

# Risky development: Increasing exposure to natural hazards in the United States

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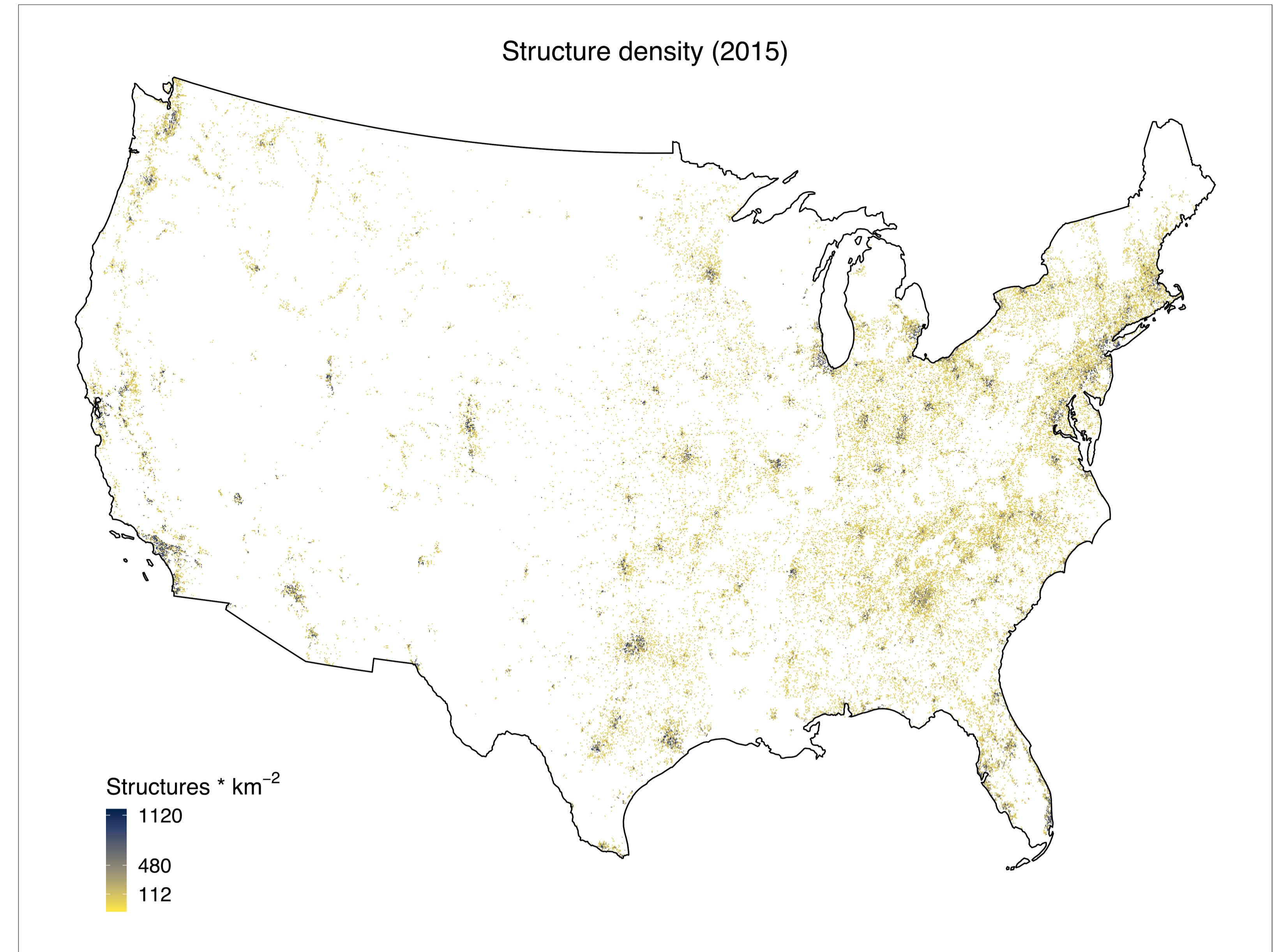
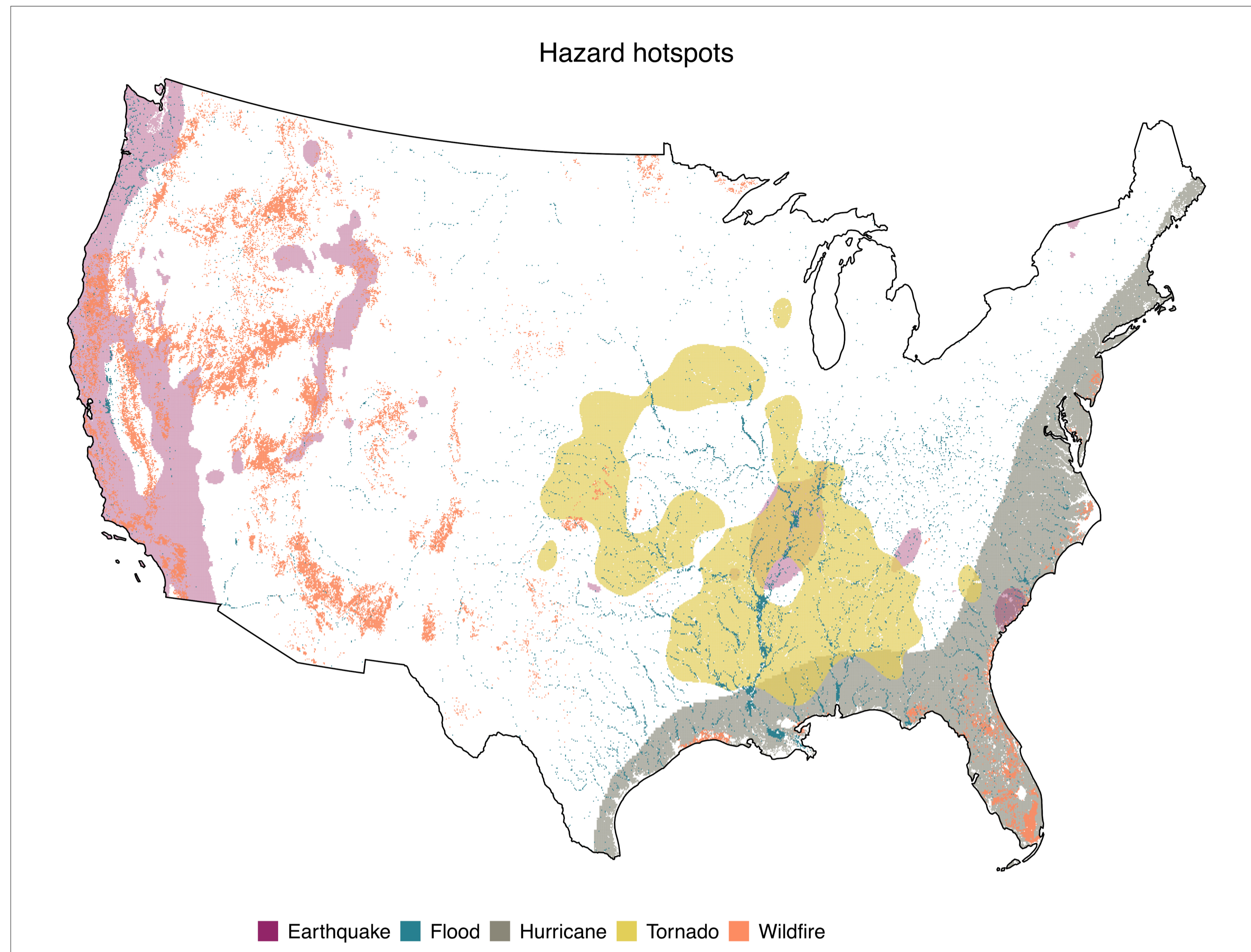
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## We are losing more even as we know more

