

CEUS Workshop on National Seismic Hazard Maps

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Boston, MA



Cost-Benefit Analysis of Earthquake Provisions in Building Codes

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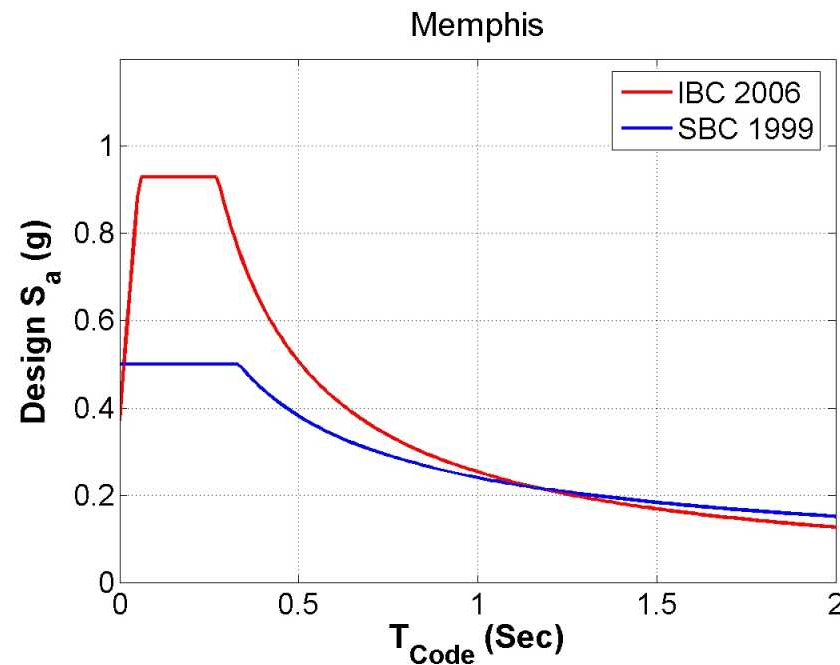
US Geological Survey

Golden, CO



UBC, SBC, BOCA/NBC => IBC

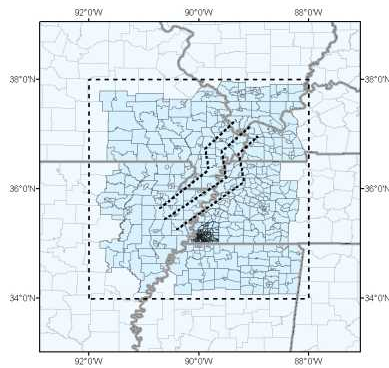
- Changes in seismic design ground motions
- Changes in seismic design category definitions
- ...



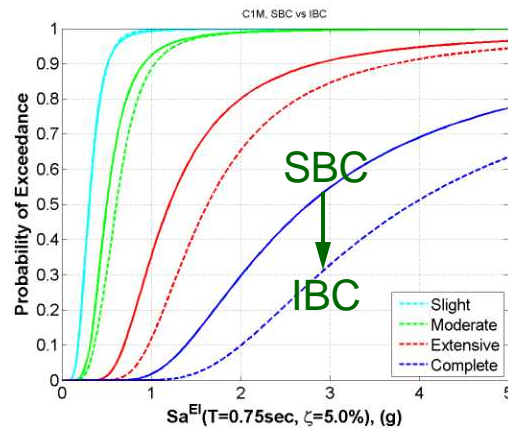
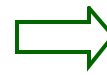
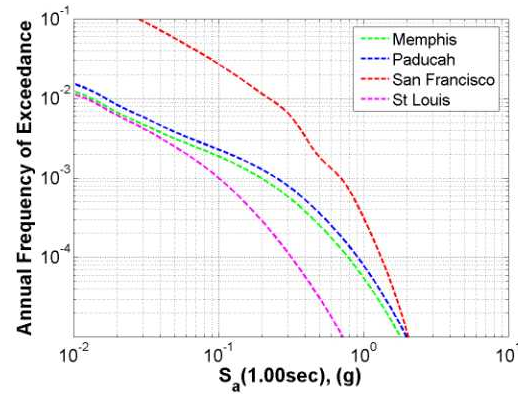
- What are the effects of these changes on seismic design => building vulnerability => costs & losses?

