

Earthquake: province profiles for Azilal, Ouarzazate, and Marrakesh prefecture

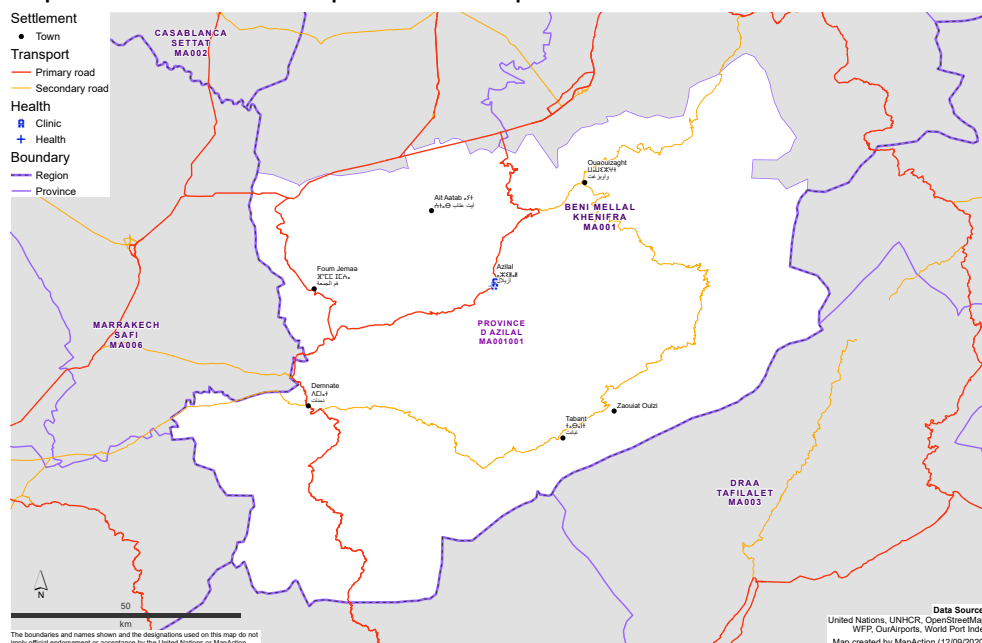
OVERVIEW OF THE SITUATION IN MOROCCO

More than 380,000 people were exposed to the impact of a magnitude 6.8 earthquake that hit Morocco on 8 September 2023 at 23:11 local time. Since the initial quake, a magnitude 4.9 aftershock (19 minutes after the initial quake) and a magnitude 3.9 aftershock (on Sunday, 10 September) have hit the country (AP 11/09/2023; VOA 10/09/2023). The most affected provinces are al-Haouz, Azilal, Chichaoua, Marrakesh, Ouarzazate, and Taroudant. The earthquake particularly affected remote mountainous villages, as boulders led to road closures, making access challenging and slowing down rescue efforts (NYT 09/09/2023; Rum Online 10/09/2023; MWN 11/09/2023). As at 13 September, over 2,900 deaths and over 5,600 injuries had been recorded

across Morocco, with over 1,450 deaths in al-Haouz province alone. The exact number of fatalities for other affected provinces is unclear (France 24 13/09/2023; HOPE 11/09/2023; Al Jazeera 13/09/2023; OCHA 11/09/2023). Humanitarian needs in the affected provinces persist, with food, clean water, psychosocial support, shelter, and blankets being reported as priority needs (ACAPS 10/09/2023; Action for Humanity 13/09/2023). Across all affected areas, the earthquake has affected about 100,000 children, who likely need protection assistance (UNICEF 11/09/2023). It has damaged over 500 schools, affecting Chichaoua and Taroudant provinces the most (Action for Humanity 13/09/2023).

AZILAL PROVINCE (BÉNI MELLAL-KHÉNIFRA REGION)

Map 1. Main roads and airports of Azilal province



Source: MapAction. See full map on page 5.

