

The Impact of GitHub Copilot On Developer Performance



A quantitative enterprise analysis across 18 organizations and 30,000+ developers.



Introduction

GitHub Copilot is often evaluated through developer feedback. Enterprise decisions, however, require measurable evidence.

This report assesses Copilot's impact on productivity using BlueOptima's Billable Coding Effort (BCE) metric. BCE quantifies the intellectual effort of code change. Productivity is expressed as BCE per active day (BCE/day) to ensure comparability across developers and time.

Copilot licenses weren't assigned randomly; they reflect real-world organizational choices. Our analysis focuses on consistently active developers within these organizations, and applies minimum activity thresholds, to focus on those regularly contributing code

The study addresses two key questions.

Q 1. Do Copilot developers see a statistically significant increase in BCE/day compared to similar non-users?

Methodology

Each Copilot user was aligned to their individual license assignment date. A statistically similar control group was constructed from non-Copilot users within the same enterprises.

Matching used pre-assignment productivity (BCE/day), productivity trends, and a minimum activity threshold of at least 30 BCE hours across 12 months.

Before adoption, the two groups were statistically comparable ($p = 0.417$), indicating no meaningful baseline difference.

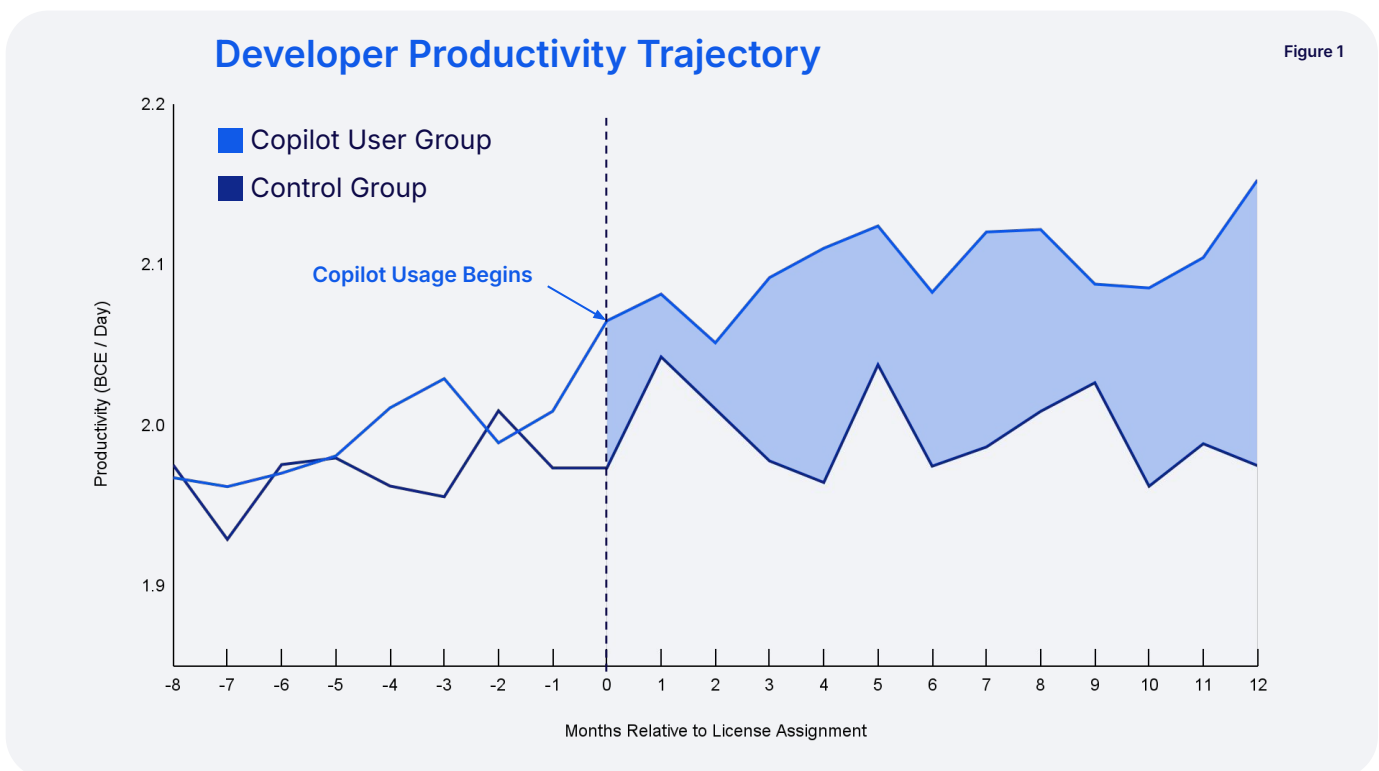
Key Finding: The "Copilot Lift-Off"

Prior to license assignment, Copilot and control groups followed parallel productivity trends (1.95-2.0 BCE/day).

