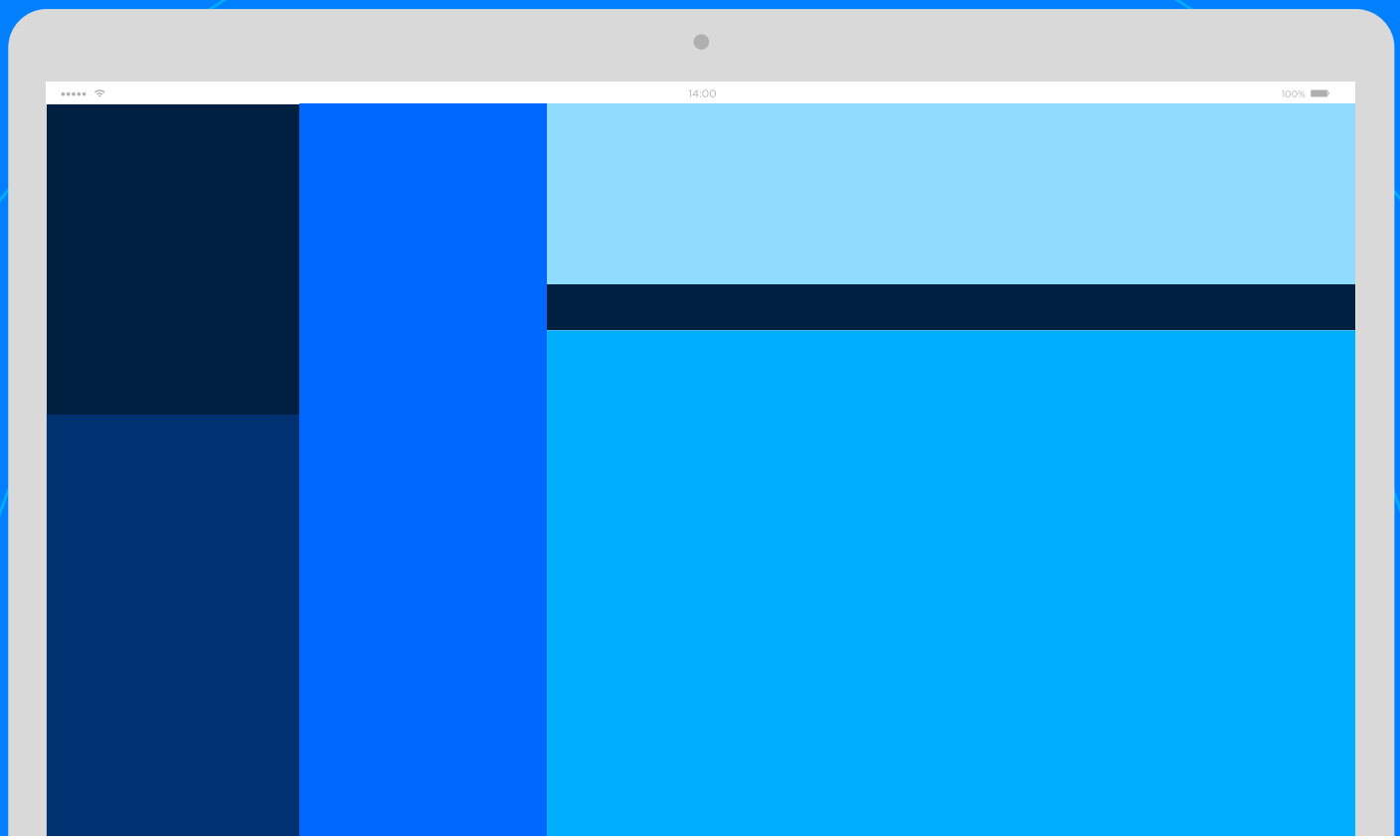

IDB | Heatmap

COVID-19 Vulnerability Perception for Micro- Small-, and Medium-sized Enterprises in Latin America and the Caribbean

Authors:

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Introduction

This guide offers a visual presentation of how to interpret the COVID-19 vulnerability heat map for micro- small-, and medium-sized enterprises (MSMEs) in Latin America and the Caribbean.

First

This guide illustrates the main features of the data visualization system implemented to make use of the available filters and views, through optimal navigation and use.

Second

The guide includes an explanation of the methodology used to develop the tool for the COVID-19 vulnerability perception, including the selection of analyzed sectors. It identifies the categories to rate the perception of the risk impact in four components (i.e., supply, demand, financial and proprietary, and systemic and regulatory) and interprets the ranges of the severity levels of the vulnerability index.

Keywords

MSMEs, COVID-19, public policies, economic development, financial risk, methodology, loans, productive sector, employment, value chains, Latin America, Caribbean.

