

SVSA

DEDT
CGCOVID

INTEGRATED SURVEILLANCE OF RESPIRATORY VIRUSES IN BRAZIL: PRACTICES AND CHALLENGES.

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CGCOVID/DEDT/SVSA



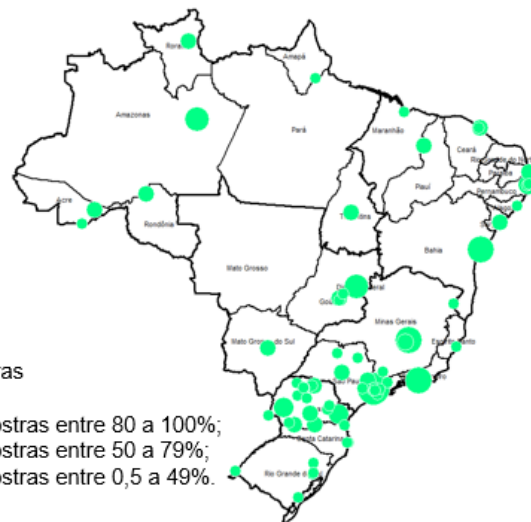
MINISTÉRIO DA
SAÚDE

GOVERNO FEDERAL
BRASIL
UNIÃO E RECONSTRUÇÃO

ILI sentinel surveillance

2019: 153 sentinel units.

Distribuição de **Unidades Sentinelas (US) de Síndrome Gripal (SG)** no Brasil, cadastradas no sistema e com dados de coleta de amostras de SNF. **Brasil, 2019.**

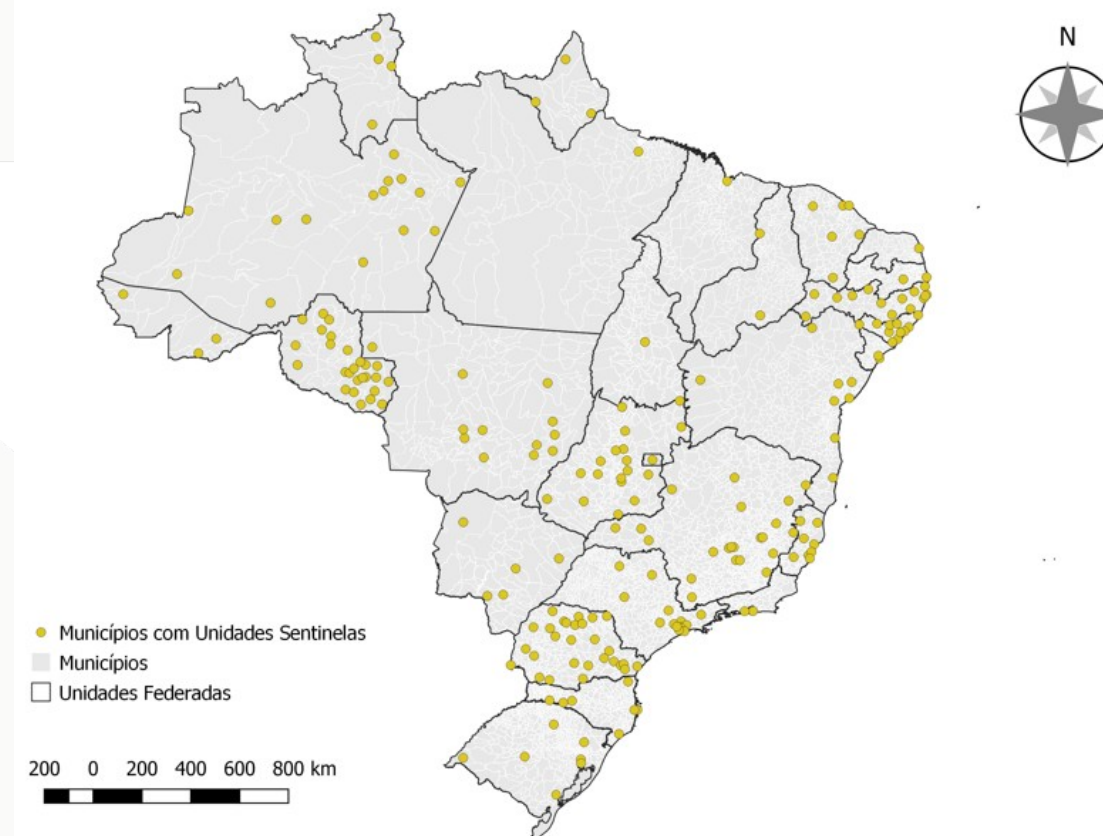


➤ **153** Unidades Sentinelas (US) registradas no Brasil

- **74,5%** (114/153) das US reportam dados de coleta de amostras
 - ✓ **61,4%** (70/114) US possuem indicador de coleta de amostras entre 80 a 100%;
 - ✓ **18,4%** (21/114) US possuem indicador de coleta de amostras entre 50 a 79%;
 - ✓ **20,2%** (23/114) US possuem indicador de coleta de amostras entre 0,5 a 49%.

Fonte: Sivep-Gripe. Dados atualizados em 14/11/2019, sujeitos a alteração.

2022: 342 sentinel units in 252 municipalities.



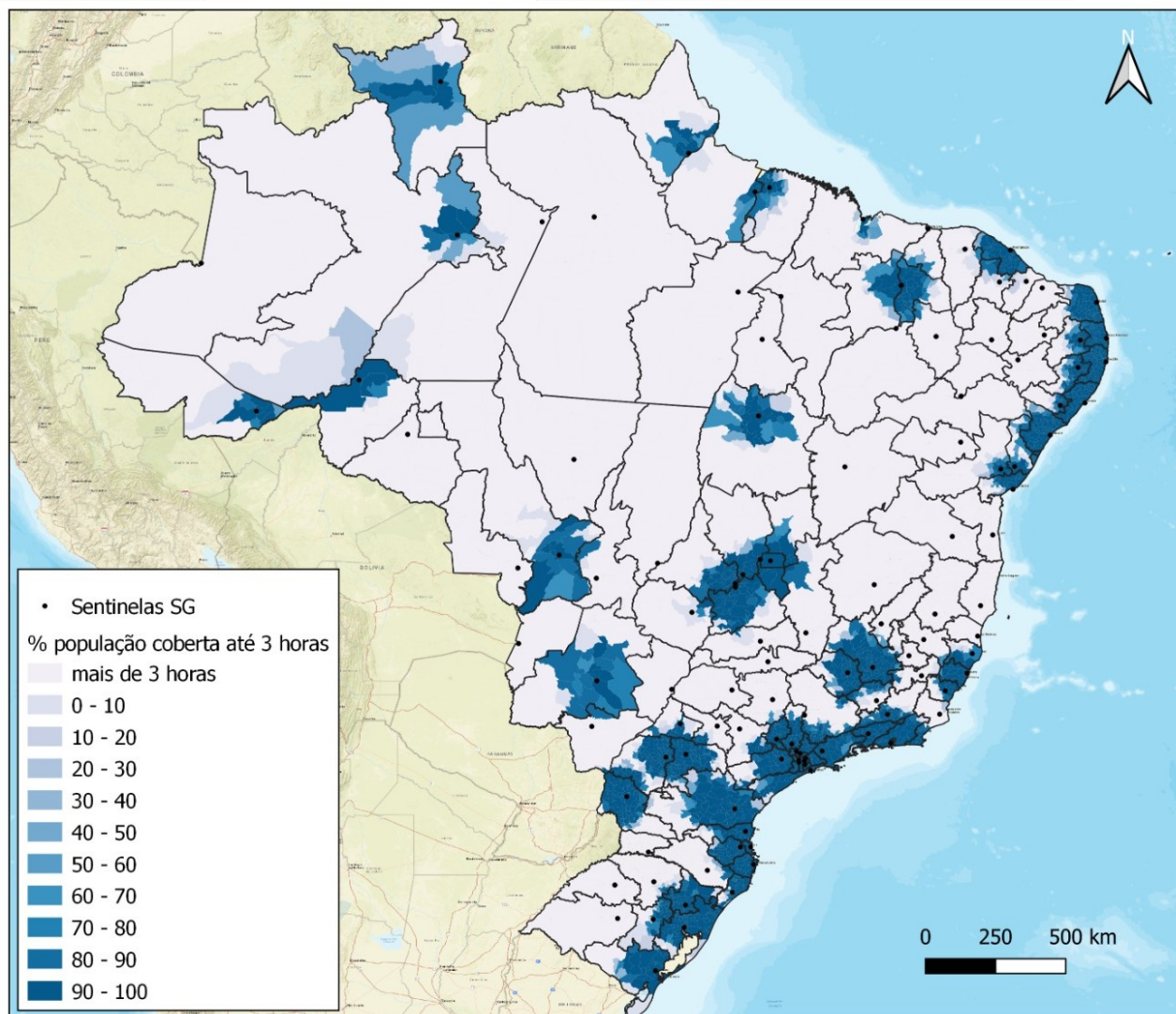
Source: SIVEP-Gripe.