Earthquake-related deaths	11 (CNN 10/09/2023)
Total population (in 2020)	566,889 (City Population accessed 13/09/2023 a)
Population under 15 years old (in 2014)	184,198 (City Population accessed 13/09/2023 a)
Population over 65 years old (in 2014)	34,677 (City Population accessed 13/09/2023 a)
Projected population density (in 2020)	59.05/km ² (City Population accessed 13/09/2023 a)
Poverty rates in Béni Mellal-Khénifra (in 2014)	13.4% (NEREUS 2020)

Access constraints

- Access to information on the impact of the earthquake, including on humanitarian needs, is limited, and restricted physical access to affected communities makes the scale of needs difficult to determine and verify.

Impact overview

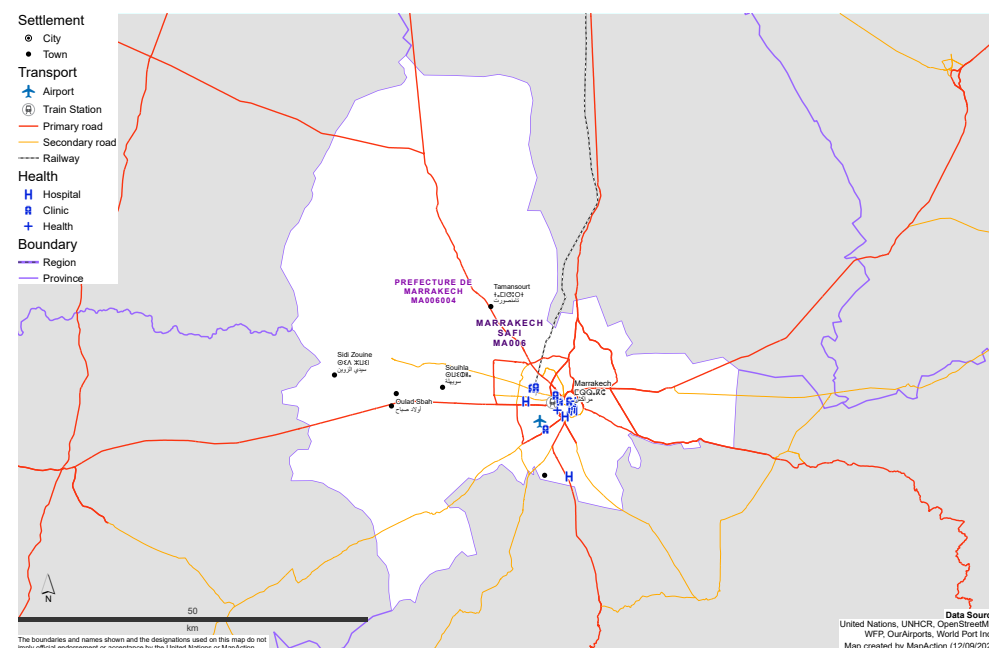
- As at 9 September, about 11 deaths had been recorded in Azilal province, although this figure could rise as rescue operations continue (France 24 09/09/2023).
- Significant damage has occurred in rural mountainous areas, although the extent of damage is unclear (HOPE 11/09/2023).

Background information

- The majority of the population lives in rural areas (over 80% as at 2014), and over 80% of the land surface is mountainous (Taïbi et al. 2019; IFAD accessed 13/09/2023).
- Livestock breeding is the main livelihood in Azilal province, although small-scale cereal farming occupies most of the cultivable land in mountainous areas (Taïbi et al. 2019; UNDP accessed 13/09/2023; Bernis-Fonteneau et al. 01/07/2023). The planting season is typically from December–March, with harvesting for cereals done in June (Global Giving accessed 14/09/2023; Balaghi et al. 11/2013; USAID 01/10/1981).
- The climate in Azilal province is semi-arid, with extreme temperatures during winters and summers. The average rainfall in the province ranges from 550–700mm per year, which is below the national average. The snow during winters accounts for 20–30% of precipitation (Taïbi et al. 2019; UNDP accessed 13/09/2023).
- Changes in climatic conditions over the past decades include the increased frequency and intensity of rainstorms, decreased snowfall and water levels, and increased drought (UNDP accessed 13/09/2023). Extreme weather events contribute to the development of poor soils that are susceptible to erosion, affecting food and pasture availability (Taïbi et al. 2019). Climate change vulnerability among communities in Azilal province remains high because of the combination of extreme weather events, soil degradation, high poverty and illiteracy rates, and isolation, given that most of its people live in rural areas (Taïbi et al. 2019; UNDP accessed 13/09/2023; IFAD accessed 13/09/2023).
- School enrollment rates are low in Azilal province, particularly among women, who present with high illiteracy and poverty rates. Up-to-date information on poverty and illiteracy rates in the province is lacking, although previous estimates put the poverty rate at 9.3% in 2007 and the illiteracy rate at over 60% in 2014 (Taïbi et al. 2019).

