



Grand Challenges in Assessment:

Leveraging Data Visualization to Support Data-Informed Decision-Making

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Learning Outcomes



1

Describe how data visualization and interactive data dashboards can help drive campus improvement, promote equity, and facilitate student growth

2

Recognize major challenges and opportunities related to advancing the use of data visualizations and data dashboards to support campus decision-making.

3

Identify your own knowledge and skill gaps in creating, sharing, and using data visualizations to support data-informed decision-making.

4

Create an action plan that will enable decision-makers at your own institutions to see and understand assessment data to support data-informed decision-making.

Session Overview

Part 1

Background

Part 2

Using Data Vis to Drive Improvement, Promote Equity, and Facilitate Student Growth

Part 3

Challenges & Opportunities

Part 4

Identifying Your Knowledge & Skill Gaps

Part 5

Action Planning

Poll Everywhere

Responses are anonymous

2 ways to participate

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On the continuum of data visualization, where do you currently fall?

Level 0: No Data Visualization Experience

Level 1: Static Charts & Tables (ex: Excel)

Level 2: Interactive Dashboards for Internal or External Consumption (ex: Tableau, PowerBI)



What part of your organization do you work in?

Institutional Research

Office of Assessment & Accreditation

Campus Administration

College or School

Student Affairs

Business Affairs

Other



Is there a question that you are bringing to the session that you hope to have answered? Let us know and we'll do our best to address it during the session.

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1

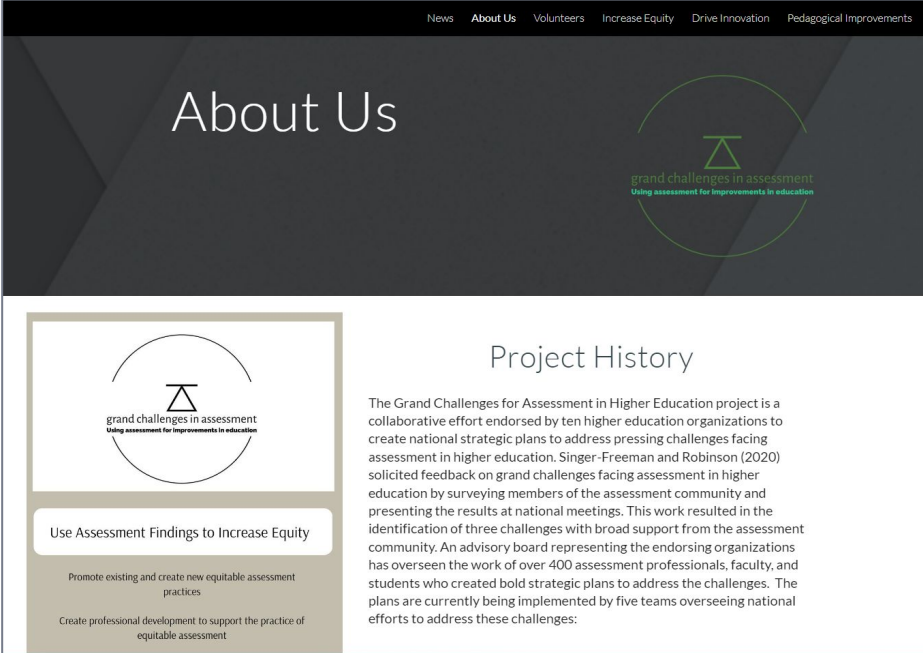
Background and Context



Grand Challenges in Assessment

3 Implementation Teams

1. Using Assessment Findings to Increase Equity
2. Making Assessment Findings Visible and Actionable to Drive Innovation
3. Using Assessment Findings to Drive Rapid and Equitable Improvements in Pedagogy



