Non-Ductile Concrete Buildings

- How Many in LA City?
- Complexity of Task
- Preliminary Methods Used by LA City
- NEES – Grand Challenge
- Additional Work Needed

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Complexity of Task

- Challenges for City of Los Angeles
  - Large area ~ 460 sq miles
  - Large population ~ 3.8 million
  - Over 800,000 parcels of land
  - ~ 2.3 million buildings
  - Records and information not readily available – exists in hand generated records from various sources.
  - Excludes surrounding cities

Preliminary Methods Used by LA City

- Past Ordinances
  - Parapet Walls
  - URM Buildings
  - Steel Frame Buildings (San Fernando Valley)
  - SB 547 – Infill wall building inventory
  - Post-Northridge
    - City of LA/SEASOCS Engineering Task Groups
    - Struct Damage Assessment
    - Query of LA Co Tax Assessors Raw Data

NEES – Grand Challenge

- NSF Funded Project - “mitigate collapse risk of older nonductile concrete buildings during earthquakes.”
  - Major Components
    - **Inventory of nonductile conc buildings**
    - Estimate Collapse Risk (using current tools & best available ground motions)
    - Improve Risk Assessment Tools
    - Reassess Collapse Risk w/ improved tools
- LA City selected by PEER for development of nonductile conc bldg inventory.
- Work described in paper given at 14th WCEE event in Beijing, Oct, 2008.

DATA SOURCES

- **LA County Tax Assessor** (limited mostly to privately owned properties)
- **Publicly available databases**
  - ZIMAS (Zone Information and Maps Access System)
  - LUPAMS (Land Use Planning and Management System)
  - Adaptive Reuse project
- **Sanborn maps** (fire insurance maps up to the 50's)
- **AB 300 database of schools** (CA Seismic Safety Commission)
- **State-owned buildings** (Dept. of General Services)
- **Public universities** (CSU Chancellor & UC Office of Pres.)
- **Hospitals** (OSHPD)
- **Harbor facilities** (Port of LA)
- **Building plans** (LA Building & Safety, visits to engineers)
- **Visual Data Confirmation** (Sidewalk surveys, Google Streetview, Live Search, Sanborn maps)

Problems with the Assessor data

- Each address is linked to an APN (Assessor Parcel number) and corresponds to 1 line of data
- A given address can be linked to multiple APNs (different taxable entities)
- Fields not always correctly populated, especially for non-taxable properties (square footage, number of stories, year built, etc.)
- Each line of data contains up to 5 entries
  - More buildings could exist
  - Difficult to know which building is which
  - Some entries are not “buildings”
- Multiple lines can correspond to the same parcel (Condominiums)
- Assessor data is a only a starting point and each line much be checked systematically

Data Collected

- Location
- “Quality class” (construction type – concrete frame Vs wood frame)
- Year built (pre-1976 as target)
- Number of stories
- Square footage
- Occupancy (main one)
- Apparent potential deficiencies (tall first story, visible damage – sidewalk survey only)

Summary

Preliminary

- Final list is 1527 lines (1 per building/entry)
- 73 entries still have missing data
- 1454 entries were finalized
- 1316 buildings are complete (138 addresses correspond to parking/vacant lots)

