IMPACTS OF THE PANDEMIC IN THE ELECTRICITY CONSUMPTION

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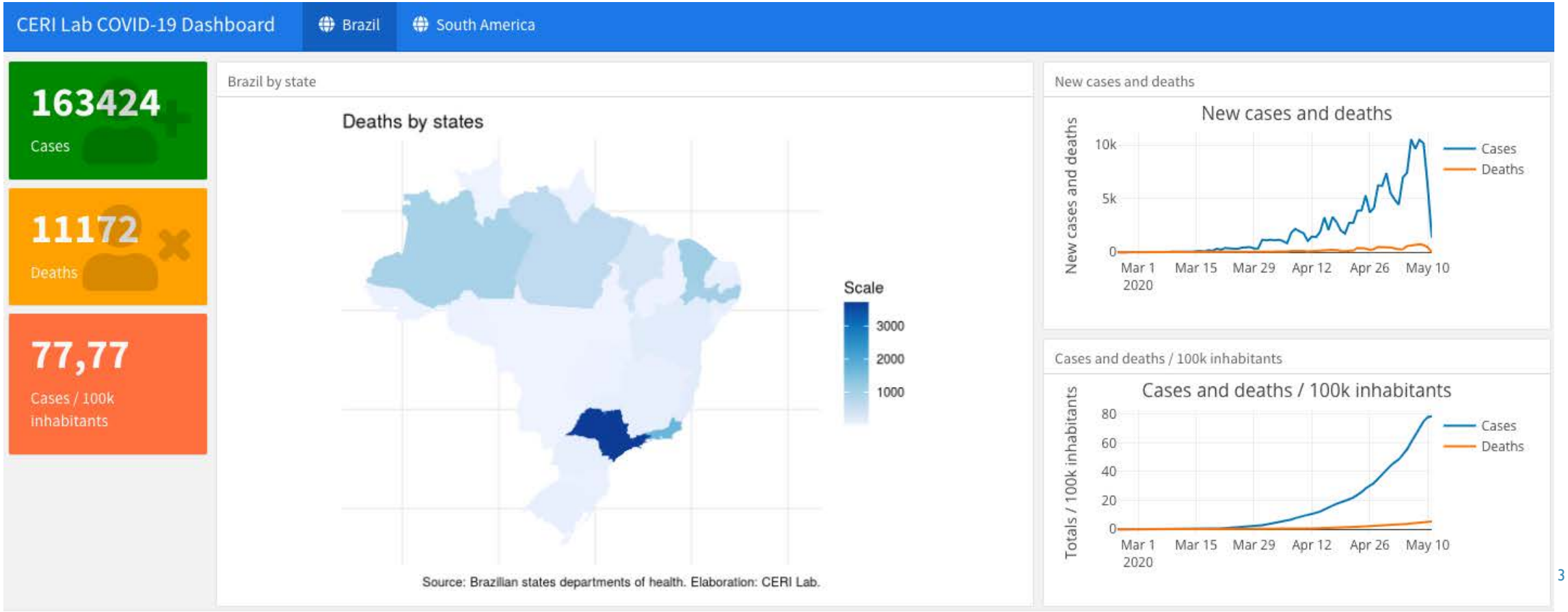
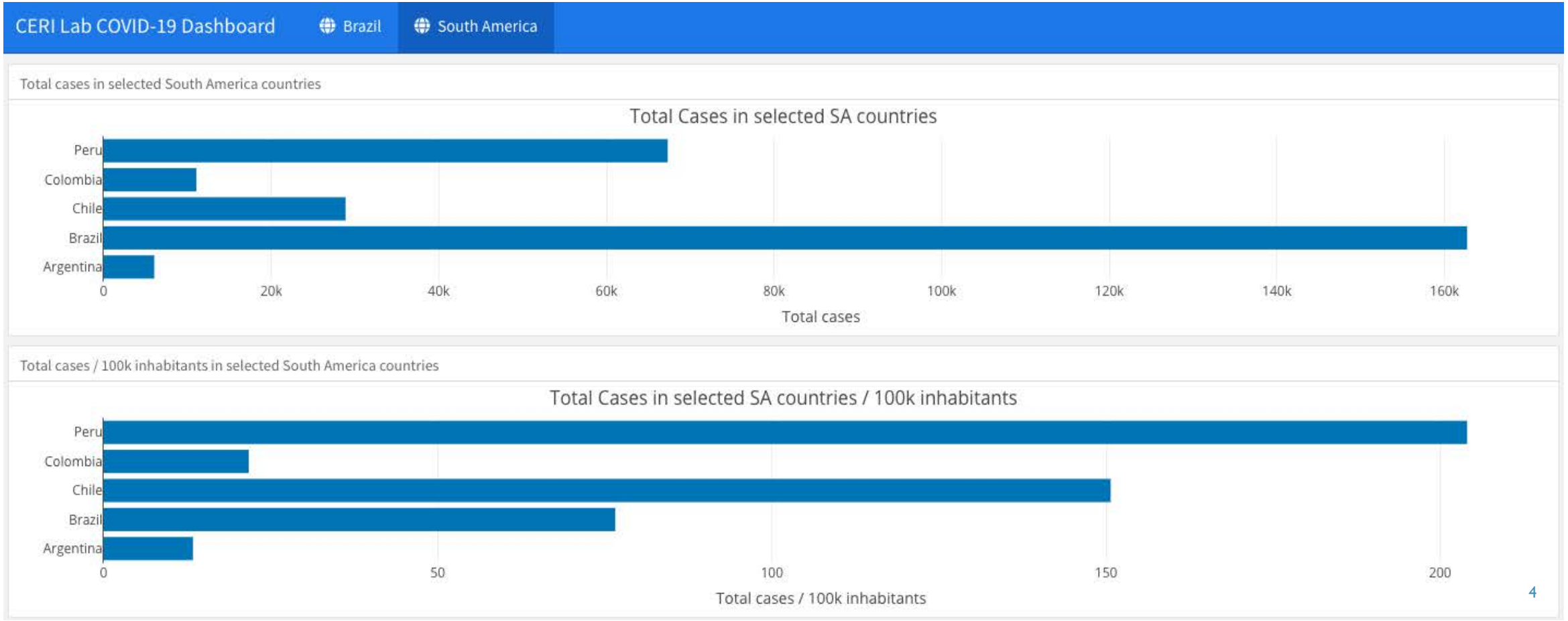
ROADMAP

