

# Tracking Two-Year College Outcomes: Comparing National Student Clearinghouse and Illinois Community College Board as Sources of Two-Year College Data

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## Background

Over the past few decades, data have played a central role in guiding research, policy, and practice efforts to increase students' likelihood of enrolling in and completing college. The University of Chicago Consortium on School Research (UChicago Consortium) first reported college enrollment and graduation rates for Chicago Public Schools (CPS) graduates in 2006<sup>1</sup> and, since 2016, the University of Chicago To&Through Project has reported rates of two-year and four-year college enrollment and bachelor's degree completion for CPS graduates on an annual basis.<sup>2</sup> CPS also includes college enrollment and persistent rates in their high school accountability ratings.<sup>3</sup> The foundation for many college outcome numbers in states, districts, and schools across the nation, including in Chicago, is data from the National Student Clearinghouse (NSC).<sup>4</sup> More recently, the development of longitudinal data systems in many states, including in Illinois (with the Illinois Longitudinal Data System, or ILDS), has provided a new source of information about college enrollment and completion among high school graduates by linking administrative data from various state agencies.

In this technical paper, we compare NSC data with two-year college data obtained through ILDS, and summarize key insights for users of these data. A stronger understanding of the strengths and limitations of two-year college data from these two sources will allow researchers at the To&Through Project and the UChicago Consortium to make more informed decisions about how we can most comprehensively identify and report on CPS graduates' outcomes at two-year colleges and how to interpret those outcomes. While we hope this

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<sup>1</sup> Roderick, Nagaoka, Allensworth, Coca, Correa, & Stoker (2006).

<sup>2</sup> See [toandthrough.uchicago.edu/tool/cps/2018/#/milestones](https://toandthrough.uchicago.edu/tool/cps/2018/#/milestones)

<sup>3</sup> Chicago Public Schools (2019).

<sup>4</sup> All but four states publicly report on post-secondary enrollment, and 35 states report on out-of-state enrollment (Achieve, 2017).

technical paper can help inform the use of NSC data and other state longitudinal data systems more broadly, some of the strengths and limitations identified in this paper may be specific to two-year college outcomes, to two-year colleges in the state of Illinois, and to CPS graduates.

In 2017, we secured a data sharing agreement<sup>5</sup> through the ILDS that linked Illinois State Board of Education (ISBE) K-12 data on CPS graduates to Illinois Community College Board (ICCB) data on CPS graduates who enrolled in a two-year college in the state of Illinois, to gain a better understanding of the relative strengths and limitations of using state administrative data through the ILDS vs. the NSC data obtained by CPS for reporting on two-year college outcomes.<sup>6</sup> We focused on two-year college outcomes because the NSC data has limitations for understanding the completion outcomes of students enrolled in two-year colleges, particularly around classifying degrees and certificates. Further, because almost all CPS two-year college students stay in state, ICCB data and NSC data largely overlap. We were therefore able to do a robust comparison of two-year college outcomes: 94 percent of CPS graduates who enrolled in a two-year college remained in the state of Illinois and were captured by the ICCB data in the ILDS (vs. 69 percent of CPS graduates who enrolled in a four-year college remained in state).

**In this paper, we examine the extent to which rates of enrollment and completion at Illinois two-year colleges differ between CPS graduates' records in the ICCB and NSC datasets and look at whether completers with missing information in the NSC data completed a certificate or associate degree, according to their ICCB records.** Specifically, we sought to answer three questions through this work:

1. Does the ISBE and ICCB data obtained through the ILDS provide a viable means to look at CPS high school graduates and their two-year college outcomes for research and reporting purposes?
2. What are the strengths and limitations of the NSC data as a source for information about CPS graduates' two-year college enrollment and completion, especially compared to Illinois-specific data available through the ILDS?
3. To what extent can we use the ICCB data to fill in the missing information on CPS graduates in the NSC data on whether some two-year college completers had attained a certificate or associate degree?

## Background on NSC, ILDS, and ICCB Data

The National Student Clearinghouse (NSC) is a nonprofit and nongovernmental organization founded by the higher education community. NSC serves as a central repository for college enrollment and completion data and provides a means for reporting and sharing student data that reduces the administrative burdens for colleges and universities. The NSC data have become an invaluable source for researchers and school districts doing work on college enrollment and completion, with colleges and universities in the U.S. serving 97 percent of college students voluntarily sharing their student enrollment data with NSC.<sup>7</sup> However, there are some limitations on the post-secondary outcomes that can be examined using NSC data:

1. **Limited information:** NSC data provides information on enrollment and completion, but does not provide more nuanced information on students' college trajectories such as credit accumulation, grades,

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<sup>5</sup> This project was one of the first research projects in Illinois to request data through the ILDS.

