# Comparative Study of PEER-CEA Woodframe Project Results with Catastrophe Loss Models
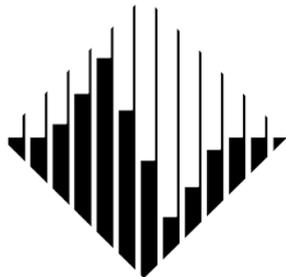
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Objectives

- Review PEER-CEA analysis process with cat modelers

- Compare selected results with modelers

- Provide damage functions that can be incorporated into the models

- PEER objective NOT to determine insurance premium discounts

PEER

Index buildings – Cat Models

- Cat modelers use "Primary" and "Secondary" modifiers to categorize buildings

- Typically these modifiers need to be observable by the underwriters' agents

- "Hidden" characteristics that are not observable but affect vulnerability are not considered by modelers

- Cat modelers are protective of their IP

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Index buildings – Model Comparison

- The PEER-CEA team identified a subset of its index buildings that could be matched to the cat models

- We provided the modelers with four locations we specifically chose to compare results

- Each modeler ran the index buildings through their models

- Ground up loss at 250yr RP and Average Annual Loss were provided to PEER

PEER

48 Index Building compared to cat modelers
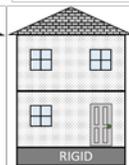
Results Presentation

- PEER-CEA – Modeler results were presented to each modeler after initial run of 12 buildings

