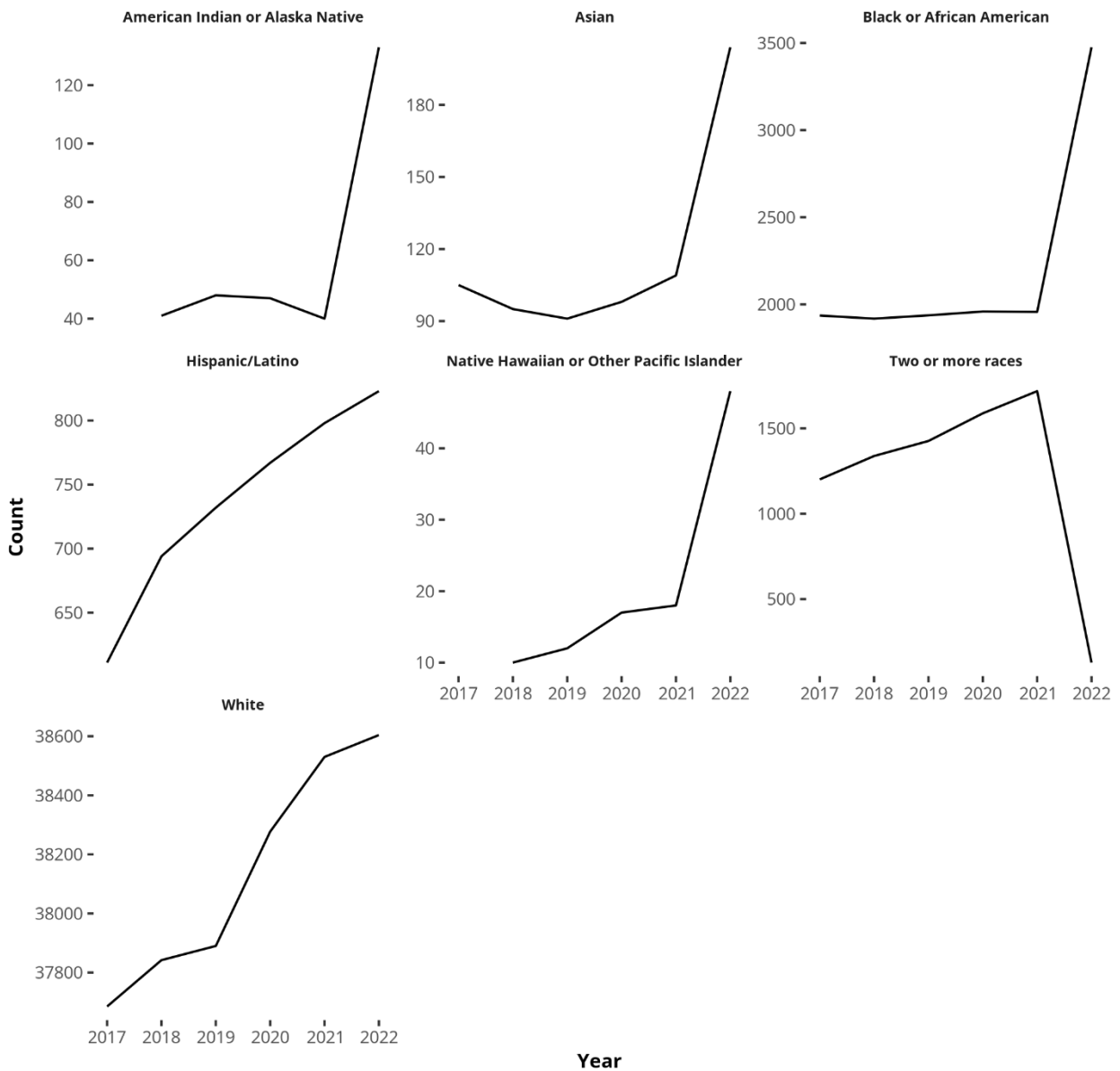

Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 3: Disability Categorization for Females and Males, 2022–2023

Below autism, at the fifth rank for females and males alike, there are more differences. Males are over four times as likely to be categorized as having an emotional disturbance disability than are females, with 615 male students to 146 females. While males see increased emotional disturbance, females split evenly around emotional disturbance, hearing, and visual impairments.