Approach: SBC => IBC

Inventory

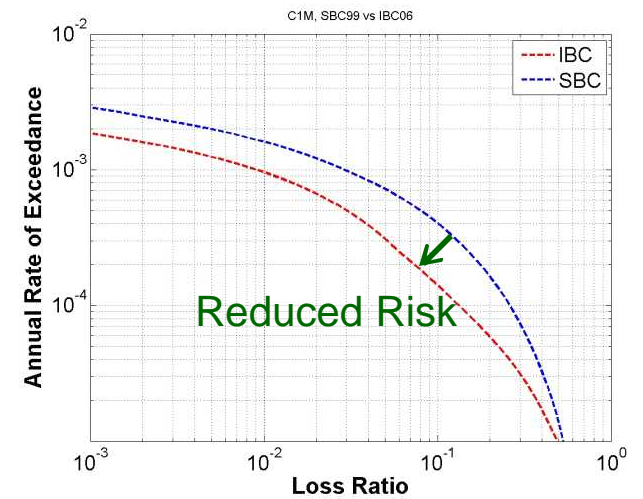


Hazard



Vulnerability

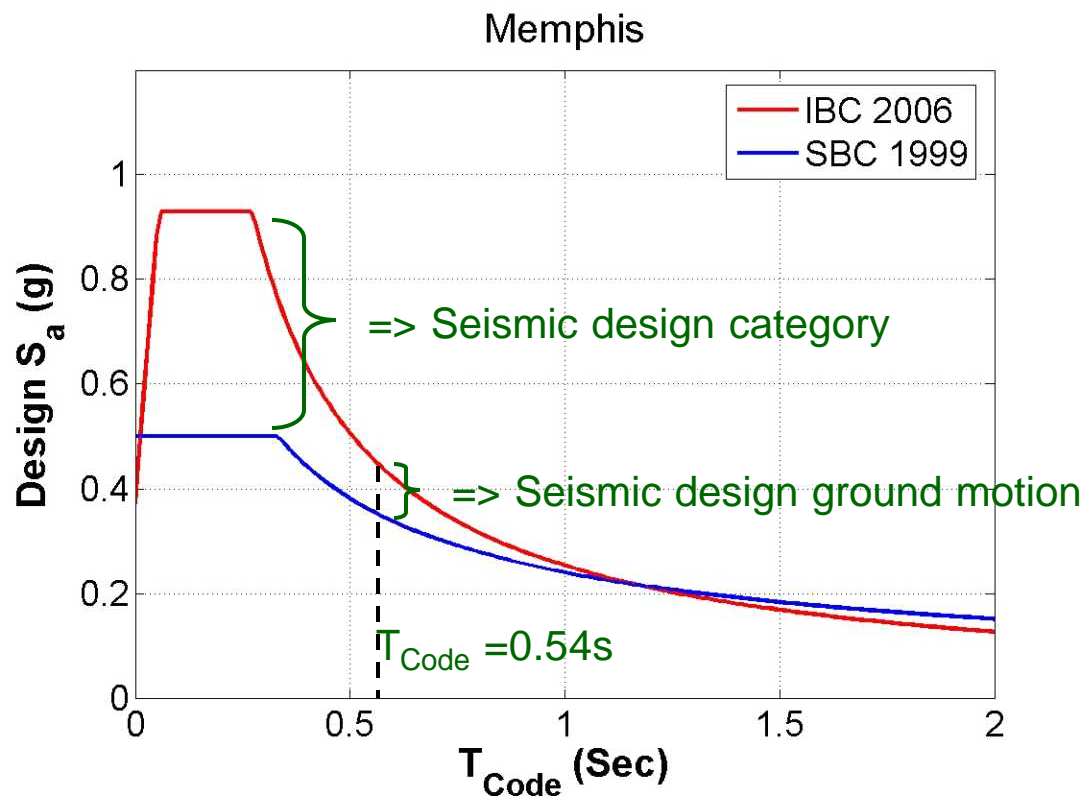
Loss/Risk