<sup>6</sup> CPS has a data sharing agreement with NSC for its graduates and the UChicago Consortium and To&Through Project use CPS data, including the NSC data through its data services agreement with the district.

<sup>7</sup> National Student Clearinghouse (2019).

and developmental education course-taking, and some specific data elements are optional for schools to report, including students' major course of study;<sup>8</sup>

2. **Incomplete certificate and degree information:** For students who have been identified as completing a credential at two-year colleges, the field for the name of the certificate or degree completed is often missing in the NSC data. For example, among all 2012 CPS graduates who completed a credential at a two-year college within four years, almost 60 percent of the completions recorded in the NSC data lack information on what type of degree or certificate was completed;<sup>9</sup>
3. **Missing colleges:** A small number of colleges, particularly for-profit two-year colleges, do not provide data to NSC;<sup>10</sup>
4. **Missing students:** Students may not be included in the NSC data for multiple reasons, and these unreported enrollments are indistinguishable from non-enrollments. Colleges that provide records to NSC may opt to not share records for non-degree seeking students (e.g., five-week training programs).<sup>11</sup> In addition, under the Family Educational Rights and Privacy Act (FERPA), individual students may opt out of reporting information to NSC for research purposes,<sup>12</sup> leading to incomplete coverage in student-level NSC data. Finally, some colleges do not provide NSC with the records of students who do not have a Social Security Number (SSN), including undocumented and international students;<sup>13</sup> and
5. **Matching errors:** NSC matches students' college records based on name and birthdate, using other information when necessary,<sup>14</sup> and there may be a very small amount of error in this matching process.<sup>15</sup>

Enacted by the Illinois General Assembly and effective July 30, 2009, Public Act 096-0107—the P–20 Longitudinal Education Data System Act—provides the statutory basis for the ILDS. An inter-governmental agreement, executed in 2013, established the governance of the ILDS and currently includes eight state agency signatories (Illinois Department of Children and Family Services, Illinois Department of Human Services, ISBE, ICCB, Illinois Student Assistance Commission, Illinois Board of Higher Education, Illinois Department of Commerce and

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<sup>8</sup> National Student Clearinghouse (2020).

<sup>9</sup> Of the 3,878 credentials earned at two-year colleges in our sample, 2,232 (57.5 percent) had a blank degree type in NSC data.

<sup>10</sup> NSC provides detailed information of institutional coverage by sector and state: [https://nscresearchcenter.org/wp-content/uploads/NSC\\_COVERAGE.xlsx](https://nscresearchcenter.org/wp-content/uploads/NSC_COVERAGE.xlsx)

<sup>11</sup> NSC encourages institutions to include non-degree-seeking students, but institutions may have different reporting policies. See [www.studentclearinghouse.org/colleges/enrollment-reporting/faqs/](http://www.studentclearinghouse.org/colleges/enrollment-reporting/faqs/)

<sup>12</sup> NSC estimates that about 4 percent of students block their records (National Student Clearinghouse, 2017). NSC does not share blocked individual student enrollment records to CPS and other organizations but does include these student enrollments in institution-level information.

<sup>13</sup> Precise records about the number of students impacted by this policy are not available.

<sup>14</sup> National Student Clearinghouse (2014). NSC matches through a two-step process, using a logic path that matches student records and then verifies matches by weighted node: <https://www.studentclearinghouse.org/colleges/studenttracker/faqs/>

<sup>15</sup> Using Michigan data, Dynarski, Hemelt, and Hyman (2015) found that the NSC matching algorithm did not add appreciable measurement error to identifying students. NSC reports having a match rate that is approximately 94 percent accurate, accounting for the 2.4 percent of student enrollment files for institutions that are not participating with NSC and approximately 3.6 percent matching errors. According to NSC, matching errors can be caused by a number of factors, including duplicate student records, missing SSNs, and enrollment reporting submission errors.

<https://www.studentclearinghouse.org/colleges/studenttracker/faqs/>

Economic Opportunity, and Illinois Department of Employment Security) as well as the Governor's Office, providing representation for early childhood to K–12 education, higher education, and the workforce.

The primary technical infrastructure of the ILDS is the Centralized Demographic Dataset Administrator (CDDA) and its Master Client Index (MCI). Established via inter-governmental agreement in 2015, the CDDA uses deterministic and probabilistic algorithms to link individual-level administrative data from the eight agencies in order to resolve individual identities across agencies and create an inter-agency unique ID—the CDDA ID. These IDs are updated twice annually, after which the CDDA returns them to the agencies for storage and use. The CDDA also maintains copies within its MCI, which represents a longitudinal record of CDDA IDs. As with the NSC data, the use of a matching algorithm can introduce error into the data obtained through the ILDS, although the CDDA uses a larger number of data elements in its matching process than NSC.<sup>16</sup> The CDDA allows the linkage of data from various state agencies, including ISBE and ICCB.

