Lean Construction Institute
Transforming Design and Construction

California Communities of Practice

June 14-15 2017

Why Projects Excel?
The Business Case for Lean Construction

John Pemberton

Lean Construction Institute

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Transforming Design and Construction

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National VP, Operations & Lean

Balfour Beatty

Objectives for Today

In order to generate better and more reliable project outcomes

1. Learn how best projects differentiate from typical
2. Understand impact of project delivery choices
3. Become a lean change agent

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Provider Number H561

The Business Case for Lean

LCILR2017BCL

Bevan Mace

April 13, 2017

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This course is being submitted for **DBIA Continuing Education Unit**. In order for individuals to earn credits, they MUST sign up at the table upon entry, outside the door to our event room today.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

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Course Description

The Lean Construction Institute recently commissioned two original research efforts done by Dodge Data & Analytics and University of Minnesota which examined 172 projects to find out what makes projects excel. The research uncovered a hierarchy of values and expectations for project delivery common among Owners and five myths commonly associated with Lean and Integrated Project Delivery (IPD). A surprising result was the discovery of a ‘gap’ between the Owners’ expectations and the reality of typical project delivery. This research disproved the theory that IPD contracts are too complicated and cannot dictate team behaviors. In this course, the research results will be presented along with a consideration of ways designers and constructors might close this ‘gap’ and increase fact-driven Lean and IPD knowledge across the industry.

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Learning Objectives

At the end of the this course, participants will be able to:

1. At the end of this presentation, participants will understand what owners value in design and construction and will be able to analyze and discuss how designers and constructors can close the gap between owner expectation and typical project delivery.

2. At the end of this presentation, participants will be able to identify Lean process innovations and tools that are flexible and positively change project team collaboration.

3. At the end of this presentation, participants will understand how the adoption of Lean impacts the architect's role in design and construction.

4. At the end of this presentation, participants will know when to strike down Lean and IPD myths with empirical data when they hear myths in the field.

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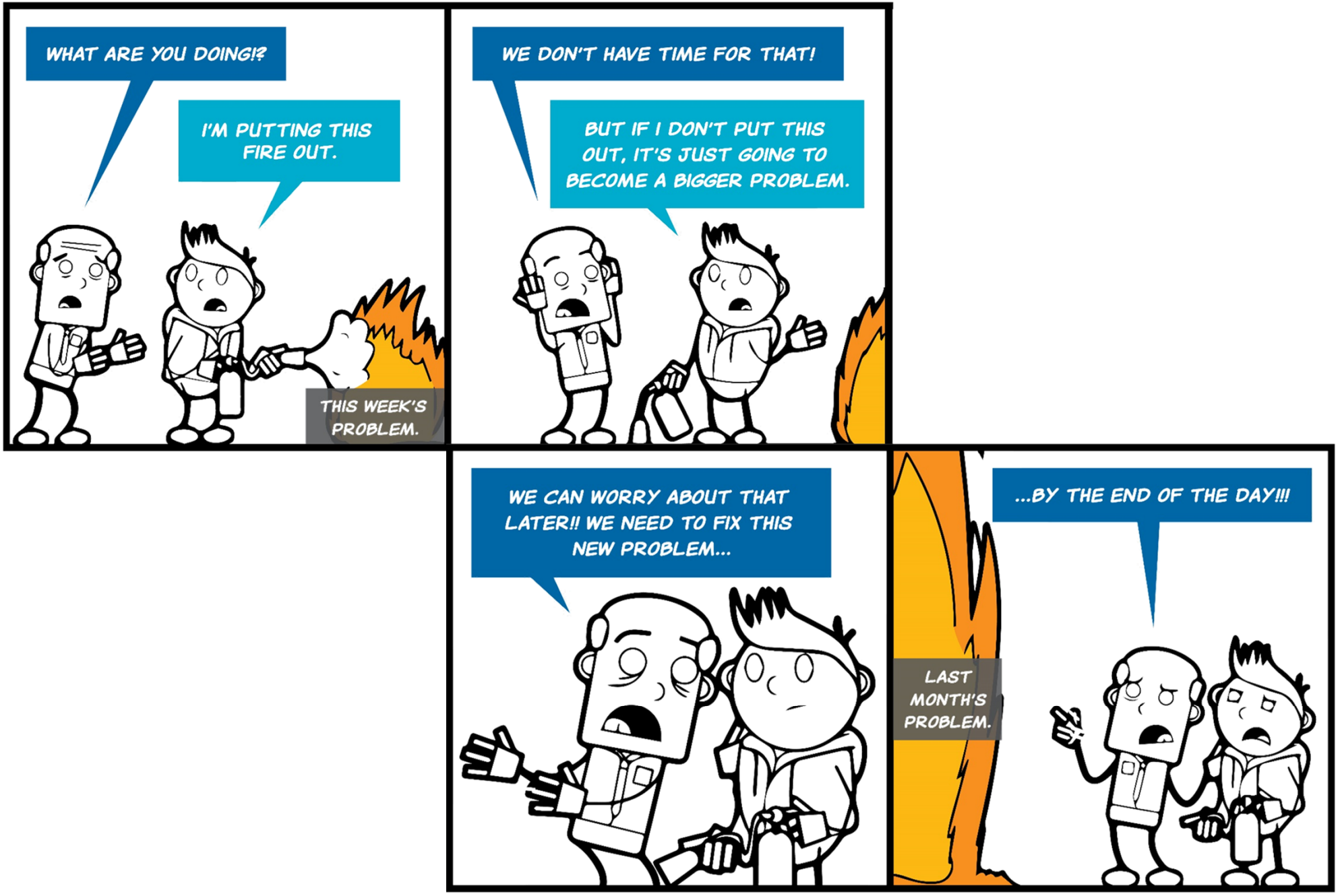
Does this sound familiar?



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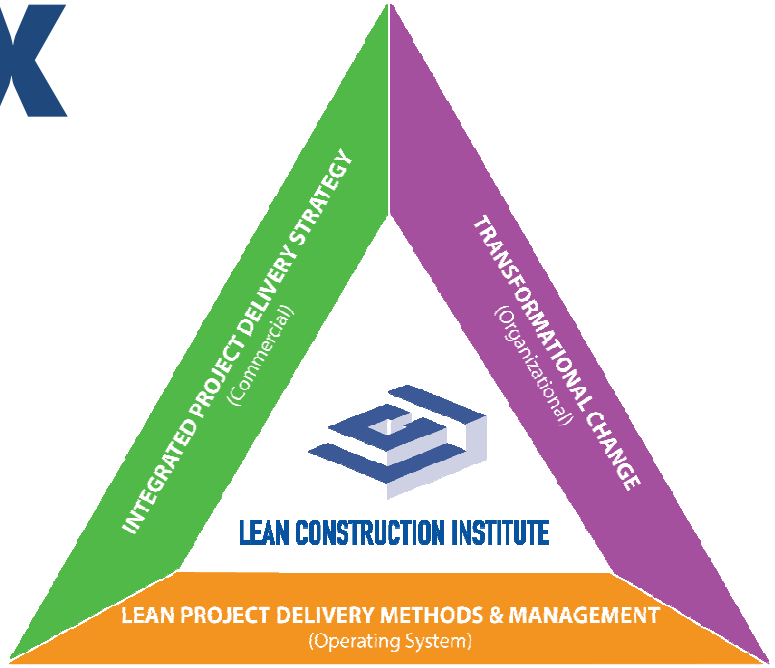
The Business Case for Lean

PROJECTS with **HIGH LEAN INTENSITY**

are **MORE LIKELY** to complete

AHEAD OF SCHEDULE & **UNDER BUDGET**

3X **2X**



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Industry Efficiency

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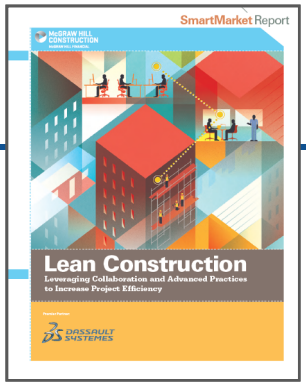