ILI SENTINEL SURVEILLANCE: POTENTIALLY EXPOSED POPULATION

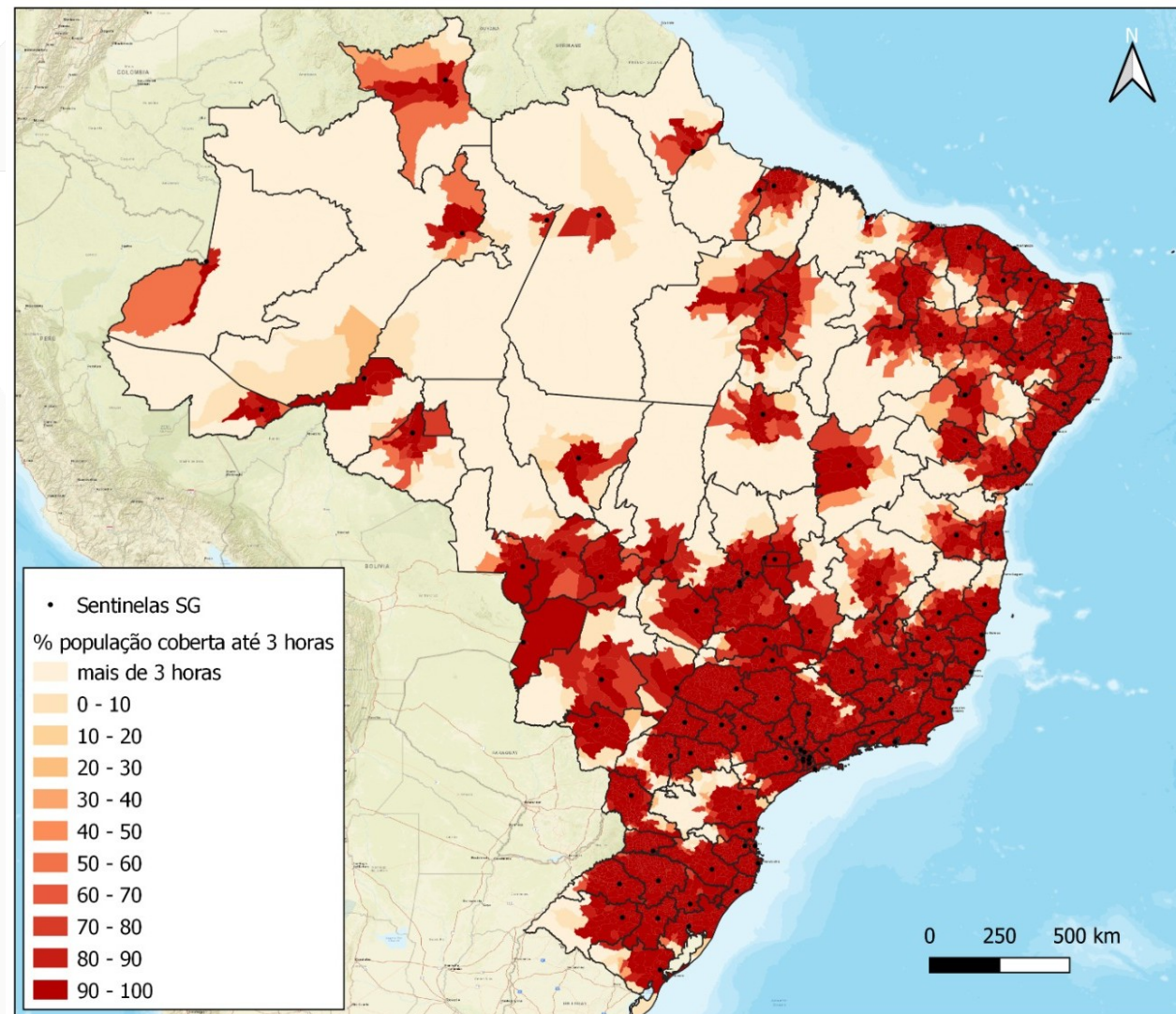
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~63% of the pop.



~89% of the pop.



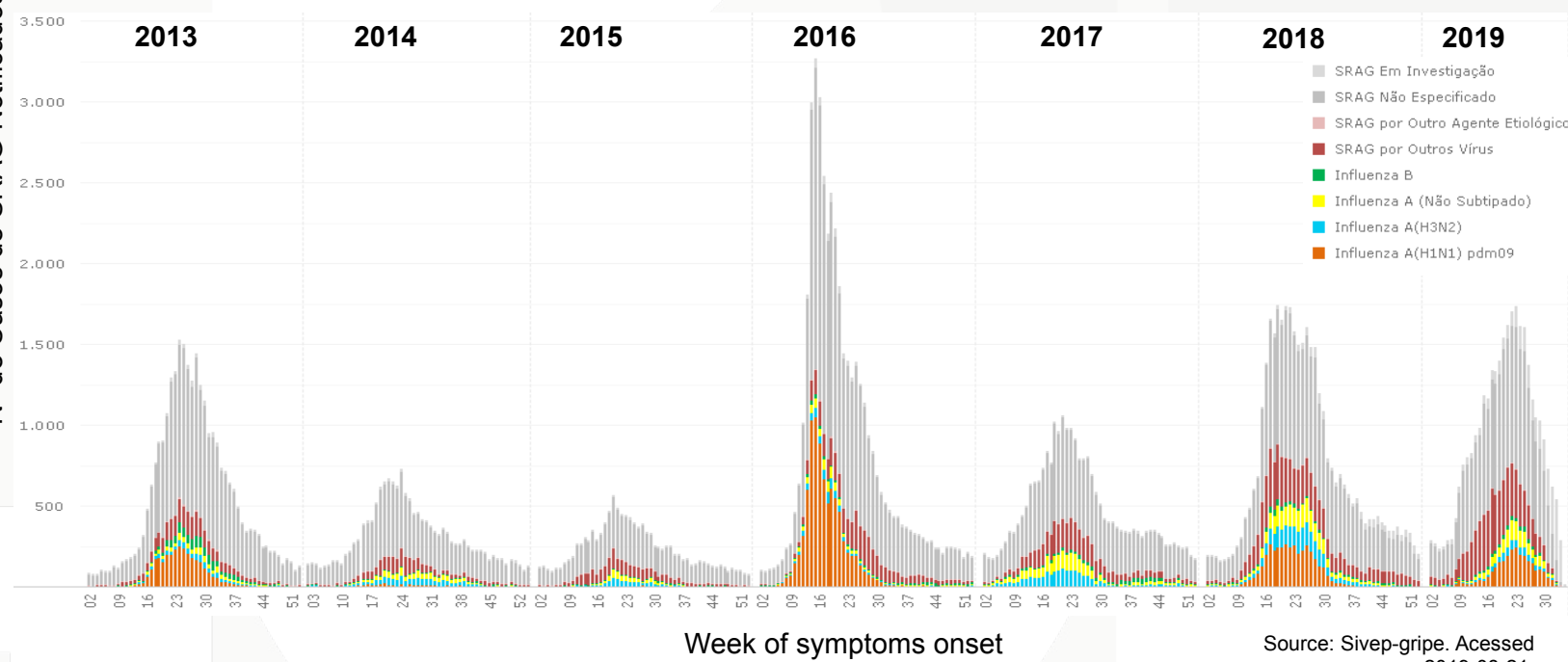
SARI surveillance

- Individual notification of every SARI case.
- Current lab protocol: real time RT-PCR tests.
 - › Quadriplex: SARS-CoV-2, Flu A/B and metapneumovirus;
 - › Multiplex: RSV, rhinovirus, adenovirus, ...
- TR-Ag is not recommended for SARI surveillance.

