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Data Mapping: Learning from Diverse Institutional Approaches

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About FirstGen Forward

FirstGen Forward (FGF) is the center for first-generation student success– your premier source for evidence-based approaches, data-informed strategies, professional development, and research. Together, we are building community and belonging through the FirstGen Forward Network, knowledge creation and evidence-based practices, and thought leadership and advocacy, transforming higher education and the student success landscape guided by a first-gen lens.

Acknowledgement and Purpose

This initiative was made possible through generous support from the Bill & Melinda Gates Foundation, whose commitment to advancing equity in higher education aligns with the goals of FirstGen Forward and the Postsecondary Data Partnership (PDP). As part of a comprehensive effort to strengthen data-informed practices, this project encompasses a range of activities designed to help institutions close equity gaps and improve student success. One key component is a series of case studies examining how colleges and universities leverage PDP data to support first-generation students. By highlighting the experiences of Metropolitan State University of Denver and Tusculum University, this research surfaces effective strategies, common challenges, and opportunities for scaling impact. These insights will inform future resources, training, and tools that empower institutions to maximize the potential of PDP in driving equitable outcomes.

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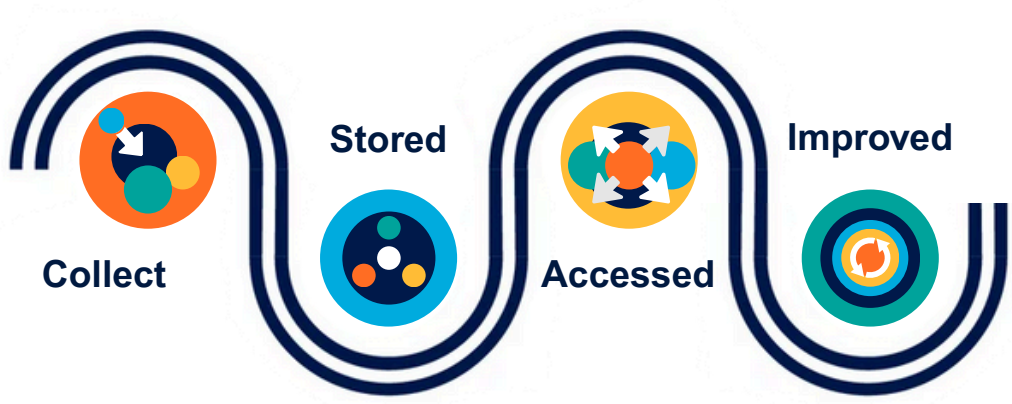
Understanding Context and Purpose of Data Mapping

As institutions strengthen their commitment to first-generation student success, they face a fundamental challenge: how to create coherent pathways through fragmented data landscapes. Metropolitan State University of Denver (MSU Denver) and Tusculum University offer complementary perspectives on this mapping process. Their experiences demonstrate how effective data mapping responds to unique institutional contexts rather than following a one-size-fits-all model.



Data mapping—the process of documenting what data exists, where it resides, how it flows, and who uses it—takes different forms across institutions. MSU Denver's mapping efforts reveal a complex ecosystem: enrollment data flows from admissions through the registrar to institutional research, student success metrics move between academic affairs and student support services, and first-generation indicators must be tracked across multiple touchpoints from application through graduation. Their challenge is to connect these parallel streams to form a comprehensive view of the student journey.

Tusculum University's data mapping focuses on different priorities. With limited staff managing multiple responsibilities, their mapping process emphasizes identifying essential data pathways: which metrics directly inform grant applications, where first-generation student information is captured and stored, and how program-level data connects to institutional reporting requirements. Their T-Reports system represents one attempt to map these connections, creating bridges between isolated data points and actionable reports.

The mapping process at both institutions revealed critical gaps and opportunities in source identification, flow documentation, access mapping, and integration points—essentially identifying where first-generation status is captured, how data flows through systems, who can access what, and where different streams could connect to yield richer insights.