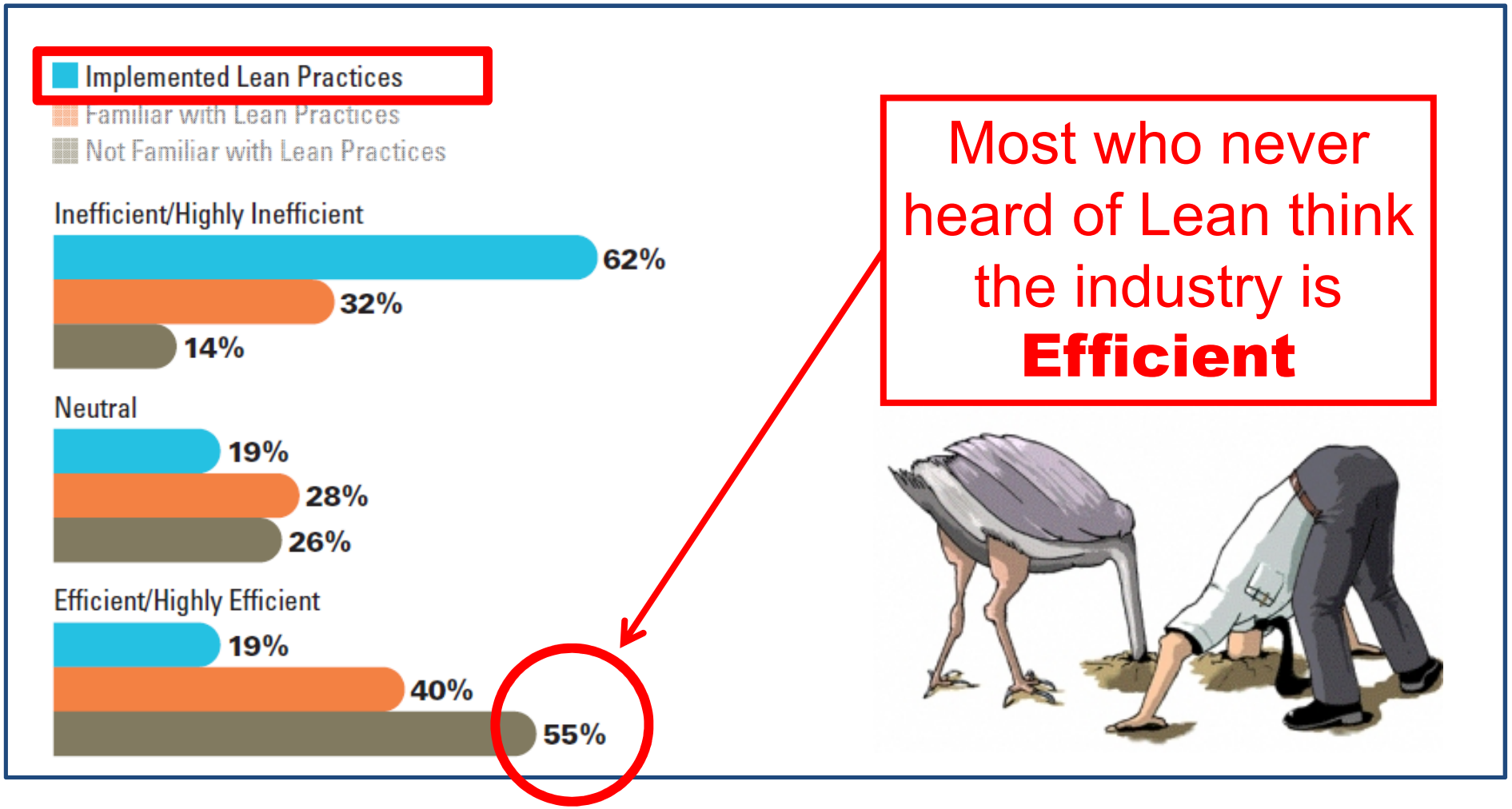

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Lean Construction Tenets

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Owner Satisfaction

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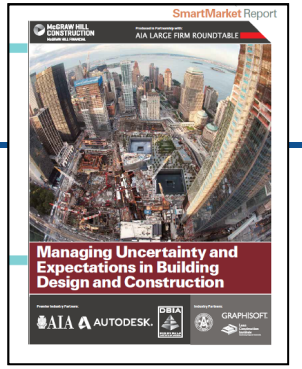

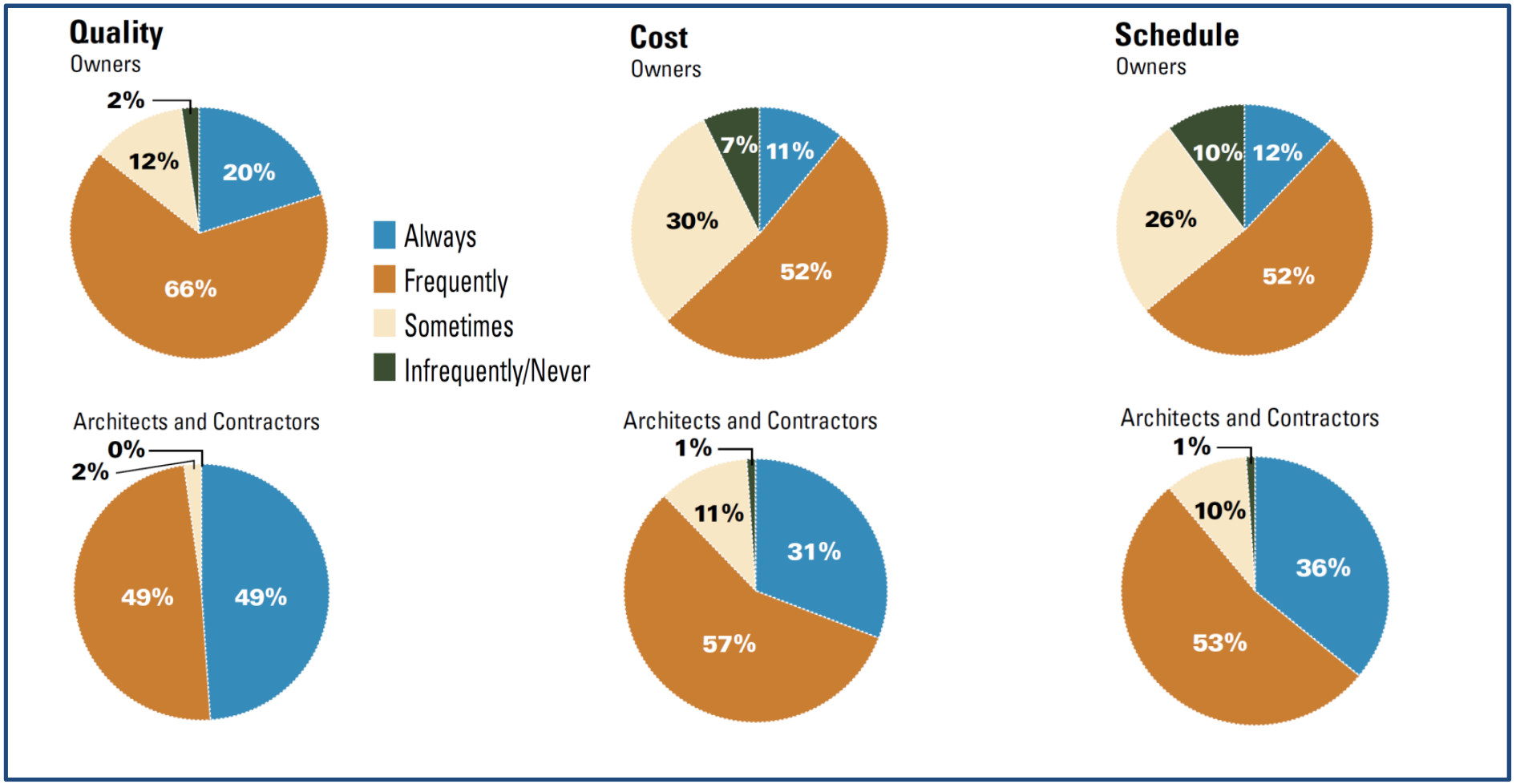

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Sat·is·fac·tion

Fulfillment of one's wishes, expectations, or needs, or the pleasure derived from this.

How satisfied are you with the delivery of capital projects?

- Always
- Frequently
- Sometimes
- Infrequently/ Never

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Research Overview

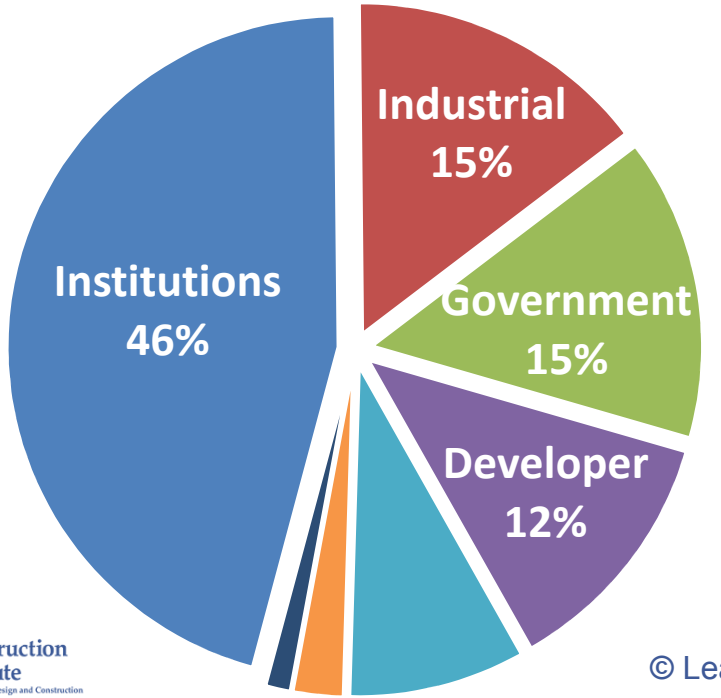
Owner Satisfaction & Project Performance

DODGE DATA & ANALYTICS

Objectives:

