



## Checklist: solutions to common at-home dangers

### Tall and/or heavy furniture:

- Place heavy or breakable objects on low shelves, or low places in general.
- Secure your furniture to walls with metal **L-shaped brackets** or **flexible ties** so that they can move independently from the walls. (e.g.: wardrobes, cabinets, bookshelves, etc.).
- Secure electrical appliances (like televisions, speakers, radios, computers and microwaves) with **flexible nylon ties**.

### Hanging objects:

- Use adhesives, wax or putty to secure fragile objects or collectibles in place.
- Do not place heavy objects over sofas, beds, or resting places. (e.g.: frames/paintings, mirrors, vases/jars, etc.).
- Hang mirrors, pictures, etc. with **closed hooks**.

### In the kitchen:

- Secure cabinet doors with safety locks, latches, or double roller catches.
- Secure gas-powered appliances with **flexible connections** or **ties** to reduce fire risks.
- Replace rigid connectors for appliances such as water heaters and stoves for **flexible ones**.
- Set the refrigerator and other heavy appliances to walls with **flexible nylon straps** and/or metal **L-shaped brackets**.

### Water heaters or propane gas tanks:

- Ask a plumber to evaluate, replace (if necessary), and secure tanks or heaters to walls.
- Heaters and gas tanks should be anchored to walls with **metal straps**.

### Objects in storages or garages:

- Move flammable or dangerous materials to low areas that have been previously secured.
- Be sure that objects that have been placed around your car(s) can't fall, cause damages, or obstruct entrances and exits.

### Key elements:

- Look up, down, and **around yourself**. Identify possible dangers; use common sense.



You'll find a video in this link with more detailed advice on how to better prepare your home for earthquakes.

## Most Significant Earthquakes in Puerto Rico

August 15, 1670

- Intensity of VII
- Damages reported in San Germán and San Juan.

May 2, 1787

- Magnitude of around 7-8
- Intensity of around VII-VIII
- Damages reported island-wide, except in the south.

November 18, 1867

- Magnitude of 7.3
- Intensity of VIII
- Epicenter between Saint Thomas and Saint Croix.
- Produced damages in PR and the Virgin Islands.
- Generated a seaquake, with waves estimated to have reached 20 feet.

October 11, 1918

- Magnitude of 7.3
- Intensity of VIII-IX in the west, V-VI to the east
- Epicenter in the Mona Canyon.
- Generated a tsunami with waves of up to 20 feet.
- 116 people lost their lives.

July 28, 1943

- Magnitude of 7.5
- Intensity of V
- Epicenter to the northwest of PR.
- Didn't cause damages, but was felt by many across the island.

January 7, 2020

- Magnitude of 6.7
- Intensity of VIII in Guánica
- Epicenter to the southwest of PR.
- Felt island-wide.
- Both the earthquake and its replicas caused deaths and damages.
- An imperceptible tsunami was reported.



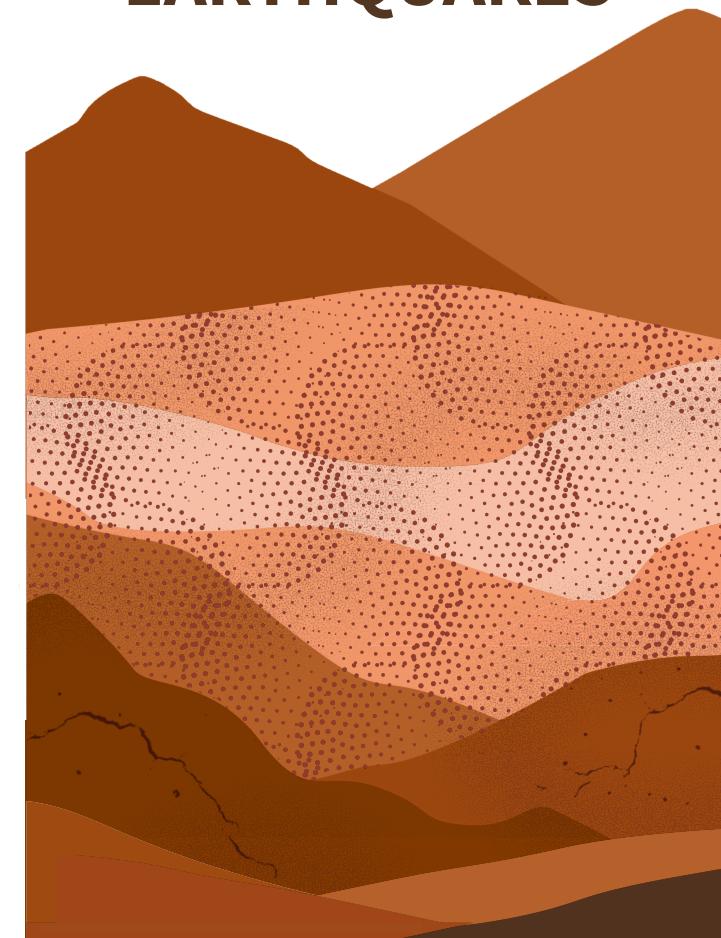
Photo of the 2020 earthquake's effects in "Parroquia Inmaculada Concepción" church in Guayanilla.  
Picture from Primera Hora / Jorge A. Ramírez Portela



