



ILLINOIS COLLEGE SEARCH TOOL AND RESEARCH PORTAL

NASCIO AWARD CATEGORY:

CROSS-BOUNDARY COLLABORATION AND PARTNERSHIPS

ILLINOIS STUDENT ASSISTANCE COMMISSION
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Executive Summary

Recognizing a collaborative opportunity to provide a service significant to the social and economic health of Illinois, the Illinois Board of Higher Education (IBHE), the Illinois Community College Board (ICCB), the Illinois Department of Employment Security (IDES), and the Illinois Student Assistance Commission (ISAC) partnered on an initiative called Workforce Readiness through Apprenticeships and Pathways (WRAP). One of the primary deliverables was to build a college search tool, now named Illinois College 2 Career (ILC2C; www.ilcollege2career.com).

Since 1987, published tuition and fee rates have more than tripled, while median family incomes in the United States have only risen by 18%.¹ Families spend significant amounts of time and money preparing for entrance exams, applying for competitive programs, and visiting schools, before even committing to the burden of tuition. These investments are too often made without reliable data on college debt, projected earnings, and employment opportunities post-graduation, and families without a financial safety net can be quickly overwhelmed.

IBHE and ICCB provided the partnership with over half a million student records spanning six academic years from over 100 Illinois public, private, and community colleges, which were linked to National Student Clearinghouse (NSC) records to uncover additional academic history. Illinois State University was chosen to derive career outcome measures by longitudinally linking IBHE/ICCB student records to IDES quarterly employment and earnings records of approximately 6.2 million workers. Each year, the tool is updated to display the most current institutional information available and an additional student cohort is matched to state wage data to increase the sample size and the robustness of the conclusions. These datasets are securely linked by Illinois State University, and the aggregated information is sent to ISAC, who design and host the site itself. **ILC2C provides information on post-graduation earnings, debt, employment rates by institution and areas-of-study within the colleges, and is one of the first tools in the nation to provide workforce outcomes for the majority of a given state's post-secondary institutions.**

ILC2C features:

- Current data on students from 121 two- and four-year institutions
- Over 20 variables on which students can filter and compare multiple institutions
- A best match metric to help students glean overall fit over multiple variables
- Gauge graphics to better visualize where each institution falls in the environment
- The ability to explore all majors at all institutions for undecided prospective students
- Mobile-responsive design
- English and Spanish versions
- Institution profiles including information on student body and admissions
- Student-tested intuitiveness and usability
- High interactivity – almost everything can be clicked on for more information or a definition
- Intelligently suppressed data to ensure student privacy
- Access to a private SAS Visual Analytics (VA) tool for institutional researchers

Armed with this information, prospective students can minimize financial uncertainty during this important transition and chart a course that fits their unique goals.

Concept

In 2017, the median income for someone with a bachelor's degree was 82% (or \$25,482) higher than someone with a high school diploma or the equivalent.ⁱⁱ Level of education also has strong relationships with health behaviorsⁱⁱⁱ and educational achievement of one's children.^{iv} Unfortunately, educational attainment is mediated by more than motivation or good grades. **The price of tuition, fees, and supplies continues to rise without clear guidance on which schools or programs generate an appropriate return on investment, and some families decide that the cost is too high to consider postsecondary education. If the state desires future workers who have this type of training, Illinois agencies must bear some of the responsibility in proving that the opportunities are worth the effort.**



IDES was the first to realize the capabilities of the data they were collecting; they contacted the state's main education agencies, who agreed that the knowledge to be gained by linking education and workforce data was worth the challenge of convincing colleges to participate.

