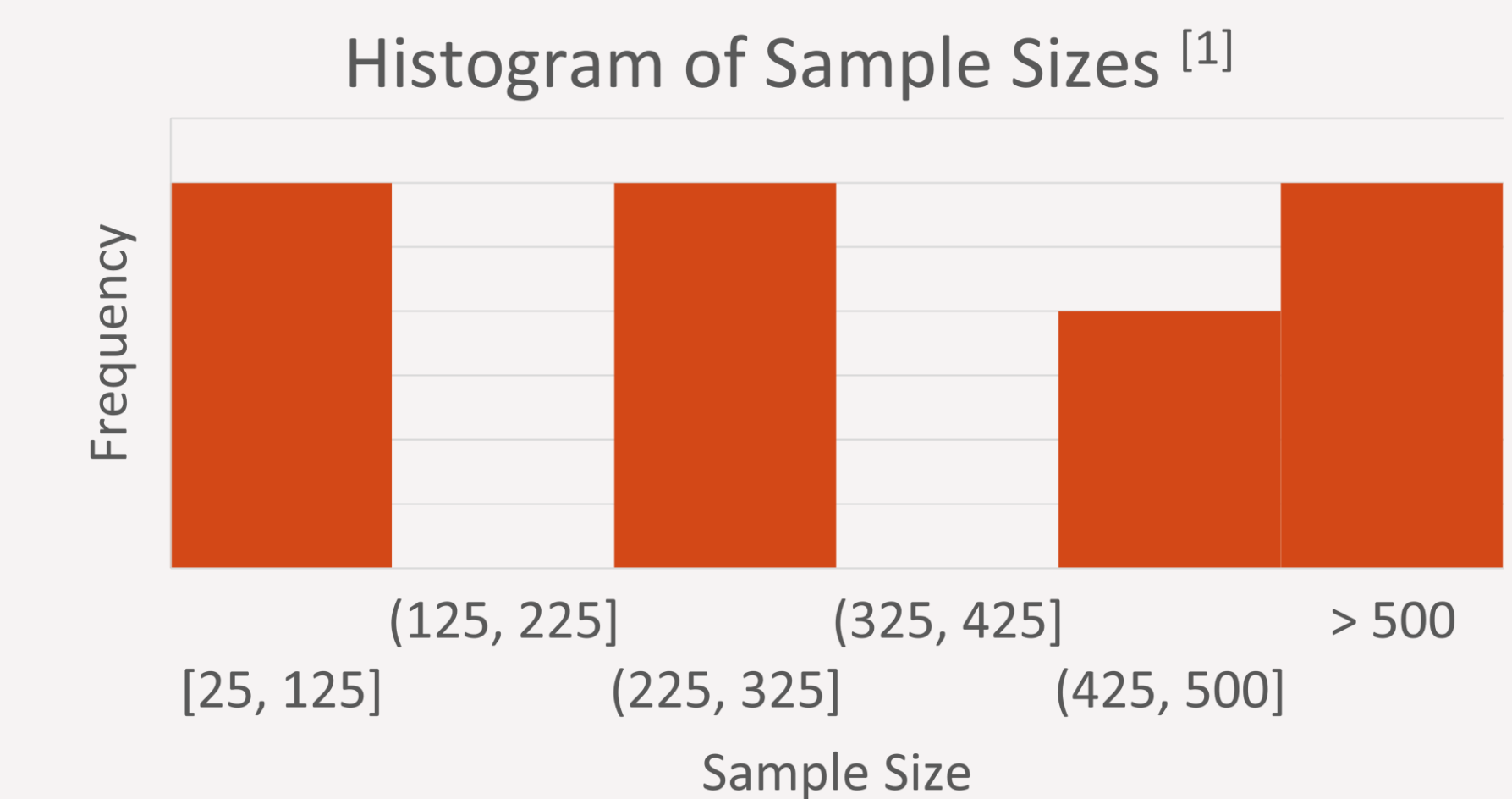
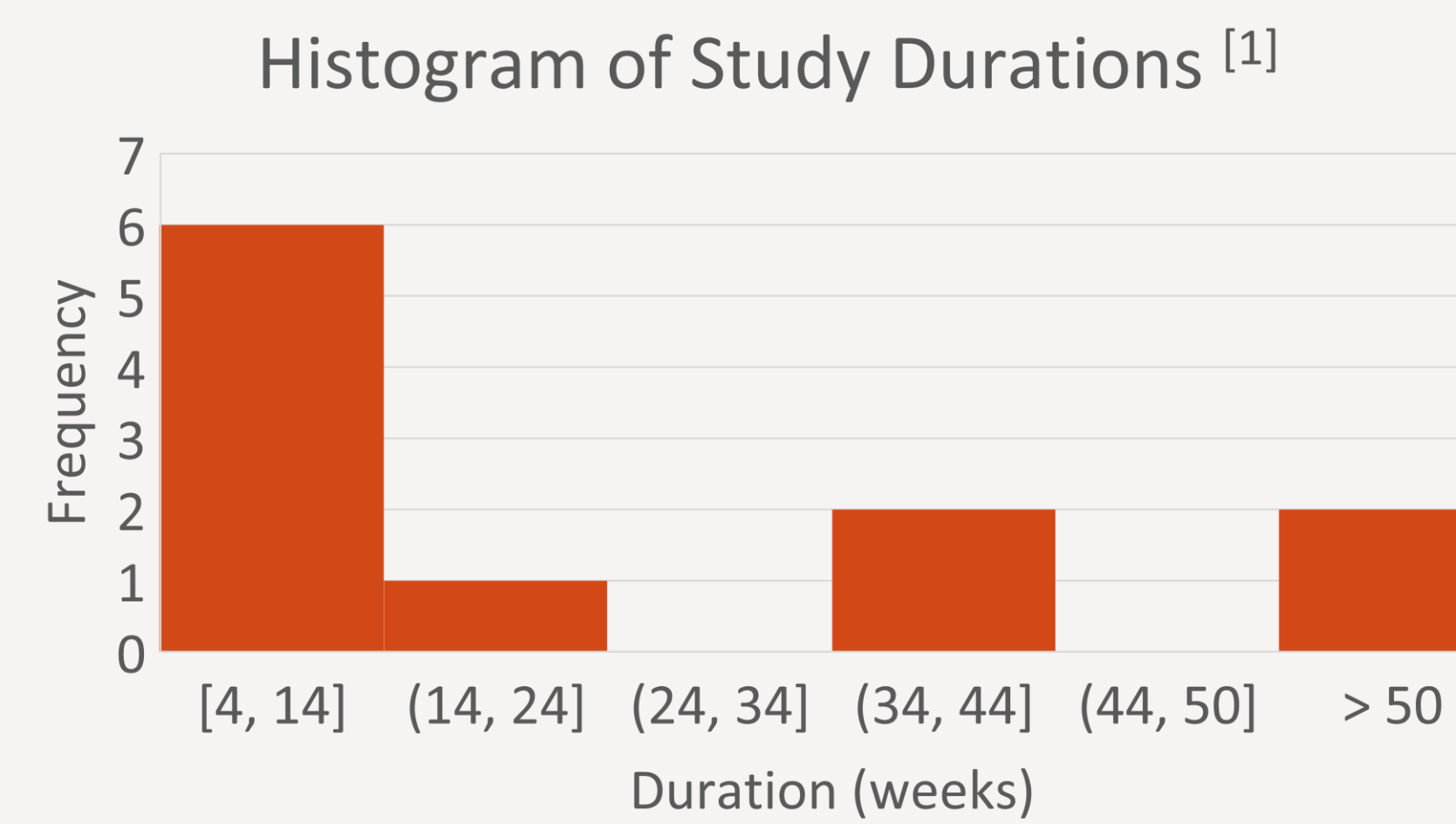
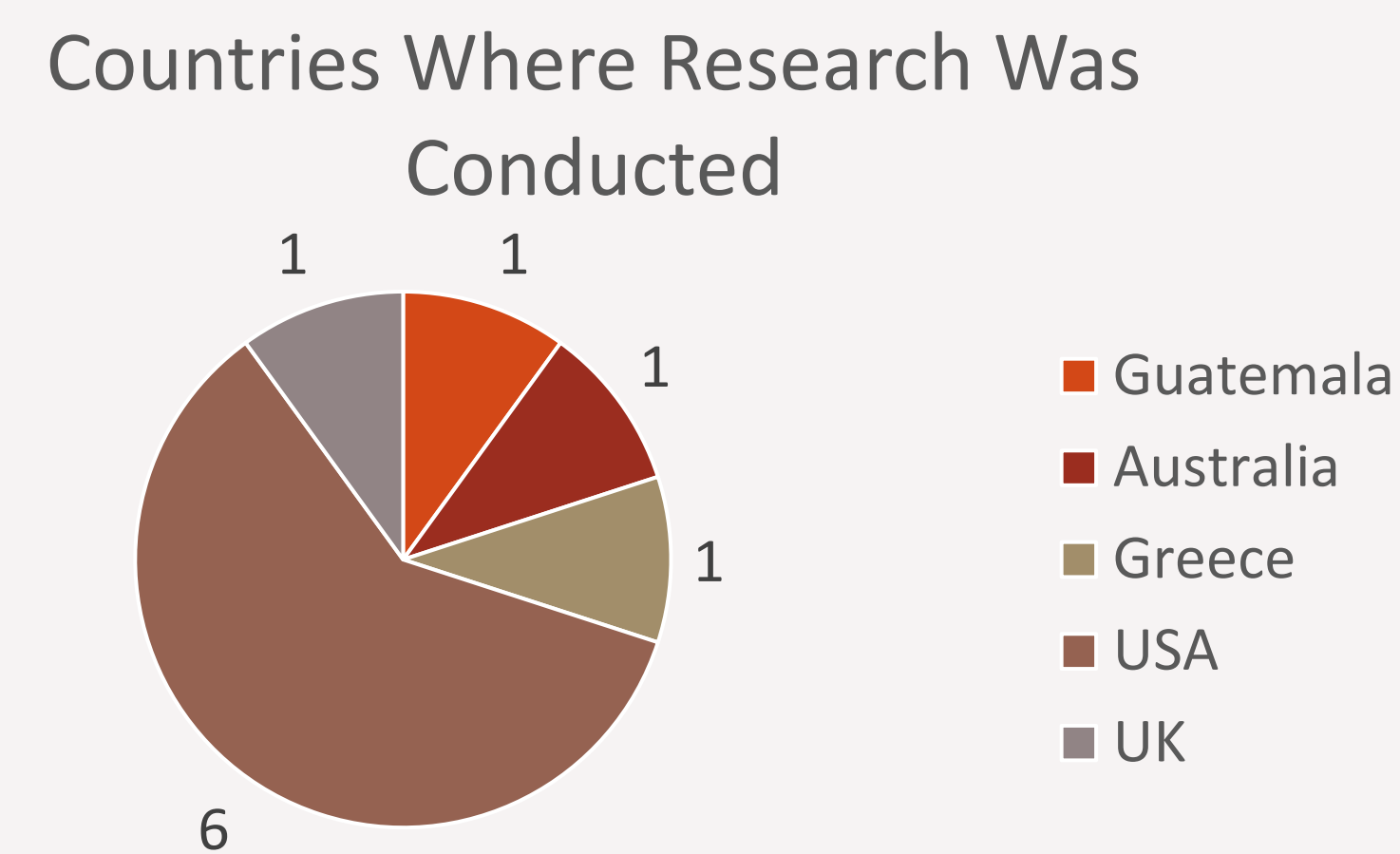
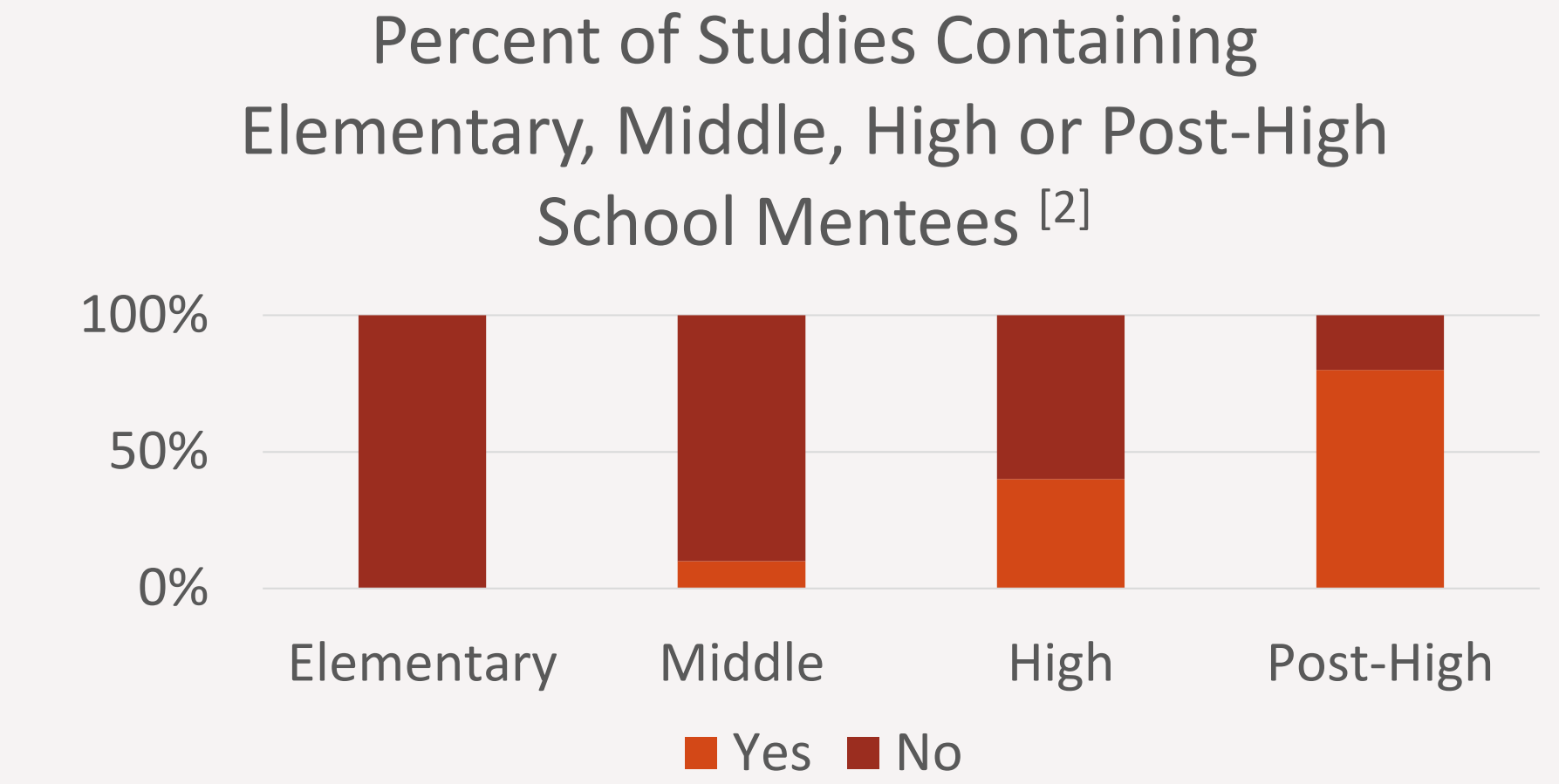
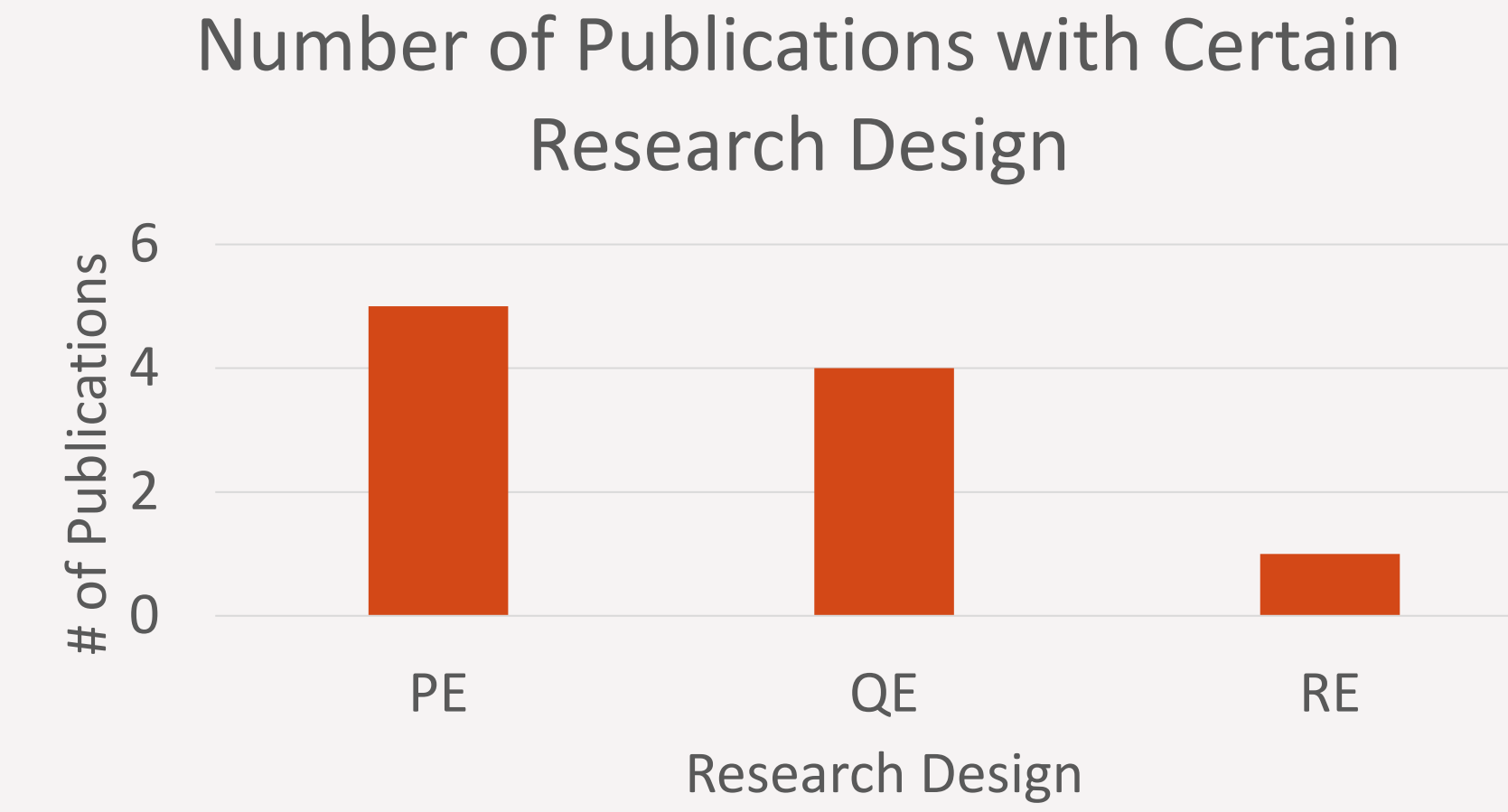
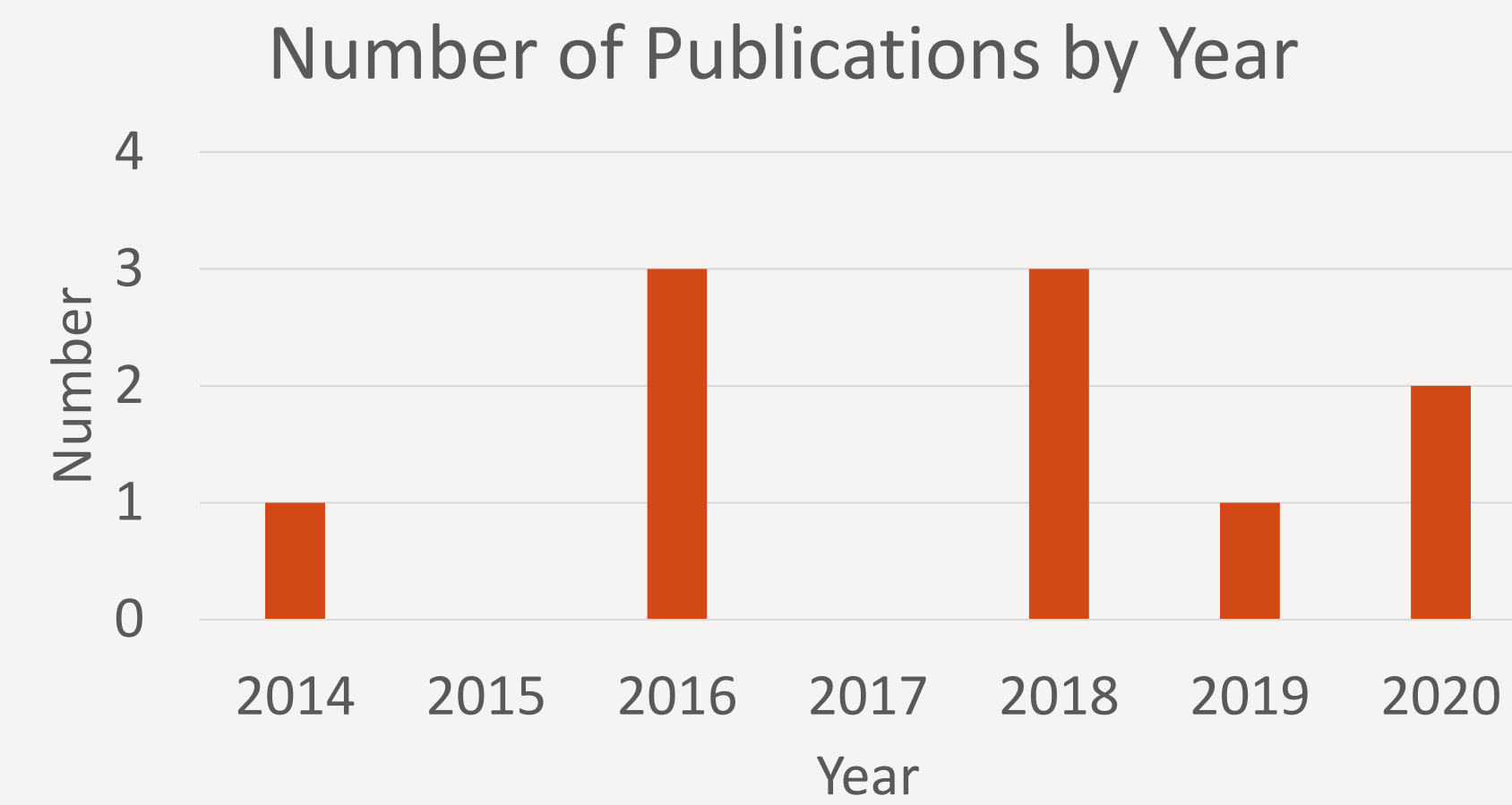


### Abstract

The current professional and post-secondary STEM and digital arts landscape lacks diversity. Students who identify themselves as Hispanic, Black/African American, Native American and those students who belong to low-SES families are less likely to choose and survive in the STEM pipeline. Research suggests many reasons for these disparities including a lack of innovative new teaching and learning techniques to improve students' perceptions and attitudes towards careers in STEM and digital arts. Near-peer tutoring has shown promise in improving students' academic outcomes and their attitudes towards targeted outcomes. Although initially confined to the domain of nursing education and educating future doctors, this innovative new social learning approach has shown potential to improve K-12 students' academic outcomes as well. In this poster we present the initial findings from a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guided systematic literature review. Our initial search resulted in 270 articles that were published during or after 2000. We further restricted our search to articles that were published in English language and were either peer-reviewed journal articles, conference proceedings; or were committee approved master's or doctoral thesis. Initial screening of the articles resulted in exclusion of 230 articles. We screened the remaining 40 relevant articles and found 10 quantitative articles to be included in the final meta-analysis. We also found 21 qualitative papers to be included in the systematic literature review. Initial analyses indicate that near-peer mentoring has a positive effect on students' attitudes, perceptions and beliefs along with an improvement in their STEM academic achievements.



