**Haiti's earthquake similar but deadlier than Christchurch's**

Researchers have explained why Canterbury escaped with no loss of life and little damage compared with the devastation in Haiti.Nearly a week on, comparisons are being made because both quakes had a magnitude of 7.1, occurred at a relatively shallow depth and were centred near population centres - one 40km west of Christchurch, the other 25km west of Port-au-Prince.But an article in the *New York Times* lays out the points of difference.Haiti is a Third World nation and the poorest in the Americas, which formed the basis of the first distinguishing feature: "Poverty kills."Second was the difference in ground motion in the two quakes."At first impression the ground motion in the city is significantly weaker than the worst parts of Port-au-Prince," said American earthquake and structural engineer Peter Yanev."This is primarily due to the distance of the faulting."Haiti was also far less prepared, with inferior building standards.

"Construction in general in Christchurch is very similar to California construction," said Mr Yanev."The new buildings have good quake designs, unlike absolutely no design in Haiti."Structural engineering professor John Mander, originally from Christchurch but now of Texas A&M University, said that of "any place in the world this [Christchurch] would probably be the best prepared".Its city council had started upgrading programmes for earthquake-prone buildings in the 1970s and damage could largely be attributed to "historic non-engineered construction", he said."That is, construction built by convention was conforming to building codes of the day, but these have historically not had any earthquake resistance provisions."Structural engineer Kit Miyamoto, an adjunct professor at California State University in Sacramento, credited Canterbury's engineering capacity, code and emergency response.

He said frequent earthquakes in New Zealand meant the city was ready."The last major earthquake in Port-au-Prince was in the mid-1700s," he said. "Society forgot about the earthquake risk and was not prepared for it."In Haiti, I still find the dead bodies buried in the collapsed buildings."The findings of a University of Canterbury PhD student, Jesse Dykstra, echoed the Times report.He said both quakes produced "maximum ground-shaking intensities" and therefore had similar destructive power. But Canterbury had better building codes - New Zealand learning from historic quakes such as the 7.8 magnitude shake that hit Napier in 1931.Modern homes were generally timber-framed and flexed and absorbed earthquake energy, and commercial buildings were generally constructed with isolated foundations."New Zealand is now a world leader in earthquake engineering," wrote Mr Dykstra. Haiti, as one of the poorest countries in the world, did not benefit from stringent building codes."Construction practices are substandard and earthquake-proof buildings are few," he said.An estimated 250,000 homes were destroyed or severely damaged. About 230,000 people died.But lastly, there was luck. "If the Canterbury earthquake had occurred at 4.53pm, as it did in Haiti, the number of deaths and serious injuries would be much higher."

**WHY NO ONE DIED**

**PORT-AU-PRINCE v CANTERBURY**

**Wealth:** NZ much better resourced to cope.

**Building codes/standards:** Haiti's lacking.

**Ground motion:** Significantly less in Christchurch due to faulting distance.

**Readiness:** NZ's history of earthquakes meant Cantabrians knew what to do.

**Emergency response:** The comparatively minimal damage meant services could respond quickly, hospitals stay open.

**Luck:** The Christchurch quake struck at night when people were asleep, businesses shut.