UN-GGIM:Americas
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9° SESSION
UN-GGIM: Americas

Population living in risk areas in Brazil

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Session 8

IBGE
Instituto Brasileiro de Geografia e Estatística

Cemaden
Centro Nacional de Monitoramento e Alertas de Desastres Naturais

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Scenario of information related to disasters in the first decade of the 21st century

- Decentralization of information and databases on disasters, including mapping of risk areas, among almost 5570 municipalities and 27 states;
- At the federal level, scattered initiatives and a certain weakness in governance;
- National Alarm System was not implemented;
- Lack of knowledge about the number of people at risk and their sociodemographic characteristics.

Turning point

- **Disasters at the turn of the decade from 2000 to 2010:** Itajaí (2008), Angra dos Reis and Ilha Grande (2010), Pernambuco and Alagoas (2010).
- **Worst Disaster in Brazil: Serrana Region/RJ (2011)** – worst disaster in Brazil: 918 dead, around 100 missing and at least 30,000 displaced

Disasters in Brazil are mostly water related: Floods, landslides, storms, droughts etc.

Foto: Marino Azevedo/ Governo do estado RJ

On that occasion, it was classified by the UN as the 8th largest landslide occurred worldwide in the last 100 years (Busch and Amorim,2011)

A new approach to disasters in Brazil

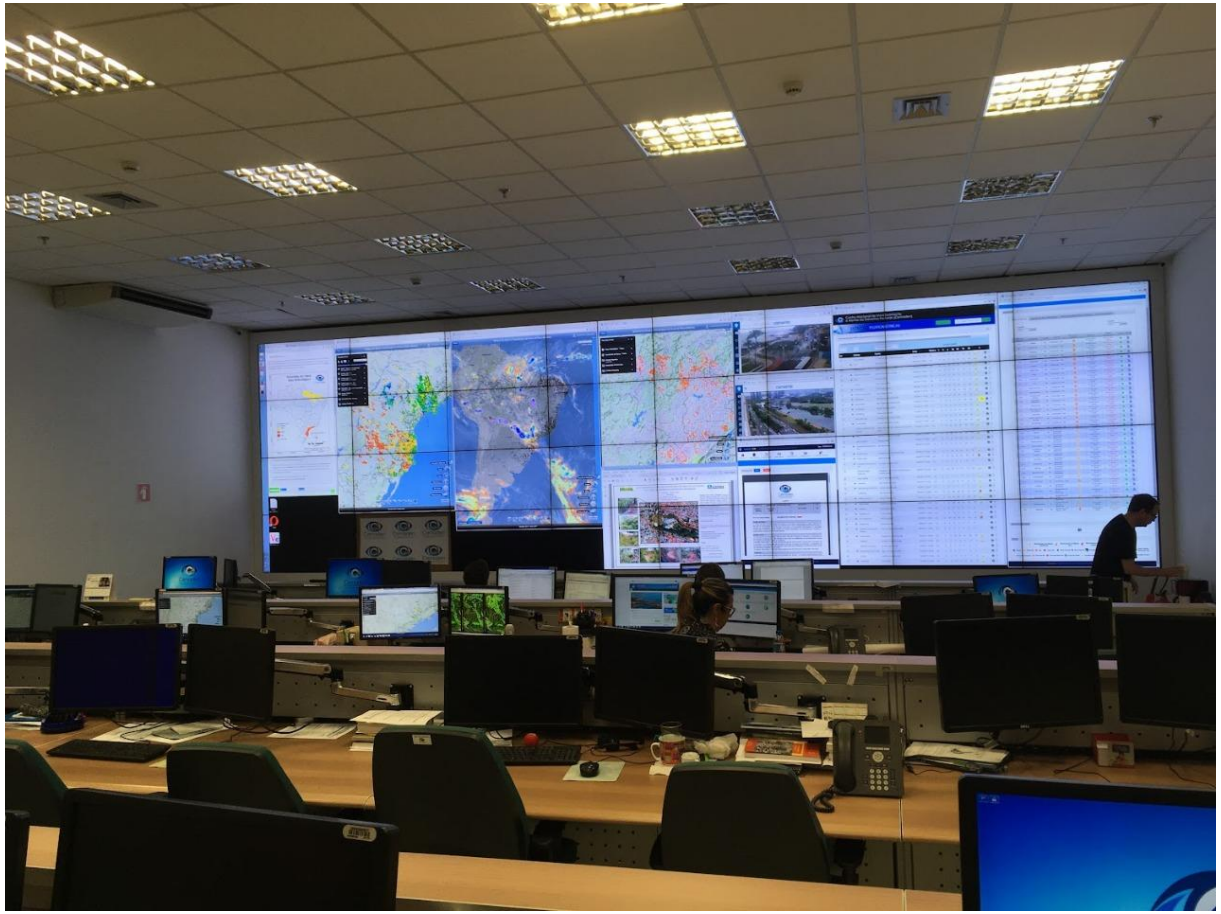
National Civil Defense database with records of disasters, impacts (human and financial) and other information that support decision-making related to risk and disaster management in the country.