MARRAKESH PREFECTURE (MARRAKESH-SAFI REGION)

Map 2. Main roads and airports of Marrakesh prefecture



Source: MapAction. See full map on page 6.

Earthquake-related deaths	15 (CNN 10/09/2023)
Total population (in 2014)	1,330,468 (City Population accessed 13/09/2023 b)
Population under 15 years old (in 2014)	N/A
Population over 65 years old (in 2014)	N/A
Population density (in 2014)	508.4/km ² (City Population accessed 13/09/2023 b)
Poverty rates in Marrakesh-Safi region (in 2014)	11.3% (NEREUS 2020)

Access constraints

- Blocked roads and rubble on alleyways in Marrakesh are delaying access and assistance delivery to earthquake victims (Al Jazeera 09/09/2023).
- There are traffic build-ups on access roads as people seek to move out of Marrakesh, and the use of roads as a shelter alternative is slowing down response times, posing significant access constraints to aid responders (BBC 10/09/2023).

Impact overview

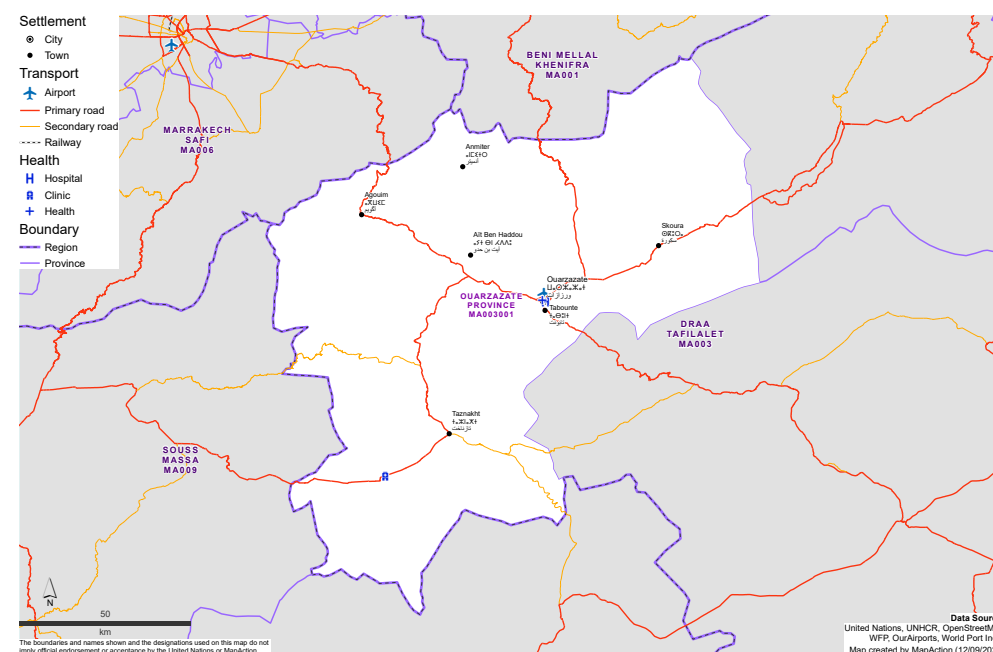
- The earthquake affected an estimated 300,000 residents of Marrakesh, which was close to the epicentre (OCHA 09/09/2023; BBC 10/09/2023).
- Nine people died in Imlil village in the High Atlas Mountains after the earthquake caused their houses to collapse (AA 09/09/2023).
- Mohammed VI University Hospital in Marrakesh is receiving patients from across the region and has had to treat some of the injured outside the hospital given a lack of space (Al Jazeera 14/09/2023; CNN 09/09/2023). As at 9 September, the high patient caseload from the remote mountainous region in al-Haouz province adding to the injured residents of Marrakesh had completely overwhelmed the prefecture's health infrastructure (AP 13/09/2023; CNN 09/09/2023; Al Jazeera 14/09/2023).
- The damage and destruction of buildings have led to widespread displacement among the earthquake-stricken population. Survivors are seeking shelter in open spaces, such as roads, because their houses are damaged or have collapsed or out of fear of the collapse of already damaged buildings (Reuters 10/09/2023; CNN 09/09/2023; US News 10/09/2023).

