

# Map of College-going Students in Wisconsin 2010-2019: Explainer

## Overview

In this project, we build an interactive map showing high school completion and college-going trends in Wisconsin from 2010 and 2019 at the county and the school level. In particular, we draw attention to the trends for “[economically disadvantaged](#)” students, a term used by Wisconsin’s Department of Public Instruction. We use this variable to identify students who are potentially eligible for Pell grants; doing so can help the Office of Admissions and Recruitment at the University of Wisconsin-Madison recruit more Pell-eligible students. This explainer describes the data sources and sample used in the analysis, how we define key terminologies and measurements, important descriptive statistics, and how to use the Tableau interactive map.

## Data Sources and Sample

We used two datasets from the Wisconsin Department of Public Instruction (DPI)’s Wisconsin Information System for Education (WISE) in this project: [High School Completion](#) and [Postsecondary Enrollment](#) data from 2009-10 through 2018-19 school years<sup>1</sup>. The Postsecondary Enrollment data pull college-going records from the National Student Clearinghouse (NSC). Due to NSC coverage rates, these records may underrepresent actual postsecondary enrollment.

We limit our sample to the high school students who: (a) earned a regular diploma or equivalent *within four years* of entering high school and (b) were enrolled in postsecondary institutions in the *first fall semester* following their high school exit date (i.e., by November 1). We consider both public schools and charter schools. We drop virtual schools from the analysis because virtual schools draw students from multiple school districts and counties<sup>2</sup>.

To map schools and counties on the Tableau dashboard, we pull geographic information from two sources: [location data for public schools in Wisconsin](#) and [2011 crosswalk between DPI and NCES school directory](#) that is linked with the Common Core of Data (CCD). These datasets provide information on schools’ physical address, zip code, longitude, latitude, etc.

DPI data provide school-level aggregate information, meaning that only school-level counts of high school completers and college enrollments are available. DPI data disaggregate the numbers by students’ demographic characteristics (e.g., economic status, gender, race/ethnicity) and postsecondary institution types (e.g., in-state versus out-of-state, 2-year versus 4-year). To protect the privacy of students<sup>3</sup>, DPI does not disclose data about a small subset of students (e.g., if there are few students with disabilities in a specific school).

In addition, there are errors with a few high schools’ completion data in specific years (See Appendix B). These schools report larger number of college enrollments than that of high school completions. For example, nine economically disadvantaged students completed high school in East High School in Madison Metropolitan School District in 2016-17, and 94 of them went on to college. After discussing with DPI, we replaced the errors using the average

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<sup>1</sup> High school completion data is available from 2009-10.

<sup>2</sup> There are 10-50 high schools with missing values for the “virtual” variable each year. Although many of those schools are e-schools, some are regular high schools with missing information. These schools are dropped from the analysis. See Appendix A to learn more about how we identified virtual schools.

<sup>3</sup> <https://dpi.wi.gov/wisedash/help/redaction>

of adjacent years for the schools in two school districts (Madison Metropolitan and Fort Atkinson) in 2016-17.

## Definitions<sup>4</sup>

### STUDENT GROUP

DPI data categorizes students in different groups. We include three categories in the dashboard: (1) Economic status, (2) Gender, and (3) Race/Ethnicity. Economic status has two sub-categories: Economically Disadvantaged, and Not Economically Disadvantaged. Gender has two sub-categories: Female and Male. Race/Ethnicity has multiple sub-categories: White, Black, Hispanic, Asian, American Indian, Two or More. See below to know more about how each category is defined and measured. When summing *all* sub-categories in each group, the total equals the value reported in the "All Students" group.

### ECONOMICALLY DISADVANTAGED

An "economically disadvantaged" student is a student who is a member of a household that meets the income eligibility guidelines for free or reduced-price meals (less than or equal to 185% of Federal Poverty Guidelines) under the National School Lunch Program (NSLP) or an approved alternative mechanism.<sup>5</sup> In the absence of reliable student-level NSLP meals eligibility data, districts may consider using available county data, scholarship information, postsecondary options information, etc. Economically disadvantaged students meet requirements for coding as F, R, or A as described on [Economically Disadvantaged Data Collection and Reporting](#).

### GENDER

Male or female sex of a student. Non-binary students are not recorded in the data.

### RACE/ETHNICITY

A person's "race/ethnicity" is the self-reported racial and/or ethnic group to which the person belongs or with which he or she most identifies. Ethnicity is coded as either Hispanic/Not Hispanic. Race includes the following five options: Asian; American Indian or Alaskan Native; Black or African American; Native Hawaiian or other Pacific Islander; or White. See more at the DPI webpage on [Racial and Ethnic Data](#).

### INSTITUTION LEVEL (Postsecondary Enrollment Data)

Set of categories that describes postsecondary institutions offering educational programs of similar duration.

- Less than 2-year Institution.
- 2-year Institution.
- 4-Year Institution.
- Multiple Levels: If a high school completer attended institutions at more than one of the above levels then he/she is counted only in the Multiple Levels category.

