

# From Patchwork to Tapestry

Collaborating to Maximize Data Utility

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JUNE 2017



**WORKFORCE**  
DATA QUALITY  
CAMPAIGN







## Data System Development: Confusion or Collaboration

**H**ow do workforce practitioners know whether their programs are improving the lives of people in the communities they serve? How do policymakers know whether taxpayer investments are working? How can researchers understand why social services help some groups of people and not others?

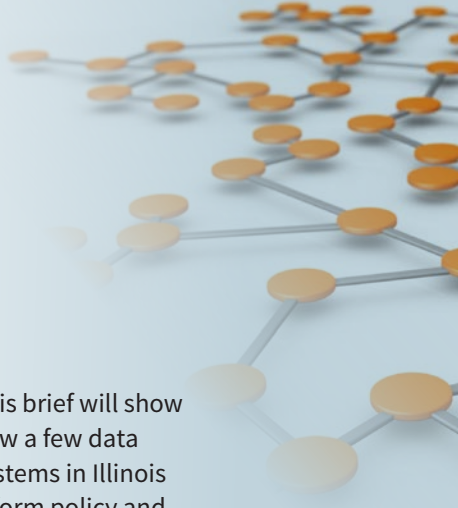
Longitudinal data systems can connect workforce training and other postsecondary education data with employment and social service data to answer those questions. With advancements in technology and significant investment by states and the federal government, agencies and research institutions are making strides in using data to assess and improve programs. Developing data systems that integrate information effectively, however, poses challenges.

Different agency and institutional requirements shape the collection, retention, and use of data, and can result in a confusing patchwork of data systems and linkages. Sometimes different entities develop separate data systems with the same type of information, creating repetitive agreements and redundant data collections. In other cases, cross-sector collaboration allows researchers, policymakers, and other stakeholders to more efficiently meet their mutual goals.

Illinois presents a rich example with data system development at different levels of government and research institutions. This brief will show how a few of these systems in Illinois inform policy and practice, and how organizations have collaborated to improve them. Recommendations informed by this case study encourage stakeholders to identify their data needs, determine whether any can be met by existing systems, collaborate when possible, and advocate for further rationalizing systems.



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## Data to Meet Many Demands

The fifth largest state in the country, Illinois is home to almost 13 million people.<sup>1</sup> About three million of them reside in Chicago.<sup>2</sup> To keep track of education, workforce, and social service programs for so many people, and with numerous research universities, Illinois has multiple data systems that include information relevant to workforce development.<sup>3</sup> This section describes data systems from a university, a major urban workforce area, and the state, and explains why these systems came to fruition and how they can contribute to understanding workforce development.

### **Chapin Hall Integrated Database**

Chapin Hall at the University of Chicago has conducted research and policy analysis since 1985 to improve the “well-being of children and youth, families, and their communities.”<sup>4</sup> Chapin Hall researchers were initially limited in their analysis because the data from state

agencies did not contain identifying information that would allow them to link data from different programs. Over two decades ago, Chapin Hall collaborated with the Illinois Department of Children and Family Services and other human service agencies to produce a more comprehensive, technologically advanced resource: the Integrated Database on Child and Family Programs in Illinois.<sup>5</sup>

**Purpose:** The Integrated Database uses probabilistic record linkage techniques to link data from different agencies and information systems for longitudinal analysis.<sup>6</sup> Researchers use the integrated database to assess the impact of multiple social service programs on families in Illinois and to “provide a comprehensive picture of child and family use of publicly provided or financed service programs.”<sup>7</sup> Chapin Hall also collaborates with agencies and institutions outside of the state for research and evaluation.

**Data:** Chapin Hall has experience combining datasets and analyzing them in partnership or through data sharing agreements with state agencies. The Integrated Database has at different times linked administrative data from over a dozen agencies in Chicago and statewide. The data warehouse has enabled Chapin Hall to link data from early childhood programs, child protective services, pre-kindergarten through postsecondary education, criminal and juvenile justice, employment and wages, social service receipt, and health care.<sup>8</sup> Running the database costs about \$750,000 per year.<sup>9</sup>

Chapin Hall staff have extensive experience arranging data sharing with agencies, and working with the University of Chicago and other institutions to vet researcher access.<sup>10</sup> Their philosophy is to serve as good stewards of other organizations’ data and not to treat data as belonging to the Integrated Database.<sup>11</sup>