- Comments, questions and suggested revisions were proposed

- PEER team revised models based on comments and ran remaining 36 buildings

- Comparison of all 48 buildings were presented to modelers

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Results: 1 story, wood
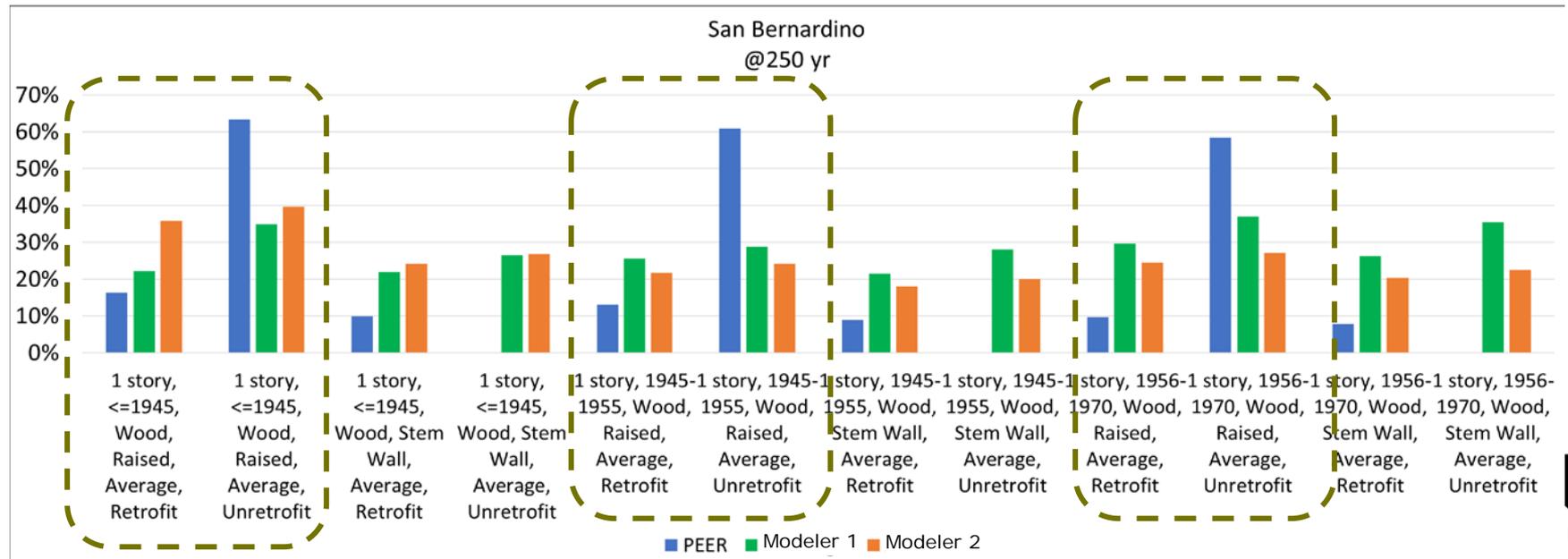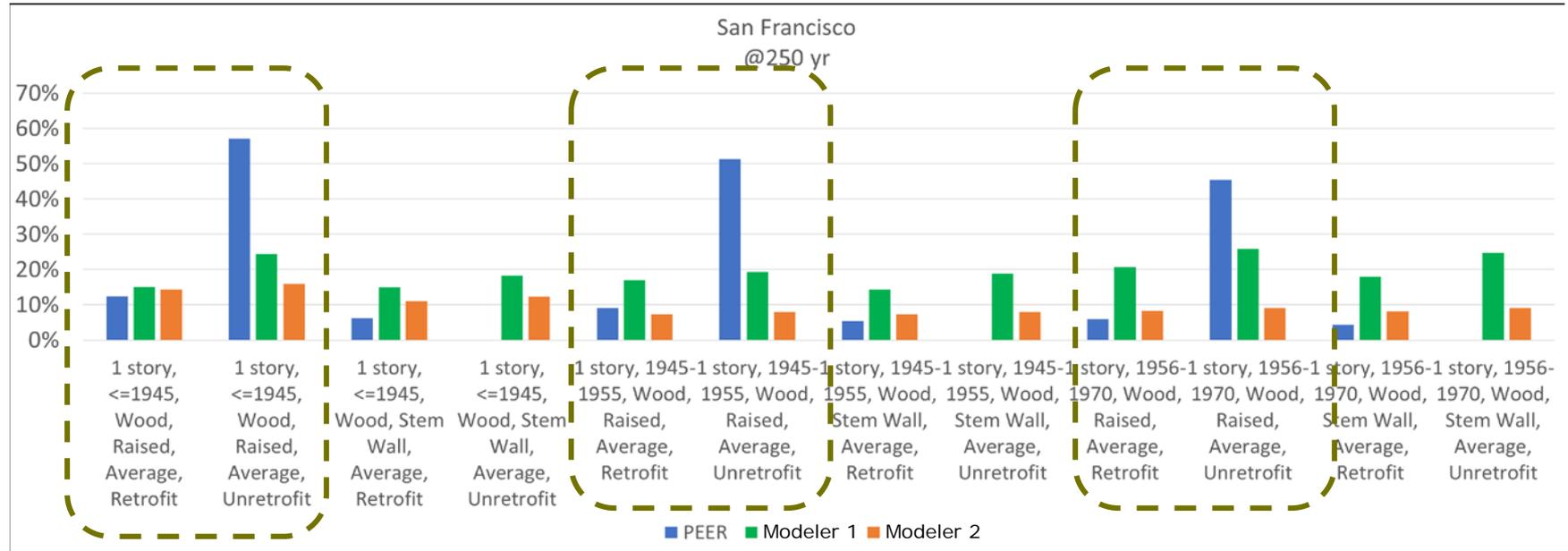
Results: 1 story, stucco