[1] The total frequency in these histograms exceed the number of studies, due to some studies having different durations and sample sizes each year.

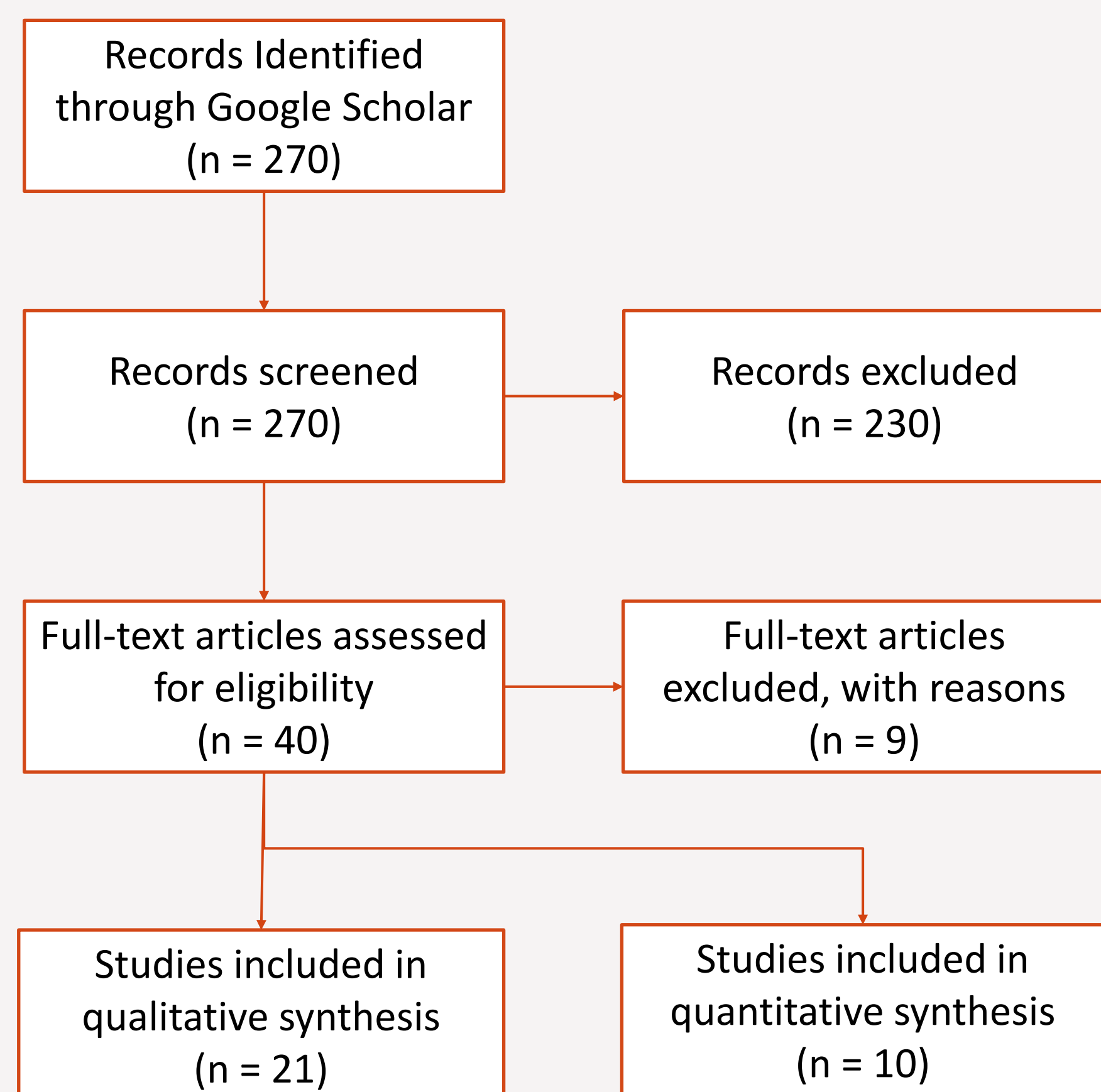
[2] The bar chart includes studies involved with multiple grade levels, which would result in totals across categories of more than 100%. Thus, it is represented as percent of studies.

