



Making it easy for people to access the data and research they need, when they need it.

The Massachusetts Education-to-Career Research and Data Hub



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Overview

The Massachusetts Education-to-Career Research and Data Hub was launched in 2021 thanks to a federal grant awarded to DESE, to improve access to actionable data and research across the Commonwealth for educators, policymakers, researchers, students, and their families. The Hub facilitates data connections between agencies, building on a strong foundation of existing integrated data systems linking students' early care, K-12, college, and workforce outcomes. In partnership with agency staff, the E2C Data Hub works to modernize data systems, improve data quality, expand access to data, and support collaboration with researchers to ensure educators and leaders have the information they need when making decisions.

Better Information → Better Decisions

Leaders, teachers, students, and families all face decisions about what education or career choice is likely to lead to the best results. The Hub will become a first stop for anyone seeking data or research to inform a decision, pointing people to what they need and eliminating barriers to access and understanding.

Who is the E2C Hub for?

- **For students and families:** Make it easy to understand the evidence on programs, schools, or supports when making decisions for a student.
- **For policymakers:** Put the right data and research into the hands of policymakers by ensuring that the needed information for policy priorities is available, findable, understandable, and actionable.
- **For educators:** Present educational best practices and data on the current state to promote equitable student outcomes in a way that is actionable and practical.
- **For researchers:** Build a larger and more diverse community of researchers with the knowledge and tools to produce relevant, actionable research to inform policy and practice.
- **For agency Staff:** Support both new and experienced staff with tools to search for available data, learn about using it, and get it in the right format so analysts spend more time on insights and less time on finding or cleaning data for both internal and external requests.
- **For students and families:** Make it easy to understand the evidence on programs, schools, or supports when making decisions for a student.

Guiding Principles

Since the E2C Hub's formation in 2021, work has been guided by four principles that were established based on input from agency leaders, data owners, and interviews with external data users:

- 1 **Promote shared ownership for progress on goals for education and career.** At the state and local level, leaders can review data on important measures and set shared goals that lead to more aligned policy and practice decisions.
- 2 **Facilitate actionable research on what leads to progress on long-term outcomes.** Create systems to support a growing community of diverse researchers who use state data to conduct research in high-priority areas and make findings accessible and actionable.
- 3 **Increase access to more complete data.** Expand links to data from other agencies while continuing to present more and better data publicly in easy-to-use formats.
- 4 **Enable more efficient, effective, and transparent reporting and data use.** Provide modern, user-friendly tools along with outreach and support that make data tasks faster and easier and increase overall usage of data.

Accomplishments

The E2C Hub's accomplishments to date include a mix of foundational work to improve data systems, relationship-building to promote more collaboration between agencies, and quick-win projects that demonstrate the promise of the E2C Hub and address immediate pressing needs. Critically, the E2C Hub now is fully staffed with talented individuals who provide capacity for agencies to focus on cross-agency work.

Current Work

In the current year, the E2C Hub is focusing on implementation of important processes and tools. This includes an internal data catalog (Alation) to support better data policies, practices, and usage within the Secretariat; an open data portal (Socrata) to make public data available through a searchable, unified system with flexible download of raw data; publication of additional dashboards in priority areas such as Early College; a streamlined system for managing external research requests; and much more.

Potential Plans

The future of the E2C Hub can still take many directions. The plans listed under Year 3+ are potential directions the Hub may take. Not all of the steps listed will be implemented; these plans will come into focus through guidance from leadership.

Principle 1: Promote Shared Ownership of Goals

Year 1 (2021-22): Accomplishments

- ✓ **Established a cross-agency leadership structure** to engage agency leaders and board members in setting priorities.
- ✓ **Hired E2C data analysts** for all three agencies.
- ✓ **Launched** E2C Hub [website](#).
- ✓ **Published** College and Career Outcomes Dashboard to show state trends and better meet Student Opportunity Act requirements for Secretary's annual update.
- ✓ **Connected Early College credit data** from DHE with participation data at DESE to enable reporting of earned credits.
- ✓ **Brought DESE earnings dashboard** up to date and established relationships with DUA to enable more reliable updating of data.

Year 2 (2022-23): Current Work

- **Formalizing decision-making** processes and structures for the E2C Hub.
- **Created an improved Early College dashboard** to present key metrics to staff, programs, and the public (public launch in Jan. 2023).
- **Launched the College and Career Outcomes** dashboard page to provide an overview of state-level outcomes.
- **Taking responsibility for ECIDS and Learn-to-Earn**, working with TSS to help agencies get more value out of the data systems.