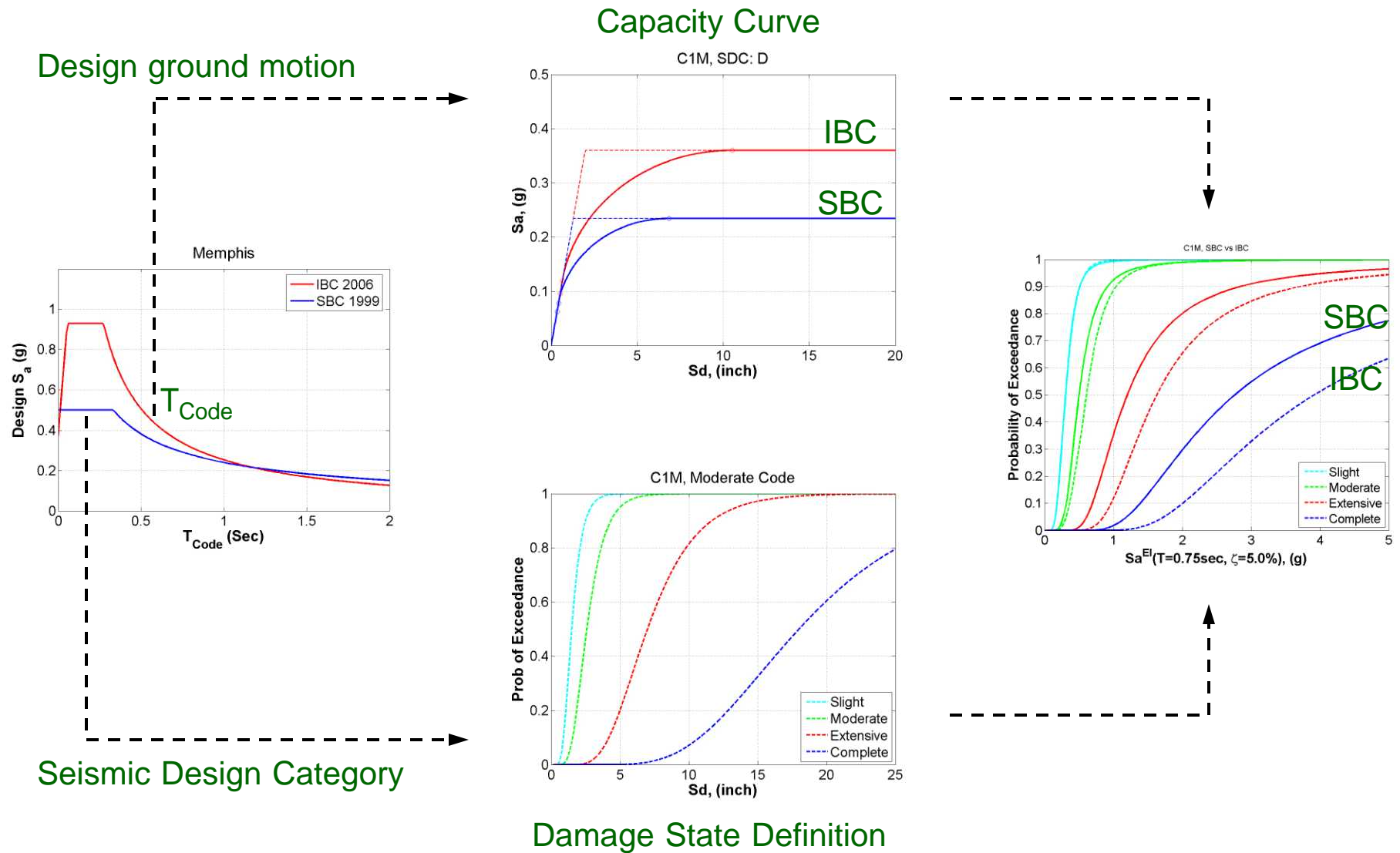
Cost?

Approach SBC => IBC

- Changes in seismic design ground motions
- Changes in seismic design category definitions
- ...