### INSTITUTION TYPE (Postsecondary Enrollment Data)

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<sup>4</sup> <https://dpi.wi.gov/wisedash/help/glossary>

<sup>5</sup> Prior to 2005-06, only students eligible for free or reduced-price meals based on an approved application or direct certification under NSLP were counted as economically disadvantaged (no alternative mechanism).

Set of categories that describes postsecondary institutions with similar governance.

- Public Institution.
- Private Institution.
- Multiple Types: If a high school completer attended institutions of more than one of the above types then he/she is counted only in the Multiple Types category.

#### INSTITUTION LOCATION (Postsecondary Enrollment)

Set of categories that describes the state where a postsecondary institution is located relative to Wisconsin.

- In-State Institution.
- Out-of-State Institution.
- Multiple Locations: If a high school completer attended institutions in more than one of the above locations then he/she is counted only in the Multiple Locations category.

### Measures

The dashboard provides two types of metric: (1) count and (2) rate of high school completion and college enrollment. The "count" metric is headcount of students who complete high school or enroll in college. High school completion rate is the number of students who complete high school as percentage of the number of students who started 9<sup>th</sup> grade together. College enrollment rate is the number of students who enroll in postsecondary institutions as percentage of the number of students who completed high school.

High school completion rate: 
$$\frac{\text{Number of students who completed high school within 4 years}}{\text{Number of students who started 9th grade together}}$$

College enrollment rate: 
$$\frac{\text{Number of students who enrolled in postsecondary institutions (first fall)}}{\text{Number of students who completed high school within 4 years}}$$

## Descriptive Statistics

[Table 1] The number of high schools (2005-06 through 2018-19), by agency type

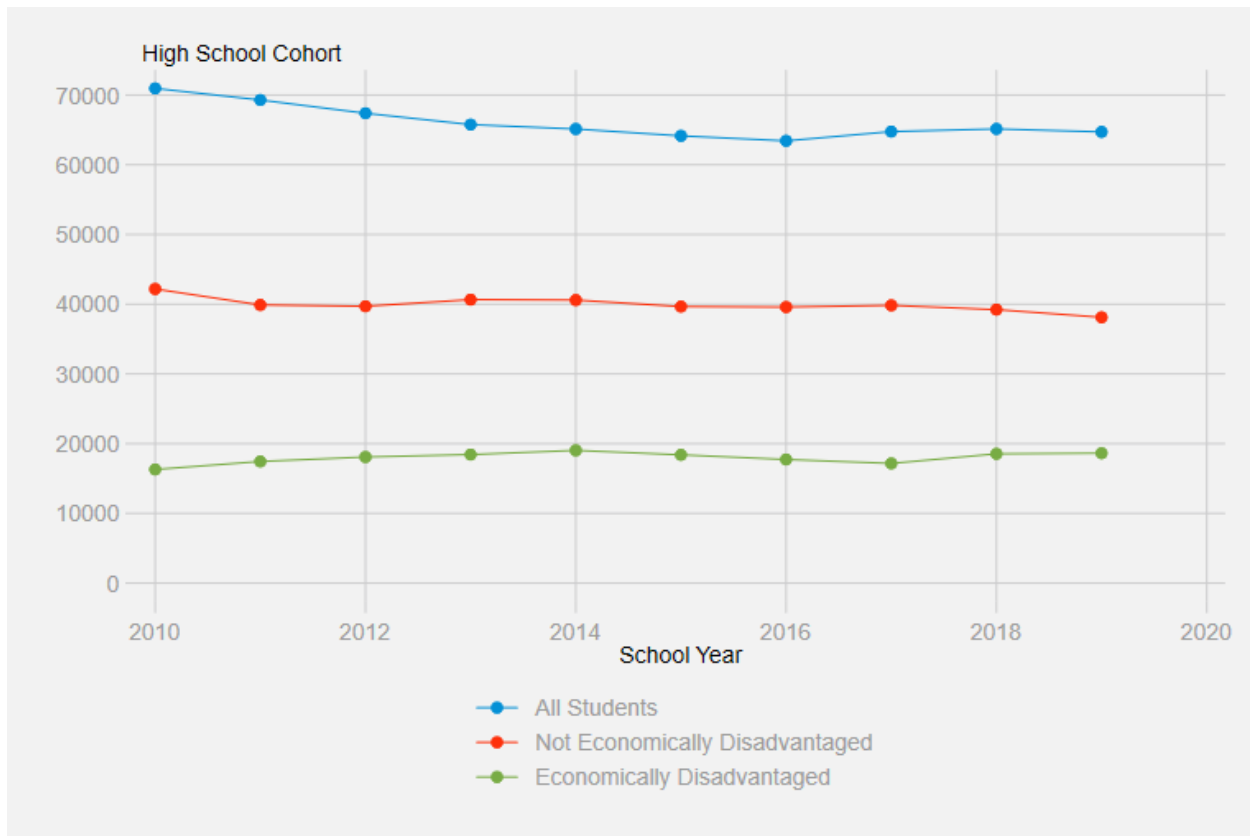
SCHOOL_YEAR	AGENCY_TYPE			Total
	Non-District Charter Schools	Multidistrict Charters	Public school	
2005-06		1	474	475
2006-07			480	480
2007-08	2	2	491	495
2008-09	2	3	491	496
2009-10	2	1	490	493
2010-11	3	1	494	498
2011-12	4	1	485	490
2012-13	4	3	482	489
2013-14	4	1	481	486
2014-15	5	1	485	491
2015-16	4		474	478
2016-17	5	1	489	495
2017-18	5	1	484	490
2018-19	5	1	475	481