JEL Codes

E24, G32, G38, L11, O14

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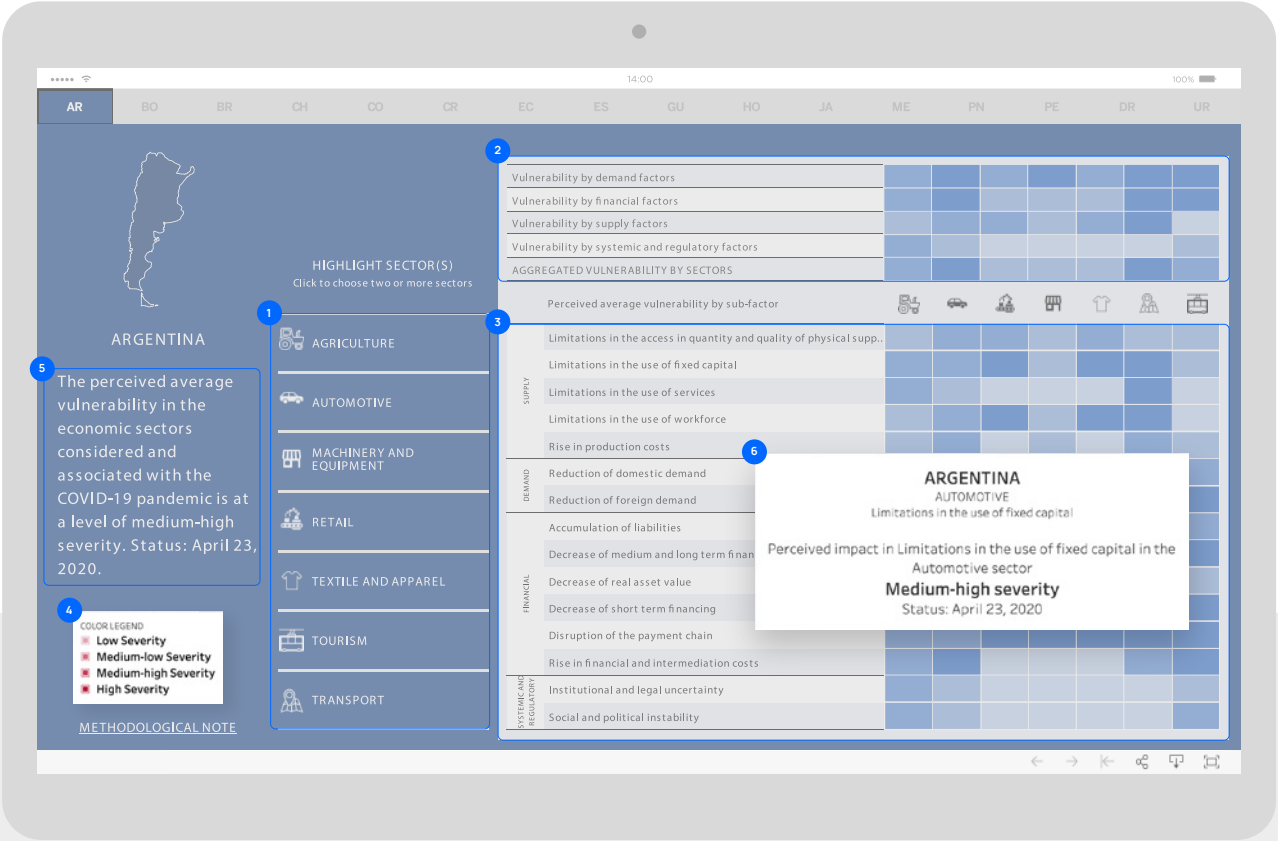
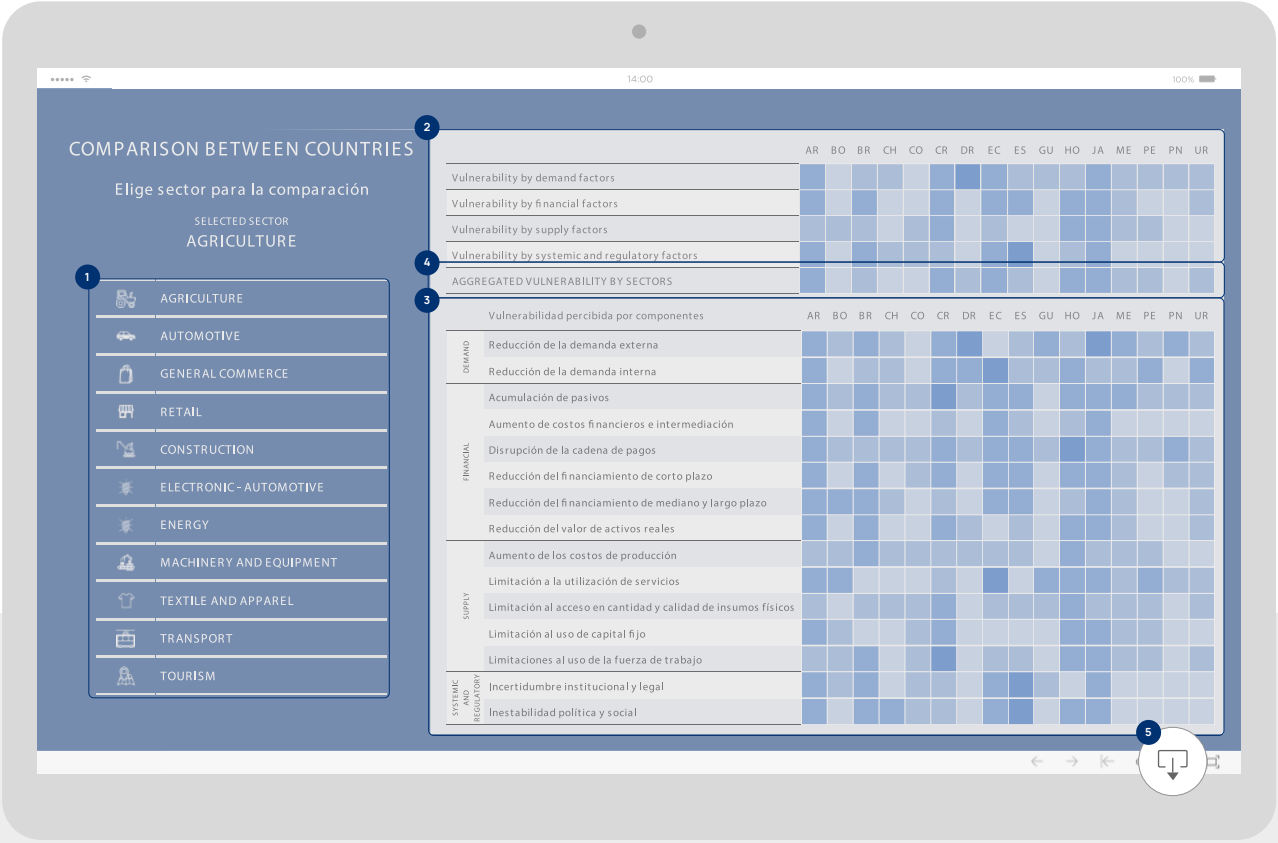
Rodrigo **Calloni** provided the Tableau Design.
Gerald **Prado** designed this methodological note.
Simón **Fernández** supported the data compilation.

