

# The Syria–Turkey earthquake

## Addendum: Earthquake damage profiles for selected urban areas

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This addendum provides initial assessment data for ten select urban areas in northwestern Syria. These ten cities were selected by HAT to indicate overall geographic trends of the earthquake's impact in northwest Syria, based on reported high levels of damage, large population centers, and importance as primary market hubs as determined by REACH in September 2021.

Each profile contains pre-earthquake population statistics, night light reflectance (NLR) assessments, remote-sensed damage assessments, and composite needs scores for the associated subdistrict, as per REACH's 13 February Rapid Needs Assessment.

The NLR assessment compares satellite night light averages from January 2023 and with NLR immediately after the earthquake (7 February) and one week after (12 February); the structure damage assessments were conducted with satellite imagery from 11 February.

The REACH composite scores for infrastructure damage and service accessibility were averaged for available locations at the subdistrict level. No data was available for Daret Azza subdistrict. Values closer to one indicate more infrastructure damage and less service accessibility for the respective composite score indicators. Please see Annex 1 of the REACH's "Earthquake Response Rapid Needs Assessment" for an explanation of the methodology.

REACH Dataset: <https://www.reachresourcecentre.info/country/syria/cycle/54553/?toip-group=data&toip=dataset-database#cycle-54553>

REACH Rapid Needs Assessment: [https://www.impact-repository.org/document/reach/4a432aaf/REACH\\_NWS-NGO-Forum\\_Earthquake\\_RNA\\_Situation-Overview\\_15-February-2023.pdf](https://www.impact-repository.org/document/reach/4a432aaf/REACH_NWS-NGO-Forum_Earthquake_RNA_Situation-Overview_15-February-2023.pdf)

Changes in night lights reflectance (NLR) for each of the ten locations was calculated using night lights satellite imagery (<https://eogdata.mines.edu/products/vnl/>). The graphs show the growth rate of NLR, from pre-earthquake NLR levels to NLR levels recorded immediately after the earthquake (7 February) and the post-rescue period (14 February). The pre-earthquake NLR is the average NLR of 3 January and 24 January 2023. These pre-earthquake NLR images were selected because they were the only two images falling on the same day of the week as the 7 February and 14 February (to account for potential weekly seasonality) that also had the least amount of cloud cover. Some NLR growth rate statistics could not be computed due to a lack of cloud-free NLR measurements a certain time period for that location; therefore, some NLR growth rate statistics are missing from the graphs.

*Disclaimer: The damage assessment maps in this addendum were produced using "version 1.0" of a methodology applying Sentinel-1 imagery to identify urban earthquake damage. The HAT will continue to refine the methodology in upcoming research.*

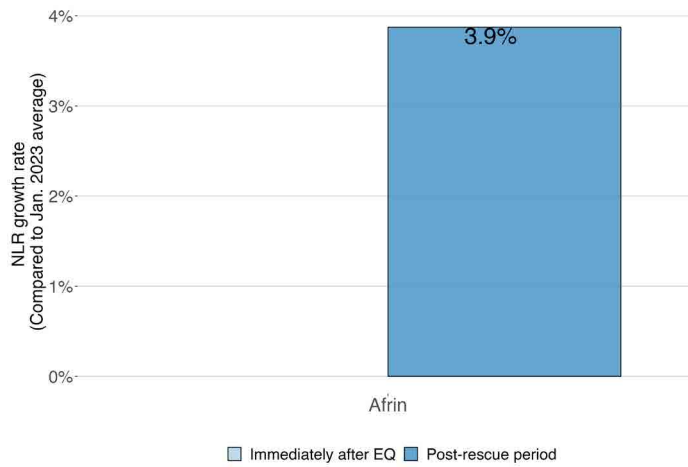
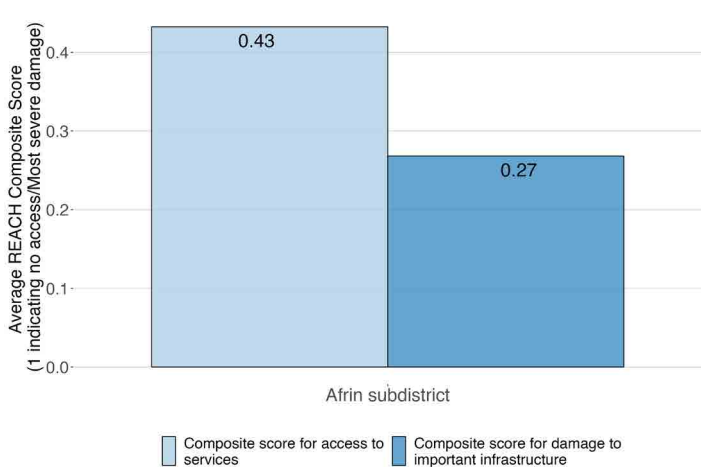
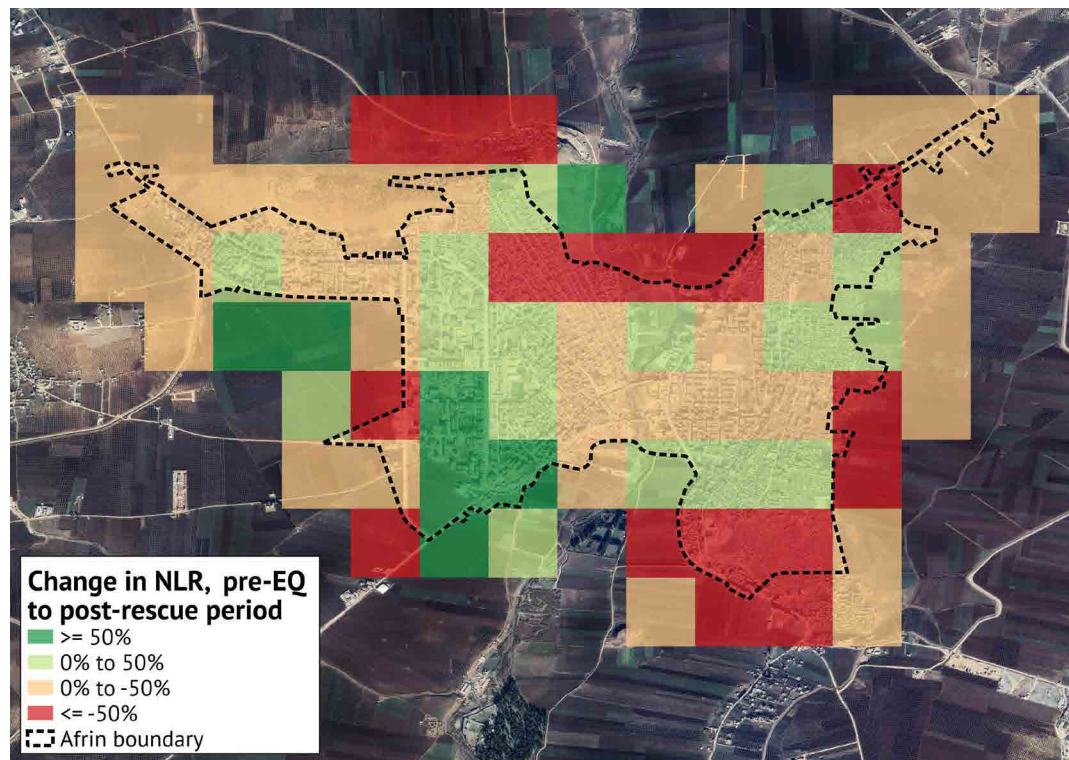
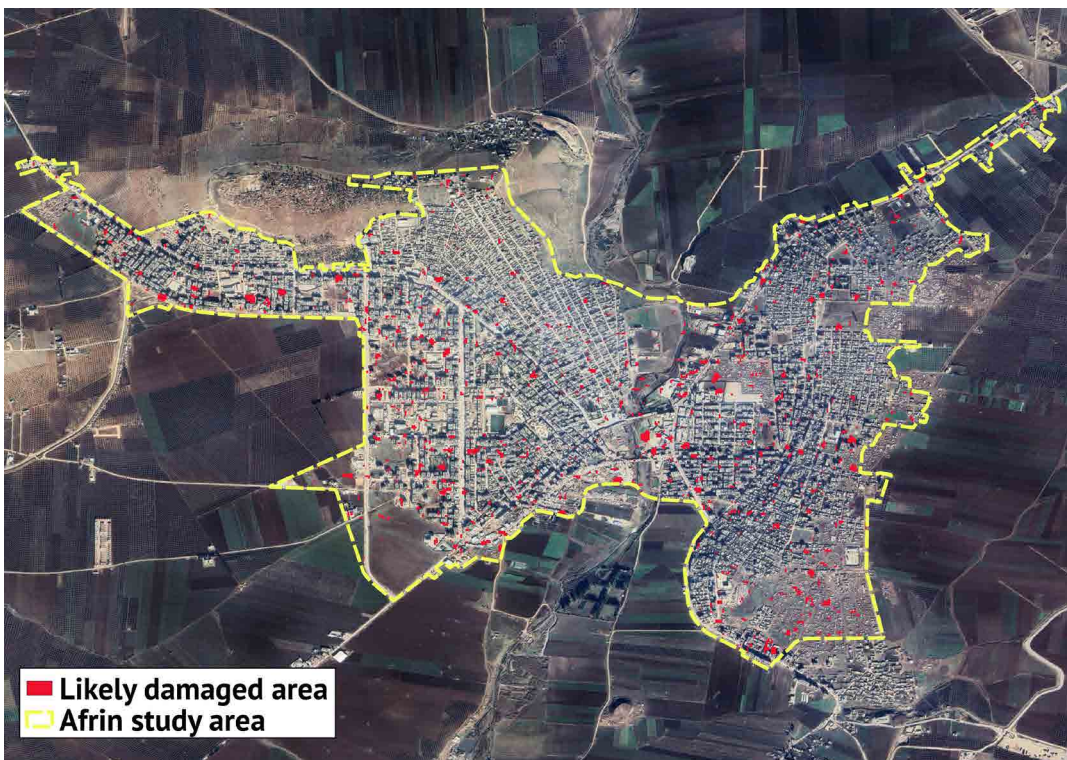


Figure 1. (top left) Likely earthquake-damaged areas

Figure 2. (top right) Night lights reflectance growth rates from the pre-earthquake (Jan. 2023 average) to post-rescue period (Feb. 14).

