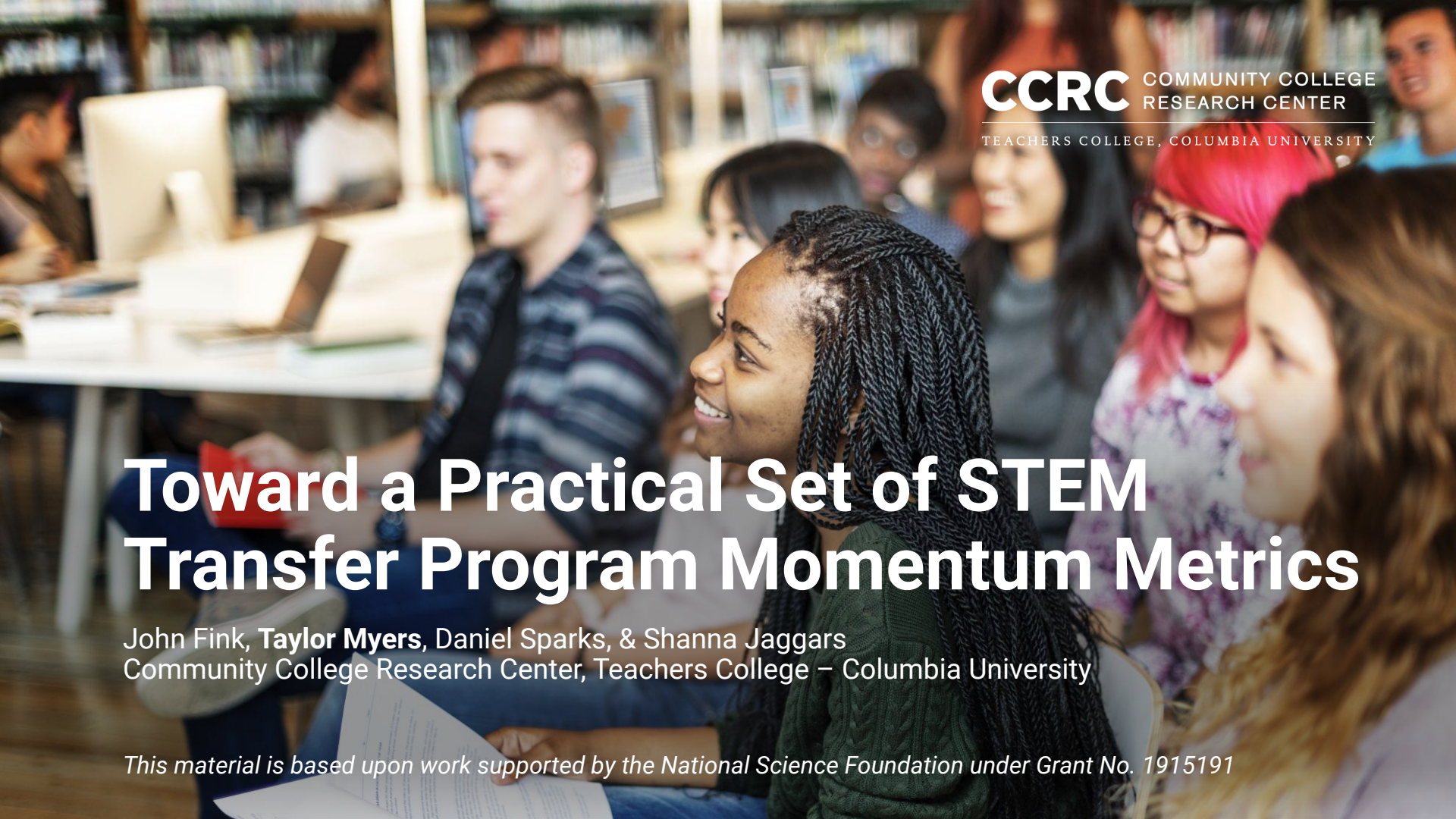

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Toward a Practical Set of STEM Transfer Program Momentum Metrics

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Program Momentum Matters

- Programs speak to a student's "why" for enrolling
- Program momentum predicts program completion
- Program data is close to practice and actionable
- Efficient and successful transfer requires alignment to baccalaureate fields and programs