Background information

- Marrakesh is a UNESCO-protected site (Euronews 11/09/2023). The Marrakesh Prefecture holds historical and cultural heritage as a religious hub and tourist destination (CNN 11/09/2023). The medina (old city) Marrakesh sustained significant damage during the recent earthquake (Int'l Charter/UNOSAT 10/09/2023; The Guardian 10/09/2023).
- Marrakesh receives minimal precipitation because of its arid-like climate. The prefecture experiences its hottest period from May–September. Winter runs from December–February and will likely worsen shelter needs (Hellotickets accessed 14/09/2023). The annual average rainfall in the region is 347mm (Weather & Climate accessed 13/09/2023).
- Marrakesh is a densely populated urban centre with an estimated population of 1,049,690 as at 2023 (World Population Review accessed 13/09/2023). Because of its large population, buildings are closely packed, allowing the earthquake to significantly damage buildings across the city.

OUARZAZATE PROVINCE (DRÂA-TAFILALET REGION)

Map 3. Main roads and airports of Ouarzazate province



Source: MapAction. See full map on page 7.

Earthquake-related deaths	41 (CNN 10/09/2023)
Total population (in 2020)	310,813 (City Population accessed 13/09/2023 c)
Population under 15 years old (in 2014)	89,255 (City Population accessed 13/09/2023 c)
Population over 65 years old (in 2014)	17,894 (City Population accessed 13/09/2023 c)
Projected population density (in 2020)	25.88/km ² (City Population accessed 13/09/2023 c)
Poverty rates in Drâa-Tafilalet region (in 2014)	10% (NEREUS 2020)

Access constraints

- Fallen boulders are possibly blocking some roads, delaying the response, but there is no specific information about this issue in relation to Ouarzazate province (NBC 09/09/2023).
- There is limited information on access constraints in Ouarzazate, but the province is close to urban areas in Marrakesh (Britannica accessed 13/09/2023).

Impact overview

- The extent to which the earthquake has affected Ouarzazate is uncertain, but reports indicate significant damage. The houses in the area are built with traditional earthen materials that may not have been able to withstand the impact of the earthquake. The province is also situated near the epicentre of the earthquake and at the foot of the Atlas Mountain, increasing the likelihood of severe damage to both houses and buildings (Britannica accessed 13/09/2023; BBC 14/09/2023).
- People affected by the earthquake in Ouarzazate report the unequal distribution of aid and need assistance from different sectors (food, NFIs, shelter, health) (MWN 11/09/2023).
- Health services are likely needed because of the unknown injuries and need for psychological counselling resulting from the losses (HOPE 11/09/2023).
- Shelter needs are expected even though the extent of the damage is unclear. There are reports of significant damage to buildings and infrastructure in the affected areas, including residential buildings in the province (Reuters 10/09/2023).

Background information

- The economy of the province is heavily dependent on tourism. The province of Ouarzazate is a popular tourist destination that boasts a UNESCO World Heritage Site and has served as a filming location for several movies (Morocco Tours Agency accessed 13/09/2023; Les Ateliers et al. 11/2018). The Moroccan Government has made significant investments in sustainable development in Ouarzazate province, including the construction of the Ouarzazate solar plant, one of the largest solar power plants in the world (W+ accessed 13/09/2023; PowerTechnology 06/03/2020). The latest news and information about the earthquake do not mention any damage to the solar plant.
- Ouarzazate province has a desert climate with hot, dry summers from May–October and mild winters from December–February (Champion Traveler accessed 13/09/2023; Weather & Climate accessed 13/09/2023).
- The province receives minimal rainfall throughout the year, making it arid and it features desert landscapes (Britannica accessed 13/09/2023; NASA 17/12/2022).