Geological mapping and support to municipalities in mapping risk areas

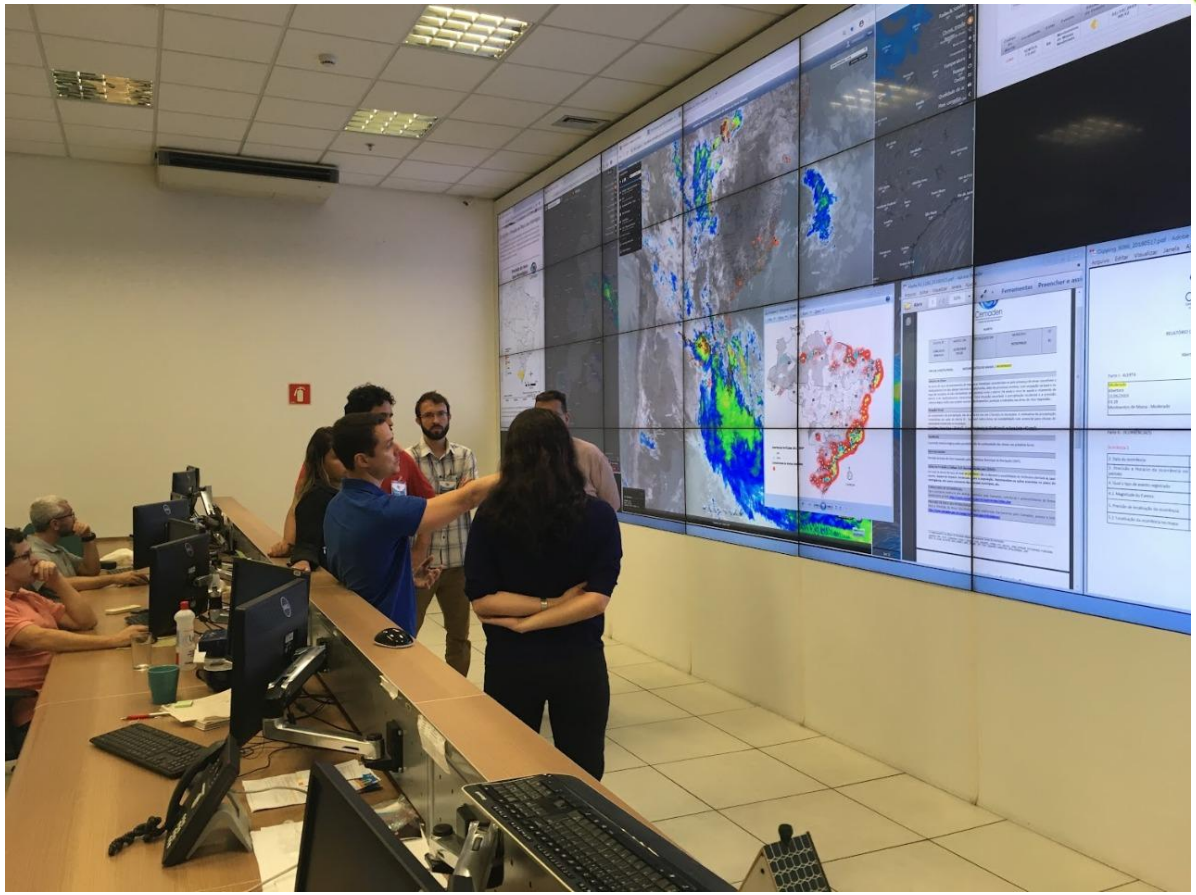
National Civil Protection and Defense Policy (2012)