Year 3+ (2023-24 and beyond): Potential Plans

- **Expand the E2C Hub to include other agencies** possibly including justice, health, or employment outcomes.
- **Provide outcome measures** for any major new program or initiative.
- **Hire analysts to collaborate with other secretariats** such as EOLWD.
- **Create a unified look and feel** for data tools across the secretariat.

Principle 2: Provide Actionable Research

Year 1 (2021-22): Accomplishments

- ✓ **Hired Equity and Research Manager** to build relationships with researchers and lead the work on research processes.
- ✓ **Planned for unified research request process** in collaboration with research staff at each agency.
- ✓ **Coordinated multi-party Educator Diversity project**, including research access to data and a steering committee of practitioners.

Year 2 (2022-23): Current Work

- **Creating a unified, more transparent research request process**, including a web-based request form, streamlined internal processes, and added capacity.
- **Planning for research library** to organize actionable research with state data.
- **Collaborating with external supporters** to build awareness and gather input from research community.
- **Establishing advisory groups on Research and Reporting, Equity and Community** to provide input on Hub plans.
- **Working on expanded Researcher's Guides** to cover EEC, DHE, ECIDS and LTE data (to accompany DESE's

Year 3+ (2023-24 and beyond): Potential Plans

- **Hire a dedicated cross-agency data fulfillment analyst** to expand capacity for data requests.
- **Consider hiring an academic researcher** to conduct in-house research with longitudinal data.
- **Create actionable research briefs** on important policy topics, for policy makers and/or the public.

Principle 3: Increase Access to More Complete Data

Year 1 (2021-22): Accomplishments

- ✓ **Created** directory of public data to make it easier for people to find what they need.
- ✓ **Supported EEC/DESE data sharing MOU** to enable EEC modeling of childcare de-mand.
- ✓ **Coordinated DESE/DHE data sharing** for Early College under existing MOU.
- ✓ **Fulfilled an ECIDS external data request** for the first time.

Year 2 (2022-23): Current Work

- **Planning for Open Data Portal**, a tool to provide search and access for all existing public data sets from agencies
- **Creating data stories** to present important data to the public with context.
- **Providing flexible, multi-year data exports** to meet needs of researchers, district staff and the public.
- **Define public files for cross agency data sets**, possibly including Early College, ECIDS, LTE, wage data.

Year 3+ (2023-24 and beyond): Potential Plans

- **Produce public reports that show race/gender together** to highlight important differences.
- **Significantly expand the data provided publicly** by each agency.
- **Explore acquisition of new data sets**, e.g. out-of-state earnings, data from independent colleges, district assessment data for K-2.

Principle 4: Enable More Effective Data Use

Year 1 (2021-22): Accomplishments

- ✓ **Purchased internal data catalog** to improve data documentation and access for agency staff.
- ✓ **Conduct user interviews** to understand unmet user needs and barriers to using existing data tools.
- ✓ **Created dashboards linked to data** in new cloud based tools (e.g. Snowflake).
- ✓ **Hired UX Designer to get user feedback** and ensure that tools are meeting users' needs.

Year 2 (2022-23): Current Work

- **Establish baseline usage numbers** for existing public reports and tools.
- **Hire Outreach and Engagement Manager** to set goals, develop strategy and increase use of existing tools.
- **Implement data catalog** to provide value for specific use case within agencies (e.g. expand # of analyst with direct access to data).
- **Improve documentation of data** internally, to support broader use of data.
- **Facilitate data governance prioritization** across agencies, to focusing data improvement efforts on policy needs.

Year 3+ (2023-24 and beyond): Potential Plans

- **Create micro-credentials** for use of state data, available to educators and/or researchers.
- **Create a flexible, easy-to-use chart tool** to make it easy for anyone to quickly access any public data.
- **Provide training to agency staff** to enable more data use outside of data teams.
- **Support teams to create and publish data stories** that help connect policy/context to data.
- **Guide data governance** at each agency to add capacity and focus on priority projects.

Organization, Funding, and Decision Making

The cross-agency E2C Hub must be equipped to work within complex dynamics, with many stakeholders including agency staff and leaders, board members, external data users, and the general public. The E2C Hub staffing is deliberately designed to support collaboration and engagement with the wide range of stakeholders the E2C Hub serves.