Heatmap
Perspective: Country



1. Selection of sectors
2. Added vulnerability perception by **components**
3. Added vulnerability perception by **subcomponents**
4. Heat map legend
5. Summary of the vulnerability of the country with the date of the analysis
6. Summary of perception with the date for each cell

Heatmap
Perspective: Comparison between Countries



1. Selection of the comparison sector
2. Added vulnerability perception by **components**
3. Added vulnerability perception by **subcomponents**
4. Countries
5. Data download

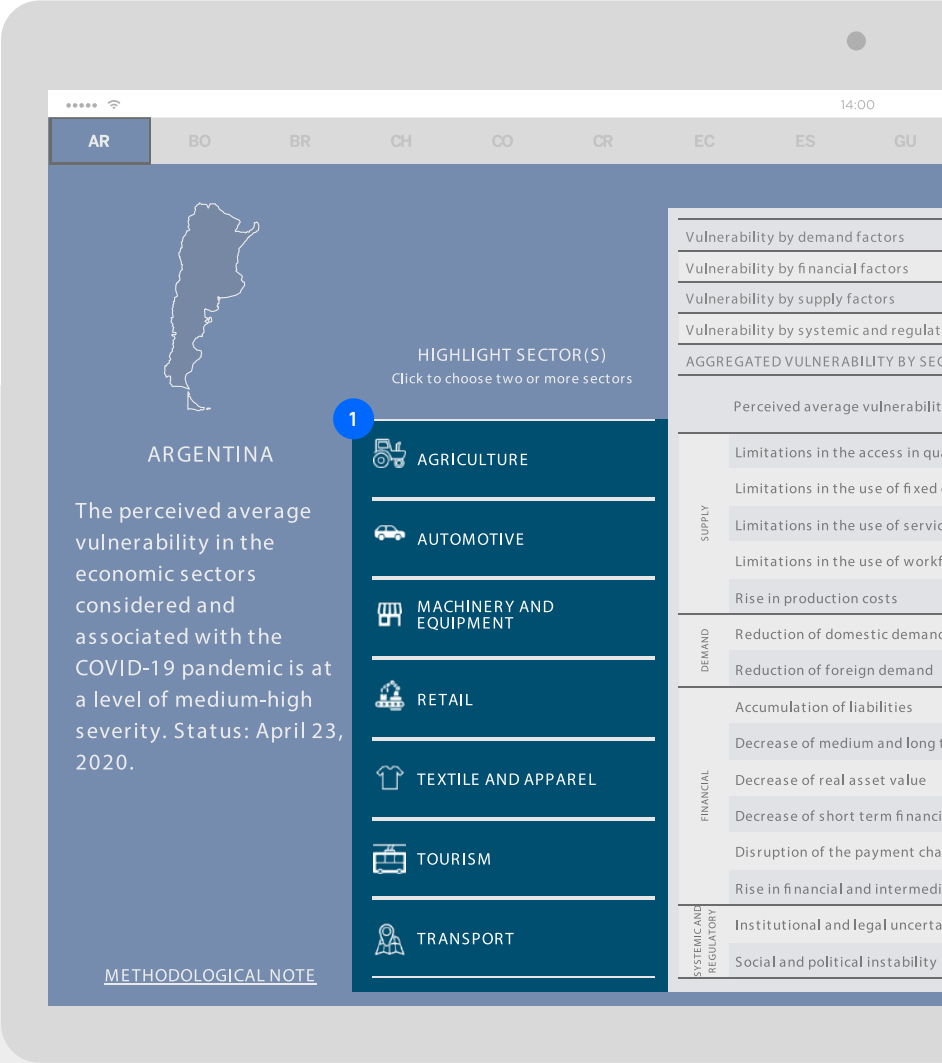
Heatmap