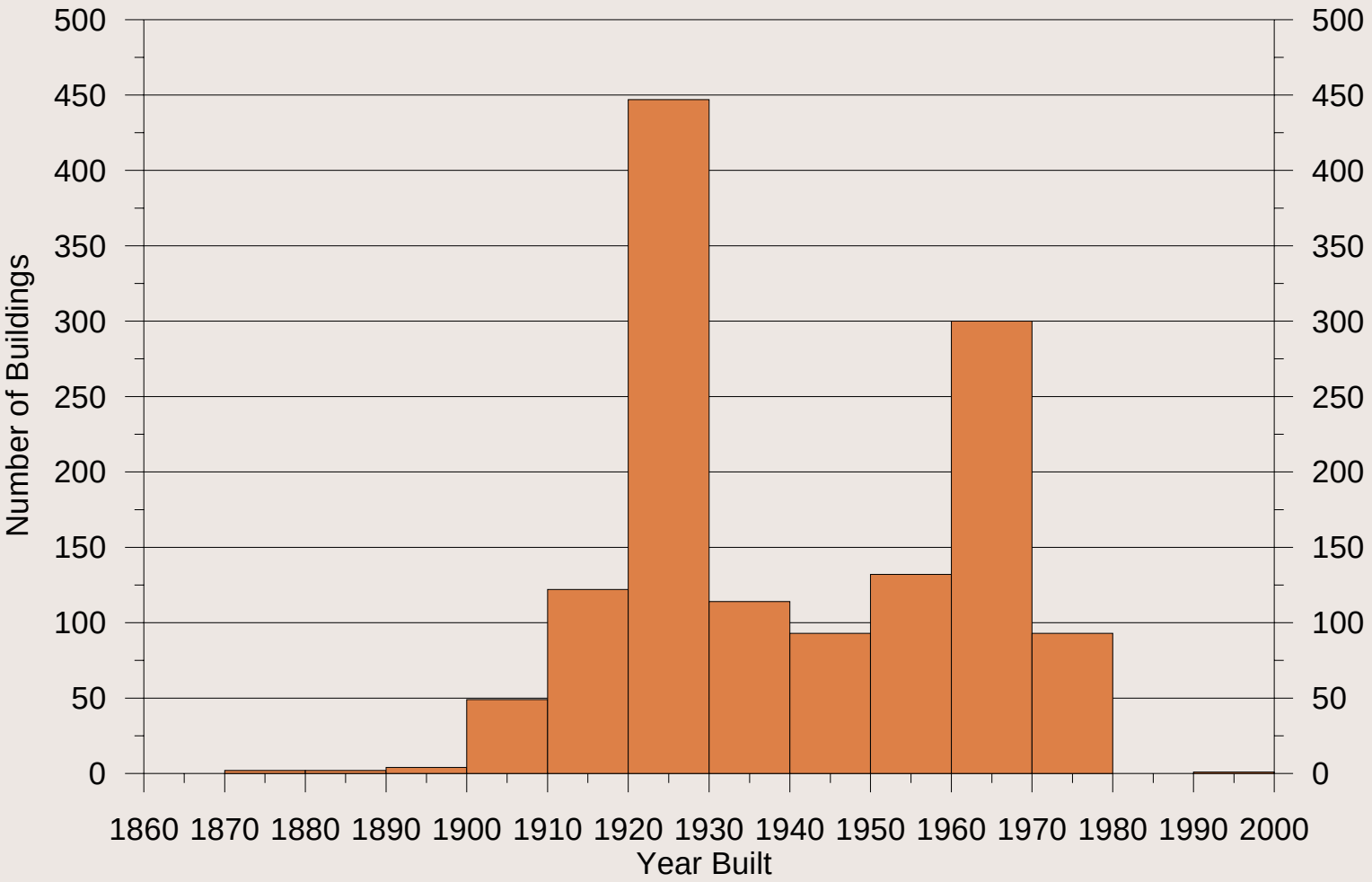
- Bottom line number of:

~1300+250 hospitals

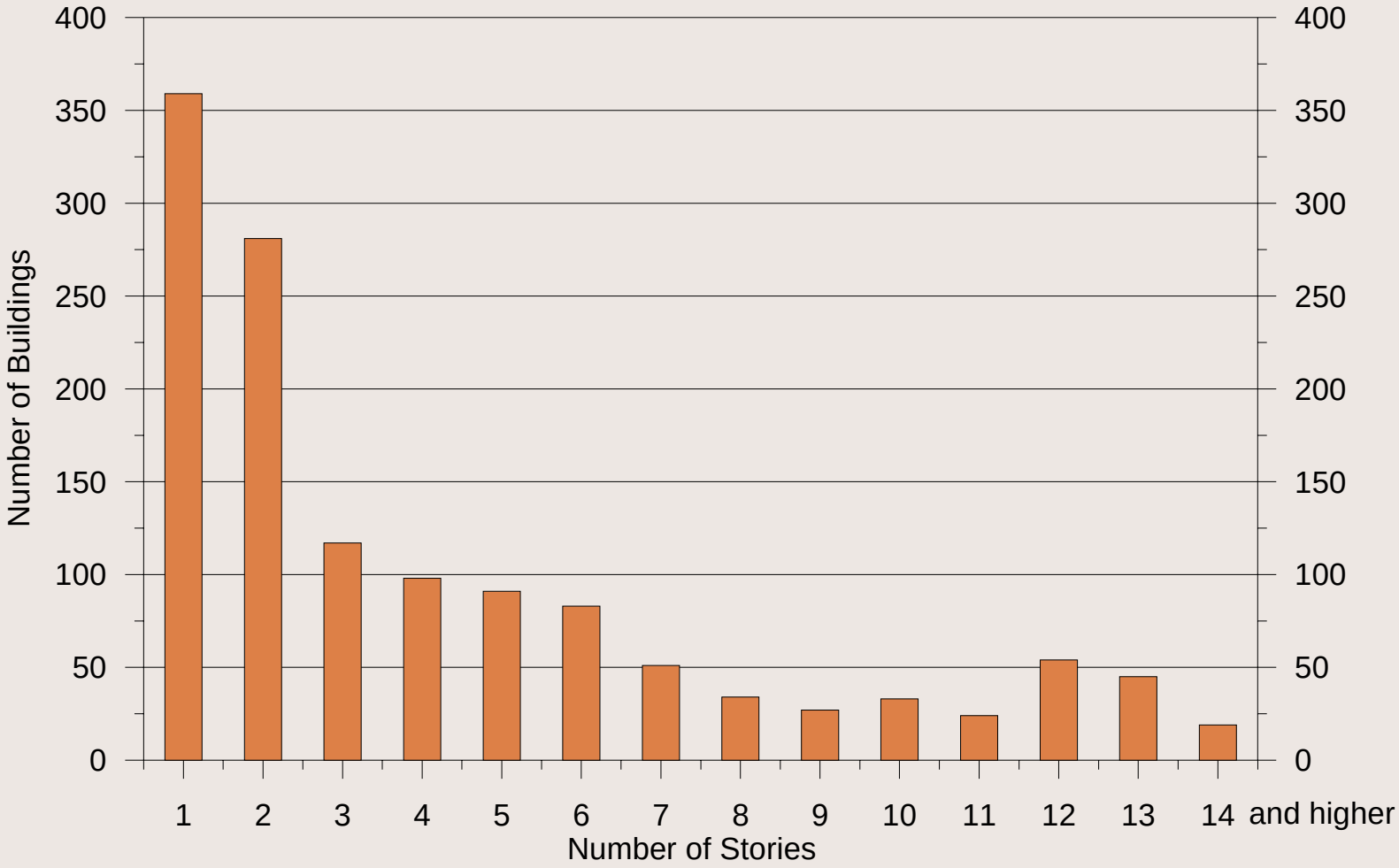
+250 schools = ~**1800**

(Does not include retrofitted buildings)