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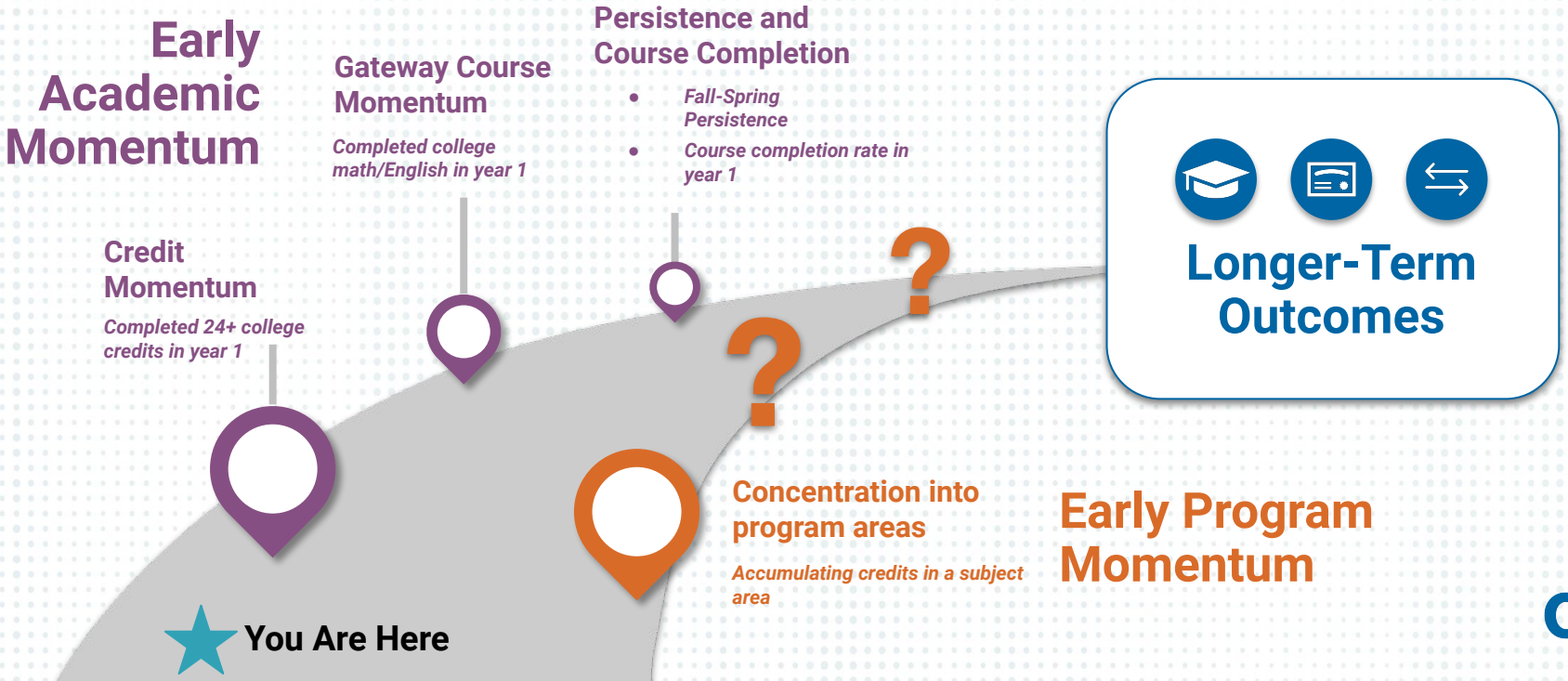
Metrics for Improvement: Momentum as a Leading Indicator



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Working Paper & Research Brief: Toward a Practical Set of STEM Transfer Program Momentum Metrics

1. Can a simple set of STEM momentum metrics predict students' long-term outcomes at a similar or superior level to widely-used general early momentum metrics?
2. Are these STEM momentum metrics reliable across a wide variety of institutional contexts and student groups, particularly those who are historically underrepresented in STEM?
3. To what extent do these metrics reflect students' intent to study STEM, student success within STEM, and institution-specific efforts to support STEM pathways?

