

## WHY IS THIS STUDY SIGNIFICANT?

***This is one of the most significant and extensive loss estimation studies to date.***

Earthquakes are both uncontrollable and unpredictable. However, years of research have yielded a knowledge base for predicting *the areas* that might be most vulnerable, *the extent* of damage and disruption that could result, and *the ways* to mitigate risk and save lives. And, this knowledge base continues to grow. A study such as this one, assessing seismic risk and consequences for the NY-NJ-CT region, is important for several reasons:

### **Identifies Specific Areas at Risk**

This work pinpoints areas in the Tri-State region that would be most vulnerable in different scenarios: What types of buildings in this region are most likely to collapse? Which would have the least risk of collapsing? What areas would be expected to have the most damaged buildings? Answering these questions with precision requires assembling detailed data on all of the buildings and soil types in the region, modeling a variety of earthquake scenarios, and predicting their probable consequences. The resulting study is one of the most significant and extensive loss estimation studies to date. The substantial knowledge base it has yielded can help mitigate loss and save lives.

### **Estimates Potential Losses**

This study is important because it provides comprehensive, quantitative estimates of potential losses (i.e., the value at risk) for a variety of earthquake scenarios: How many injuries and casualties might there be in earthquakes of different magnitudes? How much would it cost to repair and replace damaged buildings? How much revenue would be lost? How many people would be displaced from their residences?

### **Assesses Critical Facilities**

Additionally, this work is important because it assesses the performance of individual essential facilities (police, hospital, and school shelter) and the probable demands placed on them: How many people would require hospitalization or temporary shelter in schools? Would the affected area have sufficient capacity for this many people? Are there enough police and fire stations? Note that lifeline infrastructure losses (subways, bridges, power, etc.) are not included. Lifelines require further data collection and loss and impact assessments.

### **Predicts Induced Hazards**

In earthquakes, induced hazards may include fire, homelessness, inoperable water systems, and other disaster-related problems. This study is important because it predicts the extent of induced, secondary hazards should a seismic event occur in the NYC metro area. For example: How many fires are likely to ignite and where? How many people would likely be exposed to those fires? Would the water capacity be sufficient to fight the fires? Would there be enough trash-hauling capacity for all the debris?

In short, it is our hope that this study will help policy makers, practitioners, and researchers understand the value at risk in this region and form strategies to reduce seismic impact.