5.2 IEPs by Student Race or Ethnicity

Figure 4 displays the trends in IEPs by race. The series in Figure 4 should be interpreted cautiously, given WVDE's disclaimers about the data and changes in the forms of testing from

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Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 4: Trends in IEPs by Student Race or Ethnicity

year to year.[2] The US Census also cautions comparing smaller racial categories as they rely on different data sources and methodologies.[3] Figure 4 shows sharp increases in IEPs among Asians, Native Americans, Alaskans, Hawaiians, and African Americans from 2021 onward.

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[2] See the WVDE's IDEA data dashboard for information on the necessary caution and the types of tests administered yearly. WVDE's dashboard can be found here: https://zoomwv.k12.wv.us/Dashboard/dashboard/7310.
[3] The US Census "Quick Facts" for West Virginia can be found at: https://www.census.gov/quickfacts/fact/table/WV/.

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Hispanics and Latinos, along with Caucasians, show more incremental increases, though all series have risen over time except for mixed-race students. Whether the series for mixed-race students is evidence of a real decline versus changes in self-identified race is a question for another analysis.

Figure 5 displays the breakdown of disability categories for white and black students for 2022–2023. The reader should note the different x-axis scales as West Virginia's population is around 92 percent white. We leave the other racial categories in Figure 4 for another time. These small numbers present two challenges. First, the numbers of these students are too small to make comparisons with the other groups reliably. Second, their numbers are small enough that deeper analysis could present identification issues for students in these categorizations and communities.

Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 5: Disability Category for Black and White Students, 2022–2023
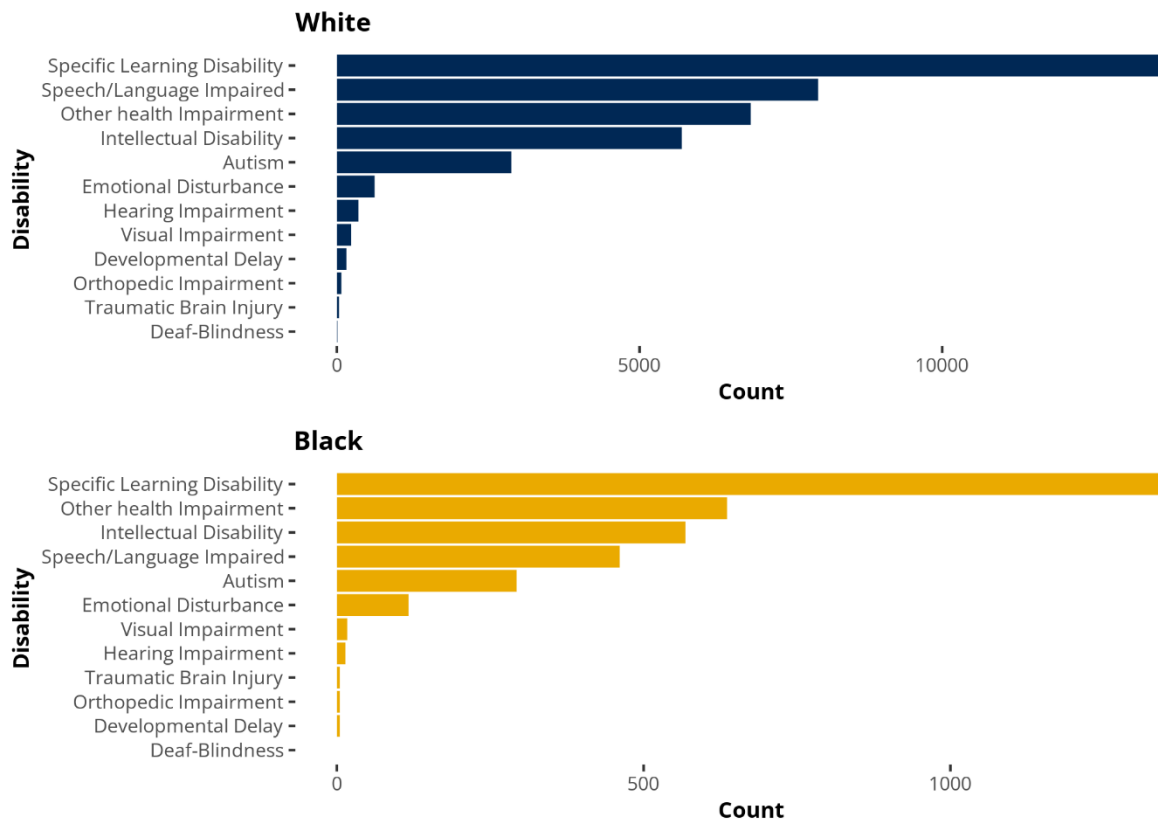
As with the breakdown by sex, SLDs are the most prevalent disability category among white and Black students. Black students are categorized as having other health impairments next, while white students are categorized more often as having a speech or language impairment. For white students, the third-ranked category is other health impairments; for Black students, the third is intellectual disability. Autism rates fifth for each group.