1. Benchmark owner satisfaction & project performance
2. What is the impact of lean?

Survey: 81 Owners/ 162 projects



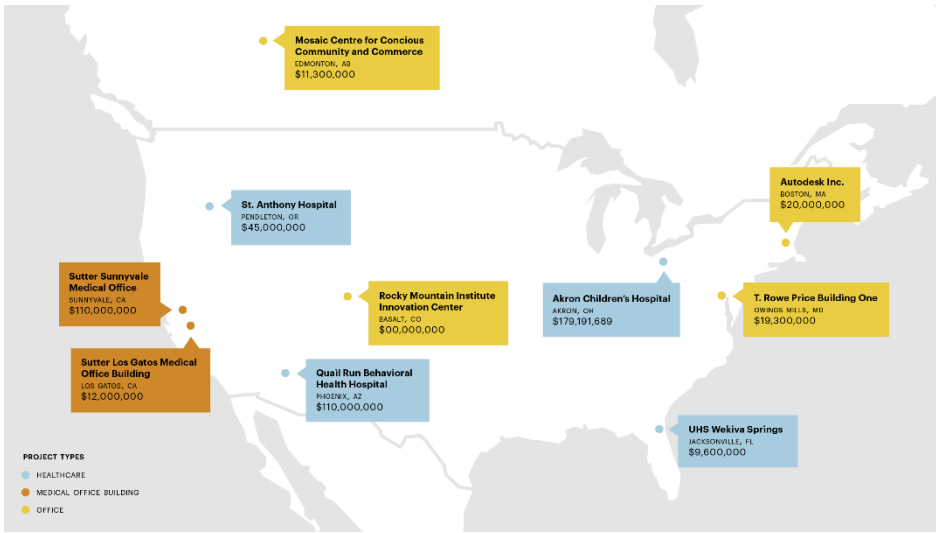
IPD & Lean Motivation & Means

University of Minnesota
Driven to Discover℠

Objective:

3. How and why does integrated lean succeed?

Case Study: 10 Owners/ Projects



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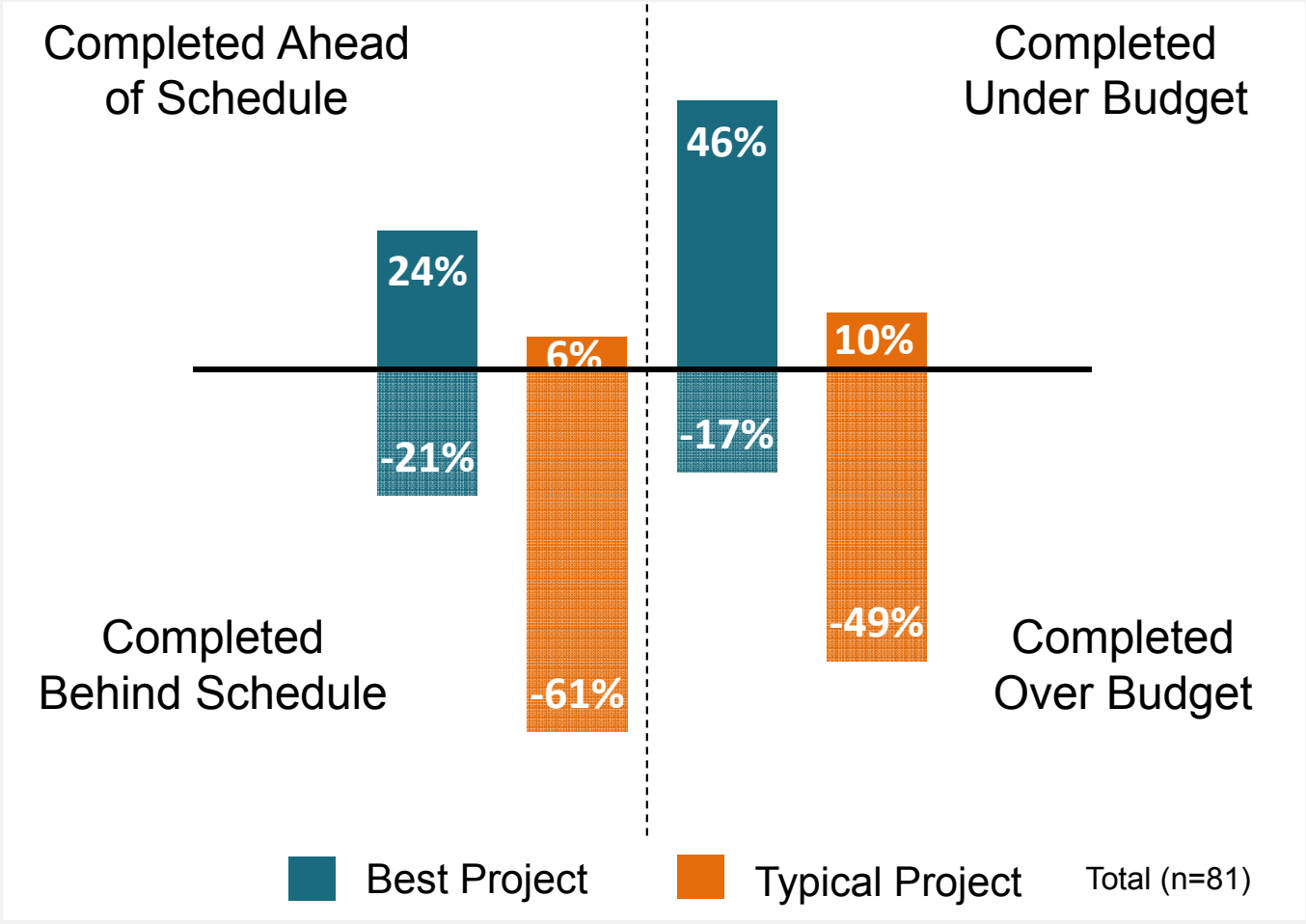
IPDA
INTEGRATED PROJECT DELIVERY ALLIANCE

Satisfaction vs. Value

Performance from Approval of Capital Project (% of Best/ Typical Projects)



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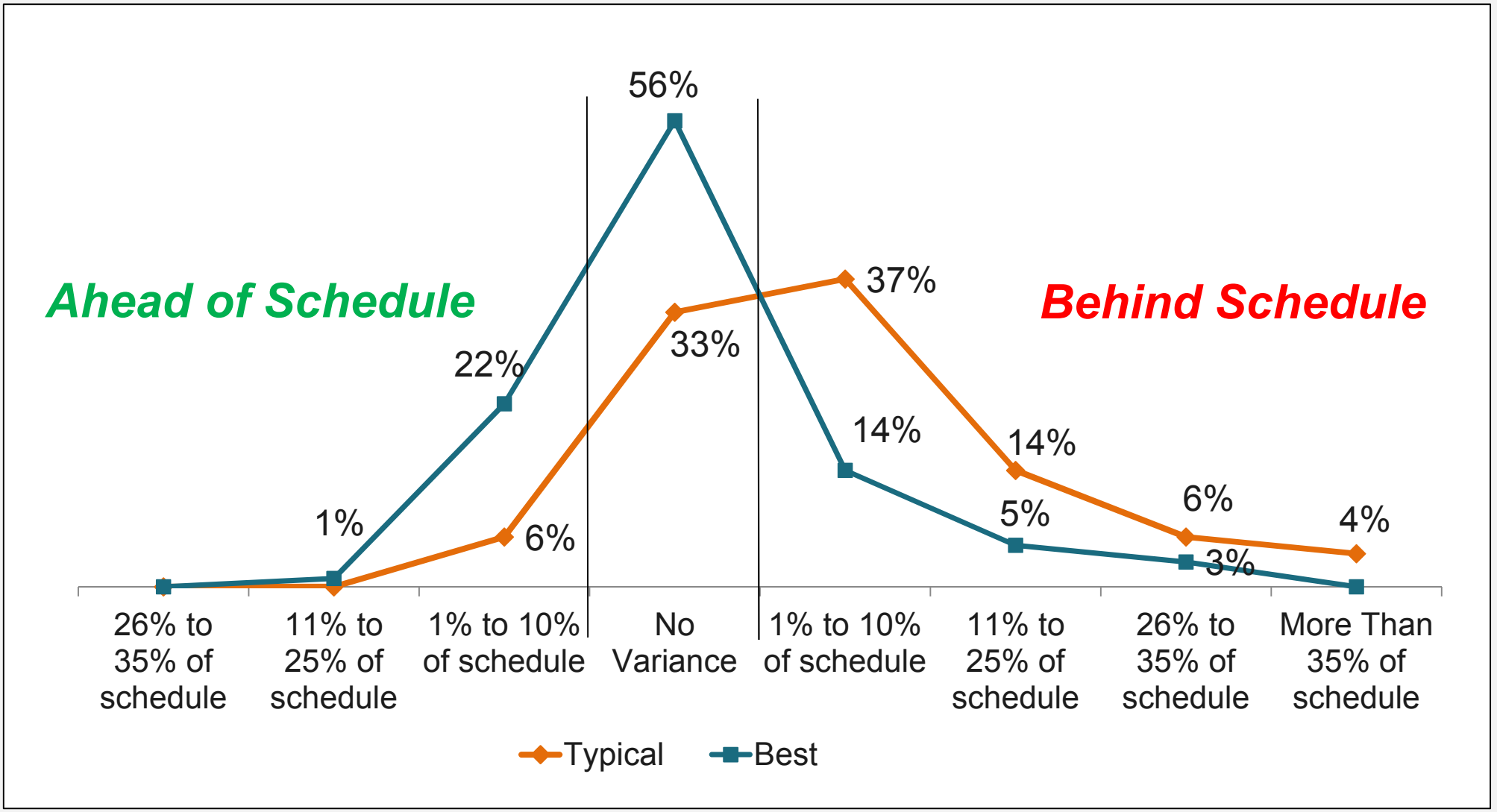
Schedule Performance