Methodological Aspects

This document presents the methodology used for the analysis of disaggregated vulnerability by sectors in reference to MSMEs. The following sectors are considered (see 1 in the functionalities of the heat map).

- AGRICULTURE
- AUTOMOTIVE
- RETAIL
- MACHINERY AND EQUIPMENT
- TEXTILE AND CONTRACTING MANUFACTURING
- TRANSPORT[1]
- TOURISM

In some countries, the analysis is extended to these additional sectors:

- GENERAL COMMERCE
- CONSTRUCTION
- ENERGY

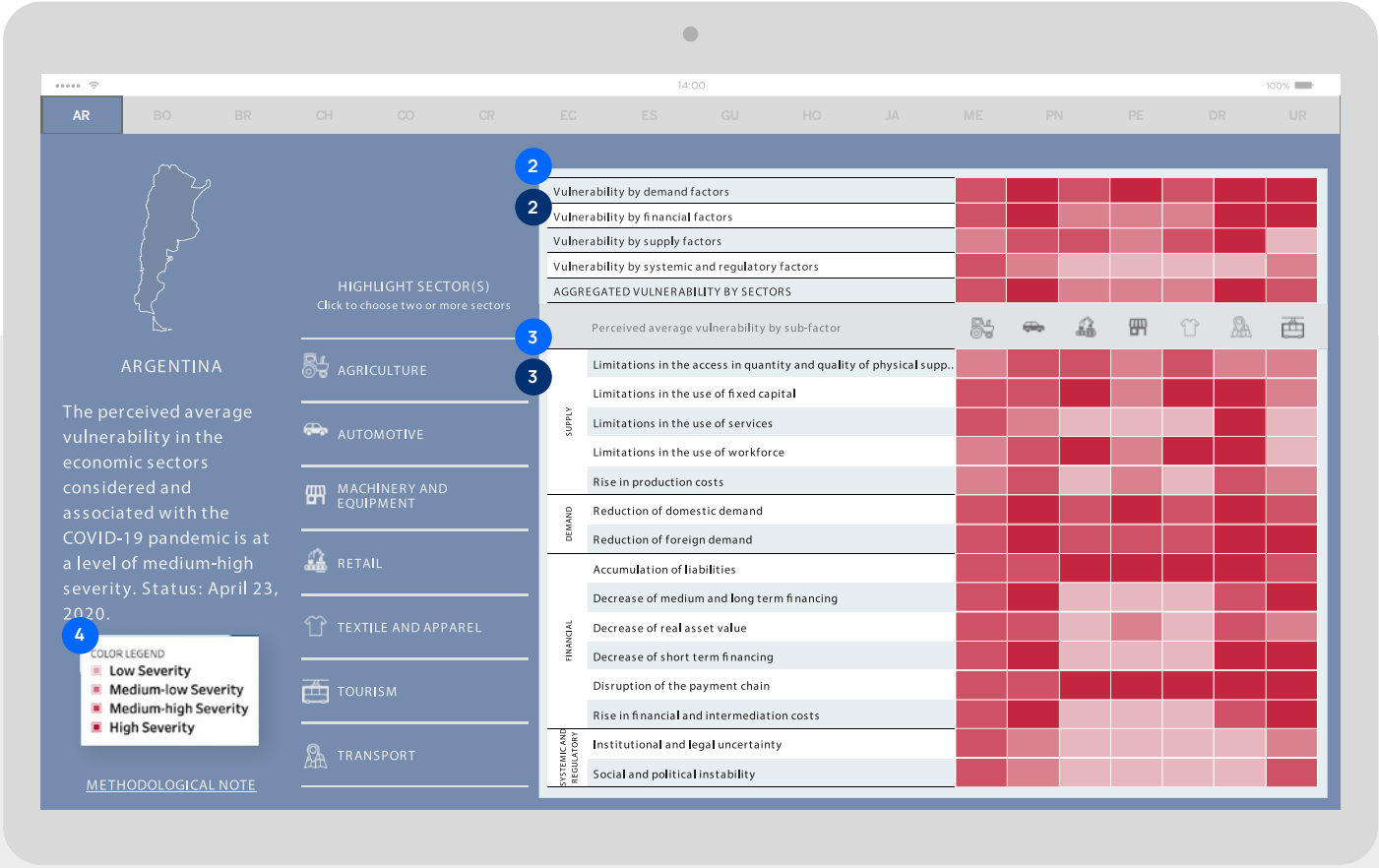


[1] Transport includes the added situation for passenger and freight transport.