Within these mapping efforts, the PDP serves as both a repository for institutional data and a source of comparative insights, requiring institutions to map not only internal data flows but also the connections between local systems and external reporting structures. This dual mapping, both internal pathways and external connections, helps institutions understand their complete data ecosystem and identify opportunities for more effective use of information to support first-generation student success.

Building Capacity and Connection

Data mapping requires both technical documentation and human understanding. Across both institutions, staff recognized that creating effective data maps means more than charting systems—it involves building shared comprehension of what data means and how it connects to student support actions.

The mapping process itself revealed consistent capacity-building needs. Staff at both institutions requested practical tools, including mapping templates, data flow diagrams, access matrices, and connection guides—resources that transform abstract data concepts into concrete maps staff can use to navigate their information ecosystems.

*These findings suggest that effective data mapping must include the creation of **standard vocabularies and the identification of opportunities for integration**.*

The process of creating these maps revealed important insights into data literacy needs. At MSU Denver, staff described how PDP data, particularly credit completion and accumulation ratios, serve as a critical component of their strategic planning and institutional effectiveness efforts, with growing interest in how the platform's various tools could support more targeted student interventions as they continue to explore the system's full capabilities. At Tusculum,

the mapping process revealed that valuable data existed in silos, with TRIO programs tracking detailed student interactions that never connected to institutional retention analyses. These findings suggest that effective data mapping must include the creation of standard vocabularies and the identification of opportunities for integration.

As institutions documented their data flows, they identified various approaches to linking information to action. Some mapped formal pathways that when a student's credit completion ratio falls below a threshold, it generates an advisor alert. Others documented informal connections, such as monthly meetings in which staff review gateway course data and collaboratively identify students who need additional support. These different mapping approaches reflect institutional cultures while serving the same purpose: ensuring data leads to student support rather than simply accumulating in reports.

The human dimension emerged strongly through the case studies. Staff emphasized that their maps needed to capture not just where data lived, but also who understood its context and limitations—the institutional memory of data quirks, seasonal variations, and population-specific considerations that shape interpretation. Effective mapping, therefore, includes identifying these knowledge holders and documenting their insights alongside technical specifications.

Resource realities shape how institutions approach the mapping process itself:

- Institutions with dedicated institutional research staff might conduct comprehensive mapping exercises, documenting every data element and connection
- Those with distributed responsibilities might focus on mapping critical pathways first, such as early alert systems or first-generation student tracking
- Organizations with collaborative structures might use participatory mapping sessions where staff from different departments collectively document data flows

Each mapping approach can effectively document data ecosystems when aligned with institutional capacity and culture. The key lies not in the comprehensiveness of the initial map but in creating a foundation for ongoing documentation and improvement.

