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OPINION: To keep Alaskans safe, we need improved building code adoption and enforcement

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FILE - This Nov. 30, 2018 file aerial photo shows earthquake damage on Vine Road, near Wasilla, Alaska. (Marc Lester/Anchorage Daily News via AP, File)

In the early morning hours of Feb. 6, 2023, a magnitude 7.8 earthquake struck the southcentral region of Turkey, with severe ground shaking extending over the northwestern region of Syria. In just minutes, thousands of buildings and structures collapsed and entombed tens of thousands of people under the rubble. Strong aftershocks, including a magnitude 7.5 nine hours after the main event, caused further structural damage and exacerbated human suffering. These were the most destructive earthquakes Turkey has seen in the past 100 years.

We live on a geologically active planet where hundreds of thousands of earthquakes are recorded every month around the globe. While an overwhelming majority of these

seismic events are small and go unnoticed by the public, some large earthquakes rise to the level of major disasters. Turkey is a very active tectonic region and is crisscrossed by multiple faults that have been mapped by geologists and studied by seismologists in detail. The fact that these large Feb. 6 earthquakes occurred where they did was not a surprise. The sheer extent of destruction, however, was astounding. The bottom line is that natural hazard events like earthquakes do not inevitably have to be catastrophic disasters.

What makes an earthquake a deadly disaster? First of all, location does matter. A [magnitude 7.9 earthquake](#) occurred on Nov. 3, 2002, in central Alaska, and it resulted in similar ground shaking intensities and large economic impacts but caused no casualties. A densely populated region in Europe or Asia has a higher seismic risk than a sparsely populated region of Interior Alaska. For example, more than 13 million people were affected by strong and severe ground shaking in the Feb. 6 earthquakes. Secondly, and more importantly, seismic resilience of buildings and infrastructure matters for the survivability of their inhabitants. We know how to construct buildings to withstand extreme earthquake shaking. The seismic component of the International Building Code (IBC) has been built on observations from multiple earthquakes and is continually improving standards for building safety. But a proper seismic building code, which Turkey has, is not enough. Proper implementation and enforcement of building codes is imperative – it takes a concerted effort over many years and it has to occur when large, devastating earthquakes are not in recent memory.

Immediately after the Turkey earthquakes, teams of engineers canvassed the impacted cities and collected data on ground failures and damaged buildings and infrastructure. Preliminary findings indicate that the intensity of ground shaking, structural design, and construction quality were decisive in building performance. Unfortunately, adherence to the IBC standards has not been consistent across the impacted cities. Simply put, buildings in areas with loose adherence to the IBC standards for structural design, construction, and inspection suffered the most damage.

Across Alaska, building code adoption and enforcement are inconsistent and depend largely on the location and type of building proposed for construction. Most of the state falls under the jurisdiction of the State Fire Marshal that uses code adoption, but no code enforcement, for the earthquake design provisions. Furthermore, this adopted code does not apply to residential construction that is three-plex or smaller, so homes are not covered by any mandatory building code. In some larger communities, the local government takes up the role of building official. An example of this is the Municipality of Anchorage, where there is a robust code adoption and enforcement program in place for all construction, including residential. However, there are parts of Anchorage, such as Eagle River and Chugiak, where the code is not enforced. The 2018 magnitude 7.1 Anchorage Earthquake highlighted the impact of inconsistent building code application. Within the Municipality of Anchorage, there were 40 buildings that suffered significant structural failure as a result of the earthquake. Of these, 38 buildings (95%) were located in the areas without code enforcement.

Building codes are a standard set of minimum requirements that are intended to ensure buildings are designed and constructed such that they are safe for their occupants. In regions with high seismic hazards, like Alaska and Turkey, earthquake-resistant structures are much more likely to remain safe and habitable during and after an earthquake. But effective implementation of a building code requires two activities: code adoption and code enforcement. Code adoption involves a building official requiring construction to be engineered per the building code. Code enforcement involves mandatory, independent inspections during construction to verify that the work is following the approved plans.

Improving building code adoption and enforcement is supported by the Alaska Seismic Hazards Safety Commission, the Alaska Statewide Home Building Association and the Structural Engineers Association of Alaska. We recognize that there are many difficulties in improving building code adoption and enforcement in Alaska. The immense size of our state, combined with a lack of infrastructure and transportation difficulties, present considerable challenges to regulating construction. However, there are several ways to improve the situation. While we cannot control where the earthquakes occur and how intensely the ground shakes, we do have some control over where and how we build.

The Alaska Seismic Hazards Safety Commission has recommended specific steps in [Policy Recommendation 2020-1](#) to improve building code adoption and enforcement in Alaska communities. This will improve the safety and functionality of our homes, schools, hospitals and businesses following the next significant seismic event. It is heartbreaking to know that many of the casualties in Turkey and Syria were preventable. But what is startling is how quickly the conversation in the U.S. has already moved on from the foreign catastrophe. Tectonically active places around the globe still face similar hazards. We must use Turkey as a reminder – now is the time to prepare ourselves for the next major earthquake. We know what to do.

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