ICCB was created by the Illinois General Assembly in 1965 to establish a system of public two-year colleges in the state of Illinois and is the State Education Authority responsible for collecting and maintaining information on community college students.<sup>17</sup> It has a centralized data system that is used for state and federal accountability purposes, student and institutional improvement efforts, research needs, and policy formulation. ICCB collects information from all public two-year colleges in the state of Illinois on enrollment, credential completion, and student characteristics. Students cannot opt out of the data, making it a more comprehensive source of information on CPS graduates who enroll in two-year colleges than NSC data.

## Study Sample and Linking Process

To compare the rates of enrollment and completion at Illinois two-year colleges in the ICCB and NSC data, we used the CPS graduating class of 2012 as our sample, as this was the most recent cohort for which we had received four years of ICCB data. This 2012 cohort consisted of 19,801 unique students. To define this cohort, we used the following decision rules: students' graduating year was determined based on their high school graduation year according to their NSC record, and the sample was limited to students who received a regular diploma from CPS, excluding students who earned diplomas from a CPS options high school.<sup>18</sup>

To compare 2012 CPS graduates' two-year college enrollment and completion in the two data sources, we needed to link the NSC records obtained from CPS to their records in the ICCB data obtained through the ILDS (see Figure 1). We used three student IDs to link the data sources: the CPS student ID, the Illinois state student ID (included in both CPS and ISBE data), and the CDDA ID. The NSC data was obtained through CPS and has the CPS student ID attached to it. The CPS student ID of each student in the sample was linked to an ISBE record through the Illinois state student ID. Our ILDS data request used ISBE data to identify CPS high school graduates, which linked their records in the ISBE data to the ICCB data through the CDDA ID. The ICCB dataset that we received included a row for all the students identified by ISBE as CPS graduates, even if those students had not

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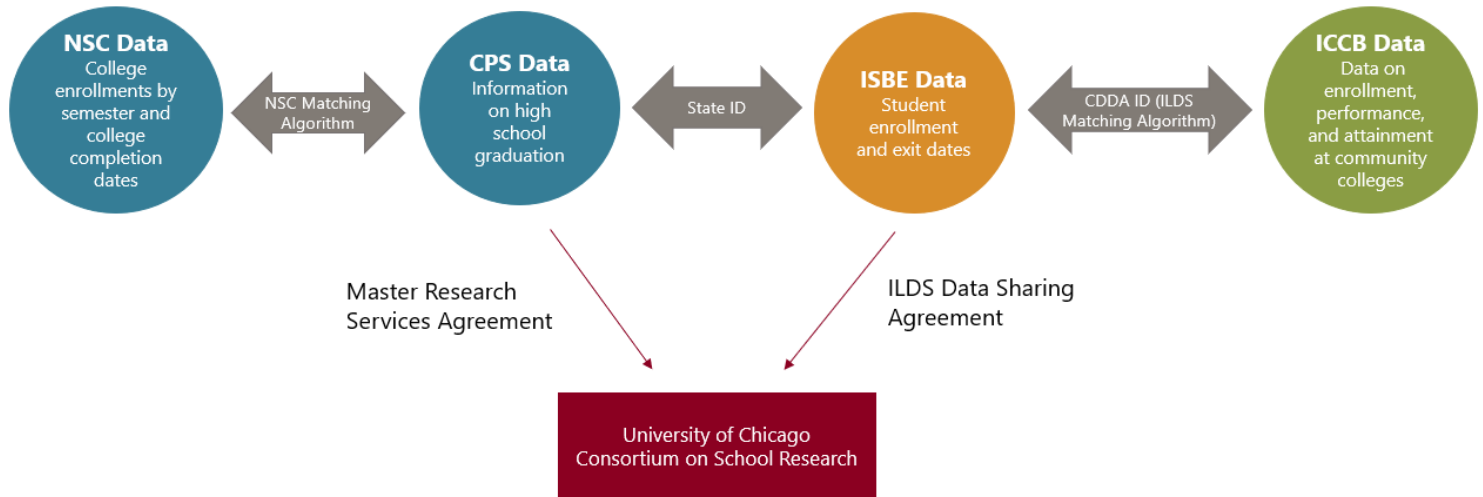
<sup>16</sup> Data elements used in the matching process include first name, middle name, last name, date of birth (DOB), SSN, gender, and race/ethnicity.

