The future of risk modeling: Communicating risk in Mexico City

Unerstanding Risk, 18th of May 2018, Mexico City

CDMX CIUDAD DE MÉXICO | AR AGENCIA DE RESILIENCIA

Multiple risks due to geographic location and socio-economic context.

Social and spatial inequality & high vulnerability to climate change.
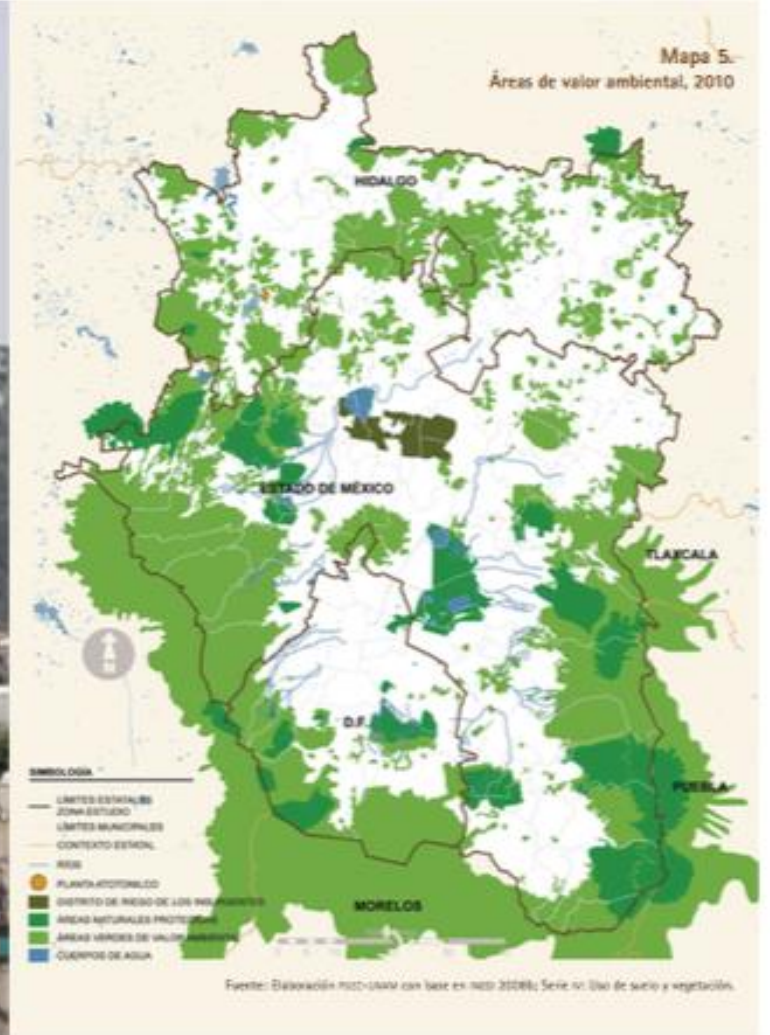
Integrated long-term planning & regional coordination.