Moving Forward with Data Mapping

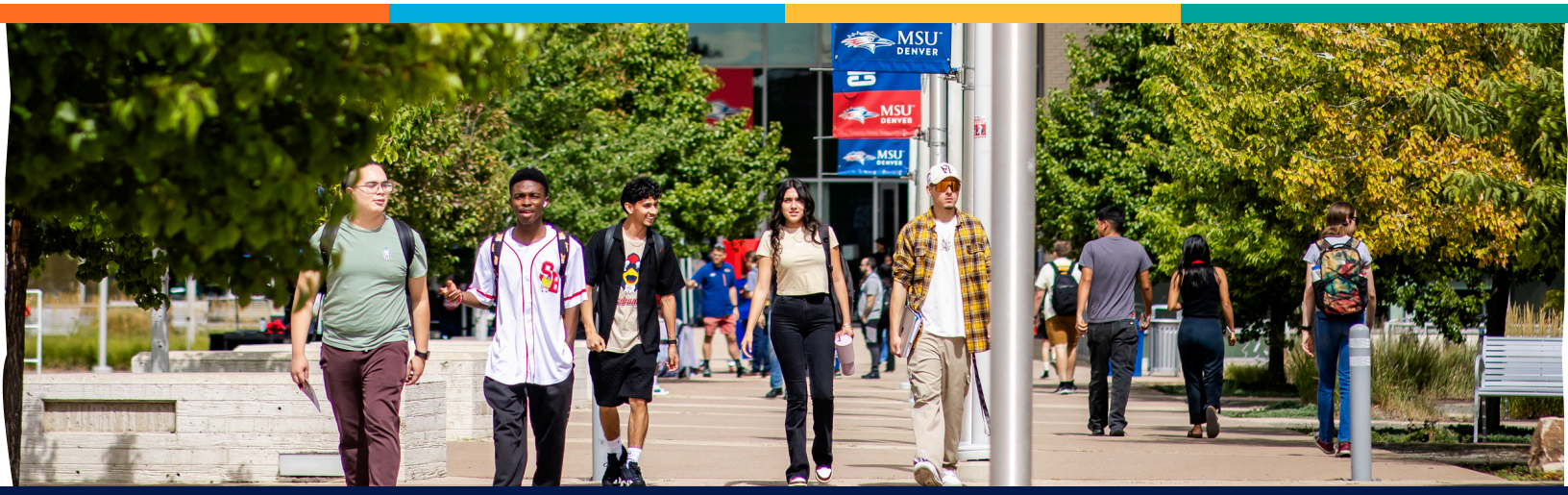
As institutions develop their data practices for first-generation student success, several principles apply across contexts, beginning with the fundamental principle of starting where you are.

Start Where You Are:

Building on existing strengths and relationships proves more sustainable than attempting wholesale transformation. Some institutions begin with comprehensive documentation of all data sources and flows. In contrast, others launch focused pilots around specific high-impact metrics, such as gateway-course success or credit accumulation rates. The key is choosing a starting point that generates early wins and builds momentum for broader efforts.

Focus on Purpose:

Once that foundation is established, every subsequent data-mapping effort should be directly linked to student success outcomes. This means prioritizing actionable metrics that inform real interventions over comprehensive but unused reports. For instance, MSU Denver staff emphasized that they use PDP metrics, such as credit completion and accumulation ratios, to track progress toward their strategic plan goals, with particular interest in identifying patterns that could inform targeted support. Similarly, Tusculum participants discussed examining gateway-course performance, particularly in challenging courses such as statistics, to understand where students face barriers. Several interviewees across both institutions noted the importance of moving beyond simply documenting metrics to using data insights to inform program improvements and student interventions, though the specific mechanisms for these connections varied by institutional resources and structures.



Invest in People:

Alongside these structural considerations, successful data mapping requires recognizing that data literacy looks different across roles and departments:

- Faculty members need to understand course-level patterns and pedagogical implications
- Advisors require skills in interpreting early warning indicators and progress metrics
- Administrators seek competency in strategic analysis and resource allocation data
- Support staff benefit from understanding program participation and outcome tracking

This differentiated approach to professional development helps each group understand not just how to access data but how to interpret and act on it within their specific context.

Maintain Flexibility:

As institutions implement these practices, they must remember that what works at one institution may need significant modification at another. A data governance structure that succeeds at a large research university might overwhelm a small liberal arts college. In contrast, a streamlined reporting system perfect for a community college might lack the necessary complexity for a comprehensive regional university. This reality adapts, not replicates, the guiding principle as institutions learn from peers.

Iterate and Improve:

Finally, effective data mapping requires treating the process as ongoing rather than finite, with clear milestones marking progress:

1. Document current state and identify priority metrics
2. Build basic access and literacy for key users
3. Establish regular review cycles and feedback loops
4. Expand capabilities based on lessons learned
5. Continuously refine based on student outcome data

These institutions' experiences offer valuable lessons for others developing their data practices. By respecting different approaches and learning from diverse experiences, the FirstGen Forward Network can support all institutions in creating data ecosystems that effectively serve their first-generation students. The path forward acknowledges that effective data mapping varies across contexts, shaped by institutional size, resources, culture, and student needs. Still, the commitment to using information thoughtfully to support student success remains constant across all contexts.