**Using administrative data provided [researchers] with more insight than survey information alone, and produces useful information for managing programs.**

**Benefits of Integrated Data: Understanding Nutrition Assistance Uptake**

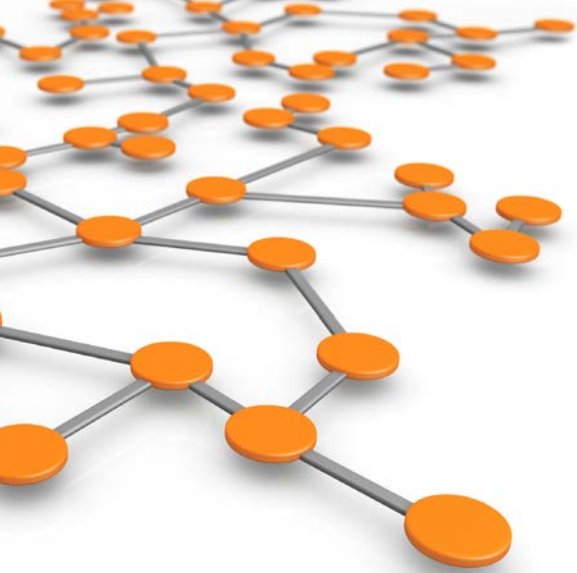
Chapin Hall’s research shows the unique benefits of data systems that combine administrative data from multiple sources to examine why programs successfully serve some people and not others. One Chapin Hall study used the Integrated Database to improve our understanding of why people who leave Temporary Assistance for Needy Families (TANF) do not apply for nutrition assistance even when they are eligible.

Researchers linked state data on TANF participants, nutrition assistance recipients,<sup>12</sup> and Unemployment Insurance (UI) wage records, and analyzed how levels of nutrition assistance receipt changed depending on family characteristics. One important finding was that nutrition assistance “take-up” varied depending on the district office, which suggested that the type of information and assistance being provided by offices was a critical factor.

The authors conclude that using administrative data provided them with more insight than survey information alone, and produces useful information for managing programs: “Administrative data records can be used to monitor nonparticipation at the local level on a ‘real-time’ basis, enabling state and local administrators to ensure that those who need it use [nutrition assistance].”<sup>13</sup>

**Illinois State Agencies with Data Relevant to Workforce Development**

<b>Postsecondary</b>	<b>Employment</b>	<b>Other Services</b>
<p><b>Illinois Board of Higher Education</b> Information such as enrollment and degrees conferred.<sup>14</sup></p> <p><b>Illinois Community College Board</b> Information such as enrollment, credentials awarded, and completion. For Workforce Innovation and Opportunity Act (WIOA), administers Adult Education and Family Literacy.<sup>15</sup></p>	<p><b>Illinois Department of Commerce and Economic Opportunity</b> For WIOA, administers Adult, Dislocated Worker, and Youth programs.<sup>16</sup></p> <p><b>Illinois Department of Employment Security</b> Labor market information, UI quarterly employment and wages. For WIOA, administers Wagner-Peyser employment services, including job searches and placement assistance, and referrals to employers.<sup>17</sup></p>	<p><b>Illinois Department of Human Services</b> Administers Supplemental Nutrition Assistance Program (SNAP) and SNAP Employment and Training.<sup>18</sup> For WIOA, administers Vocational Rehabilitation services, such as counseling, job training, and job search assistance, related to the employment of people with disabilities.<sup>19</sup></p>



Local stakeholders wanted a system that could produce operational reports and enable user-designed queries for more tailored analysis.

## Chicago Area Workforce Information Systems

Bringing their experience with the Integrated Database, Chapin Hall researchers collaborated with workforce development stakeholders to serve the Chicago Workforce Investment Council (CWIC) and launched CWICstats in 2009.<sup>20</sup> CWICstats focused specifically on workforce issues to help leaders in the Chicago area monitor public investment in education and workforce training “to improve the skills and earning potential of residents” and meet local employer needs.<sup>21</sup> CWICstats showed participant progress by using data “before, during, and after their workforce programs.”<sup>22</sup> Moreover, CWICstats produced a quarterly “dashboard report” for the Council with information such as labor force trends and industry sector changes.<sup>23</sup>