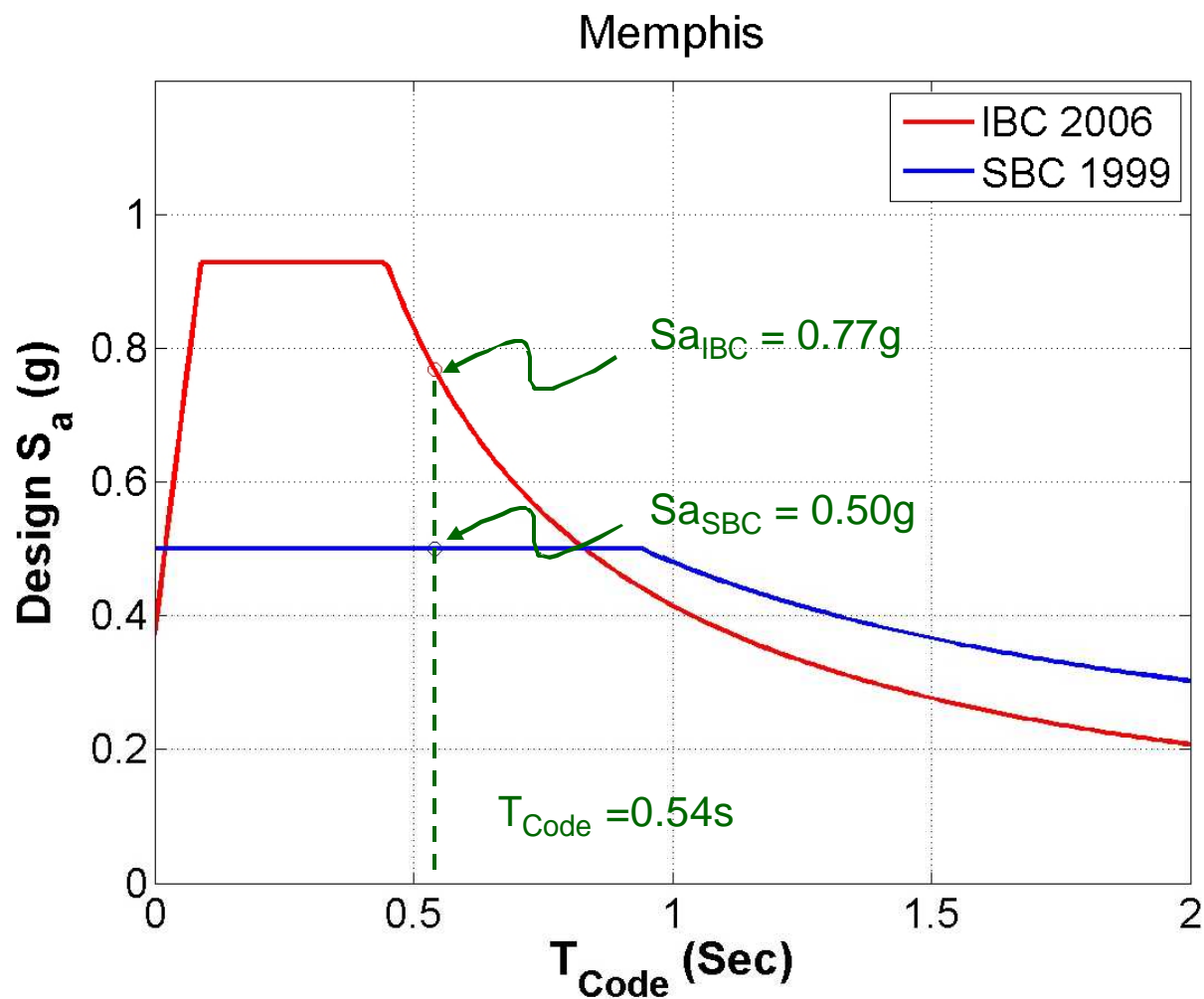


Approach: SBC => IBC

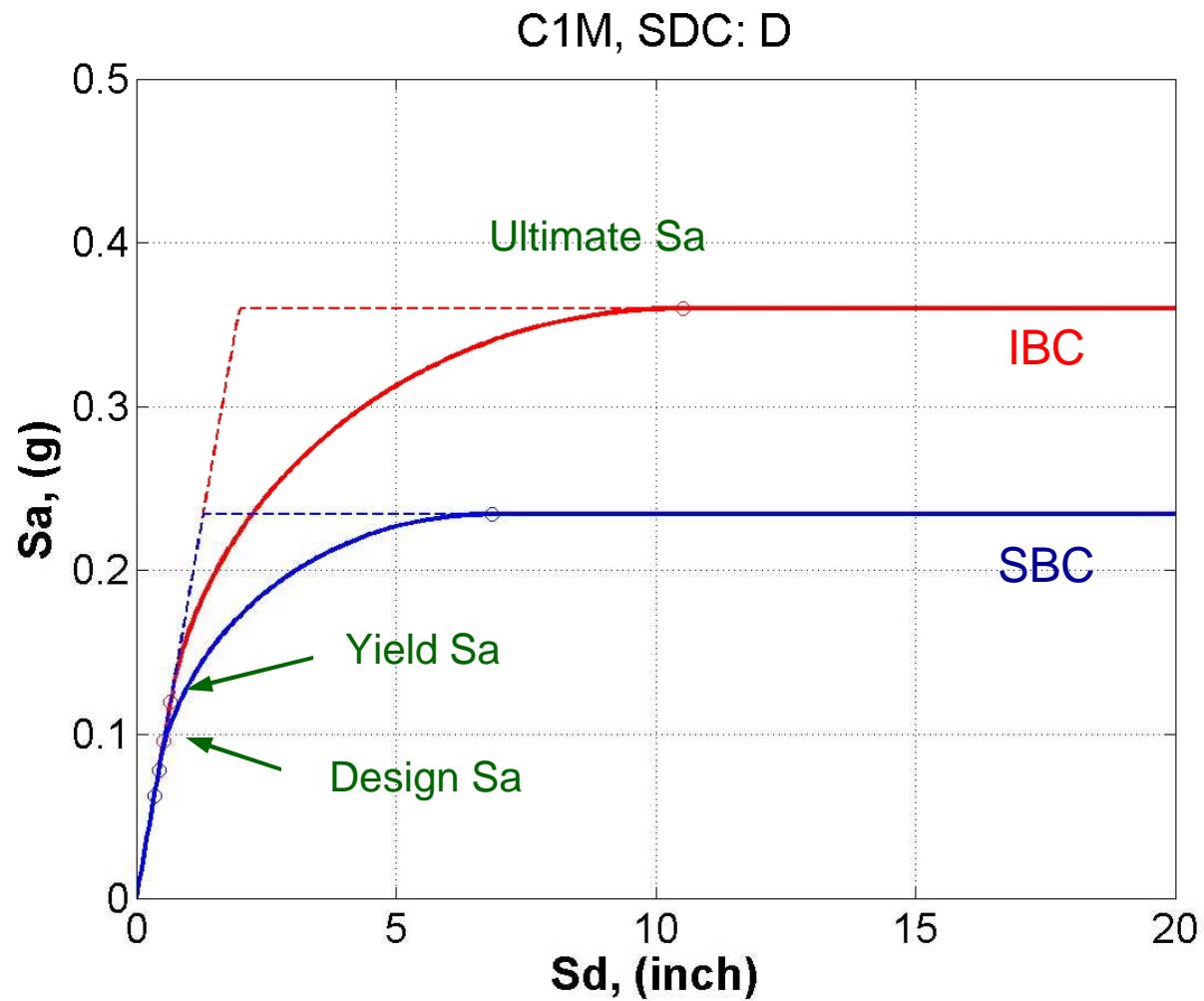


Design Spectra: SBC vs IBC

(Site Class D or Soil Type 4)

