

Information requests should be addressed to Sílvia Pinto, preferably by e-mail (imprensa.epi@gmail.com), and alternatively by telephone and WhatsApp messaging (+55 53 98123-7933). The research team will carry out a press conference on Tuesday 26 of May at 5:00 PM Brasilia time, which will be streamed live on the Facebook page of the Federal University of Pelotas (<https://www.facebook.com/ufpel/>). Journalists wishing to have their questions answered must request to join prior to the conference using the contact information presented above.

Pelotas, Brazil - May 25, 2020

One country with multiple epidemics

Phase 1 of EPICOVID19-BR potentiates concerns with the Brazilian Amazon

The results of the first stage of the EPICOVID19-BR survey, which took place in Brazil between the 14th and 21st of May, are highly concerning. Over the one-week period, researchers performed 25,025 interviews coupled to SARS-CoV-2 antibody tests in 133 cities across all of the country's 27 states. In 90 cities, including 21 of 27 state capitals, at least 200 randomly selected individuals were tested.

In the 90 cities altogether, the proportion of people with antibodies to the coronavirus, indicative of current or past infection, was estimated at 1.4%. potentially ranging from 1.3% to 1.6% given the study's margin of error. These data already take into account each city's population and the sensitivity and specificity of the rapid antibody test used. These 90 cities account for 25.6% of the Brazilian population, or 54.2 million people, of which 760 thousand—705 to 867 thousand given the margin of error—are estimated to be infected.

These results should not be extrapolated to the country as a whole, nor used to estimate the absolute number of cases in Brazil, since the cities in the sample have larger populations that circulate more intensively and have greater access to healthcare services than the cities not included in the sample. The dynamics of the pandemic is thus likely to be different in smaller cities or rural areas. However, the study's team emphasizes that *“the most important conclusion from these data in terms of the country as a whole is that coronavirus cases in Brazil should now be counted in the millions, rather than in the thousands.”*

Comparison of the numbers estimated by this survey and official statistics shows that the latter substantially underestimate the number of infected individuals in the country. On May 13th, the day before the survey began, the official number of confirmed cases and deaths in these 90 cities was 104,782 and 7,640, respectively. Based on these numbers, EPICOVID19-BR data lead to an estimate that, for each confirmed case of coronavirus in these cities, there are actually 7 cases in the population.

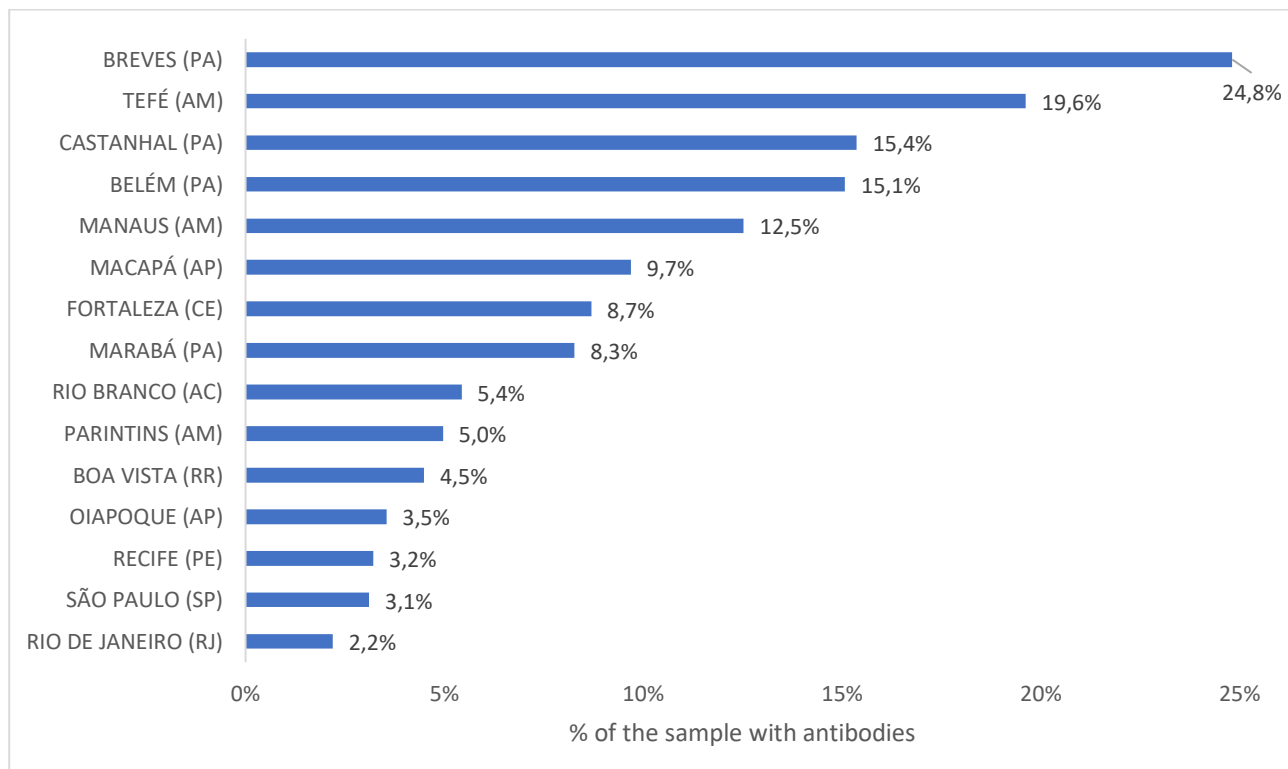
Regarding these results, the researchers state that *“it is not by accident that the logo of EPICOVID-19 is an iceberg. Confirmed cases, which are those that appear in official statistics, represent only*

the visible tip of an iceberg whose bulk is under water. To understand the real size of the coronavirus problem, population-based surveys are imperative.”