Heatmap
Methodological Aspects

Vulnerability Components by Sector

To determine the general vulnerability of a sector, it is necessary to identify risk factors grouped into four components: supply, demand, financial and proprietary, and institutional (2). After the risk types are identified in these components (for a breakdown of the subcomponents see 3 and Table 2), they are evaluated by a qualitative level of potential materialization and risk impact: severity level 1 to 4, where 4 is the highest (see 4 and Table 1).

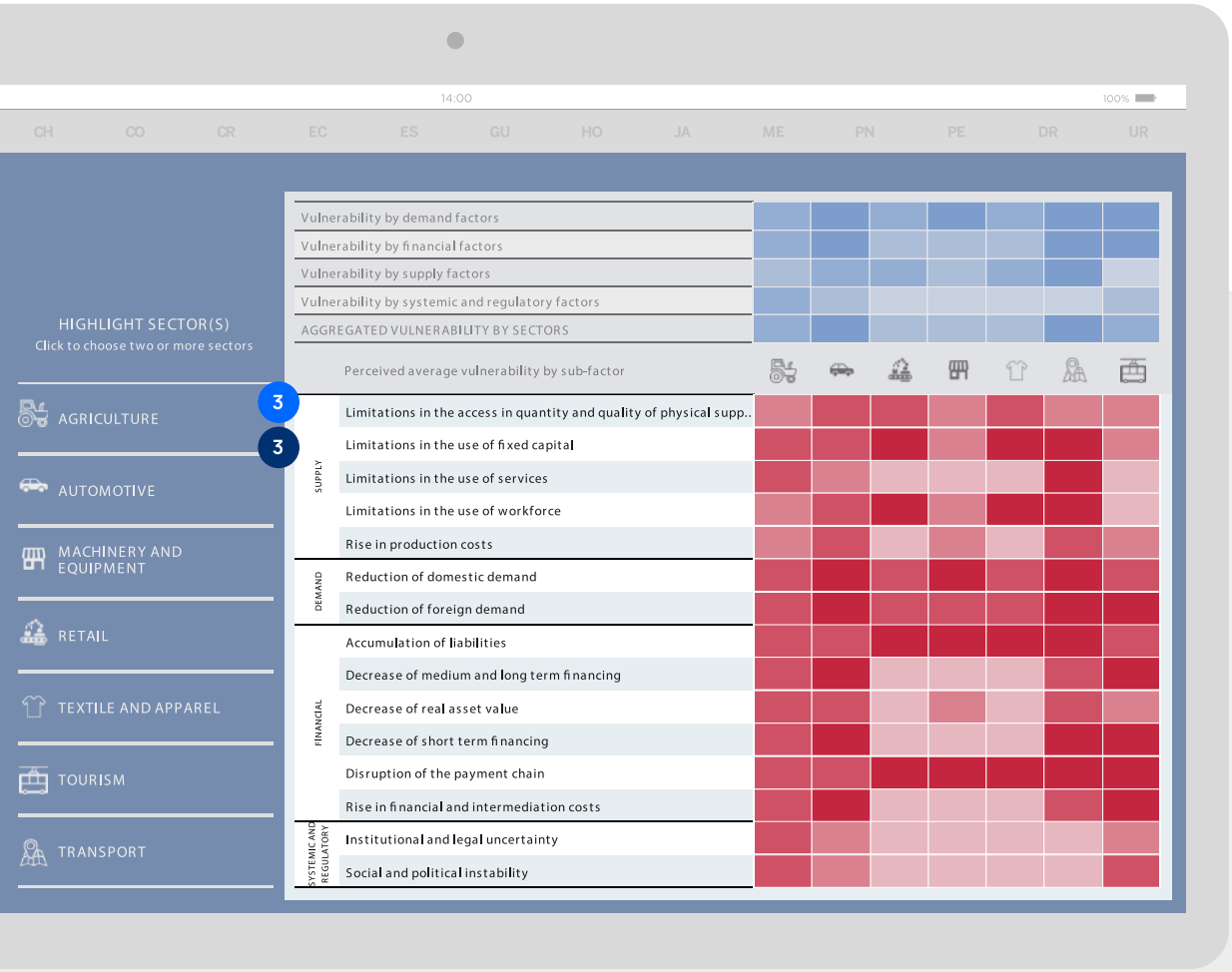


Heatmap
Methodological Aspects

Vulnerability Components: Assessment

Once the risk/vulnerability level has been assigned for each component, the results are reevaluated and added to an index that assigns a 30 percent weight to the supply, demand, and financial and proprietary components and a 10 percent weight to institutional components.