Risk data integration in CDMX

- National Risk Atlas
- National Climate Change Vulnerability Atlas
- Mexico City´s Risk Atlas
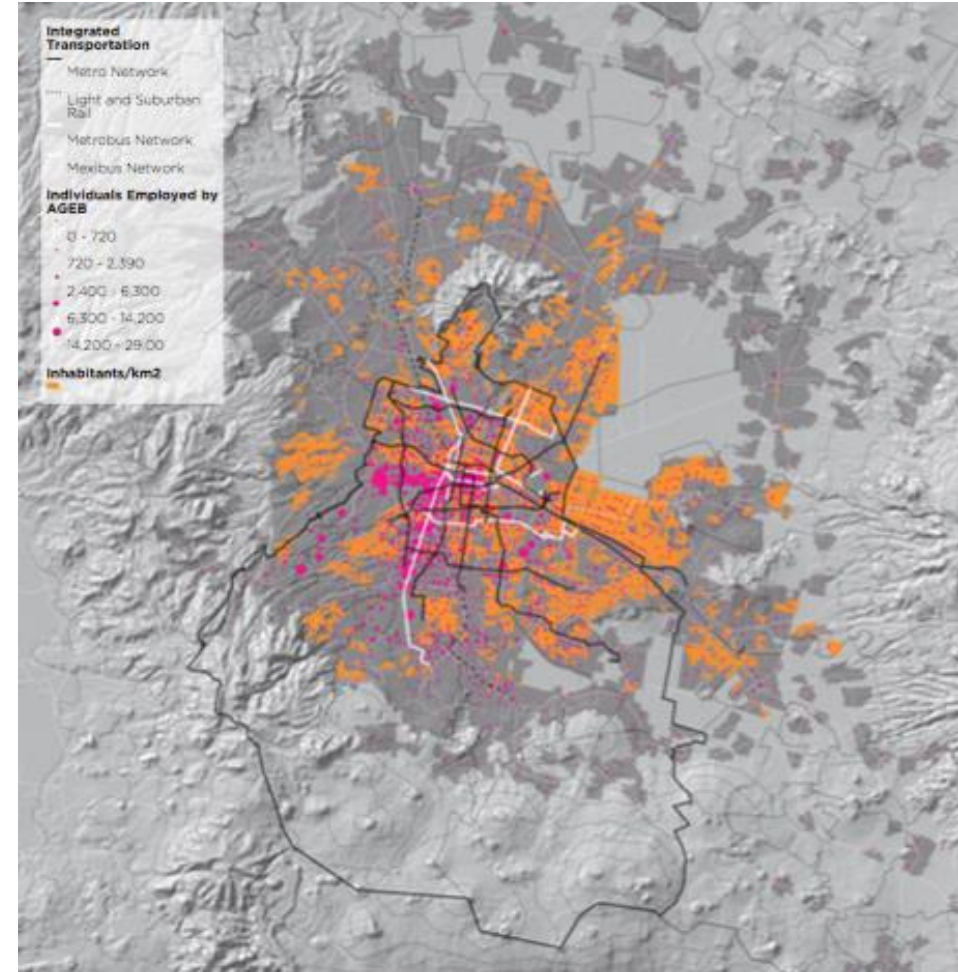
Zonificación Sísmica

Mapa que consiste en dividir una región en porciones, en cada