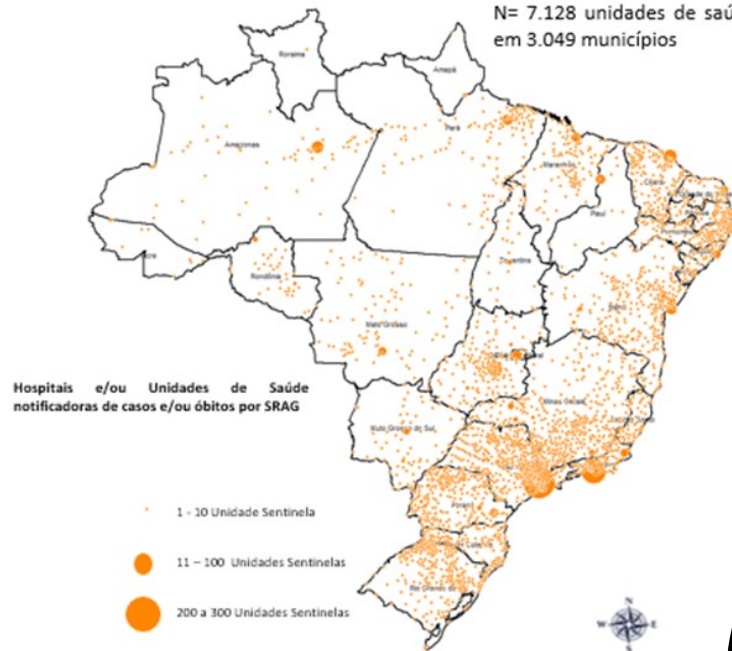
PS: both SARI and ILI surveillance feed the genomic surveillance of Influenza, by sub-sampling per state and epiweek. For SARS-CoV-2 genomic surveillance, the universal surveillance of covid-19 is also a possible source for samples.

SARI by pathogen, 2013-2019

Nº de Casos de SRAG Notificados



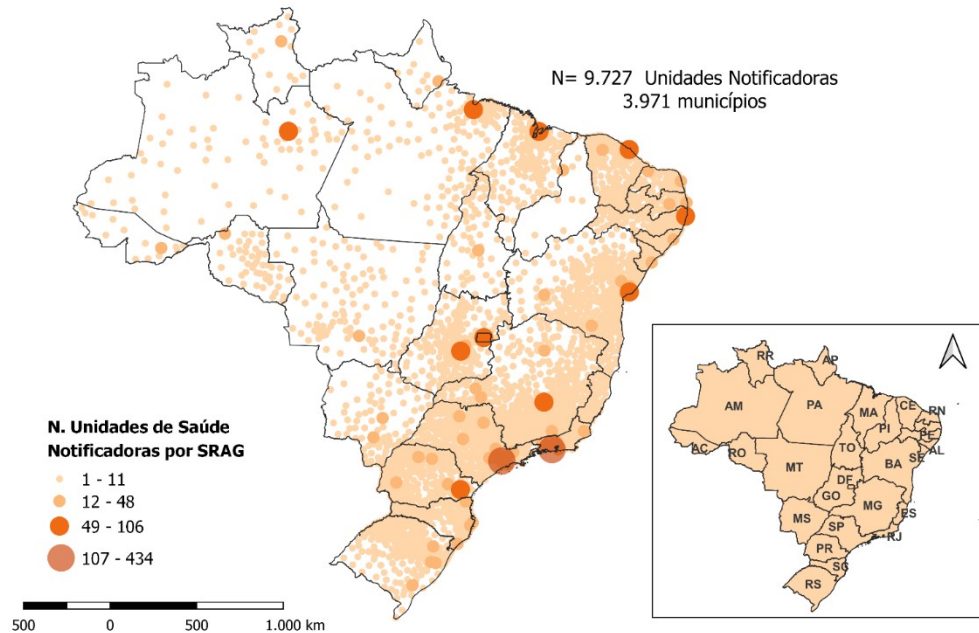
N= 7.128 unidades de saúde,
em 3.049 municípios



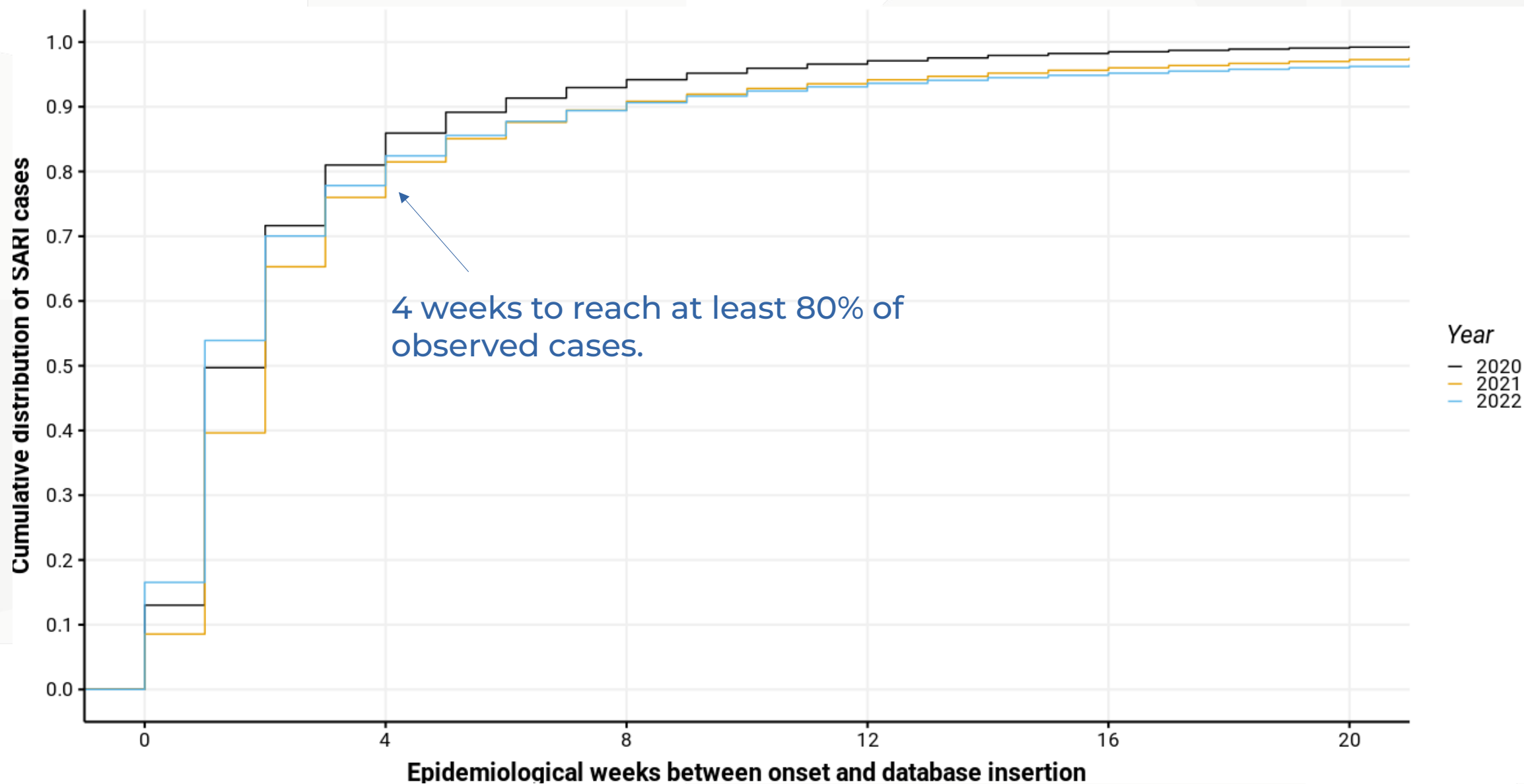
FONTE: Sistema de Informação da Vigilância Epidemiológica da Gripe (SIVEP-Gripe), atualizado em 13/07/2020. Dados sujeitos à alteração.