Figure 3. (bottom left) The REACH composite indicator of infrastructure damage and service accessibility, averaged by subdistrict.

Figure 4. (bottom right) Night lights reflectance growth rates from the pre-earthquake period (Jan. 2023 average) to the night after the earthquake (Feb. 7) and the post-rescue period (Feb. 14).



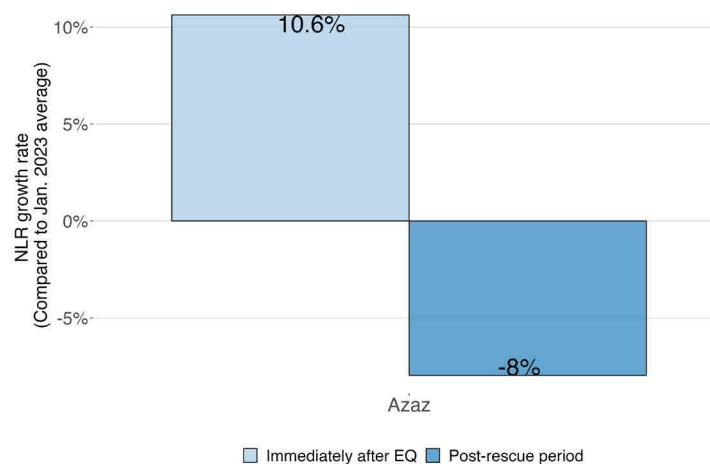
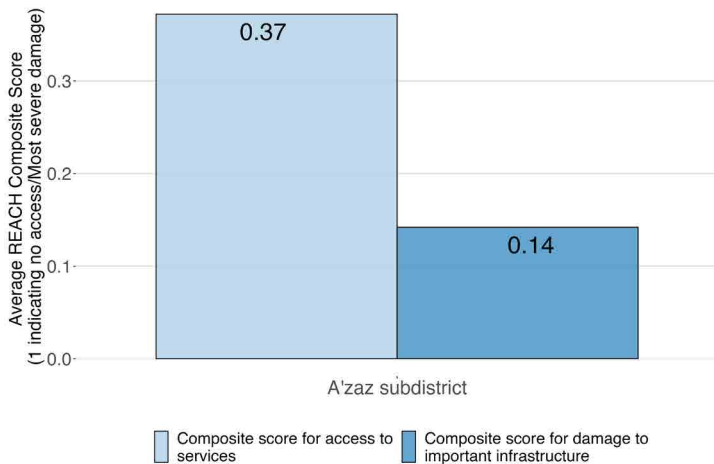
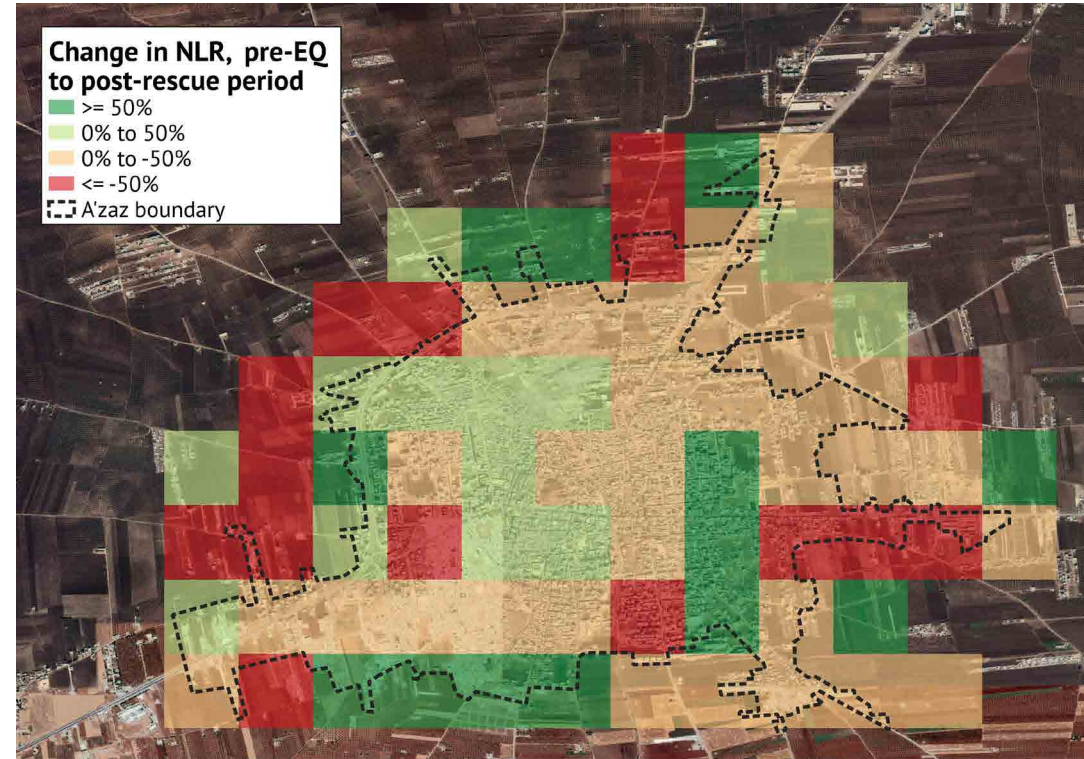
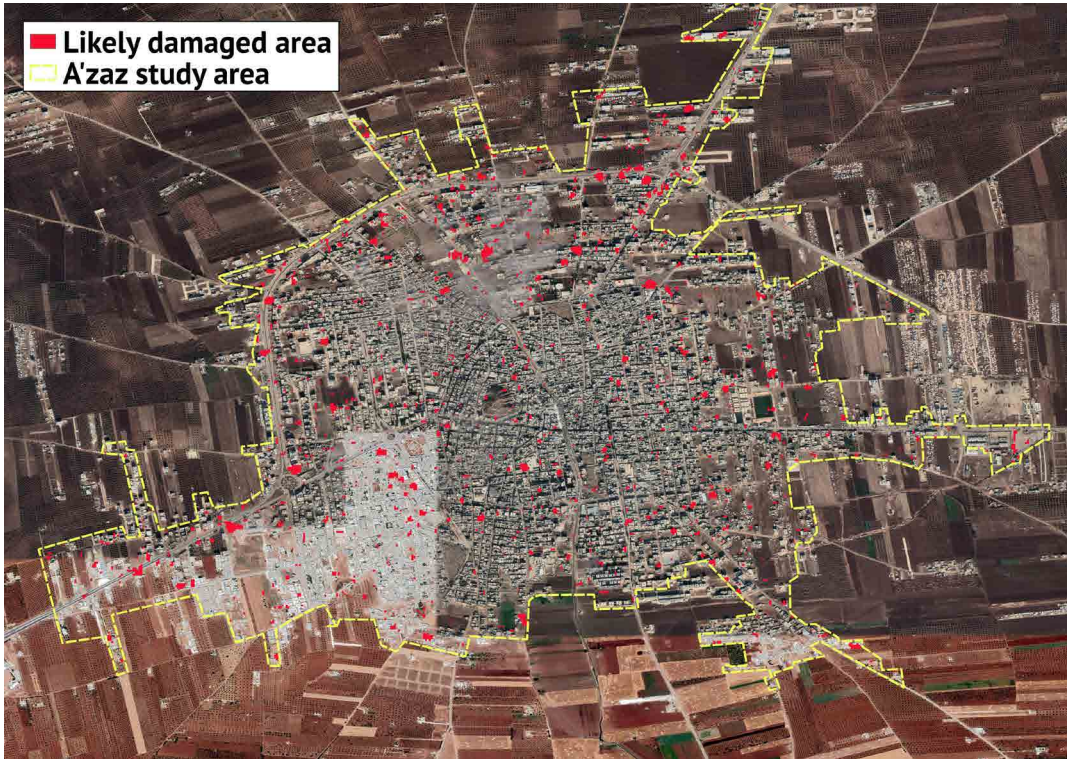