Creation of the **National Center for Natural Disaster Monitoring and Alerts** (2013) for integrated monitoring; early warning systems for the likelihood of natural disasters; modern hydrometeorological and geodynamic monitoring and forecasting technologies; prevention and mitigation

A new approach to disasters in Brazil



Situation Room - CEMADEN



How many people live in risk areas?

- Information about how many people live at risk requires layers of information mainly from two fundamental themes of geospatial data:

Geology and Soils

Population Distribution

How many people live in risk areas?

Geology and Soils

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Risk areas
(mapped by SGB and municipalities)

Types of risk
(floods/flash floods and mass movements)

+

=

Population Distribution

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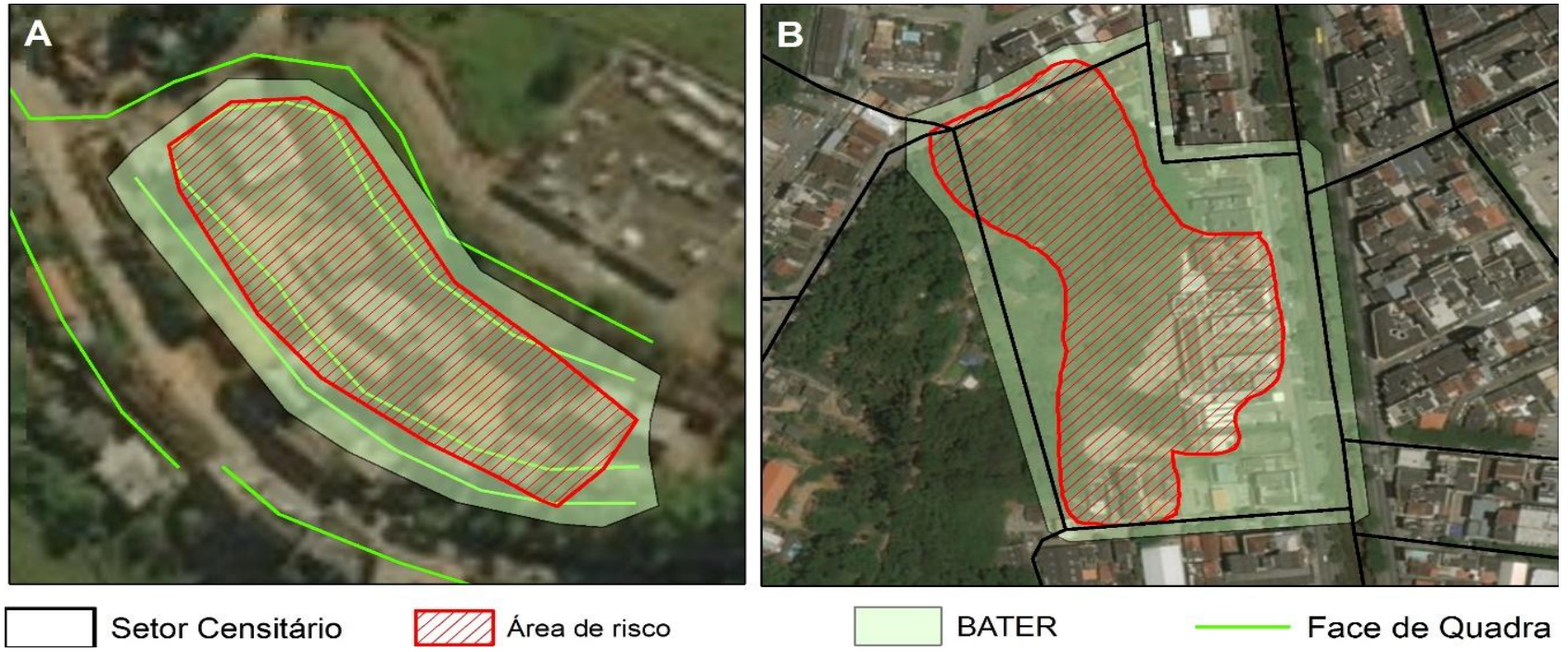
Census tracts and block-faces

