

Earthquake and building safety: Plucking weeds from the urban garden

Craig D. Comartin, SE

Early reinforced concrete



San Fernando 1971



Ductile concrete

One Rincon Hill



The World Housing Encyclopedia

Web-based Housing Encyclopedia

Hosted by
EERI and IAEE



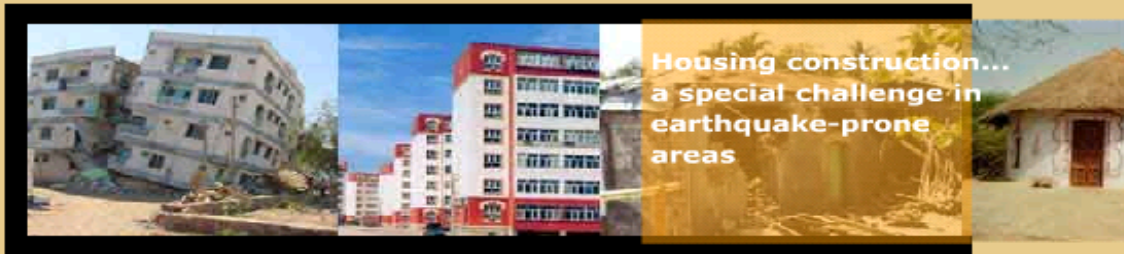
www.world-housing.net



WORLD HOUSING ENCYCLOPEDIA



As a contribution to the ISDR



aecportico
site of the week

THE NSDL SCOUT REPORT FOR
**MATH,
ENGINEERING,
& TECHNOLOGY**
SELECTION



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Chances of Dying if a Major Earthquake Occurs

San Francisco

1 in 1000

Istanbul

1 in 50

Concrete Coalition



Earthquake Engineering Research Institute
(EERI)



Pacific Earthquake Engineering Research
Center (PEER)

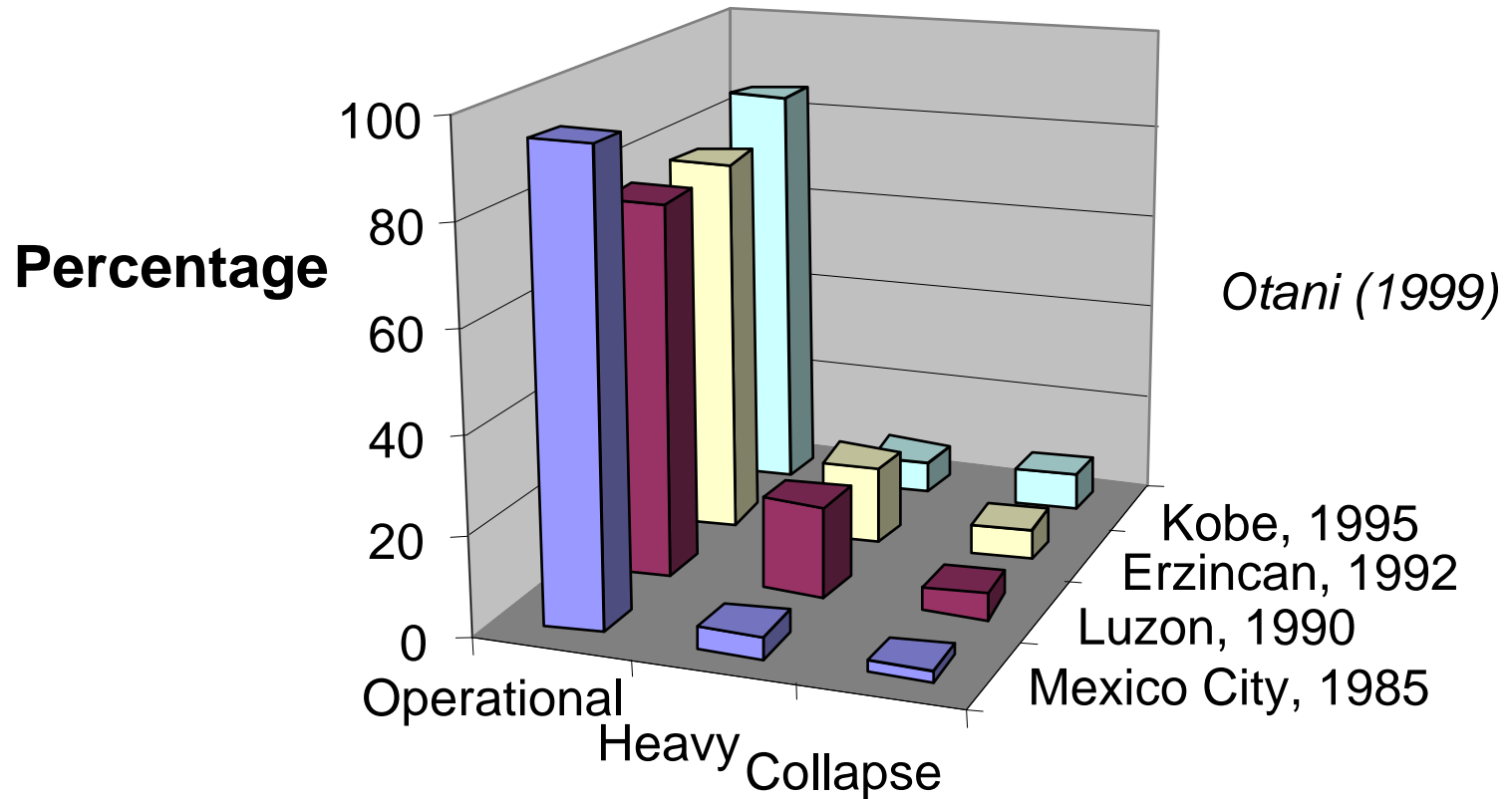


Applied Technology Council (ATC)

The “Challenge”

- **Some concrete buildings constructed before the 1970’s might be dangerous.**
- **Where are they ?**
- **Which ones are dangerous ?**

How many are dangerous?



“50% of the casualties are coming from 5% of the buildings.”

Kircher et al., 2006

The “Next” Challenge

- **Retrofit is expensive**
- **How can we do better to reduce costs ?**

ATC/ENR

Top Earthquake Engineering Projects of the 20th Century



**University of
California, Berkeley**



Stanford University

Risk reduction at Berkeley 1997-2007



	Retrofitted buildings	Central campus
Life safety	95%	50%
Economic losses	60%	20%

Stanford retrofits

Escondido Village Midrises



Main Quad



The Challenge of “Reality”

- **These buildings do not exist in a seismic vacuum.**
- **What are the economic and social implications?**
- **How can we develop community retrofit programs that represent the interests of all stakeholders?**