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# Dana & Sarmada

Total Population: 174,047  
Residents: 65,478  
IDPs: 108,569

Returns: 0  
IDPs as a percentage of population: 62%

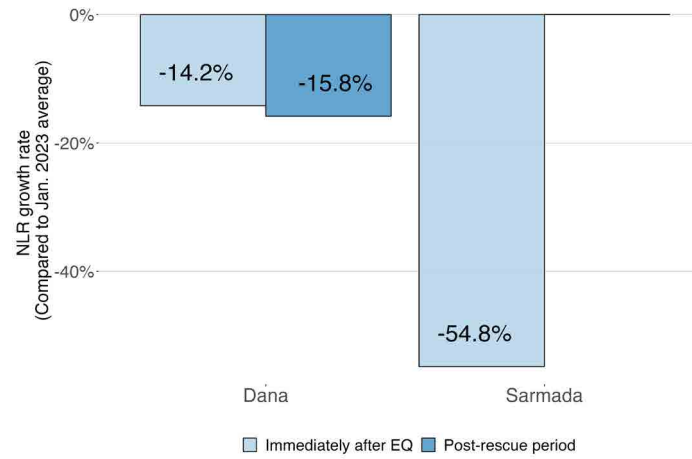
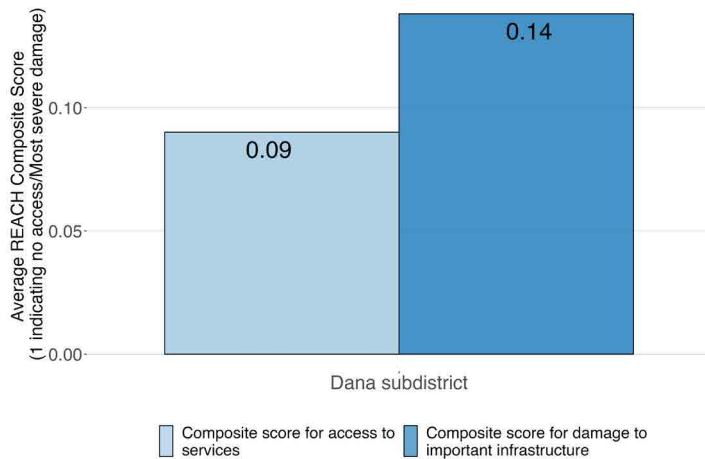
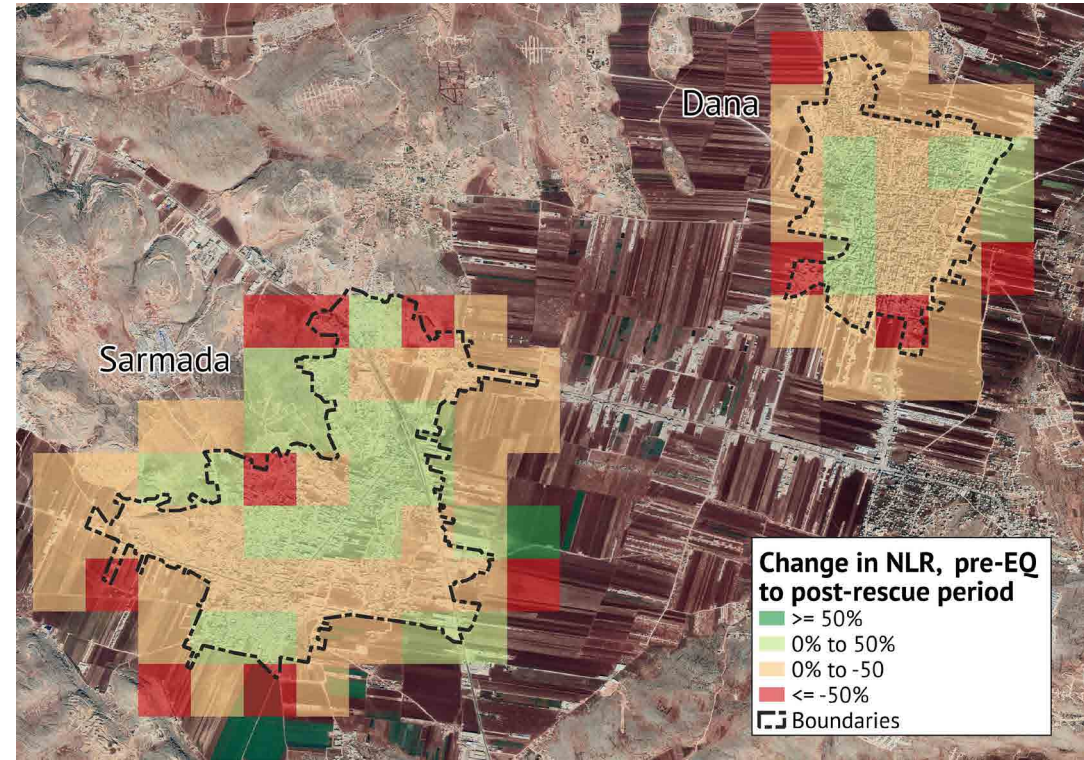
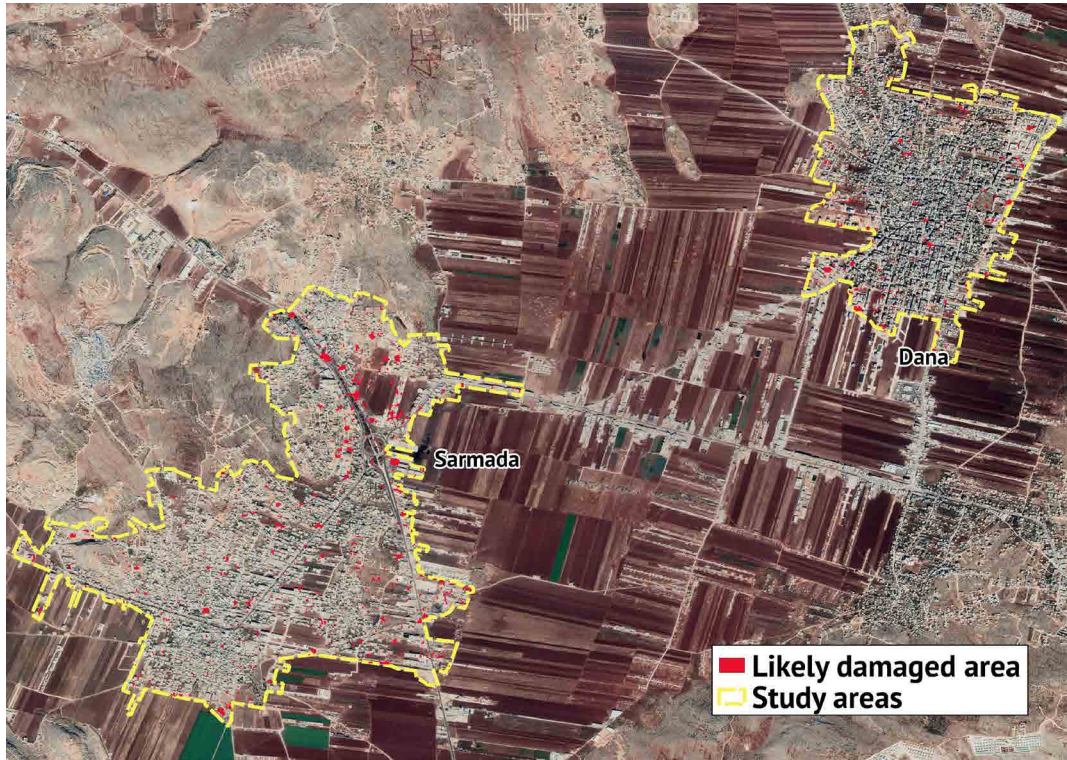


Figure 1. (top left) Likely earthquake-damaged areas

Figure 2. (top right) Night lights reflectance growth rates from the pre-earthquake (Jan. 2023 average) to post-rescue period (Feb. 14).

Figure 3. (bottom left) The REACH composite indicator of infrastructure damage and service accessibility, averaged by subdistrict.

Figure 4. (bottom right) Night lights reflectance growth rates from the pre-earthquake period (Jan. 2023 average) to the night after the earthquake (Feb. 7) and the post-rescue period (Feb. 14).