Damage from natural hazards is increasing despite our growing ability to delineate where and when extreme events will occur. We show that decades of risky development have increased exposure to the most damaging natural hazards.

## Assessing where two geographies intersect: hazards and development



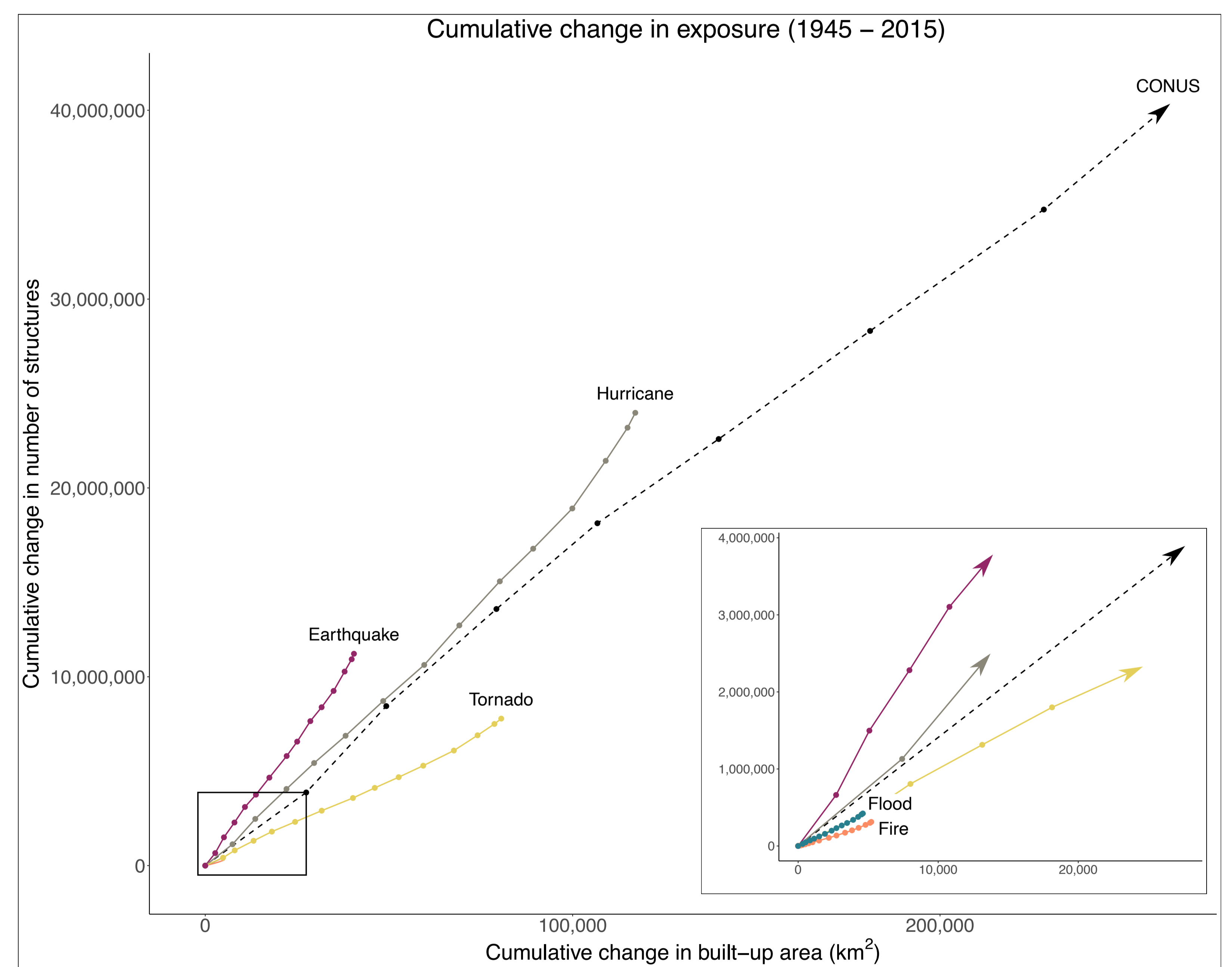
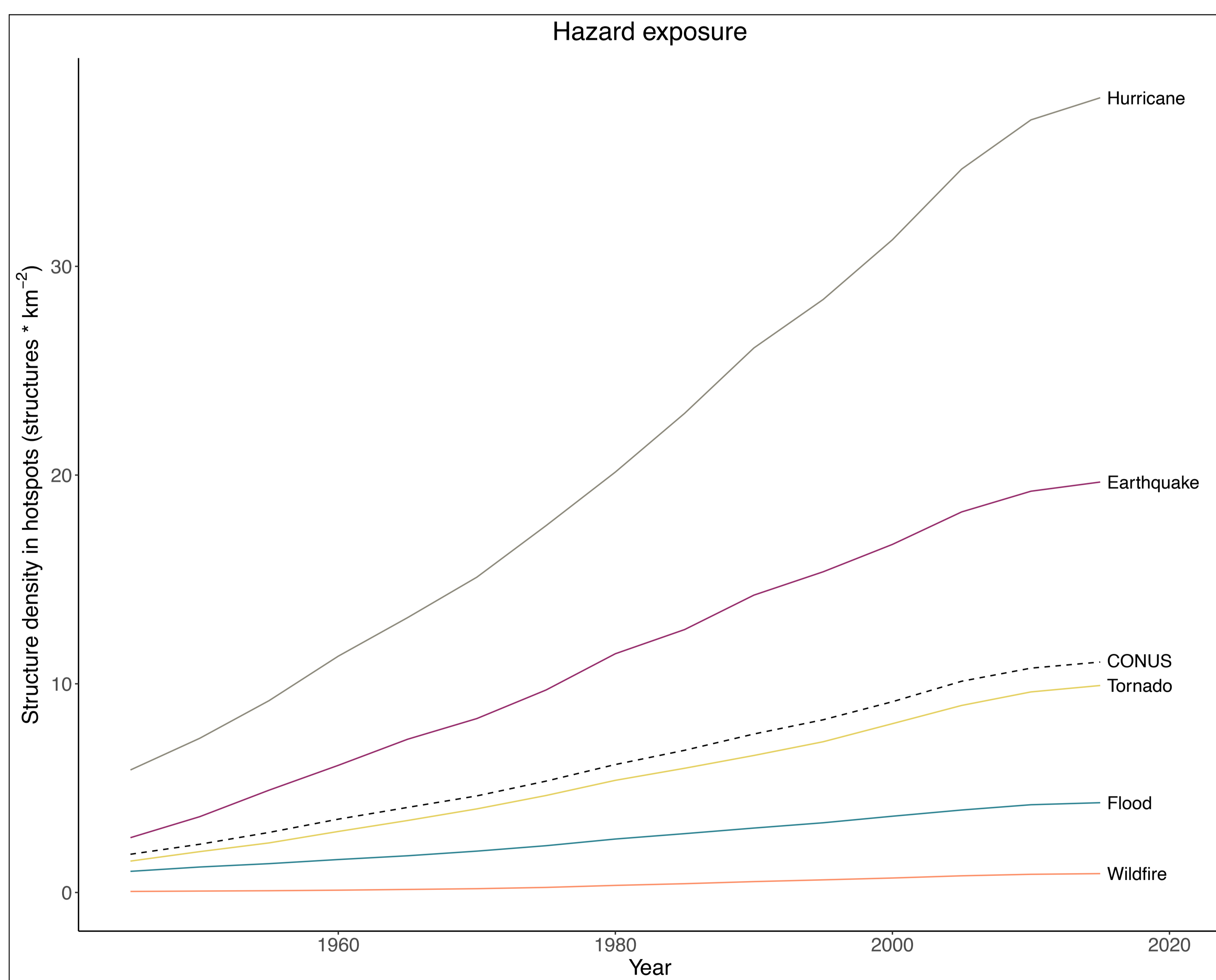
We mapped “hotspots” of occurrence and magnitude of the most damaging hazards -flood, earthquake, hurricane, tornado, and wildfire- over CONUS at 250m x 250m grid cells.