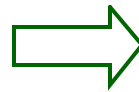
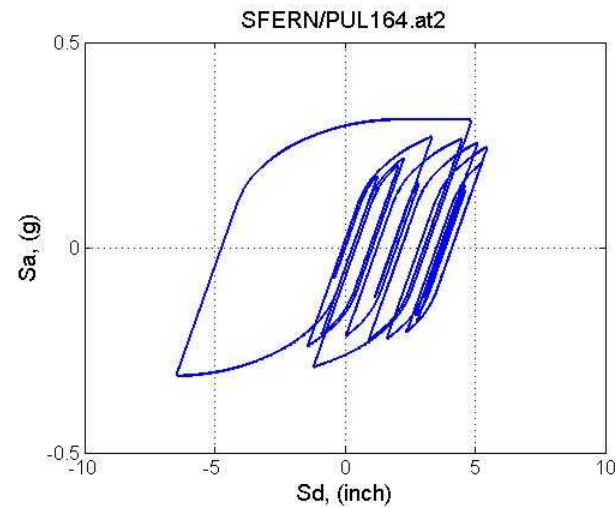
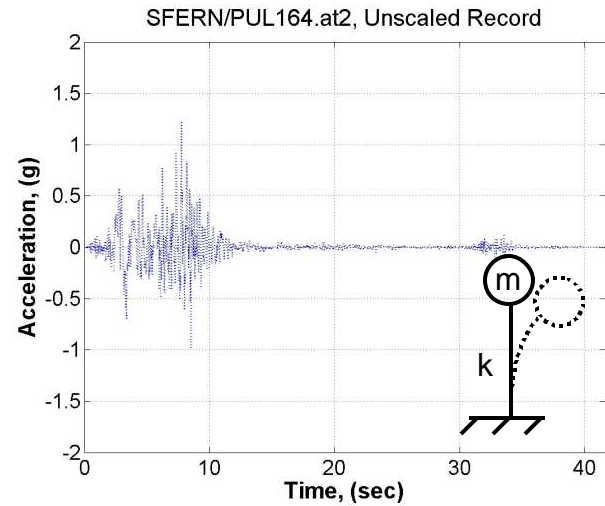


Capacity Curves: Mid-rise Concrete Building (C1M)