Unidades de Saúde notificadoras de casos e/ou óbitos por SRAG, segundo municípios entre 2013 a 2022

N= 9.727 Unidades Notificadoras
3.971 municípios



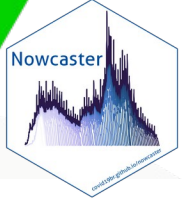
SARI: database insertion delay



SARI NOWCASTING BY AGE, AND LAB RESULTS BY AGE

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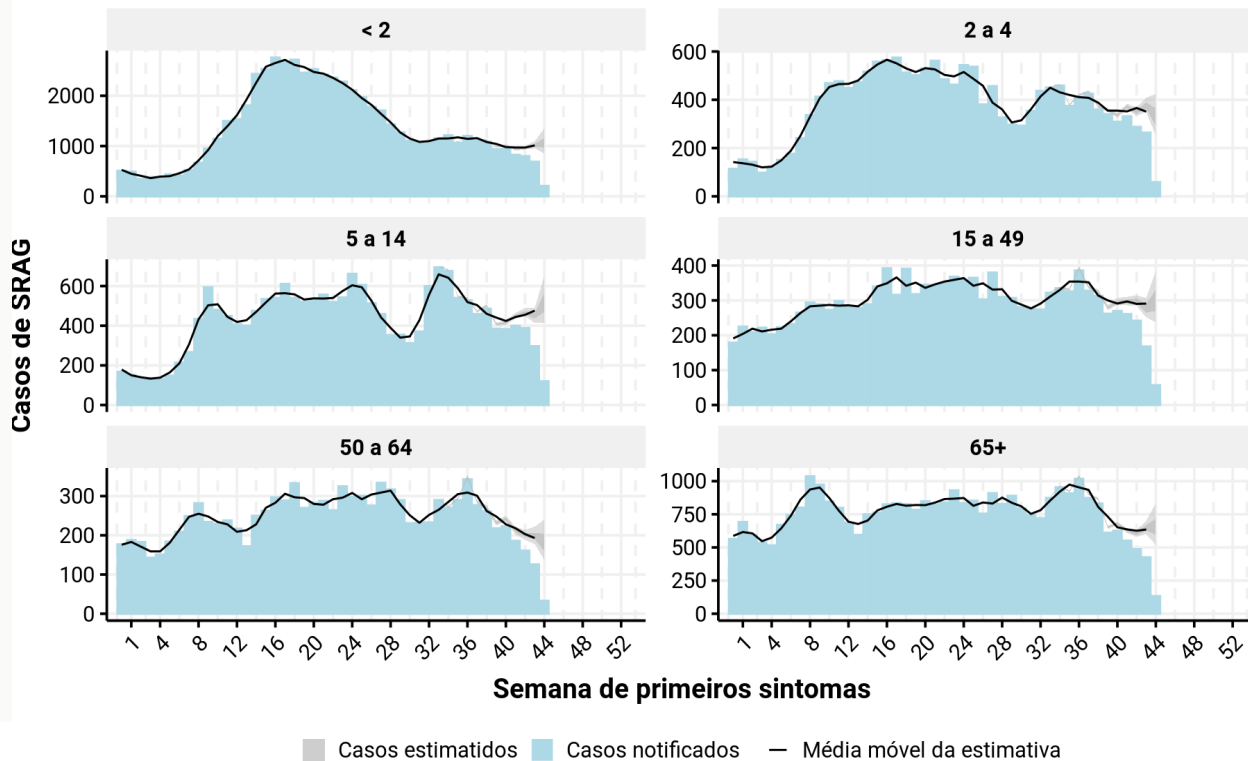


<https://github.com/covid19br/nowcaster>

BR



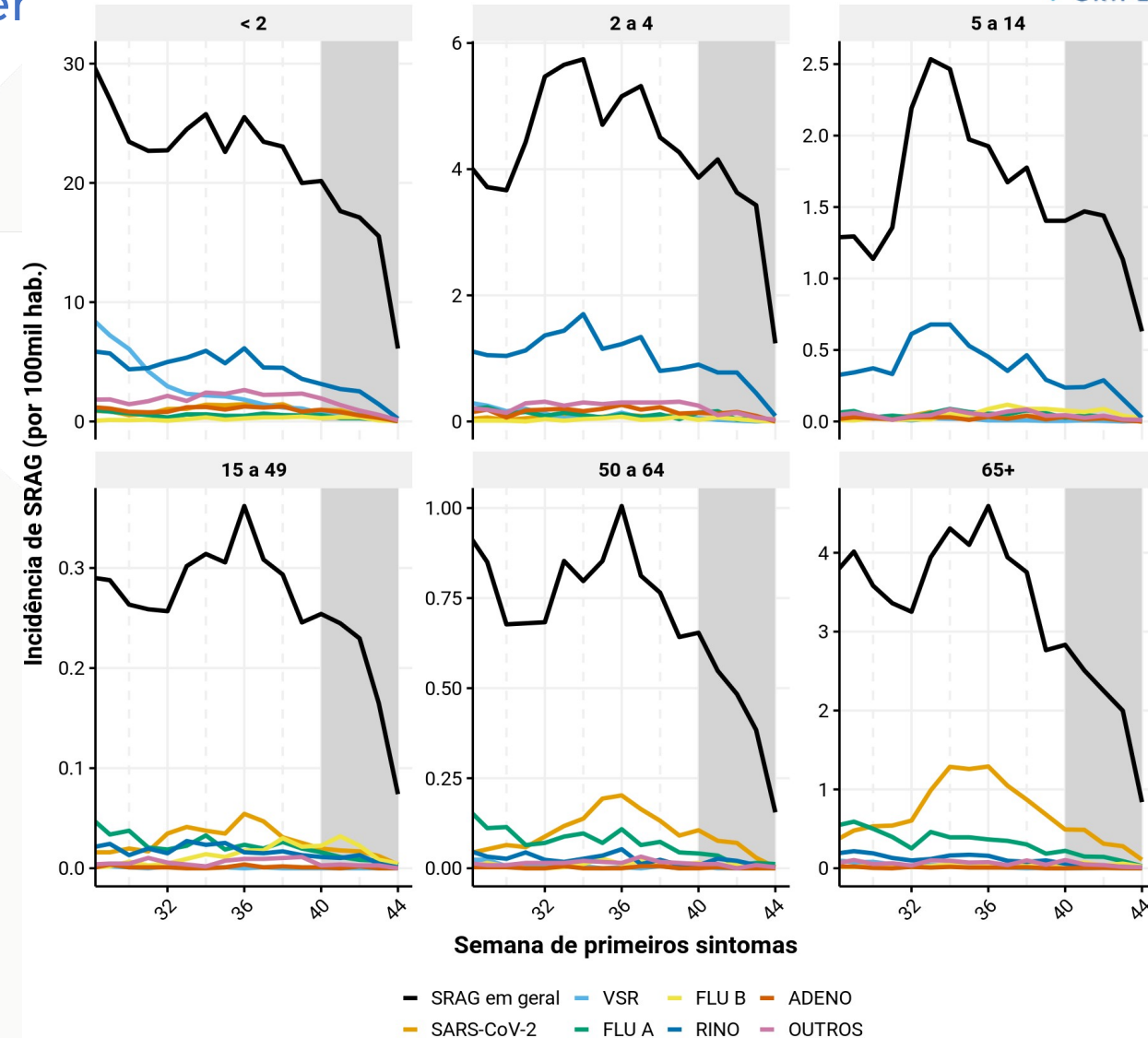
Novos casos semanais por faixa etária. Dados até a semana 44 2024