Sociodemographic data (vulnerability)

BATER

Statistical Territorial Base of Risk Areas

How many people live in risk areas?



Fonte: IBGE. Diretoria de Geociências, Coordenação de Geografia

How many people live in risk areas?

4,273 census tracts were used in urban areas, and **193,486** block faces drawn by IBGE. Of the **8,309** BATER polygons, **77.5%** (6,438 polygons) had data associated with the 2010 Census, while **22.5%** (1,871 polygons) had no data association.

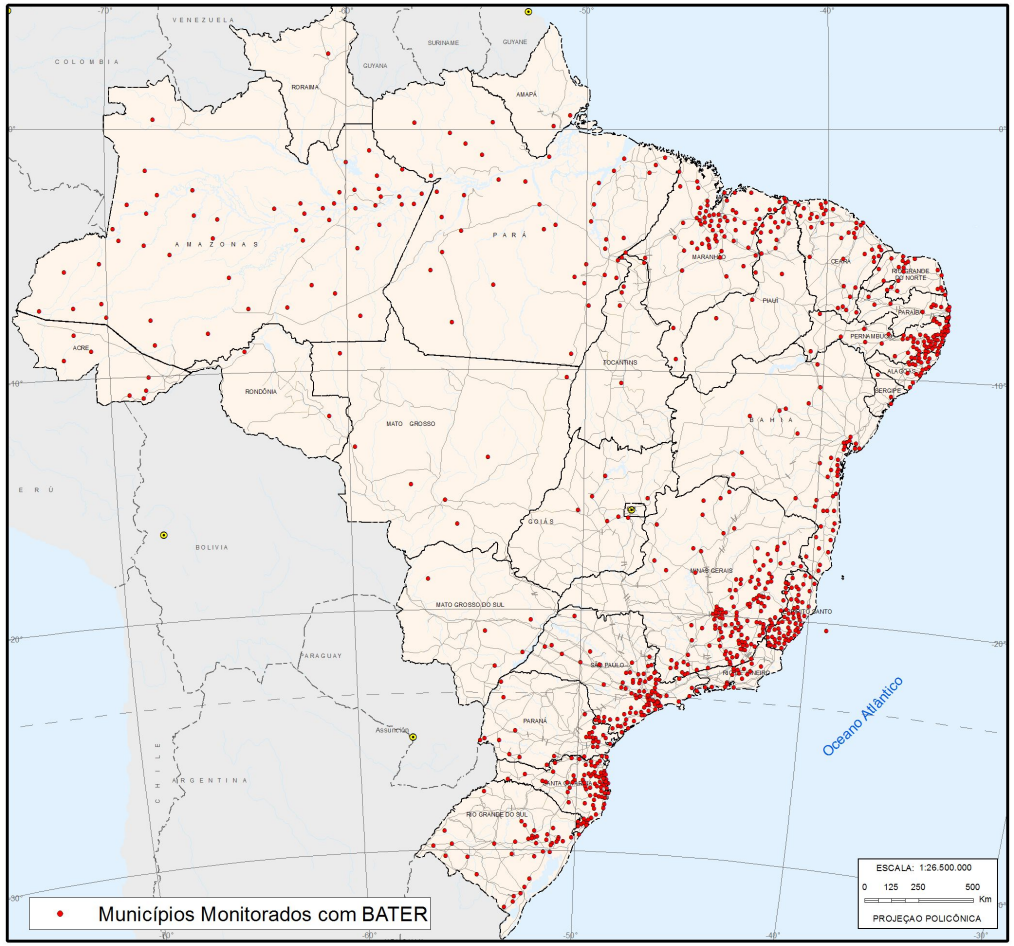
Of the BATER polygons with data associated with the 2010 Census, **87%** (5,625 polygons) were mapped using block faces, while **13%** (813 polygons) used census tracts with data associated with the 2010 Census.