**Purpose:** Chicago area workforce leaders eventually discovered they needed a more comprehensive system for customer intake and program management.<sup>24</sup> With support from a \$3 million Workforce Innovation Fund (WIF) grant in 2012 and almost \$500,000 from the Chicagoland Workforce Funder Alliance,<sup>25</sup> the Chicago Cook Workforce Partnership led the creation of a more advanced data infrastructure.<sup>26</sup>

To inform the project, a team of experts from Chapin Hall and leaders from the Chicago Jobs Council, with the help of an expert consultant, surveyed 112 workforce service providers.<sup>27</sup> They also conducted focus groups with funders and providers, and held one-on-one and small group meetings with public agency and provider staff.<sup>28</sup> Local stakeholders wanted a system that could produce operational reports and enable user-designed queries for more tailored analysis in support of managing

services and reporting to funders.<sup>29</sup> Other concepts included allowing different levels of access depending on the user, with community-based service providers and public agencies able to access information for their program participants, and to access aggregate-level information for clients they are not directly serving.<sup>30</sup> Such “tiered access” can ensure privacy while allowing users the ability to see the performance of operations relevant to their roles.

The system, originally called the Integrated Workforce Information System, and now called Career Connect, is still under development. Career Connect will serve as an intake and information system for workforce customers across programs and funding streams, including jobseekers and employers. It will also allow personnel to access relevant information on a timely basis to provide better service to their customers. The new design should also save time for front-line staff by reducing redundant data entry.<sup>31</sup>

**Data:** Career Connect will build on the benefits of CWICstats, which matched wage records and other administrative data from agencies such as the Illinois Department of Employment Security and the Illinois Department of Commerce and Economic Opportunity.<sup>32</sup> The new system will include more data about service delivery, which is particularly relevant to program managers.

Earlier versions of the system had been estimated to cost about \$500,000 for annual operations.<sup>33</sup> The final version of Career Connect is scheduled to go live in spring/summer 2017.<sup>34</sup>