una de ellas específica los parametros constantes de diseño sísmico

ZONA I (LOMAS)
ZONA II (TRANSICIÓN)
ZONA IIIa ⎫
ZONA IIIb ⎬ LAGO
ZONA IIIc ⎪
ZONA IIId ⎭
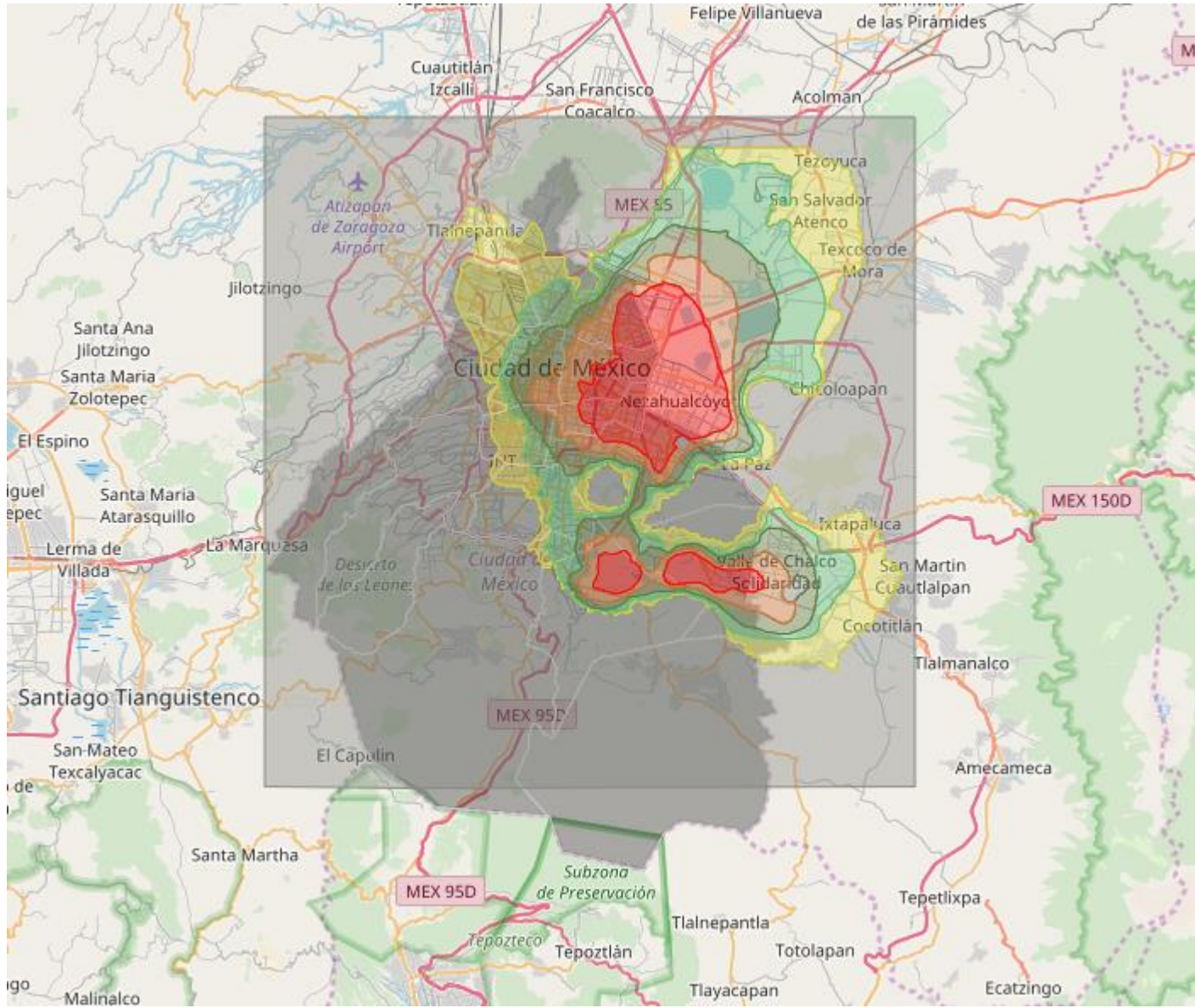
Key issues where risk modeling can transform the city