<sup>17</sup> ICCB can be used to reference both the Board and the agency and staff under the Board. In this paper, we use ICCB to mean the agency.

<sup>18</sup> Options programs are non-traditional high schools that serve students outside of traditional school-day structures. We based these decision rules on what we use to define high school graduating classes for reporting two- and four-year enrollment rates on the To&Through Online Tool.

matched to any ICCB enrollments because they had never enrolled at an ICCB institution (see **Figure 1**). ISBE provided ICCB with the CDDA-IDs of the CPS students, and ICCB merged ISBE and ICCB data using the CDDA-ID, without requiring the transfer of any personal identifying information.

**Figure 1. Linking the 2012 CPS Graduating Class from NSC Data to ICCB Data at the Student Level**



Of the 19,801 CPS high school graduates in the sample, 19,209 (97 percent) of student records were successfully linked to at least one record in the ICCB data. **Table 1** shows the number of students who were dropped from the sample at each step in the linking process. Of the 592 students (3 percent) that we were not able to link to a record in the ICCB data, most were present in the ISBE data but appeared to be missing from the pull of ICCB data requested through ISBE. Because ISBE only requested records from ICCB for high school students who graduated during their senior year, some students who graduated from CPS earlier in their high school career were not a part of the pull. As a result, 240 students were not included because they graduated before their senior year of high school, and 295 others were not included because their most recent record in the ISBE data was a grade promotion for the 2010–11 school year, rather than a graduation from the 2011–12 school year. Only 15 students from the CPS graduating class of 2012 were not identifiable in the ISBE data.<sup>19</sup>

<sup>19</sup> Other reasons for student records not being identifiable include missing the state ID in CPS data or missing information in the ISBE or ICCB data for matched students.

**Table 1. Only 592 of 19,801 Students from the 2012 CPS Graduating Class Could Not Be Matched from NSC Data to ICCB Data**

*Number of students in categories of unmatched records among NCS, ICCB, and ISBE data*

<b>Linking Stage</b>	<b>Reason Unable to Link</b>	<b>Number of Students</b>
<b>ISBE Data Issues</b>	Missing state ID in CPS data (1 student); No ISBE data associated with state ID (14 students)	15
<b>ISBE to ICCB</b>	Early graduates	240
<b>ISBE to ICCB</b>	Missing senior year in ISBE data	295
<b>ISBE to ICCB</b>	Other missing ICCB rows	42
<b>Total</b>		<b>592</b>

The 3 percent of students who we could not link to a record in the ICCB data did not appear to be missing in any systematic way. They included graduates from 73 different high schools and did not appear to significantly over-represent students of any race/ethnicity or gender. Given the high rate of linkage and our being able to identify reasons for the discrepancies that we did find between the samples of students appearing in the NSC data and the ICCB data, we were satisfied that we would be able to compare the enrollments for individual students in the NSC data to the ICCB data using the CDDA ID. For the remainder of our analyses, we limited our sample to the 19,209 students who had records in both the ICCB and NSC data.

### **Assessing Alignment in Enrollment Data**

We next turned to examining the extent to which two-year college enrollment in the NSC data aligned with two-year college enrollment for the same students in the ICCB data. We focused on immediate two-year college enrollment, which we defined as any enrollment in a two-year college in the fall following graduation from CPS. Specifically, we compared alignment on two outcomes—*any* immediate two-year college enrollment and *full-time* immediate two-year college enrollment—at a student level, regardless of which two-year college they attended.

The variables included in the ICCB data and the NSC data differed, but we tried to create decision rules that made the calculations of the rates across the two datasets as consistent as possible (see **Table 2**).

Table 2. Immediate Enrollment Decision Rules for NSC and ICCB Data

Data Definition	NSC	ICCB
<b>Immediate Two-Year College Enrollment for 2012 CPS Graduates</b>	Enrollment in a less-than-four-year college with a start date before November 1, 2012 and an end date after September 15 2012.	Greater than zero credit hours attempted at an ICCB institution in the fall 2012 term.
<b>Full-Time Immediate Two-Year College Enrollment for 2012 CPS Graduates</b>	Marked as having a full-time status in enrollment status field that colleges provide directly to NSC.	At least twelve credit hours attempted at an ICCB institution in the fall 2012 term.

