EAB

Developing and Supporting Analytics Initiatives

Insights and Benchmarks for BI in Higher Education

IT Forum

IT Forum

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About This Report

Introduction and Purpose of this Report

This Business Intelligence (BI) Report provides insights and statistics on BI initiatives of colleges and universities across the United States and Canada. Members can use these data to benchmark their BI strategy, plan, and operations against those of other organizations.

For IT Forum members, please reach out to your EAB Dedicated Advisor to learn more about and access the IT Forum's additional publications focusing on data governance, business intelligence, and analytics. We value your feedback, and we would be happy to discuss the report and results with you, should you seek additional details.

A Guide to the Report

Overview of Survey Respondents
page 4

Executive Summary
page 5

We have organized the results of the report into the following categories:

BI Maturity and Culture

Explains our BI maturity index, which reflects data integration, attitudes about analytics, and the relationship between data and decisions.

pages 7-11

Leadership, Organization

Describes the role of a single leader for BI efforts, where BI is likely to reside, and the roles of various campus partners and champions.

pages 13-19

Focus and Goal

Shows the main goals and planned uses of analytics on campus, and whether institutions have a plan to measure success or ROI of BI efforts.

pages 21-25

Technical Architecture

Provides additional information about the technologies and architectures on which BI efforts have been built.

pages 27-31

Staffing

Includes details about the skill sets necessary for analytics on campus, and how institutions plan to grow staff in specific areas.

pages 33-37

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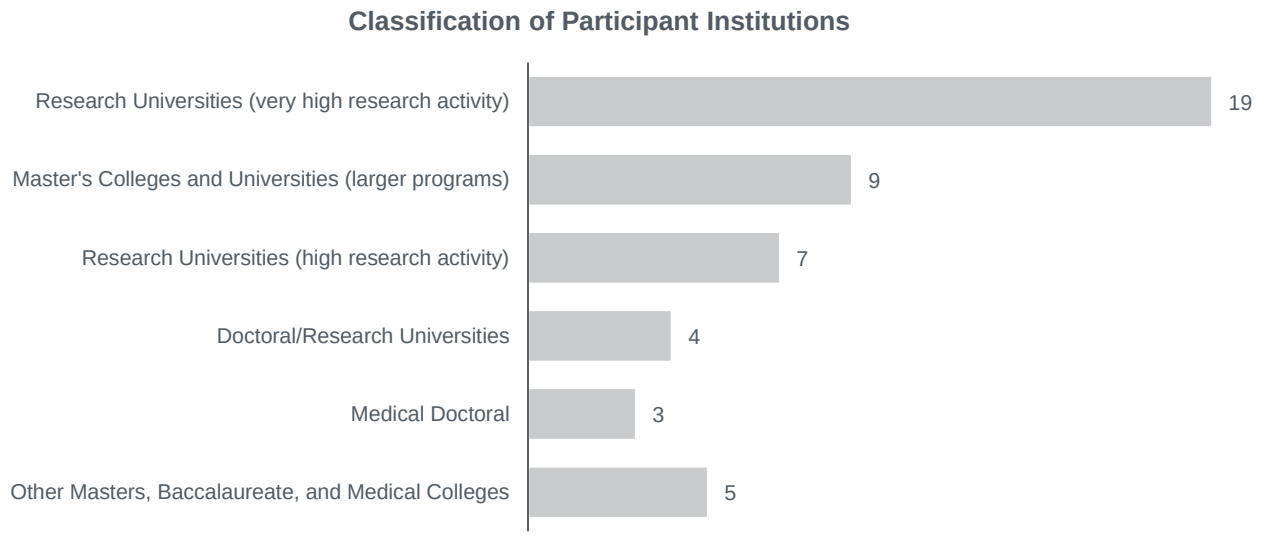
Overview of Survey Respondents

Who Participated in the IT Forum's BI Survey?



47
Higher Education Institutions

29
States and Provinces Represented

1,000,000+
Enrolled Students in Fall 2014

Executive Summary

Business intelligence and analytics initiatives have the potential to serve decision makers and leaders across the institution, but many institutions struggle to launch BI programs that are sustainable and affordable. The IT Forum has collected benchmarks on BI to help the IT function **allocate resources** and **set goals** that will make BI a long-term success on campus.

Top Lessons from the Research

BI Struggles without Data Governance

Invest in tactics to standardize definitions, align processes, and centralize data access to build a sustainable BI initiative.

- Data governance contributes to transparency, confidence, consistency, and security; without these critical pieces, BI projects can stall and even fail outright (pages 9-11)
- Collaboration with IR on BI is correlated with better data governance, higher BI maturity, and more ROI measurement (page 18)

Consider Hiring a Dedicated BI Leader

Full-time BI leaders help build an initiative that is more mature, better-governed, and has stronger buy-in across campus.

- BI leaders tend to support more collaborative efforts- which leads to more mature efforts with better ROI metrics (page 16)
- Dedicated leaders for BI are most common in initiatives with initial investment of at least $500,000, but are associated with maturity and cabinet buy-in across institution types (page 17)

Match BI Goals to Campus-Wide Missions

Codify BI goals in a single, written plan and define ROI metrics for BI upfront to engage users early and demonstrate progress.

- Fewer than half of institutions define the goals of BI in written form, creating the risk that turnover or organizational changes could obviate gains (page 15)
- More mature institutions use the institution's strategic plan and vision to set goals for BI, and define ROI metrics to be measured at regular intervals (page 25)

Staff Investments Outweigh Technology

Investments in people make up over half of BI budgets- and most plan to train existing staff rather than outsource.

- Despite perceptions of BI as a technology project, a majority of budget dollars are dedicated to cultivating internal staff for data preparation and analysis (pages 34-45)
- Set staffing plans based on the goals and progress of BI; early success in visualization and simple dashboards can build the foundation for more complex investments

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Contents

A BI Maturity Index for Higher Education
Four Inputs Score Institutional Buy-In for BI (page 8)

Enterprise-Wide Data Governance Supports BI
Data Governance Maturity Tied Closely to BI Maturity (page 9)

BI Initiatives Develop Maturity Over Time
Invest in Written Plan, ROI Measures, and Leadership to Catch Up (page 10)

Not Seeing Eye-to-Eye
Cabinet Leaders Don't Always Understand Institutional Benefits of BI (page 11)

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A BI Maturity Index for Higher Education

Four Inputs Score Institutional Buy-In for Business Intelligence

The IT Forum created a BI Maturity Index that comprises weighted inputs based on responses to the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Our data remains in departmental silos	-5	-2	0	2	5
Institutionally, data is viewed as a shared asset	5	2	0	-2	-5
Decisions made at high levels are validated with data from central sources	5	2	0	-2	-5
We align BI initiatives with institutional priorities	5	2	0	-2	-5

Our data remains in departmental silos.
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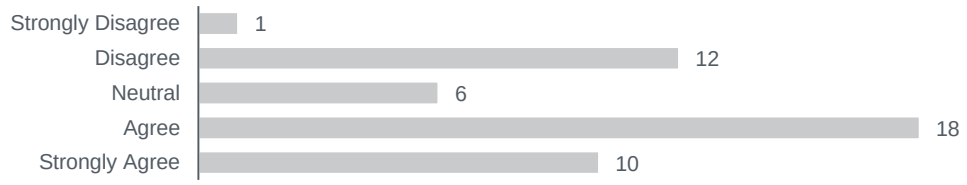

-1.21
Average Score

Institutionally, data is viewed as an shared asset.
n=47

+0.04
Average Score

Decisions made at high levels are validated with data from central sources.
n=47

0.00
Average Score

We align BI initiatives with institutional priorities.
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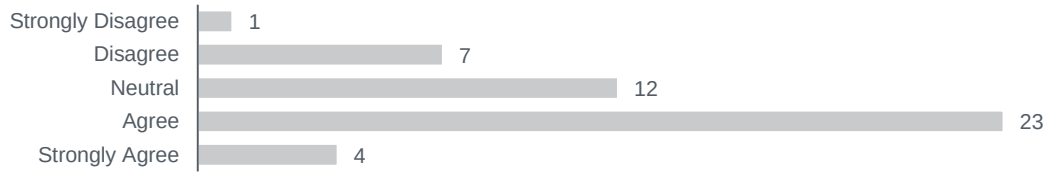

+1.00
Average Score

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Enterprise-Wide Data Governance Supports BI

Data Governance Maturity Tied Closely to BI Maturity

Defining the Components of Data Governance

Consistently defined performance metrics stored in a central data dictionary

Data entry quality rules and checks tied to alerts and incentives

Tiered access to sensitive information set to individual roles and data needs

Key data fields clean, accurate, consistent for timely, usable reports

Sustainable roles and committee process to maintain data efforts over the long term

Data Governance at My Institution Contributes to:

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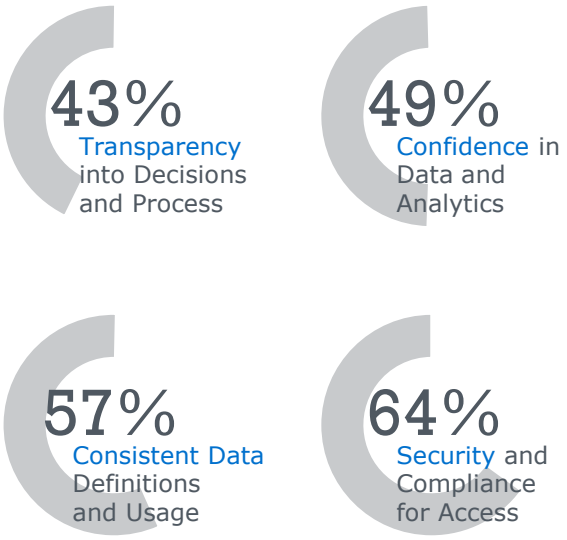

Along this spectrum, which best describes the maturity of your data governance?

