Multiskilling in U.S. Construction

SIMPLAR FOUNDATION

Multiskilling has been studied for nearly three decades, but no prior study had measured its effects on active U.S. construction projects. This study is the first to do so, with the largest field dataset on multiskilling to date.

1 WHAT MULTISKILLING IS

Multiskilling is a labor strategy in which workers and crews are qualified to safely and competently perform selected work activities across more than one trade, craft, or skill classification.

This does not mean every worker performing every trade. As examined in this study, multiskilling is:

QUALIFIED
Within normal training, licensing, and safety rules

TARGETED
To naturally complementary skill combinations

BUILT ON DEPTH
Added skills build on a strong primary trade

EXAMPLES OF COMPLEMENTARY TRADE COMBINATIONS

- **Carpenter** + concrete placing and finishing
- **Sheet metal worker** + scaffolding, pipe insulation
- **Pipefitter** + welding
- **Ironworker** + concrete formwork
- **Electrician** + heavy equipment operation
- **Concrete finisher** + rebar tying

2 THE EVIDENCE: ONE NATIONWIDE DATASET



This study combines seven sources of evidence into one dataset covering 40 projects across 23 project types, from wastewater plants, bridges, and substations to hospitals, data centers, and EV charging stations, ranging from under $1 million to more than $1 billion.

Fieldwork was conducted in 24 states and Washington, DC (darker), plus interviews in five more states (lighter). Each pin is a site visit, payroll record, training-facility tour, or controlled field trial.

40
site visits to 36 projects

11,407
work-sampling observations of 644 workers

89,620
labor hours of payroll records from 18 projects

2
controlled field trials and 120,000 simulation runs

80
interviews with 48 organizations

7
training-facility tours

26
trades in nearly 190 distinct combinations

33 million
employee hours of contractor safety records

PRODUCTIVITY
39%
more crew time spent on direct construction work

SCHEDULE
22% to 38%
fewer workdays than a one-trade workforce would need

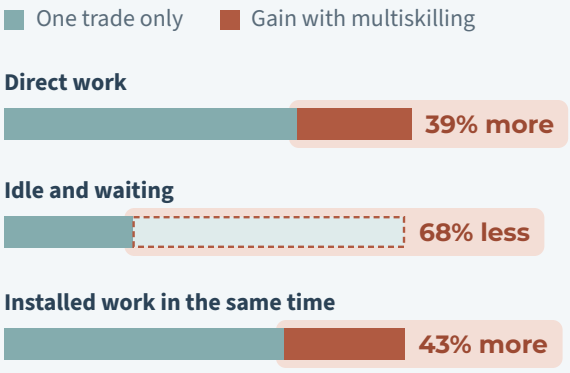
STAFFING
45% to 72%
more workers a one-trade crew would need for the same work

See page 2 for all results →

Productivity

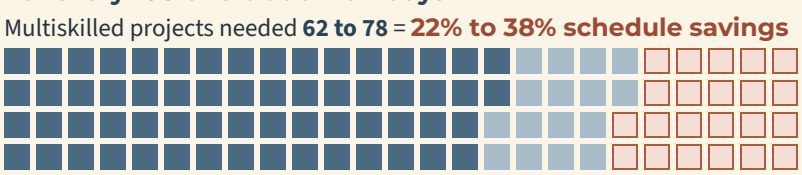
In 60 observed crews, multiskilling raised the share of time spent on direct construction work by **39%** (about 8 more minutes of every crew hour) and cut idle and waiting time by **68%**, compared with the same crews limited to their primary trades. Both results are statistically significant at the 99.9% confidence level.

On closely sequenced multi-trade work scopes, a multiskilled workflow completed about **43% more installed work** in the same production time. The gain came from fewer handoffs: two multiskilled workers completed a seven-trade sequence that the one-trade workflow staffed with 12 workers and 10 handoffs between trades.



Schedule

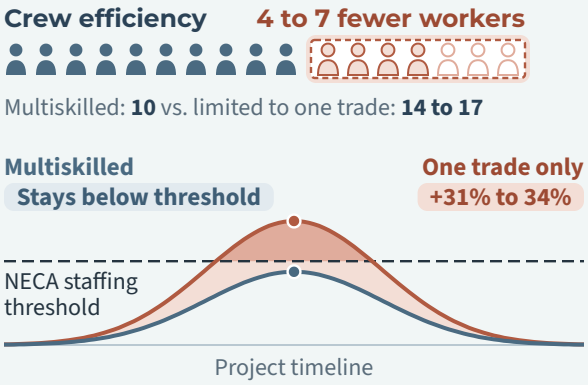
Across payroll records from 18 projects, the recorded multiskilled projects completed their work in about **22% to 38% fewer workdays** than a one-trade workforce was estimated to need.



Staffing and Labor Curve

Limiting workers to one trade would require about **45% to 72% more workers** to keep an observed crew's work sequence moving; a crew of 10 multiskilled workers did the work of 14 to 17 single-trade workers.

Across whole projects, limiting workers to one trade would require about **9% to 12% more workers** each day on average. Peak staffing demand would rise **31% to 34%**. That taller peak exceeds the staffing threshold from prior National Electrical Contractors Association (NECA) research, which links peaks of this size to a potential **15% to 20% loss** in labor productivity.



Safety Context

Participating contractors that shared annual safety records covered about 33 million employee hours. Their safety results were better than industry averages: **57% better** on recordable incidents, **66% better** on cases involving days away or restricted work, and about **40% better** on the overall safety rating insurers use (EMR), with no fatalities.

What to Do With This Evidence

Multiskilling should not be mandated, and it should not be arbitrarily prohibited. Many decisions that enable or restrict it are made before a worker reaches the site: procurement approach, scope packaging, contract terms, labor agreements, and classification rules. Policymakers and public owners can preserve qualified workforce flexibility where it is safe, legal, and useful, and evaluate it based on the work and the evidence.

About this study. This six-report series was produced by researchers at the University of Kansas, the University of North Carolina at Charlotte, Arizona State University, and the Simplar Foundation, with funding from Associated Builders and Contractors. The research team controlled the study methods, analysis, interpretation, and reporting. Full reports: simplarfoundation.org/multiskilling