Variance of Final Schedule vs. Allocated Capital Schedule



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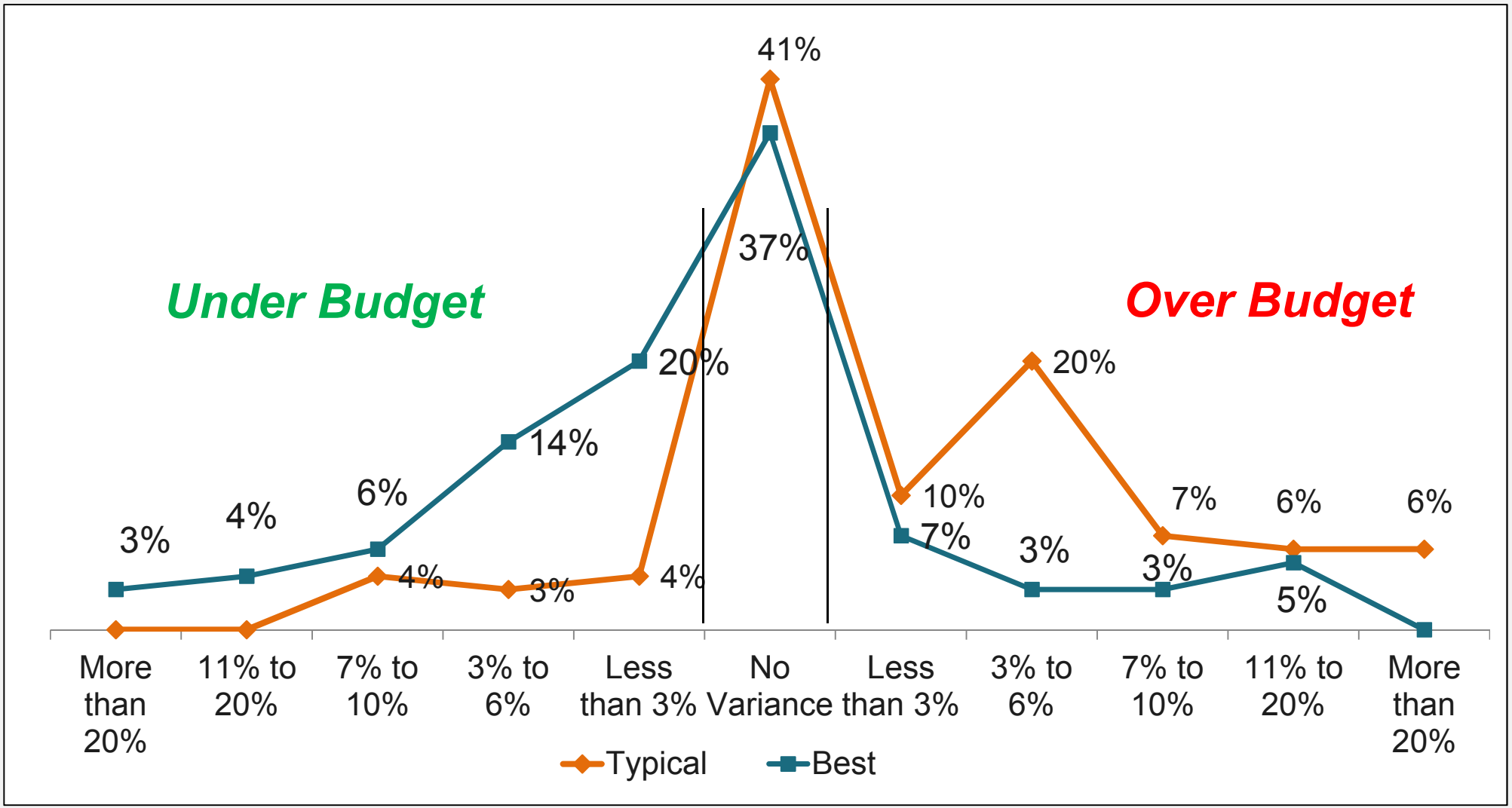
Budget Performance

Variance of Final Cost vs. Allocated Capital Budget



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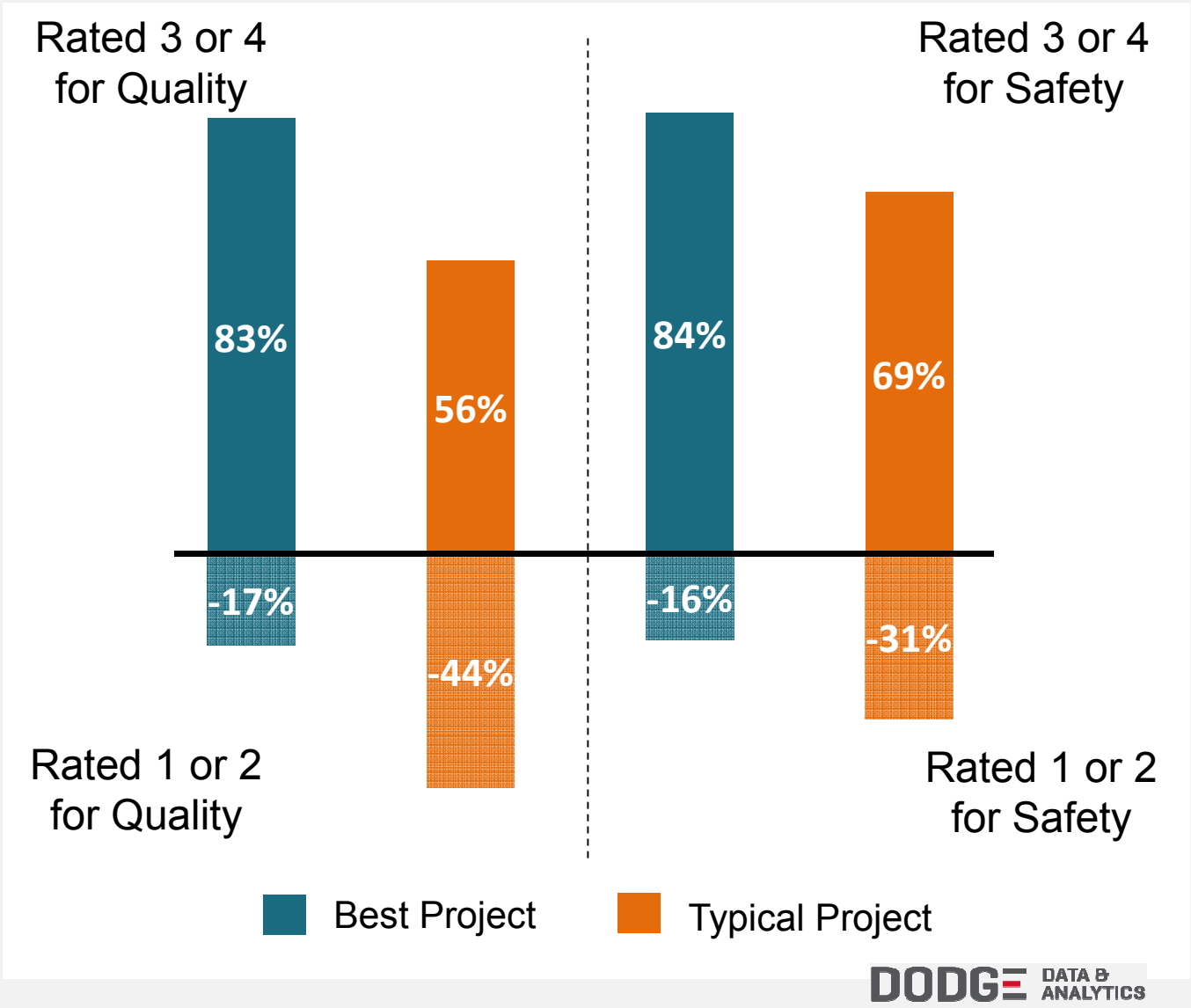
Satisfaction vs. Value