How many people live in risk areas?

The approximate population living in risk areas, in the **872** municipalities, as of the **2010 Census**:

- 8,270,127 inhabitants;
- 2,471,349 permanent private households.

Mapa 1 - Distribuição dos Municípios Monitorados na BaseTerritorial Estatística de Área de Risco do Brasil (2010)

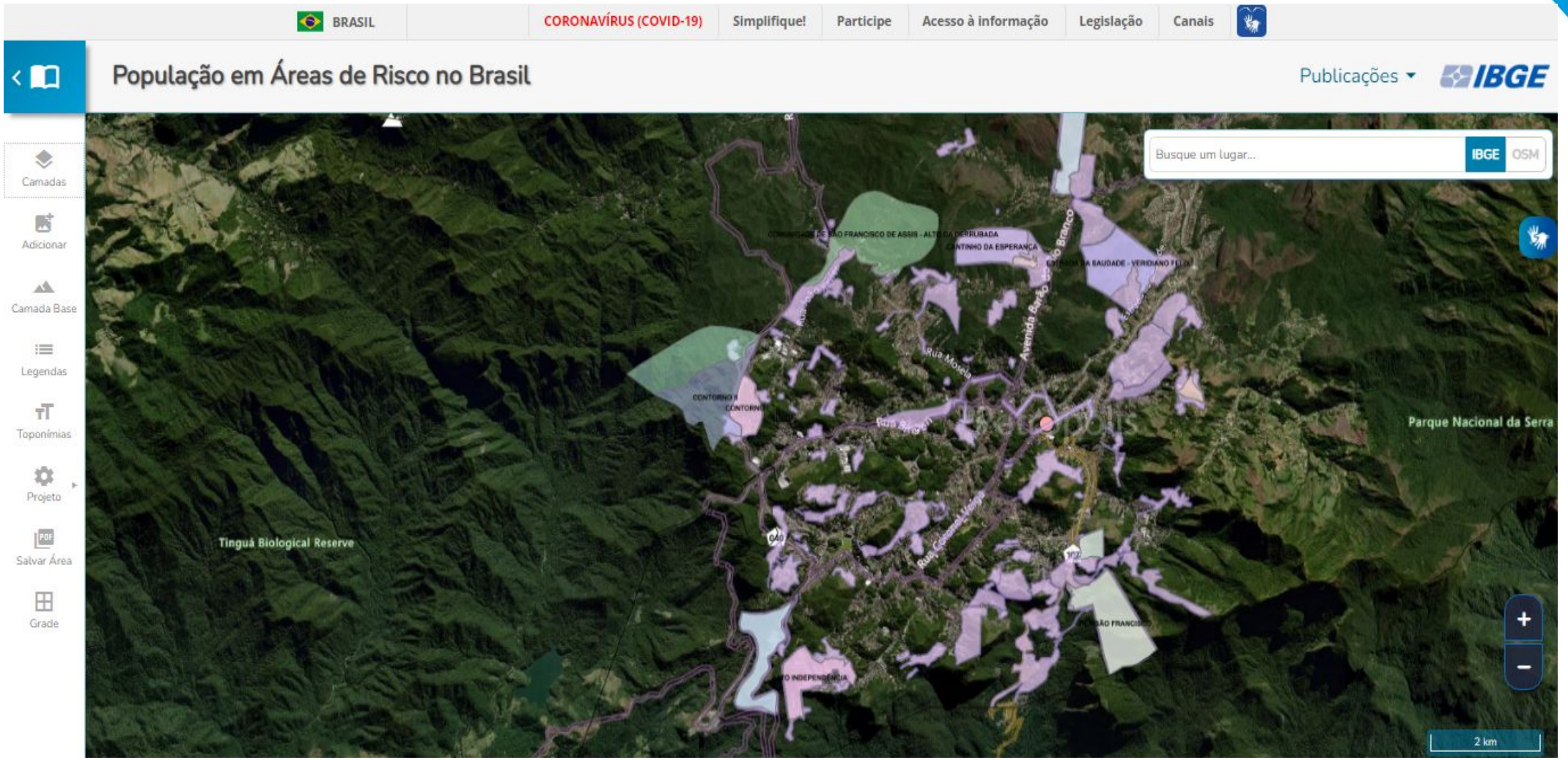


Fonte: IBGE, Censo Demográfico 2010; CEMADEN

Municipalities with the largest number of residents in permanent private households in areas at risk of natural disasters in Brazil – 2010, according to absolute total population