### For more information:

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# EARTHQUAKES



## Puerto Rico Seismic Network

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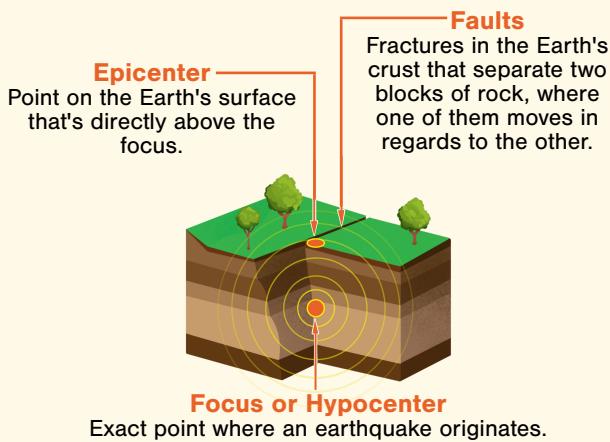


## What is an earthquake?

An earthquake, tremor, or seism is a sudden shake in which energy that's been accumulated in the Earth's crust or upper mantle is released.

### Where are they generated?

Most earthquakes happen along zones of contact between the large plates that make up the external part of the Earth.

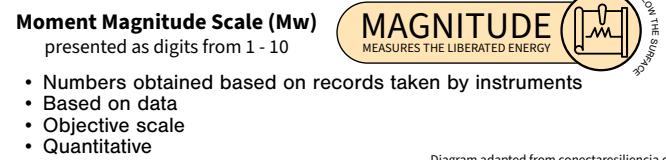
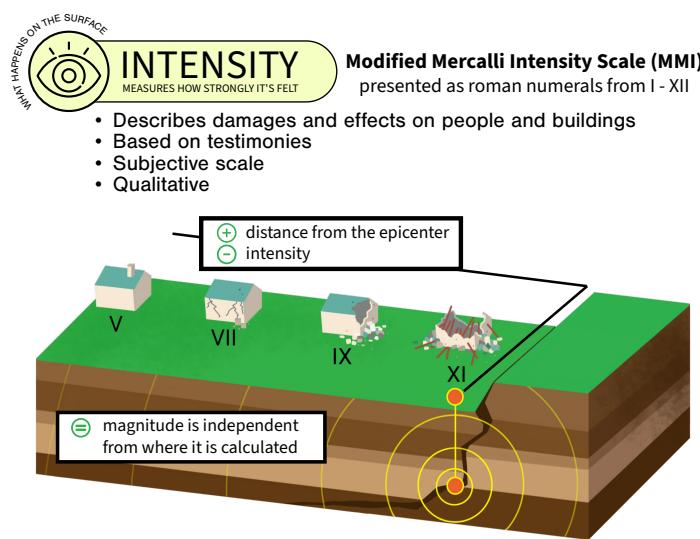


### Puerto Rico's tectonic scenario

Puerto Rico is located in the north-eastern corner of the Caribbean Plate, on its convergence zone with the North American Plate. To the north and east, the North American Plate subducts obliquely under Puerto Rico, while to the west the displacement is more lateral. The depth of most of the earthquakes that occur within this region range between 1 and 160 km, which are concentrated in the following zones:



## Magnitude vs Intensity



### Possible side effects:

- Liquefaction** - Process in which the ground's sediments temporarily lose their strength and begin to act like a fluid during an earthquake.
- Landslides** - Process in which masses of earth collapse and descend down a slope due to the ground's vibrations.
- Amplification** - Process in which the intensity and duration of the earthquake's vibrations increase in areas with soft soil (example: sandy terrains, fill dirt or structural fill, etc.).
- Fires** - Mainly caused by gas leaks, electrical short circuits, and the fall of electrical lines during an earthquake.
- Tsunami or seaquakes** - A series of waves that are generated by a submarine disturbance or violent activity in the ocean, displacing the water-column vertically.

## What to do...

### NOW

- Develop your seismic conscience.
- Go over structural failures in your home and place of employment and correct them.
- Identify places where you can protect yourself both during and after an earthquake.
- Revise the checklist on the back of this brochure and implement it to prepare your home.
- Keep your emergency bag or kit up to date.
- Work out an emergency plan and participate in practice drills (example: Shake Out, Caribe Wave).



### DURING



**DROP**



**COVER**



**HOLD ON**

### AFTER

- Activate your emergency response plan.
- Meet up in your emergency assembly point.
- Administer first aid as needed.
- Identify damages.
- Avoid making unnecessary calls.
- Get away from beaches, as a tsunami could occur.
- Keep yourself informed and follow instructions given by relevant authorities.