Results: 2 story, wood

San Francisco @250 yr
San Bernardino @250 yr

Results: 2 story, stucco

San Francisco @250 yr / San Bernardino @250 yr — bar charts comparing PEER, Modeler 1, and Modeler 2 across building categories (2 story, <=1945, Stucco, Raised/Stem Wall, Average, Retrofit/Unretrofit; 2 story 1945-1955 and 1956-1970 Stucco variants).
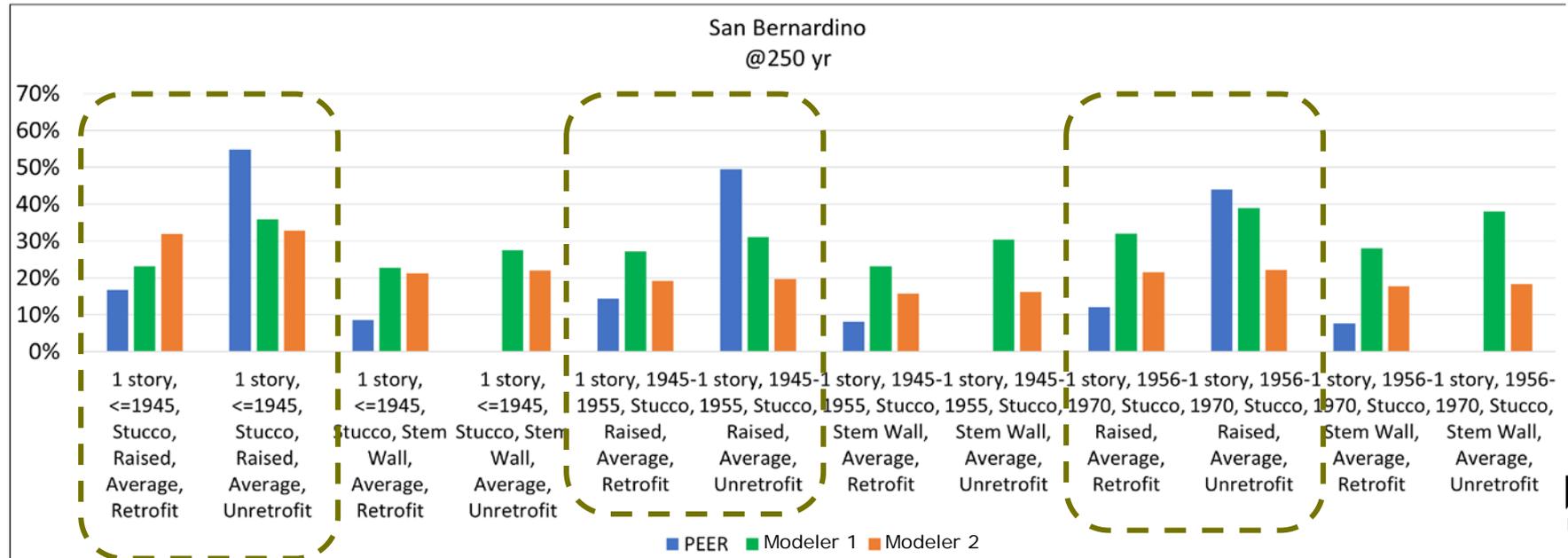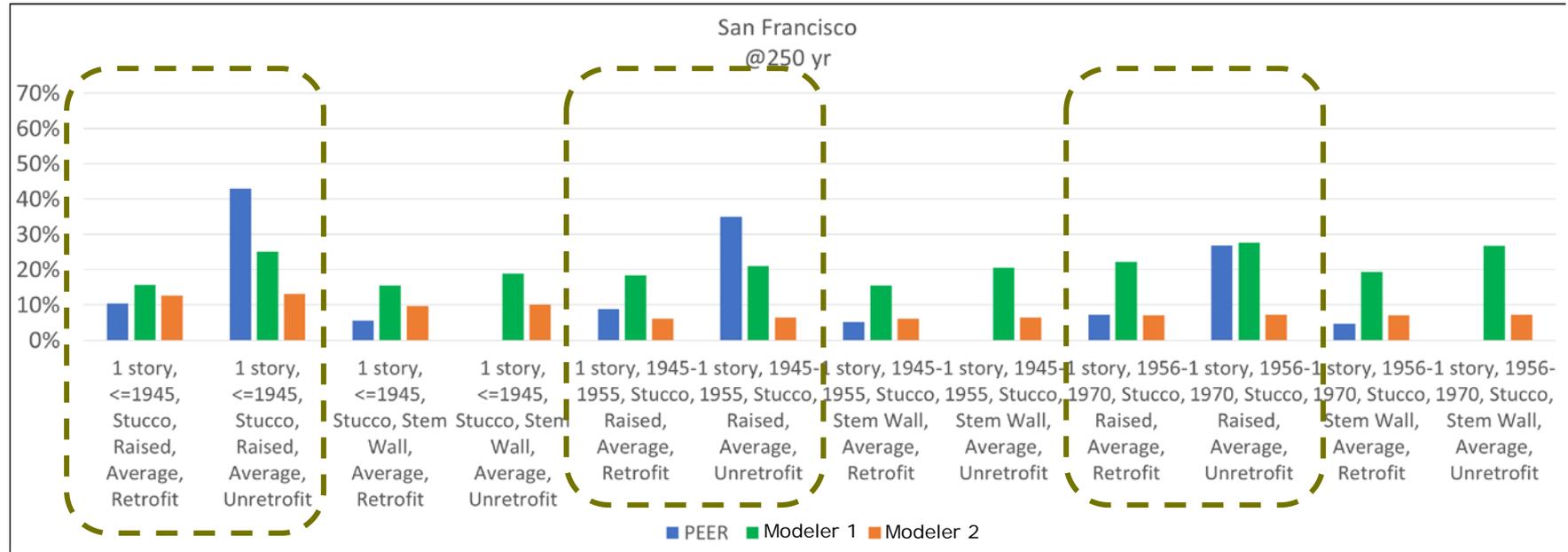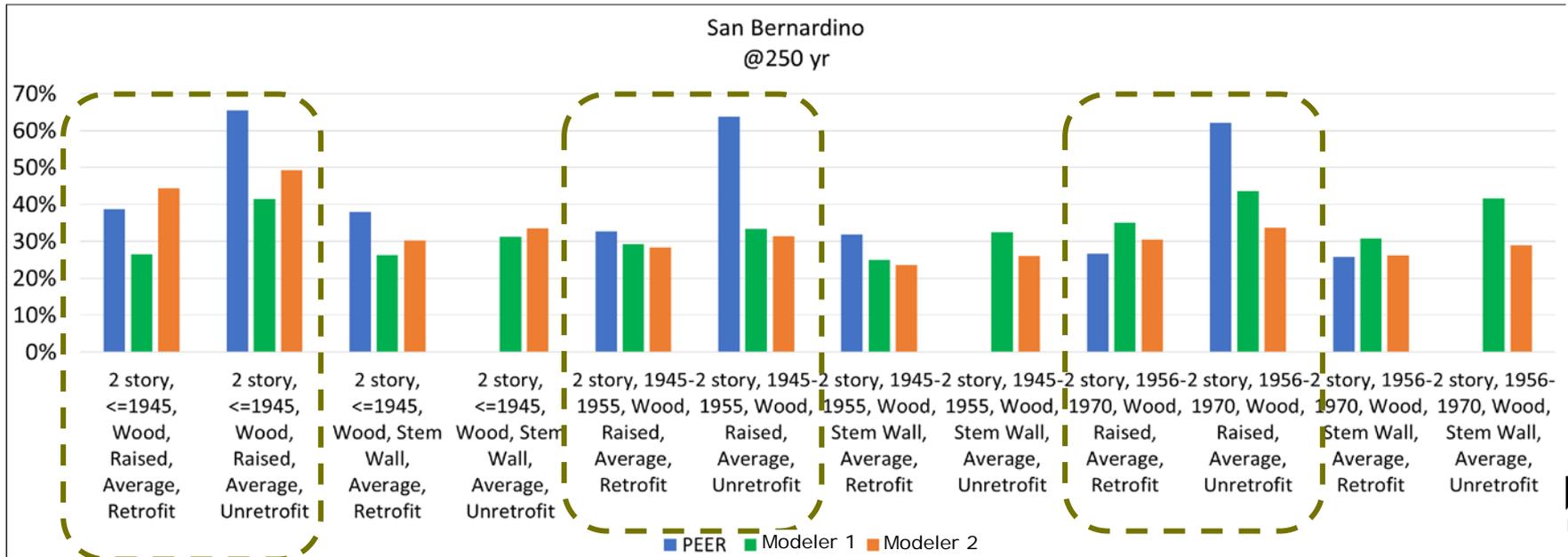