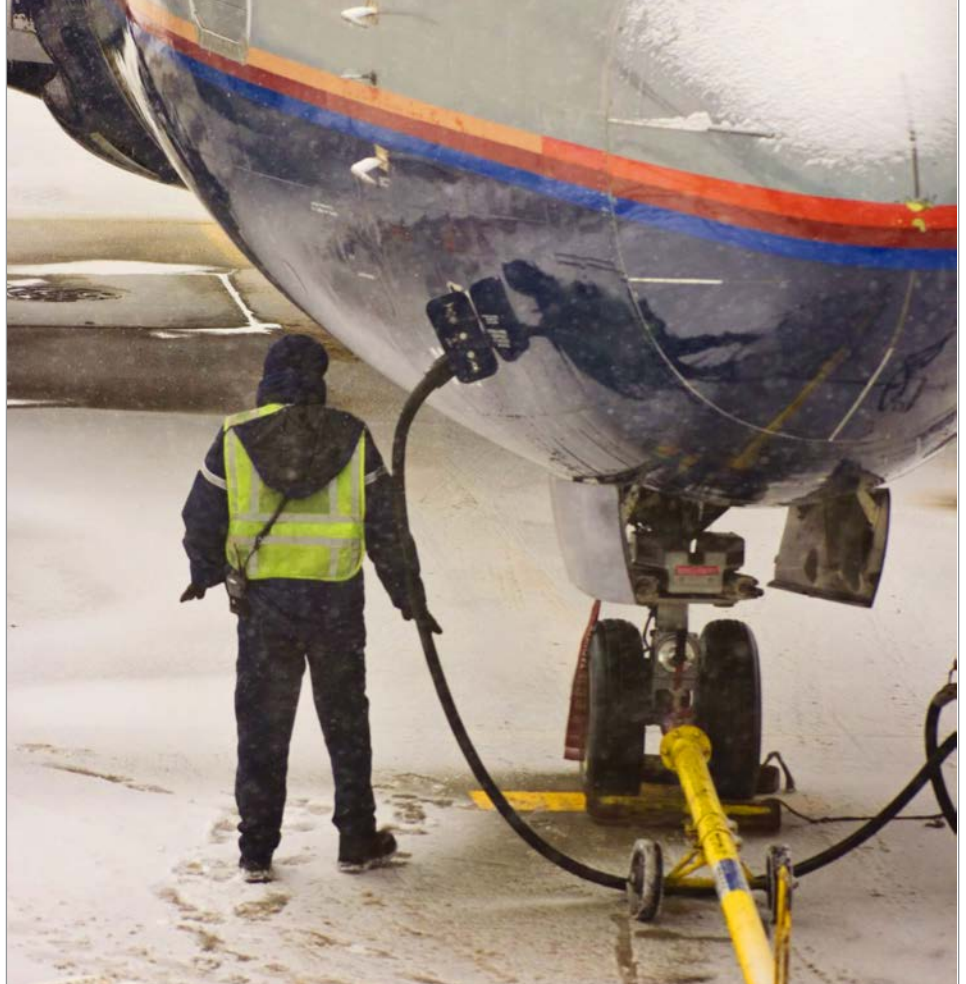
## Illinois Longitudinal Data System

In recent years, Illinois state agencies responsible for economic and workforce development and education have come together to ensure stronger linkages between education and workforce data. For performance reporting and analysis, agencies previously had to enter into stand-alone data sharing agreements that permitted only one-time data merging, which hindered long-term analysis.<sup>35</sup> Illinois received a Workforce Data Quality Initiative (WDQI) grant of \$1 million in 2012 to strengthen workforce longitudinal data used to promote training in high-demand sectors and occupations.<sup>36</sup> As part of this effort, the office of the Governor and seven state agencies teamed up to create the Illinois Longitudinal Data System (ILDS).<sup>37</sup>

**Purpose:** ILDS is a federated system that matches data from multiple agencies for specific tasks, while keeping data stored in individual agency databases and leaving agencies to administer separate intake systems. Linked data sets can assist government and qualified third parties with “performance management and reporting, research and analysis, and consumer information initiatives.”<sup>38</sup>

ILDS has five high-level priorities:

- Early Childhood: establish a distinct count of children (birth to age 5) served by programs;
- High School to College Success: college enrollment and performance information for Illinois public high school graduates;
- Community College Feedback: outcomes of community college graduates who transfer to public universities in Illinois;



- Career Pathways & Talent Pipeline Analysis: education and employment outcomes of students participating in health science career pathway programs in high school and in postsecondary education, and talent pipeline reporting for in-school youth, out-of-school youth and adult learners;
- 60% by 2025: measure credential attainment to track progress on the goal of 60% of Illinois residents obtaining a high quality postsecondary degree or credential by the year 2025.<sup>39</sup>

**Data:** Agencies that share data through the ILDS include the Illinois Department of Commerce and Economic Opportunity,<sup>40</sup> the Illinois State Board of Education, the Illinois State Board of Higher Education, the Illinois Community College Board, the Illinois Department of Employment Security, the Illinois Department of Human Services, and the Illinois Student Assistance Commission.

The ILDS uses an identity resolution system at Northern Illinois University to match data and return information to agencies<sup>41</sup>—building upon the university’s experience handling and matching UI data from the state.<sup>42</sup> To ensure privacy and security, ILDS is aligning security protocols across agencies. ILDS also developed a standardized vetting process for external researchers to access data with agency approval.<sup>43</sup>

The FY2017 budget for the data linkage system and staffing at the university is \$250,000. Expenses for staffing the governing board are \$60,000.<sup>44</sup> Those cost totals do not include expenses for data systems at the other ILDS participating agencies.<sup>45</sup>

## Collaboration and Creating Efficiencies

Extensive collaboration was required to develop each of these data systems. Each of the three systems involves multiple stakeholders—such as state agencies, university researchers, foundations, and city-level program managers—that forged trusting relationships based on mutual interests. Notable points of collaboration include:

- Chapin Hall collaborated with the Chicago Cook Workforce Partnership on the development of Career Connect. This relationship benefited from Chapin Hall's hosting of CWICstats.
- The initial Career Connect project received supplemental funding (in addition to the main federal grant) that resulted from ongoing engagement with Chicago-area funders who understood the demand for data, as well as the potential for a new data system to improve reporting to them.<sup>46</sup>
- The five high-priority areas for ILDS touch on questions of interest for several state agencies, leading them to establish a permanent arrange-

ment that facilitates data linkage for reporting and research.

- ILDS turned to Northern Illinois University to house its data linkage system because there was already a trusting relationship. The university had demonstrated its expertise by matching UI wage information for state agencies.