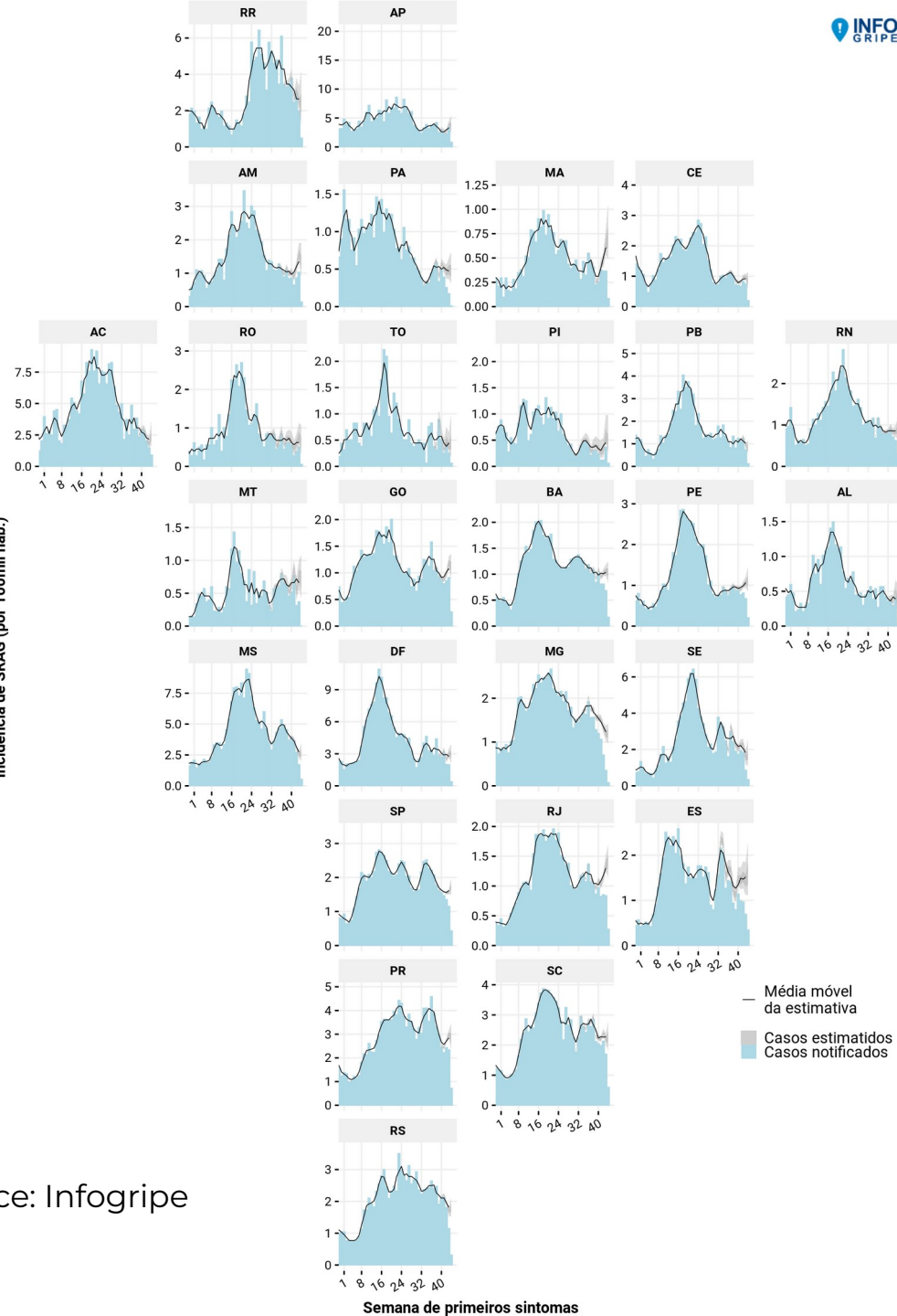
* dados preliminares

Fonte: SIVEP-Gripe, atualizado em 29/9/2024, dados sujeitos a alteração.

Novos casos de SRAG semanais por faixa etária. Dados até a semana 44 2024.
Para semanas recentes os dados são parciais (área cinza).

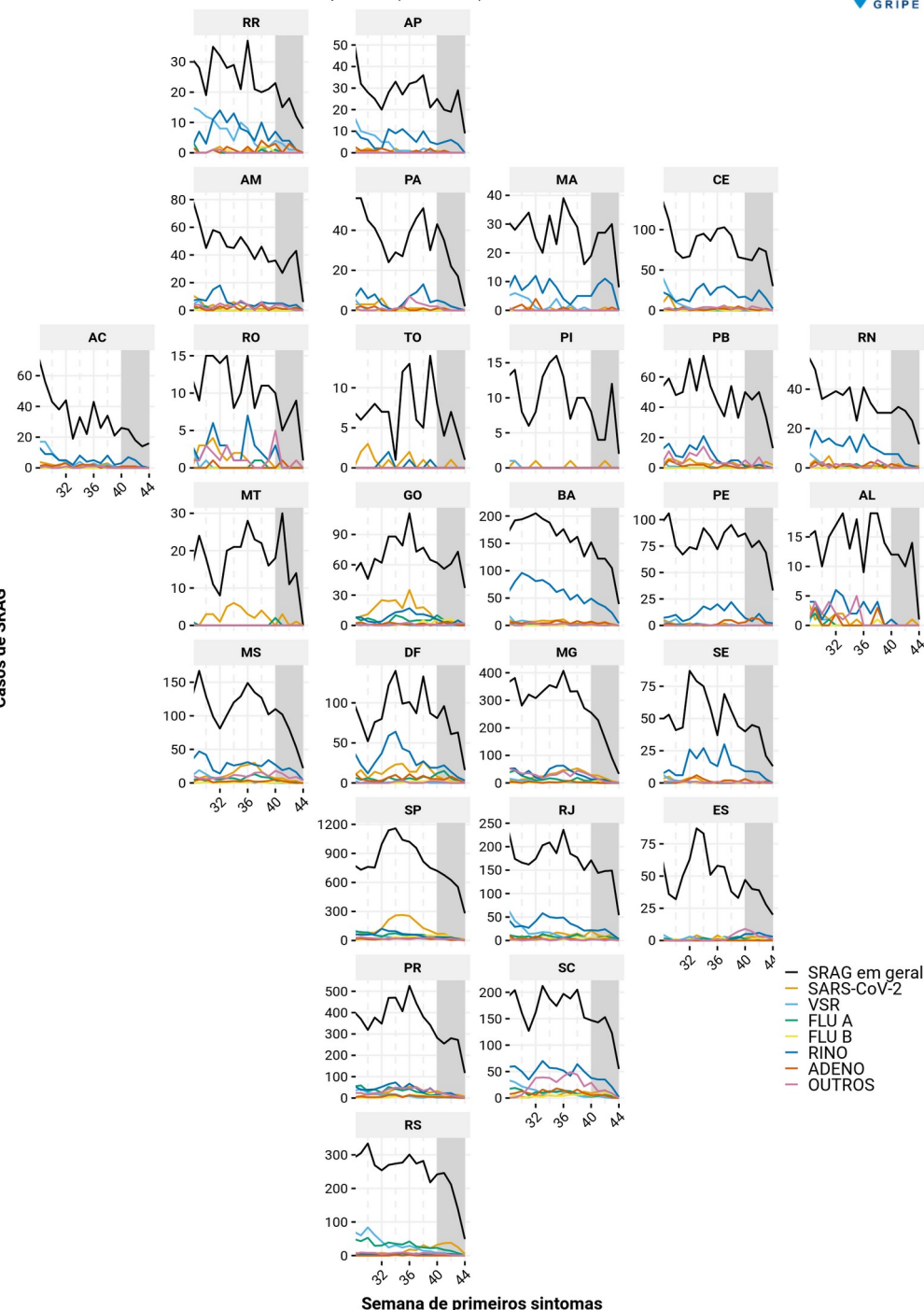


Incidência de SRAG (por 100mil hab.)



Casos de SRAG

Novos casos de SRAG semanais na população em geral. Dados até a semana 44 2024. Para semanas recentes os dados são parciais (área cinza).



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curto prazo
(últimas 3 semanas)

Semana 44 2024
(27/10 - 02/11):
Estados e DF

longo prazo
(últimas 6 semanas)