The screenshot displays the 'About Us' page of the Grand Challenges in Assessment website. The top navigation bar includes links for News, About Us, Volunteers, Increase Equity, Drive Innovation, and Pedagogical Improvements. The main heading is 'About Us'. A circular logo on the right contains the text 'grand challenges in assessment' and 'Using assessment for improvements in education'. Below this, the 'Project History' section is visible, featuring the same logo and a text block that describes the project as a collaborative effort endorsed by ten higher education organizations to create national strategic plans to address pressing challenges facing assessment in higher education. The text mentions Singer-Freeman and Robinson (2020) solicited feedback on grand challenges facing assessment in higher education by surveying members of the assessment community and presenting the results at national meetings. This work resulted in the identification of three challenges with broad support from the assessment community. An advisory board representing the endorsing organizations has overseen the work of over 400 assessment professionals, faculty, and students who created bold strategic plans to address the challenges. The plans are currently being implemented by five teams overseeing national efforts to address these challenges.

sites.google.com/wfu.edu/grandchallengesinassessment

Data Visualization Subcommittee Charge

- 1) Create and disseminate data visualization and data storytelling resources *and*
- 2) Increase use of data visualizations in higher education

Proper data visualization can communicate findings quickly so that stakeholders can focus on implementation strategies rather than understanding the data.

Data Vis Working Group Priorities

Where we started

- ▶ Formed as a group
- ▶ Created a logic model
 - ▷ Activities
 - ▷ Impacts
 - ▷ Resources needed
- ▶ Outlined performance outcomes measures

Where we are now

- ▶ Conducting a needs assessment (ongoing)
- ▶ Building awareness about role/value of data visualization in decision-making
- ▶ Creating a data vis toolkit

Where we're headed

- ▶ Completing & disseminating toolkit
- ▶ Writing articles
- ▶ Creating and offering educational opportunities
 - ▷ Webinars
 - ▷ Hands-on workshops
 - ▷ Other continuing education

2

Using Data Visualization to Drive Improvement, Promote Equity, and Facilitate Student Growth



Data vis is ...

... the presentation of data in a pictorial or graphical format. It enables decision makers to see analytics presented visually, so they can **grasp difficult concepts or identify new patterns.** ([SAS Website](#))



Why “do” data vis?

Alberto Cairo explains,

“The first and main goal of any graphic and visualization is to be a tool for your eyes and brain to **perceive what lies beyond their natural reach**” (Cairo, *Functional Art*, pages 9 -10).

“...if you don’t present your data to readers so they can see it, read it, explore it, and analyze it, why would they **trust** you?” (Cairo, *Functional Art*, page 13).





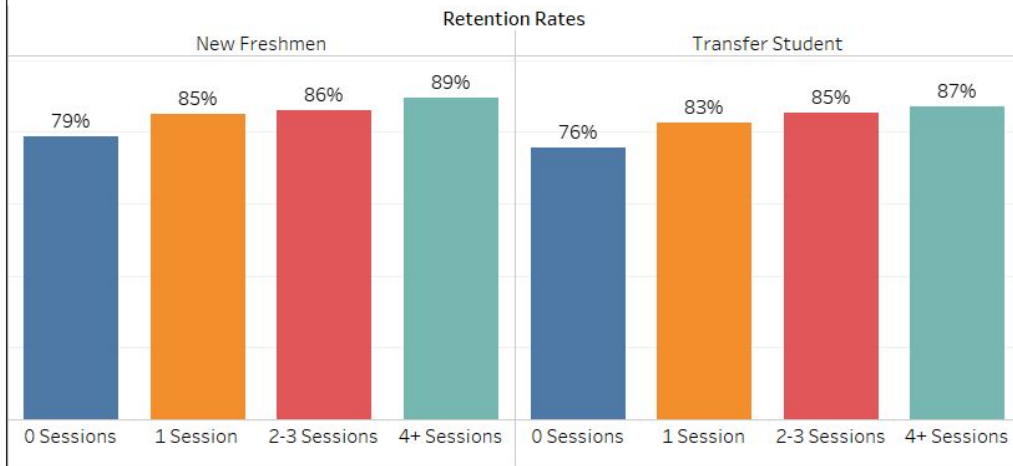
Example:

UNC Charlotte's library is leading a 10+ year campus-wide longitudinal study to gather, align, and analyze undergraduate co-curricular engagement data with measures of student success.