# Daret Azza

Total Population: 37,263  
Residents: 25,000  
IDPs: 12,263 0

Returns: 0  
IDPs as a percentage of population: 33%

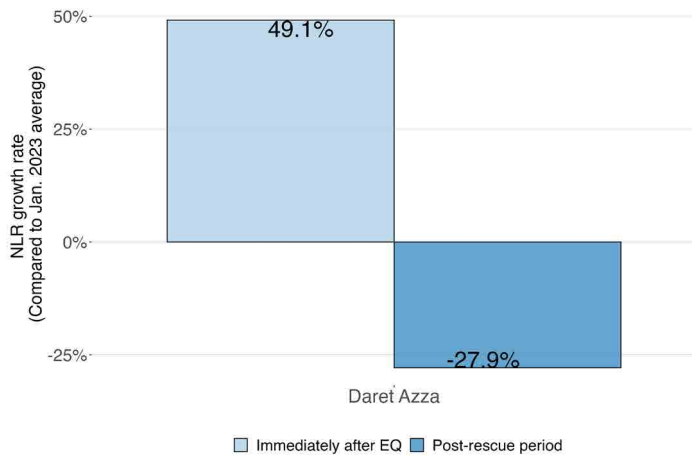
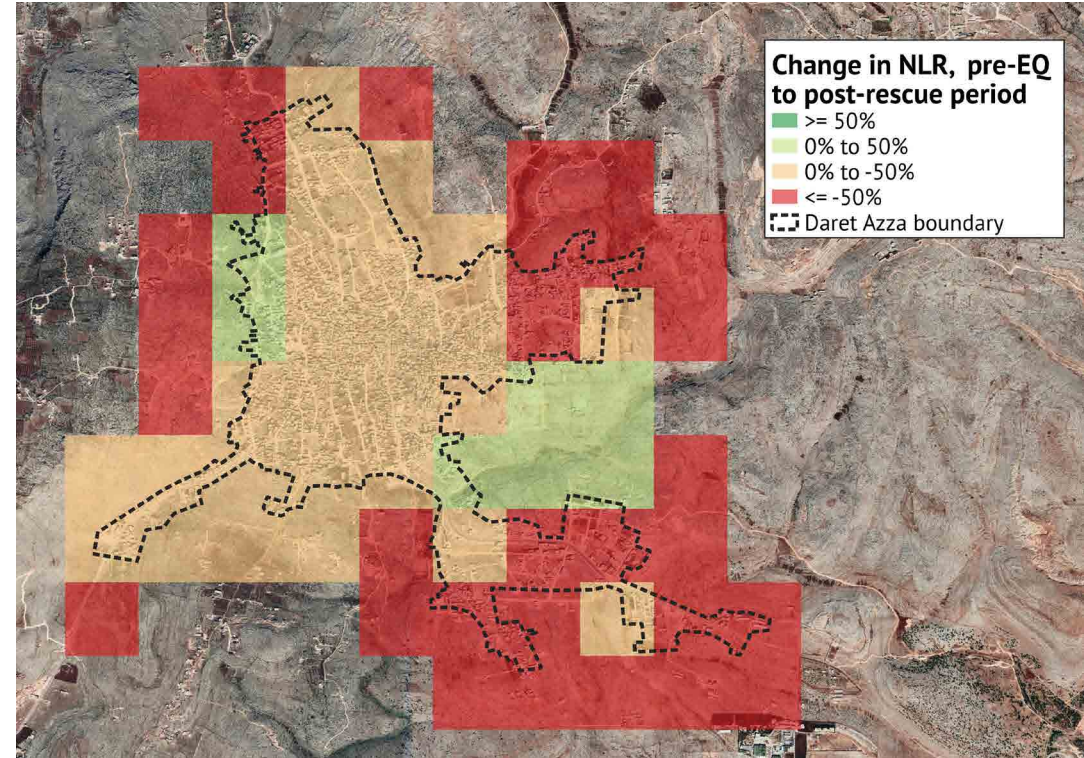
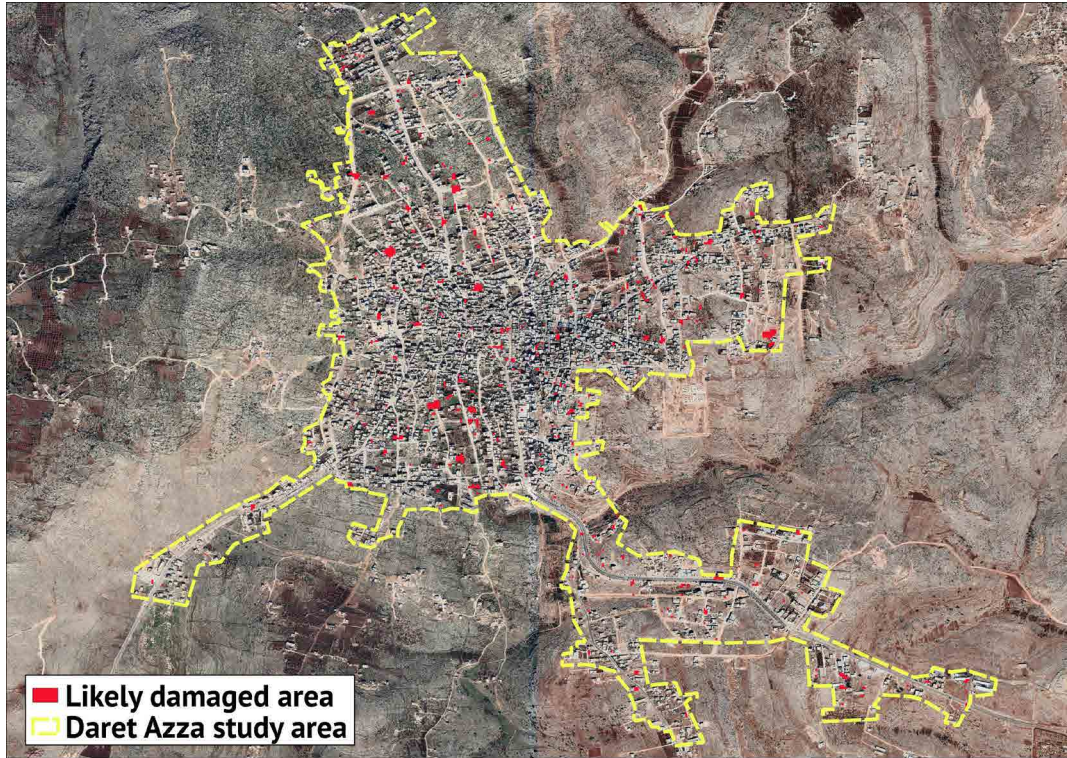


Figure 1. (top left) Likely earthquake-damaged areas

Figure 2. (top right) Night lights reflectance growth rates from the pre-earthquake (Jan. 2023 average) to post-rescue period (Feb. 14).

Figure 3. (bottom) Night lights reflectance growth rates from the pre-earthquake period (Jan. 2023 average) to the night after the earthquake (Feb. 7) and the post-rescue period (Feb. 14).

**NB. REACH data did not cover Daret Azza, and so composite score of indicator of infrastructure damage and service accessibility is unavailable for this area.**



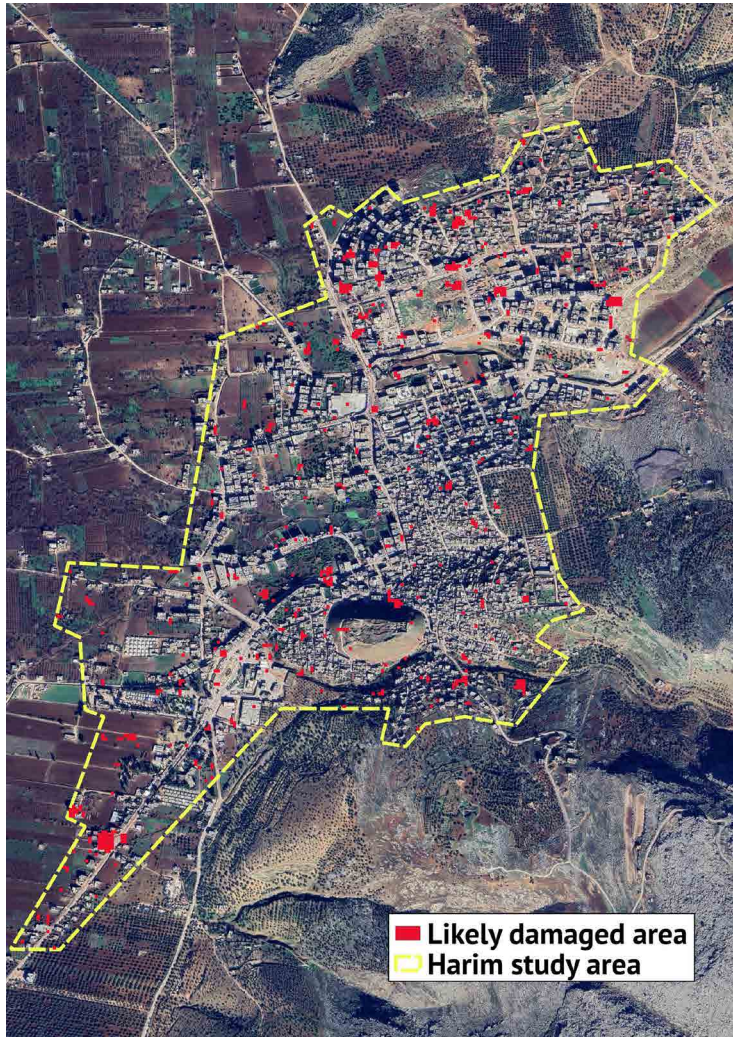


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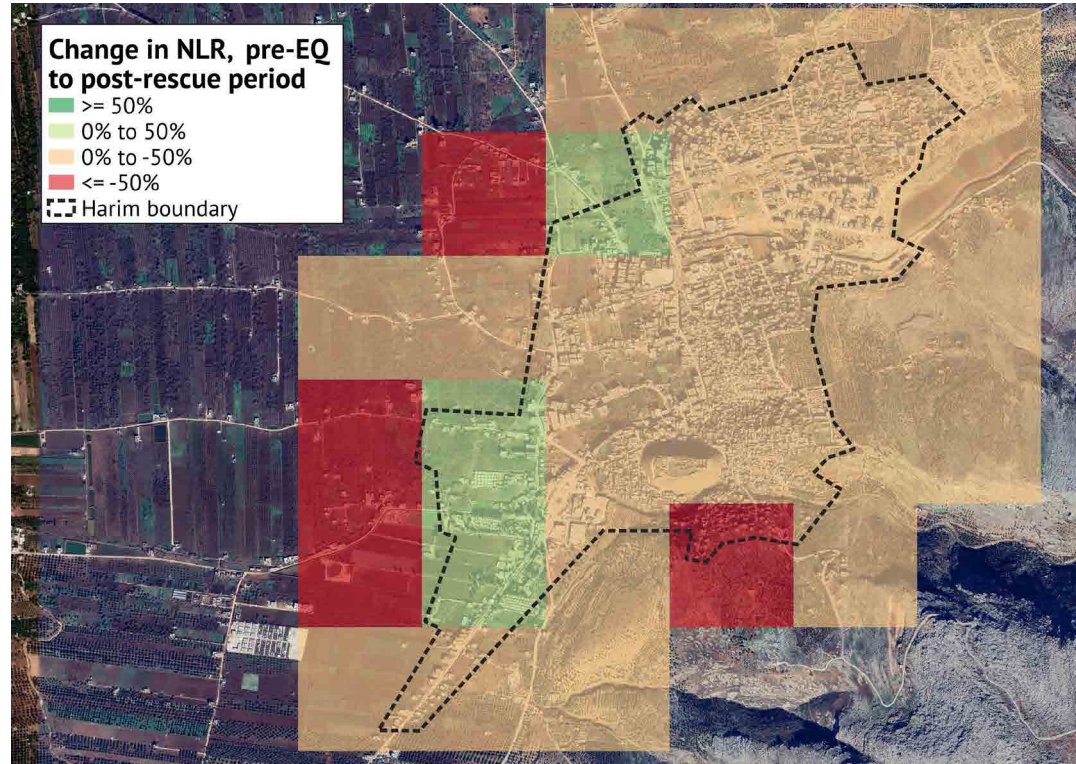


Figure 3. (bottom left) The REACH composite indicator of infrastructure damage and service accessibility, averaged by subdistrict.