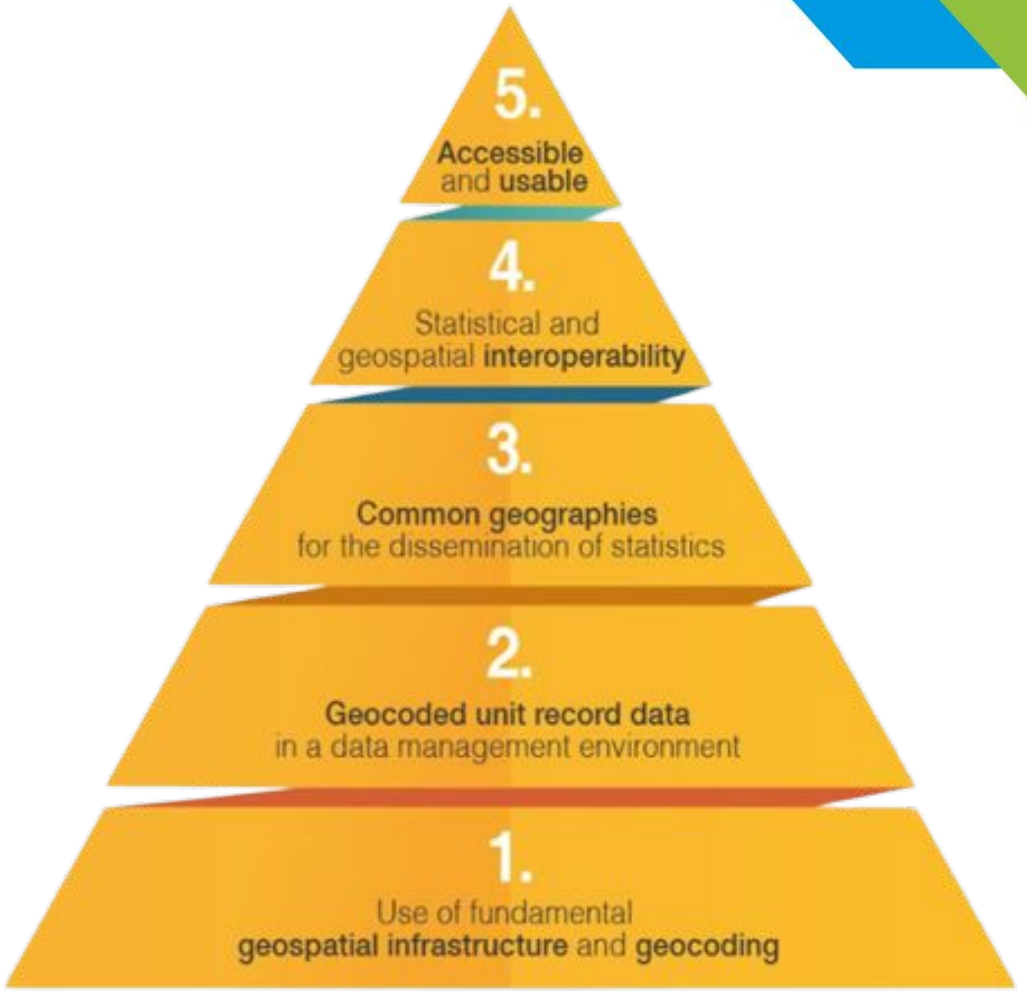
	Municipalities	Total Population	Population living in risk areas	% Population living is risk areas
1	Salvador (BA)	2 675 656	1 217 527	45,5%
2	São Paulo (SP)	11 253 503	674 329	6,0%
3	Rio de Janeiro (RJ)	6 320 446	444 893	7,0%
4	Belo Horizonte (MG)	2 375 151	389 218	16,4%
5	Recife (PE)	1 537 704	206 761	13,4%
6	Jaboatão dos Guararapes (PE)	644 620	188 026	29,2%
7	Ribeirão das Neves (MG)	296 317	179 314	60,5%
8	Serra (ES)	409 267	132 433	32,4%
9	Juiz de Fora (MG)	516 247	128 946	25,0%
10	São Bernardo do Campo (SP)	765 463	127 648	16,7%
11	Natal (RN)	803 739	104 433	13,0%
12	Fortaleza (CE)	2 452 185	102 836	4,2%
13	Santo André (SP)	676 407	96 062	14,2%
14	Guarulhos (SP)	1 221 979	94 720	7,8%
15	Vitória (ES)	327 801	87 084	26,6%
16	São João de Meriti (RJ)	458 673	86 185	18,8%
17	Blumenau (SC)	309 011	78 371	25,4%
18	Petrópolis (RJ)	295 917	72 070	24,4%
19	Maceió (AL)	932 748	70 343	7,5%
20	Igarassu (PE)	102 021	69 801	68,4%

Source: IBGE, Censo Demográfico 2010; CEMADEN


BRASIL
CORONAVÍRUS (COVID-19)
Simplifique!
Participe
Acesso à informação
Legislação
Canais
População em Áreas de Risco no Brasil
Publicações
IBGE
Camadas
Adicionar
Camada Base
Legendas
Toponímias
Projeto
Salvar Área
Grade
Busque um lugar...
IBGE
OSM
Parque Nacional da Serra
Tinguá Biological Reserve
2 km

Geospatial and Statistical Integration

- The GSGF was important for structuring the project considering its 5 principles, BATER were **geocoded** and structured as a **common geography** that reconciled data from risk areas and population distribution. Furthermore, the information is **accessible and usable** on an interactive geospatial platform.



Next Steps and beyond

- Update the database with 2022 Census data and new mapping data;
- Make the comparability between the two reference periods calibrating the databases;
- Explore the 2022 Census coordinates and addresses data, which has higher quality and granularity than in 2010;
- Integrate with other Federal Government databases like S2ID;
- Improve the governance of disaster information in partnership with the SEDEC, SGB and CEMADEN;
- Improve communication with ordinary citizens on other platforms (mobile app, for example).

Thank you!
Muchas gracias!
Obrigado!