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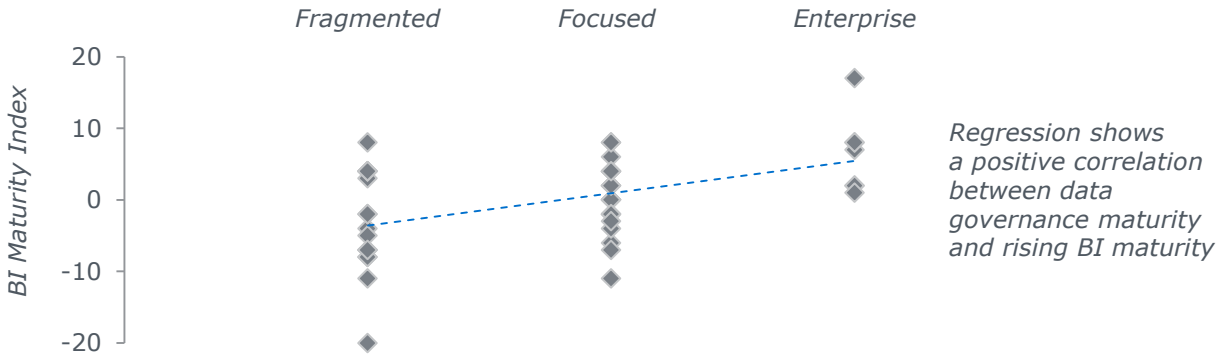

The Data Governance Maturity Spectrum, Defined:

- *Fragmented*: Zero or few processes govern the input, collection, definitions, usage, and access of data
- *Focused*: Within a narrow terrain (e.g., reporting), policies, definitions and processes exist to maintain data quality and consistency
- *Enterprise*: Common policies and standards are in effect, with centrally-managed KPIs directing policy and plan development

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BI Initiatives Develop Maturity Over Time

Invest in Written Plan, ROI Measures, and Leadership to Catch Up

When did you start your Business Intelligence (BI) initiative?
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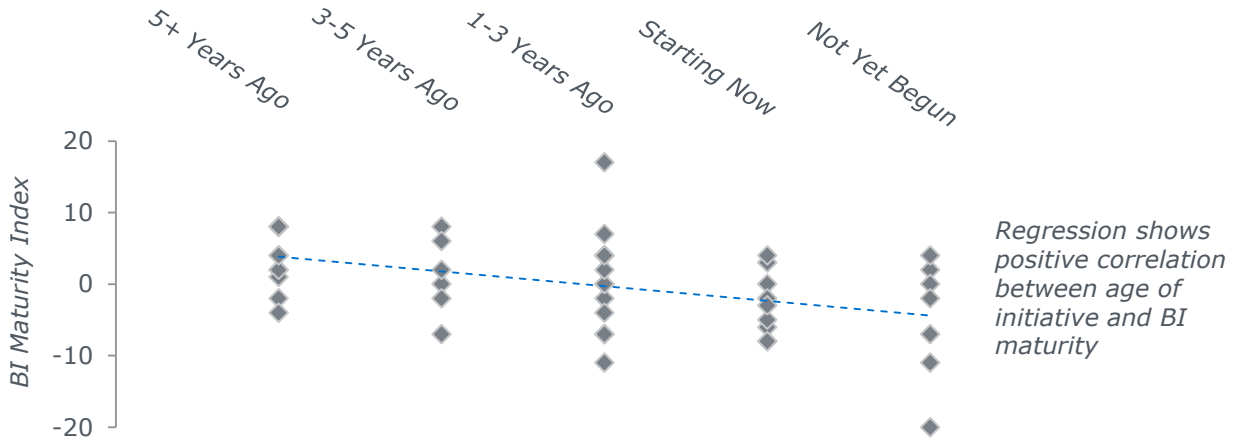
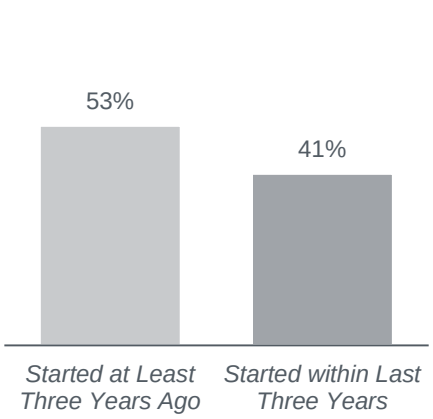


What Older Initiatives Have Learned

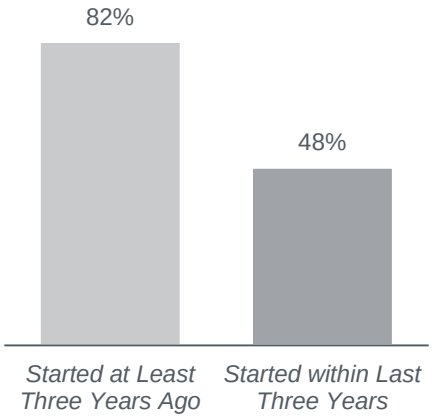
Codify BI Goals and Methods in a Written Plan

Percentage of Institutions with Written BI Plan



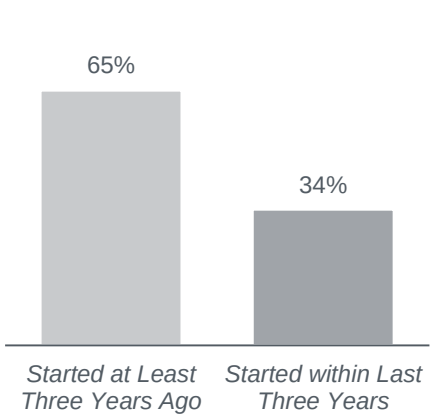
Agree on How to Measure ROI for BI Investment

Percentage of Institutions that Have Set ROI Metrics



Hire a Dedicated Leader to Control and Organize BI

Percentage of Institutions that Have BI Leader



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Not Seeing Eye-to-Eye

Cabinet Leaders Don't Always Understand Institutional Benefits of BI

Cabinet leaders at your institution view BI primarily as an…
n = 47

IT or Technical Initiative

40%

Too Many Cabinets Still View BI As IT Initiative

If senior leadership views BI and analytics as a purely technical IT exercise, the project will struggle to gain buy-in and long-term success. Nearly half of IT and BI leaders surveyed in this report argue that the cabinet views BI as a technical, IT project outside of their purview.

Academic Initiative

4%

Few Leaders See BI Serving Only Academic Uses

Among the 47 IT and BI leaders surveyed for this report, only two reported that the institution's cabinet saw BI as an academic initiative only. While virtually all institutions include academic aspects in their BI plan and investments (e.g., student success, faculty productivity), the data show that few cabinet leaders separate academic goals from enterprise-wide goals.

Administrative Initiative

13%

Administrative Benefits of BI Clear to Many

BI and analytics have clear applications to areas like procurement, where increased data quality and efficiency can have immediate positive financial outcomes. However, institutions in which the cabinet sees BI as an administrative project also have a lower average maturity than institutions where the cabinet sees BI as an IT, academic, or enterprise initiative.

Enterprise Initiative

43%

Enterprise Viewpoint Provides Strongest Foundation for BI Success

A president's cabinet that sees the full institutional potential of a BI initiative will be poised to engage the greatest number of functional areas in analysis and have the best chance of creating a sustainable and successful project. These institutions report a higher level of BI maturity and data governance than those with cabinets that see BI as a siloed project within one unit.

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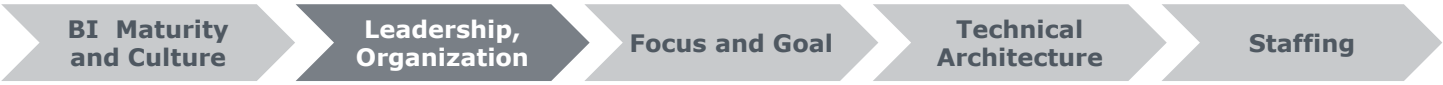

Contents

Big Data without the Big Funding
Most BI Initiatives Start with Less Than $500,000 Initial Investment (page 14)

Investing in BI, But Not Always with a Plan
Less Than Half of Surveyed Institutions Write a BI Strategy Plan (page 15)

Dedicated BI Leaders Prove Beneficial
Full-Time Leaders A Feature of Mature, Well-Resourced Initiatives (page 16)

Prevalence of BI Leaders Rises with Initial Investment
But Not All Institutions with Large Initial Funding Hire Dedicated Leader (page 17)

IT Taking the Lead On BI Efforts
Collaborating with IR on BI Drives Maturity and ROI Measurement (page 18)

Provost Most Common Cabinet Ally for BI
Provost Support Associated with Governance Maturity, Enterprise View on BI (page 19)

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Big Data without the Big Funding

Most BI Initiatives Start with Less Than $500,000 Investment

Initial Funding Investment for BI
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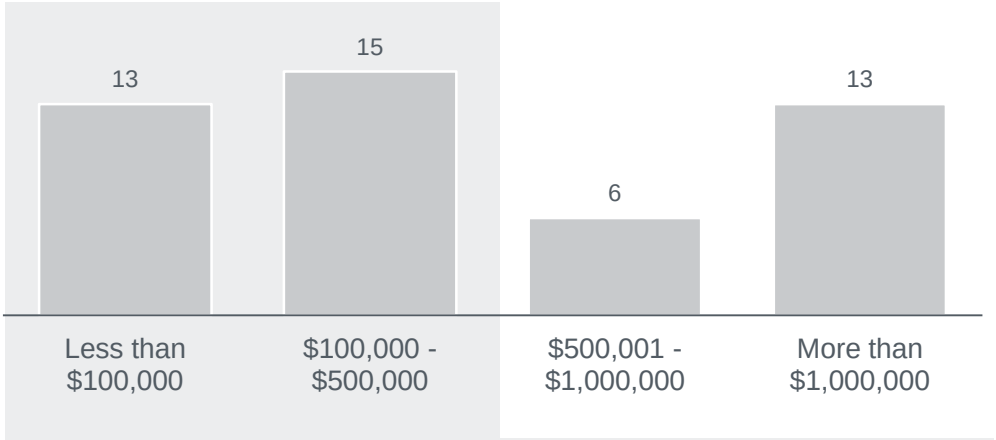

A majority of BI initiatives in higher education start with less than $500,000 investment in staff salary and capital. Larger research institutions are more likely to spend more than $1,000,000 on BI as an initial investment, but smaller investments in analytics are within reach for institutions across the spectrum.