### Findings

Authors & Year	Publication Type	Research Design	Country	Sample Size	Duration (weeks)	Mentee Grade Level	Summary of Results
Dotson et al., 2020	Journal	Pre-Experimental	Guatemala	102	4	Middle, High School	Across all grade levels, there was an increase in the mean level positivity towards STEM. 11th grade, in particular, had the greatest difference. ★
Gazula, 2018	Thesis	Pre-Experimental	Australia	102	11	Post-High School	Participants (both peer teachers and learners) in this study recorded a mean increase in knowledge score from pre to post test. Participants who served as peer teachers recorded a greater mean increase over learners.
Karamaroudis et al., 2020	Journal	Pre-Experimental	Greece	527	261	Post-High School	Increasing the number of peer teachers has resulted in a decline in final exam failure rates over the 4 years. Students' willingness to learn was significantly related to their PT's contribution to their understanding and learning.
Kemppainen et al., 2018	Journal	Quasi-Experimental	USA	236	16	Post-High School	When self-reporting, 76% of students found the program to be helpful. In across all performance metrics, students who were a part of the program had higher averages than those who were not.
Metcalfe et al., 2016	Journal	Quasi-Experimental	USA	295, 309	10, 10	Post-High School	Peer mentoring has a positive effect on content mastery, despite students not feeling the difference. Mentor leadership also makes a significant contribution to student learning.
Rodrigo-Peiris et al., 2018	Journal	Quasi-Experimental	UK	479	11	Post-High School	Students who participated in STEMcats showed a more positive student retention trend in STEM majors than those who did not.
Rosenzweig et al., 2016	Journal	Pre-Experimental	USA	25	8	High, Post-High School	There was no significant increase in students' perceptions and attitudes towards I-STEM fields from pre to post test. ★
Seng, 2014	Thesis	Quasi-Experimental	USA	488	37	High School	Students who participated in Project PATH had a greater mean of professions they were interested in compared to the control school and before they were involved in the project. ★
Wilton et al., 2019	Journal	Random Experiment	USA	1612	157	Post-High School	Students who participated in the intervention course performed better than those who did not. It was also noted that students in the intervention course did have a greater sense of belonging. ★
Woods & Preciado, 2016	Journal	Pre-Experimental	USA	5000+	37	High School	There was no significant impact of student-mentor relationship on improving scores, However, the better the quality of the student-mentor relationship, the more students' attitudes toward motivation and self-efficacy around college increased. ★

★ Highlight (Positive)  
★ Highlight (Negative)

### Literature Search (PRISMA)



### Acknowledgments

This research was made possible by The Institute for Applied Creativity, the College of Architecture and InnovationX. We would like to thank our project leader Aamir Fidai, the faculty advisor Professor Carol LaFayette, Monica Vega, and Dr. Kim Wright, Assistant Research Scientist at the Education Research Center for their support in this research project.