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Key Findings

- ***Building STEM momentum benefits students;*** Correlation with longer-term STEM outcomes are reliable across states and student subgroups.
- ***Findings provide validation of faculty-recommended courses on state transfer pathways;*** STEM indicators appear to capture momentum beyond signaling STEM intent
- ***Few students gain STEM Momentum;*** Gender & racial/ethnic gaps present in access to/completion of STEM Momentum courses in year 1 across and within colleges

Data

- Three medium/large-size community college systems in the United States
- 70 college campuses
- 4 FTIC cohorts (2010, 2011, 2012, 2013)
- ~ 270,000 students
- Deidentified, unit record enrollment, course, and outcome files

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Building STEM program momentum increases students' likelihood of STEM bachelor's degree completion

- Conditional on articulated state transfer pathways being in place, completing calculus or non-math transfer-level science courses is associated with a **7 to 9 pp increase in STEM bachelor's completion, on average**.
- Significant across-college and across-state variation on these metrics
- Relatively few students complete STEM program momentum

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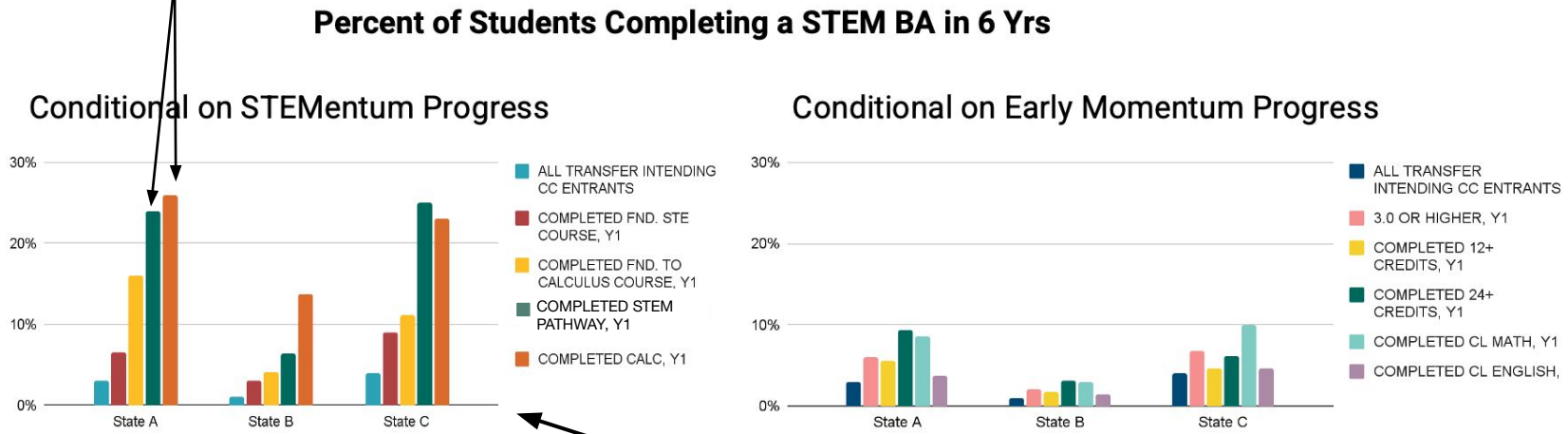
STEM vs. General Academic Momentum Metrics

STE Pathway & Calculus most correlated with STEM bachelor's completion across states



Early STEM Momentum Metrics stronger correlates of STEM bachelor's completion than general momentum metrics