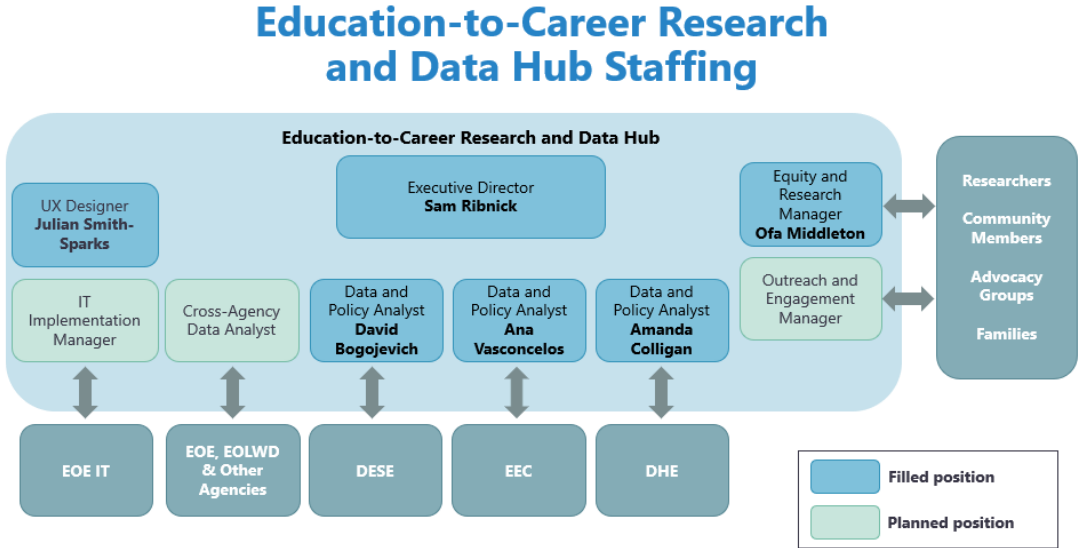


Figure 1. While most E2C Hub staff are DESE employees, the organization of E2C Hub enables effective work between and across agencies. This is further bolstered by the collaboration structures established (Figure 2 below).

Funding

The funding for the E2C Hub comes from DESE, thanks to a federal grant and a 2021 increase to the state line item for educational data services. DESE provides funding via interagency service agreement (ISA) to fund the positions in EEC and DHE, so that each agency benefits from added capacity and is able to participate fully in the cross-agency work. The grant is expected to fund the work at current levels through mid-2025, contingent on approval for no-cost extension.

Cross-agency collaboration structures for the Data Hub

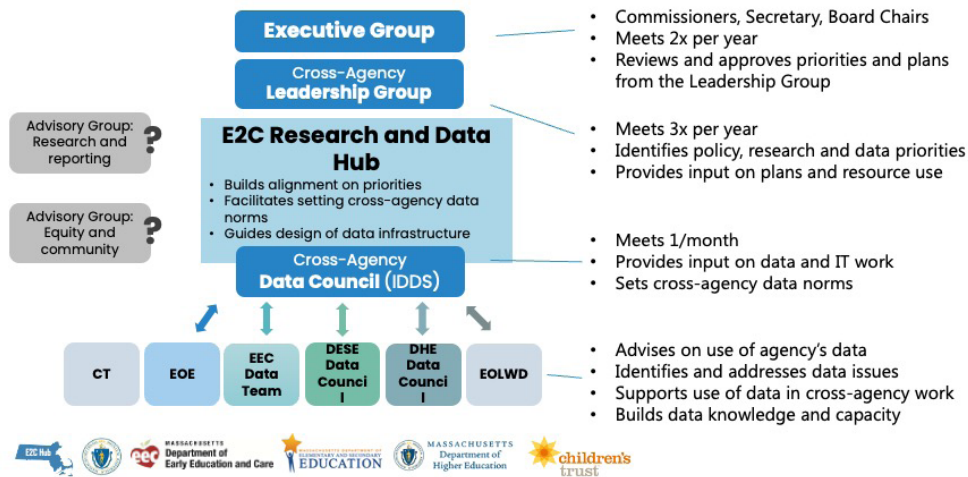


Figure 2. Voluntary cross-agency leadership structures. As of Nov. 2022, the Leadership Group is meeting 3x/year and Data Council is meeting monthly. The advisory groups are currently under exploration.

Roles and Responsibilities for Decision Making

The existing collaboration structures have worked well to engage each agency, but more clarity about decision making and roles will be needed as the E2C Hub matures. We recommend that the Cross-Agency Leadership Group be empowered to review and endorse plans, priorities, and resource decisions developed by E2C Data Hub staff to fulfill the vision and guiding principles outlined above. As needed, the Leadership Group will engage the Executive Group to review and approve priorities and plans to ensure alignment with statewide priorities.

Specific decisions about access to data, including approval of research requests, will continue to be made by the agency that owns the data (or agencies, in the case of merged datasets).

More details are explained below.