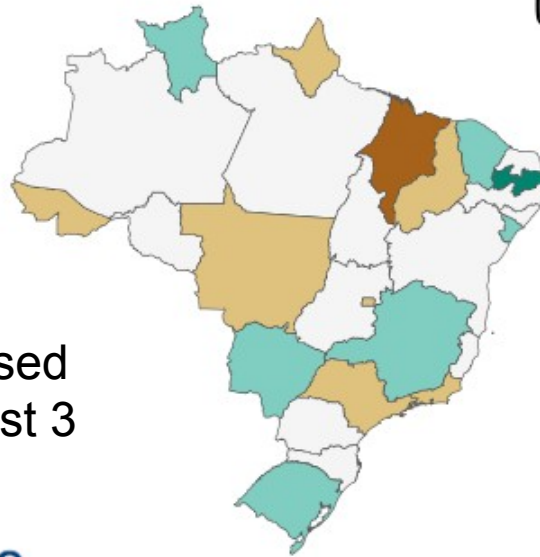
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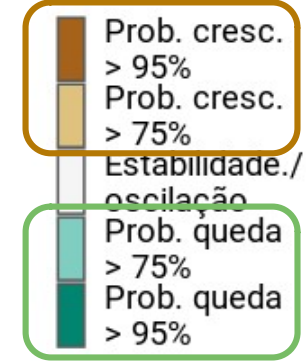
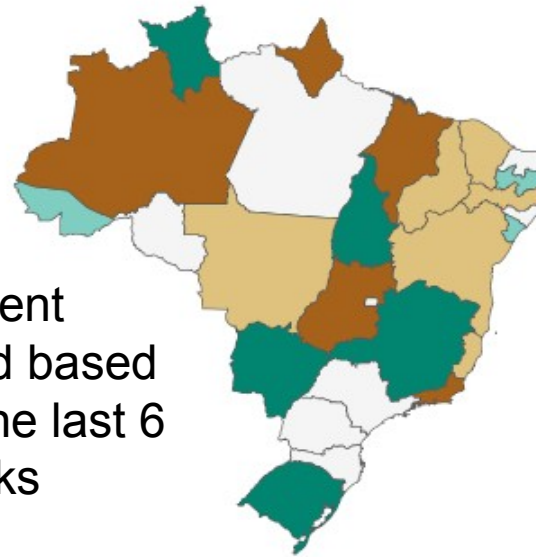
Likely
increasing

Likely
decreasing

Current
trend based
on the last 3
weeks

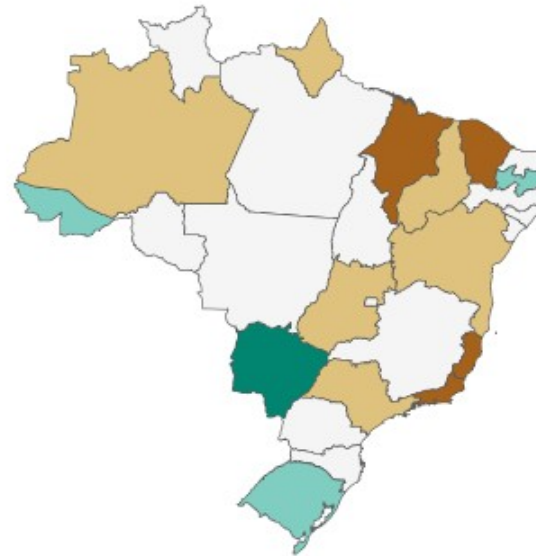


Current
trend based
on the last 6
weeks



curto prazo
(últimas 3 semanas)

longo prazo
(últimas 6 semanas)



Source: Infogripe



PITFALLS OF ACCUMULATED COUNTS BASED ON REPORTING DATE

$$\begin{aligned} \text{Total at week T} &= (\text{Total at week T-1}) \\ &+ (\text{new events occurred and reported at week T}) \\ &+ (\text{old events reported at week T}) \\ &- (\text{data clenaup: duplicity, discarded cases, ...}) \end{aligned}$$

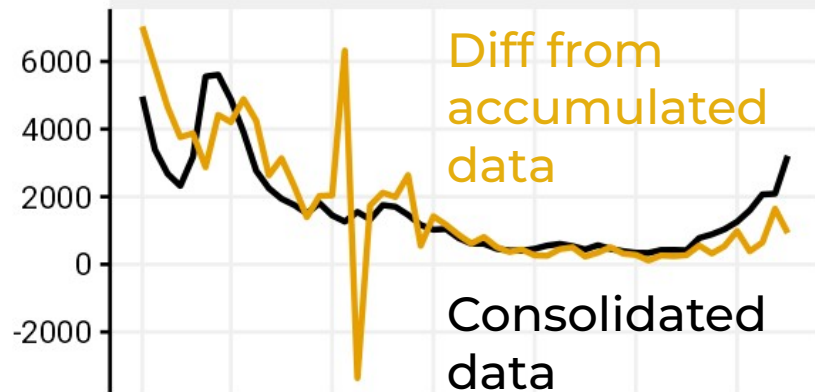
WEEKLY COUNTS, BY REGION

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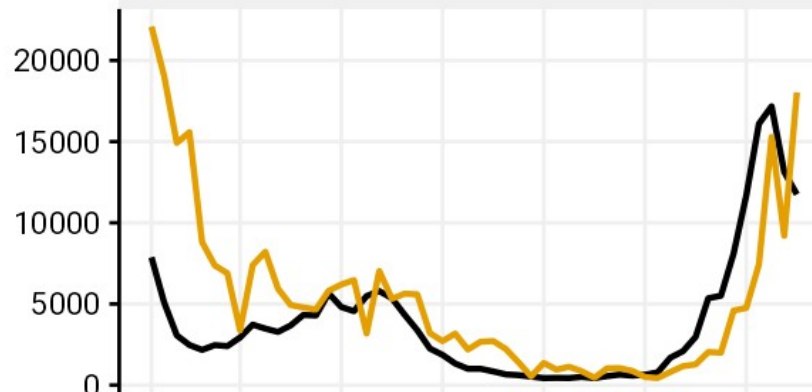
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Casos semanais