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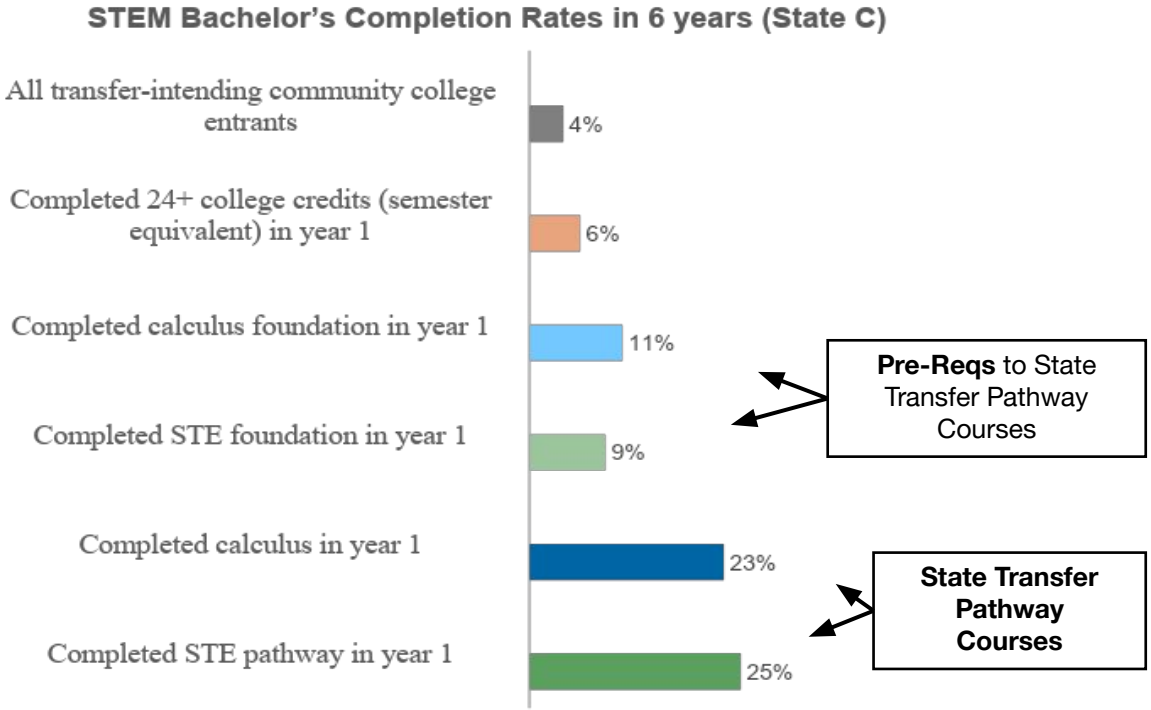
Transfer Pathway Courses Can Capture Program Momentum



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If building STEM program momentum increases students' likelihood of STEM bachelor's degree completion, how might this attenuate?

- How much variability is there in STEM Momentum gained – and for whom – even within the same course subjects (e.g., Calculus, STE-Transfer)?
- Does this change our understanding of the role of building program momentum more generally?

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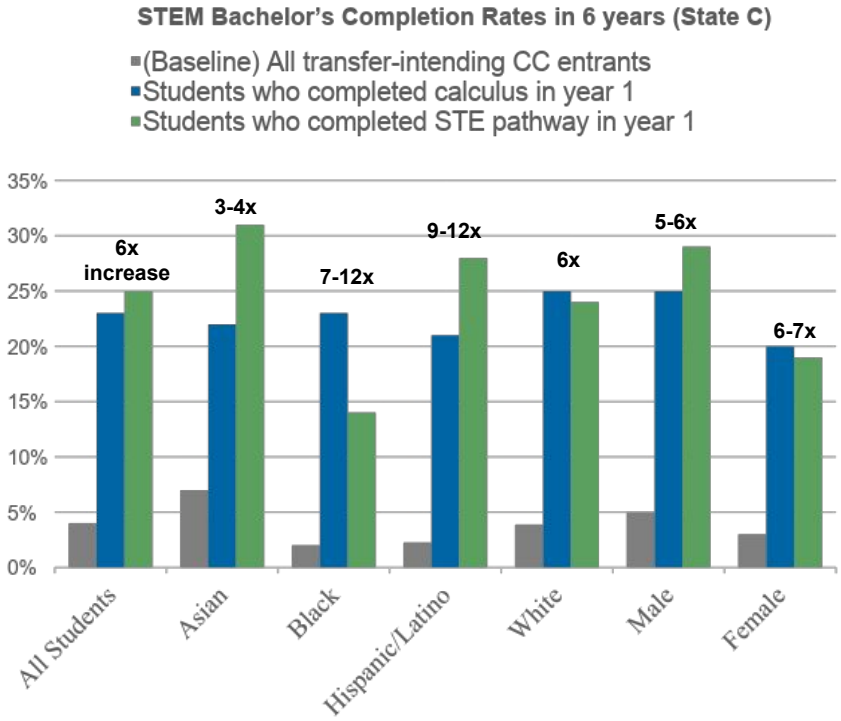
Benefits of Early STEM Momentum Reliable across Student Groups