Average Planned Allocation to Funding Categories
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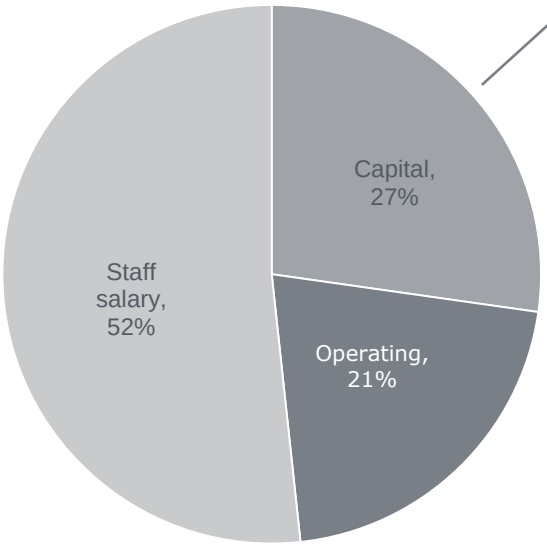

Staffing Leads Technology

- Despite the common perception that 'BI' equates to technology tools, staff investments heavily outweigh capital costs for BI initiatives at surveyed institutions.
- Seven initiatives plan to move forward with no new investments in technology- compared to seven institutions that will dedicate at least 80 percent of all BI funding to staff costs.
- While several institutions plan to invest all funding in either staffing or capital costs, variance for operating costs is quite low; 70 percent of institutions have planned operating costs between five and 30 percent of total investment.

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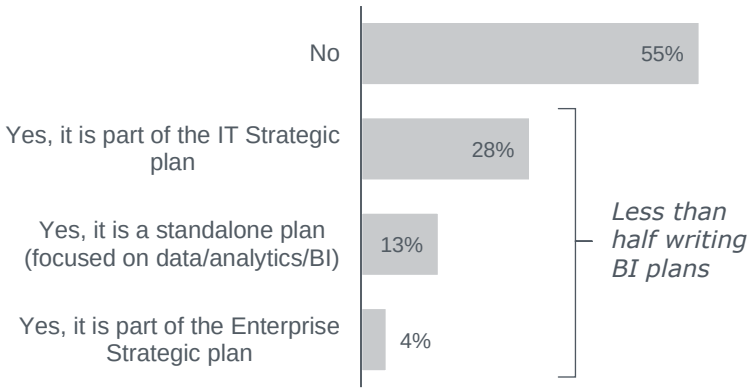
Investing in BI, But Not Always with a Plan

CIOs and their teams use BI strategy plans to organize resource allocation, agree to goals and methods for analytics projects, and help campus constituents understand the complex goals and necessary costs of a BI initiative. However, less than half of surveyed institutions codify their BI strategy into a written plan, creating the risk that efforts will become siloed within IT or IR, lack buy-in for data governance and data sharing, and will lose the interest and attention of leadership and campus constituents.

Does your organization have a written BI strategy plan?
n = 47



Initiatives without A Written Plan Lacking Direction

- Scale and use of funding
- Agreement on goals
- Data governance
- Campus buy-in

Components of An Effective BI Strategy Plan

Status Quo Problems
- Why current decision-making processes must change
- Specific, tangible problems caused by status quo

Leader and Sponsors
- Senior leaders and cabinet members that will play a role guiding and supporting BI

Institutional Goals
- Campus-wide goals that will benefit from increased accuracy, speed, and consistency of data

Funding
- Dollars devoted to new technology and staff, and source of funds from central and distributed sources

Steps in Process
- Short-, medium-, and long-term steps to integrate BI into strategic and operational decisions

Specific Targets
- Enterprise values (e.g., student success) and department missions (e.g., procurement) that will be included in new analytics

Metrics for Success
- Specific, metrics-based goals that will demonstrate the value and applicability of analytics across campus

Wide Access to Plan
- Accessible on campus website
- Face-to-face engagement with departments

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Dedicated BI Leaders Prove Beneficial

Full-Time Leaders A Feature of Mature, Well-Resourced Initiatives

Is there a dedicated full-time leader for your business intelligence and data analytics initiative?
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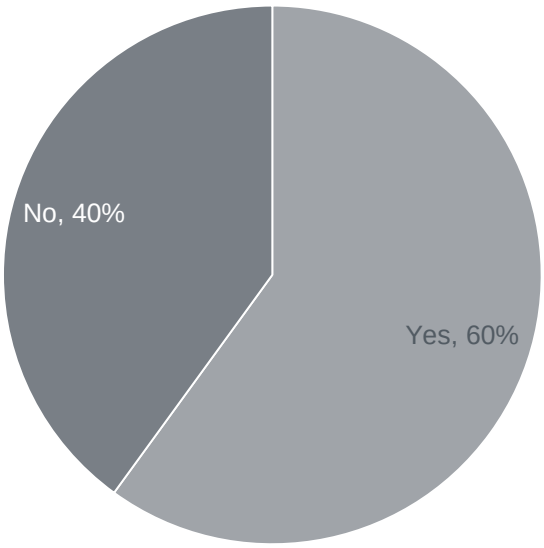

Benefits of a Full-Time BI Leader

- BI initiatives supported by a dedicated leader tend to have more
  - **BI Maturity**: The average maturity diagnostic score for institutions without a full-time leader is -2.89, and rises to 1.89 for institutions that dedicate a staff member to BI.
  - **Data Governance**: 70 percent of institutions with enterprise data governance and 73 percent of institutions with focused data governance also have a full-time staff member dedicated to BI. However, more than half of institutions identifying their data governance as fragmented do not have a dedicated BI leader.
  - **Planning**: Only 32 percent of institutions that did not hire a dedicated BI leader have a written BI plan, compared to 54 percent of institutions with a full-time BI leader that also create a written BI plan.
  - **Funding**: Initiatives with at least $500,000 in upfront investment are more than twice as likely to have a dedicated, full-time leader as those with less than $100,000 initial investment.

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Prevalence of BI Leaders Rises with Initial Investment

But Not All Institutions with Large Initial Funding Hire Dedicated Leader

Although more than half of institutions surveyed currently employ a full-time leader for BI, several initiatives are entirely composed of new investments in technology. However, 85 percent of projects that began with at least $1,000,000 still maintain a dedicated BI leader, compared to 33 percent of initiatives which started below $100,000.

High Initial Funding for BI Initiative Carries into Present Leadership

Initial Funding Level for BI Initiative	Percentage that Currently Employ Dedicated BI Leader
Less than $100,000	30%
$100,000-$500,000	60%
$500,001-$1,000,000	67%
More than $1,000,000	85%

Even High Initial Funding Doesn't Guarantee Dedicated Staffing for BI Initiatives

15% Of the 13 institutions that started their BI initiative with at least $1,000,000 in spending, 11 currently employ a full-time staff person to BI- but 2 still do not have a dedicated leader.

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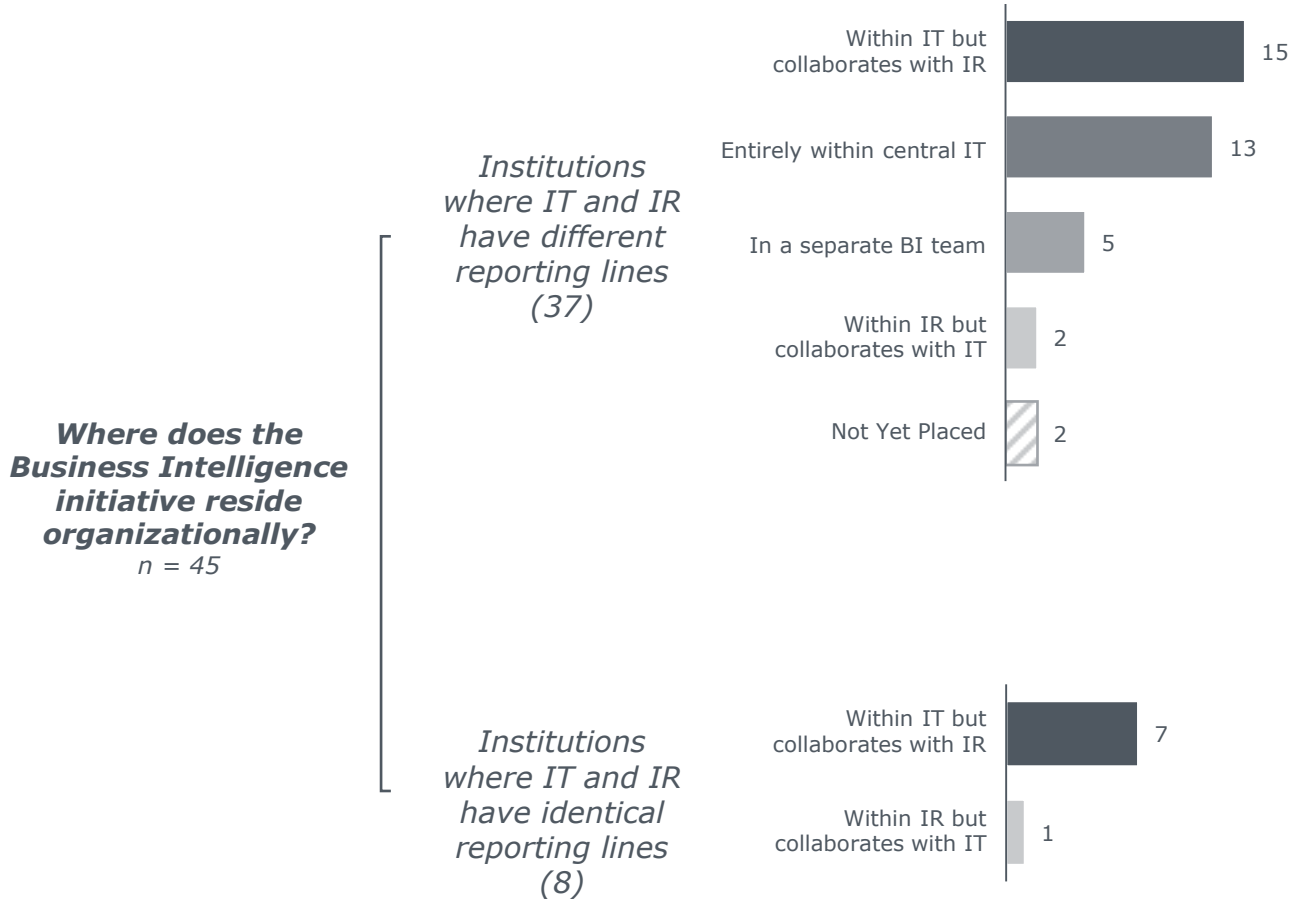
IT Taking the Lead On BI Efforts