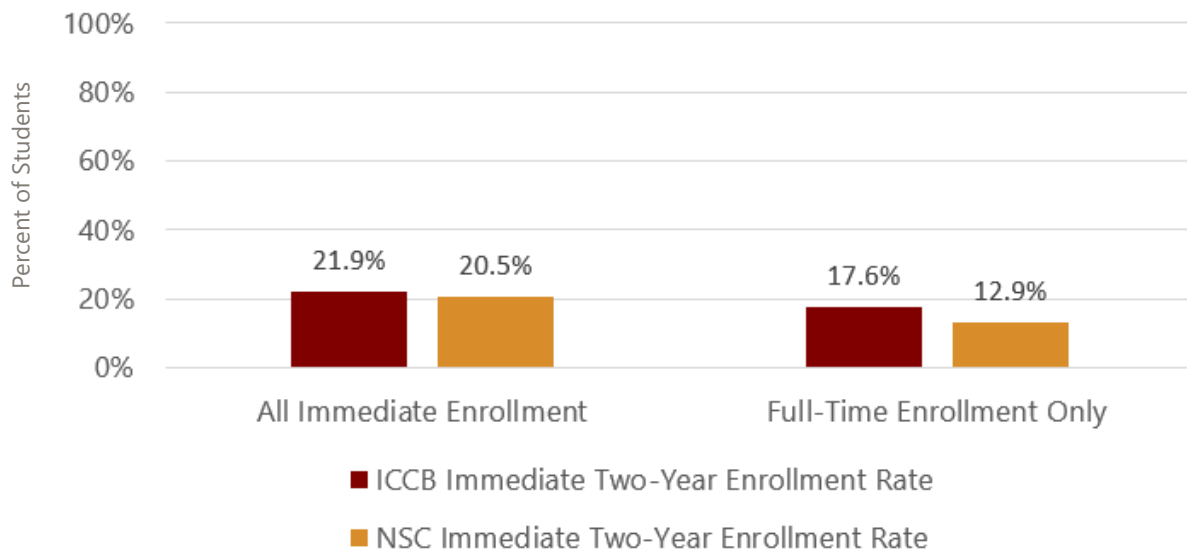
**Note:** We defined fall enrollments using a broad date window in order to capture all fall terms for schools on multiple academic calendars, including both quarter- and semester-based calendars. The NSC data does not include the number of credits attempted or completed. ICCB defines full-time enrollment as twelve credit hours attempted during the term.

We found that the ICCB data showed a slightly higher proportion of the 2012 CPS graduates as having an immediate enrollment in a two-year college than the NSC data (see **Figure 2**). While the ICCB data showed an immediate enrollment for 21.9 percent of the students, the NSC data showed an immediate enrollment for only 20.5 percent of the students. There was a larger difference between the full-time immediate enrollment rates: 17.6 percent of students attempted at least 12 credit hours in the fall 2012 according to their ICCB records, while the NSC data contained full-time enrollment for only 12.9 percent of the students. This may suggest that students' full-time status is being determined at different points in the term in the two different datasets.<sup>20</sup>

<sup>20</sup> Full-time status is self-reported to NSC by colleges. Full-time status is one of the characteristics used to determine whether a student is included in graduation rates collected by the U.S. Department of Education and reported publicly through the Integrated Postsecondary Education Data System (IPEDS).

**Figure 2. Immediate Two-Year College Enrollment Rates Were Similar, but the Full-Time Immediate Two-Year Enrollment Rate Was Significantly Higher when Calculated Using ICCB Data than NSC Data**

*Immediate two-year college enrollment rates in ICCB and NSC data, 2012 CPS graduates*



**Note:** The denominator for these rates is 2012 CPS graduates with records in both the NSC and ICCB data (19,209 students). The 592 students (3 percent of the graduating class) who were not matched to an ICCB record are not included.

**Table 3. Only 4 percent of Students Had Different Immediate Two-Year Enrollment Outcomes in the ICCB and NSC Datasets**

*Immediate enrollment among 2012 CPS graduates with records in ICCB and NSC data*

	No Immediate Enrollment (ICCB)	Immediate Enrollment (ICCB)	Total
No Immediate Enrollment (NSC)	14,722 (76.6%)	553 (2.9%)	15,275
Immediate Enrollment (NSC)	274 (1.4%)	3,660 (19.1%)	3,934
Total	14,996	4,213	19,209

**Note:** The denominator for these rates is 2012 CPS graduates with records in both the NSC and ICCB data (19,209 students). The 592 students (3 percent of the graduating class) who were not matched to an ICCB record are not included.

At a student level, the NSC and ICCB datasets showed a matching enrollment outcome for around 96 percent of the students. Of the 19,209 students with records in both datasets, 3,660 (19.1 percent) students had an immediate enrollment in both datasets, 14,722 (76.6 percent) did not have an immediate two-year enrollment according to either dataset, 274 (1.4 percent) had an immediate two-year enrollment according to the NSC data only, and 553 (2.9 percent) had an immediate enrollment in the ICCB data only (see **Table 3**). The small number of students with enrollments in only the NSC data largely reflects enrollment in private two-year colleges and two-year colleges outside of Illinois, including community colleges near public four-year universities outside of



Illinois. It makes sense that these enrollments would not be included in the ICCB data, which include only two-year colleges in Illinois.