- The COVID-19 context
- First Policies Responses
- Measuring COVID-19 Impacts in Electricity Demand
- Key Messages

COVID-19 IN BRAZIL IN NUMBERS



COVID-19 IN SOUTH AMERICA (SELECTED COUNTRIES)



FGV CERI

KEY POLICY RESPONSES FOR THE SHORT-TERM: THE STIMULUS PACKAGE

01

Establishing a safety net for the needed:

- Policies targeting vulnerable people granting minimum income and employment.
- The Covid-19 Bonus deployed experiencing income losses.

02

Assisting companies:

- Implement capital preservation measures (taxes deferral) and access to new credit lines

03

Fighting the pandemics:

- Addressing the health crisis

KEY POLICY RESPONSES FOR THE SHORT-TERM: THE STIMULUS PACKAGE FOR ELECTRICITY CONSUMERS AND POWER COMPANIES

CONSUMERS

- ✓ Enlarge the low-income support program scope.
  - ✓ The number of beneficiaries is expected to increase from 9.5 million to 17 million users in a universe of 70 million.
  - ✓ Consumers enrolled in the program are granted a franchise consumption of 220kWh/month for 90 days.
- ✓ A regulatory ruling prevents Discos from disconnecting defaulting residential users for a period of 90 days from March 25th.

POWER COMPANIES

- ✓ Capital access to firms though an off-Balance Sheet syndicated loan.
  - ✓ Advanced negotiations are taking place to agree loan details (guaranteed by future tariff increases).
  - ✓ Similar mechanism was adopted in 2013-2014 to tackle a crisis experienced by the electricity industry.
- ✓ The market comprises 70% of captive consumers hence the credit line will also benefit transmission and generation companies.
- ✓ BNDES, the power sector main financier has offered payment holidays to existing loans.

HOW RELEVANT IS THE ELECTRICITY CONSUMPTION INDICATOR IN THIS CRISIS?

DISRUPTIVE EVENTS LED TO SUDDEN CHANGES IN THE ECONOMIC ACTIVITY

- ✓ Governments need to react fast in a fast-evolving environment plagued by high uncertainty.
- ✓ Traditional economic indicators such as GDP growth and employment are released with significant time lag.

WHY IS IT USEFUL TO CONSIDER THE INFORMATION ABOUT ELECTRICITY CONSUMPTION?