- ▶ Students who matriculated from 2012-2013 to 2021-2022 are included in the dataset; data are added after each academic year.
- ▶ Through insights gained through data visualizations, the library was able to make a case for hiring a new librarian to support transfer student success.

Library Instruction Year 1 to Year 2 Retention

Library Instruction Sessions x Year 1-Year 2 Retention Rates



Matriculation Year

(All) ▾

First Generation

(All) ▾

Race (URM)

(All) ▾

Pell Eligibility

(All) ▾

College

(All) ▾

Major

(All) ▾

The first graph confirmed that students who engage in library instruction in Year 1 are more likely to be retained for Year 2.

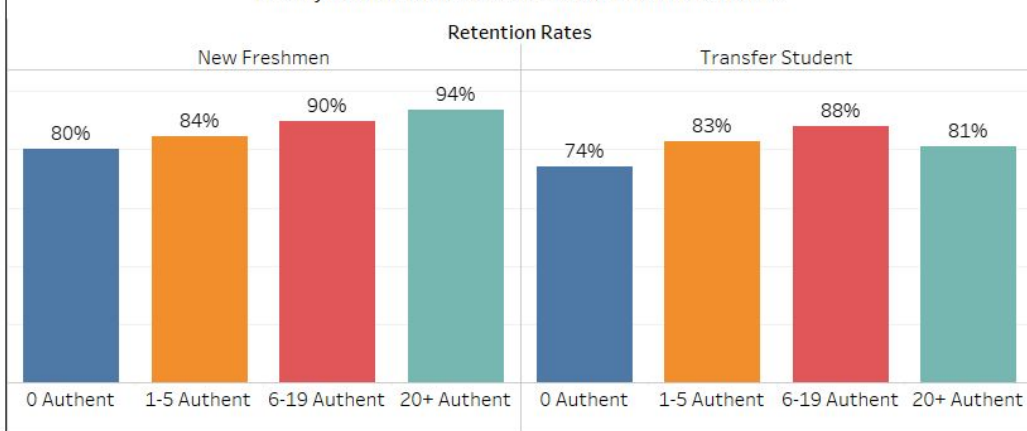
Undergraduate Students Participating in Library Instruction in 1st Year

	New Freshmen		Transfer Student	
	Total	% of Total	Total	% of Total
0 Sessions	13,309	42%	20,544	81%
1 Session	11,816	37%	3,678	14%
2-3 Sessions	5,778	18%	1,096	4%
4+ Sessions	685	2%	115	0%
Grand Total	31,588	100%	25,433	100%

However ... the visualizations also revealed that 81% of transfer students did not participate in library instruction.

Library Authentications Year 1 to Year 2 Retention

Library Authentications x Year 1-Year 2 Retention Rates



Matriculation Year

(All) ▼

First Generation

(All) ▼

Race (URM)

(All) ▼

Pell Eligibility

(All) ▼

College

(All) ▼

Major

(All) ▼

Undergraduate Students who Authenticated to Library Resources in 1st Year

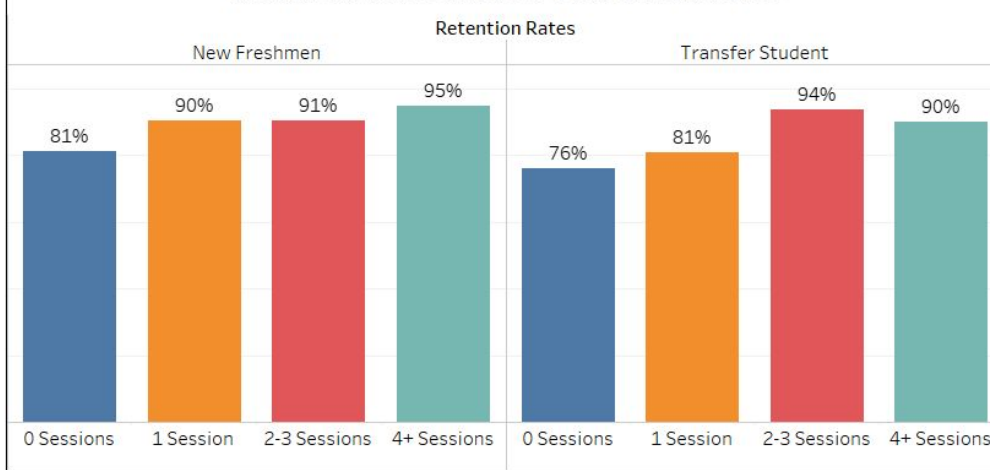
	New Freshmen		Transfer Student	
	Total	% of Total	Total	% of Total
0 Authent	20,259	64%	18,234	72%
1-5 Authent	6,391	20%	4,167	16%
6-19 Authent	4,335	14%	2,424	10%
20+ Authent	603	2%	608	2%
Grand Total	31,588	100%	25,433	100%