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From Figure 3, we learned that males are more often categorized with disorders relating to emotional disturbance than females. Figure 5 suggests that among this higher rate among males, Black students are more likely to be categorized with emotional disturbance disorders. For every 62 white students, one is categorized as having emotional disturbance disorders. For Black students, that number is 1 in 29.

5.3 IEPs by Disability Category

Figure 6 shows trends in categorizing developmental disabilities across the WVDE Section 618 data period. SLDs, autism, other health impairments, and developmental delays are on the increase. Developmental delay was only recently included in the development disability data. Equally remarkable are the sharp declines in the categorization of emotional disturbance, intellectual disability, and hearing and orthopedic impairments. The remaining disability categories are variable and less distinct as increasing or decreasing categories.

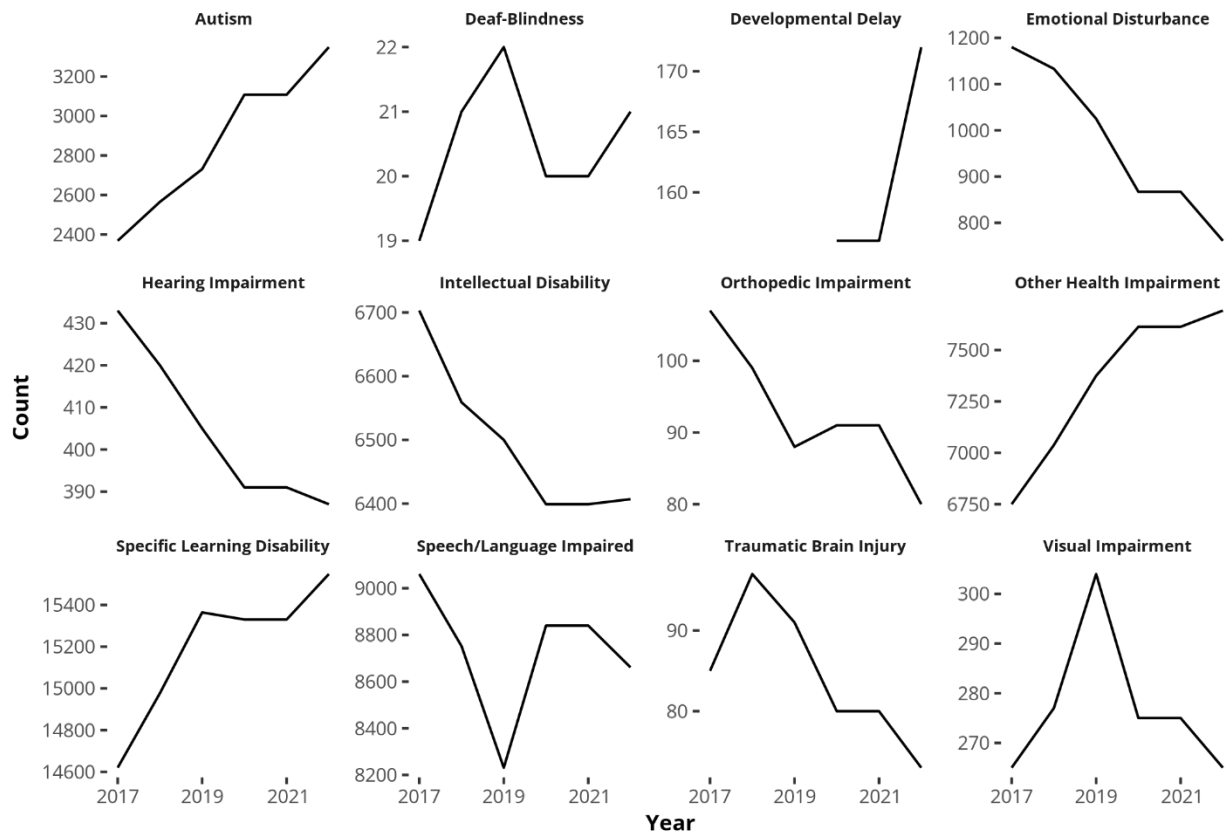Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.
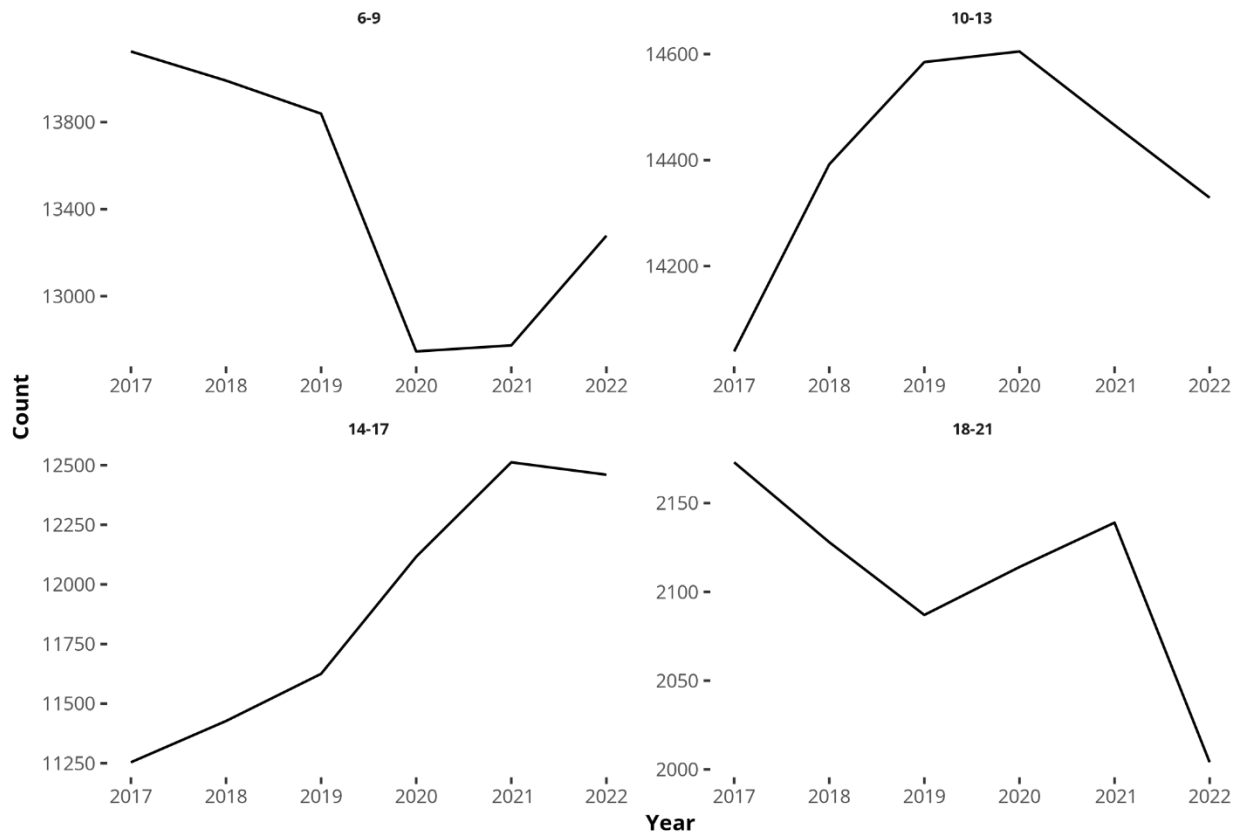
Figure 6: Trends in IEPs by Student Disability Category

Figure 6 begs whether the dynamics evident in the graph are a product of emergent changes in problems associated with public health, improvements in medicine and technology, or changes in definitions and standards for diagnosis in the medical and education professions.