The components that are considered to be more volatile in the short term (supply, demand, financial and proprietary) have been given more weight. Institutional components were included because of the rising risk in that dimension due to the seriousness of the COVID-19 pandemic (see 3 and Table 2 for a detailed explanation).

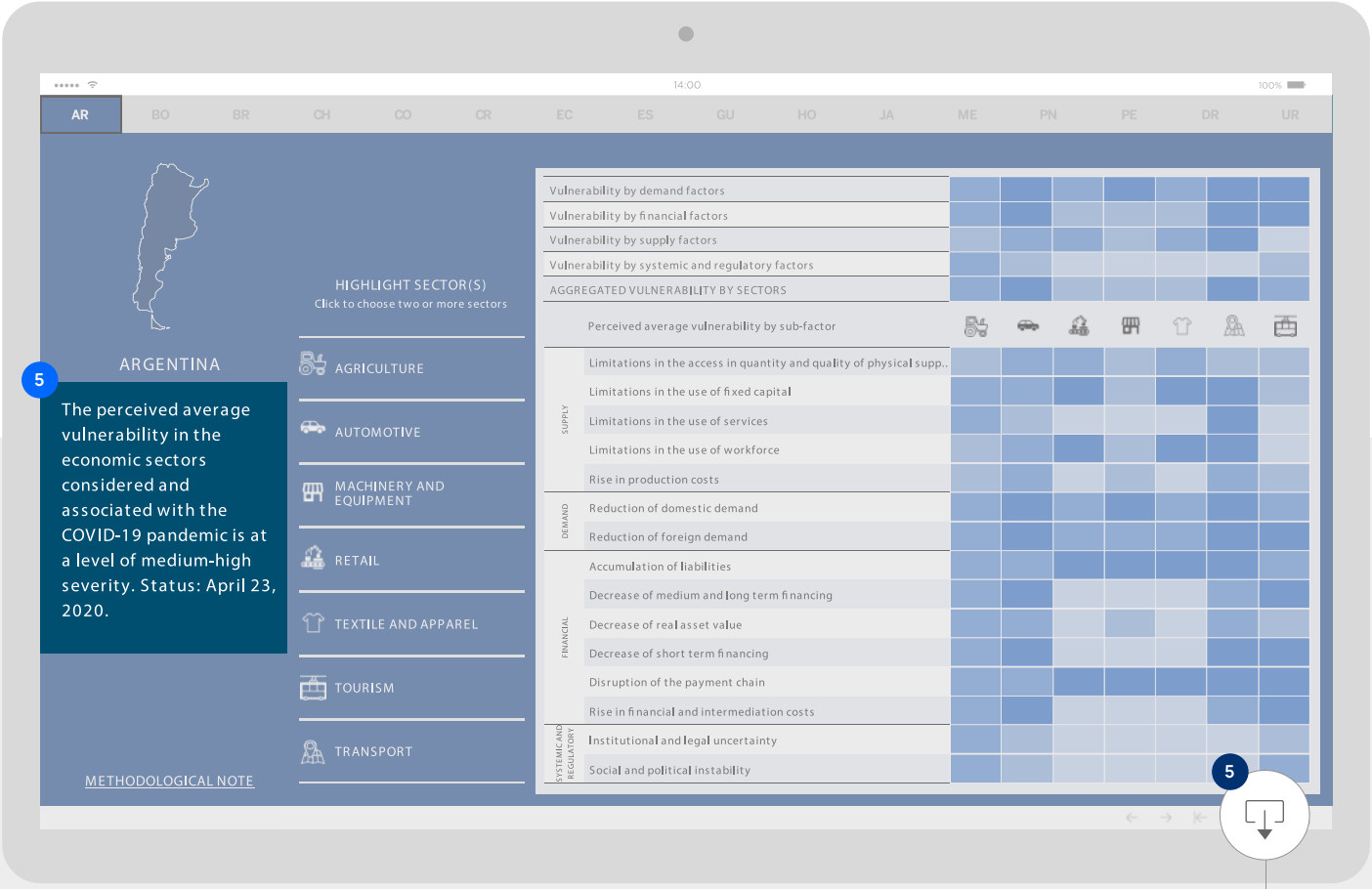


Heatmap
Methodological Aspects

Vulnerability Components: Assessment

The added vulnerability level is assessed in each country based on the productive sectors using their contribution to gross domestic product (GDP) and employment as weights. Only the contributions of low analysis sectors are considered (5).

All data can be downloaded in different formats, including Excel CSV (5).