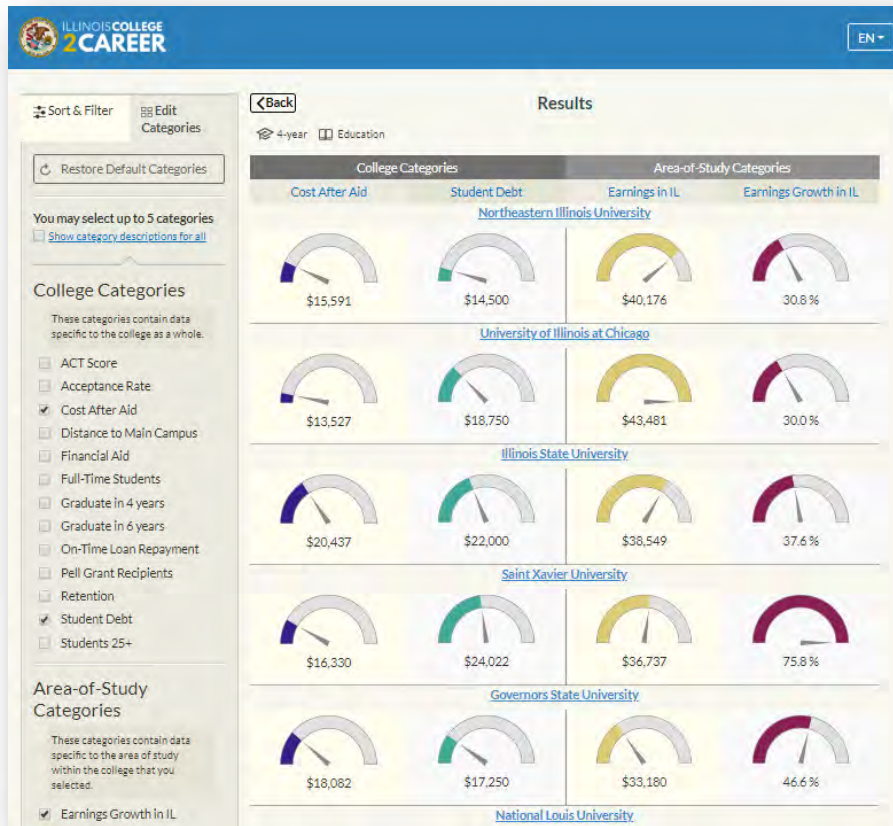


Together, these agencies submitted a proposal to the Cabinet on Children and Youth and were selected to receive implementation planning assistance. The project team, now consisting of IBHE, ICCB, IDES, ISAC, and Cabinet Staff, then began the lengthy process of learning about one another's abilities and priorities, performing outreach to institutions, establishing data agreements, and building and testing multiple tools.



In order to raise awareness about the project idea and obtain buy-in and support from Illinois post-secondary institutions, the project team conducted a promotional tour, where they traveled across the state and demonstrated the concepts for both the public-facing tool as well as the tool in SAS VA that could analyze the institutions' microdata matched to the NSC and the IDES employment records. Each presentation was delivered to multiple institutions; administrators from colleges and universities would travel to the roadshow location closest to them to see the presentation and ask questions. Feedback received from these roadshows led to changes made to both the public-facing website and the secure SAS VA tool.

Another post-secondary search tool, The U.S. Department of Education's College Scorecard, has become central to the discussion surrounding the connection between education and employment outcomes. In 2014, the federal government instituted a rule that colleges who produce graduates who are not prepared for the labor market (measured by whether graduates' loan payments exceeded 30 percent of their discretionary income) would not be eligible to accept Title IV student aid.^v These requirements are hotly debated, both because they appear to take aim at for-profit institutions and because the Social Security Administration considers use of their earnings data as a violation of privacy regulations. The Department of Education expected to display this "gainful employment" measure on their College Scorecard site, but are currently only able to present data on tuition and post-graduation earnings for the institution overall. Because these outcomes differ between programs/majors,^{vi} access to student-level data is necessary to make conclusions relevant to the user.^{vii} Another project, the U.S. Census Bureau's Post-Secondary Employment Outcomes tool, collects and displays program-level data, but only for select schools in Texas and Colorado. **In contrast, ILC2C has the cooperation and input of both the education and economic agencies, including the program details that must come directly from the schools, which results in an instrument whose value is recognized at the national level.**



Screenshot from the ILC2C results page

Significance

Since 1957, ISAC has labored to make college accessible and affordable for Illinois students. While postsecondary education has increased in cost and necessity, so has ISAC’s responsibility to provide tools to manage this process. The statutory responsibilities of IBHE and ICCB include review of programs and institutions, as well as maintenance of comprehensive data systems. And the agency mission statement at IDES pledges to encourage economic growth and stability by providing services and actionable information. **By building an interactive, mobile-friendly tool that displays valuable information in a digestible format, ILC2C fulfills not only the mission statements of the agencies involved, but the promise of a responsive and transparent government.**