The larger mismatched group—the 3 percent of students with an enrollment in the ICCB data but not in the NSC data—include students from all seven City Colleges of Chicago (CCC) campuses and other Illinois community colleges. Earlier, we described some of the known limitations of the NSC data. These limitations provide some possible explanations for the presence of records in the ICCB data that do not have matching enrollments in the NSC data. We've identified three possible reasons for these discrepancies in students' immediate enrollment status across the two datasets:

1. **Missing students in NSC data:** Some two-year colleges may not have been reporting the enrollments of students without SSNs, including undocumented students, to the NSC, or individual students who are represented in the ICCB data may also have opted out of allowing their data to be reported;
2. **Differing enrollment definitions:** Students who were enrolled for only a brief period of time may have been reported to ICCB for administrative purposes but not reported to NSC because the NSC data were pulled at a later date;<sup>21</sup> and
3. **NSC matching issues:** Students could be missing from the NSC data because of errors in the student-level match between the NSC and CPS datasets.

## Assessing Alignment in Completion Data

When considering the extent of alignment in students' completion of degrees or certificates from two-year colleges, we had several distinct goals: assessing whether the ICCB and NSC data were identifying the same students as completing a degree or certificate at a two-year college; assessing whether the two data sources had the same degree or certificate for a given student; and determining whether we could use the ICCB data to identify the type of degree or certificate associated with NSC records with missing credential information.

The NSC data include a field for the institution name, the name of the credential, the U.S. Department of Education Office of Postsecondary Education (OPE) ID number, and characteristics of the institution awarding the credential. For credential information, the reporting institutions can enter any character string in the credential name field. In comparison, ICCB identifies three types of credentials: associate degree, short-term certificate, and long-term certificate. In addition, for 57.5 percent of two-year college completion records of 2012 CPS graduates in the NSC, the credential name field was blank.<sup>22</sup> To the extent possible, we used credential names and institutions' credential and degree offerings to classify completions as associate degrees or certificates.<sup>23</sup> However, a significant number of credentials remained uncategorizable, and for many completion records, the credential name field was blank.

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<sup>21</sup> NSC (2014).

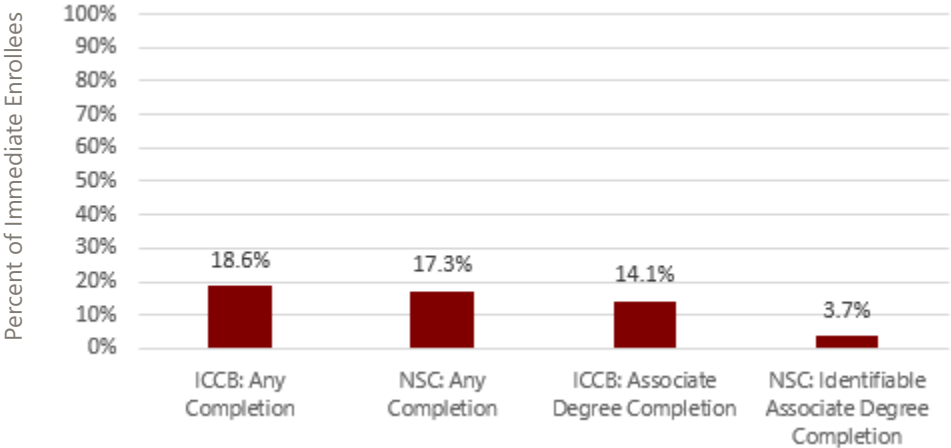
<sup>22</sup> This problem is not unique to certain colleges or groups of colleges: credentials with blank degrees included credentials awarded 92 different two-year colleges attended by CPS graduates. Blank degrees fields are much more prevalent at two-year colleges than at four-year colleges.

<sup>23</sup> Because it is extremely difficult to determine whether a certificate was short-term or long-term based on credential name in the NSC data, we did not distinguish between certificate types.