Students who use the library's authenticated (licensed) resources are also more likely to be retained to Year 1. Learning to use these resources often occurs in library instruction.

Similar to library instruction ... very few students are accessing authenticated resources in their 1st year.

Library Instruction Year 1 to Year 2 Retention

Library Instruction Sessions x Year 1-Year 2 Retention Rates



Matriculation Year
(All) ▾

First Generation
(All) ▾

Race (URM)
(All) ▾

Pell Eligibility
(All) ▾

College
Education ▾

Major
(All) ▾

Using filters enables exploration of nuances based on student demographics in order to gain additional insights.

Undergraduate Students Participating in Library Instruction in 1st Year

	New Freshmen		Transfer Student	
	Total	% of Total	Total	% of Total
0 Sessions	161	21%	800	72%
1 Session	250	32%	242	22%
2-3 Sessions	306	39%	65	6%
4+ Sessions	59	8%	10	1%
Grand Total	776	100%	1,117	100%

Explore on your own!

<https://tinyurl.com/datavisexample>

3

Challenges & Opportunities



Data Visualization Inventory of Assessment Users Survey

(our needs assessment)

- Address professional development needs of higher education assessment professionals
- Consider ways to address current barriers to data visualization

Survey Link: <https://tinyurl.com/surveydatavis>



Last Data Refresh: April 24, 2023

Total Survey Responses: 371

Dashboard Navigation Buttons

About the Respondents

Primary Stakeholders

Data Visualization Tools Available

Data Visualization Tools Regularly Used

Data Visualization Challenges

Professional Development Needs

Professional Development Needs & Carnegie Class

Professional Development Needs & Part of Organization

Professional Development Needs (Comments)

Professional Development Needs Format Preferences

Tips, Tricks, & Expertise

 + a b l e a u



<https://tinyurl.com/datavisdashboard>

Which of the following is the most pressing challenge you are current facing relating to data visualization in your organization?