- ✓ There is no substitute energy source for electricity in the short-run.
- ✓ Data on electricity consumption (load) is highly granular (hourly data is easily available), publicly disclosed and with only one-day lag and granularity.
- ✓ The challenge:
  - ✓ Identify how much of the change in electricity consumption cannot be explained by known and strong impact factors on consumption - such as temperature, number of holidays, seasonality.

KEY POLICY RESPONSES IN LATAM FOR THE SHORT-TERM: SIMILARITY OF MEASURES WITH VARYING INTENSITY

Argentina

Decentralized Regulation (Province level): payment deferral of 180 days.

Payment plans for consumers:

- Vulnerable residential customers can finance their bills in 30 quotas from October with zero interest.
- Industrial consumers are allowed to pay as low as 25% of the electricity bill.

Lack of a general rule or regulation to evaluate how companies will finance the discounts.

Colombia

Payment of electricity bills deferred:

- Groups E1 and E2 (36 months) and zero interests
- Groups E3 and E4 (24 months) with interests.
- Other users can defer payments at a negotiated number of installments and interest rates set by the regulator.

Working capital loans made available to companies.

Payment encouragement measures:

- Optional 10% discount for payment on time.
- Adoption of "Sharing my Energy" mechanism.

About 50% of consumers receive subsidies.

- Government transfers delays have weakened the financial situation of companies.

KEY POLICY RESPONSES IN LATAM FOR THE SHORT-TERM: SIMILARITY OF MEASURES WITH VARYING INTENSITY

Chile

State of catastrophe established in March 18 for a period of 90 days.

The demand reduction magnitude is not as severe as what has been observed in other countries.

- Santiago – demand reduction is lower than 10% - in any segment.

Preparedness:

- Chile had already carried out an assessment of critical infrastructure to be prioritized in response to terrorist attacks.

Support to consumers announced by the government with no law approved yet.

- Prohibition of disconnection of defaulting customers.
- Payment reductions of electricity bills must be voluntarily negotiated between the parties. This has been proven difficult to implement due to lack of legal support.

Default of 40% most vulnerable for three months amounts $600 million.

- There have been legislative proposals to allow payments deferral and suspension of disconnections due to non-payment.
- Discos' financial situation is aggravated by the recent decision to freeze tariffs for 24 months. Risk allocated to distributors.

CNE (Regulator) has suspended differentiated peak demand rates in April and May including free-market customers.

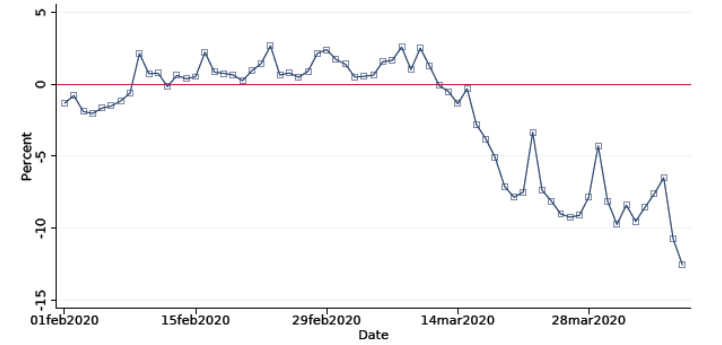
HOW MUCH THE OBSERVED REDUCTION IN ELECTRICITY CONSUMPTION CAN EXPLAIN THE PANDEMIC'S IMPACTS?

STEVE CICALA (UNIVERSITY OF CHICAGO) AND BRATTLE GROUP

- ✓ Cicala (2020) proposes an indicator of the electricity consumption adjusted for characteristics such as temperature, year, week of the year, day of the week, hour of the day and holidays.
  - ✓ He estimates an 8.7% decrease in the hourly average electricity load in March 2020 compared to February of the same year.
  - ✓ He uses hourly electricity consumption data for the six largest RTOs in US.
- ✓ Results: 4.9% (60% of reduction) can be explained by seasonal components.
- ✓ **The question:** can the remaining 3.8% reduction be a consequence of the COVID-19 crisis?