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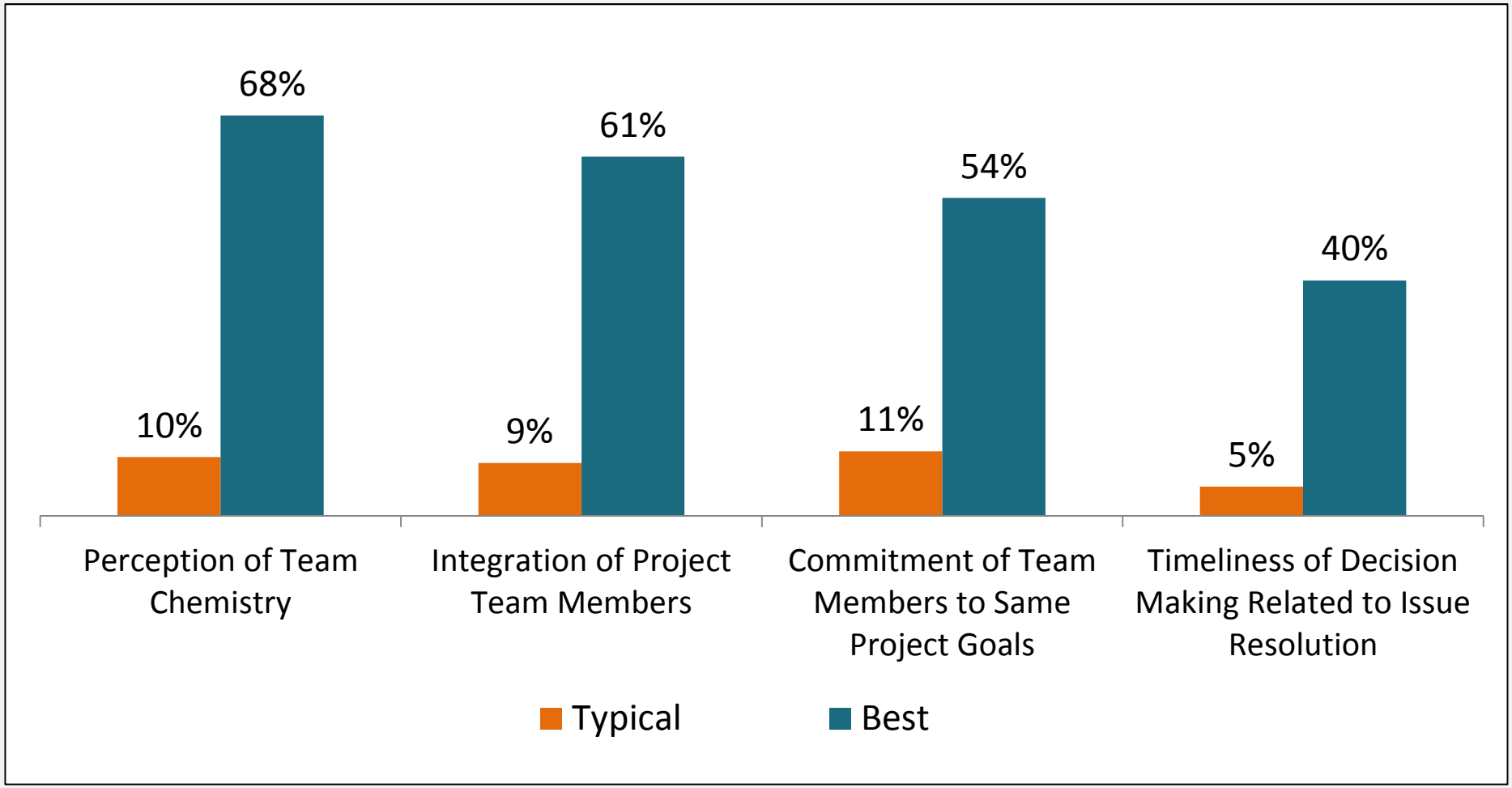
Importance of Team Cohesion

Maximizing Success in Integrated Projects
An Owner's Guide

CHARLES FANKOW FOUNDATION
Construction Industry Institute

% Projects Reporting the Highest (4/4) Rating



DODGE DATA & ANALYTICS

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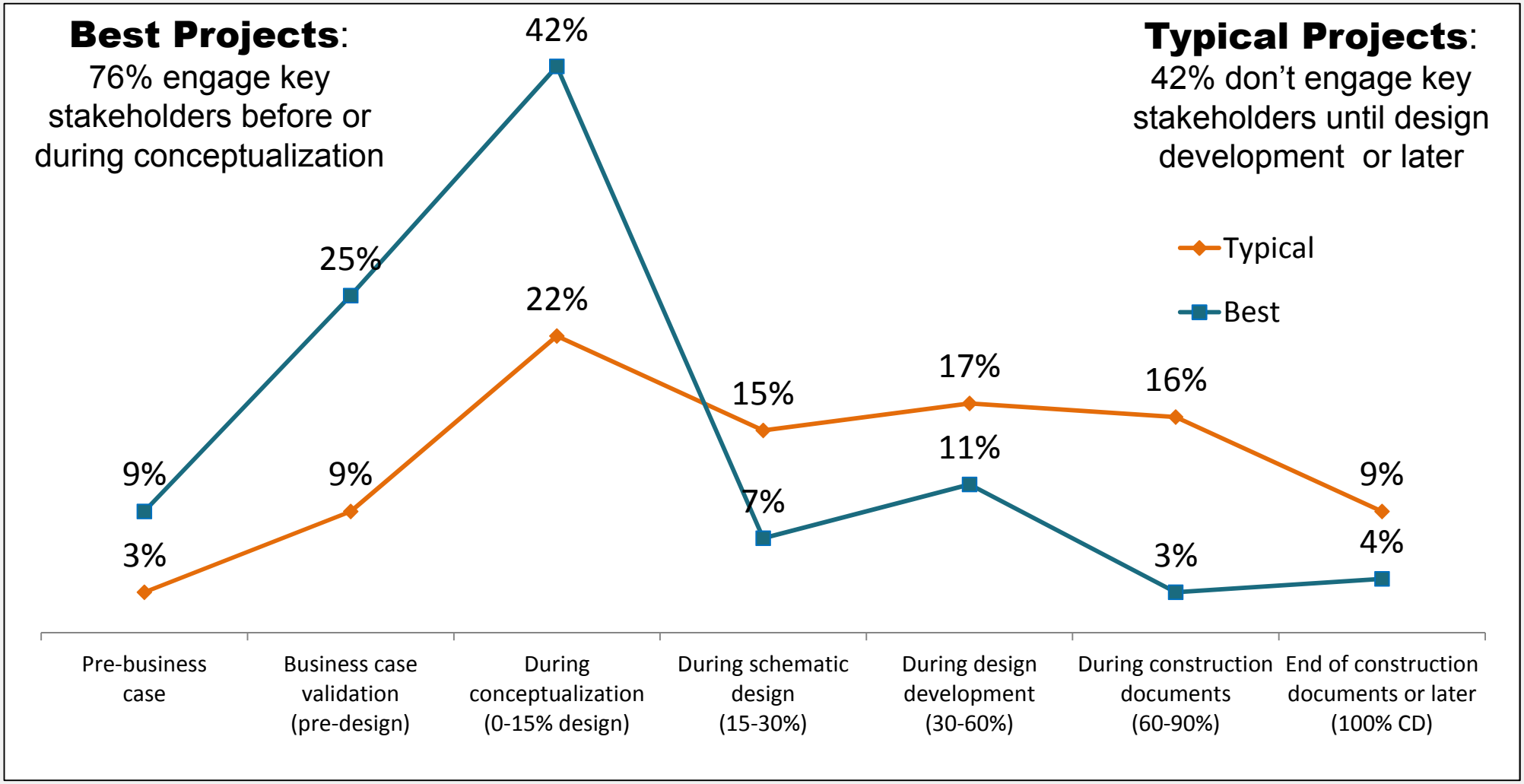
Build the Team

Timing of Key Stakeholder Engagement

Best Projects:
76% engage key stakeholders before or during conceptualization

Typical Projects:
42% don't engage key stakeholders until design development or later