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Understanding the logistics of these dynamics in the classroom is also important. As IEPs become more individualized, this will likely benefit students whose instruction can be tailored to their distinct disability. Conversely, IEPs present real logistical problems in the classroom, especially for students and teachers, as personnel, expertise, and resources spread thin.

5.4 IEPs by Student Age Grouping

Figure 7 shows the trends in IEPs by student age group. We exclude data for children five years of age as data is included in WVDE's spreadsheets for only the latter half of the data. Figure 7's most consistent grouping is 14–17-year-olds, who witness a steady increase across the period of the data. As shown below, this is largely owed to the rise in the categorization of SLDs in students. For those 10–13 years of age, IEPs rise, peaking in 2019–2020 and declining thereafter. The 6–9-year-old category was higher early in the series, declining during peak COVID years and rebounding thereafter. Though jagged, the 18–21 age range declines over the series, especially as students exit the educational system.
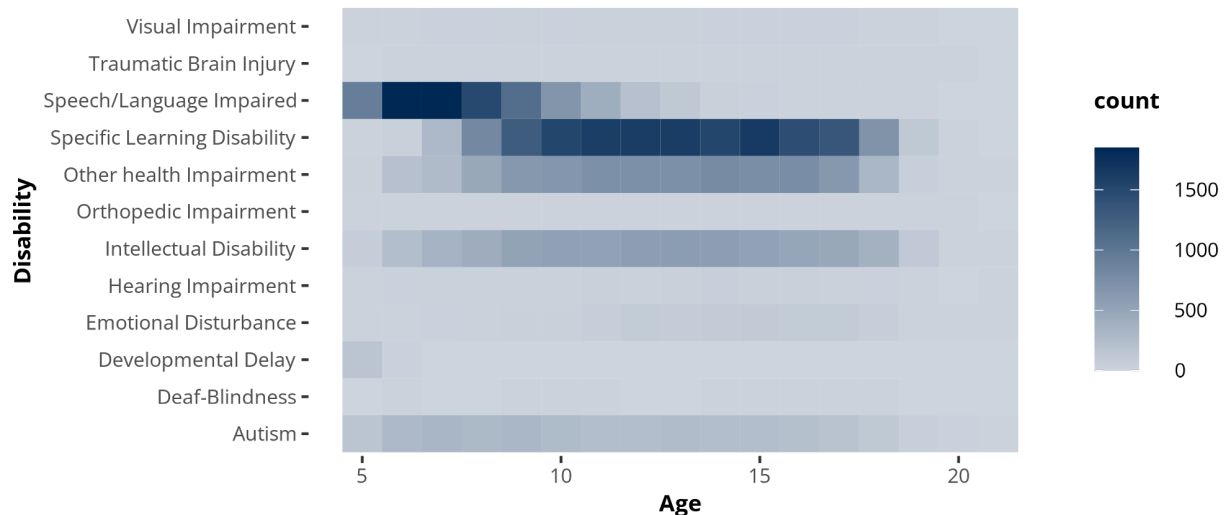

Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 7: Trends in IEPs by Student Age Grouping

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Figure 8 contains a heatmap of student age and disability categories for IEPs. The darker areas represent ages and disability categories with higher numbers of students, with lighter shades indicating fewer students. Note the darker bands in Figure 8. The speech and language-impaired student is on an IEP quite early from the entry to public schools at 5–6 years of age. These physical impediments to understanding or using language are noticeable early. Psychological disorders associated with speech and language are sources of IEPs much later.