Figure 4. (bottom right) Night lights reflectance growth rates from the pre-earthquake period (Jan. 2023 average) to the night after the earthquake (Feb. 7) and the post-rescue period (Feb. 14).

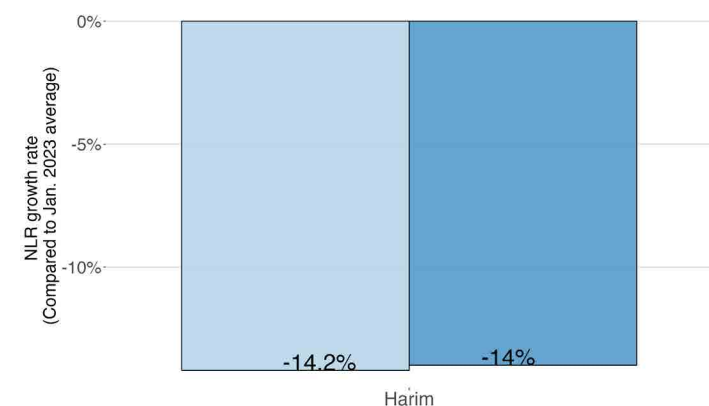
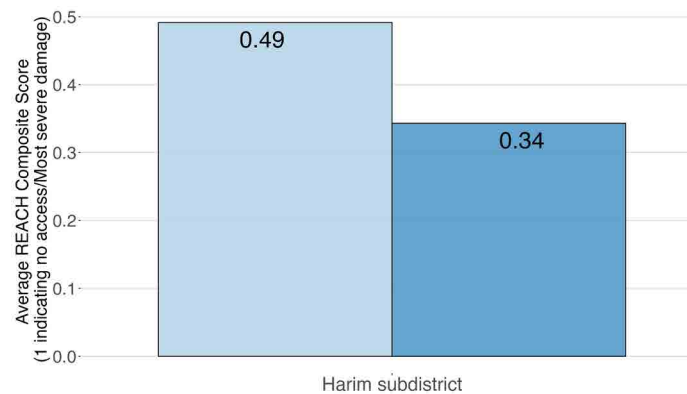


Figure 2. (top right) Night lights reflectance growth rates from the pre-earthquake (Jan. 2023 average) to post-rescue period (Feb. 14).

Composite score for access to services | Composite score for damage to important infrastructure

Immediately after EQ | Post-rescue period



# Jandairis

Total Population: 43,483

Residents: 6,092

IDPs: 37,391

Returns: 0

IDPs as a percentage of population: 86%

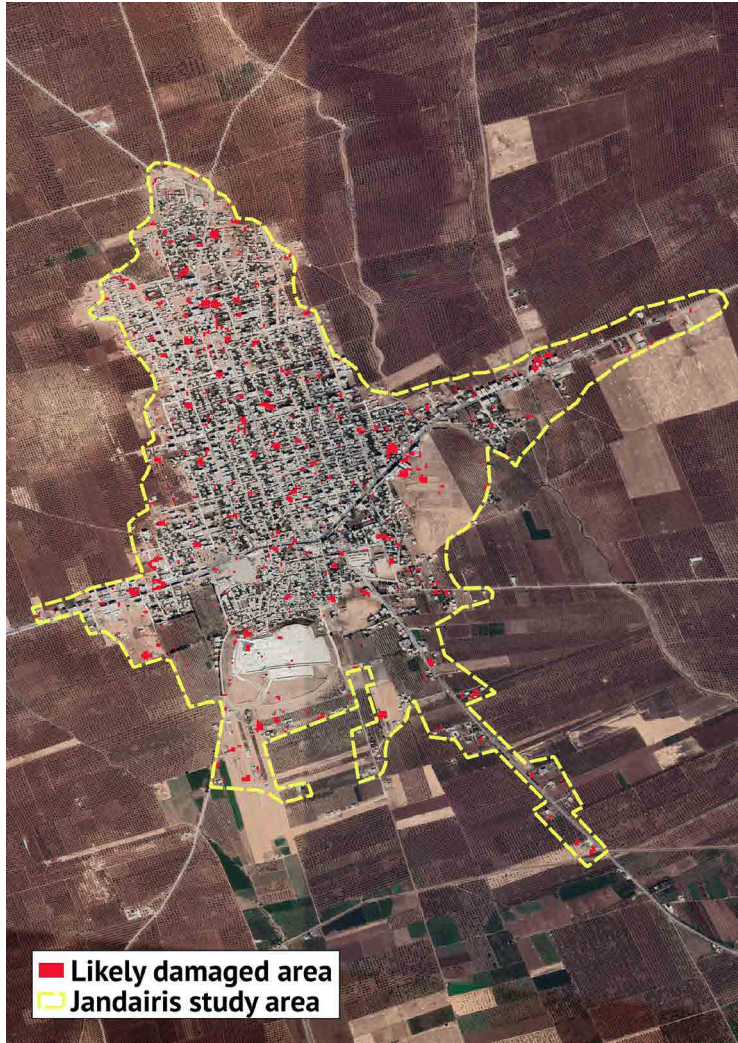


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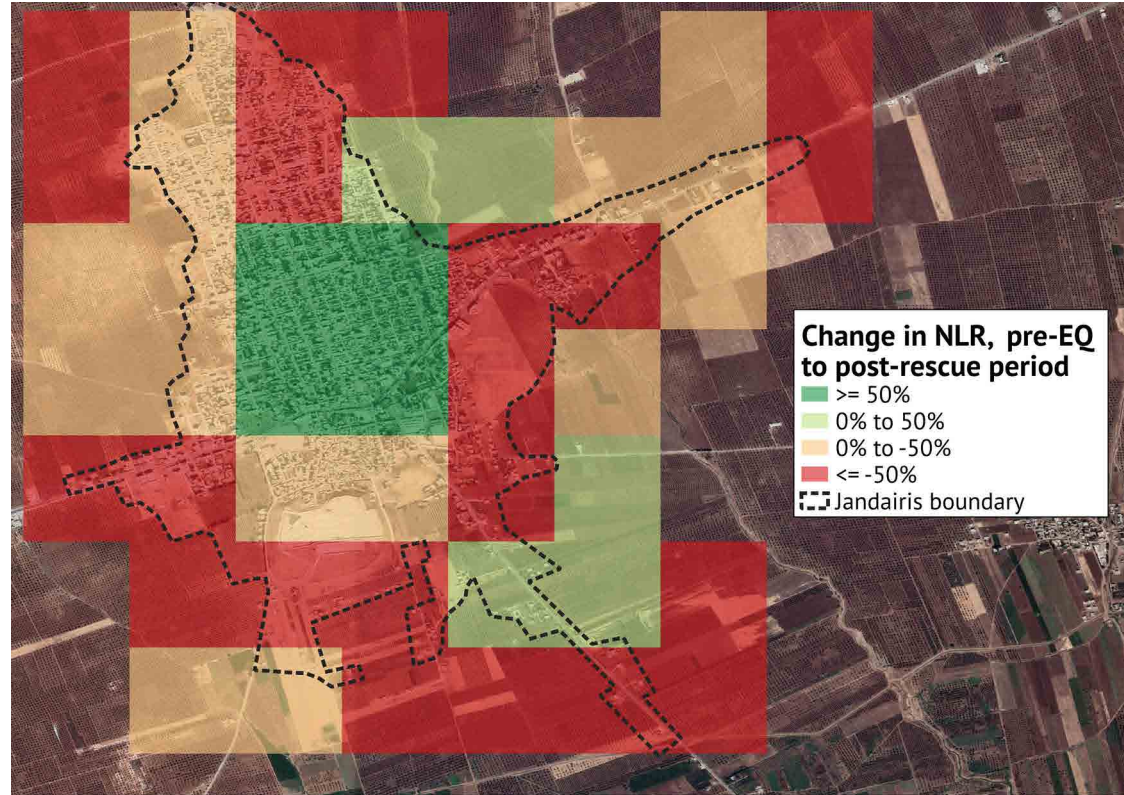
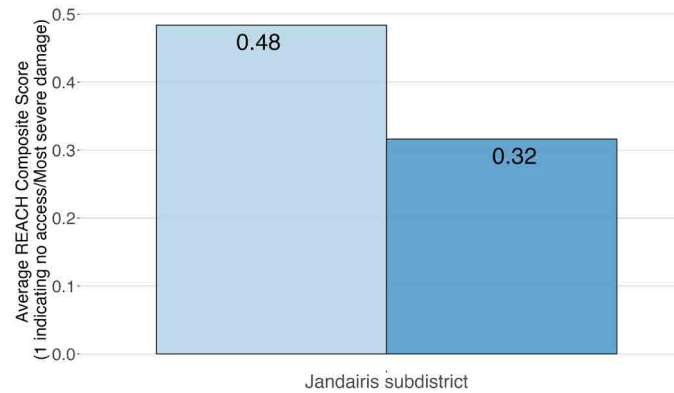
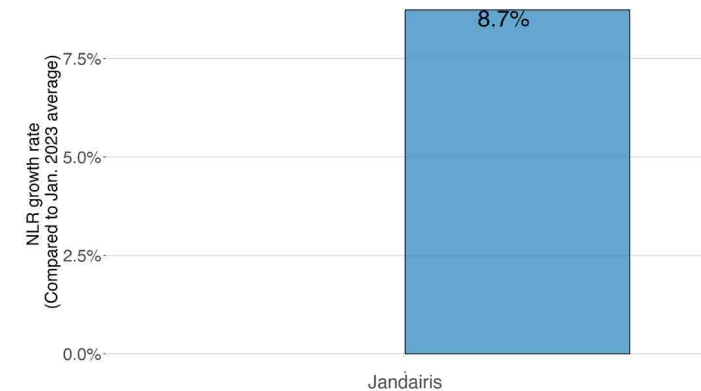


Figure 3. (bottom left) The REACH composite indicator of infrastructure damage and service accessibility, averaged by subdistrict.