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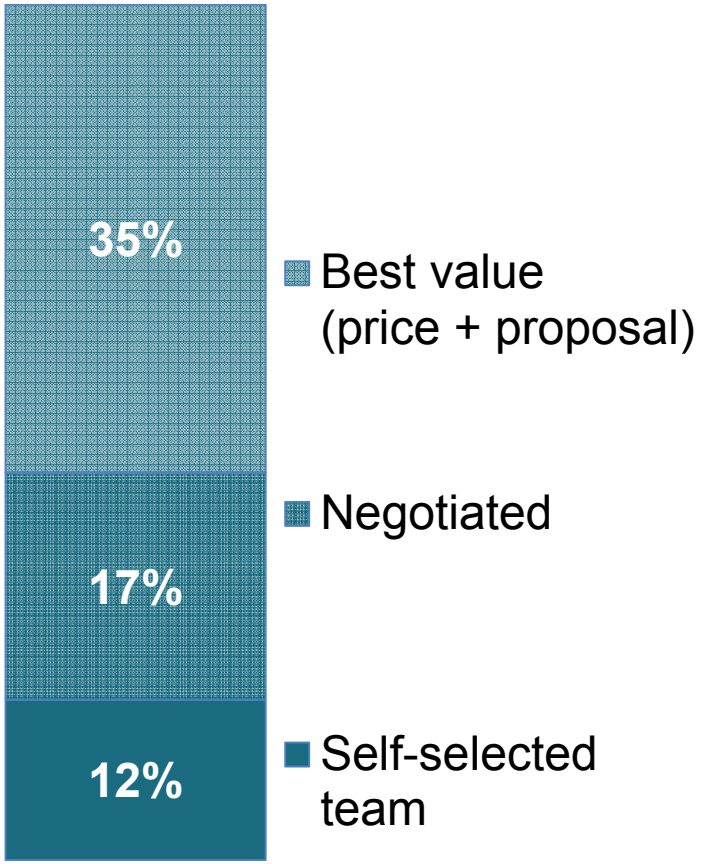
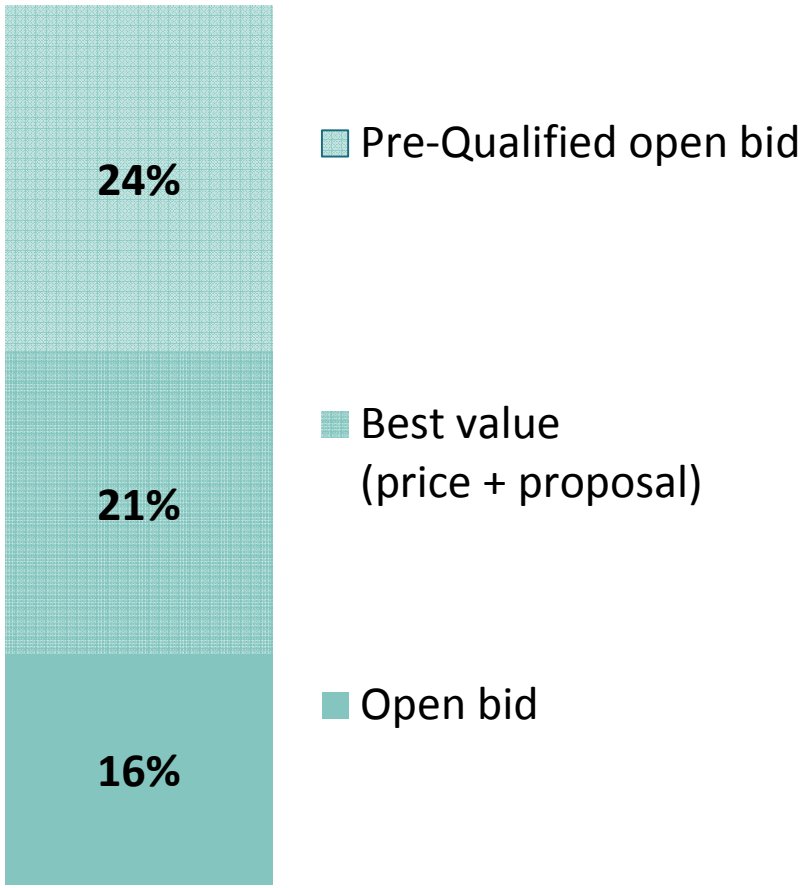
Key Stakeholders Selection Process

Top 3 Selection Processes:
Best Performing Project



Top 3 Selection Processes:
Typical Project



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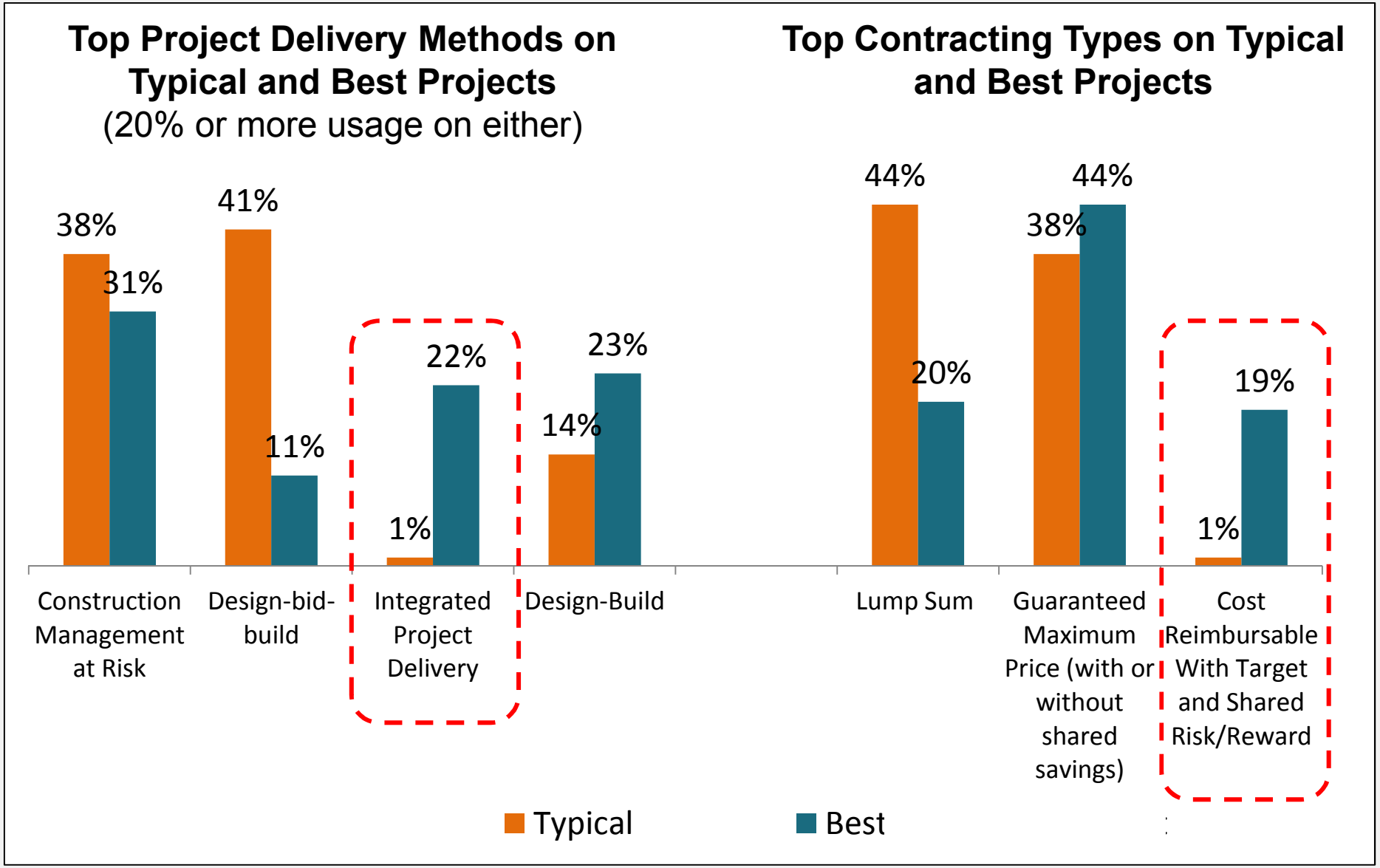
Support the Team



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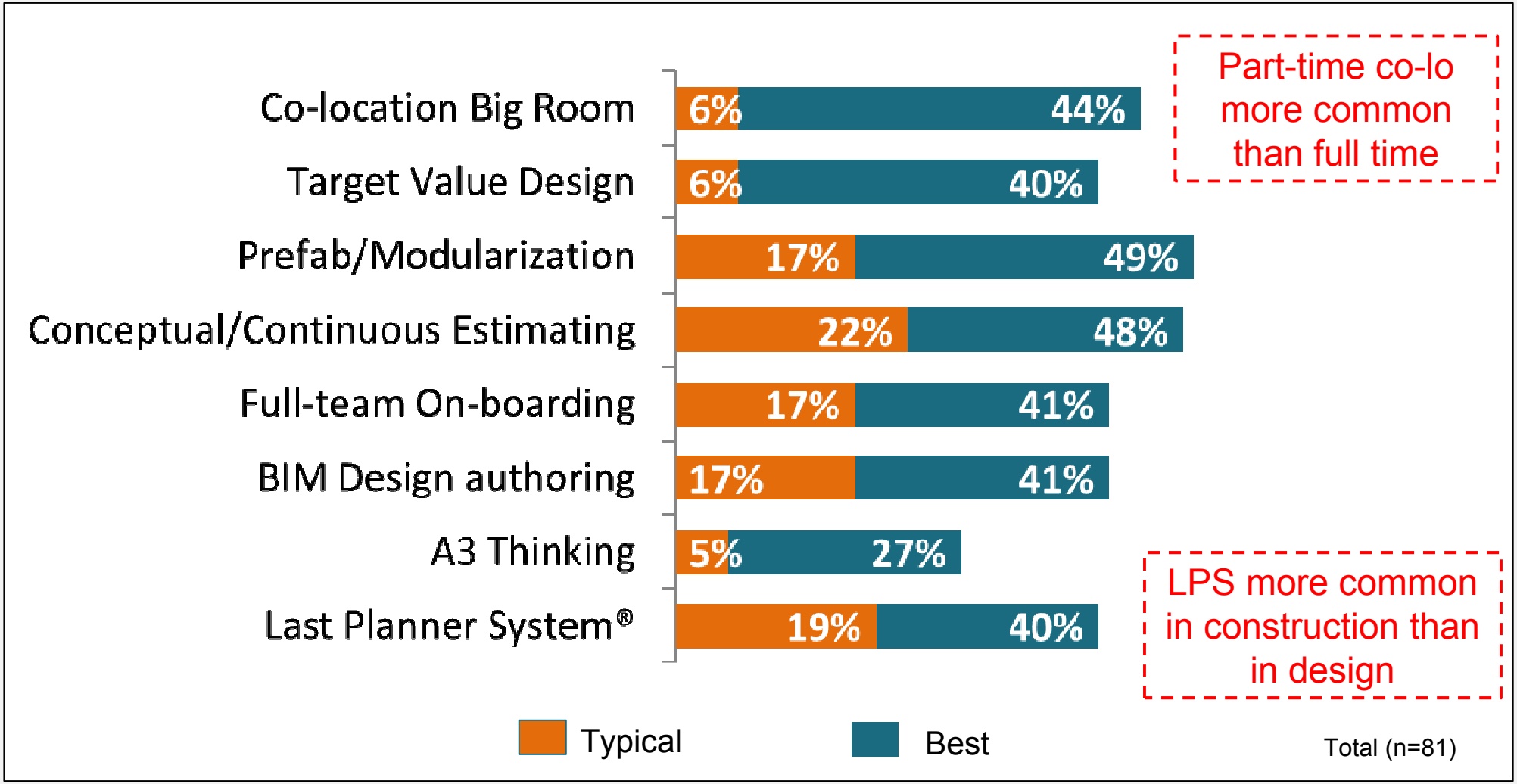
Learn as a Team