Collaborating with IR on BI Drives Maturity and ROI Measurement



How BI Benefits from Collaboration between IT and IR

- When BI is shared between IT, IR, and other units rather than being housed in a single unit, institutions show the following characteristics:
  - **More BI Maturity**: Shared BI initiatives have a higher self-assessed BI maturity than those owned entirely by IT or in a separate BI team
  - **More Attention to ROI**: Collaborative BI initiatives are more likely to measure ROI than those housed in a single location
  - **Supported by Single Leader**: Dedicated, full-time leaders are more likely to support collaborative rather than siloed efforts

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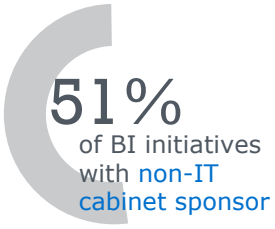
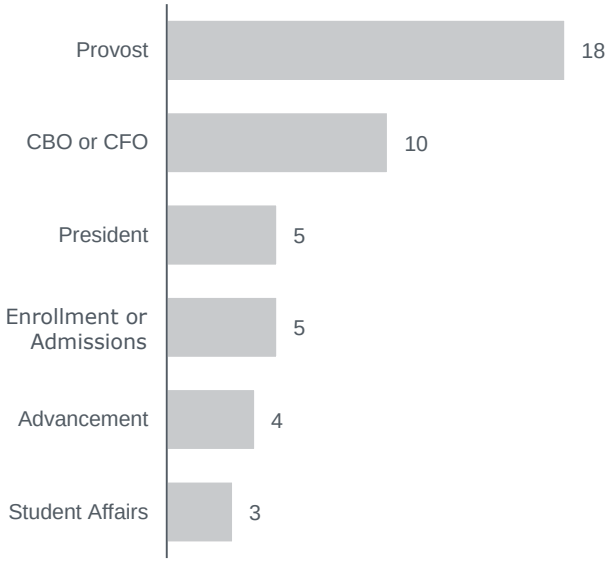
Provost Most Common Cabinet Ally for BI

Majority of Initiatives Find Non-IT Sponsor in President's Cabinet…



… And the Provost Takes A Leading Role in Most Institutions*

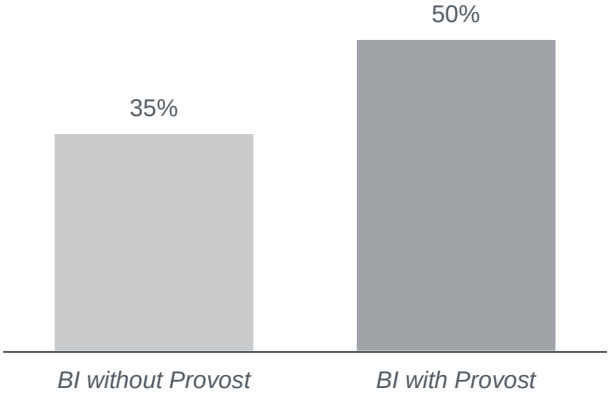


* Multiple responses allowed

How the Provost Supports BI Initiatives

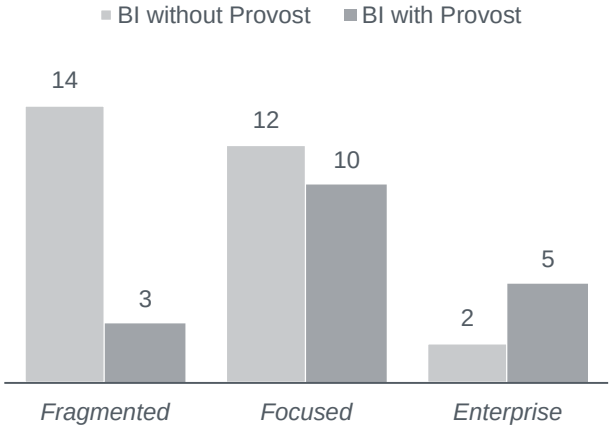
More Institutional Buy-In for Analytics

Cabinets that View BI as Enterprise Initiative



Stronger Data Governance Across Campus

Data Governance Maturity and Provost Involvement



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Contents

Why is Higher Education Investing in BI?
Drive for Student Success at the Core of Analytics Initiatives (page 22)

Students Front and Center
Enrollment, Student Success Lead Investments in Analytics (page 23)

Funding Considered Largest Challenge to BI Success
But Cultural Change and Data Governance Close Behind (page 24)

Few Institutions Have Plan to Measure Success
Less Than Half of Initiatives Include Plan to Measure ROI (page 25)

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Why Is Higher Education Investing in BI?

Drive for Student Success at the Core of Analytics Initiatives

What enterprise values were targeted for return on the BI investment?
n = 47

Seeing the Diverse Benefits of Better BI

- In addition to the values listed above, institutions are investing in BI to take advantage of benefits to
  - **More Effective State Reporting**: Increased demands by state legislatures and regulators for financial and performance data
  - **Faster Internal Reporting**: Rapid access to key metrics for decision makers across the institution
  - **More Efficient Finance and Administration**: Centralized, shared viewpoint on purchasing and resource allocation decisions
  - **More Transparency**: Campus visibility into the metrics and considerations that drive change at the institution
  - **Reduced Programmer Workload**: Less need for individualized, one-off requests to access data when single warehouse serves most data needs

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Students Front and Center

Enrollment, Student Success Lead Investments in Analytics

Which of the following functional areas do you actively manage or plan to include in your BI efforts?

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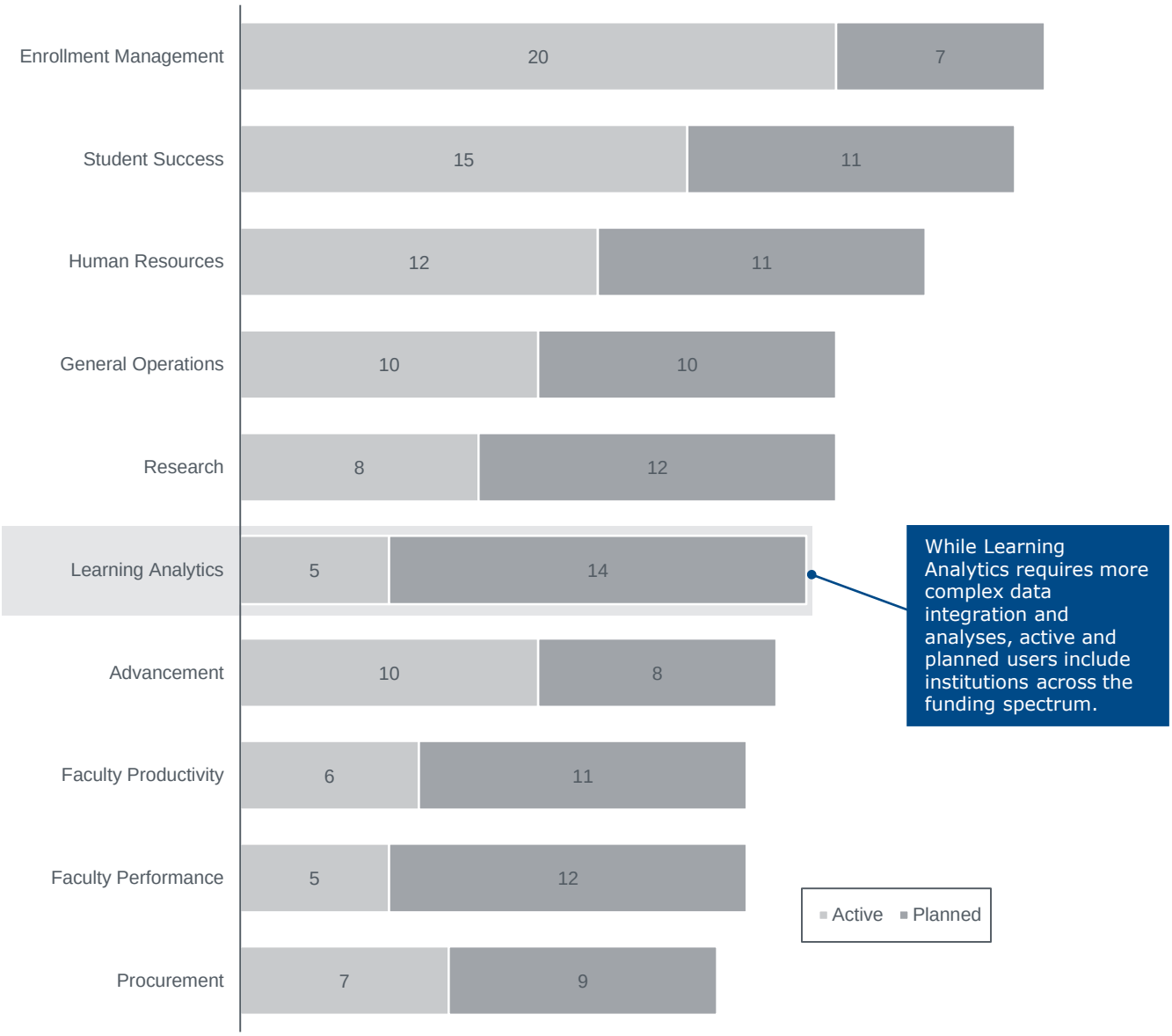

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Funding Considered Largest Challenge to BI Success

But Cultural Change and Data Governance Close Behind

What are the top challenges for implementing your envisioned BI environment?