Figure 4. (bottom right) Night lights reflectance growth rates from the pre-earthquake period (Jan. 2023 average) to the night after the earthquake (Feb. 7) and the post-rescue period (Feb. 14).



Legend: ■ Composite score for access to services, ■ Composite score for damage to important infrastructure



Legend: ■ Immediately after EQ, ■ Post-rescue period



# Jisr Ash-Shugur

Total Population: 25,077

Residents: 19,736

IDPs: 3,350

Returns: 1,991

IDPs as a percentage of population: 14%

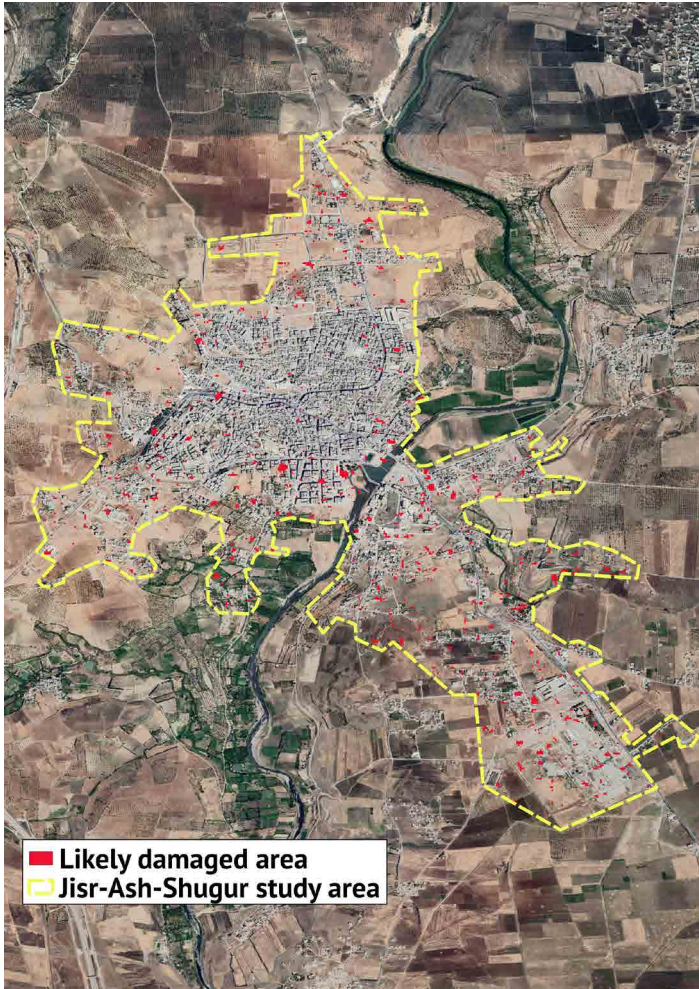


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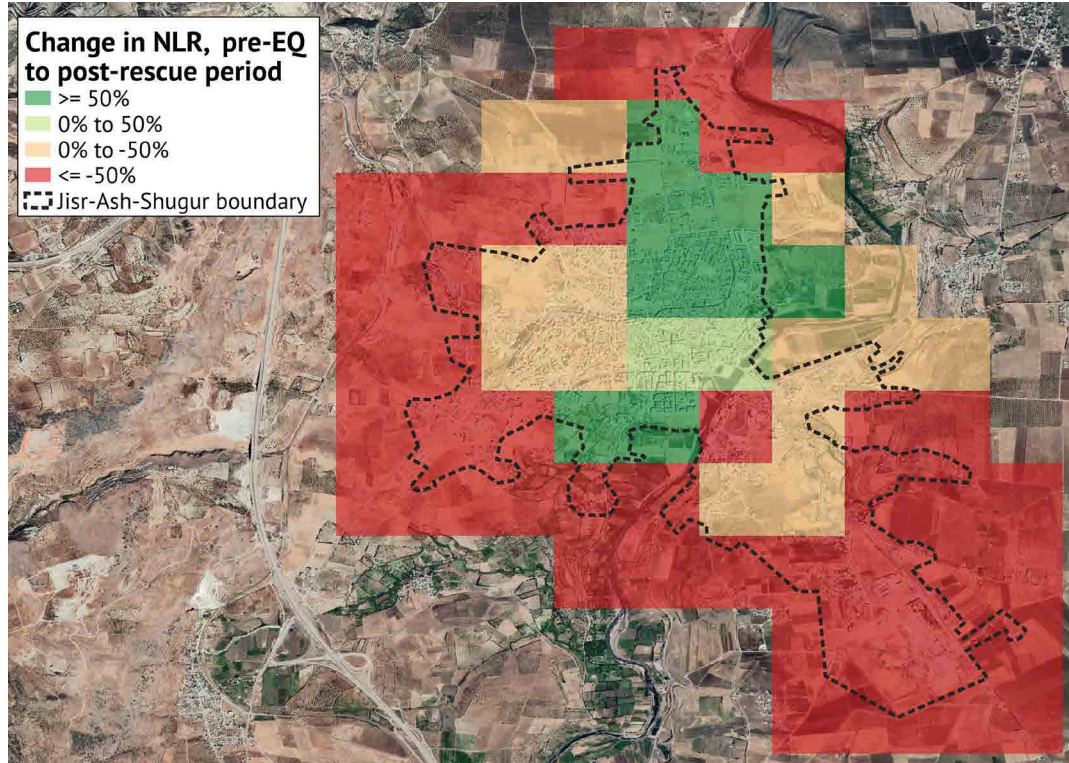
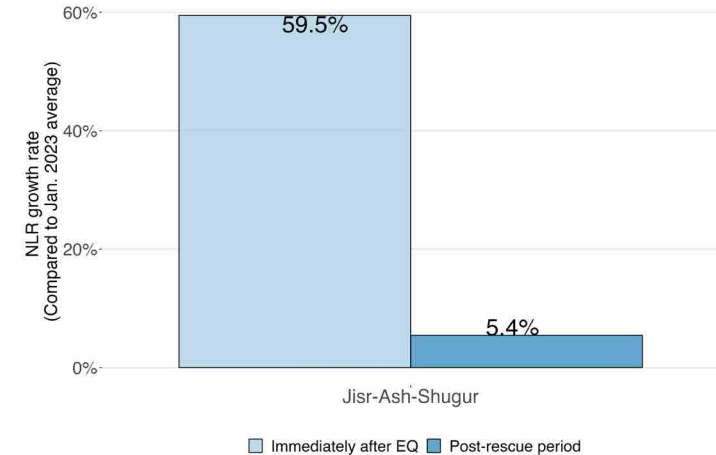
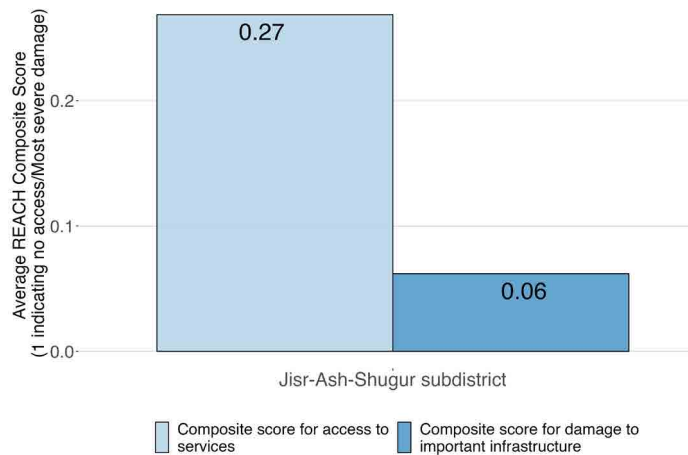


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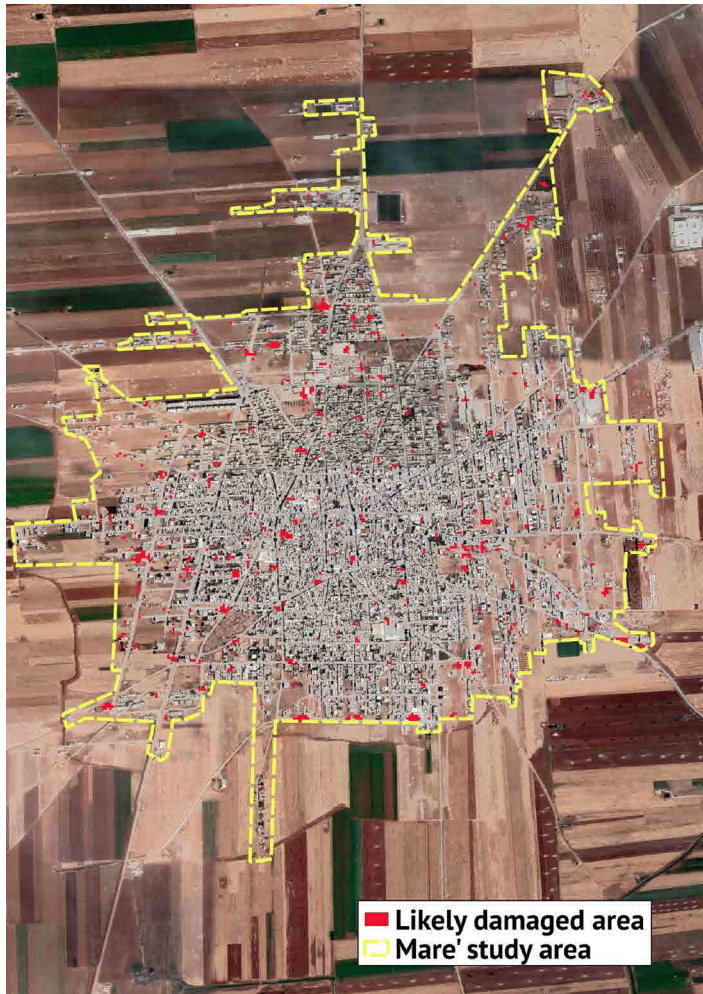