[Table 2] How many students completed high school and went to college? (2005-06 through 2018-19)

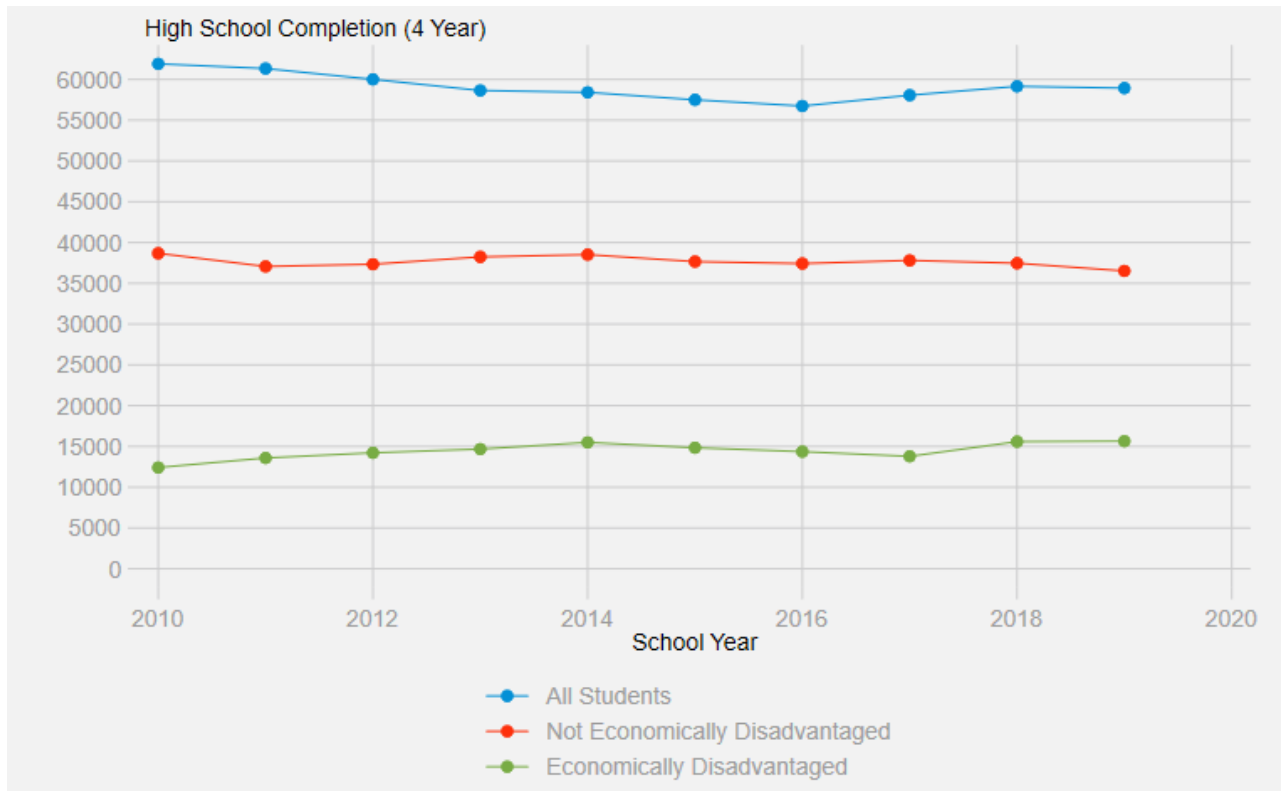
SCHOOL_YEAR	9th grade cohort	high school completion	college enrollment
2005-06	-	-	36687
2006-07	-	-	37375
2007-08	-	-	37816
2008-09	-	-	37449
2009-10	70954	61912	37508
2010-11	69290	61336	37187
2011-12	67387	60009	36839
2012-13	65763	58647	36623
2013-14	65128	58417	36536
2014-15	64145	57503	36037
2015-16	63426	56741	35539
2016-17	64759	58062	36629
2017-18	65141	59154	36638
2018-19	64714	58934	35739

[Table 3] How many Economically Disadvantaged students completed high school and went to college? (2005-06 through 2018-19)