Post-adoption, Copilot users averaged 2.09 BCE/day, while the control group averaged 1.98 BCE/day.

This represents a statistically significant, **sustained 5.4% uplift**.

Copilot adoption is associated with a statistically significant and persistent increase in developer productivity relative to matched non-users.



Q 2. Does deeper adoption of GitHub Copilot lead to larger improvements in BCE/day?

Methodology

A second analysis examined usage intensity for a smaller subset of 6,369 Copilot developers with available usage telemetry.

Each developer was compared to their own pre-adoption baseline, to remove team and role differences. They were grouped into usage quartiles, and productivity uplift was measured against their past performance.

Key Finding: Productivity Scales With Usage Depth

Results show a clear monotonic pattern:

- Light users show modest gains
- Moderate users show stronger improvement
- High-usage developers demonstrate the largest productivity uplift

Lower-usage developers exhibit modest gains relative to baseline. As usage increases, the magnitude of uplift increases correspondingly. High-usage developers demonstrate the strongest productivity acceleration.

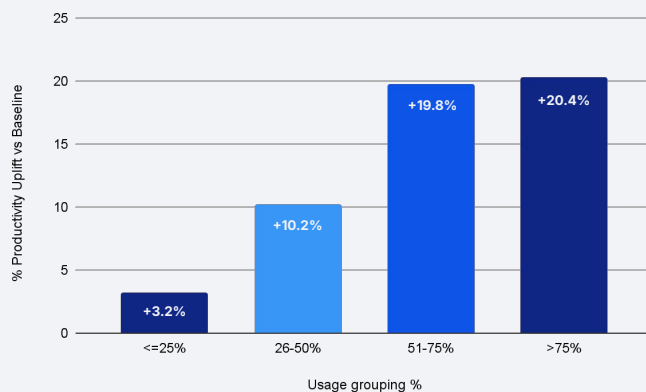
Productivity gains increase as Copilot usage deepens, indicating that adoption intensity is associated with greater performance improvement.

A 20.4% productivity uplift equates to an increase of 0.38 hours of BCE, or 8.36 hours per developer per month.

At an average Cost/BCE of \$189, that equates to \$1,580 additional output per dev per month.

\$1.89M in additional coding output scaled across 1,000 developers.

ROI by Adoption Depth: Why Usage Matters Figure 2



Conclusion

Across 18 enterprises, GitHub Copilot adoption is associated with a statistically validated **5.4% increase in developer productivity** compared to similar non-users. Furthermore, productivity gains increase consistently with deeper adoption.

These findings indicate that Copilot delivers measurable, sustained performance uplift in enterprise environments.

Returns grow with how deeply the tool is used, not just how widely it's licensed.

Sustainable performance demands continued attention to code quality. As AI-assisted development scales, risks to maintainability and security can increase without strong engineering practices.

Measuring productivity alongside quality and security remains critical to long-term enterprise value.

Based on the BlueOptima benchmark, the average developer achieves 1.87 BCE/day at a Cost/BCE of \$189.

A 5% improvement lifts productivity to 1.96 BCE/day.

Assuming 22 working days per month, this equals an extra 1.98 hours of BCE, or \$374, per dev per month.

Scaled to 1,000 developers: additional coding output of ~\$448K annually.



Engineering Intelligence For the AI Era

Objective measurement is critical to understanding Copilot's realized impact.

BlueOptima's platform enables enterprises to:

- ✓ Track onboarding and ramp-up effectiveness post-Copilot deployments
- ✓ Gain transparency into AI-assisted versus human-authored code
- ✓ Translate productivity gains into measurable ROI for executive stakeholders

With trusted visibility into engineering outcomes, you can scale AI adoption with confidence.

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