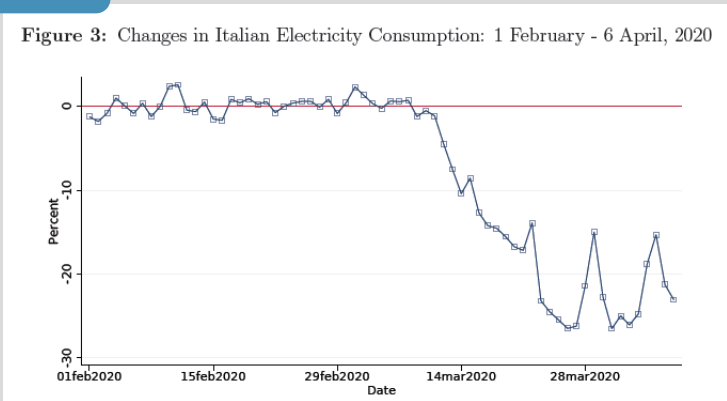
USA

Figure 2: Changes in EU Electricity Consumption: 1 February - 6 April, 2020



ITALY

Figure 3: Changes in Italian Electricity Consumption: 1 February - 6 April, 2020



THE PANDEMIC'S IMPACT IN THE ELECTRICTY SECTOR: THE FGV CERI INDICATOR

Methodology

- ✓ Based on Cicala (2020).

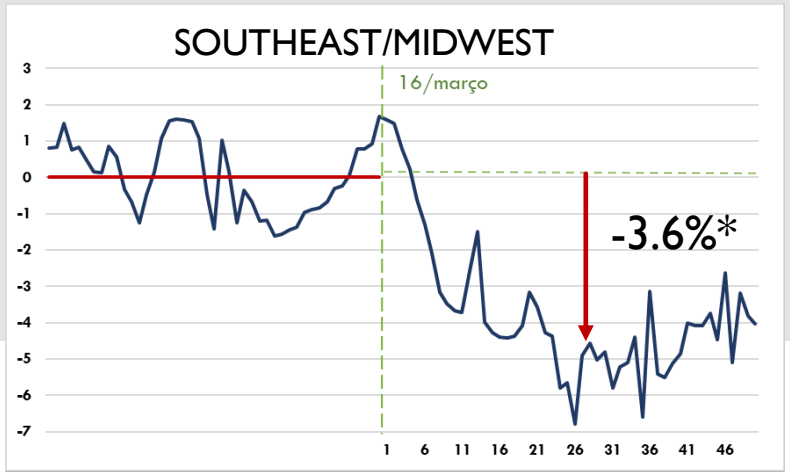
Dataset

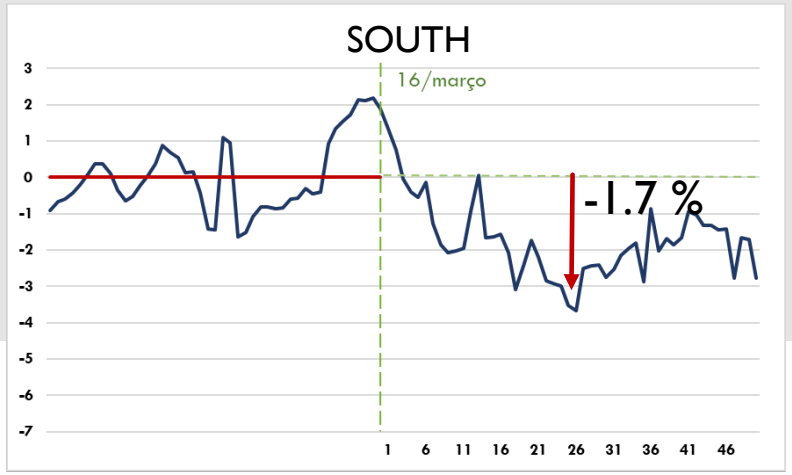
- ✓ Based on ONS (2020) aggregated daily/hourly consumption data by 4 regions: N, NE, S/SE and MW.