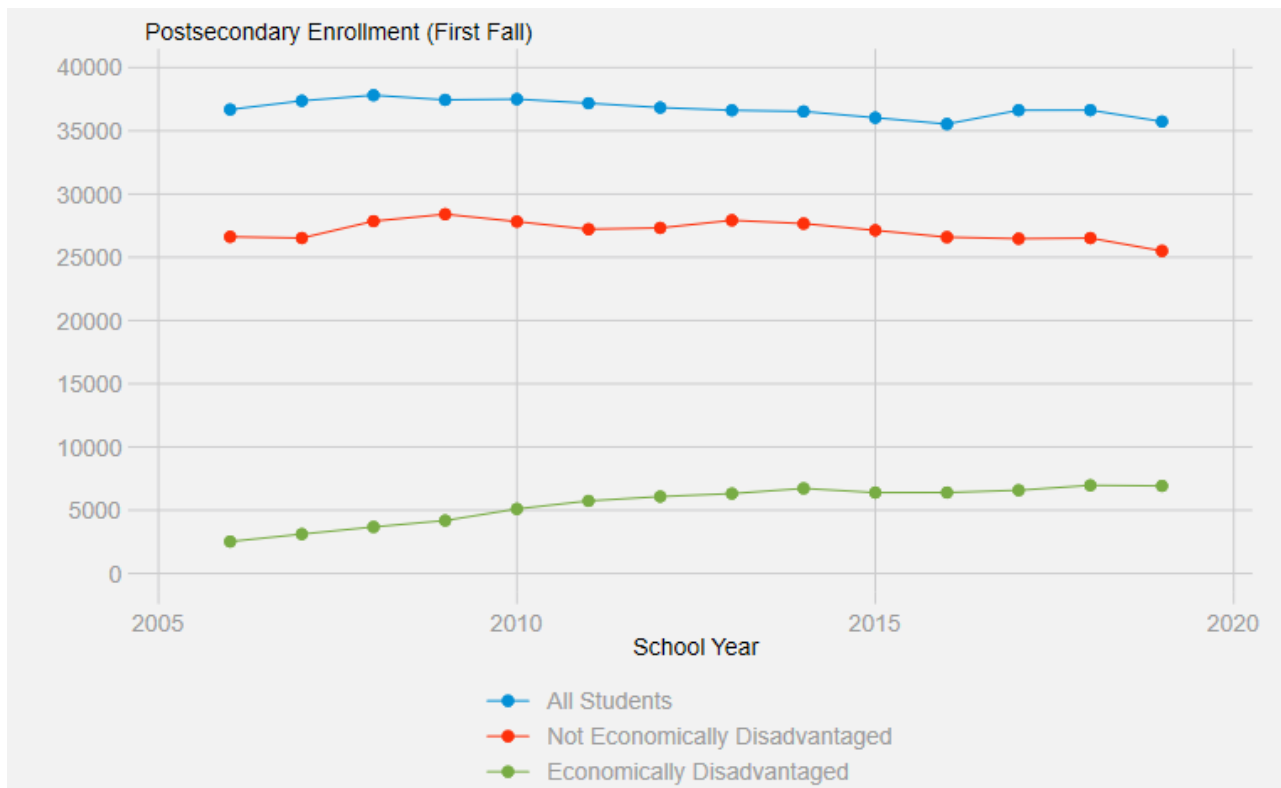
SCHOOL_YEAR	9th grade cohort	high school completion	college enrollment
2005-06	-	-	2521
2006-07	-	-	3112
2007-08	-	-	3677
2008-09	-	-	4183
2009-10	16297	12413	5103
2010-11	17443	13585	5737
2011-12	18085	14222	6077
2012-13	18433	14675	6315
2013-14	19034	15497	6725
2014-15	18395	14841	6392
2015-16	17729	14361	6398
2016-17	17166	13784	6580
2017-18	18539	15587	6965
2018-19	18632	15644	6921



[Figure 1] Trend of high school enrollment (9<sup>th</sup> grade cohort)



[Figure 2] Trend of high school completion (within four year)