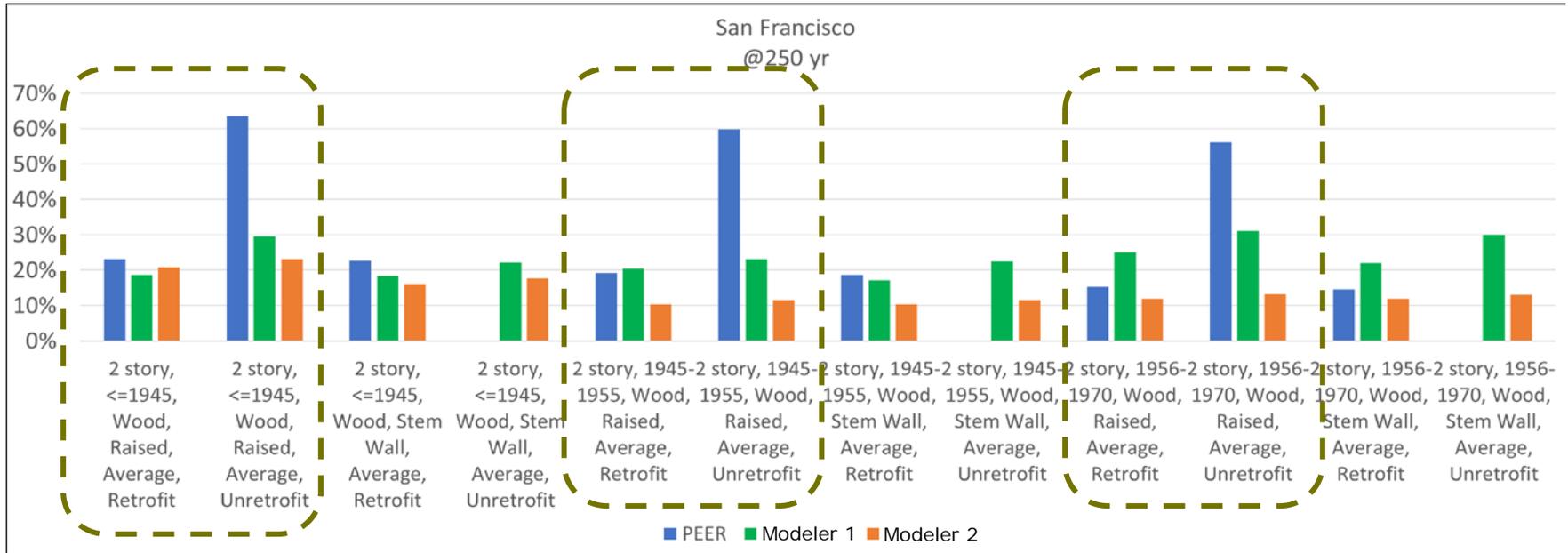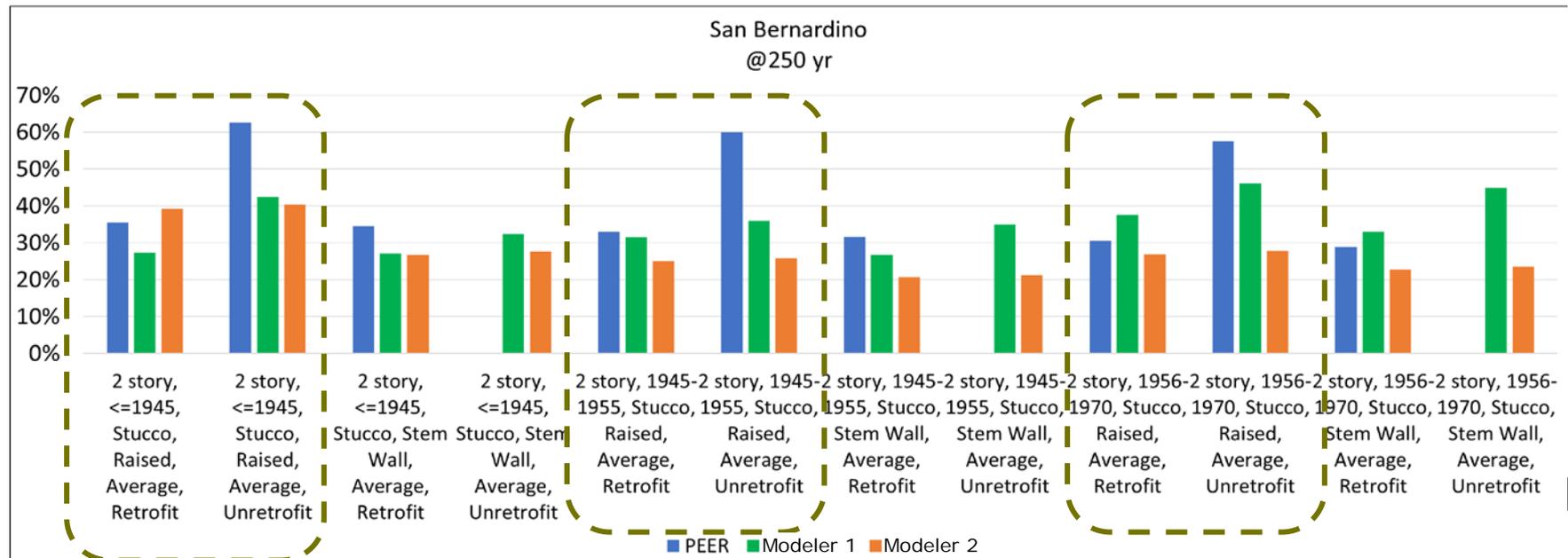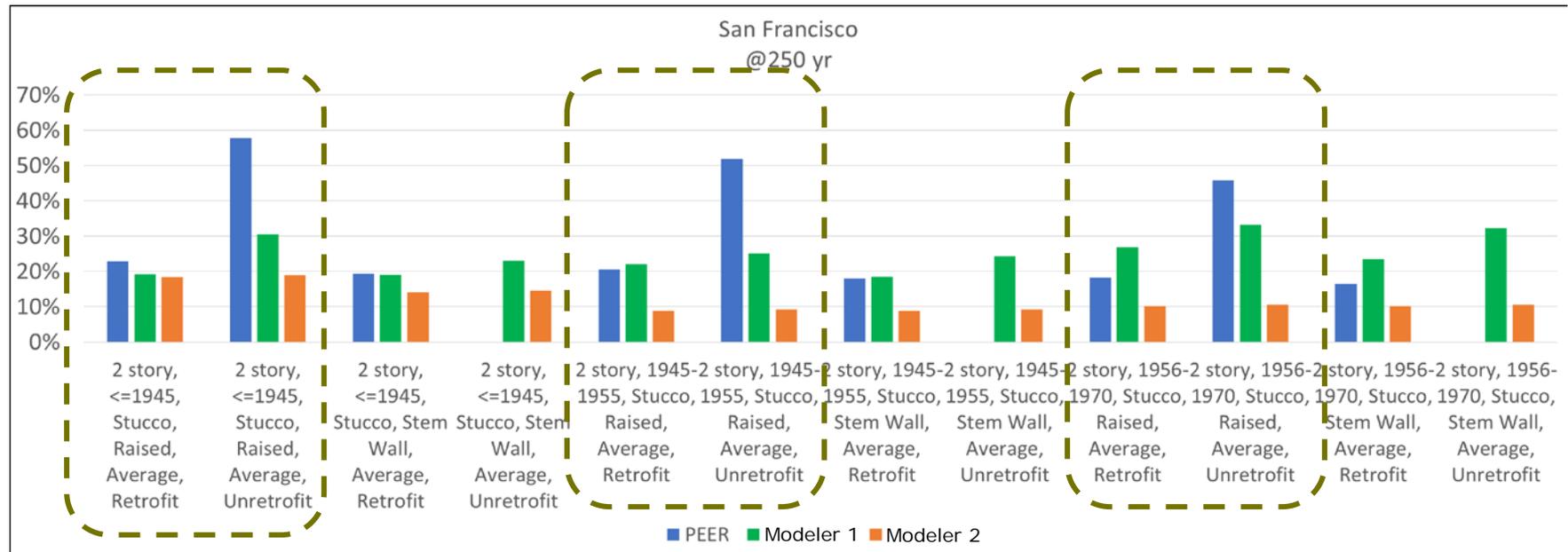
Summary

- One relatively clear result appears to be that the PEER-CEA models predict a greater difference in damage between the retrofitted and existing conditions than do the modelers.

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Key Findings

- For unretrofitted raised (2-ft) cripple-wall conditions the PEER-CEA Project models consistently and significantly estimated more significant damage than the modelers.

- Both the Modelers and PEER-CEA Project predicted greater damage for the two-story, raised cripple-wall homes versus the one-story homes.

- For unretrofitted stem-wall conditions the Modelers consistently estimated lower damage than the PEER-CEA Project models.

- For retrofitted conditions, the PEER-CEA Project and Modelers' results compared significantly better than unretrofitted conditions.

- The PEER-CEA Project results showed a consistent improvement in performance with age. The Modelers results showed consistent improvement from the 1945–1955 age range over the pre-1945 age range, but poorer performance from the 1955–1970 age range over the 1945–1955 age range.

- The PEER-CEA Project models show distinctly better performance for stucco over wood siding in the unretrofitted condition, unlike the Modelers.

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