In the band of darker colors describing age and SLDs, the peak for these as a basis of IEPs is from 10–16 years of age. The rise of SLDs as a disability category and the age at which it is identified as a basis for an IEP explains to some degree why we see a steady increase in students aged 14–17 on IEPs. Intellectual disability is a cause of IEPs in the same general age band. Figure 8 also shows the darkening band for Autism as more students have been diagnosed in recent years. When looking at trends, especially in our age brackets, it is important to remember that students on IEPs will likely remain in the count as they progress through school. So, some of these figures for age have considerable inertia from year to year.
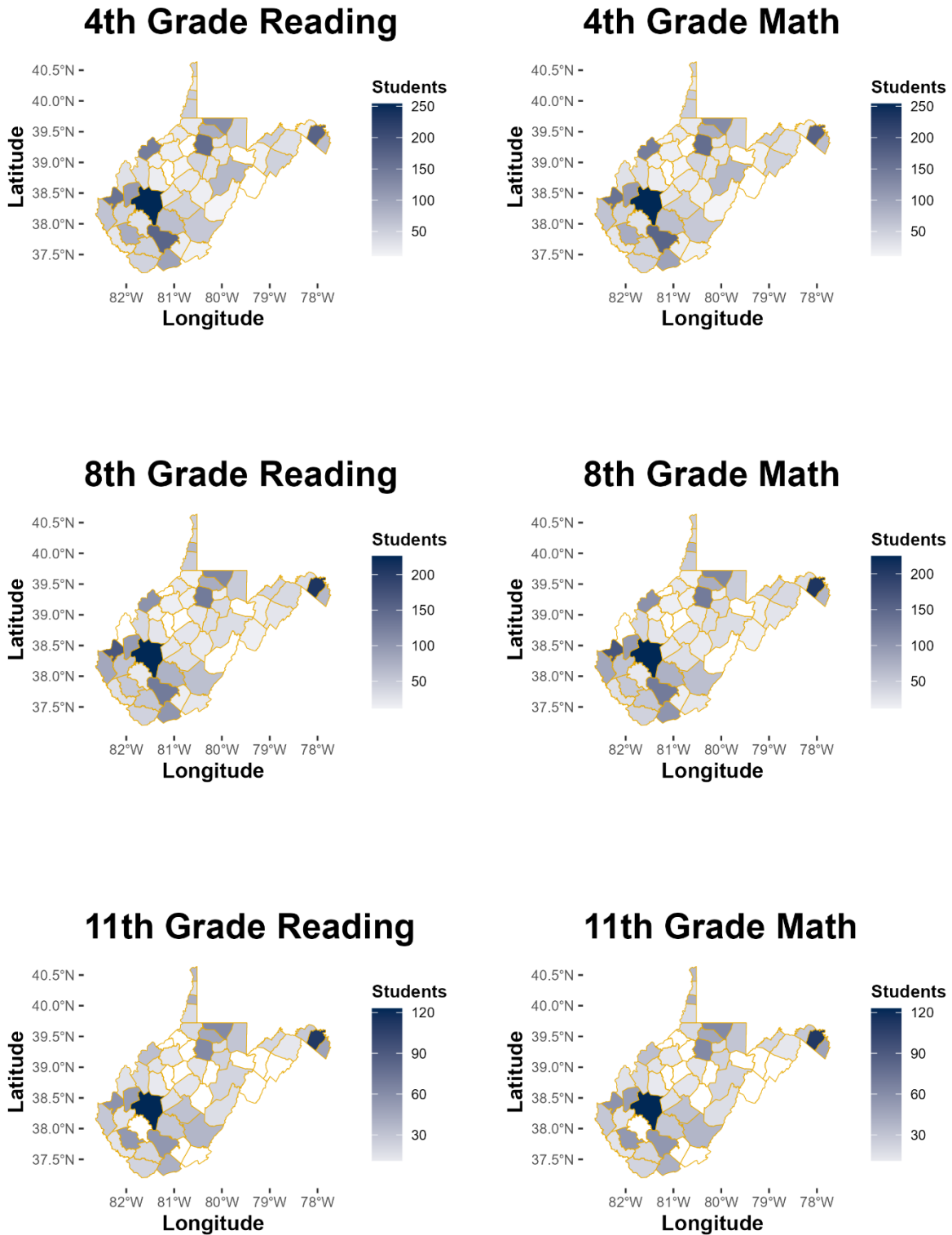

Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 8: Heatmap of Student Disability Categorization by Age Grouping

The above analyses use the data to describe temporal trends associated with key student demographics as far as the short data series will allow. They also give a clear snapshot of disability category, sex, race, and age in the academic year 2022–2023. Below, the analyses explore IDEA data on student counts and special education personnel spatially as a county atlas of the IDEA data.