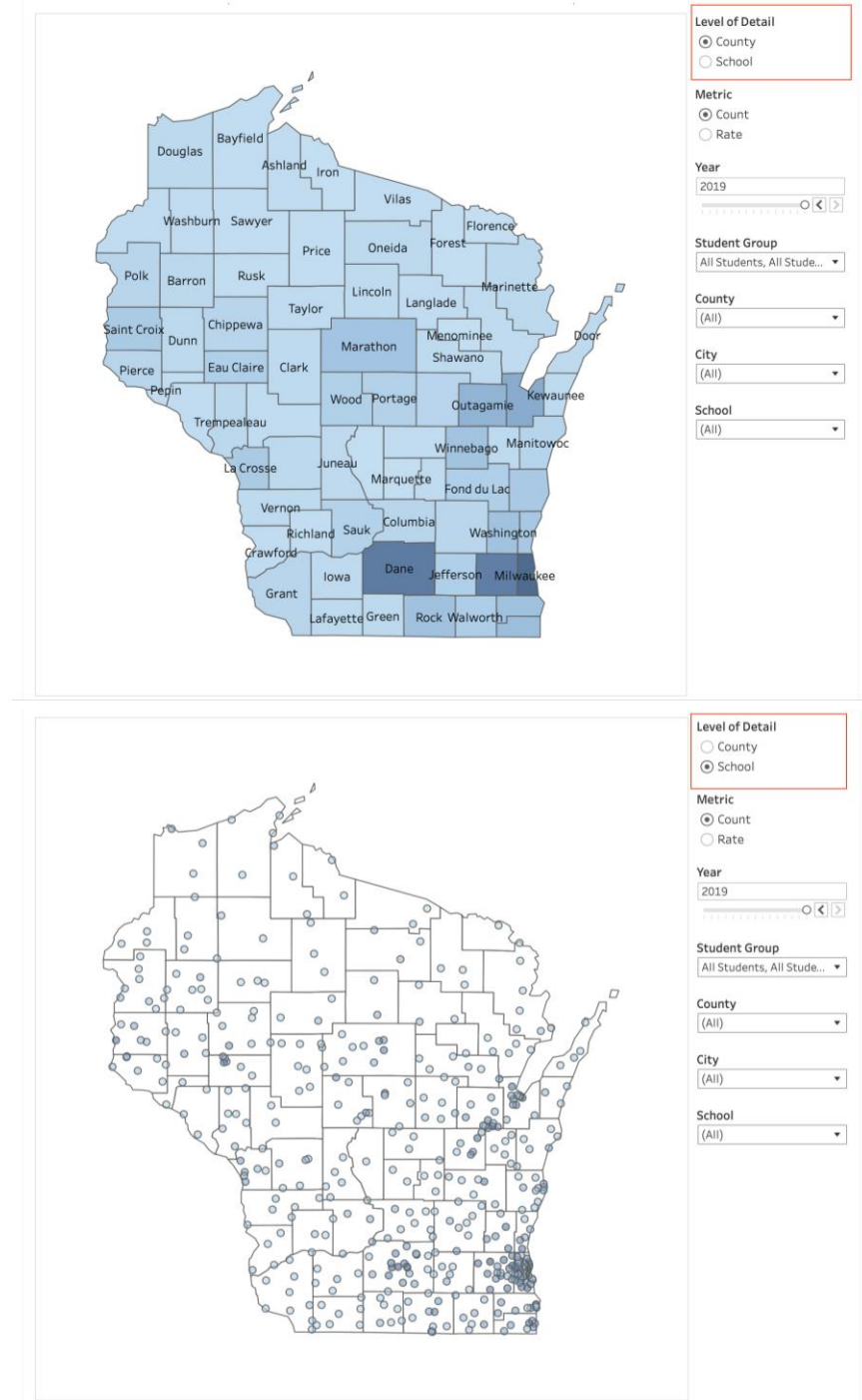


[Figure 3] Trend of college enrollment (first-fall semester)

## How to Use the Tableau Dashboard

### Filter shelf on the right panel

The Tableau dashboard displays two types of visualization: (1) county and (2) school level map. Users can switch between county- and school-level map by using “Level of Detail” filter. The color shades represent the size of high school completion/college enrollment (i.e., darker shade means more students)



Users can check high school completion and college enrollment trends in each year by moving the slide bar for the “Year” filter. If scrolled all the way to the left, the dashboard will display ‘All’ years, accumulating data from 2005-06 through 2018-19 school years. Users can also search and highlight specific counties, cities, and schools of interest by using “County,” “City,” and “School” filters. Simply untick the box for ‘(All)’ option and check the box for specific counties/cities/schools of interest. Users can search specific counties/cities/schools in the dropdown menu or use the search function on the bottom.

**College Enrollment Dashboard**

This visualization provides information on Wisconsin high school students' college enrollments from 2006 to 2019. It indicates schools or counties that have higher college enrollments (by total number or by percentage). Calculate students completing high school in 4 years and enrolling in any postsecondary institution in the first fall semester after high school completion date.

- > Use the filters at right to toggle between school/county level details or between count/rate metrics.
- > Scroll over a school/county to see trends over time.
- > An “economically disadvantaged” student is a student who is a member of a household that meets the income criteria.

**Filters:**

- ☐ (All)
- ☐ Adams
- ☐ Ashland
- ☐ Barron
- ☐ Bayfield
- ☐ Brown
- ☐ Buffalo
- ☐ Burnett
- ☐ Calumet
- ☐ Chippewa
- ☐ Clark
- ☐ Columbia
- ☐ Crawford
- ☐ Dane
- ☐ Dodge
- ☒ Door
- ☐ Douglas
- ☐ Dunn
- ☐ Eau Claire
- ☐ Florence
- ☐ Fond du Lac
- ☐ Forest
- ☐ Grant

**City:** (All)

**School:** (All)

**Level of Detail:**

- ☒ County
- ☐ School

**Metric:**

- ☒ Count
- ☐ Rate

**Year:** 2019

**Student Group:** All Students, All Students

**Search:** Door

“Student Group” filter allows users to explore specific student groups of interest.