Lack of Staffing/Time to Meet Demand

Educating Data Visualization Customers

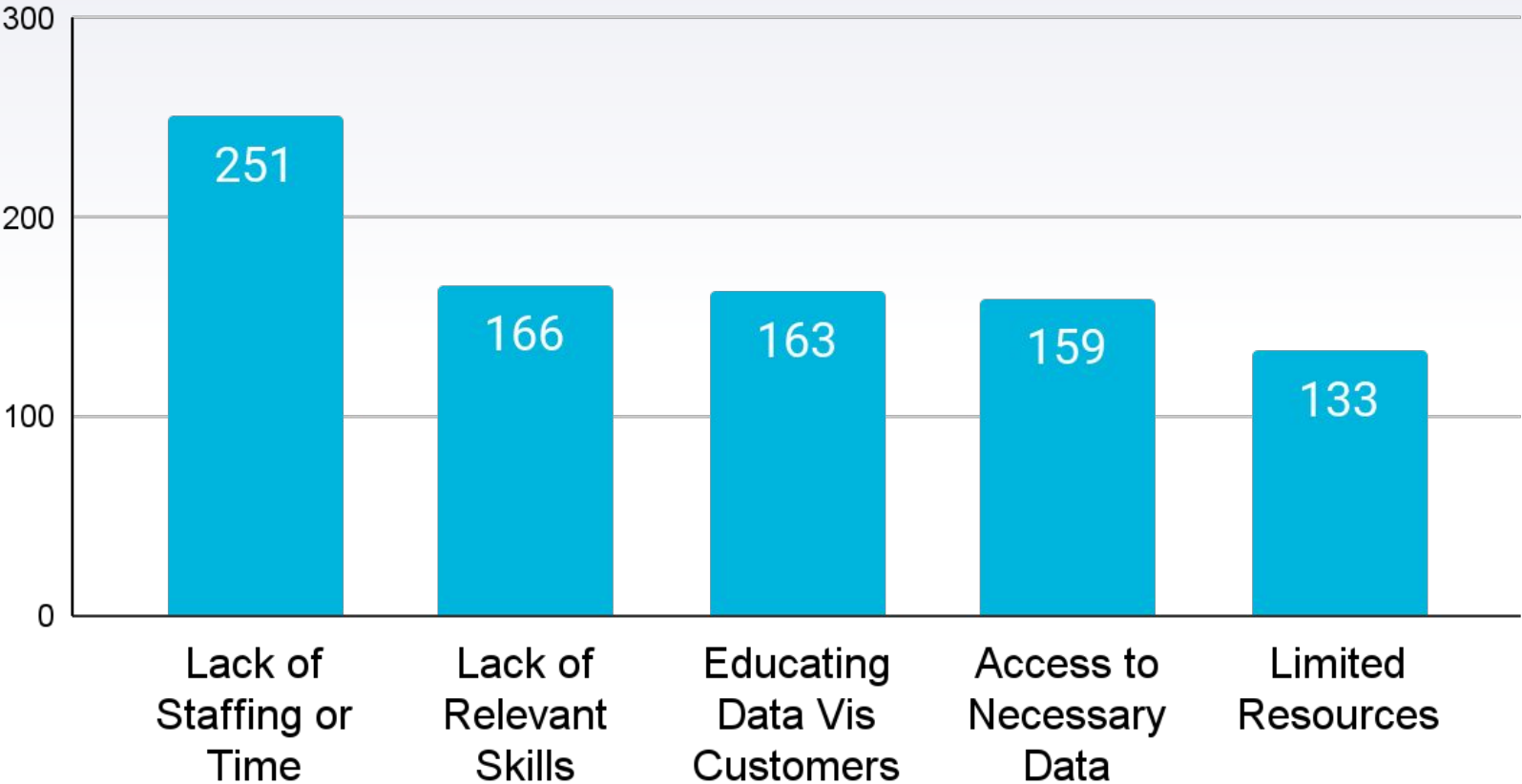
Access to All Data Sources Necessary

Lack of Relevant Skills

Limited Resources



Most Pressing Data Visualization Challenges



Which of the following professional development topics would be most useful to you?

How to create interactive visualization using specific tools (ex: Tableau, PowerBI)