Methods with Most Degree of Difference Between Usage



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Lean Intensity Scoring

- 5 S's
- 5 Whys
- A3 Thinking
- BIM 3D Coordination
- BIM 4D & Site Logistics Planning
- BIM Design Authoring
- BIM Execution Plan
- BIM Model Based Estimating
- CBA Decision Making
- Co-Location Big Room
- Conceptual/Continuous Estimating
- CPM Scheduling
- Design to Budget
- Electronic Information Exchange
- Full-Team On-Boarding
- Kaizen
- Last Planner System
- OAC Report Out Meetings
- PDCA
- Prefab/Modularization
- Production System Modeling
- Root Cause Analysis
- Set Based Design
- Target Value Design
- Value Engineering
- Value Stream Mapping
- Visual Management

Eliminated Methods Deemed Standard Industry Practice

Greater Weight Given to Methods Deemed Particularly Valuable

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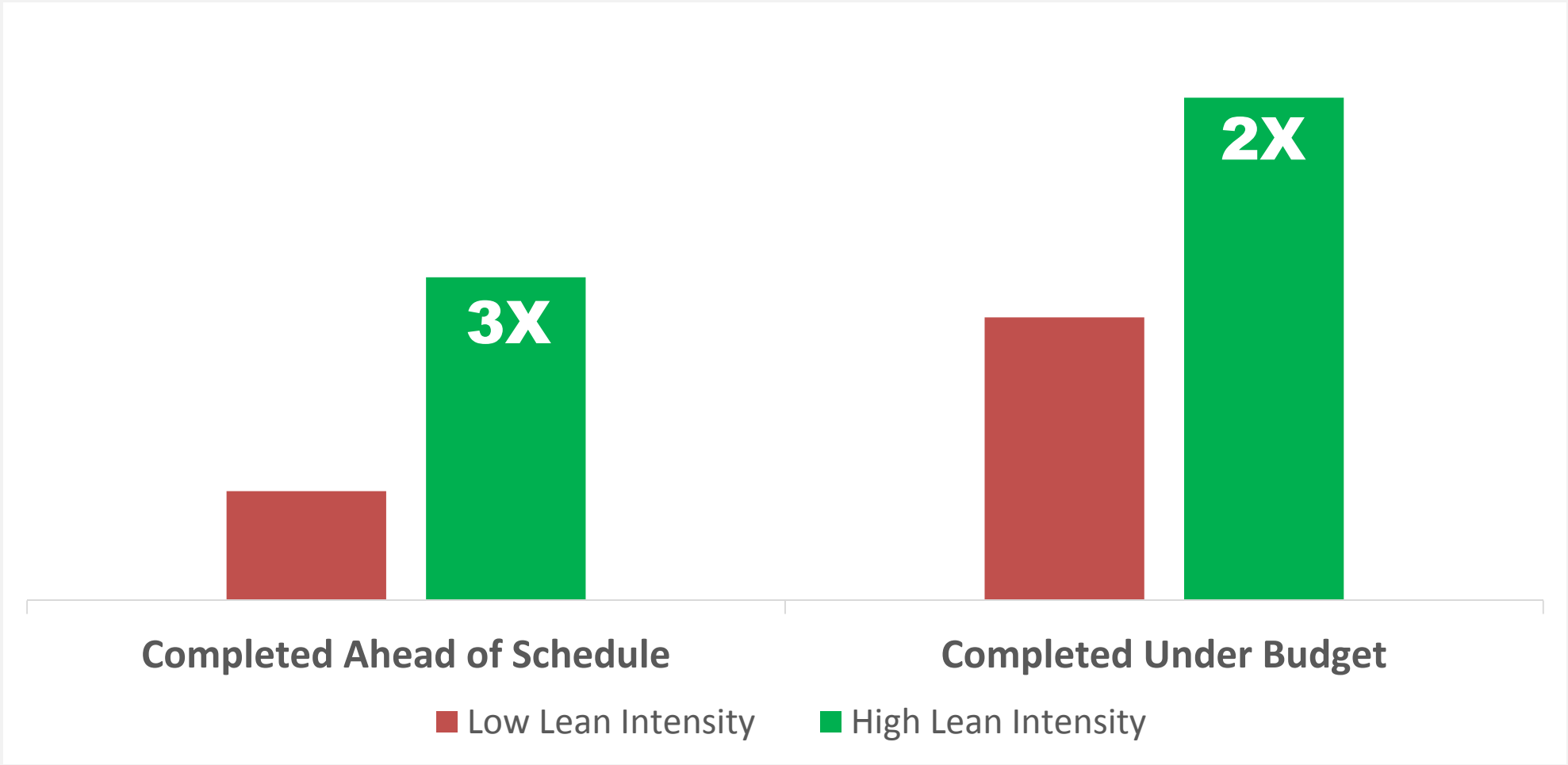
Succeed as a Team

Correlation of lean intensity to outcomes (% likelihood on best projects)



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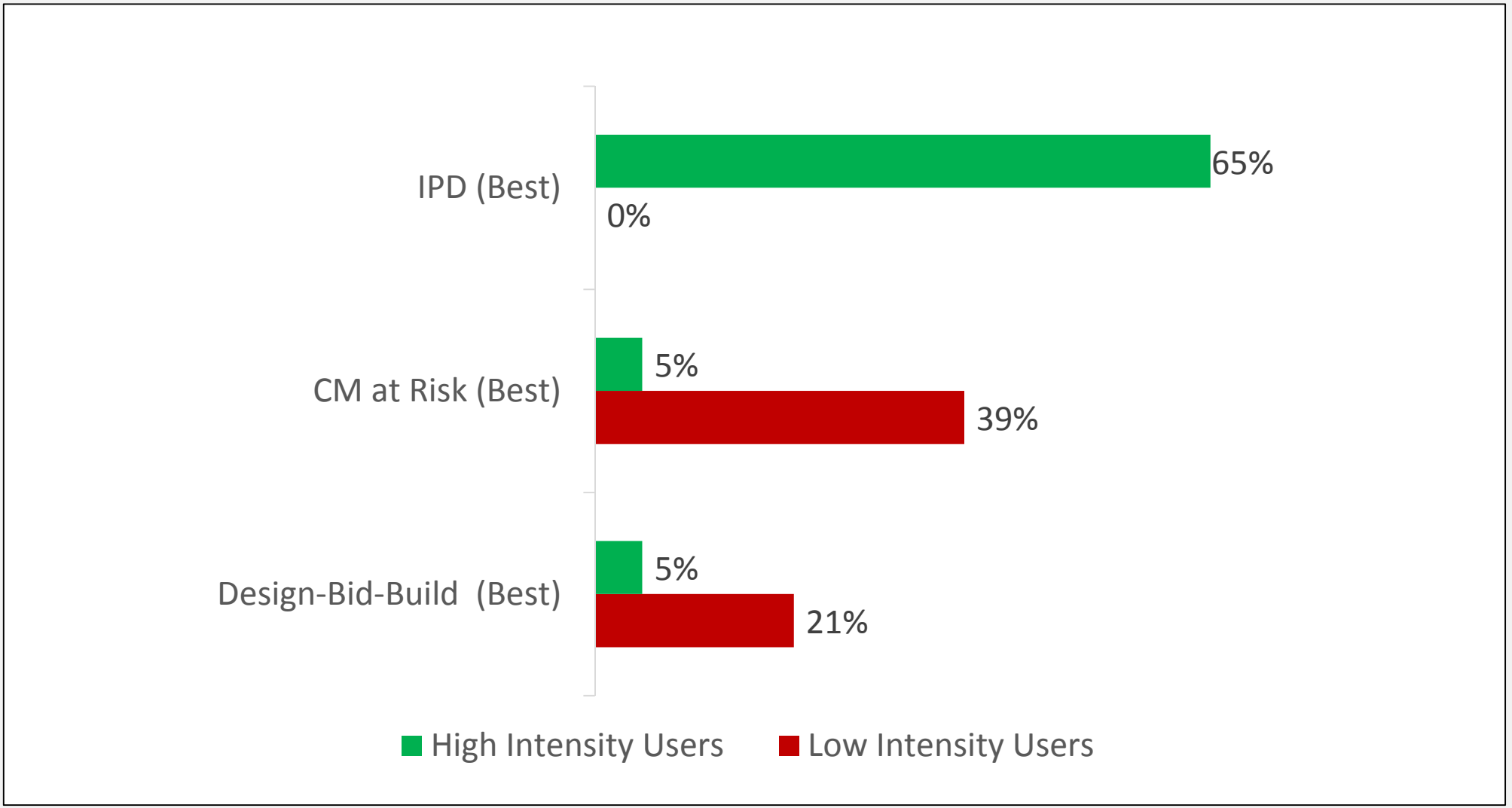
IPD & Lean



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How and **Why:**
IPD creates need to collaborate
Lean provides the means

All projects in the study* were highly successful:
Regardless of project type, scope, geographic location, previous experience with IPD or Lean.