We defined hotspots for each natural hazard as cells where the occurrence or intensity of the hazard exceeded the 90<sup>th</sup> percentile among all CONUS cells.

We used a unique dataset of over 350 million structures (homes, apartments, shops, offices, etc.) obtained under a data-sharing agreement with the Zillow Group, Inc., to identify where people live, work and recreate, and estimate trends in development.

Analyzed together, these two datasets reveal the extent, pattern and trend of hazard exposure in CONUS.

## Over half (57%) of the structures extant in 2015 were built in hazard hotspots for earthquake, wildfire, flood, hurricane, and tornados even though these hotspots cover only 31% of the contiguous U.S.



Exposure has grown in all hazard hotspots over the last 70 years, even in hotspots where development trends fall below the national values. E.g., wildfire hotspots exhibit a 10-fold growth of the built-up area and 18-fold increase in structure density with respect to 1945.

Exposure has come from both densification and expansion of built-up areas. Due to repetition of “build back bigger” after disasters, small gains in mitigation have been overwhelmed by larger trends that place more property value at risk.

## Expect worsening losses

Weather and climate hazards are worsening due to climate change, and though exposure growth shown here is driven by risky development, climate has already exacerbated loss trends and threatens to worsen losses from extant development. The “Hurricane Katrina’s” of the future are poised to exceed \$200b.

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