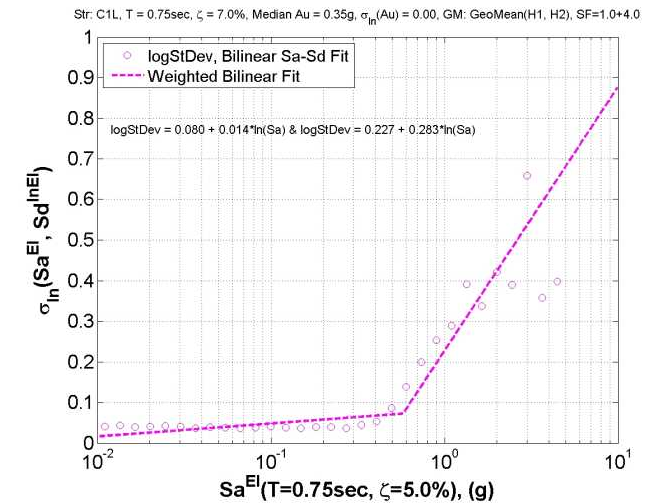
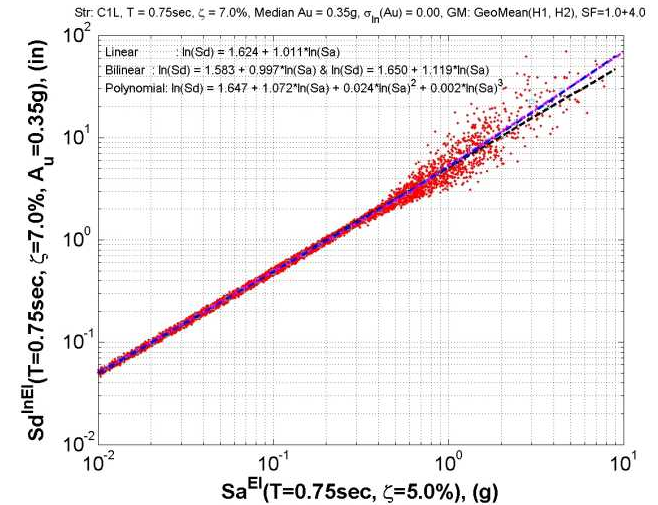