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6   An IDEA Data Atlas

Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 9: County Maps of IEPs by Grade Level

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Figure 9 maps IEPs by county for reading in the left column and math in the right column for 4th, 8th, and 11th grade. Darker shades for the county indicate greater numbers of students with IEPs. The first broad thing to notice is that the maps for reading and math at each grade level are similar. Students needing accommodation and assistance in reading are likely to need it in math and vice versa.

The maps also have a great deal of similarity from grade to grade. As mentioned above, students on an IEP in fourth grade will likely remain on an IEP as they progress through school. The exception here is the leap from 8th to 11th grade, with vastly reduced numbers of students. The same is true across age groupings above as students progress, age out, graduate, or leave public education for other reasons. The data for participation and achievement in reading and math are plagued by sparsity and highly variable benchmarks for protecting identity in spreadsheets. This makes it more difficult to hypothesize the differences across grades.

Figure 9 also shows that the highest concentrations of students with IEPs are found in counties with urban-like population centers (e.g., Monongalia, Kanawha, Raleigh, Harrison). Of course, these population centers contain higher numbers of students. In addition, where support professionals and resources for identifying students with developmental disabilities are higher, we would predict greater densities of IEPs, all else equal.

Figure 10 maps the total number of special education teachers, service personnel, and para-professionals by county as raw counts in the left column and student-staff ratios in the right column. In the figure below, we include certified and non-certified professionals from each group of staff.

The top row of Figure 10 speaks to the sparsity and unevenness in special education teachers and support staff. Counties that are home to population centers have more students on IEPs and more staff to teach and support those students. Leaving the counties with population centers, many rural counties have high student-staff ratios. Clay and Logan counties, for example, have student-staff ratios exceeding four. Remember, these students are on IEPs, and many have specific disability and accommodation requirements. A teacher-to-student ratio common in general education is especially pernicious in a special education setting.

A similar story appears for service professionals and para-professionals. Para-professionals and teachers' aides are especially scarce in more rural counties in West Virginia. Taking the maps altogether means that rural counties have higher student-staff ratios, and in these instances, teachers or service personnel also lack the assistance of teachers' aides.