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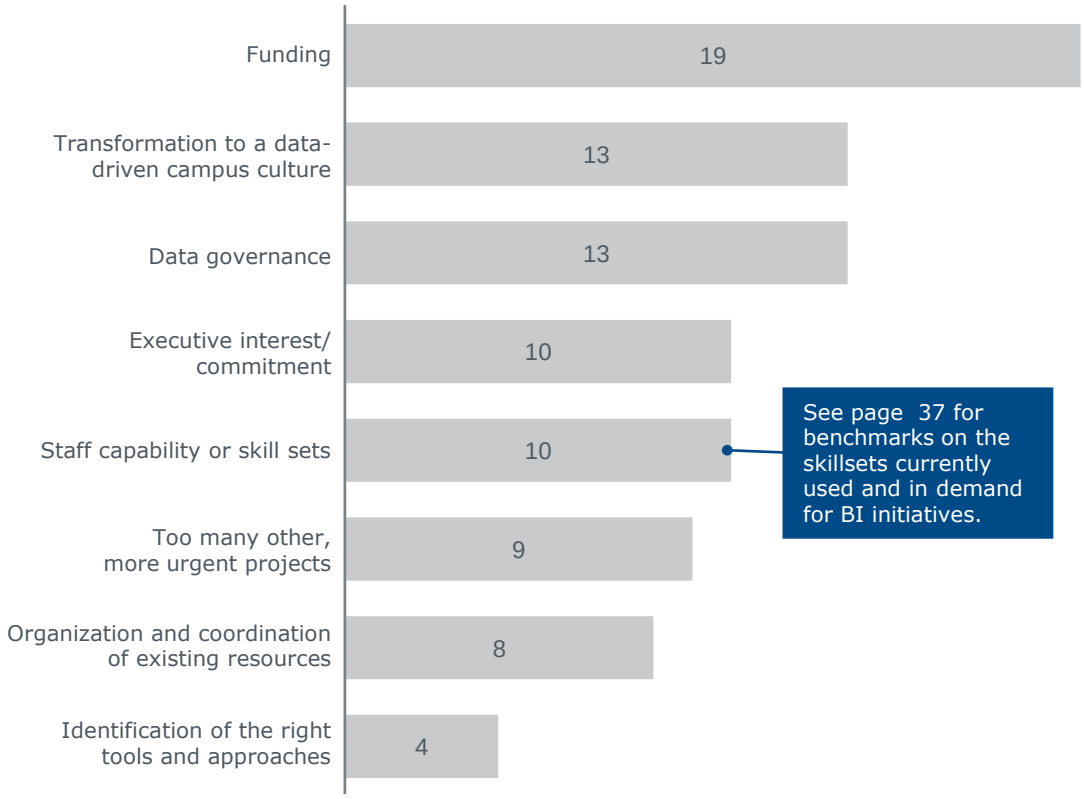

See page 37 for benchmarks on the skillsets currently used and in demand for BI initiatives.

See EAB's 2015 Study "A Common Currency" For Best Practices on Data Governance, Culture Change, and Executive Engagement

- The IT Forum has explored the most pressing issues CIOs face around data governance and transformation to a data-driven culture, and created a host of resources for members to support data-driven decisions on campus.
- Please visit www.eab.com or ask your dedicated advisor to gain access our best practices and develop your successful, sustainable BI initiative.

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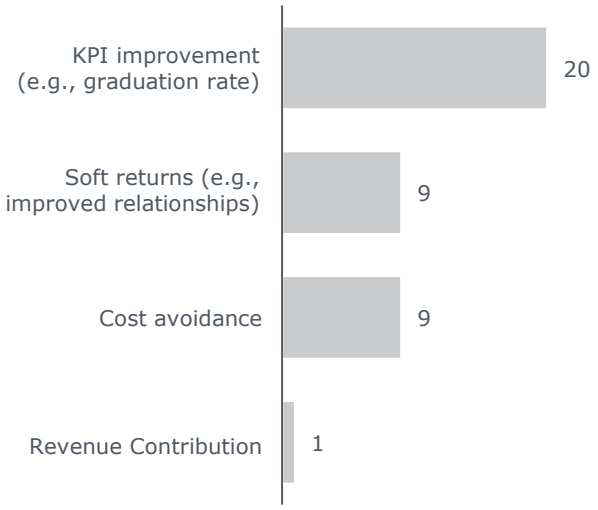
Most Institutions Lack Plan to Measure Success

Fewer Than Half of Initiatives Include Plan to Measure ROI

Fewer Than Half of BI Initiatives Have ROI Measurement Plan…

47% of BI initiatives with a plan to measure ROI metrics

…And Even Fewer Set BI Goals Based on KPI Improvement*



* Multiple responses allowed

Suggested ROI Metrics for Top BI Areas

Enrollment
- # applications
- % yield
- Class academic score
- % of contacted recruits that apply

Student Success
- % DFW in bottleneck courses
- Students switching majors
- Graduation and transfer rates

Human Resources
- Average time to onboard and provision new employees
- Time to fill vacant position

Research
- # publications, prizes, grants by department and faculty member
- # research compliance errors

Learning Analytics
- Module completion and pace rates by discipline and course
- Faculty adoption rates

Advancement
- Percentage of MGO visits yielding gifts
- Efficiency of call center hours, staff
- % alumni donating

Academic Faculty
- Cost per student credit hour by discipline
- % of faculty teaching full course load

Procurement
- Average cost and time to process invoice
- Spend fragmentation by unit, time of year, and purchase type

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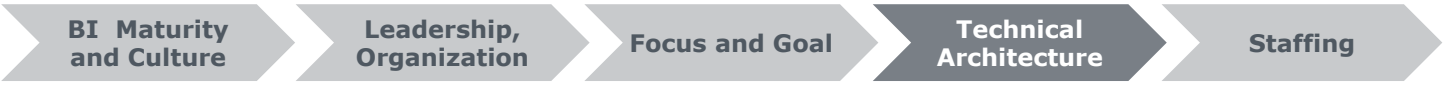

Contents

Internal, Operational Reporting at the Core of Current BI
Few Institutions Exceed Daily Rate for Data Extractions (page 28)

If You Build It, Will They Come?
Most Creating ODS and Warehouse to Prepare for Future Requests (page 29)

BI by Central IT, for Central IT
Primary, Central Data Feeds BI, With Many Reliant on Central IT for Access (page 30)

ETL In Place for Most BI Initiatives
Predictive Modeling, Visualization Tools in High Demand (page 31)

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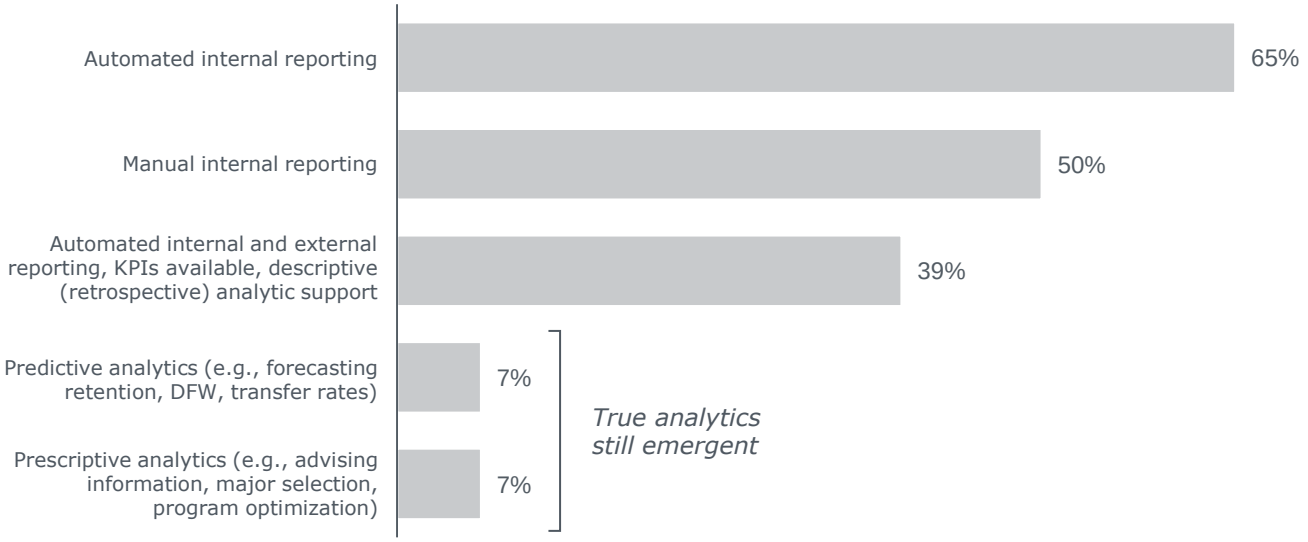
Internal Reporting at the Core of Current BI