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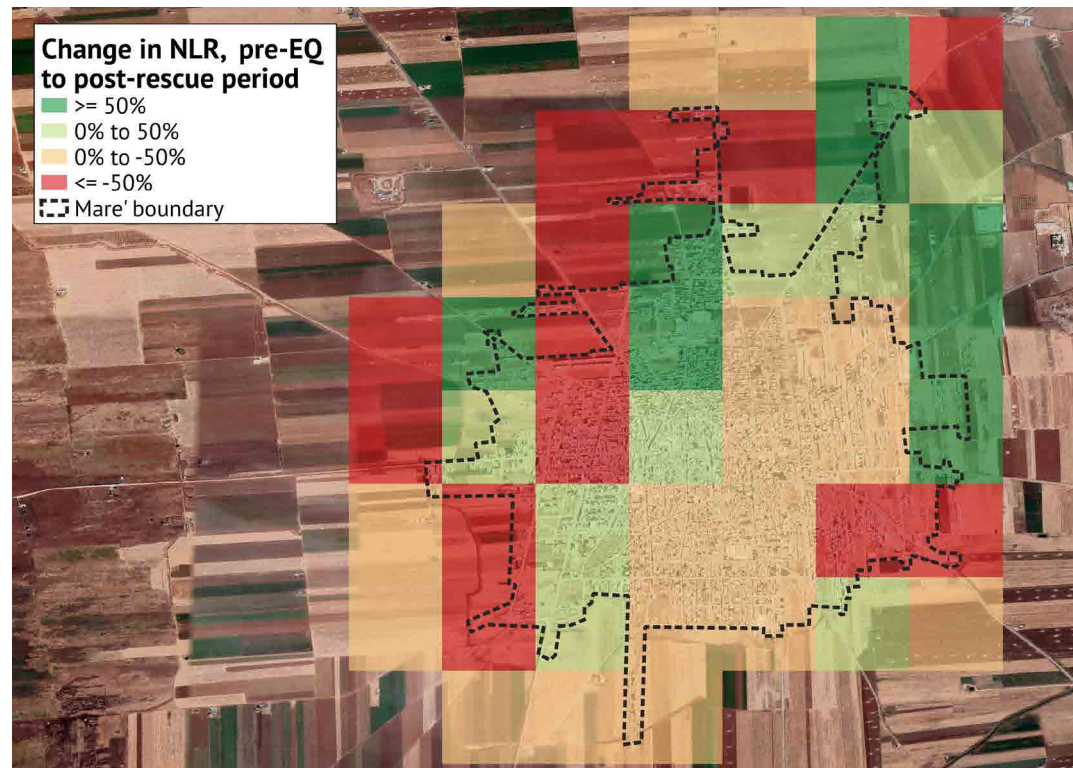
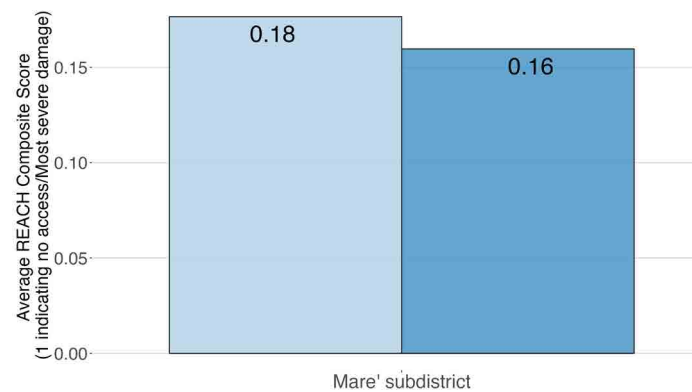
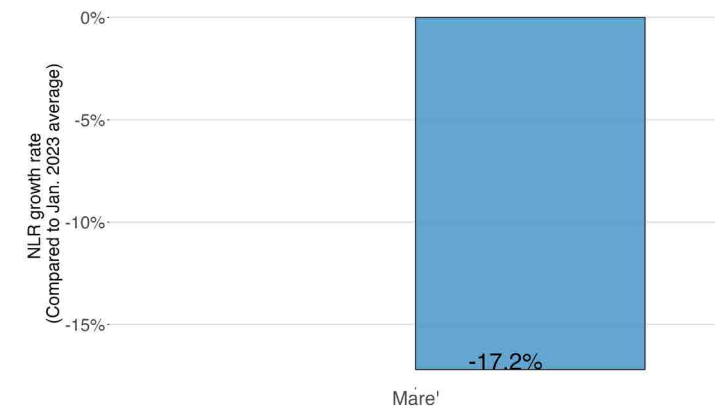


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Composite score for access to services | Composite score for damage to important infrastructure



Immediately after EQ | Post-rescue period



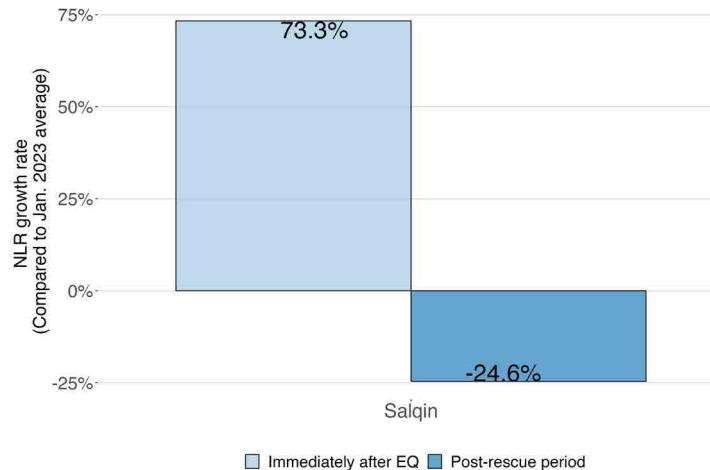
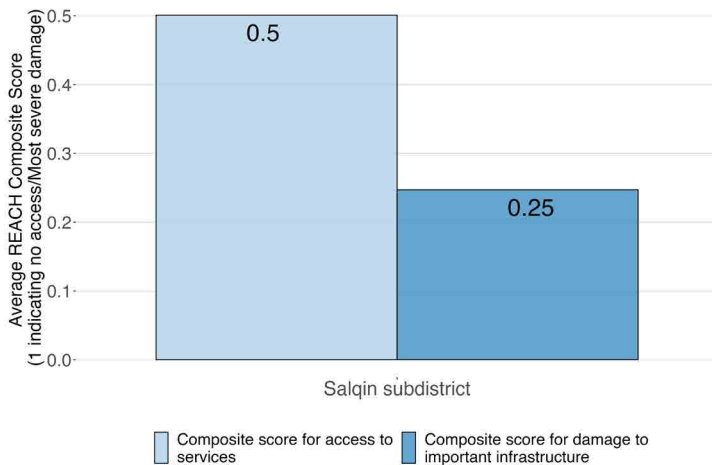
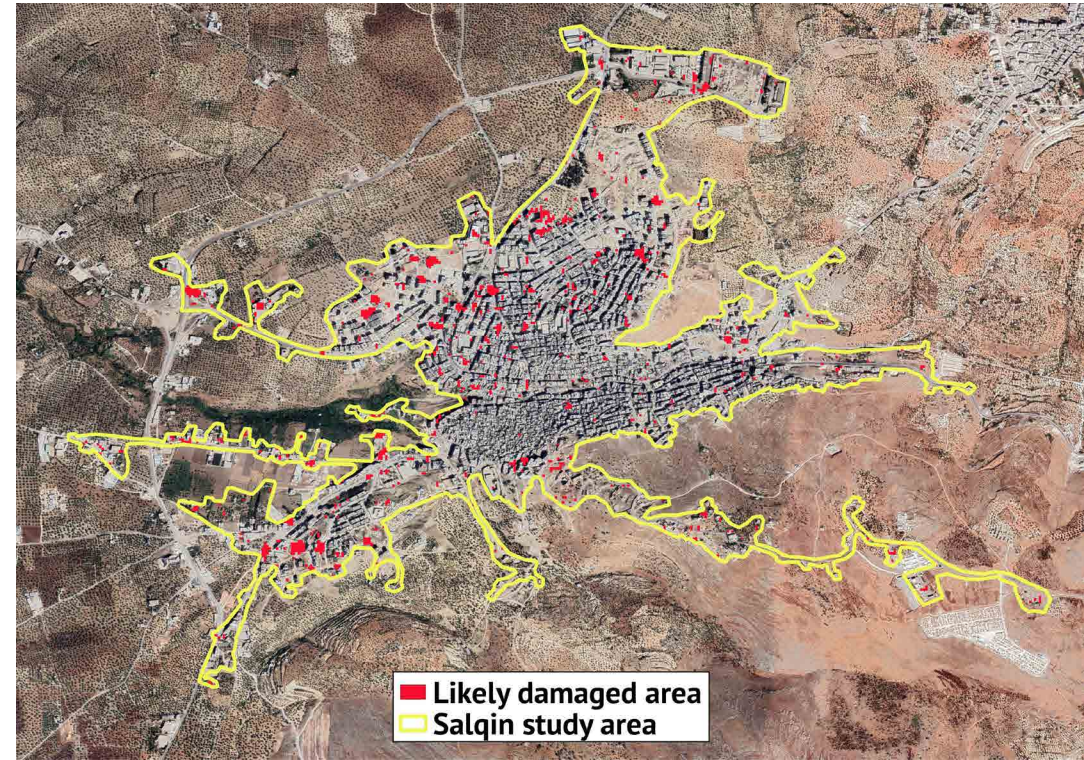
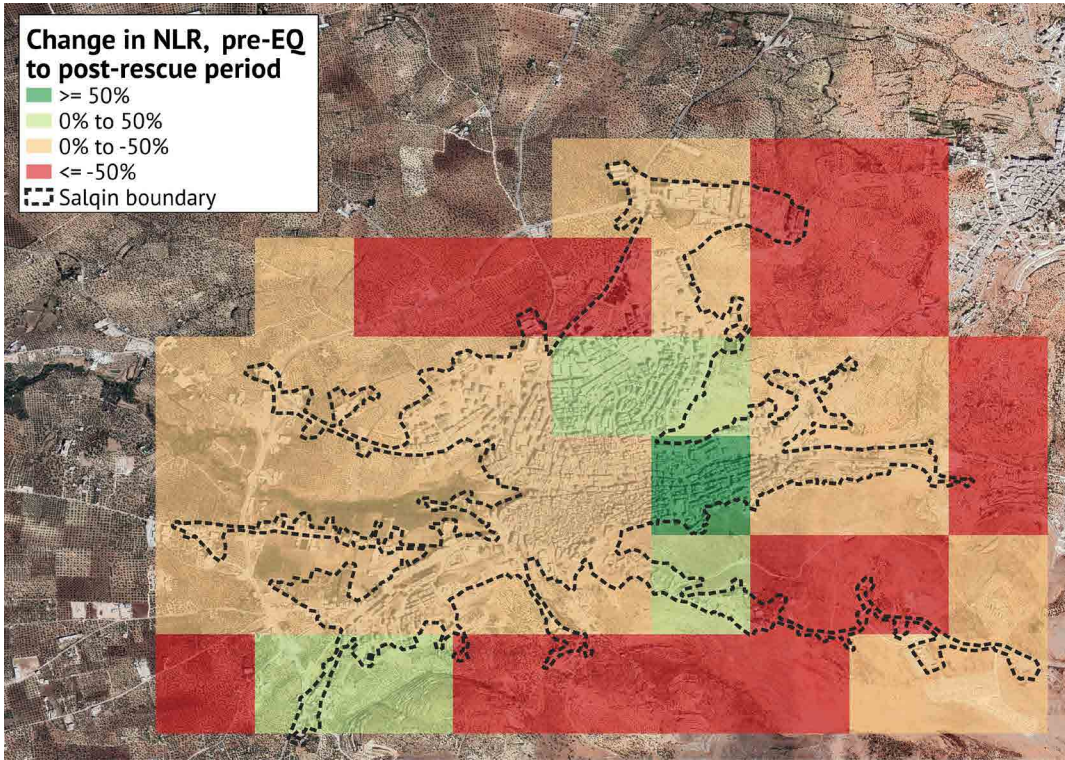