Available formats:

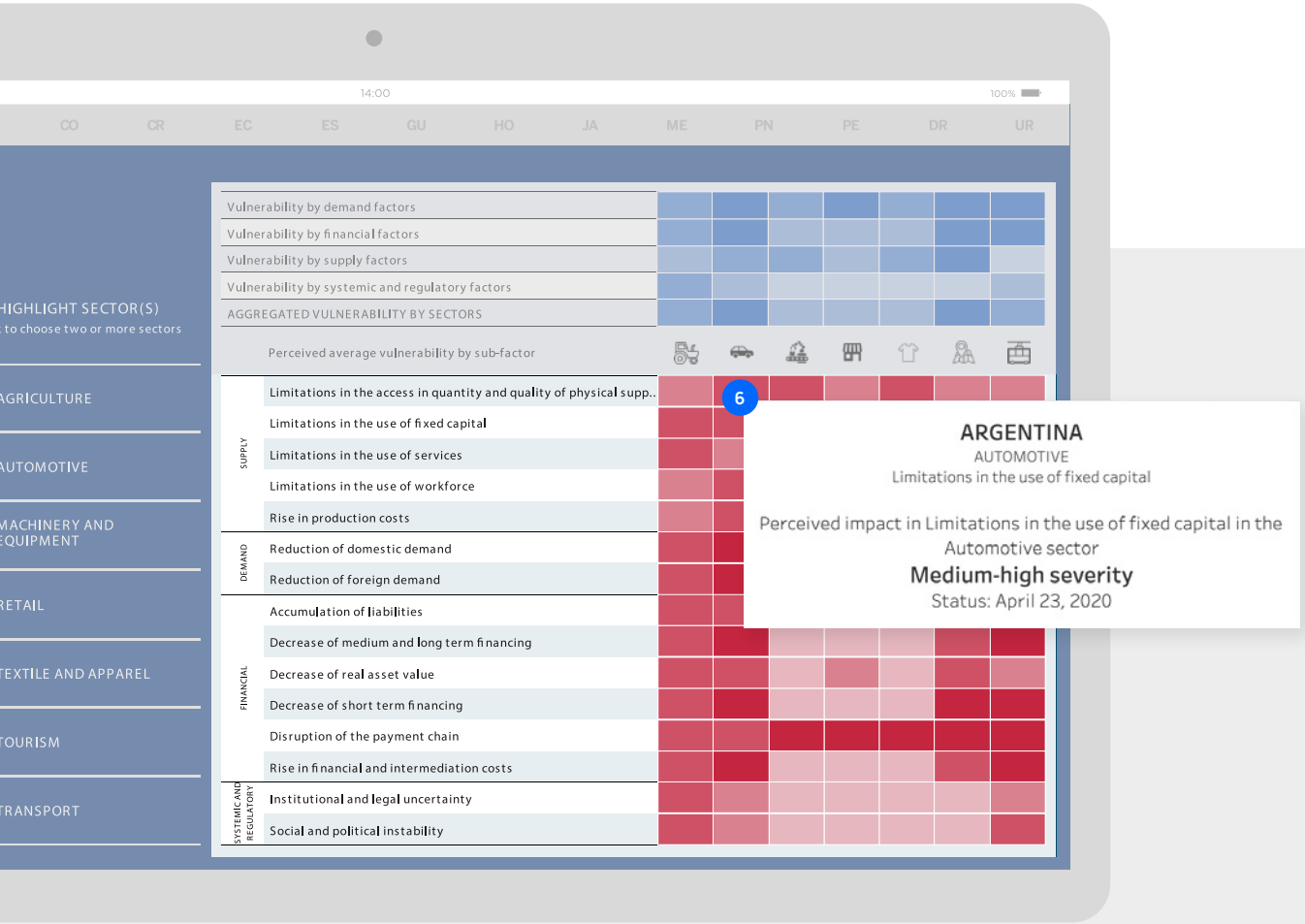
PDF, Power Point, PNG, CSV, among others.

Heatmap
Methodological Aspects

Perception Level by Experts

The level of each component has been assigned by experts from the **Inter-American Development Bank** and other organizations. They have created a general evaluation from the initial outbreak of the COVID-19 pandemic, based on their own perceptions, experiences, and different data sources. These include public access data, specialized reports, and discussions with chambers of commerce and other stakeholders. The analysis was carried out between April 23 and May 15, 2020 (6).

Table 2 includes the components that were considered and the different areas they belong to, as well as a description of the concept.



Heatmap
Methodological Aspects

Interpretation of the Vulnerability Index

The methodology identifies a sector's global level of vulnerability to COVID-19. The sectors have been selected due to their importance relative to job creation and contribution to GDP. They have also been selected based on their possible vulnerability before the changes to the supply, demand, financial and proprietary, and institutional context.

The analysis maximizes the standardization of what sectors were chosen for each country.

Index levels are graded starting from a high level of vulnerability. However, the fact that a sector has a relatively low **vulnerability index (VI)**—for example, between 0 and 24, which is equal to a severity level 1—does not mean that the sector is not vulnerable; it just means that it is on a severity level 1 among the affected. To highlight this concept, Table 1 presents the **VI** severity levels from 1 to 4.