Building Response

Single Record

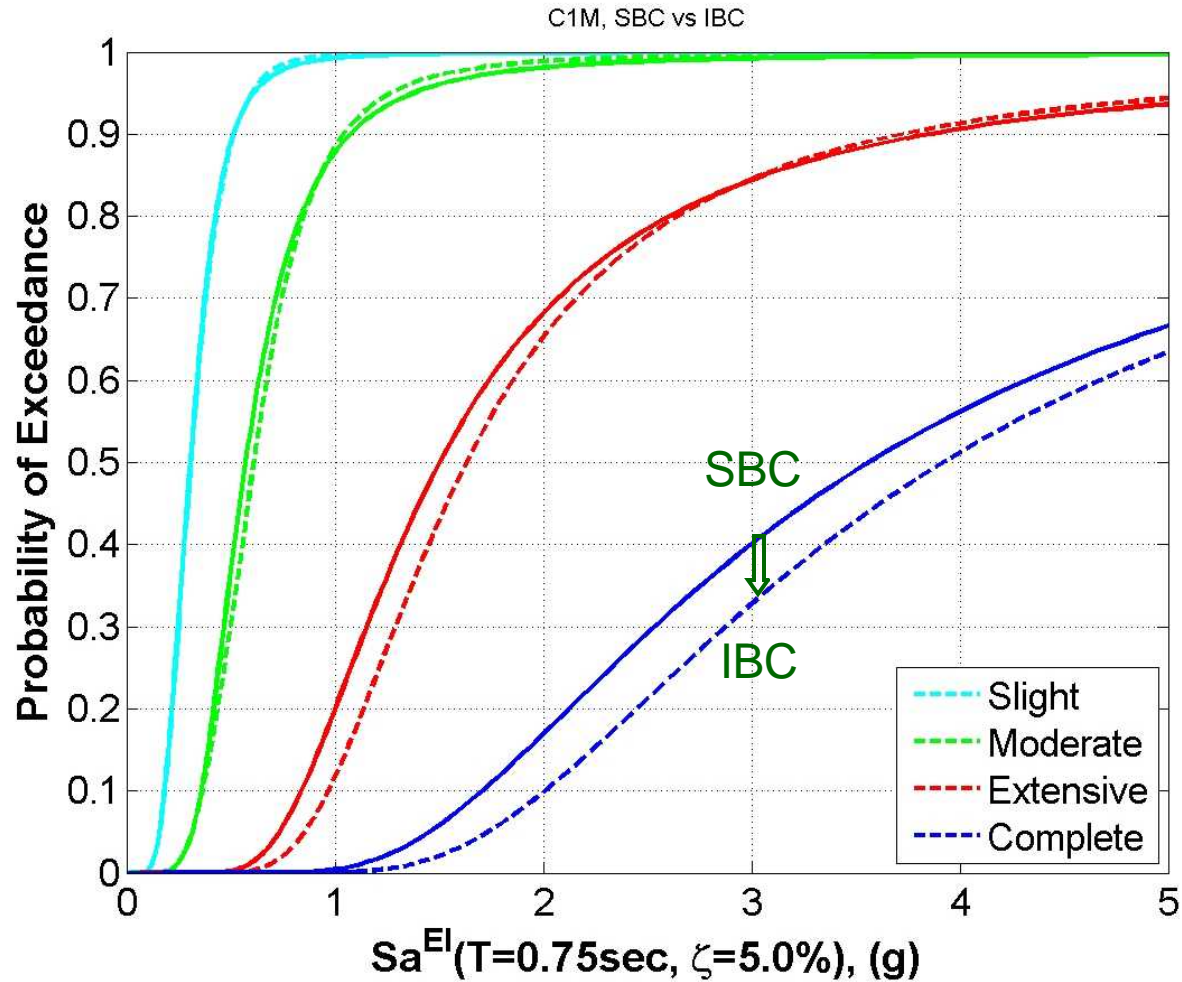


All Records



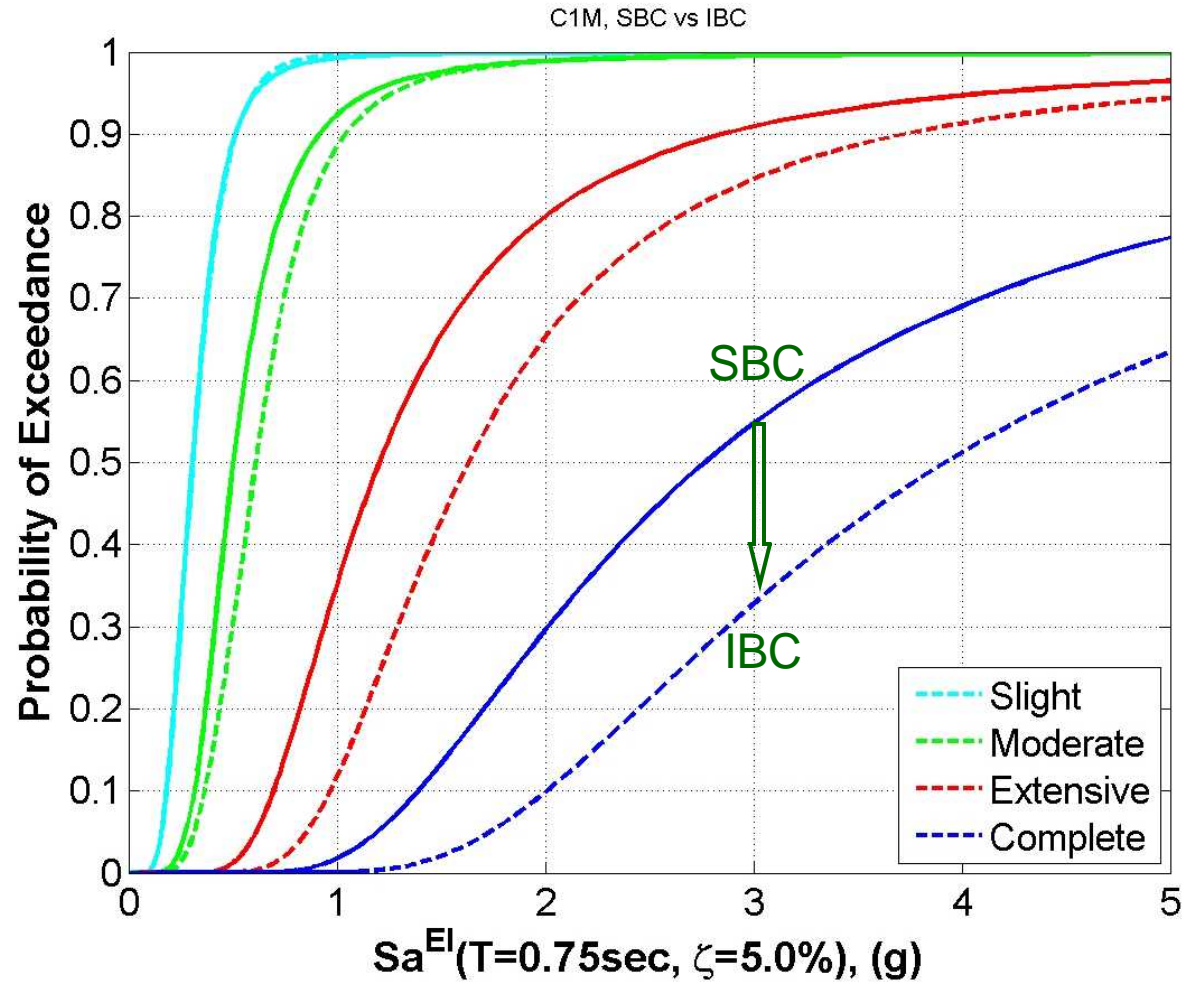
Fragility Curves

(SBC'99 SPC: **D** & IBC'03 SDC: **D**)



