

## Great Alaska Earthquake, 1964: A Case Study

### Introduction

The Alaska earthquake of 1964, also known as the Great Alaska Earthquake, was a seismic event of unprecedented magnitude and impact. Striking on March 27, 1964, this earthquake had profound implications for public health and disaster management, making it significant for a case study.<sup>1</sup> With a magnitude of 9.2 on the Richter scale, it remains the strongest earthquake ever recorded in North America and the second-largest earthquake globally, surpassed only by the 1960 Valdivia earthquake in Chile. The tremors emanated from Prince William Sound, Alaska, and extended over a vast geographical area, affecting communities, infrastructure, and lives across Alaska and beyond.<sup>1</sup>

### Facts of the Case

The magnitude of the Alaska earthquake resulted in a stunning death toll. It took 131 lives and injured over 1,000 people.<sup>3</sup> The damage to buildings and infrastructure was considerable, with an estimated cost of \$311 million, a sizable sum in 1964 currency. To put this in context, after inflation, this equates to almost \$2.6 billion today.<sup>1</sup> The calamity happened in stages, beginning with the earthquake and continuing with a succession of tsunamis that wreaked havoc along coastal areas. Entire neighborhoods were destroyed, hospitals were rendered inoperable, schools were reduced to ruins, and transportation networks were disconnected. The economic cost went far beyond the immediate destruction, affecting the livelihoods of numerous people as well as the state's entire economy.<sup>3</sup>

### Epidemiological aspects of the event

Epidemiological studies undertaken in the aftermath of the earthquake were critical in determining the disaster's health consequences. A review of medical records and vital statistics revealed not just the immediate casualties, but also its long-term health impacts on survivors. To analyze the relationship between various risk variables and bad health outcomes, main measures of association such as Relative Risk (RR) and Odds Ratio (OR) were used.<sup>4</sup> To account for relevant confounders such as age, gender, and geographic location, multivariate regression models were applied.<sup>1,2</sup>

The observation of different mortality rates across age groups was an important epidemiological factor. The elderly and children were disproportionately affected. The elderly had a greater mortality rate due to variables such as pre-existing health issues and difficulty escaping after the earthquake's quick beginning. Injuries caused by collapsed structures and falling objects were substantial causes of morbidity and mortality among children.<sup>4</sup>

### Management of the event

The public health response to the Alaska earthquake was a testament to the resilience of the Alaskan people and the dedication of emergency responders.<sup>2</sup> Immediate mobilization of resources was crucial, as search and rescue operations commenced amidst the rubble.<sup>2</sup> Emergency medical care was provided to the injured, and temporary shelters were established for displaced residents.

One of the positive aspects of the response was the resilience of local communities. Neighbors helped neighbors, and individuals with medical training volunteered their services, effectively supplementing the official response efforts. However, given the scale of the disaster and the remote Alaskan terrain, the response also faced considerable challenges. The state's limited healthcare infrastructure struggled to cope with the influx of injured individuals, and many had to be airlifted to distant hospitals. The destruction of key transportation routes hindered the delivery of supplies and medical assistance.

The response exposed significant gaps in preparedness.<sup>2</sup> The earthquake underscored the need for stricter seismic building codes, as many structures failed to withstand the tremors. Hospitals and schools, crucial components of disaster response, suffered extensive damage, further hampering the ability to provide care. Disaster recovery plans needed enhancement to address the long-term needs of affected communities, including psychological support for survivors dealing with trauma.

The lessons learned from this event played a pivotal role in shaping Alaska's disaster management infrastructure. Subsequent investment in earthquake-resistant construction and the development of comprehensive disaster recovery plans have been essential steps in improving preparedness for future seismic events. The response to the 1964 earthquake serves as a model for the importance of community resilience and adaptive capacity in the face of catastrophic disasters.<sup>5</sup>

### **Communications of the event**

The 1960s saw limited communication means compared to the present digital age.<sup>1</sup> Radio broadcasts and newspapers were the primary communication channels. Both local and federal governments made concerted efforts to provide timely updates and guidance.<sup>1</sup> However, Alaska's vast and challenging terrain, combined with the severity of the disaster, posed significant challenges to timely communication, particularly in remote areas. Reflecting on this, it is evident that a robust communication infrastructure is vital for effective disaster management, ensuring real-time dissemination of crucial information and warnings.

### **Summary**

The Great Alaska Earthquake of 1964 is a monumental event in the annals of natural disasters in the United States. Its lessons extend beyond the immediate loss, underscoring the imperatives of robust infrastructure, community awareness, proactive disaster management strategies, and efficient communication mechanisms.<sup>1</sup> This event is a testament to the indomitable human spirit, resilience, and the continuous pursuit of safety and preparedness in the face of nature's unpredictable might.

## References

1. Collective GOT. Case Study 2: 1964 Port Alberni Tsunami. Pressbooks. Published June 12, 2014. <https://opentextbc.ca/geography/chapter/case-study-2-6/>
2. Gbh. Alaska Volcano and Earthquake Case Study. PBS LearningMedia. Published November 7, 2022. <https://ny.pbslearningmedia.org/resource/buac17-35-sci-ess-akvolquake/alaska-volcano-and-earthquake-case-study/>
3. The Alaska Earthquake, March 27, 1964: Field Investigations and Reconstruction Effort.
4. Kunreuther H, Fiore ES. THE ALASKAN EARTHQUAKE: A CASE STUDY IN THE
5. ECONOMICS OF DISASTER. DTIC. <https://apps.dtic.mil/sti/citations/AD0645536>  
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