For the 3,660 students who were immediate two-year enrollees according to both datasets, the two datasets showed a similar rate of completion of any credential within four years: 18.6 percent of the students completed any credential within four years according to the ICCB data, and 17.3 percent completed any credential within four years according to the NSC data (see **Figure 3**). For 96 percent of the students, the two datasets agreed on whether or not they had completed a credential: 576 students (16 percent) earned a completion according to both ICCB and NSC data, and 2,925 students (80 percent) had no completion according to both ICCB and NSC data. One hundred three students (3 percent) earned a credential according to NSC only, and 56 students (2 percent) earned a credential according to ICCB only.<sup>24</sup>

**Figure 3. Overall Completion Rates Were Similar Across the Two Data Sources, but the Associate Degree Rate Was Much Lower When Calculated Using NSC Data**

*Rate of two-year credential completion within four years for immediate two-year enrollees*



**Note:** The denominator for these rates is the 2012 CPS graduates who enrolled immediately following graduation in a two-year college according to both the ICCB and NSC datasets (3,660 students). The 827 students (4.3 percent) who enrolled immediately according to only one of the two datasets are not included.

<sup>24</sup> Percentages total 101 percent due to rounding.

When we look more closely at credential types in **Table 4**, the ICCB data shows a rate of associate degree completion of 14.1 percent (515 of 3,660 immediate enrollees), while only 3.7 percent of students earned a credential that could be identified as an associate degree in the NSC data (136 of 3,660 immediate enrollees). When we compare at the student level, we see that 324 of the 403 students (80.4 percent) whose highest completion was a completion of uncategorizable type according to the NSC data had earned an associate degree according to the ICCB data. This demonstrates a significant limitation to using NSC data to study students' credential completion in two-year colleges: it is not possible to use the NSC data alone to accurately calculate a rate for any specific type of two-year completion. Completions that are recorded in the NSC data but have a blank credential name field appear to include both associate degrees and short- and long-term certificates, although the majority of credential completions for 2012 CPS graduates were associate degrees, rather than certificates.

**Table 4. Most Students with Uncategorizable Credentials in the NSC Data Completed an Associate Degree According to the ICCB Data**

*Student-level completion outcome match between ICCB and NSC data*

		Outcome in ICCB Data				
		Associate Degree	Certificate: Long-Term	Certificate: Short-Term	No Completion	Total
Outcome in NSC Data	AD	122	1	0	13	136
	Completion of Unknown Type	324	16	37	26	403
	Certificate	13	18	45	17	93
	No Completion	56	1	46	2,925	3,028
Total		515	36	128	2,981	3,660

**Note:** The denominator for these rates is the 2012 CPS graduates who enrolled immediately following graduation in a two-year college, according to both the ICCB and NSC datasets (3,660 students). The 827 students (4.3 percent) who enrolled immediately according to only one of the two datasets are not included. Cells are colored according to the degree of alignment between outcomes. Orange cells represent cases for which the two datasets contained contradictory information about whether students had completed any credential. All green cells represent cases for which the two datasets contained aligned information about whether the students had completed any credential, and dark green cells represent cases for which the two datasets were aligned on which credential students had completed. Categories are mutually exclusive: for each dataset, students are categorized according to their highest completion earned from a two-year college within four years of high school graduation.

## Conclusions

The use of data and the increasing number of data sources has transformed the approach practitioners in schools and nonprofits, policymakers, and researchers have taken to support students in the transition to college. While this paper has focused on the data for two-year college outcomes for one graduating class of Chicago Public School (CPS) students, the insights learned from our analysis provide guidance to others who seek to use the National Student Clearinghouse (NSC) data and Illinois Community College Board (ICCB) data through the Illinois Longitudinal Data System (ILDS). **Tables 5 and 6** summarize our takeaways about the general strengths and limitations of the NSC data and ICCB data as sources of information about two-year college enrollment and completion.

**Table 5. Strengths and Limitations of NSC Data for Analyzing Two-Year College Enrollment and Completion**

<b>Strengths of NSC data</b>	<b>Limitations of NSC data</b>
<b>Consistent:</b> Can be provided regularly to states, districts, and schools	<b>Limited Information:</b> Many completions are uncategorizable as associate degrees or certificates; includes very limited information about students' programs and credits earned towards completion
<b>Comprehensive:</b> Includes data on enrollment and credential completion from both two- and four-year institutions	<b>Incomplete Coverage:</b> Institutions and students can opt out of reporting data to NSC
<b>National Coverage:</b> Covers institutions associated with 97 percent of all two-year enrollments nationally, including out-of-state and private institutions	<b>Potentially Unrepresentative Sample:</b> Students who are members of certain groups, such as undocumented students, may be under-represented in the data