Leaders of these data systems have been making efforts to reduce redundant data collection and streamline processes. In the case of creating Career Connect, planners took into account technological advances and anticipated different uses, demands, and products, and have been working to incorporate them into a master system to streamline data entry. The ILDS provides participating agencies with ongoing access to data matching to avoid a cycle of re-creating agreements and data linkage capabilities.

Collaboration has its limits. While there is some overlap in the types of information these data systems manage, each has discrete purposes. For example, Chapin Hall serves social policy and academic missions,<sup>47</sup> while

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Career Connect will focus on providing information for workforce policy and programs in the Chicago metro area. ILDS' mission centers on education and workforce development for the entire state.

As state and local leaders continue to rationalize data infrastructure, there are more inefficiencies and data gaps to tackle. For example, a Chapin Hall scholar said it would have been more efficient for him to go directly to a state longitudinal data system to get employment data matched with SNAP participant data, instead of having to approach different agencies.<sup>48</sup> Other researchers at the local level have noted that reaching agreements to access data for wage outcome analysis can still be challenging and time-consuming.

Illinois researchers also face challenges getting wage data on residents who cross state borders for work—a situation agencies and researchers face across the country. Illinois participates in the U.S. Department of Labor's Wage Record Interchange Systems, which respond to state agency requests for out-of-state wage record information, but these systems only allow use of out-of-state data for limited purposes.<sup>49</sup>





# Recommendations

**W**orkforce development leaders are increasingly seeing the value of data systems for informing policy and practice. This overview of data systems in Illinois shows that systems take effort to develop and funding to sustain. Proponents of effective data use can learn from the experiences of Illinois. Some of these measures may require new collaboration, but can help to fill data gaps and further rationalize systems.

## Identify data needs and determine gaps

As a first step, stakeholders should identify their data needs and determine whether any can be met by existing systems.

An assessment of required datasets means involving all the likely users of data, including those who will use data for performance reporting. Make sure the design of the system will allow for producing timely reports that can inform program improvement and meet agency and government requirements. For example, agencies should account for Workforce Innovation and Opportunity Act (WIOA) performance reporting requirements when designing systems for intake and reporting. If gaps are found, other agencies or institutions may be able to share information they already have.

## Develop longitudinal, integrated data systems

Longitudinal reporting is necessary to show progress through education and workforce pipelines.

Matching data on education, workforce, and social service receipt provides a more complete picture of what happens as people move through different opportunities and use public services. The same information can be extracted for performance reporting, or for more in-depth evaluations.



Developing systems that could “talk” to each other would also eliminate redundant data entry and prevent having to recode or reformat data.

**Turn to end-user advice** Bring in local practitioners who understand the demands of the workforce system, and those who will use the system every day.

Will the types of information that come from the system be relevant to community organizations that perform training? Will the information produced from the system be timely enough to help local businesses make decisions? What kinds of workforce customer information will frontline workers need to enter into the system? For example, developers of Career Connect interviewed workforce development practitioners to address their needs and used their feedback to design a system that should eventually allow for more efficient intake of information by frontline workers.

## Reach out to research institutions

Research institutions with analytical and technical capacity can inform the process of data system development, and may provide the most viable options for hosting integrated, longitudinal systems.

Government partnerships with Chapin Hall at the University of Chicago and Northern Illinois University show how valuable researchers and technical professionals are to the development of data systems. Academics are interested in accessing good information when it is relevant to the mission of their own departments and understand the various types of data necessary to inform performance and evaluation, and may have an interest in helping their surrounding communities.<sup>50</sup>

## Make privacy and security manageable priorities

Privacy and security are the most important issues to consider when designing data

systems and should be integral to the planning process from the beginning.

Legal or bureaucratic barriers may seem too daunting, but developments in Illinois show that different options are available. ILDS chose a federated approach to linking data, which keeps much of the burden for maintaining privacy and security with the agencies that store their own data. Tiered access that allows the sharing of data while limiting access according to user roles is another solution. Such an arrangement can consolidate data intake and processing, while maintaining appropriate privacy protections, and can avoid the accumulation of more data in different places.