VI	Interpretation
0-24	Severity level 1
25-49	Severity level 2
50-74	Severity level 3
75-100	Severity level 4

Table 1: Qualitative Classification of the Vulnerability Index

A higher **VI** indicates the need for a detailed analysis of the sector, which should cater to the unique vulnerability and situation of the four components (supply, demand, financial and proprietary, and institutional) and to the instrument needed to address the sector's challenges. Table 2 summarizes how the heat map can be interpreted based on the indicative data that were used by the experts. This information is qualitative and is based on the perceptions constructed from different sources at the outbreak of the pandemic, where the limited information added value to data collection and information gathering from qualified informants. Nonetheless, the homogeneity of the criteria allows for comparisons by sector and country, and also permits the use of this visual guide along with quantitative analyses and surveys conducted in the countries.

Heatmap
Methodological Aspects

Table 2: Description of Components and Subcomponents of the Vulnerability Index

Component		Risk subcomponent	Description
Supply	Operational	Limitations in the use of workforce	› Indicates the limitations in the effective availability of the workforce, regarding the habitual availability in normal conditions. › The effective availability tries to consider the effective use of the workforce. For example, if normally there is a 100% workforce, but workers can only work a half day, then the effective availability can be 50% (or even less if the level of efficiency loss in work organization is considered). › Consider the possibility of telework, alternative/extended shifts, and other solutions that may come up. › **Indicative values** (the specialist can use alternative values) **1: Low severity;** reduction of up to 25% **2: Medium-low severity;** reduction of up to 50% **3: Medium-high severity;** reduction of up to 75% **4: High severity;** reduction of more than 75%
		Limitations in the use of fixed capital (offices, shopping malls, machines, etc.)	› Refers to the limitations of the necessary assets for production. › Address the possibility or degree of continuity that can be achieved through alternative agreements (for example: using shifts to minimize the number of employees in a certain schedule) and the relative importance of digital commercialization (digital presence and logistical capacity). Consider the availability of work limitations (shifts arrangements, digital means, others).
		Insufficient quantity and quality of physical supplies	› Limitations in the access to production supplies (goods and services). › Consider energy, raw materials, and physical supplies in general. Do not consider services such as transport, communication, or financial (they are considered separately). › Consider the possibility of using supplies of lower quality or changes in their utilization.
		Limitations in access to services (transport, communication)	› Limitations in logistics and communication services. › Consider the limitations in logistics (especially in transportation and distribution services) and communication services.

Heatmap
Methodological Aspects

Table 2: Description of Components and Subcomponents of the Vulnerability Index

Component		Risk subcomponent	Description
Supply	Market-based	Rise in supplies and production costs	› Rise in the production costs of goods and services (workforce, capital services, transport, energy, communications, etc.) › In real terms. › Consider global costs even when specific supplies can have significant increases.
Demand	Market-based	Reduction of domestic demand	› Reduction of domestic demand of produced goods and services. This includes the demand of consumers (families or companies) and the government.
		Reduction of foreign demand	› Reduction of the foreign demand of goods and services. Consider the demand of tourists of goods and services provided in the country as foreign demand.
Financial and Proprietary	Liquidity	Delay or interruption in the cycle of payments	› Degree of delay in payments for the sale of goods and services made in relation to the usual conditions.
		Reduction or interruption of short-term financing	› Reduction or interruption of short-term financing (suppliers credit, factoring, work capital, other short-term financing such as credit cards).
	Credit	Reduction or interruption of medium- and long-term financing	› Reduction or interruption of medium- and long-term financing (including foreign trade and investment).
	Operational	Rise in financial and intermediation costs (interest rates, commissions, etc.)	› Rise in financial and intermediation costs (interest rates, commissions, etc.) Consider the costs from all sources (suppliers, banks, credit cards, etc.) › Consider costs and rates in real terms (pay close attention to inflation).
	Proprietary	Decrease in the value of real assets due to demand retraction	› Decrease in the value of real assets due to demand retraction (value of buildings, land, inventory, etc.) and devaluation (for example: merchandise expiration). › Consider in real terms.

Heatmap
Methodological Aspects

Table 2: Description of Components and Subcomponents of the Vulnerability Index

Component		Risk subcomponent	Description
Financial and Proprietary	Operational	Backlog of liabilities (rents, salaries, etc.)	Consider the rise in liabilities associated with the lack of income due to sales that would otherwise be done, for example salary payments, rents, tax obligations, payment of services (energy, communications, etc.) Consider the indebtedness incurred to try and keep the payments (loans to pay salaries and wages).
Institutional	Systemic and regulatory	Political and social instability	The impact that political and social instability can have over businesses. Consider a moderate scenario of political and social instability (localized and contained social unrest, looting, increased violence, and localized and contained delinquency).
	Systemic and regulatory	Institutional and legal uncertainty	The impact that institutional and legal instability can have over businesses. Consider a moderate scenario of institutional and legal instability of the general maintenance of constitutional order, rule of law, and protection to private property and civil rights, but with progress on private property and contracts among private actors.

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