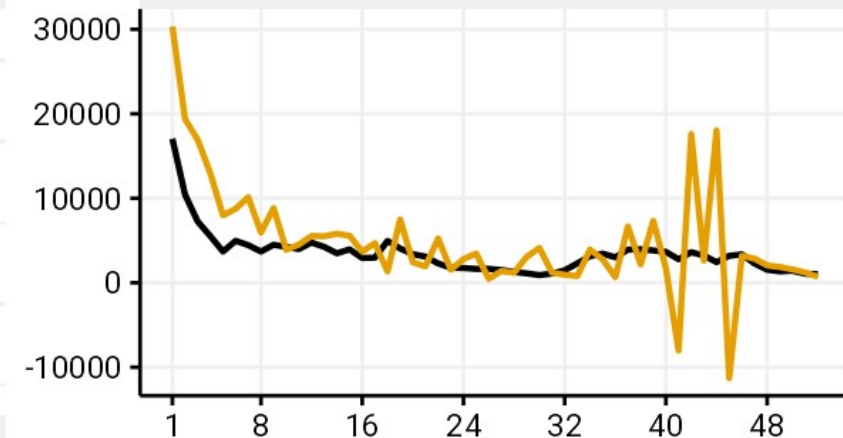
Norte



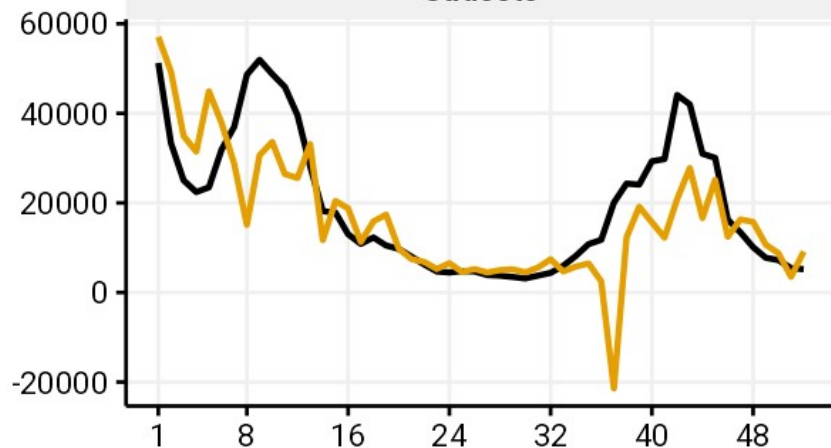
Nordeste



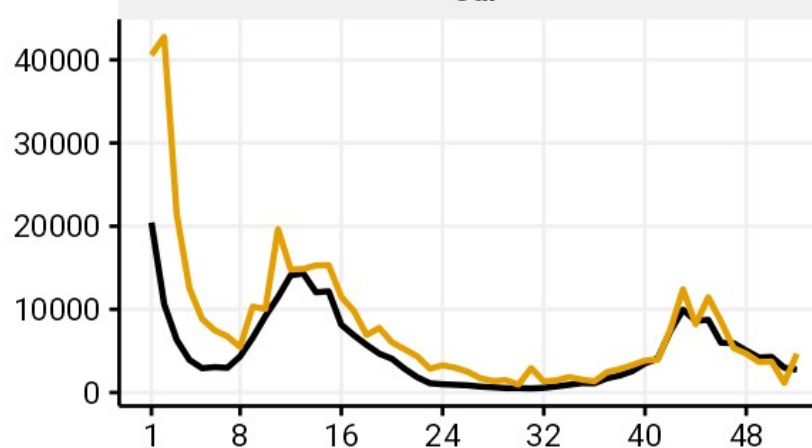
Centro-Oeste



Sudeste



Sul



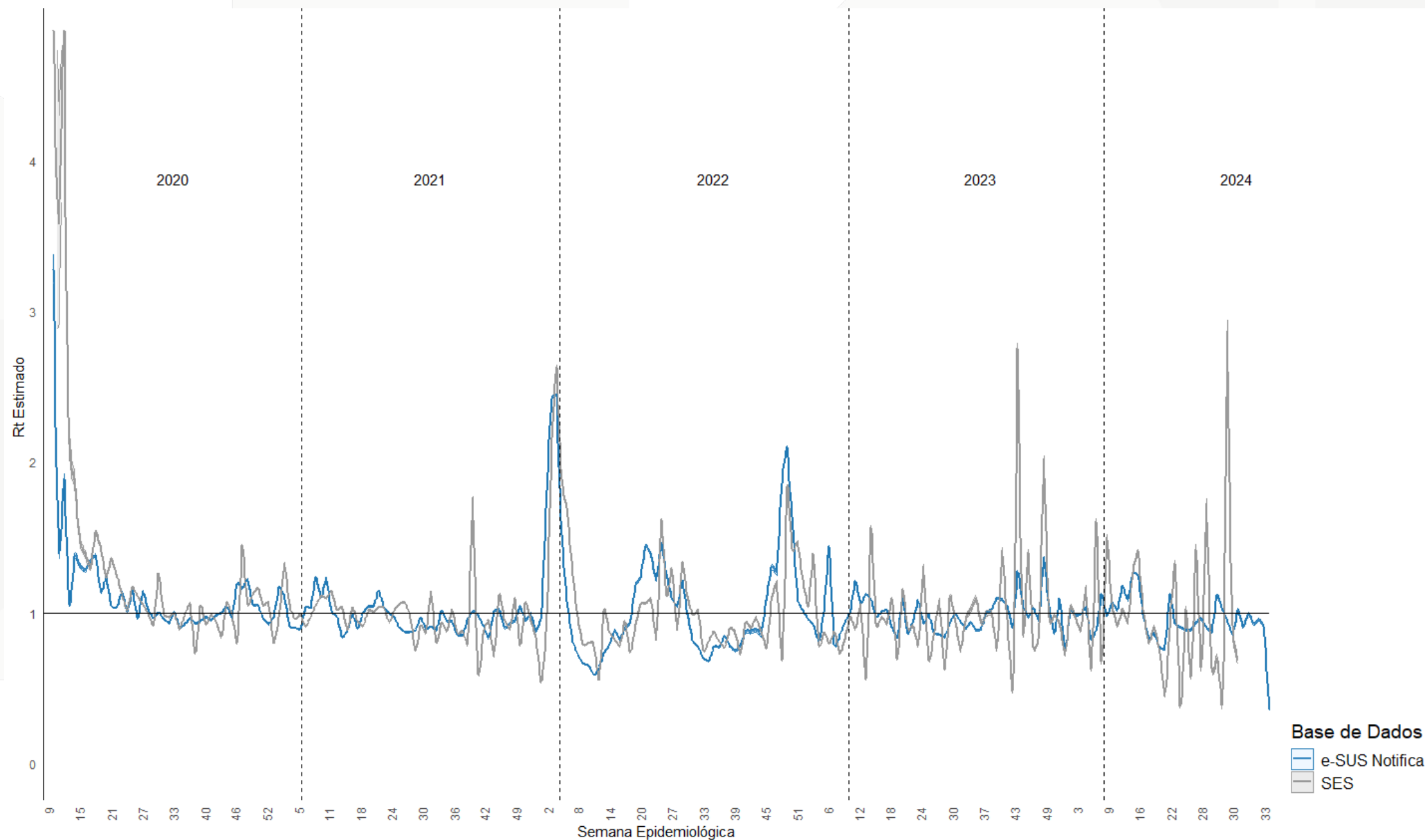
Semana de início de sintomas

Fonte - e-SUS Notifica - envio semanal SES

IMPACT ON Rt ESTIMATES

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INVASION PATTERNS AND INTERVENTION SCENARIOS

Exposure

Estimates published on March 23 and 25, 2020.

<http://bit.ly/mave-covid19-relatorio2>

Medrxiv:

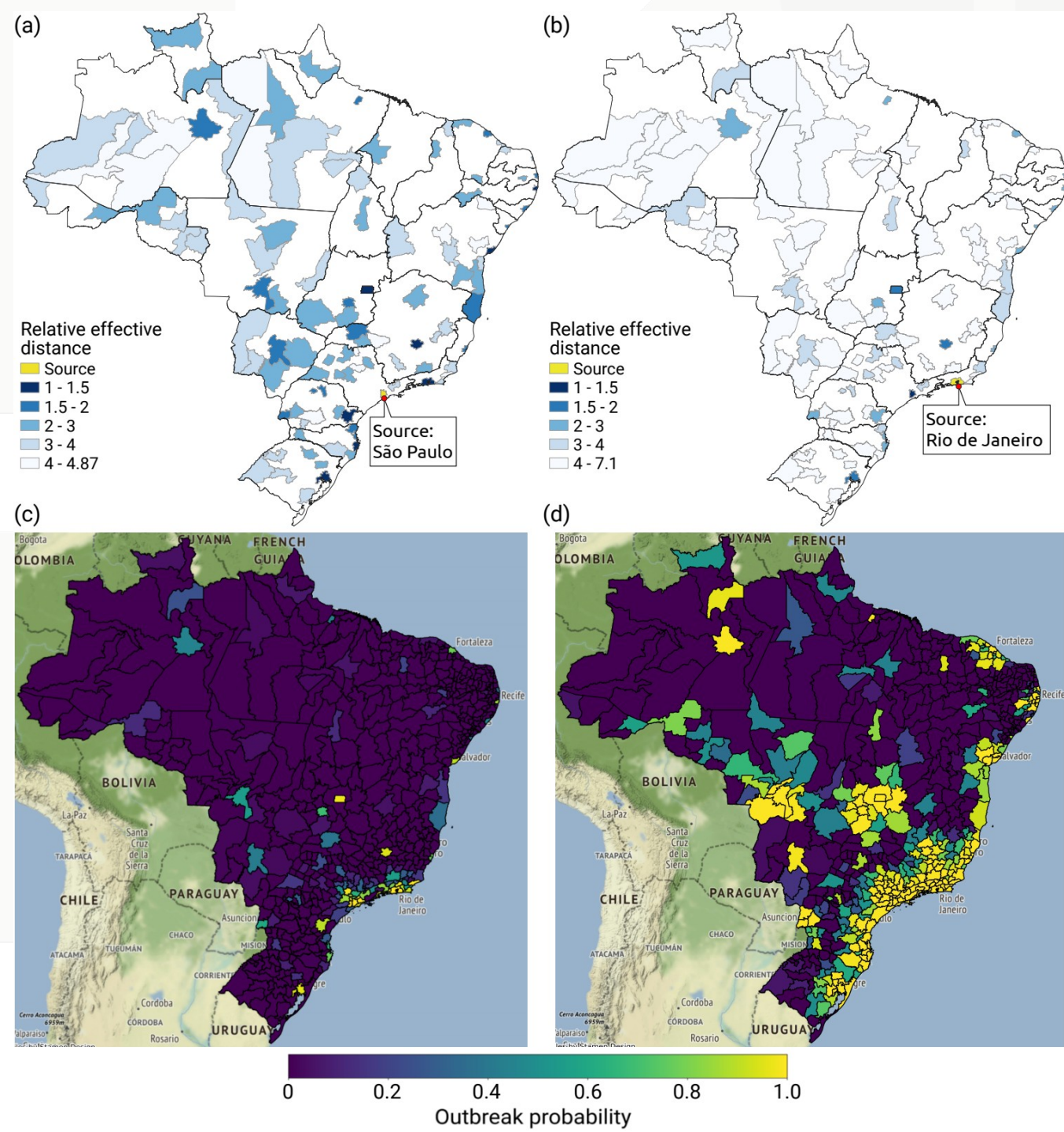
[https://doi.org/](https://doi.org/10.1101/2020.03.19.20039131)