- The houses in Ouarzazate are made with traditional pre-Saharan earthen construction techniques using rammed earth and mud bricks, which are unable to withstand earthquakes of this magnitude (Iar-Salma El Amghari accessed 13/09/2023; Spatial Experiments 29/04/2016).



Morocco - Earthquake Sep 2023

Provinces with response infrastructure for: Province d Azilal



MA013 v01
Scan for
latest maps

Settlement

- Town

Transport

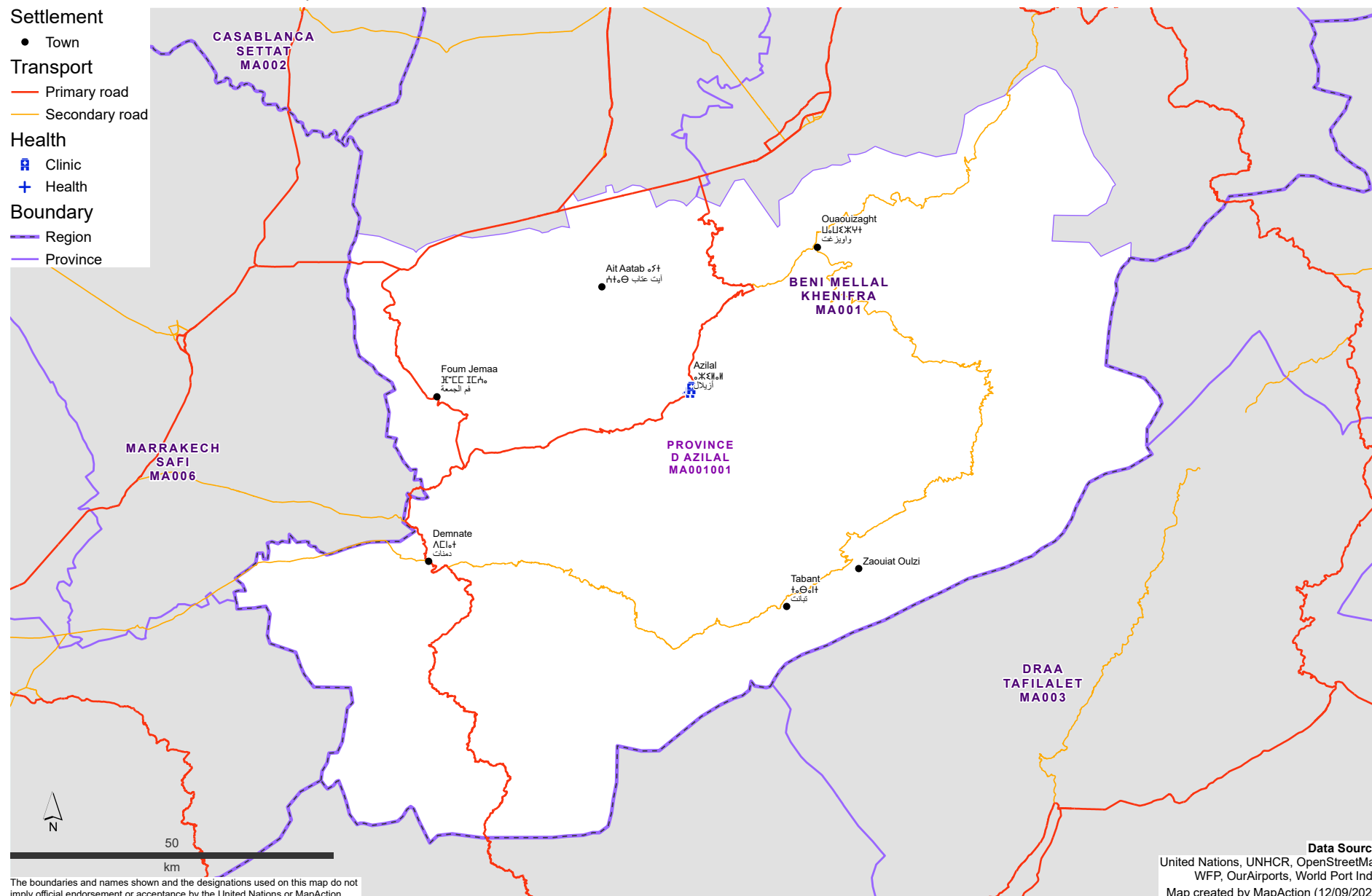
- Primary road
- Secondary road

Health

- 🏥 Clinic
- ⛑ Health

Boundary

- Region
- Province



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations or MapAction.