**Level of Detail:**

- ☒ County
- ☐ School

**Metric:**

- ☒ Count
- ☐ Rate

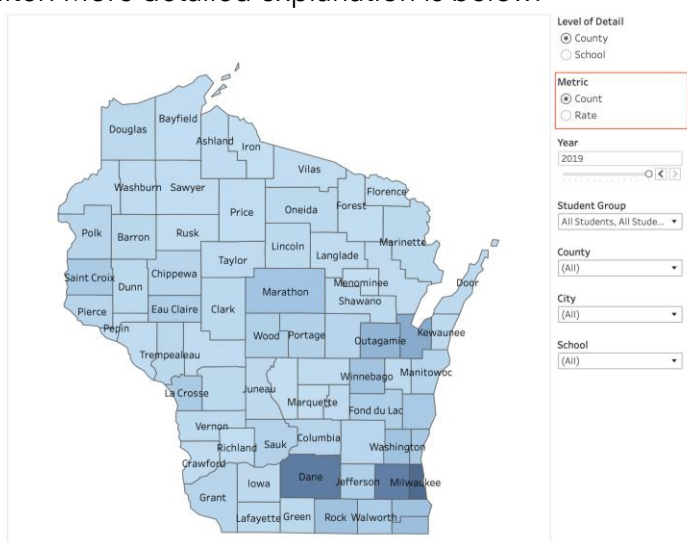
**Year:** 2019

**Student Group:**

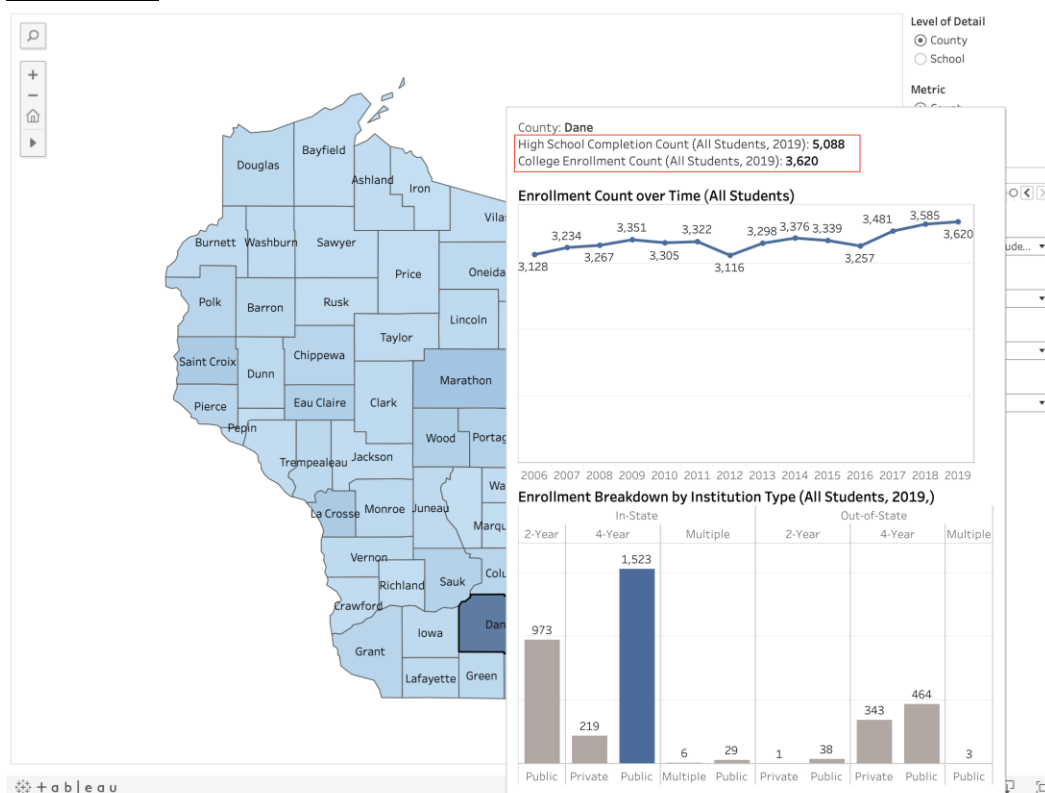
- All Students, All Students
- Economic Status, Econ Disadv
- Economic Status, Not Econ Disadv
- Economic Status, Unknown
- Gender, Female
- Gender, Male
- Race/Ethnicity, Amer Indian
- Race/Ethnicity, Asian
- Race/Ethnicity, Black
- Race/Ethnicity, Hispanic
- Race/Ethnicity, Two or More
- Race/Ethnicity, Unknown
- Race/Ethnicity, White



The dashboard provides two types of metric: (1) count and (2) rate of high school completion and college enrollment.<sup>6</sup> Users can switch between count and rate metrics by using "Metric" filter. More detailed explanation is below.