**Table 6. Strengths and Limitations of ICCB Data for Analyzing Two-Year College Enrollment and Completion**

Strengths of ICCB data	Limitations of ICCB data
<p><b>Credential Information:</b> All credentials are classified as associate degrees, long-term, or short-term certificates</p>	<p><b>Narrow Focus:</b> Covers only two-year colleges in Illinois</p>
<p><b>Program Information:</b> Includes information about program types, credits attempted and earned, and early college enrollment</p>	<p><b>Designed for Administrative Use:</b> Less research and guidance on best practices exist for working with and interpreting ICCB data in external research</p>
<p><b>CDDA_ID:</b> Records can be linked across multiple data systems, including other state agencies, using only ID numbers, without transferring personal identifying information across data systems</p>	<p><b>Multiple Independent State Data Systems:</b> No consistent data system and decision rules between IBHE and ICCB that can be used for calculating students’ overall postsecondary outcomes</p>

Additionally, five insights surfaced in our process of comparing NSC and ICCB data to understand CPS graduates’ trajectories through two-year colleges that may be useful to others working with the data:

1. **The CDDA ID enables the linkage of CPS and NSC data to ISBE and ICCB data through the ILDS, providing valuable additional information on CPS graduates’ two-year college outcomes.** Using the CDDA ID, we were able to match 97 percent of the CPS graduating class of 2012 to a record in the ICCB data. The alignment between the student and enrollment records in the NSC and ICCB data gives us confidence that the ILDS and CDDA ID provides us and other researchers with a more detailed understanding of students’ two-year college experiences than the NSC currently allows, including credits attempted and completed, developmental education course-taking, and more detailed information about students’ programs and credentials, to conduct more nuanced explorations of CPS students’ outcomes in two-year colleges.
2. **NSC appears to be a reliable source of data on CPS graduates’ two-year enrollment and completion of any credential in a two-year college.** In general, the high degree of alignment between students’ outcomes in the ICCB and NSC data, particularly with respect to their rates of two-year college enrollment and completion of any credential, gives us more confidence in using NSC data to report students’ rates of enrollments and completion of any credential in two-year colleges. The two datasets showed a matching enrollment outcome for 96 percent of the sample, and the two datasets were aligned on whether or not the students had earned any credential within four years for 96 percent of the students who were immediate enrollees according to both datasets.

3. **NSC data cannot be used to calculate completion rates of CPS graduates' specific credential types from two-year colleges, including associate degrees.** One key limitation of using the NSC data to report CPS students' outcomes at two-year colleges is that the field for type of credential (associate degrees or certificates) is missing or uncategorizable for many students who completed. Our analysis confirmed that this is a significant limitation in using data from NSC to track CPS graduates' college attainment. For 57.5 percent of two-year college completion records of CPS graduates in our NSC sample, the credential name field was blank. Using the ICCB data, we found that the unidentifiable credentials in the NSC data included both associate degrees and certificates, and most were associate degrees. However, because the completions with missing degree name fields in the NSC include both associate degrees and certificates, it will not be possible to use NSC data to report rates of completion for associate degrees or any other specific credential awarded by two-year colleges for a given student with missing data.
4. **Most CPS graduates with blank or uncategorizable completions in the NSC data earned an associate degree according to the ICCB data.** In linking the students who had blank or otherwise uncategorizable completions in the NSC data to their records in the data from ICCB, we found that most, though not all, students who had a completion that was missing or not categorizable in the NSC data had completed an associate degree in the same time frame according to their ICCB records. Eighty percent of the students with only uncategorizable completions in the NSC data had earned an associate degree according to their ICCB records. Although we are not able to identify all completions as either associate degrees or certificates using the NSC data alone, knowing that most students with any completion in the NSC data likely earned associate degrees gives us more confidence that providing an overall two-year completion rate would be a meaningful measure of students' success at attaining a credential of economic value from two-year colleges.<sup>25</sup>
5. **Exploring the differences between students' records in the NSC and ICCB datasets also highlighted several additional limitations of the NSC data as a tool for understanding CPS graduates' trajectories at two-year colleges.** Most significantly, we found that there are a small but meaningful number of enrollments and completions by CPS graduates at ICCB institutions that are not represented in the NSC data, and it is possible that certain groups of students, such as undocumented students, are particularly under-reported in NSC data.<sup>26</sup> Unlike the NSC, students cannot opt out of having their individual information included in the ICCB data we used. Additionally, we found that there was not strong alignment between full-time immediate enrollment as reported to NSC and whether the number of credits students attempted according to the ICCB data met the ICCB definition of full-time status, suggesting that the full-time status field in the NSC data may have limited reliability.

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<sup>25</sup> Studies of the relative economic value of short-term certificates, long-term certificates, and associate degrees generally find that associate degrees and long-term certificates are associated with higher wages, although there is considerable variation by major (Dadgar & Trimble, 2014; Xu & Trimble, 2016).

<sup>26</sup> Dynarski et al. (2015) examined how students with missing information in the Michigan NSC data were systematically more likely to belong to certain student demographic groups.

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