Data Sources

United Nations, UNHCR, OpenStreetMap,
WFP, OurAirports, World Port Index
Map created by MapAction (12/09/20203)



Morocco - Earthquake Sep 2023

Provinces with response infrastructure for: Prefecture de Marrakech



MA013 v01
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latest maps

Settlement

- City
- Town

Transport

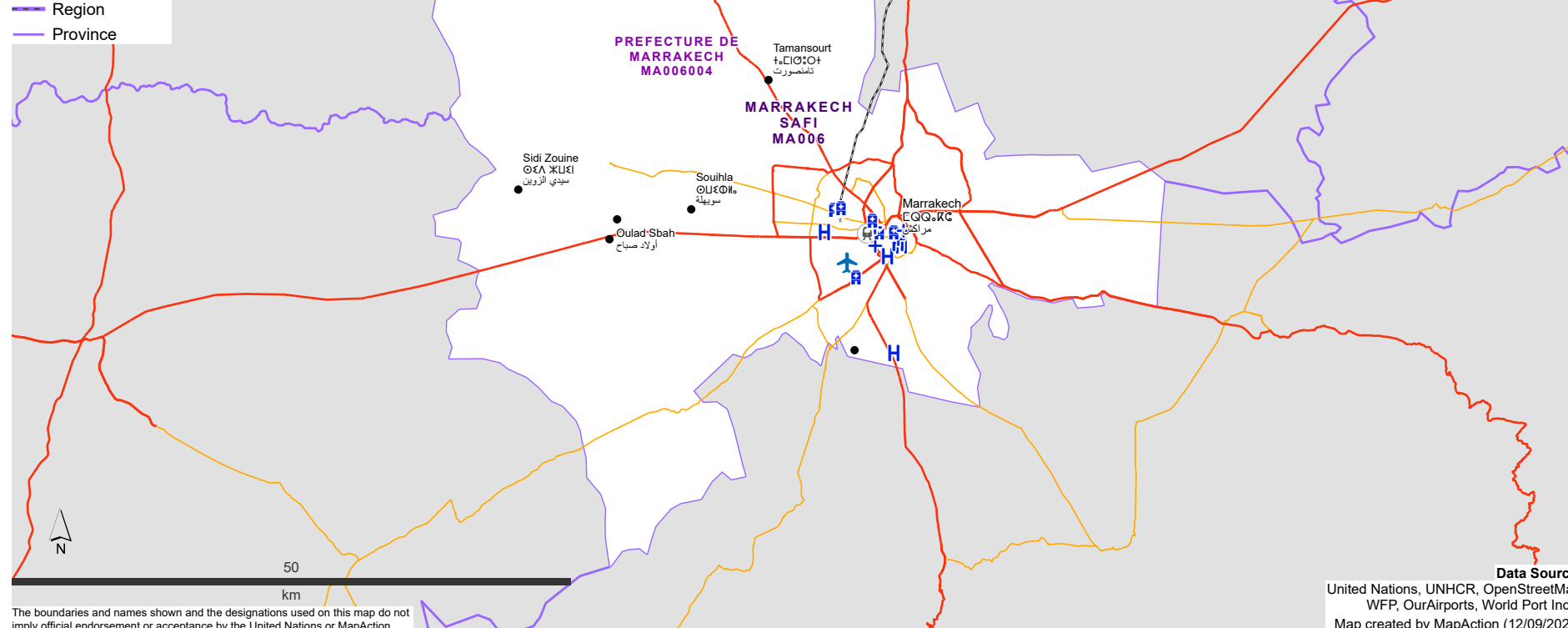
- ✈ Airport
- 🚂 Train Station
- Primary road
- Secondary road
- Railway

Health

- H Hospital
- 🏥 Clinic
- + Health

Boundary

- Region
- Province



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Map created by MapAction (12/09/20203)