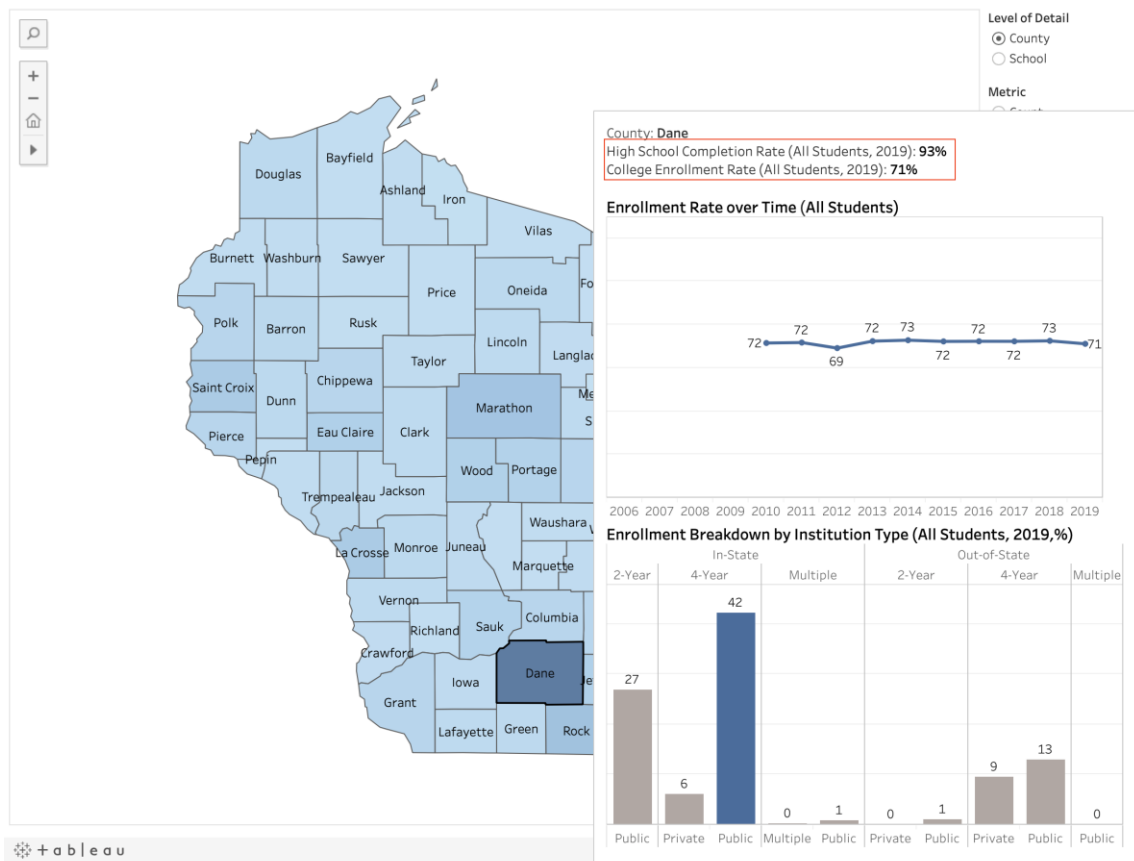
Hover over a specific county (in the county-level view) or a school (in the school-level view) to see more information and trends over time. A small rectangular window pops up when scrolling over to Dane county. Please note that the below screenshot is from the "count" metric view.



<sup>6</sup> See the above Measures section for more detail.

This pop-up window tells us that the number of students who completed high school in Dane county in 2019 was 5,088, and 3,620 of those students went to college in the same year. The line graph shows how college enrollment number has changed over time. The bar chart further disaggregates college enrollment in a specific year by institution type. Continuing with the example of Dane county, 1,523 out of 3,620 college-going students were enrolled in in-state, four-year, public institutions.

Switching over to the "rate" metric view, the pop-up window changes to the view below. Now the numbers displayed represent rates. High school completion rate for all students in 2019 is 93% (5,088 divided by 5,470) and college enrollment is 71% (3,620 divided by 5,088). The line graph shows how college enrollment rate has changed over time. The bar chart shows the number of students enrolled in a specific type of institution as proportion to total college enrollments. The rate for in-state, four-year, public institutions is 42% (1,523 divided by 3,620).



## Appendix A

### Number of public schools, by DPI's virtual school identifier

School year	Missing	Exclusively Virtual	Primarily Virtual	Yes	No	Primarily Classroom (Supplemental Virtual)	Total
2005-06	40	2	0	0	29	404	475
2006-07	44	1	0	0	29	406	480
2007-08	52	2	0	0	31	410	495
2008-09	47	3	1	0	30	415	496
2009-10	64	4	1	0	31	430	530
2010-11	54	4	1	0	31	435	525
2011-12	50	6	2	0	31	440	529
2012-13	40	8	3	0	31	452	534
2013-14	29	7	3	0	30	453	522
2014-15	20	13	3	0	31	459	526
2015-16	16	15	4	0	30	459	524
2016-17	16	16	4	0	31	469	536
2017-18	10	26	5	0	33	464	538
2018-19	8	23	4	1	33	468	537

*Note.* Schools coded as “exclusively virtual,” “primarily virtual,” “Yes” and schools with missing identifiers (column 1) are dropped from the analysis

### List of schools with missing “virtual school” identifier

1. 21st Century eSchool
2. Academy of Learning Competency Based Sch
3. Achievement Center
4. Advanced Language and Academic Studies
5. Alternative School
6. Appleton Central High
7. Ashland Charter High School
8. Barron County Alternative School
9. Beaver Dam Charter School
10. Black River Area Green School
11. CITIES Project High School
12. CYD - Career Youth Development
13. Career and Technical Education
14. Caring Opportunities for Recovery Education
15. Central Cities Health Institute
16. Centro Hispanic High
17. Centro Hispano High
18. Chetek High
19. Cirrus Charter High
20. Community High School
21. Comprehensive Learning Center
22. Cornerstone Academy
23. Crandon Alternative Resource School
24. Crossroads
25. Custer High
26. DIAL - Downtown Institute of Arts & Letters
27. DuBois High
28. East High School
29. Eclipse Center Charter School
30. Edison School