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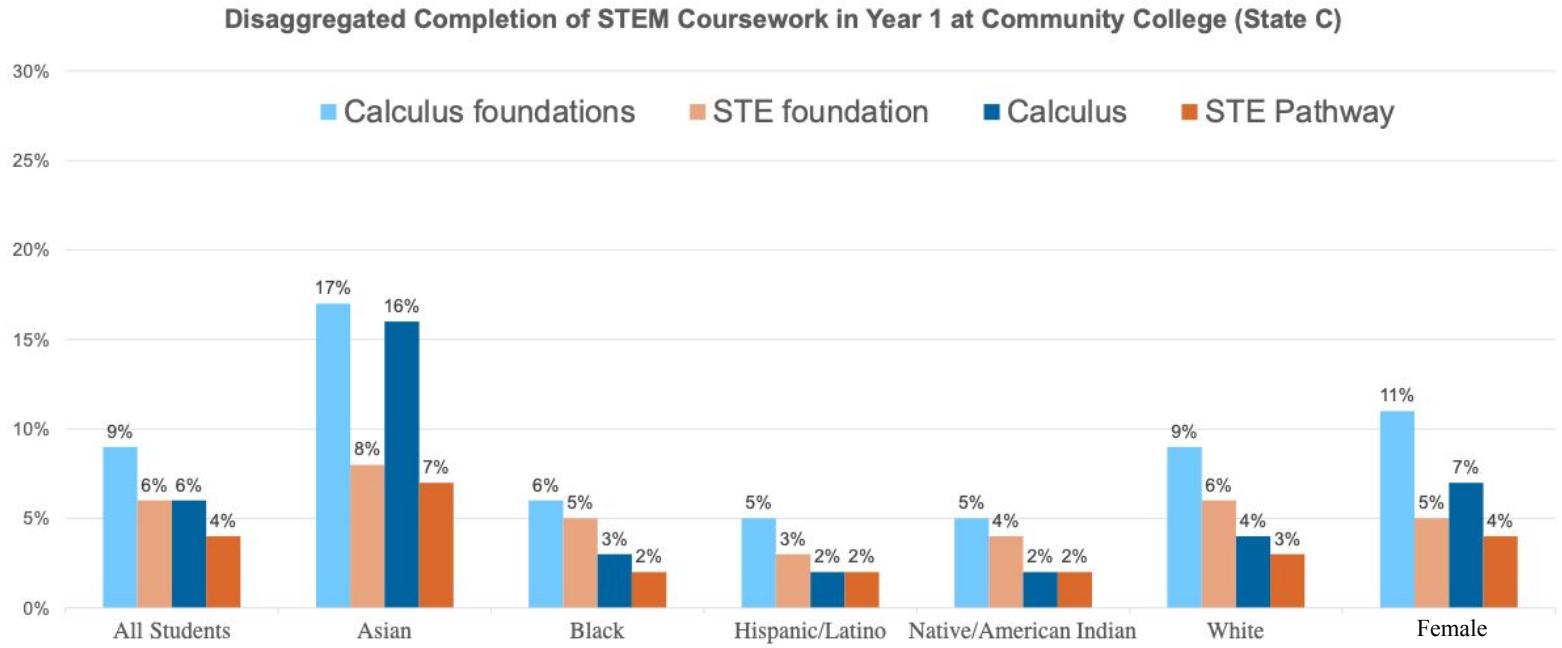
Few Students Gain STEM Momentum, Equity Gaps Present Early



Discussion

Questions This Study Provokes

1. How can states support colleges in tracking and improving early STEM momentum overall and closing early equity gaps?

2. Which colleges are more effective in helping students gain early STEM momentum, and what can be replicated at other colleges working to improve STEM transfer outcomes?

3. What does this implicate for program momentum more generally - would this study be applicable to considering different transfer programs in humanities or social sciences?

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Thanks!

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