- Facing multiple risks: earthquakes, subsidence, climate change, etc…

- Increase resilience towards flooding and the potential collapse of the sewage system

- Emergency planning and response

- Address socioeconomic conflicts and security

- Improve the mobility system

Examples of how we use data to plan

INTELLIGENT MOBILITY: TRANSFORMING MOBILITY THROUGH DATA

- Mexico City launched the **Vision Zero** Initiative to reduce fatalities related to transit accidents. The mobility control centre will include all databases and it's an opportunity for monitoring, measuring and improving road safety.

- Mapaton: 30,000 buses perform 14 million trips daily and there is no tool that recognizes these routes. LabCDMX developed Mapaton, a crowdsourcing and participatory mapping excercise where 3557 users built 2,102 routes.

Map by Laboratorio para la Ciudad, Isaax Serrano 2016

Examples of how we can use data to plan

WATER MANAGEMENT:

- Floods are recurrent in CDMX. Data can help understand areas prone to flooding, intensity, and population at risk to design plans and projects.

- Data can also provide key information to define triggers for innovative insurance schemes.
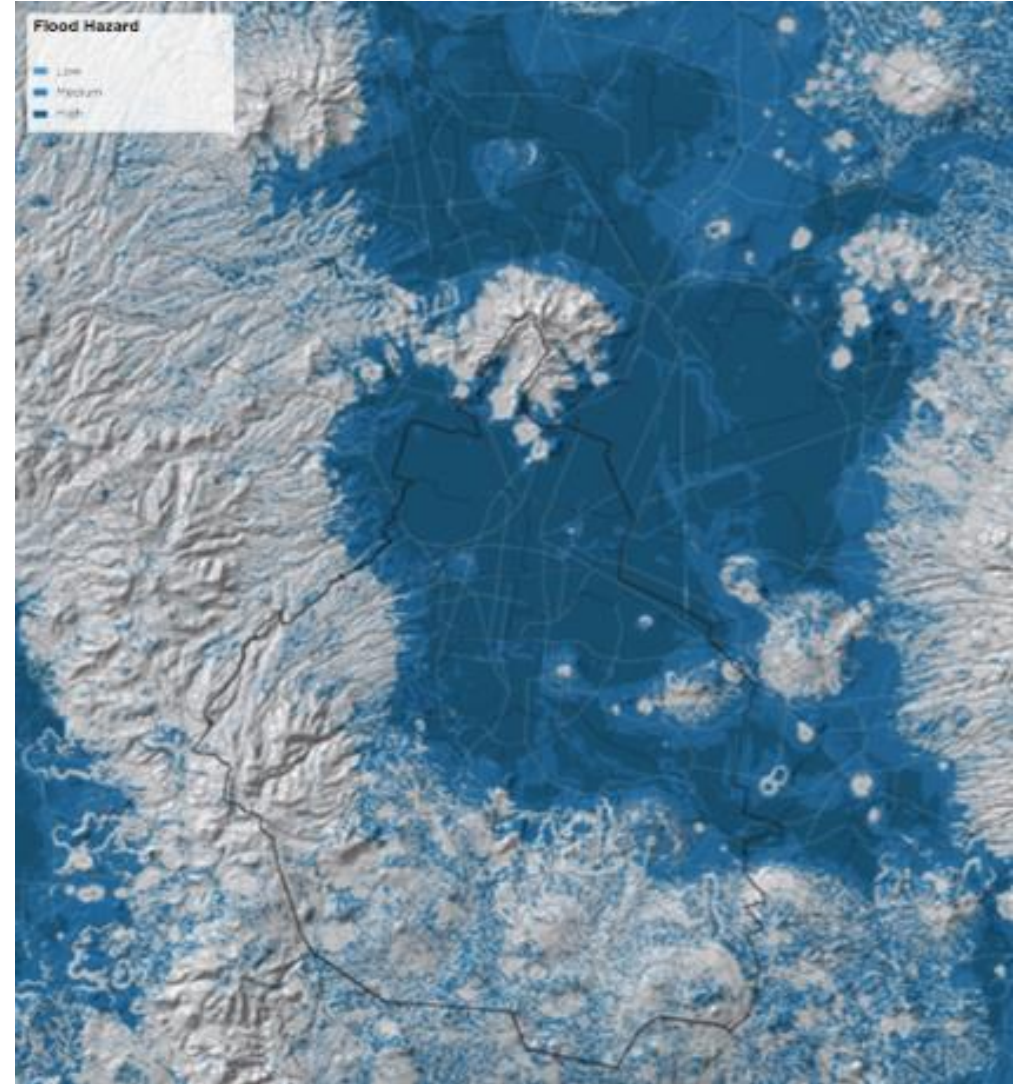
Examples of how we can use data to plan

- Quantify the current resilience of the city.
- Set realistic goals for the future.
- Identify where investments in resilience can be more productive.
- Increase resilience of the city´s strategic public facilities.

Figure 26. Risks in CDMX markets (RMS).

