

## Determining what level of damage buildings experience is the essential component and heart of the loss estimation process.

Knowing what buildings are made of is a key factor in predicting the level of damage they might sustain in an earthquake. This information is also useful in predicting damage patterns; for example, the most vulnerable building types in a region, or the areas expected to have the most damaged buildings in different scenario earthquakes. In fact, determining what level of damage buildings experience is the essential component and heart of the loss estimation process (which is later used to predict other losses, such as cost and casualties).

### Building Distribution in Manhattan

The figure on this page shows the relative distribution of the number of buildings in each of these four categories within 12 different neighborhoods in Manhattan. The predominant building types by count are these:

- ▶ Unreinforced masonry (M on the bars to the right, totaling 29,352 buildings)
- ▶ Steel (S)
- ▶ Reinforced Concrete (C)
- ▶ Wood (W)

### Problem with Unreinforced Masonry

The results indicate that most buildings (in 9 of 12 Manhattan neighborhoods) are constructed of unreinforced masonry; whereas, there are few wood buildings. Unfortunately, buildings made of unreinforced masonry (URM) are the *most vulnerable* to damage during an earthquake because URM is brittle and does not absorb motion as well as more ductile wood and steel buildings.