Few Institutions Exceed Daily Rate for Data Extractions

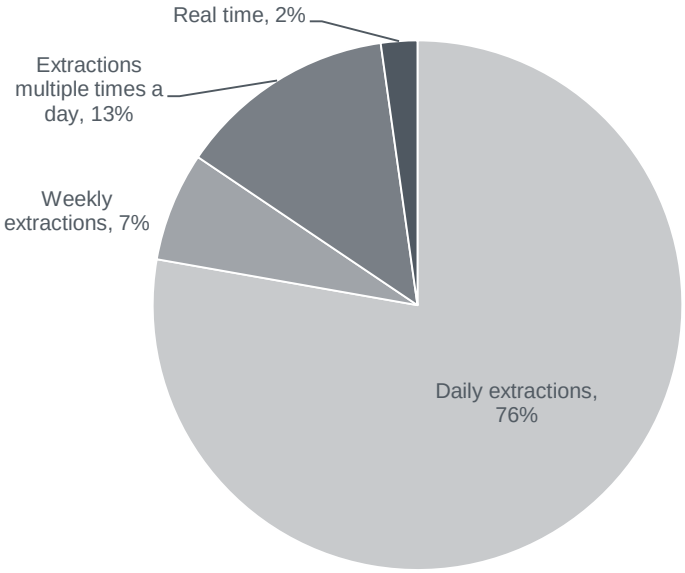
Which of the following best describes the types of analytics you currently produce from your BI environment? (select all that apply)

n = 47



Which of the following best describes the data warehouse's capability to access updated data?

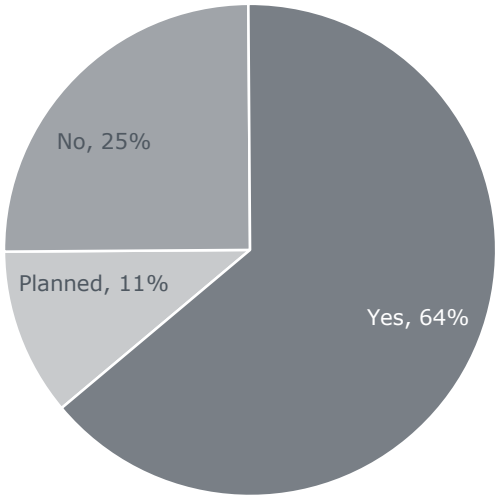
n = 47



If You Build It, Will They Come?

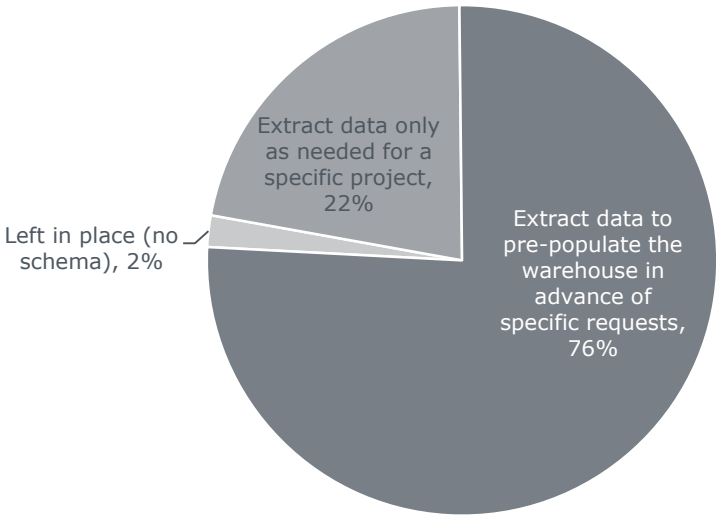
Most Creating ODS and Warehouse to Prepare for Future Requests

Does your architecture include an Operational Data Store?
n = 47



How do you assemble the data?
n = 47

Four out of five institutions use a dimensional (Kimball) model to organize data



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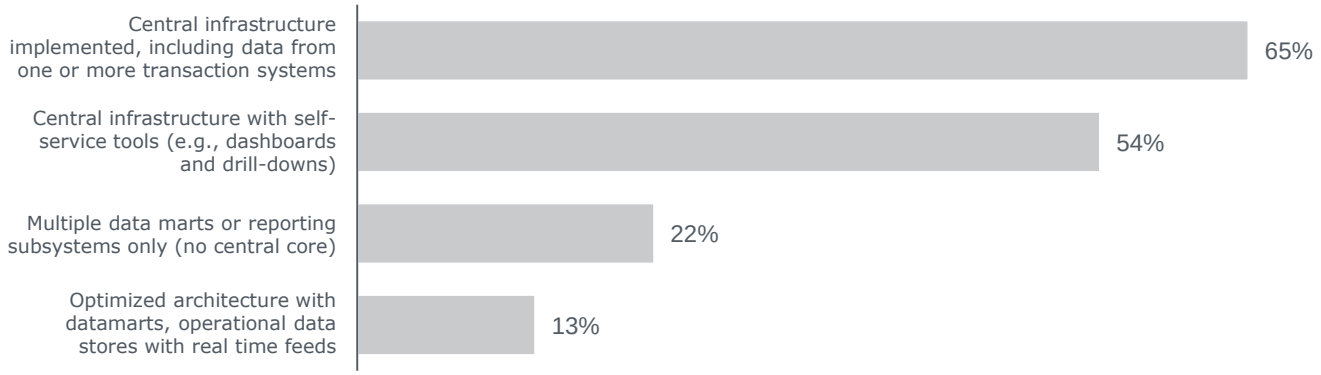
BI by Central IT, for Central IT

Primary, Central Data Feeds BI, With Many Reliant on Central IT for Access

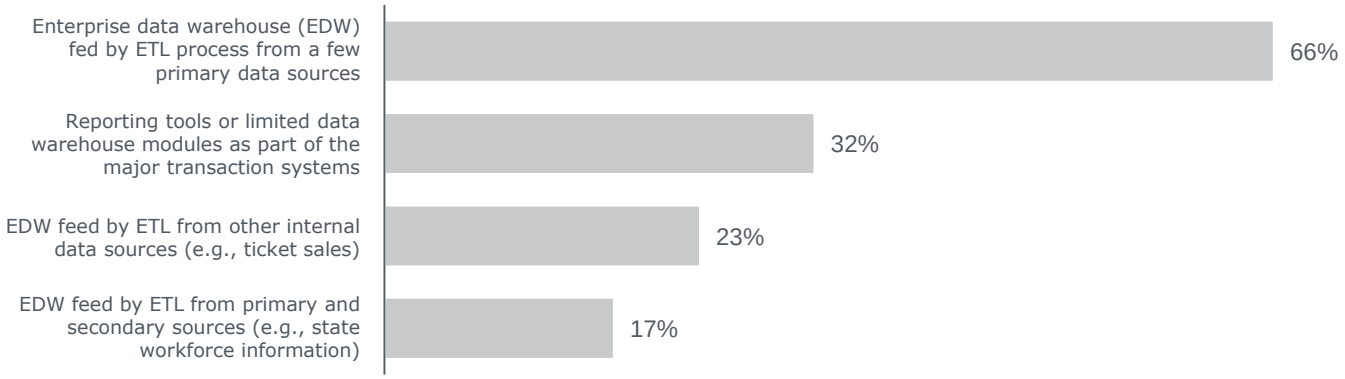
Which of the following best describes your current BI architecture?*

n = 47



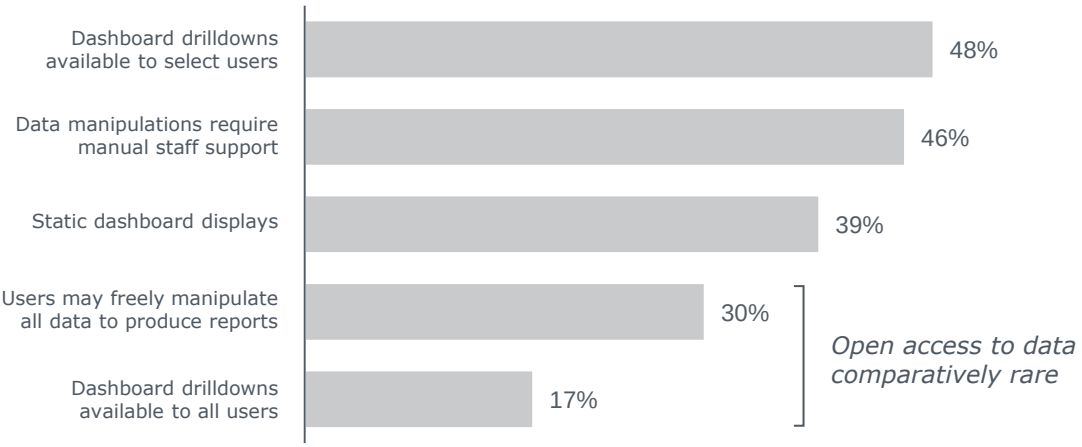
Which of the following best describes your current data sources and data access?*

n = 47



Which of the following best describes the way in which users interact with the data?*