Morocco - Earthquake Sep 2023

Provinces with response infrastructure for: Ouarzazate Province



MA013 v01
Scan for
latest maps

Settlement

- City
- Town

Transport

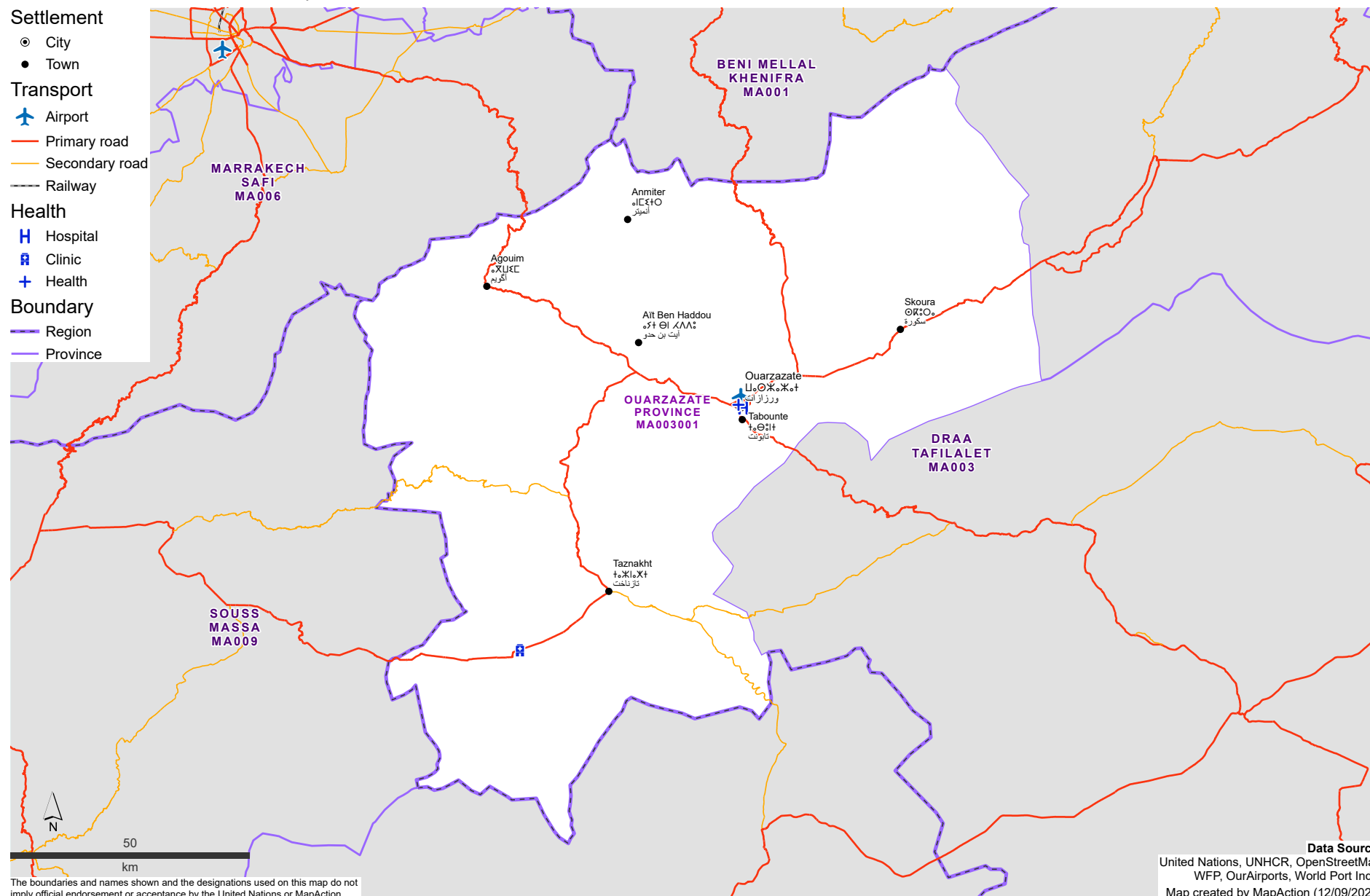
- ✈ Airport
- Primary road
- Secondary road
- Railway

Health

- H Hospital
- ⚕ Clinic
- + Health

Boundary

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