10.1101/2020.03.19.20039131

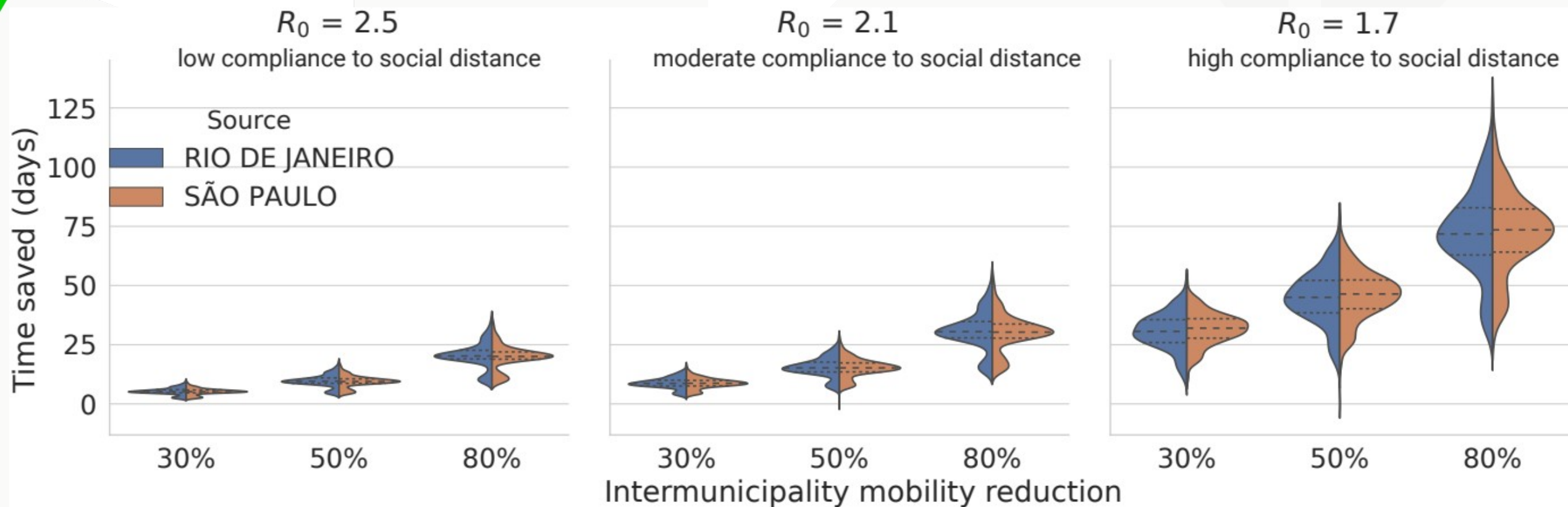
PloS:

Coelho et al. (2020) Assessing the spread of COVID-19 in Brazil: Mobility, morbidity and social vulnerability. PLOS ONE 15(9): e0238214.

<https://doi.org/10.1371/journal.pone.0238214>



Mitigation scenarios: time to invasion



Estimates published on March 23 and 25, 2020.

<http://bit.ly/mave-covid19-relatorio2>

Medrxiv: <https://doi.org/10.1101/2020.03.19.20039131>

$$T_{i,j} = \frac{d_{ij}}{\gamma(R_0 - 1)}$$

SISS-Geo Platform

Information System on Wildlife Health

Participatory monitoring of wildlife
and human health in Brazil



What does it offer



**Open access
Managers
access**

Animal data

Alive, Dead, Sick animals
Type of animal/Species validation by specialists
Physical conditions



Map with georeferenced location records

Google maps
Geographical coordinates and precision

Details of the observation site

Environmental impacts, human presence, conservation units, developments, agriculture, livestock

Contributor information

Professional or leisure use, age, gender, contact

Contact us

Tool for information, criticism and suggestions

Outcome

Real-time alerts to national, state and municipal managers, indication of suspicion, result and type of diagnosis, analysis of similarity of records, traceability, export of data



SISS-Geo

Sistema de Informação em Saúde Silvestre

TOQUE PARA INICIAR...



Versão 2.5.8 (Serra dos Órgãos)

TERMO E CONDIÇÕES DE USO



SISS-Geo

TIRAR
FOTO

NOVO
REGISTRO

Meus Registros

Mapa

Fale Conosco

Meu Cadastro

ANIMAL INFORMATION



Descrição do animal

Qual sua certeza sobre a identificação deste animal? *

Tenho certeza

Tipo do animal *

Macaco

O animal está *

SELECIONAR

Comportamento do animal *

SELECIONAR

Quantidade de animais com estas características *

0

Condição física do animal *

SELECIONAR

Problemas observados no animal *

SELECIONAR

Nome popular do animal



✓ AVANÇAR

OFF LINE GEOREFERENCING



Descrição do registro

ANIMAIS

LOCAL

FOTOS

DATA :
12/04/2021

HORA :
10:06:42

REDEFINIR
LOCALIZAÇÃO

SELECIONAR
NO MAPA

Latitude
-22.93676

+/-
21.01m

Longitude
-43.18953

Bairro/Povoado

Laranjeiras

Endereço/Ponto de referência

Rua Sebastião de Lacerda

Estado Rio de Janeiro



✓ AVANÇAR

ENVIRONMENTAL IMPACTS



Detalhamento do local

Característica do Local *

SELECIONAR

Impactos observados no Local *

SELECIONAR

Situação fundiária da área

SELECIONAR

Corpos D'Água

SELECIONAR

Agriculturas

SELECIONAR

Pecuárias

SELECIONAR

Obras/Empreendimentos

SELECIONAR

Detalhamento do local



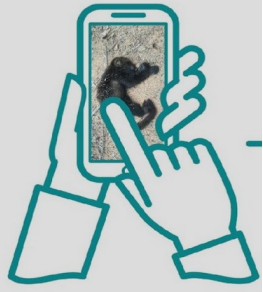
✓ AVANÇAR

Increase
geographic
accuracy

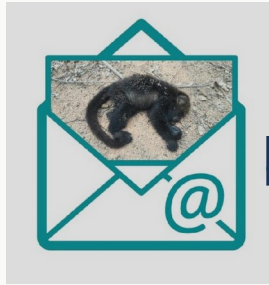
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Surveillance of outbreaks in animals and information pathways in SISS-Geo



**SISS-Geo
Records**



**Real-time
Alerts**



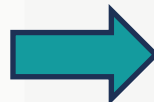
**Field
investigation**



**Outbreak
notification**



**Biological
Sample
Collection**



**Laboratory
diagnosis**

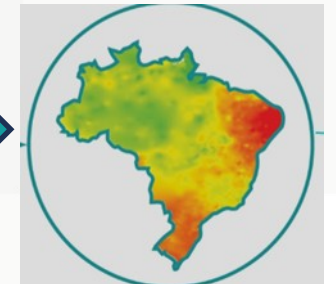


SOROLÓGICO			
NOME DO EXAME	METODOLOGIA	ETAPA	CÓDIGO DB
HIV 1 - NEONATAL	ELISA	T1	HIVN
HIV 1 E 2 - ANTICORPOS (CLIA E SOLIA) < 40	CLIA E SOLIA	T1	HIV2
HIV 1 E 2 - ANTICORPOS (CLIA) < 40	CLIA	T1	HIV
HIV 1 E 2 - ANTICORPOS (SOLIA) < 40	SOLIA	T1	HIV1
HIV WESTERN BLOT	WB	T2	HIVB
MOLECULAR			
NOME DO EXAME	METODOLOGIA	ETAPA	CÓDIGO DB
HIV - QUANTITATIVO (DETECÇÃO POR PCR)	PCR	T2	HIVQ
HIV - QUANTIFICAÇÃO POR PCR (CARGA VIRAL)	TEMPO REAL	T2	HIVOT
HIV - GENOTIPAGEM DE RESISTÊNCIA	SEQUENCIAMENTO		HIVDR
IMUNOFENOTIPAGEM			
NOME DO EXAME	METODOLOGIA		CÓDIGO DB
LINFÓCITOS T HELPER	CITOMETRIA DE FLUÍDO		CD4
SUPORÇÃO UNIFOCITÁRIA CD4-CD8	CITOMETRIA DE FLUÍDO		CD4B3

**Laboratory
results**



Upshot



**Predictive
models**

Thank you!

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