n = 47



* Multiple responses allowed

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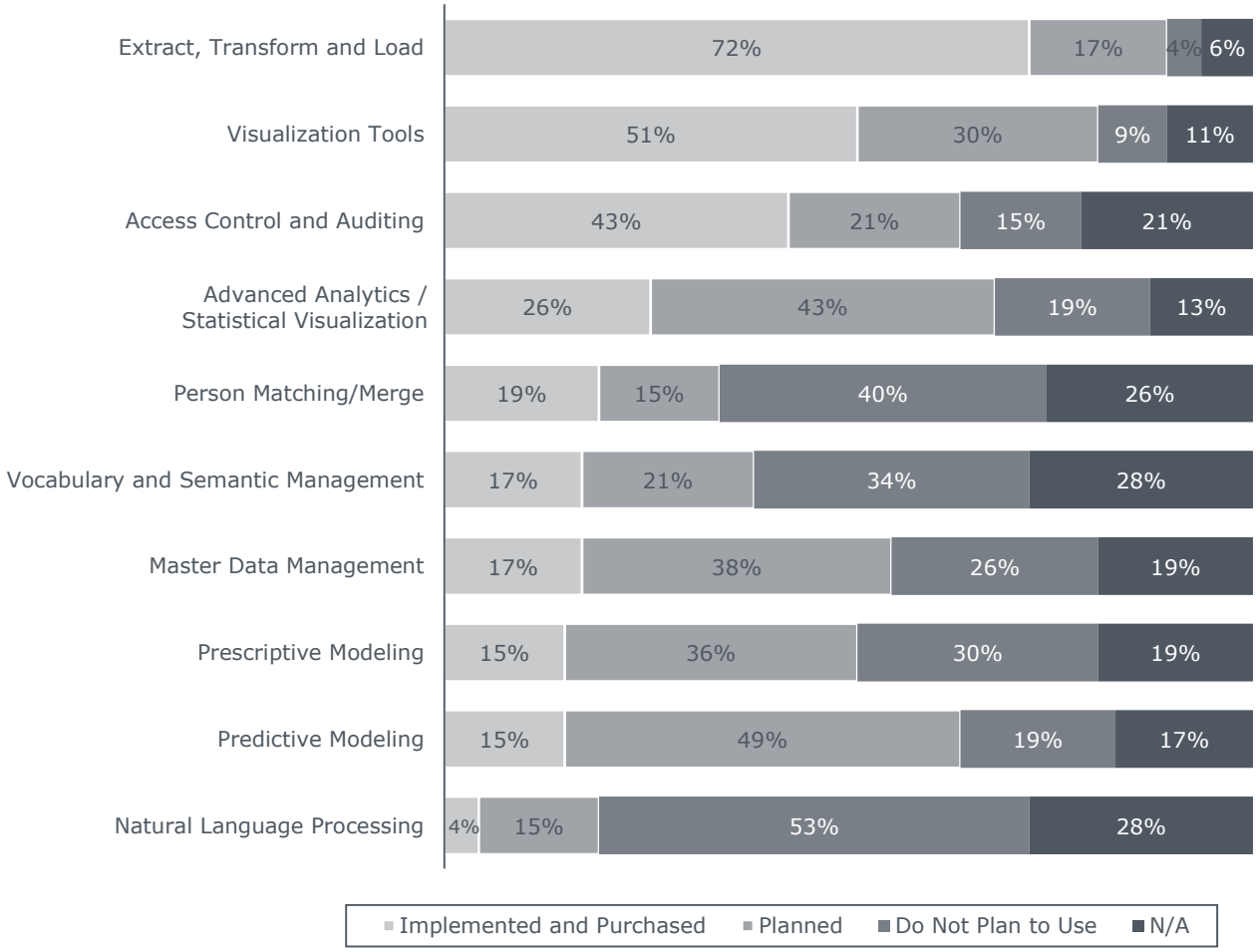
ETL In Place for Most BI Initiatives

Predictive Modeling, Visualization in High Demand

What is the inventory of current and planned BI tools?

n = 47



Tools Used by BI Teams in Predictive Modeling and Visualization

- **Predictive Modeling**: IBM Cognos, SAP Business Objects, MicroStrategy, R, SPSS, SAS BI
- **Data Visualization**: SAS Visual Analytics, Tableau, Oracle Business Intelligence Enterprise Edition (OBIEE), Business Objects, Jaspersoft, Pentaho Data Analysis Tool

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Contents

Planning to Grow Employed BI Staff
One Fourth of Institutions Plan >20% Growth in FTE in Next Three Years (page 34)

BI Teams Combine Internal, External Staff
Existing Employees Largest Source of Analytics Staffing (page 35)

Majority of All Analytics Functions 'Insourced'
Outsourcing Most Common for Data Warehouse Construction (page 36)

Data Modeling, Visualization Skills in Demand
Only One in Four Employ or Plan to Employ Map Reduce Programmers (page 37)

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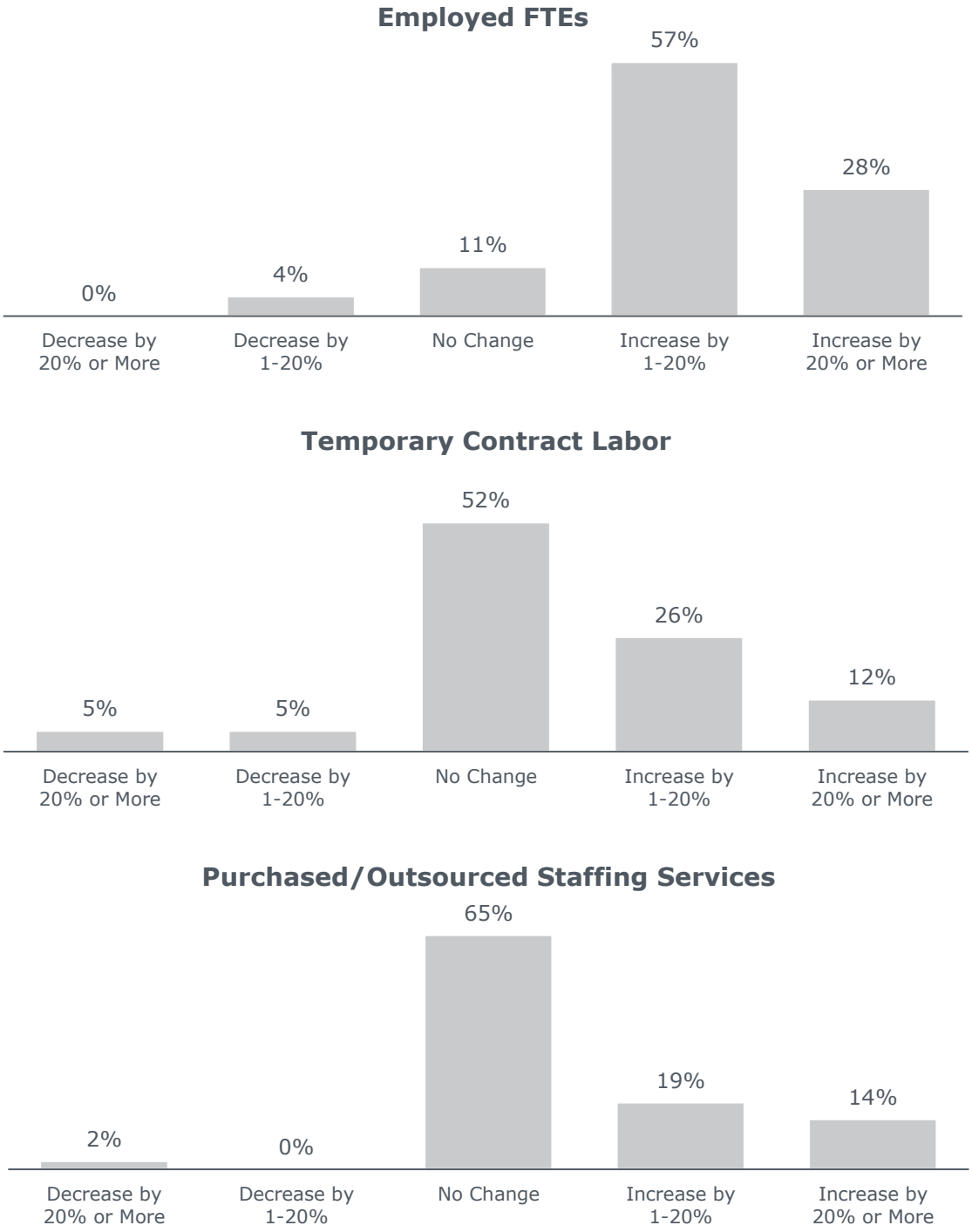
Planning to Grow Employed BI Staff