The map indicates the location of public markets in CDMX, and the diameter of each circle represents the risk of each according to PAE. The exceedance probability curve shows that there is a 1 percent chance that the damages caused by an earthquake in the markets are five times greater than the damages in 1985. In the lower box, the epicenter of stochastic earthquakes identified in the curve for the chosen probabilities is shown (1/100 and 1/500). Finally, the table shows the variations in damages undergone by the markets with three different earthquakes and according
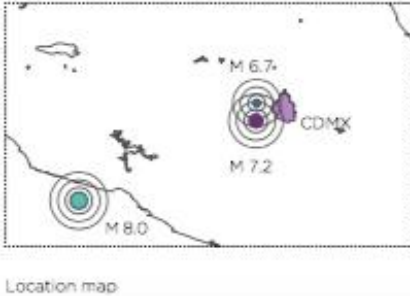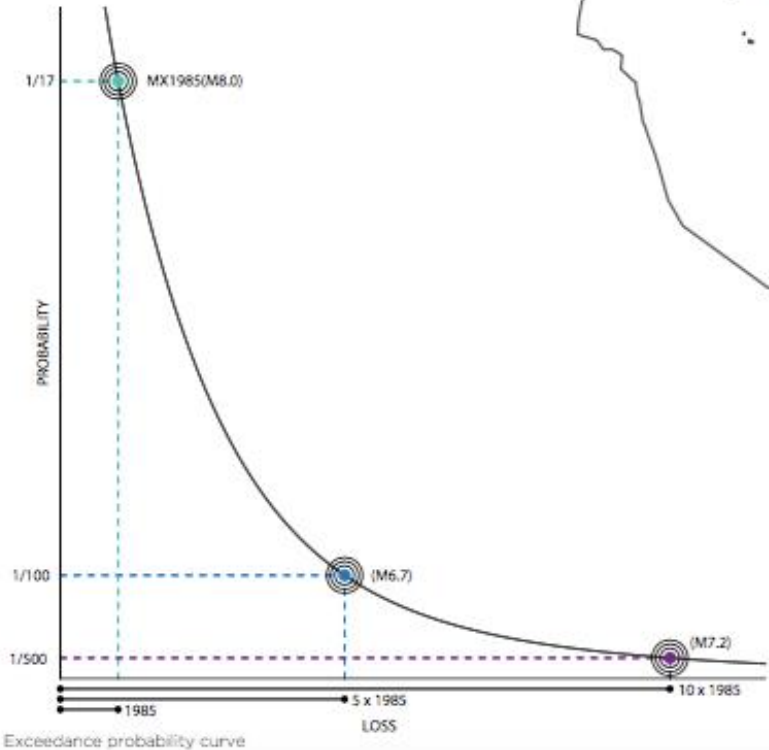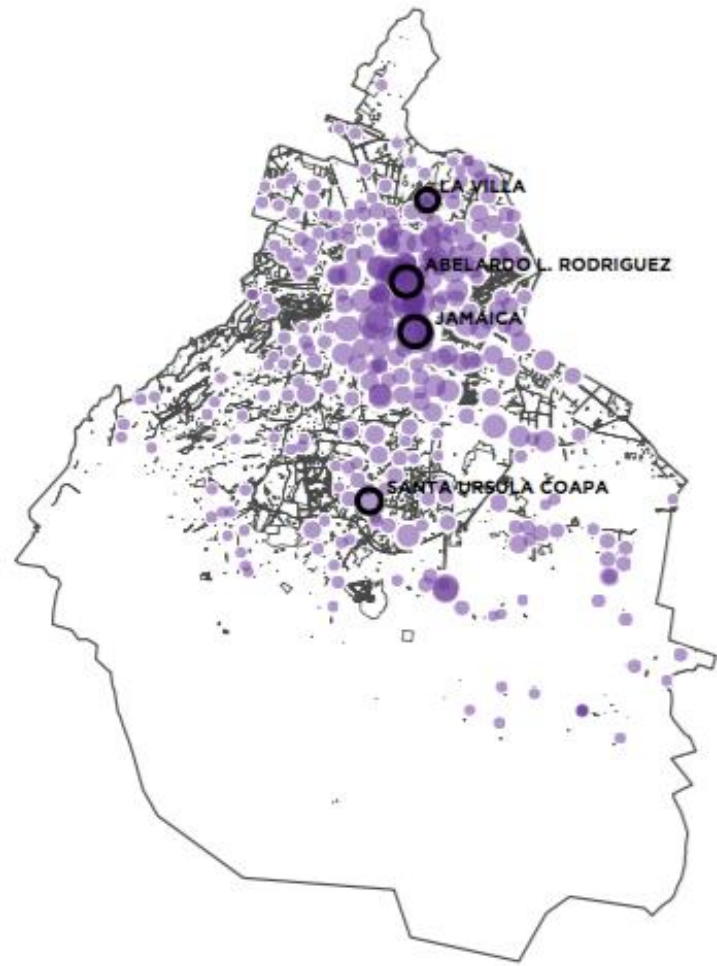
Challenges

- Reluctance to release data due to concerns over negative impacts and externalities. For example:
  - Impact on the real estate market
  - Creating social demands without comprehensive policy response.
  - National security concerns.
- Lack of data
  - Ownership of data is power.
  - Low incentives for the scientific community to share data.
- Level of trust from citizens

Lessons learned from 19S Earthquake

- Focus on high priority buildings.
- Strengthen the most vulnerable components of the water distribution system.
- Create redundant plans for the most strategic components of the public network system.
- Create incentives to promote earthquake insurance for housing.
- Strengthen communication with the citizens.