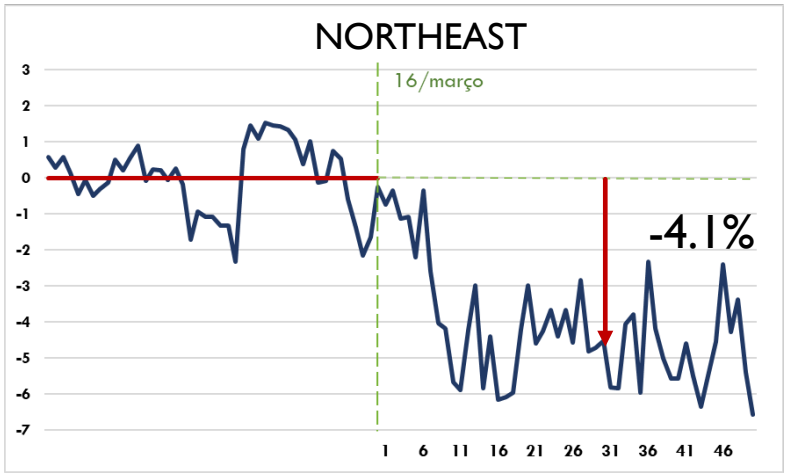
Further Steps

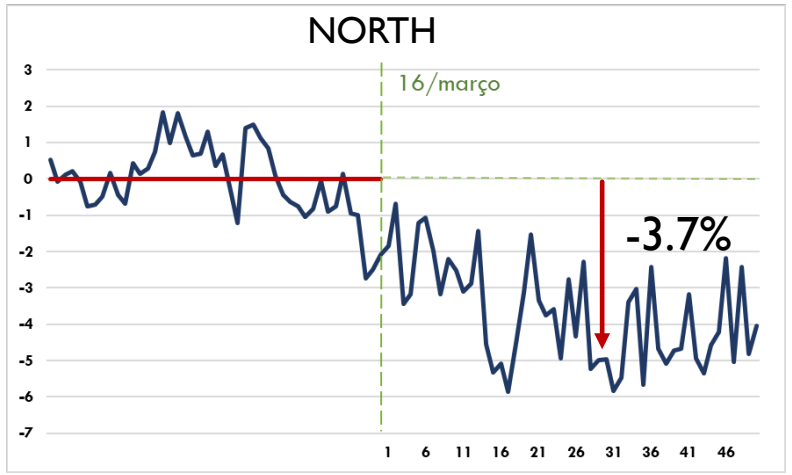
- ✓ Additional controls and data disaggregated by sector - subject to availability.

ELECTRICITY CONSUMPTION DURING COVID-19: THE FGV CERI INDICATOR









Legend:

- Average between Feb 1 to Mar 15
- Normalized coefficients

Note (*) Percentages account for the change in average electricity consumption normalized by region - cumulative change in the period from March 16 to May 4.

Source: FGV CERI (Figer et al., 2020)

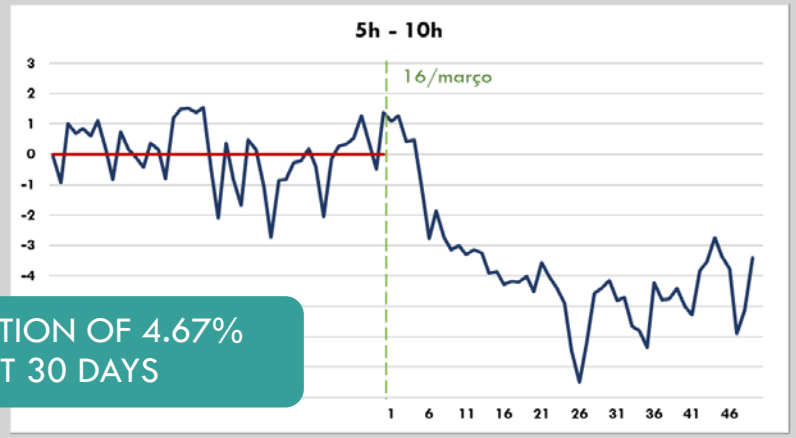
ELECTRICITY CONSUMPTION BY REGION: FGV CERI INDICATOR FOR 15, 30 AND 50 DAYS

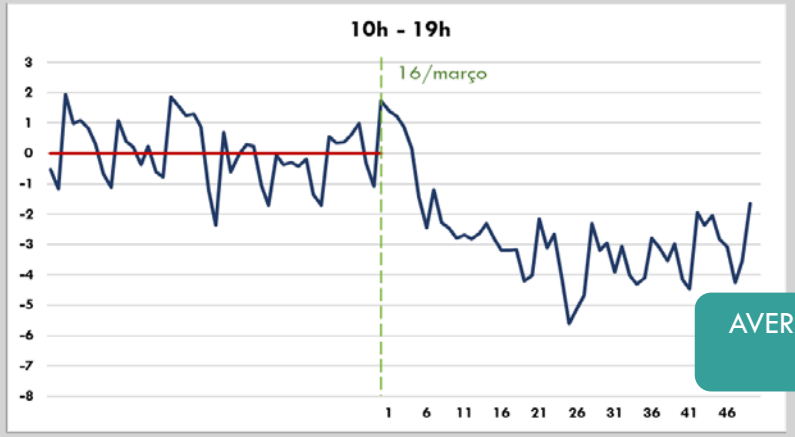
Largest reduction happened in the first 30 days