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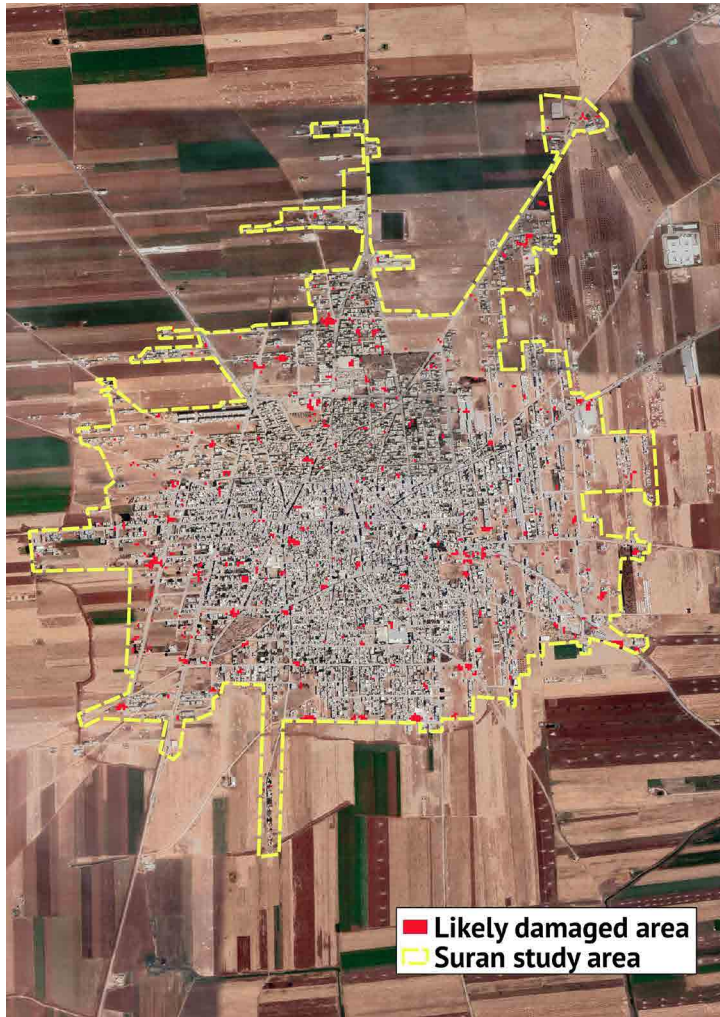


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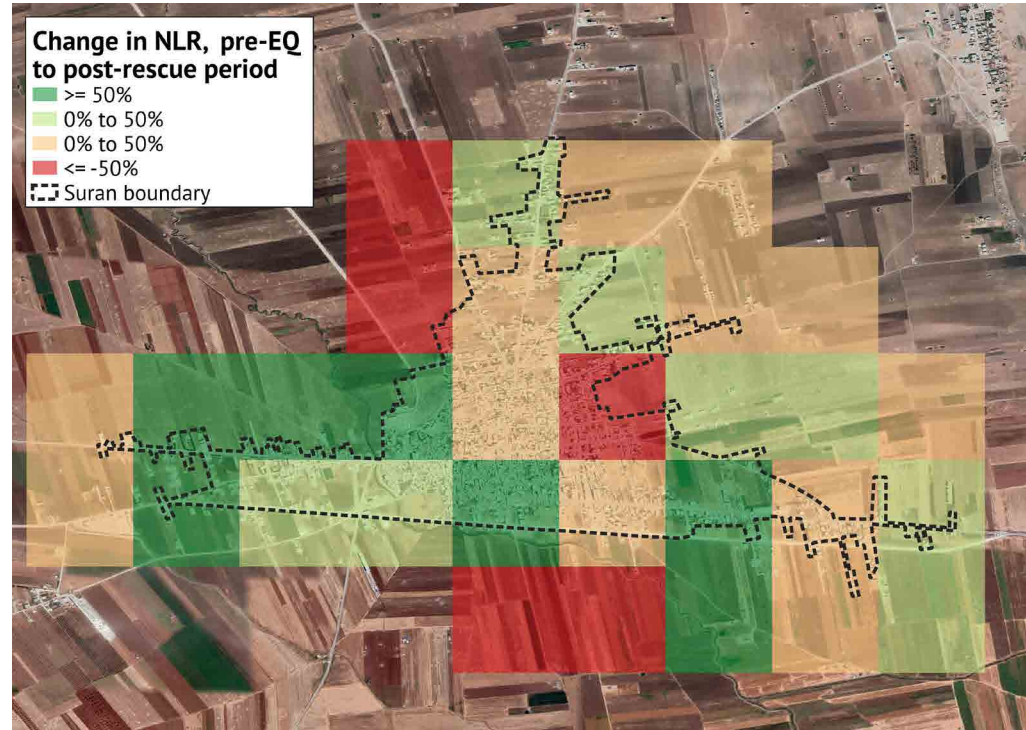


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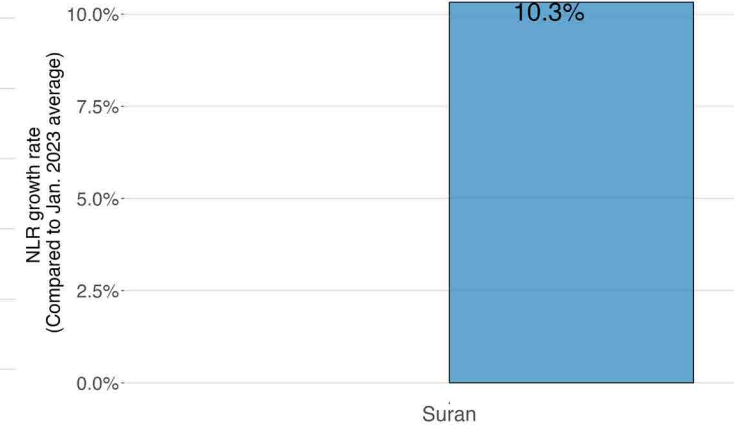
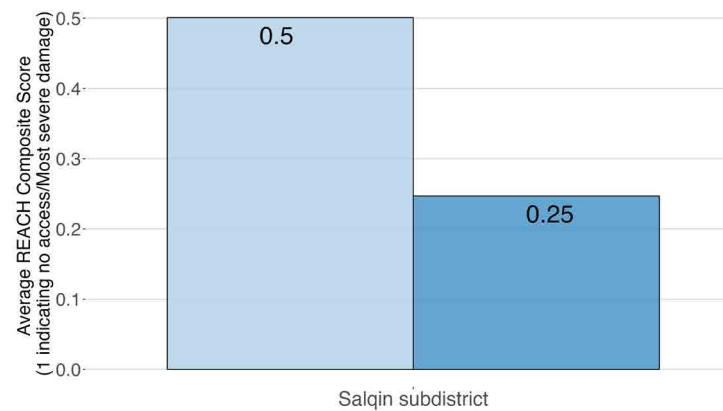


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Composite score for access to services | Composite score for damage to important infrastructure

Immediately after EQ | Post-rescue period