IPD establishes out the terms for collaboration:
financial incentives, baseline costs plus overhead, metrics of success

Lean tools and processes facilitate collaboration:
creates alignment around cost, schedule and other goals

*projects self-selected to respond to our request for participation and may not be representative of all IPD projects. However teams were candid about the challenges they faced and their lessons learned

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IPDA
Integrated Project Delivery Alliance

Common Project Myths…

1. Delivery matters less than choosing the right people – behaviors can't be dictated by a contract
2. IPD contracts are too complicated, Lean tools are too rigid
3. IPD only works on large complex healthcare projects – Teams new to IPD and lean are at a disadvantage
4. Owners aren't getting best value – or – Owners are getting value but the team is not making profit
5. IPD and IPD-lite are essentially the same; financial incentives and release of liability are no big deal

BUSTED

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5 IPD & Lean Myths - Cheng

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Lean Usage & Proficiency

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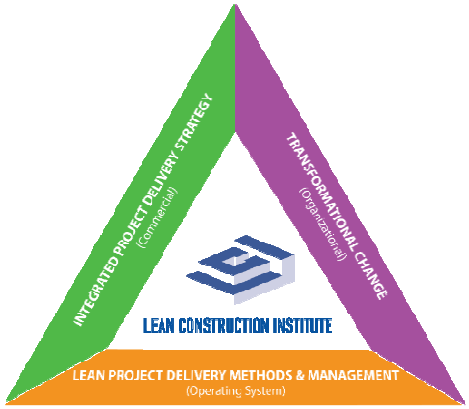
Tactical Takeaways for Projects

1. **Set targets:** Define owner's business case & goals at c-suite

2. **Build the team:** Contract (using best value) key stakeholders prior to/ during concept design to validate targets & unify the team

3. **Learn as a team:** Provide training and coaching for the team to increase adoption of Lean methods

4. **Support the team:** Contracts should support (not thwart) a good team culture and adoption of Lean methods



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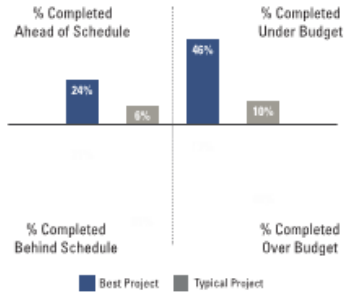
Summary

THE BUSINESS CASE FOR LEAN CONSTRUCTION...THERE IS A BETTER WAY!

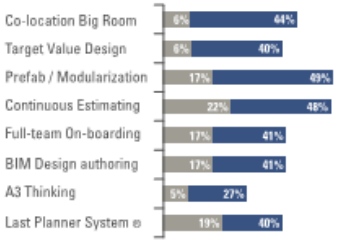
How do you increase speed to market and/ or improve the return on investment of your capital projects? The Lean Construction Institute sponsored two separate research studies, conducted by Dodge Data & Analytics and the University of Minnesota, to explore how and why projects excel. **Empirical evidence now shows that projects with high Lean intensity are three times more likely to complete ahead of schedule and two times more likely to complete under budget.**

HOW DID PROJECTS PERFORM?

Dodge benchmarked 162 projects identified by owners as best or typical vs. schedule and budget performance (what owners cited as most valuable to them). The sample represents projects using various delivery methods and contract types across the United States for owners completing more than five capital projects over three years.

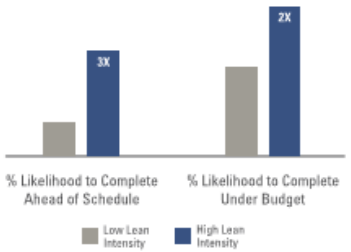


Dodge also inquired about the use of 27 project management methods on each project. The research found the following methods with the biggest gap between use on best and typical projects.



WHY DID PROJECTS EXCEL?

Of the best projects Dodge found a **statistically significant correlation** between high Lean intensity projects and likelihood to complete ahead of schedule or under budget. Lean intensity refers to the extent a project used the management methods studied, particularly those that are recognized as the most effective.



MYTHS ABOUT LEAN

The University of Minnesota "busted" some industry myths through ten in-depth case studies in partnership with the Integrated Project Delivery Alliance. Regardless of project type, regulations or Lean/IPD experience the research found that teams are leveraging Lean and IPD to foster and cultivate "project first" behaviors to deliver "A team results" with every team!

TOP MYTHS BUSTED

1. Delivery matters less than choosing the right people – behaviors can't be dictated by a contract
2. IPD contracts are too complicated, Lean tools are too rigid
3. IPD only works on large, complex healthcare projects – Teams new to IPD and Lean are at a disadvantage
4. Owners aren't getting best value – or – Owners are getting value but the team is not making profit
5. IPD and IPD-lite are essentially the same; financial incentives and release of liability are no big deal

SO HOW DO I START?

Based on the research follow these four key steps:

1. **Set Targets:** Define owner's business case and goals.
2. **Build the Team:** Use a best value selection process to contract key stakeholders prior to or during concept design to validate targets and unify the team.
3. **Learn as a Team:** Provide training and ongoing coaching for the team to increase adoption of Lean methods.
4. **Support the Team:** Contracts should support (not thwart) a collaborative team culture and adoption of Lean methods.

WHAT DOES THIS MEAN FOR ME?

While the research is focused on the project business case; the benefits extend to the individuals and businesses of both owners and service providers for the project including:

- Reduced costs and improved profitability
- Increased employee engagement
- Better work/life balance

HOW DO I LEARN MORE?

For more information about the research, connect with the Lean community in your area and to advance your own Lean journey, please visit:

WWW.LEANCONSTRUCTION.ORG/LEARNING

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November 17, 2016

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Case Study Report

Click to Enter

MOTIVATION AND MEANS:
How and Why IPD and Lean Lead to Success

Research Report
November, 2016

University of Minnesota in collaboration with University of Washington, University of British Columbia, Scan Consulting
Sponsored by Integrated Project Delivery Alliance (IPDA) & Lean Construction Institute (LCI)

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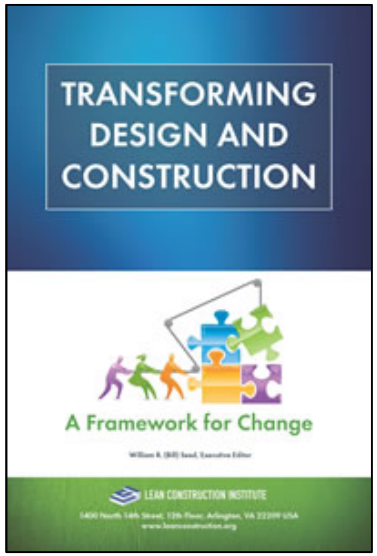

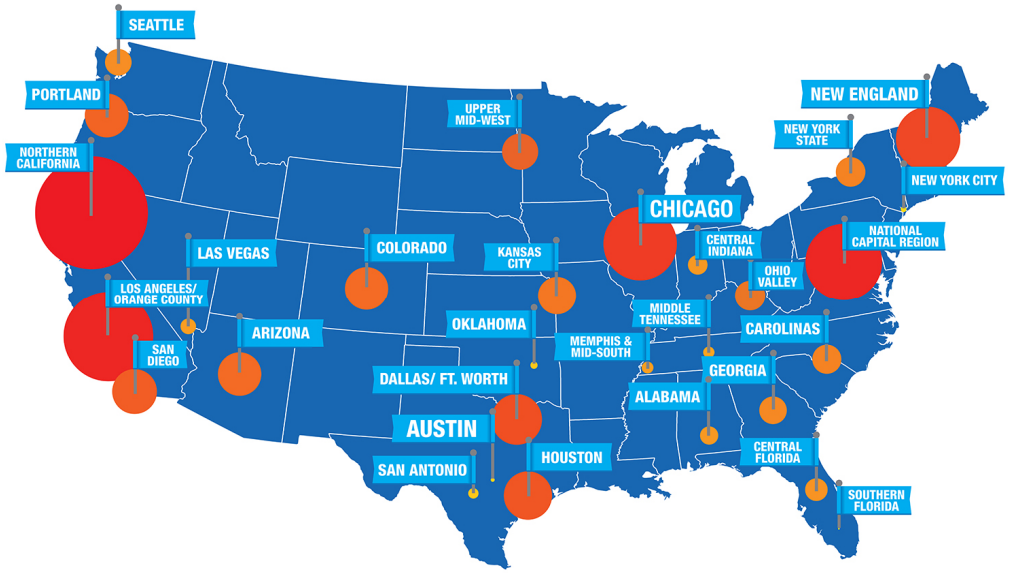

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- **Connect** with your local LCI Community of Practice: www.leanconstruction.org/local-communities/
- **Access tools:** www.leanconstruction.org/learning/getting-started-with-lean/

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Questions?

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