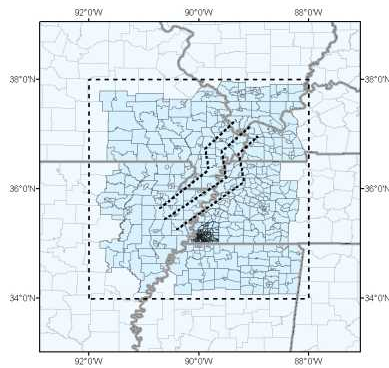
Fragility Curves

(SBC'99 SPC: **C** & IBC'03 SDC: **D**)

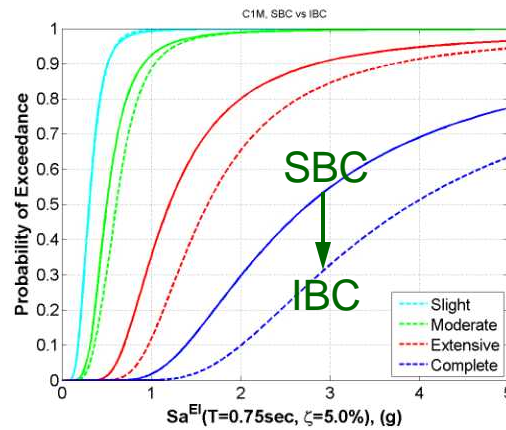
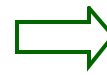
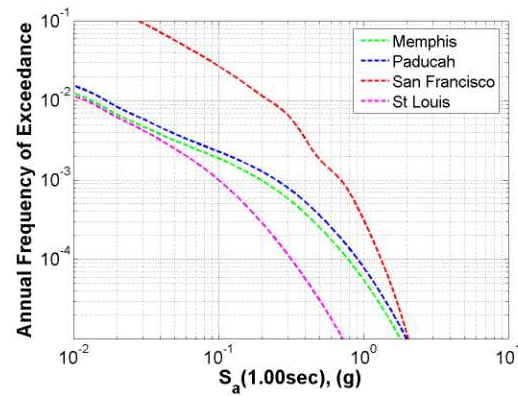


Current/Future Work

Inventory

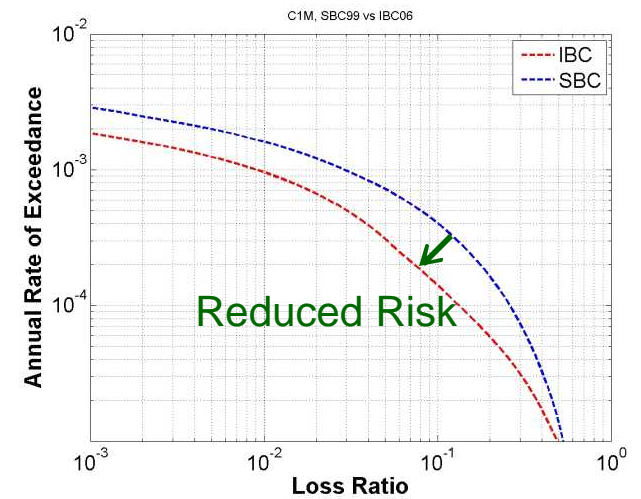


Hazard



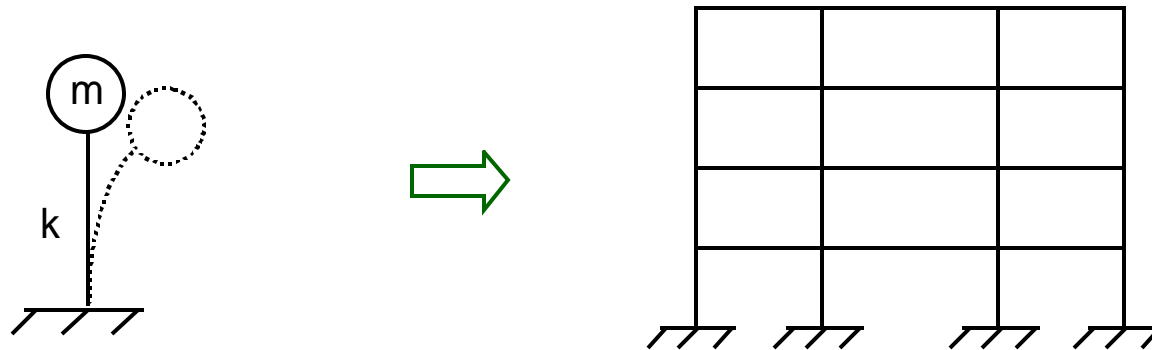
Vulnerability

Loss/Risk



Cost?

Future Work



Any suggestions
&
comments
are welcome!