Creating interactive dashboards

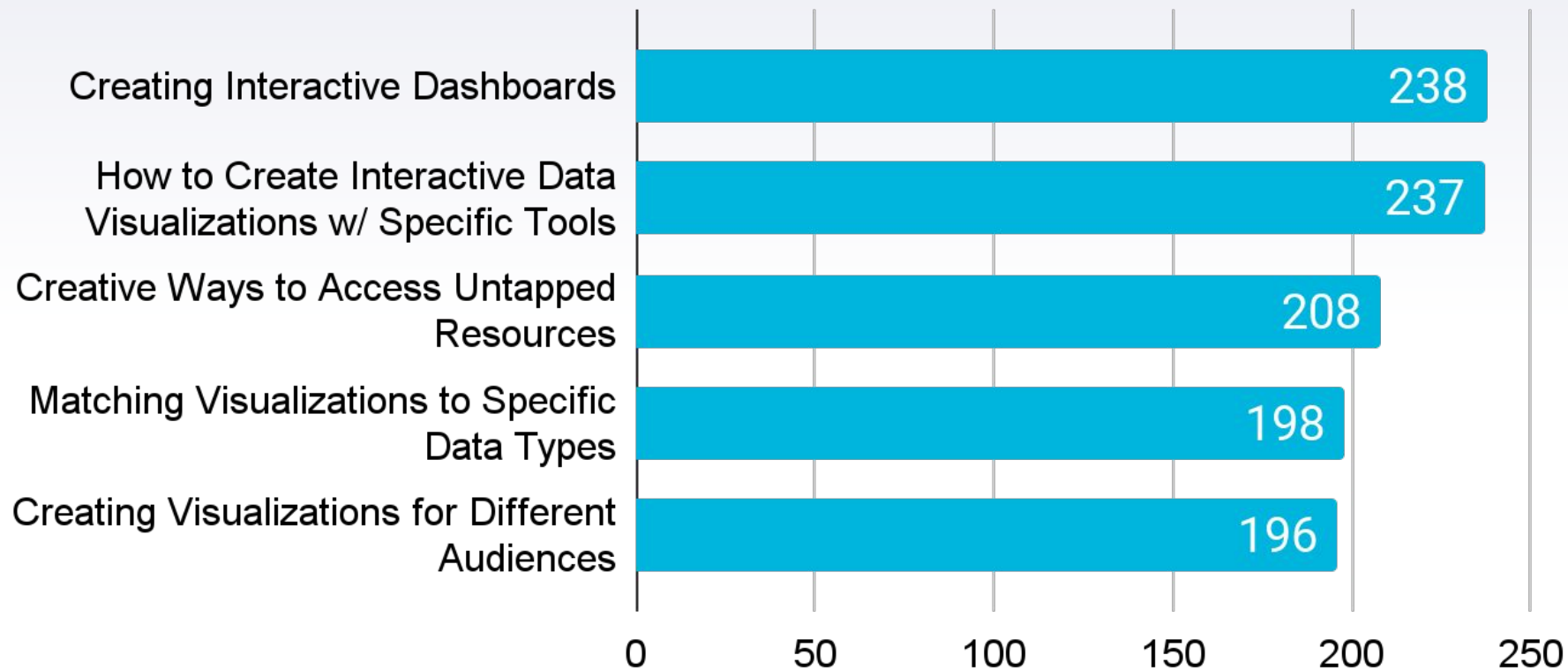
Matching visualizations to specific types of data

Creative ways of accessing untapped resources

How to create visualizations for different audiences and presentation needs



Professional Development Topics



How the Grand Challenges Data Visualization Subcommittee Plans to Use the Results

- Develop opportunities to address what we learned through the survey and today's polls ... today is the beginning!
 - Webinars, Articles, Workshops, Toolkit



4

Identifying Your Own Knowledge and Skill Gaps in Data Visualization



What can you do to move your own skills forward?

Some ideas ...

- ▶ Find some tutorials
- ▶ Take a workshop
- ▶ Attend a webinar
- ▶ Ask a friend
- ▶ Explore a data visualization tool



Join our data visualization subcommittee!!!

What ideas or next steps do you have for how to move your own skills forward?

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5

Action Planning for Advancing the Use of Data Visualization at Your Institution



What can you do to help advance the use of data visualization at your own institution?

Some ideas ...

- ▶ Ask your supervisor to invest in a tool and training.
- ▶ Identify others at your institution doing data vis.
- ▶ Form or join a campus working group.
- ▶ Invite yourself to the table.
- ▶ Share success stories (your own or others') about ways data vis has helped drive innovation.



What's one thing you can commit to now that might help to advance the use of data visualization at your own institution?

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Start the presentation to see live content. For screen share software, share the entire screen. Get help at poll-ev.com/app

Session Recap



Part 1

Background



Part 2

Using Data Vis to Drive Improvement, Promote Equity, and Facilitate Student Growth



Part 3

Challenges & Opportunities



Part 4

Identifying Your Knowledge & Skill Gaps



Part 5

Action Planning

References & Suggested Resources

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Q & A



Scan for Slides



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