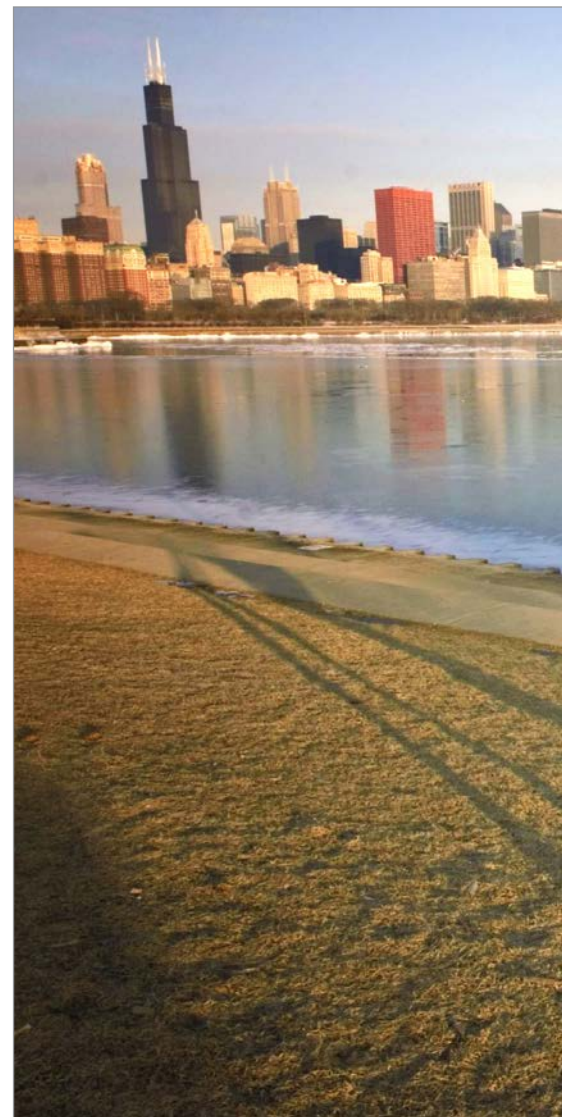
**Plan for long-term funding of systems** State and local data systems need sustainable plans that do not consistently rely on federal funding.

Education agencies in Illinois advanced their longitudinal data systems initially through significant support from the U.S. Department of Education’s Statewide Longitudinal Data System grant awards, and efforts to bring in longitudinal workforce data came later under the WDQI grant. However, continued grant funding is uncertain as federal leaders consider wide-ranging budget cuts. As an alternative, state legislation to provide annual funding is important for running systems and making necessary improvements. For local systems, involve leaders and foundations with an interest in community development, as the Chicago Cook Workforce Partnership did for informing and supporting the creation of its workforce data system.

**Advocate for federal data sharing** The federal government should develop ways to share wage information to fill state data gaps.

The federal government has wage data that could be shared with states for incorporation into their longitudinal data systems. This information could show employment and earnings outcomes of people served within the state’s

education and training system even when those people travel to another state to work—where their wage records are held. For example, the Longitudinal Household Employment Dynamics (LEHD) program at the U.S. Census Bureau collects quarterly wage record information from almost all states. Federal agencies sharing data with states might require legal changes,<sup>51</sup> but enabling such sharing could eventually result in greater efficiencies and more complete data.<sup>52</sup>

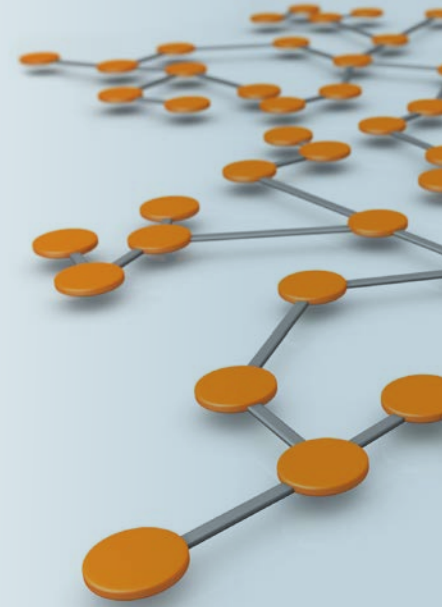




## Conclusion

The modern workforce system requires more collaboration than ever. State and local agencies should share information and develop their systems to work together as much as possible. Technologies now enable more integration of data. Workforce stakeholders should consider the opportunities for building on an integrated data model for improving workforce development in particular. To do it right takes cooperation from all relevant stakeholders, and likely more significant investments up front for efficiencies that will pay off later.