ILC2C consolidates multiple sources of postsecondary information and presents this knowledge alongside previously unreleased data. The project team benefited from an existing relationship between IDES and the University of Oregon, which provided access to an API that efficiently gathers and displays institution profile data from the University’s into CAREERS database. Other variables were harvested from College Scorecard and the National Center for Education Statistics’ Integrated Postsecondary Education Data System, which are updated each year when a new cohort of students is loaded into ILC2C. While the typical search tool offers users the ability to sort institutions by characteristics like size, location, or tuition, panel discussions with students have revealed that they often use the official institutional website to find this type of information. ILC2C includes this information in the tool for convenience, but the innovation lies in previously unavailable metrics, offered at the programmatic level

rather than for the institution as a whole: percent employed in Illinois, earnings, earnings growth, and job stability.

Prospective students can select up to five of these categories at once and display them side-by-side for easy comparison across postsecondary institutions. Information is displayed as a gauge, allowing the user to conceptualize where each school falls in the range of possibilities. Users can sort their results by any of the categories chosen, but the default is to sort by “Best Match,” wherein the tool displays the schools that cumulatively perform best in all the selected categories, offering a well-rounded and responsive results page. Users can also filter results by desired characteristics such as religious affiliation, school size, location, and available athletic programs, so the schools listed in their results will only meet the criteria important to them. The tool was also designed to provide a quick and responsive user experience. Data provided to ISAC was pre-aggregated to prevent lengthy on-the-fly calculations when calculating the best match for a user. This aggregation also enhances security – in the case of a breach, the underlying information does not exist at the personally identifiable level. Data is also being stored on the client-side in memory to increase query performance and reduce response times that are typically seen with an API server.



Screenshot from a SAS Visual Analytics Dashboard

Another project underlying the public-facing tool that has great collaboration potential is the secure, Azure government cloud-based SAS Visual Analytics platform, which supports data visualizations and data analytic workspace for each of the two- and four-year colleges that have joined the partnership with a data use agreement. This instrument provides authorized institutional researchers access to de-identified micro-level student records matched to workforce outcomes and statistical tools to conduct custom analyses. The SAS license is unique; each institution is able to access the software in the cloud, which means that there is room for schools to be added indefinitely. **This mechanism offers postsecondary institutions an unprecedented perspective on how their work affects students and the community, enhancing their data-driven decision-making.**

Impact

While the benefits of making informed postsecondary decisions cannot be fully measured until students are in the workforce post-graduation, the partnerships and transparency established by this project have already begun to affect the higher education environment. The relationship built between state economic and education agencies is groundbreaking and fruitful, generating other projects and tools even while ILC2C was in production. **The availability of actual, high-quality data offers citizens access to the information that state agencies have been warehousing, motivates the data stewards to continually seek improvements, and makes tangible the agencies' ability to provide feedback on how these systems function together.**

Recognizing that user needs are broad and variable, the project team strives to fuel a feedback loop with several sources of input.



A bright blue "Feedback" button on each page invites users to share their comments and questions. Users who reach out through the Feedback button and provide contact information are individually thanked and given details on how their concerns or suggestions are being addressed.



Additionally, data scientists and user experience designers regularly conduct focus groups in partner high schools with active college-seekers. Early in the project, the project team conducted evaluative research with central Illinois high school students and low-fidelity wireframes. As student and stakeholder feedback was integrated, this process evolved to include generative research with more comprehensive tools. Students are first observed using the tool without any instruction, to generate a baseline for which features interest students at first glance. As part of the "lean UX" approach to the design processes, designers quickly identified target users' pain points by asking students to perform a list of tasks, which evaluates the logic and layout of the tool. Testers are also asked about their search for colleges and programs, which reveals the other tools students use in this process, as well as offering an opportunity to critique ILC2C. Subsequent usability tests of the prototyped site were used to validate initial findings and guided the team through design iterations. Digital design applications like Sketch and Figma afforded pixel-perfect precision on the frontend, and prototyping tools like Marvel and InVision facilitated workflow and UI refinement. The project team distributes a History of ILC2C Design link (<https://www.ilcollege2career.com/#/designhistory>) with the coordinators at the schools where feedback workshops were conducted, so they can share the impact of their students' comments.



The inter-agency project team also receives weekly analytics from Google and custom code on the nearly 1,000 visitors the site receives each month. These reports detail how far into the site people go, how long they stay on the site, what options they choose for their search, what type of device/browser they use, what language options they select, and how they navigated to the site. These statistics are fed into Tableau and the resulting visuals are distributed to the inter-agency team to drive discussion at weekly meetings.