ZONE	PERIOD		
	03/16 to 03/30 15 days	03/16 to 04/30 30 days	03/16 to 05/04 50 days
Southeast/MW	-1.4	-3.0	-3.6
South	-0.6	-1.6	-1.7
Northeast	-2.8	-3.6	-4.1
North	-2.4	-3.2	-3.7

Source: FGV CERI (Figer et al., 2020)

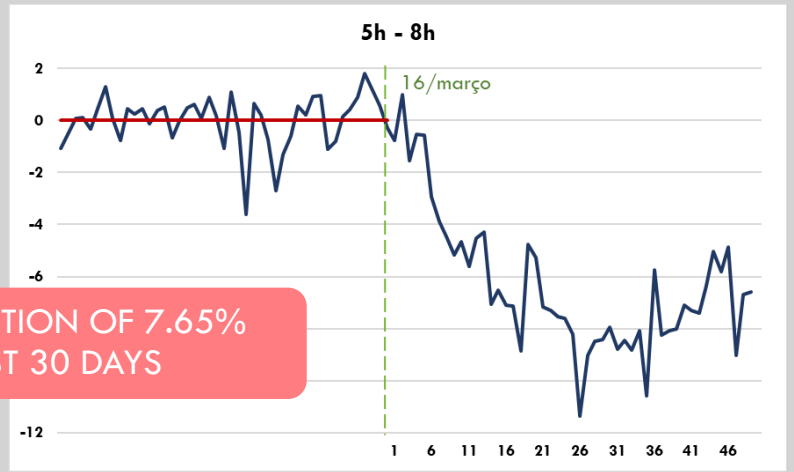
THE ELECTRICITY CONSUMPTION – SE/MW REGION
FGV CERI INDICATOR AT DIFFERENT TIME INTERVALS IN THE LAST 30 DAYS

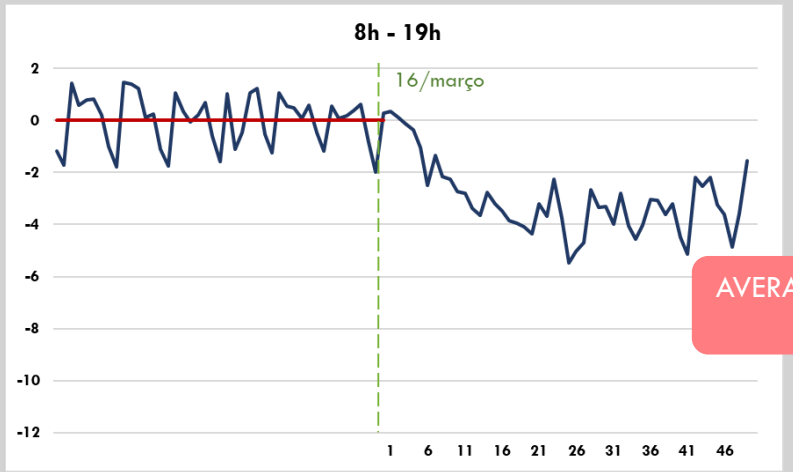




AVERAGE REDUCTION OF 4.67% IN THE LAST 30 DAYS

AVERAGE REDUCTION OF 2.1% IN THE LAST 30 DAYS





AVERAGE REDUCTION OF 7.65% IN THE LAST 30 DAYS

AVERAGE REDUCTION OF 3.58% IN THE LAST 30 DAYS

Legend:

- Average between 1/Feb and 15/Mar
- Normalized Coefficient

Source: FGV CERI (Figer et al., 2020)

KEY MESSAGES

- Initial impacts of COVID-19 can be observed in electricity demand reduction.
- First responses have addressed impacts to consumers and not innovated in its support to power companies.
  - History says the proposed measures for companies are detrimental to consumers.
- There are major challenges in the aftermath and contributions of the power sector to the covid-19 crisis recovery are in the making.
  - Remedies for re-starting the economy are still unclear.
  - It is of essence to assess the demand reduction controlling for seasonal factors, among others.
  - These measurements will be critical for future tariff review regarding COVID-19 impacts.
- Main impacts and future trends