# FROM THE 2026 COLOMBIA EARTHQUAKE FOR



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**On 10 August 2026, a magnitude 7.4 earthquake struck western Colombia near San José del Palmar in the department of Chocó.** Although the earthquake occurred more than 100 kilometers (65 miles) beneath the Earth's surface, it was felt across much of Colombia and neighboring countries. The shaking damaged buildings, roads, hospitals, schools, and other infrastructure in several major cities. Hundreds of people were killed, and thousands were injured.

> The summary below is based on a review of publicly available information. Improved information will become available through the efforts of groups like the Earthquake Engineering Research Institute (EERI).



**Quibdó, Chocó, Colombia.**

# Why Did This Earthquake Cause So Much Damage?

One unusual aspect of this earthquake was its depth. Deep earthquakes typically cause less severe damage near the epicenter than shallow earthquakes because seismic waves spread out before reaching the surface. However, deep earthquakes can affect a very large area. In this case, strong shaking was experienced across many cities in Colombia's central Andean region.

The shaking from the earthquake also lasted much longer than that of many similar-magnitude earthquakes. Reports indicate that shaking continued for roughly one to two minutes in some areas. Long-duration shaking can be especially damaging because buildings are subjected to repeated cycles of movement, increasing the likelihood of cracking, structural damage, and collapse. There are also indications that

## Takeaway: Not All Concrete Buildings Are the Same

Many people think of concrete buildings as inherently strong because concrete itself is a strong material. However, a building's performance during an earthquake depends heavily on how it is detailed and reinforced.

Buildings in Colombia frequently use closely spaced reinforced concrete walls as their primary earthquake-resisting system. In many cases, these walls are relatively thin compared with the heavily reinforced shear walls often seen in modern high-rise construction in North America. Despite being relatively thin, wall-dominated structural systems can perform well when they are properly detailed and distributed throughout the building. In fact, earthquakes around the world have shown that buildings with many walls often perform better than buildings that rely mainly on columns and beams.

However, substantial damage can occur rapidly when older buildings have shear walls that have limited reinforcement, insufficient boundary detailing (at the ends of the walls), or are subjected to

# How Colombia's Building Codes Evolved

It is impossible to understand building performance during the 2026 earthquake without considering the evolution of Colombia's seismic building regulations. For much of the twentieth century, many buildings in Colombia were designed before modern earthquake-resistant requirements existed. As in many countries, including the United States, damaging earthquakes prompted engineers and government officials to improve construction standards over time.

A major turning point came after the 1983 Popayán earthquake, which caused widespread damage and highlighted vulnerabilities in the country's building stock. In response, Colombia adopted its first national seismic design code, known as the CCCSR-84, in 1984.

The next major step occurred in 1998 with the adoption of NSR-98, developed in response to advances in earthquake engineering and supported by Colombia's seismic design law enacted in 1997. This law requires

rules and obtain a building license. NSR-98 established comprehensive requirements for structural concrete, masonry, steel, geotechnical investigations, and construction supervision. Concrete design was based on the American Concrete Institute (ACI) 318-95 code, which stated that

buildings should withstand minor earthquakes without damage, moderate earthquakes without significant structural damage, and severe earthquakes without collapse, consistent with United States codes at the time.

The magnitude 6.2 Armenia earthquake in 1999 was the most recent significant earthquake in Colombia, and occurred in a region similar to that of the 2026 event. The event was much shallower and produced stronger shaking over a smaller area. There were approximately 1,200 deaths and 50,000 structures damaged or destroyed. Although few existing buildings were designed to the NSR-98, it was found that newer buildings performed better than older buildings constructed before 1984.

Colombia's current seismic code, NSR-10, was adopted in 2010 and remains the governing standard. It is based on the American Concrete Institute (ACI) 318-08 code. NSR-10 incorporated updated seismic hazard maps, expanded earthquake data, and more modern design requirements based on

more advanced seismic codes in Latin America.

As a result, buildings in Colombia can generally be grouped into three broad eras:

- Pre-1984 buildings
- 1984-2010 buildings
- Post-2010 buildings

Investigators studying the 2026 Colombia earthquake will likely compare the performance of older buildings with that of those designed under NSR-98 and NSR-10 to better understand how improvements in seismic design translate into real-world performance.

## Takeaway: The Importance of Reinforcement Detailing and Building Configuration

How reinforcement is arranged can be just as important as how much

able to crack, deform, and dissipate energy without losing their ability to support gravity loads.

Achieving this behavior requires careful detailing of reinforcing steel, particularly near wall boundaries and at

critical locations where large strains can develop.

Images on the web and preliminary reports indicate that soft-story buildings, some of which collapsed, had soft stories created by taller first floors with less infill or fewer walls than the floors above. This is a common cause of collapse in older concrete buildings.

## Takeaway: Masonry Infill Walls Remain a Common Source of Damage

Perhaps the most visible damage observed after many earthquakes, including this one and similar events in Venezuela, involves unreinforced masonry infill walls. These walls are often constructed between concrete columns and beams. Although they are often considered “nonstructural”

In Colombia, many infill walls appear to have been constructed with separation gaps between the masonry and the surrounding concrete frame. Reports indicate that these walls were often not positively connected to the concrete structure. Unfortunately, strong earthquake shaking can cause these

walls to crack, separate, or fall out of plane when adequate anchors are not present.

Even when the primary concrete structure remains intact, infill wall failures can pose significant hazards to occupants and pedestrians. Falling masonry has caused injuries in numerous earthquakes worldwide. For this reason, modern seismic design increasingly focuses not only on preventing structural collapse but also on improving the performance of nonstructural components. It appears that post-earthquake occupancy improvements from advances in seismic design and construction were limited by incomplete implementation of nonstructural detailing requirements. There are reports that many repairs to nonstructural infill are currently being undertaken with minimal supervision.

# Looking Ahead

The most valuable insights from the

These studies may help answer several important questions:

- How did thin, lightly reinforced concrete walls perform?
- Did modern concrete frame buildings generally perform better than older construction? The preliminary answer is yes.
- What role did reinforcement detailing play? In the previous 1999 earthquake, detailing in older concrete frames and walls was shown to be deficient.
- How much of the damage was associated with masonry infill walls, and what improvements can be made?
- Were certain building configurations more vulnerable than others?

As these findings become available, they will contribute to a growing body of knowledge regarding the seismic performance of reinforced concrete buildings worldwide.