Setting Plans, Priorities, and Resource Use

The E2C Data Hub staff are best positioned to develop plans and responsible for their execution, but the plans must be informed by the priorities of agencies and external users. There should also be appropriate structures to ensure leadership at each agency have appropriate input, oversight, and accountability mechanisms.

Roles	Responsibilities
E2C Hub staff	<ul style="list-style-type: none"> • Gather input from stakeholders at all levels and synthesize to identify common themes and needs. • Understand priorities set by leadership. • Develop plans and budgets to meet the priorities, and refine the plans based on leadership input. • Draft data policies, identify data improvement needs, coordinate data governance efforts within agencies.
Cross-Agency Data Council	<ul style="list-style-type: none"> • Review data-related plans and recommendations from E2C Hub. • Determine policies that should apply across agencies. • Resolve cross-agency data issues.
Advisory Groups	<ul style="list-style-type: none"> • Present the top priorities of the external stakeholders that they represent. • Provide feedback on E2C Hub performance and plans. • Offer expert advice on specific projects or questions.
E2C Cross-Agency Leadership Group	<ul style="list-style-type: none"> • Review plans, options, and recommendations presented by E2C Hub. • Set priorities for the E2C Hub, and when needed, measurable goals. • Incorporate external input when setting priorities and direction. • Provide organizational support for E2C Hub projects that are set as priorities. • Keep executive leaders up-to-date and engaged when needed. • Hold E2C Hub accountable, including reviewing performance.
Executive Group	<ul style="list-style-type: none"> • Identify top priorities for the E2C Hub. • As needed, make final decision on options from Leadership Group. • Secure funding to support prioritized plans.

Roles and Responsibilities Example 1: Producing Actionable Research

- **Leadership group identifies needs for actionable research** in top policy areas, with input from executives, including general ideas of questions to be answered.
- E2C Hub staff, working with Data Council, agency research teams and research advisory group, **determines what relevant research is available, what research could be conducted, and what funding** may be needed. Staff formulates specific, actionable research questions that can be addressed by data.
- E2C Hub staff **provides briefing of existing research and recommendations** for new research projects to Leadership Group. Hub staff works with agencies to solicit high-quality research proposals, and ensures results are shared back with Leadership Group.

Roles and Responsibilities Example 2: Improving Data Access

- **E2C Hub staff maintains a prioritized list of data access needs**, including issues within agencies, across agencies, and for external users.
- **Leadership Group adjusts prioritization based on policy needs**, perhaps assigning the E2C Hub staff to pursue a new data connection or to invest time in resolving a known data issue.
- **Data Councils translate priorities into specific data projects**, with a combination of E2C Hub staff and agency staff assigned as resources to execute.
- **Executive group may be needed to forge connections in other secretariats** or to approve steps that may have significant risks or budget implications.

Access to Data

Data access questions arise for internal sharing between agencies and external sharing to fulfill public record requests or provide confidential data to researchers. Data sharing is governed by laws such as FERPA, HIPAA, and other federal and state statutes, along with the legal data-sharing agreements between parties (data sharing agreements includes both MOUs and DULAs).

- **Who should make decisions about which research projects are approved?** Recommend continuing the current practice: the agency whose data are requested is responsible for reviewing the research proposal and ultimately signing off on data access terms. One possible change is that the E2C Hub, under advisement of the Leadership Group, could develop a list of priority research topics and a set of considerations for reviewing research proposals, which could serve as a non-binding guide for agency review.
- **Who should sign off on cross-agency data-sharing agreements?** Recommend continuing the current practice: only the agency who owns the data has the power to execute data-sharing agreements.
- **Who should set the terms of data sharing?** Recommend that the E2C Hub work with lawyers from each agency, and with input from external research institutions, to develop a single data-sharing template that can be used for agreements to provide multi-agency data to researchers.

Current Priorities: Policy areas and data systems

The E2C Hub is guided by our understanding of the most pressing data and research needs for policy priorities, and the system improvements that will provide the strongest foundation for future needs. These priorities have not been ratified in any way, but have emerged through meetings with leadership and interviews with agency staff, data users in the field, and leading experts on longitudinal data systems.