One Fourth of Institutions Plan >20% Growth in FTE in Next Three Years

How will the makeup of your BI staff change in the next three years?
n = 45



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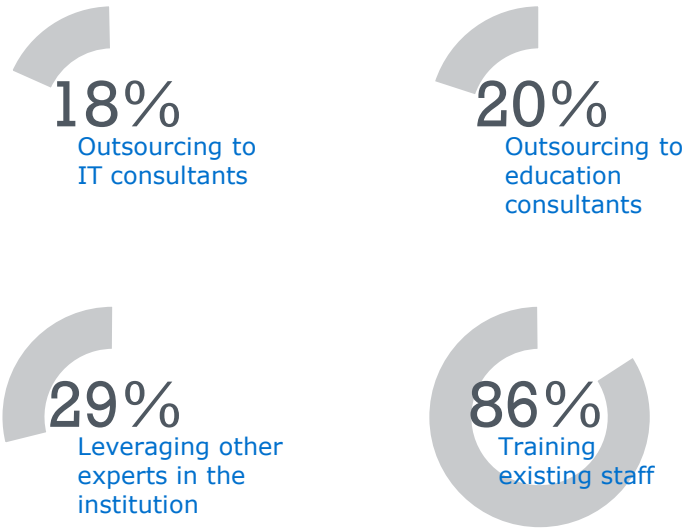
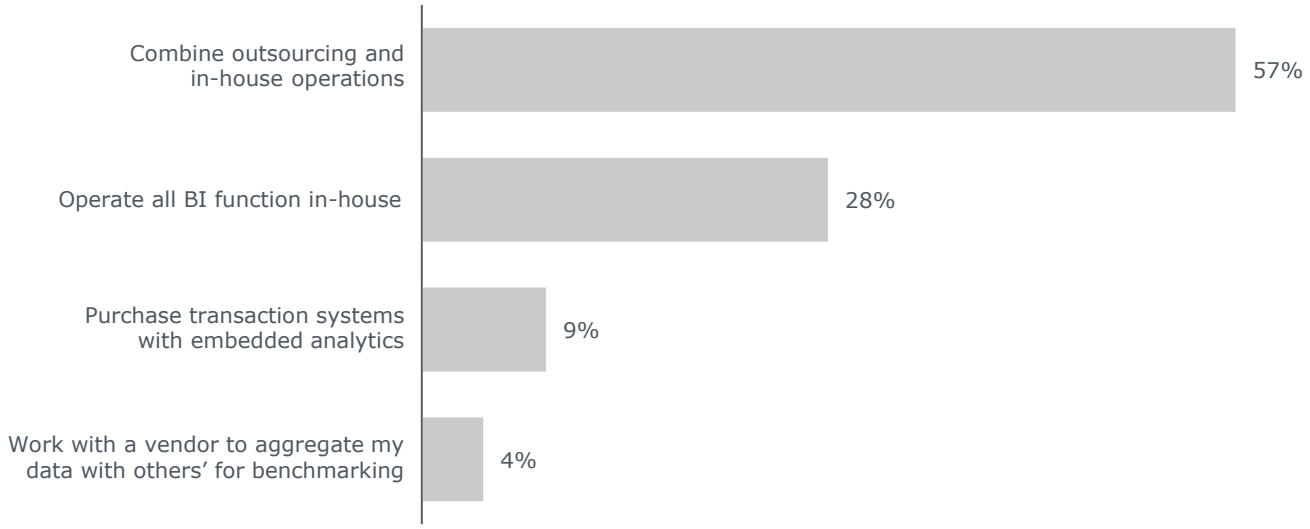
BI Teams Combine Internal, External Staff

Existing Employees Largest Source of Analytics Staffing

Which of the following best describes your approach to BI staffing? (select all that apply)
n = 47



In an ideal situation, how would you operate your BI environment?
n = 47



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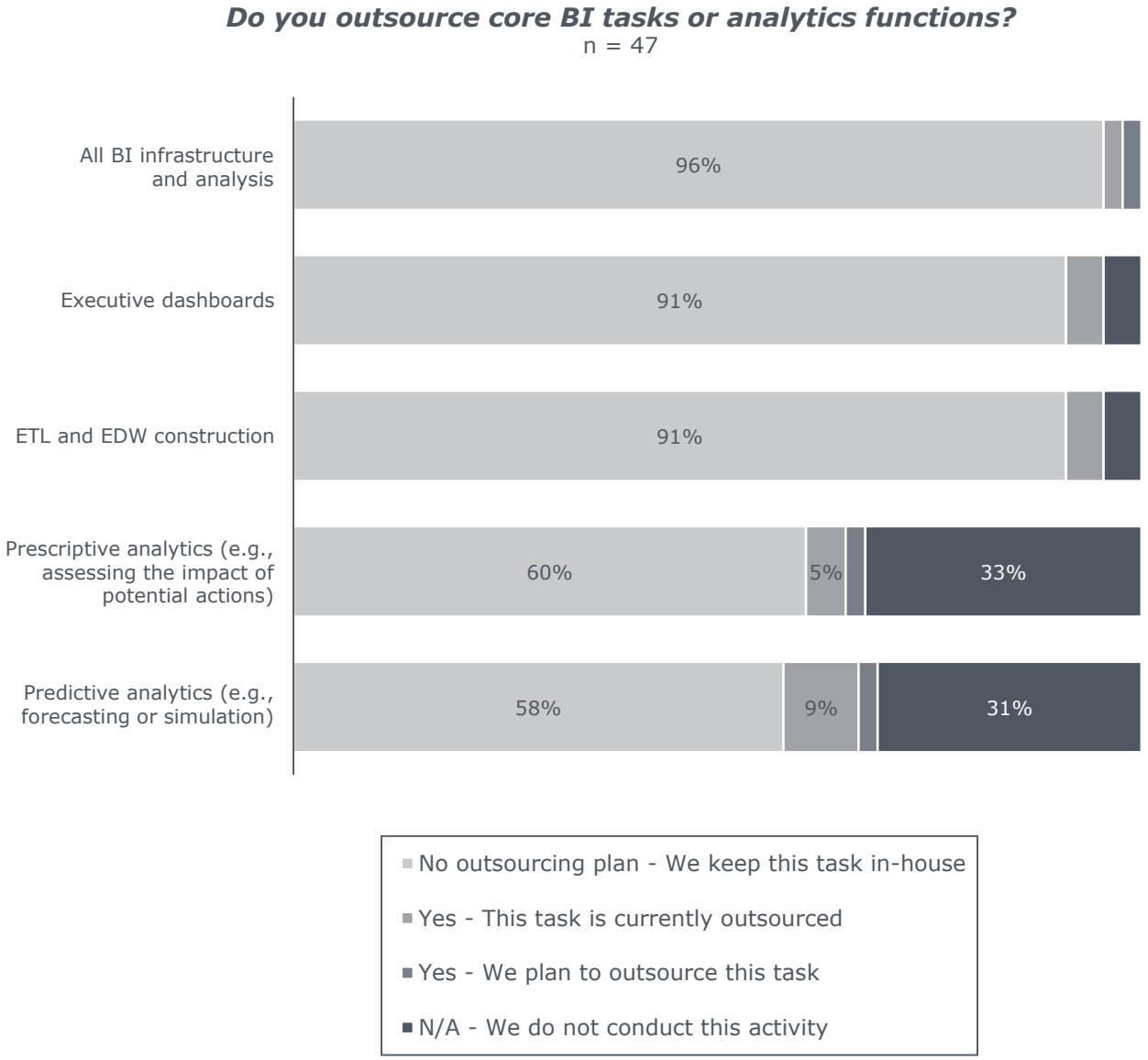
Majority of All Analytics Functions 'Insourced'



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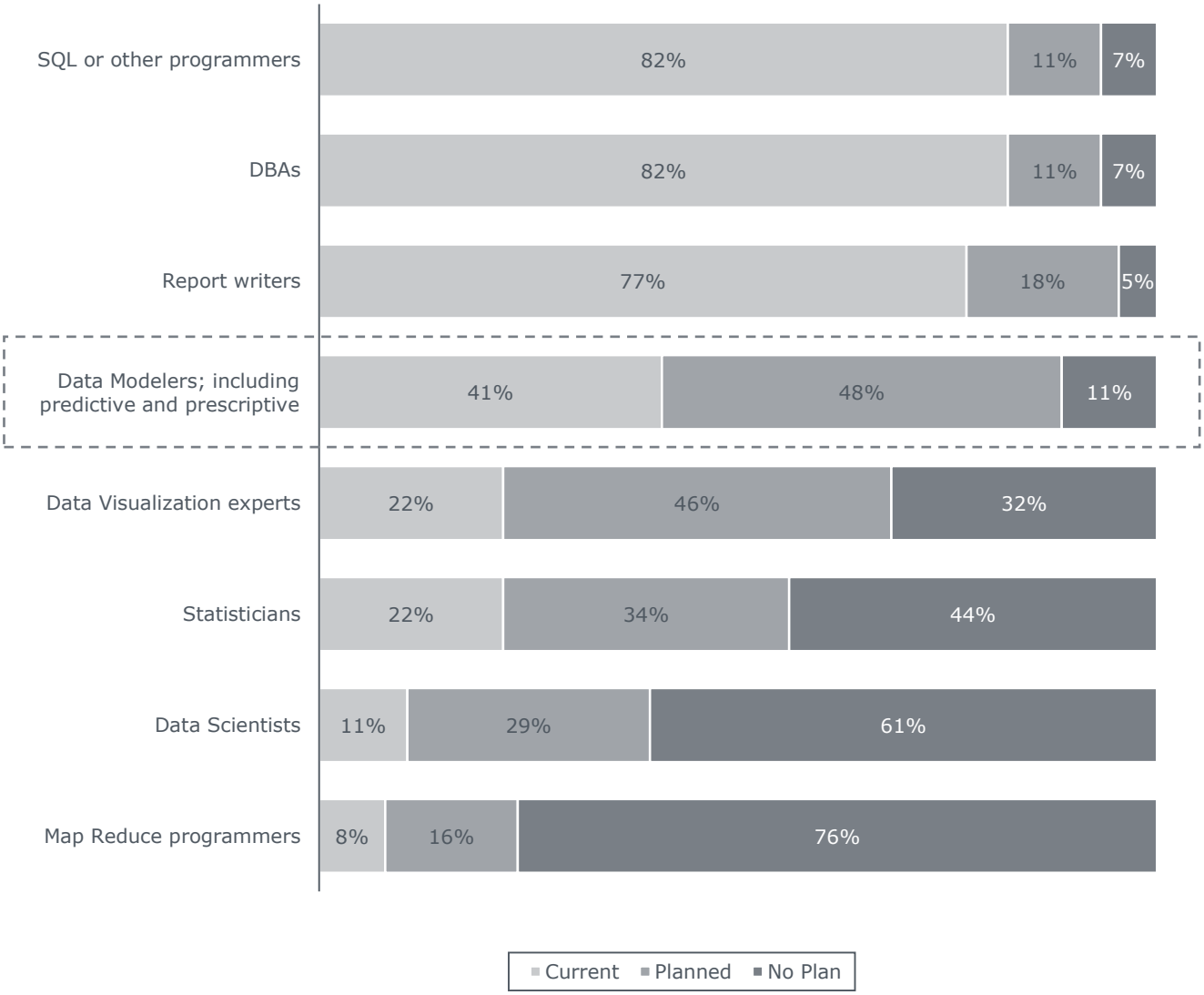
Data Modeling, Visualization Skills in Demand

Only One in Four Employ or Plan to Employ Map Reduce Programmers

What are the skillsets of your current and planned BI staff?
n = 47



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