In the long term, more integrated, longitudinal data systems will provide information that practitioners and policymakers can use to make better decisions. It will also be up to policymakers to pay attention to these promising developments to support a more virtuous cycle of information intake, analysis, and program improvement.

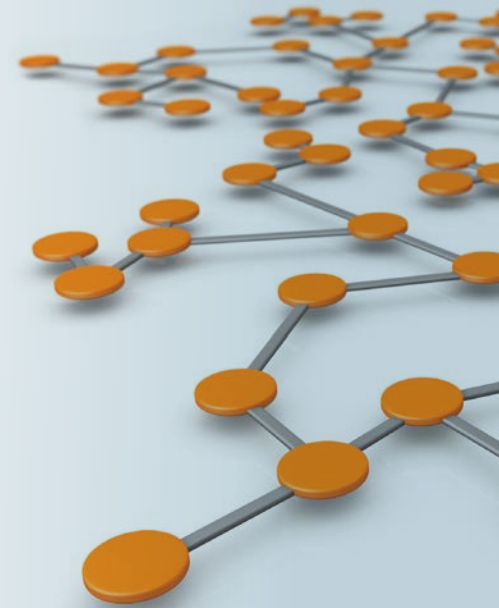


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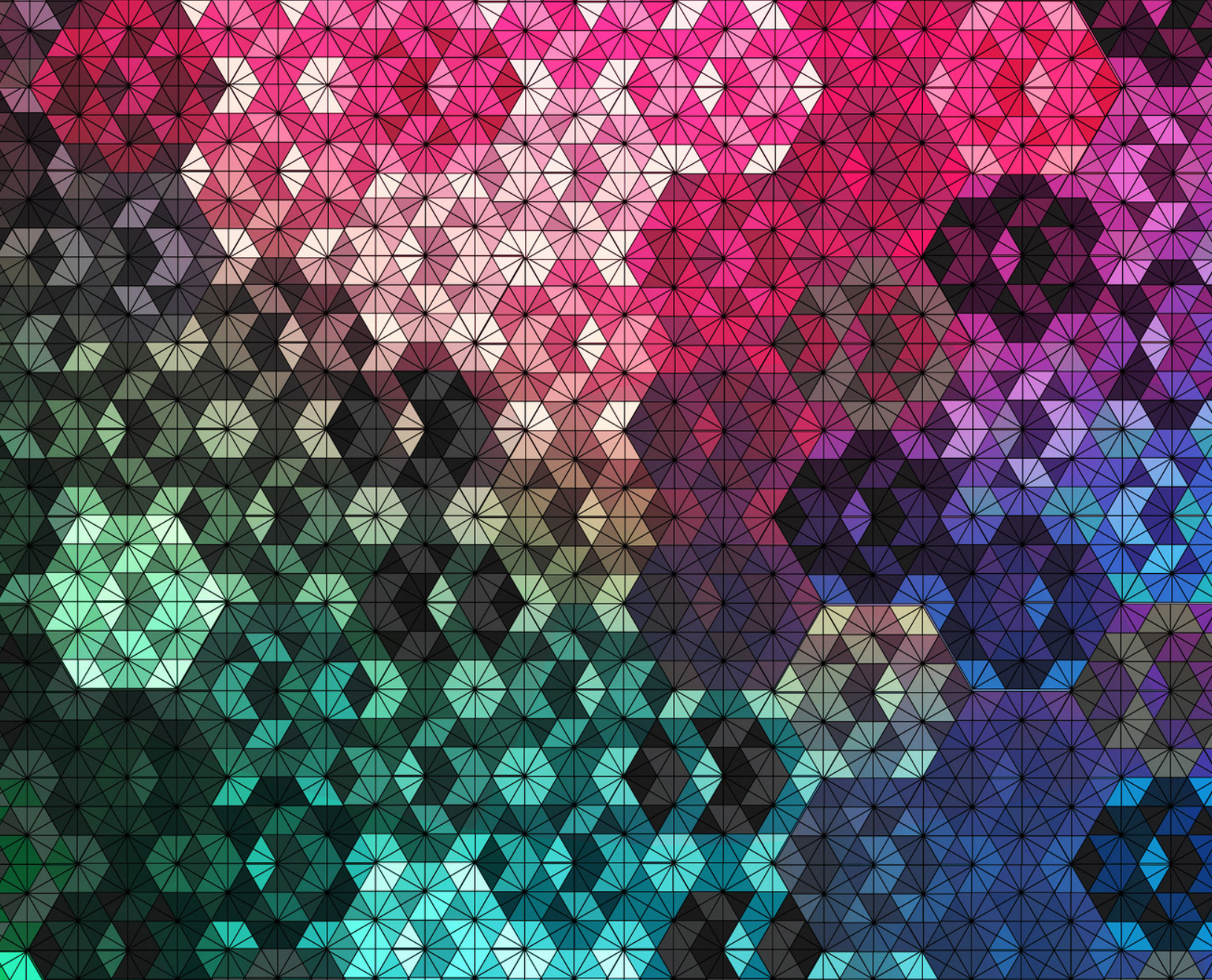