This report has described several temporal and spatial approaches to understanding children with developmental disabilities on IEPs. The analysis demonstrates the data's importance for integration with other public policy, educational, and public health measures.
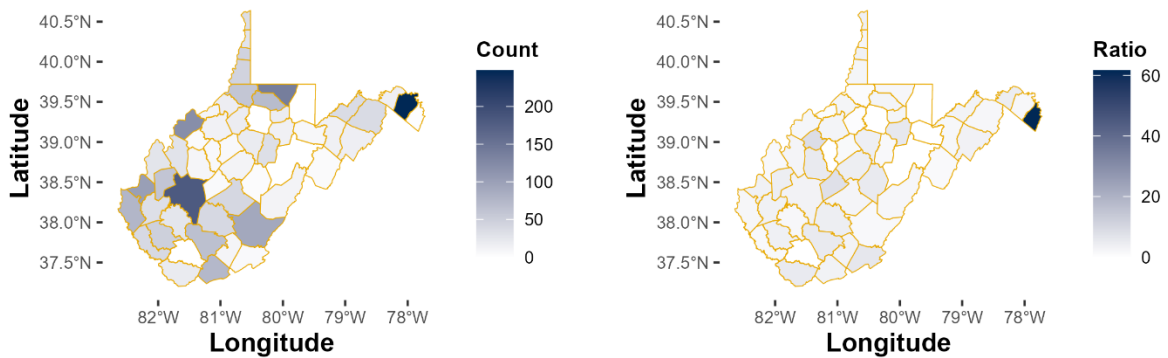
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Special Education Teachers
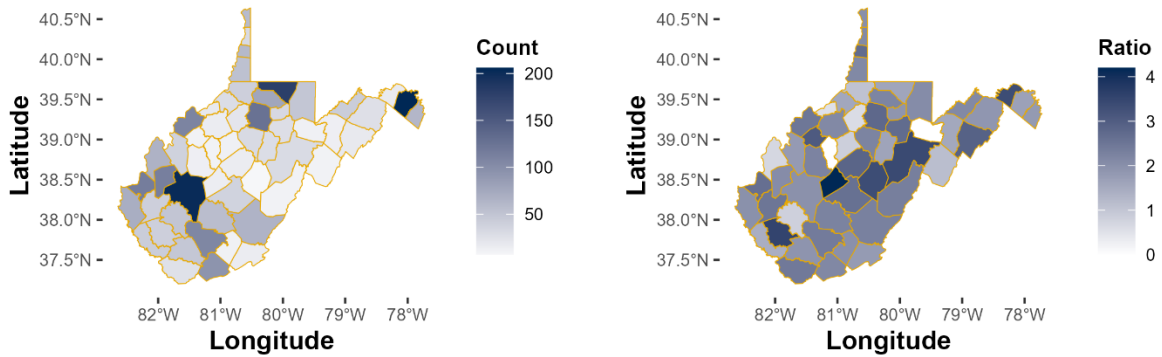
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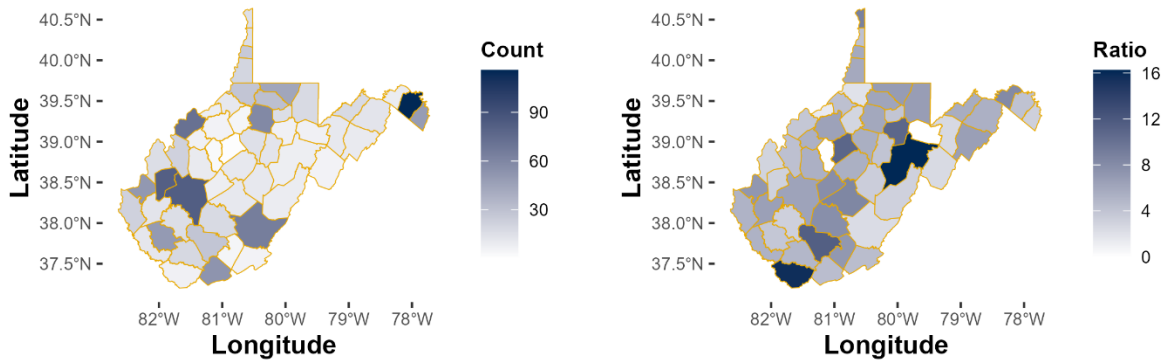
Para-Professionals

Source: Compiled by the WVU Institute for Policy Research & Public Affairs from WVDE IDEA Section 618 data.

Figure 10: County Maps of Staffing Levels and Student-Staff Ratios, 2022–2023

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7 Institute for Policy Research and Public Affairs Partnerships

The Rockefeller Institute for Policy Research and Public Affairs (IPRPA) in Eberly College at WVU is a non-partisan source of research, data, and analysis for state and local officials in West Virginia and the broader Appalachian region. IPRPA conducts basic and applied research on various problems important to the region and related to public policy and broader social, political, and economic transitions.

We employ the full range of qualitative and quantitative research methodologies to societal problems to help public, non-profit, and private sector partners plan, strategize, and adapt to changes and challenges in the region, be they physical or biological, economic, governmental, or societal. We have extensive expertise in developing and maintaining large-scale data infrastructures to answer fundamental questions about public policy and its effects on communities. Our partnerships span the public, nonprofit, and private sectors and develop research co-designed with our stakeholders, clients, and communities, improving the use of research and data-driven decision-making in tackling important policy problems. The Institute aims to spur evidence-based policymaking and uptake of research in the state and region.

Please contact the [Institute for Policy Research and Public Affairs (IPRPA)](#) for questions and technical assistance in pursuing any recommendations outlined here.

7.1 How to Cite this Report

Workman, Samuel, and Oreoluwa Runsewe. 2024. "West Virginia's IDEA Data: Developmental Disability in Time and Space." Institute for Policy Research and Public Affairs (IPRPA), West Virginia University (WVU). IPRPA-2024-006.

7.2 Our Data Visualizations – Media

All tables and data visualizations in this report are available. Please get in touch with us here: [policyresearch.wvu.edu/contact-us](#).