E2C Hub staff have developed a project plan intended to execute on these priorities. Most recently, in the Oct. 31, 2022 Leadership Group meeting, we reviewed existing projects, planned projects, and suggestions from external stakeholders to seek feedback and direction on these efforts. Some of the top priorities endorsed by the Leadership Group were:

- Make existing public data more accessible for download (e.g. Open Data Portal)
- Promote usage of existing reports and data tools produced by agencies
- Assess which audiences/users are well-served, and develop plans to address gaps
- Clarify decision-making authority
- Establish a sustainable funding plan

Policy Priorities with Research/Data Needs

- **Early literacy supports** – An EEC/DESE interagency working group has been focused on identifying systemic barriers for students to reach early literacy benchmarks on 3rd grade reading MCAS. Thanks to the ECIDS data system, we have data on participation in a range of early childhood services linked to student outcomes in K-3. The E2C Hub team is working closely with EEC to formulate specific analytic questions and strengthen the use of ECIDS.
- **Educator Diversity** – The E2C Hub is helping to coordinate a research-policy-practice partnership spanning K-12 and higher ed, with interest from early education on similar questions. The research will focus on projections for educator diversity, enabling DESE to set targets and manage initiatives to hit those targets.
- **Pathway Opportunities** – Pathway programs are growing in importance and participation. DESE will soon be publishing participation data for Early College and Innovation Pathways, but data on internships will require additional work before trustworthy data are available for publication.
- **Early College** – Early College requires timely, trustworthy data on program leading indicators (enrollment, credits earned, demographics, etc.) and post-secondary outcomes (college attendance, persistence, degree attainment). This requires connecting DESE and DHE data in new ways and using new technology to enable automated updating of public dashboards.
- **Earnings Outcomes** – DESE has recently released a public report showing student earnings after graduation, by school district. The availability of this data has opened many new questions about viewing earnings by level of post-secondary attainment, by major, by high school type (Voc/Tech, charter, etc.) and more. Combined with the Learn-to-Earn data system, there is tremendous opportunity to explore what programs and services are connected to earnings outcomes for students and adults.

Foundational System Improvements

- **Streamlined process for research requests** – The E2C Hub has been working together with research staff across the education secretariat to produce a structured web to intake research requests and automate portions of the research request review process. This comes from a strong desire across agencies to reduce the time it takes to fulfill these requests, and conversations with external researchers who would like to see more transparency over the request process.
- **Additional capacity for research data sharing** – The E2C Hub team provides capacity across the agencies for receiving and fulfilling data requests and instructing members of the public on how to find and use the various data and research tools readily available online.
- **Export of raw data for multiple years or student groups** – The consistent top pain point in conversations with external users of the state's data and agency analysts is that they are unable to download and export multiple years of data or student groups at a time (e.g. Profiles statewide reports). This limits people's use of state data and adds more burden to agency analysts who spend time fulfilling custom requests for public data.
- **More usage of existing tools** – Through interactions with external users of the state's data, the E2C Hub team has noticed that members of the general public are not often aware of the data tools already available on agency websites. The E2C Hub team is working to draw attention to these tools and demonstrate the value through our newsletter, participation in conferences, and other communication strategies.
- **Simplify data use within agencies** – Agency staff have identified barriers that limit who can use data effectively within agencies. In some cases, important data are only accessible to a small set of analysts who use SQL. Knowledge of the data is mostly undocumented, so that only long-time staff have the needed information to use data effectively. And agencies have little in the way of data training for new hires outside of the data teams. The E2C Hub is addressing these issues, and more, through the implementation of a data catalog and better documentation.

Sustainability

The E2C Hub is currently well-situated to sustain and accelerate work through 2023 and 2024, with funding from DESE's federal grant and state account for educational data services. The existing leadership structures give the E2C Hub some stability during times of transition or personnel change.

External groups supportive of the state's efforts on data are advocating to codify an approach to sustainability. The "Friends of the Longitudinal Data System", led by MassINC, is working with consultants and legislators to prepare a bill for the 2023 legislative session. A recent report (Oct. 2022) specified key elements of such a bill, including establishing a governance structure that includes external stakeholders, providing for greater public access to linked data, set goals and hold the system accountable, and ensure there is adequate and predictable funding.

Appendix

EOE

Ann Reale, Undersecretary of Education
Bob LePage, Assistant Secretary for Career Education
Danielle Norton, IDDS Project Manager

EEC

Mora Segal, Board member
Jocelyn Bowne, Deputy Commissioner
Adrienne Murphy, Director of Data
Ana Vasconcelos, E2C Analyst

DESE

Marty West, Board member
Regina Robinson, Deputy Commissioner
Matt Deninger, Chief Strategy and Research Officer
Rob Curtin, Associate Commissioner

DHE

Alex Cortez, Board member
Christine Williams, Assistant Commissioner
Mario Delci, Associate Commissioner Research & Planning
Amanda Colligan, E2C Analyst

Children's Trust

Pam Soukamneuth, IT Director

EOLWD

Jennifer James, Undersecretary, Workforce Development
Lisa Hemmerle, Economic Research Director
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