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- 44 Ibid, p. 20.
- 45 Ibid.
- 46 Weigensberg and Cage, pp. 474 and 475; Chicago Cook Workforce Partnership, Integrated Workforce Information System Overview, May 22, 2014, p. 9 <http://www.workforceboard.org/media/8898/iwis-overview-05-22-2014.pdf>
- 47 Kitzmiller, p. 8.
- 48 Phone interview with Robert Goerge, Senior Research Fellow, Chapin Hall, University of Chicago, August 23, 2016.
- 49 WRIS 1 and 2 are limited by their data sharing agreements. Only a state agency responsible for WIOA programs may receive individual wage record information. Under WRIS 2, Third Party Entities can receive aggregated information, but not individual record information. (Michelle Massie, "Crossing Boundaries: Regional Data Sharing to Study Worker Mobility," Workforce Data Quality Campaign, December 2014, p. 2, <http://www.workforcedqc.org/sites/default/files/images/WDOC%20crossing%20boundries-web%20version-final.pdf>). WRIS uses the Interstate Connection Network (ICON), which is operated through a cooperative agreement with the State of Maryland. Other limited interstate exchanges exist, such as the Multistate Longitudinal Data Exchange (MLDE) under the Western Interstate Commission on Higher Education (WICHE), but the MLDE does not include Illinois.
- 50 The Center for Regional Economic Competitiveness (CREC) similarly found in a review of state administrative data that making use of research expertise and facilities can make sense for state and local agencies that do not have these resources at their disposal. (Center for Regional Economic Competitiveness, "Improved State Administrative Data Sharing: A Strategy to Promote Evidence-Based Policymaking for Economic and Workforce Development," January 2017, p. 34.)
- 51 Although Chicago also hosts a Federal Statistical Research Data Center that provides an entry point for qualifying researchers to access U.S. Census Bureau microdata, Illinois and other states lack an agreement with Census to access the individual wage information the Bureau collects. The U.S. Census Bureau established one of its Federal Statistical Research Data Centers there in 2003—now among 24 centers across the United States. The Chicago FSRDC, located at the Federal Reserve Bank, provides a secure access point for qualified researchers to perform statistical analyses on non-public microdata from Census and other federal government agencies. Census collaborated with the Federal Reserve Bank of Chicago, Northwestern University, the University of Chicago, and the University of Illinois at Chicago to create the Center. Chicago Research Data Center, <http://www.ipr.northwestern.edu/research-areas/qcenter/chicago-research-data-center/about-us.html>, last accessed February 2, 2017.
- 52 For more information on federal linkages and employment data, see: Rachel Zinn, "Classroom to Career: Leveraging Employment Data to Measure Labor Market Outcomes," Postsecondary Data Collaborative, Institute for Higher Education Policy, and Workforce Data Quality Campaign, Envisioning the National Postsecondary Data Infrastructure in the 21<sup>st</sup> Century paper series, May 2016, <http://www.workforcedqc.org/sites/default/files/images/Leveraging%20Employment%20Data.pdf>; Chapin Hall at the University of Chicago, supported by the Laura and John Arnold Foundation, recently launched an initiative to provide policy-relevant insights on federal programs using administrative data available at the U.S. Census Bureau. The grant will support projects deemed most promising for helping to gauge the demand from researchers for linking to federal data and to inform capacity building within the federal government.









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