RESEARCH HIGHLIGHTS

Zero Energy Day: How Nationwide Blackouts Affect the Economy

By Luis E. Gonzales, Koichiro Ito, and Mar Reguant

What are the effects of power outages on economic activity?

Context

Large-scale blackouts have recently affected many parts of the world.

- March 2026: Cuba experienced a nationwide blackout caused by fuel shortages, leaving about ten million people without power for approximately 29 hours.
- April 2025: Portugal and Spain were hit by a blackout, leaving large portions of the two countries without electricity for more than ten hours.
- February 2025: Chile experienced a nationwide blackout leaving more than 90 percent of the population without electricity for several hours.
- Winter 2021: A blackout in Texas left more than four million homes and businesses without electricity for several days.

Despite their growing importance, the economic impacts of large-scale blackouts remain largely unknown.

Research Design

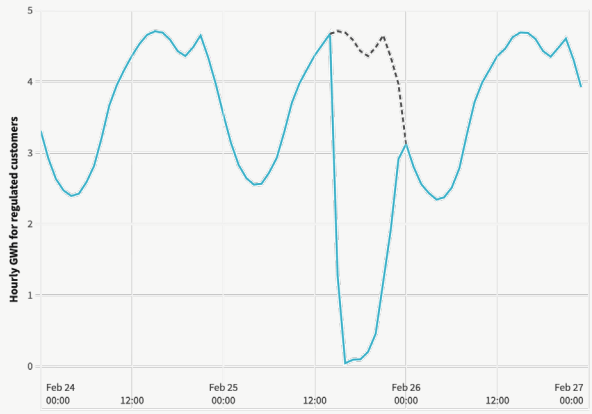
The authors study the economic effects of a nationwide blackout by analyzing a large-scale power outage that recently occurred in Chile—a middle-income country with a modern electricity system. They combine high-frequency electricity data, including hourly demand at the substation level and hourly generation at the plant level, with detailed measures of economic activity. These economic data come from tax records on retail transactions as well as credit and debit card transactions provided by the Central Bank of Chile.

Findings

The costs of blackouts unfold over time, and focusing only on same-day losses can significantly overstate their economic impact.

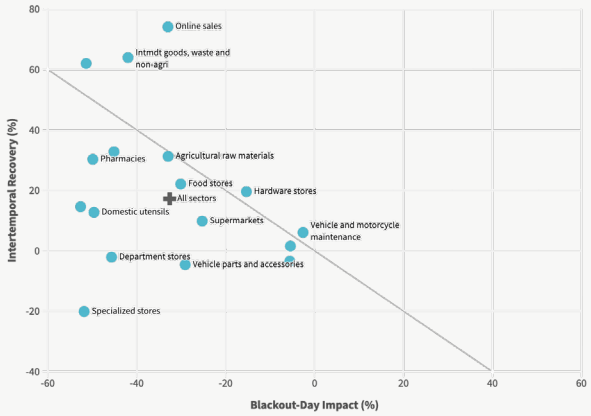
When Chile's blackout occurred, electricity consumption immediately went to zero at the time of blackout (around 3 pm), and it took several hours to recover (around midnight) (Figure 1). The blackout caused economic transactions to fall by about 35 percent on the day of the outage, but nearly half of this decline was recovered over the following four days—indicating that much of the spending was postponed.

Panel A · Hourly Electricity Consumption (GWh)



A closer look at spending across sectors shows that consumers chose to delay purchases where they could. Figure 2 shows the blackout-day impact on economic activity (horizontal axis) and the recovery on the subsequent days (vertical axis) by sector. Sectors selling durable goods that could be sold later like cars, hardware and agricultural materials were hit hard on the day of the blackout but quickly recovered as consumers waited until after the blackout to make their purchases. For example, car sales dropped by 60 percent on the day of the blackout but rebounded by 52 percent in the following days, leaving a net decline of 8.5 percent. In contrast, sectors selling time-sensitive or perishable goods like food stores or pharmacies saw smaller initial declines but more persistent losses. For example, supermarket sales fell by 25 percent on the blackout day and recovered by only 9.8 percent in the days after, leaving a net decline of 15.5 percent.

Figure · Blackout-Day Impact vs. Intertemporal Recovery



Overall, the blackout resulted in an estimated $70 million in lost economic activity when considering only the day of the outage, or $2,170 for every megawatt hour of lost electricity. When accounting for the recovery in subsequent days, total losses fall to $36 million, or $1,118 for every megawatt hour of lost electricity.

CLOSING TAKE-AWAY

The study highlights the economic importance of reliable electricity and provides new estimates of the cost of power outages. Understanding both the immediate and longer-term effects of severe, system-wide blackouts is crucial for designing resilient electricity markets and guiding reliability and restoration decisions.