31. El Puente High
32. Falls Alternative Learning Site (FALS)
33. Flambeau Charter School
34. Foster & Williams High Charter of the Visual Arts
35. Genesis School of Business Technology/ Trade Health and Human Services
36. Glidden High
37. Gresham High
38. HR Educational Complex
39. Health Care Academy of Ladysmith-Hawkins School District
40. International Peace Academy
41. Janesville Academy for International Studies
42. Janesville Virtual Academy
43. Juneau Business High School
44. Juneau County Charter School
45. Kenosha eSchool
46. LaCrossroads Charter
47. Lady Pitts
48. Lakeshore Alternative School
49. Lena Education Alternative Network Charter
50. Loyola Academy
51. Lucas Charter School
52. Lumen Charter High
53. MATC 118.15 Program
54. Madison High
55. Malcolm X Academy
56. Marshall Charter
57. Marshfield Human Services Academy
58. Mellen High
59. Mercer Environmental Tourism Charter School
60. Metropolitan High
61. Middleton Alternative High
62. Milwaukee Academy of Aviation Science and Technology
63. Milwaukee Community Cyber High
64. Milwaukee Excel High
65. Milwaukee Learning Lab & Institute
66. Milwaukee School of Entrepreneurship
67. Milwaukee Spectrum School
68. Monona Grove Alternative High
69. Monroe Alternative Charter School
70. Monroe Independent Virtual Charter High
71. Monroe Independent Virtual Charter School
72. Montessori High
73. NOVA Tech
74. NOVA Tech-Northwest Opportunities Vocational Academy
75. New Path
76. New School for Community Service
77. New School for Community Services
78. Next Generation Academy
79. North Division High
80. Northern Lakes Regional Academy
81. Northwest Secondary School
82. Northwood School
83. Northwoods Community Secondary School
84. Osceola Career Charter School
85. Park Falls High

86. Pathways
87. Phoenix High Sch
88. Portage Virtual School
89. Professional Learning Institute
90. Project STAY
91. Racine Alternative Learning 6-12
92. Ripon Exploration & Application Charter
93. Riverview Academy Charter
94. Roy Chapman Andrews Academy
95. School for Urban Planning & Architecture
96. School of Enterprise Marketing
97. Spotted Eagle High
98. St Charles Behav Reassign Success Acad
99. St Charles Youth & Family Ex Ed
100. Tenor High School
101. The Etude School
102. Tosa School of the Trades
103. Transformation Learning Community
104. Transitional Skills Center
105. Truth Institute
106. Vel Phillips School of the Arts and Media Technology
107. Veritas High
108. WHS
109. WHS Expeditionary Learning
110. WHS Law Education & Public Service
111. WORK Institute
112. Walworth Co Educ Alt High
113. Washington High
114. Waupaca Accelerated Learning Center
115. Wausau Engineering and Global Leadership Academy
116. Weyerhaeuser High
117. Whitetail Academy
118. Wings Academy
119. Wisconsin Career Academy
120. Wisconsin River Academy
121. Wisconsin Virtual Academy (WIVA)

## Appendix B

### List of schools and years with data errors

School year	District name	School name	Group by	Group by value	Cohort count	Completion count	Group count	Student count
2012-13	CEO Leadership Academy	CEO Leadership Academy	Gender	Male	9	8	11	10
2016-17	Cambria-Friesland	Cambria Friesland Middle/High	Gender	Female	10	9	10	10
2016-17	Madison Metropolitan	East High	Economic Status	Econ Disadv	55	9	105	94
2016-17	Madison Metropolitan	Memorial High	Economic Status	Econ Disadv	29	4	79	63
2016-17	Madison Metropolitan	LaFollette High	Economic Status	Econ Disadv	28	3	105	93
2016-17	Madison Metropolitan	West High	Economic Status	Econ Disadv	21	3	79	66
2016-17	Middleton-Cross Plains Area	Clark Street Community School	All Students	All Students	16	5	7	6
2016-17	Fort Atkinson	Fort Atkinson High	All Students	All Students	228	1	140	131
2016-17	Fort Atkinson	Fort Atkinson High	Economic Status	Econ Disadv	64	1	28	27
2016-17	Fort Atkinson	Fort Atkinson High	Gender	Male	117	1	58	53
2016-17	Milwaukee	Carmen Middle/High School of Science and Technology Northwest Campus	Economic Status	Not Econ Disadv	10	7	8	8
2017-18	Middleton-Cross Plains Area	Clark Street Community School	All Students	All Students	12	4	9	8
2017-18	Appleton Area	Valley New School	All Students	All Students	9	9	11	11
2017-18	Appleton Area	Valley New School	Economic Status	Not Econ Disadv	9	9	11	11
2017-18	Kickapoo Area	Kickapoo High	Gender	Female	14	13	14	14
2018-19	Marshfield Unified	Marshfield High	Race/Ethnicity	Asian	6	6	9	9