Feedback from students and user data have prompted changes that improved the clarity and accessibility of the tool, while establishing a reliance on public collaboration.

One of the WRAP umbrella projects involved workforce readiness training for dislocated workers and youth. Completion of these training programs was associated with increases in employment, job stability, and earnings above the average Illinois worker. **Conclusions like these were only possible through careful use of official records and partnerships with organizations like the vocational training groups.** Another WRAP project used IDES and ISAC data to build a SAS VA dashboard on intergenerational mobility. In this context, the term refers to the ability of young people to move to higher income groups than their parents, an achievement often attributed to one's education and a topic of great interest to Illinois colleges. While ISAC only had data on a portion of Illinois high school students to include in this intergenerational mobility dashboard project, it was able to demonstrate the capability of SAS VA and the reach of the partners, which cemented the interest of the Illinois State Board of Education (ISBE). Because ISBE's data encompasses the entire Illinois public high school student population, linking this data to ISAC's FAFSA information, the NSC's post-secondary education records, and IDES' wage records will allow for a comprehensive picture of how people gain and lose social capital, and where the state might be able to intercede with educational and economic programming. Work has begun on a tool accessible to the public, illustrating the pathways and outcomes of students after high school, whether they continue to post-secondary education before entering the workforce, or enter the workforce immediately.

Projects like these require the sustained collaboration of agencies whose strategic plans, data infrastructure, and business goals are usually independent of one another. The common goals of workforce readiness and financial stability offer an opportunity to build a bridge between these siloed fields and the public. The resulting trust and understanding has inspired further coordination: partners established during this process have joined the Illinois Department of Human Services and Illinois Department of Corrections in submitting a funding proposal to Data for the American Dream. The project will enhance an Administrative Data Research Facility, a data environment where state agencies can safely share and link data to examine longitudinal outcomes. If successful, the undertaking will involve other Midwestern states. While the project team desires to recognize the triumph of ILC2C and the SAS institutional researcher tool, the collaborative ability of the partnership speaks to an even higher-level accomplishment that will fuel outcomes in the state for years to come.

ⁱ Ma, J., Baum, S., Pender, M., & Libassi, C.J. (2018). *Trends in College Pricing, 2018*. New York: The College Board.

ⁱⁱ U.S. Census Bureau. (2017). *Educational attainment, 2017 American Community Survey 1-year estimates*. Suitland, MD: U.S. Department of Commerce.

ⁱⁱⁱ Centers for Disease Control and Prevention. (2018). *2017 National Health Interview Survey*.; Montez, J.K, Hummer, R.A., Hayward, M.D., Woo, H., & Rogers, R.G. (2011). Trends in the educational gradient of U.S. Adult Mortality from 1986 to 2006 by race, gender, and age group. *Research on Aging, 33*(2), 145-171

^{iv} Dubow, E.F., Boxer, P., & Huesmann, L.R. (2009). Long-term effect of parents' education on children's educational and occupational success: Mediation by family interactions, child aggression, and teenage aspirations. *Merrill-Palmer Quarterly, 55*(3), 224-249.; Duncan, G. J., & Magnuson, K. (2012). Socioeconomic status and cognitive functioning: Moving from correlation to causation. *Wiley Interdisciplinary Reviews: Cognitive Science, 3*(3), 377-386.; Noble, K.G., Houston, S.M., Brito, N.H., Bartsch, H., Kan, E., Kuperman, J.M., ... (2015). Family income, parental education, and brain structure in children and adolescents. *Nature Neuroscience, 18*(5), 773-778.

^v Cellini, S.R. & Turner, N. (2016). *Gainfully employed? Assessing the employment and earnings of for-profit college students using administrative data*. Cambridge, MA: National Bureau of Economic Research.

^{vi} Carnevale, A.P., Cheah, B., & Van Der Werf, M. (2015). *Ranking Your College: Where You Go and What You Make*. Washington, D.C.: The Georgetown University Center on Education and the Workforce.

^{vii} Carnevale, A.P., Garcias, T.I., & Gulish, A. (2017). *Career Pathways: Five Ways to Connect College and Careers*. Washington, D.C.: The Georgetown University Center on Education and the Workforce.