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2023 Türkiye-Syria Earthquakes: A Case Study

Introduction: On February 6, 2023, a 7.8 magnitude earthquake struck southeast Türkiye near its Syrian border, followed by a magnitude 7.5, followed by hundreds of aftershocks over the next month.[1] In total, at least 59,000 people were killed,[2] more than 110,000 people were injured,[3] and over 3 million people were forced to evacuate the earthquake zone,[4] compounding an already existing humanitarian crisis in the region.

Facts of the Case: Türkiye sits at the intersection of three tectonic plates–the Anatolian, the Arabian, and the Eurasian–making the region one of the most active earthquake zones in the world.[5] At 4:17am local time on a winter Monday, a shallow 7.8 magnitude earthquake struck the Türkish province of Kahramanmaras, approximately 23 kilometers east of Nurdagi in the Gaziantep province near the Syrian border, with the equivalent energetic force of 8 million tons of TNT.[5] A 7.5 magnitude earthquake followed only nine hours later,[5] as those who had escaped the hundreds of thousands of collapsed buildings[6] worked in near-freezing temperatures to locate those who had not.[1] Many people were trapped alive under the rubble for days without professional rescue team assistance.[1] Estimates of how many buildings collapsed or were heavily damaged range widely, with at least 217,000 structures having been officially deemed unsafe, including 520,000 housing units.[7] While building standards had been put in place following a major earthquake in 1999, many buildings were neither built to code nor retrofitted.[1] Key response infrastructure which collapsed during the earthquakes included medical centers, killing those inside and rendering them unable to contribute to relief efforts.[1]

The most recent official death toll stands just shy of 60,000, making it the deadliest earthquake since a 1970 earthquake in Peru killed 67,000.[8] The impacted region included 11 Türkish provinces,[6] parts of the Syrian state, and much of what was formerly North-Western Syria (controlled by various factions active in the Syrian Civil War and suffering from heightened conflict and displacement directly prior to the earthquake).[2] The massive displacement can be understood as a secondary disaster in its own right, as some 1.9 million people were reported to receive temporary shelter following the earthquakes, half of it classified as informal and most of it lacking in basic provisions.[6] Some 800,000 people already living in humanitarian aid camps in the Syrian territory required rehousing.[2] In total, over 14 million people were impacted by the earthquakes in Türkiye alone.[8] Damages have been estimated to total roughly $43 billion, with reconstruction costs reaching up to $115 billion.[3] Business activity was determined to have declined substantially across Türkiye following the event.[7] While it began slowly climbing again after February 14th, business in the impacted region had not recovered from its collapse by the end of the tracked period on 3 March.[7]

Epidemiological aspects of the event: The available reports on this incident consist of news reporting from the scene, official data released by the Türkish government and its Disaster and Emergency Management Presidency (AFAD), data compiled by global response and humanitarian groups (e.g. the UN office for Coordination of Human Affairs), and research by data scientists. Data scientists at Direct Relief and CrisisReady worked with academics and members of the Syrian Medical Society to remotely support relief efforts through the tracking of mobility, assessment of current needs, mapping of damage to buildings and health infrastructure, and the sharing of information.[7] Data from the Facebook accounts of residents was used to track population movement after the earthquake, measuring out movement from heavily damaged areas as well as movement into less impacted cities and provinces.[7] Post-earthquake business activity was measured using the Facebook Business Activity Index which uses posts to Facebook business accounts as a proxy measure of general business activity.[7] Publicly available data compiled to the EMDAT database was last updated 26 September 2023, however much data remains missing from the database. The available reports

did not consider death, injury, or displacement as a portion of population, possibly due to their still climbing numbers.

The total number of dead is difficult to calculate as the authoritarian political regime in Türkiye[9] faced an election that May, casting doubt on official death counts, and due to a lack of reporting from the region that was formerly Syria but now exists outside the state. Regardless of those factors, official death counts are still being cited as the most reliable source of information on total deaths.

Management of the event: By almost all accounts, earthquake response was not wellhandled.[1,9] Syria's response capacity has been severely weakened by its ongoing civil war. Since 2011, much of the Syrian health, power, and water structure had already been destroyed.[2] Many of the areas impacted by the earthquake had been experiencing military shelling and air strikes carried out by the Syrian and Russian militaries prior to the event.[2] Many of the region's inhabitants were already dependent on humanitarian aid before the event occurred, limiting their ability to respond.[2]

Türkiye's highly centralized regime complicated relief efforts, exposing the limits of the conventional wisdom that a centralized system is more effective in a disaster.[9] Despite the fact that Türkiye has experienced many earthquakes, had anticipated an event of similar magnitude, and had conducted drills as recently as 2019, the AFAD had not anticipated a breakdown of response capacities over such a large area.[9] Additionally, Türkish president Recep Tayyip Erdoğan's regime had previously weakened the civil society, undermining social infrastructure necessary to coordinate and organize extra-governmental relief efforts.[9] As a result, no mutual aid was possible in the region, leaving only the military with the capacity to respond effectively, something they had done successfully following the earthquake in 1999.9 However, no role was assigned to them following the 2023 event and they were not dispatched during the acute phase of the response.[9] With no contingency plan in place, local authorities, unclear on who had authority to direct relief efforts, were similarly slow to take action.9 These delays, based on failures in planning, organization, and collaboration across different levels of the state, resulted in many people dying under the rubble who might otherwise have been saved. Furthermore, while a substantial percentage of the displaced population was ultimately provided temporary shelter, the settlements lacked access to basic services, such as adequate sanitation, clean water, or health care.[6]

To better prepare for future events, the AFAD should create disaster response contingency plans, support the coordination of civil and state actors, and engage the military during the critical acute period following the event with the express goal of limiting mortality.

Communications of the event: Immediately following the event, people in the region took to social media to communicate their location, request help, and share first hand accounts of the situation on the ground.[1] When no help arrived, there was much criticism and anger at the lack of response.[1] With the Türkish election upcoming, the event was quickly politicized. Despite its importance to rescue efforts, the state shut down Twitter for 12 crucial hours on Wednesday in an effort to suppress what it deemed disinformation.[1,9] In addition, both the internet and mobile infrastructures proved unreliable, further challenging those working to save lives.[9] Erdoğan's government had previously passed a law criminalizing "the spread of misinformation," with those who are found guilty facing up to five years in jail.[1] This law allows for government moderation of social media and is likely to hinder relief efforts in future emergencies.[1]

Summary: The 2023 Türkiye-Syria Earthquakes brought devastation to an already heavily impacted region. Political choices in Türkiye such as underenforcement of building codes, lack

of contingency planning, and misuse of critical resources, alongside a lack of response capacity in Syria, contributed to the high cost of this disaster. Unfortunately, these conditions appear to persist, rendering the same still-recovering populations extremely vulnerable to future disasters.

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