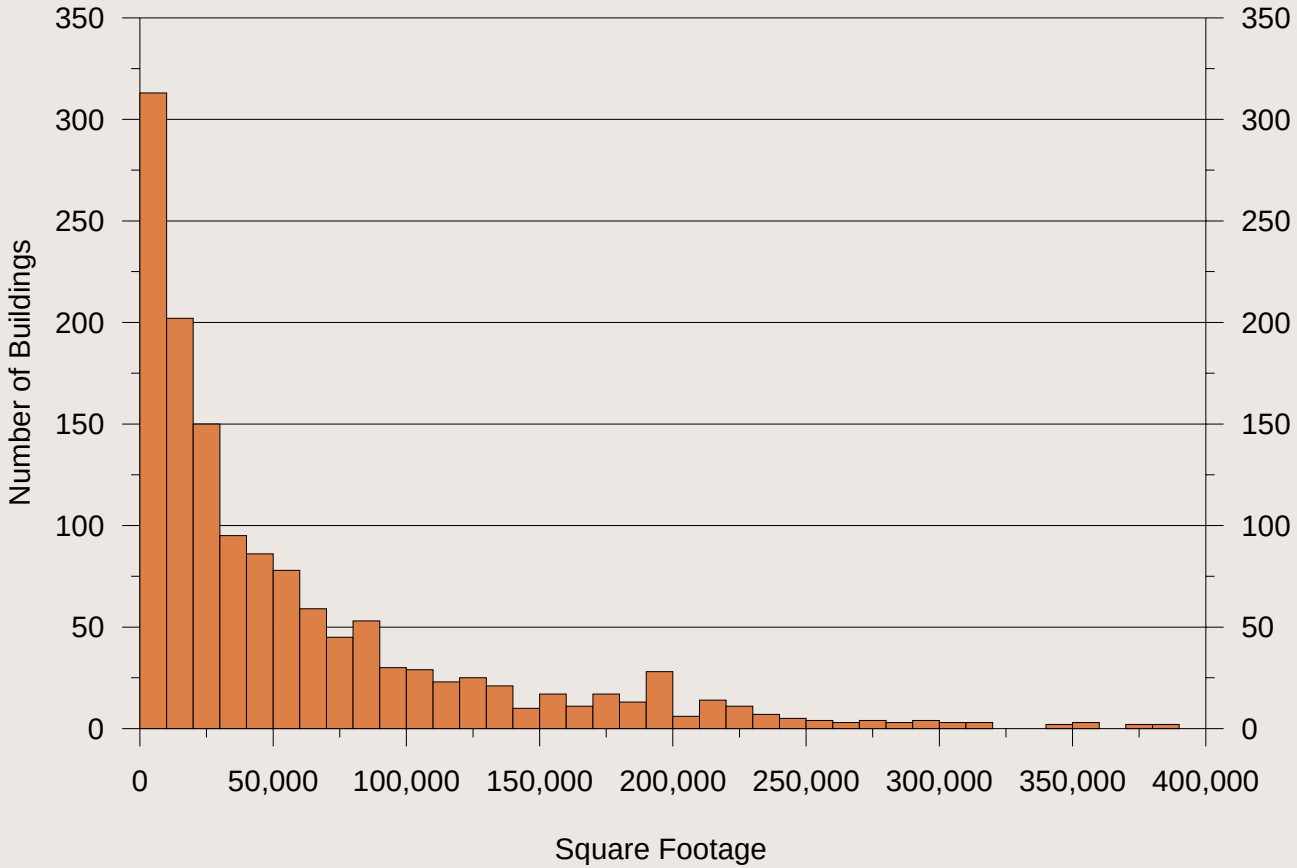
LA City: NDC Buildings - Year Built



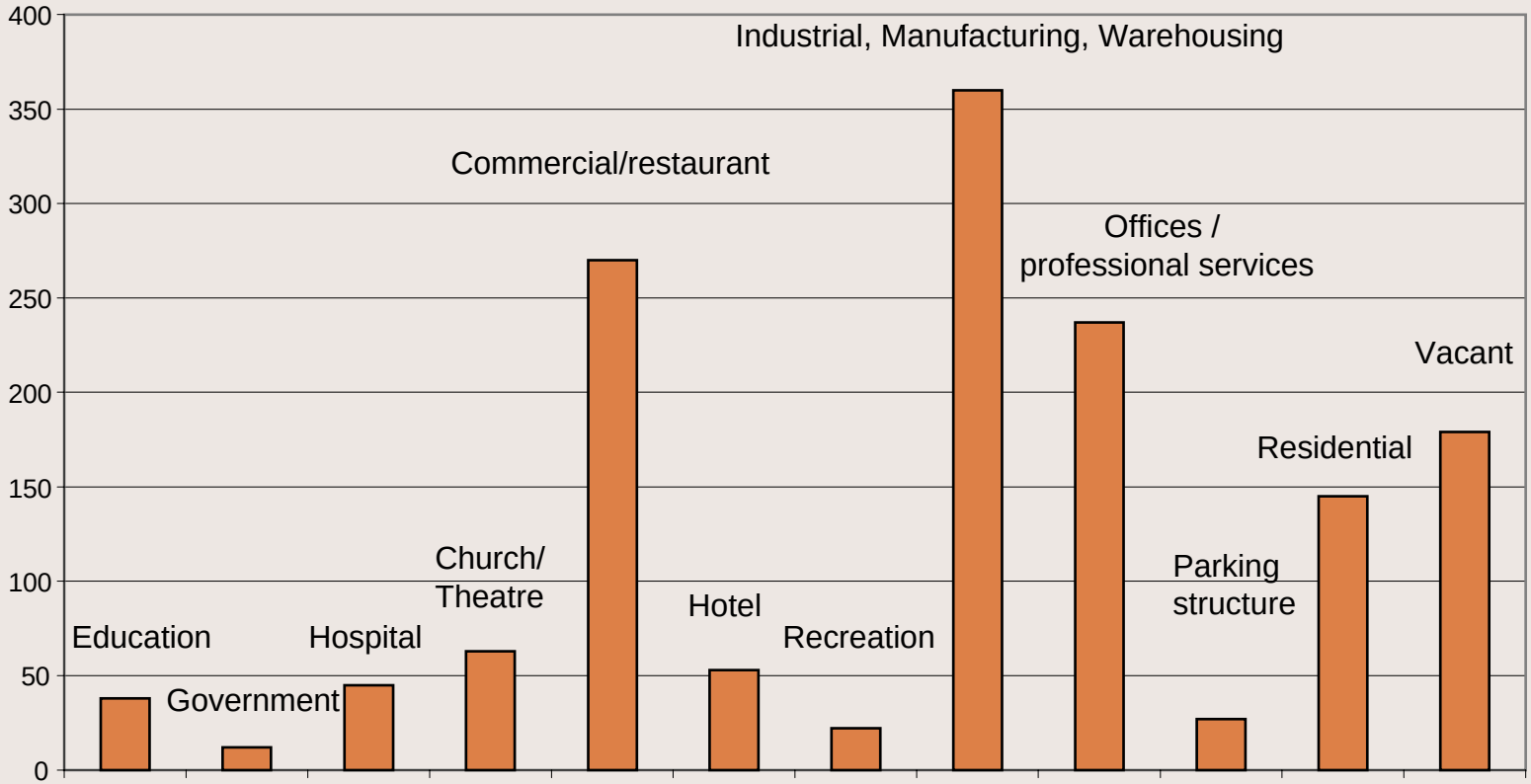
LA City: NDC Buildings - No. of Stories



LA City: NDC Buildings - Floor Area



LA City: NDC Buildings – Usage Summary (finalized buildings)



LA City: NDC Building Inventory Additional Work

- ~ 250 School Buildings
  - Public Schools, Community Colleges, California Universities
- ~ 250 Hospital Buildings
  - OSHPD Hospitals

! Missed Buildings !