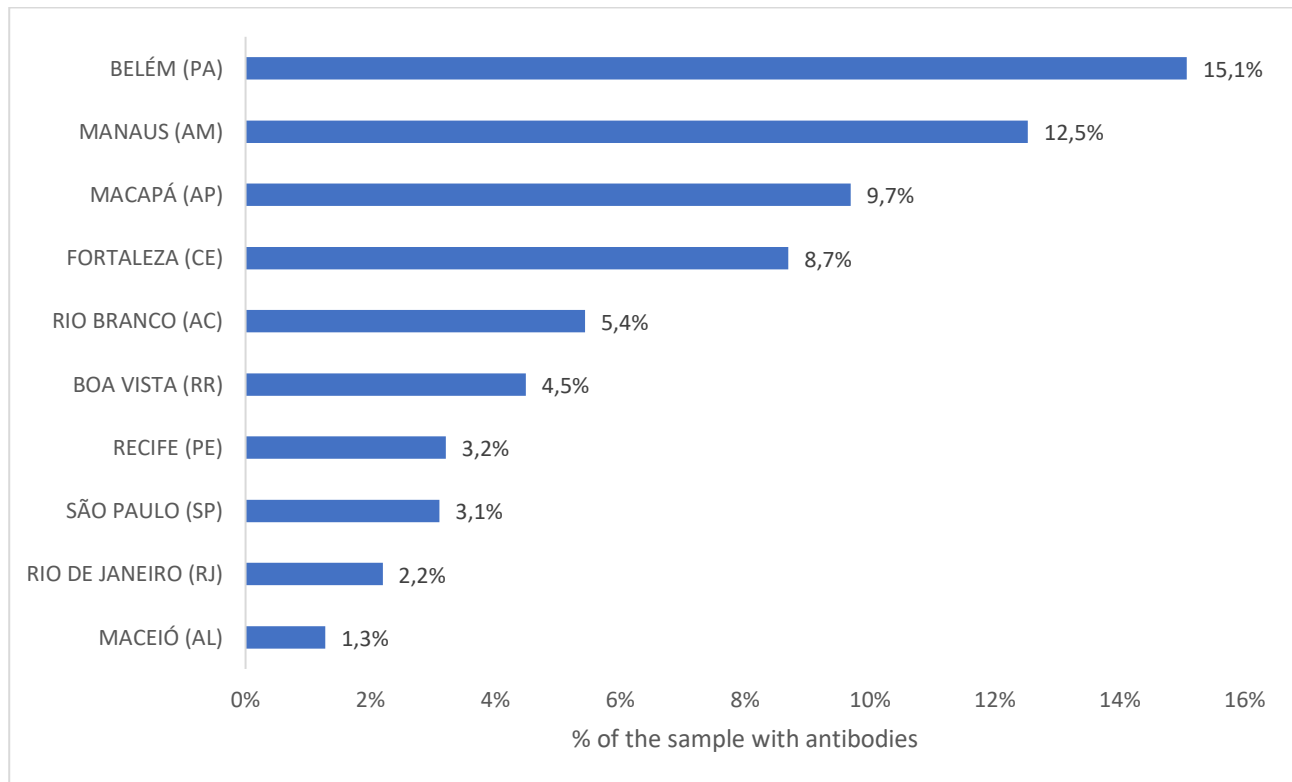
The finding that there are 7 times more cases in the population than those reported by official numbers worries the research team. *“Of every 7 people who are or have been infected with the virus, only one knows their status. This is concerning because the 6 people unaware of their infection may have involuntarily transmitted the virus to others.”*

Differences in prevalence between the five Brazilian regions are stark. Of the 15 cities most affected, 11 are in the North (which encompasses most of the Brazilian Amazon), 2 are in the Northeast (Fortaleza and Recife), and 2 are in the Southeast (Rio de Janeiro and Sao Paulo). In the South, only Florianópolis had a prevalence higher than 0.5%, and in the Mid-West, not a single case was detected in the 9 cities surveyed, although official case and death statistics show that the virus is present in this region. According to the research team, *“these results confirm what can already be inferred from the official statistics, namely that the North is the epicenter of the pandemic in Brazil.”*

Differences between individual cities were even more striking. In Breves, Pará, a city deep in the Amazon, the proportion of people carrying antibodies SARS-CoV-2 is estimated at 24.8%, meaning that 25 thousand of the city’s 103 thousand inhabitants are or have been infected with the virus. The second highest prevalence was found in Tefé, Amazonas, also deep in the Amazon, where 16.8% of the population is estimated to have been infected. This is equivalent to 12 thousand of the city’s 60 thousand people. The figure below shows the 15 cities in the survey with highest prevalence of antibodies to the coronavirus.



We were able to complete 200 or more interviews in 21 of the country's 27 state capitals. Of these, Belém (Pará) and Manaus (Amazonas) were the only two where prevalence exceeded 10%. Of the 10 most affected capitals, 5 are in the North, 3 in the Northeast, and 2 in the Southeast.



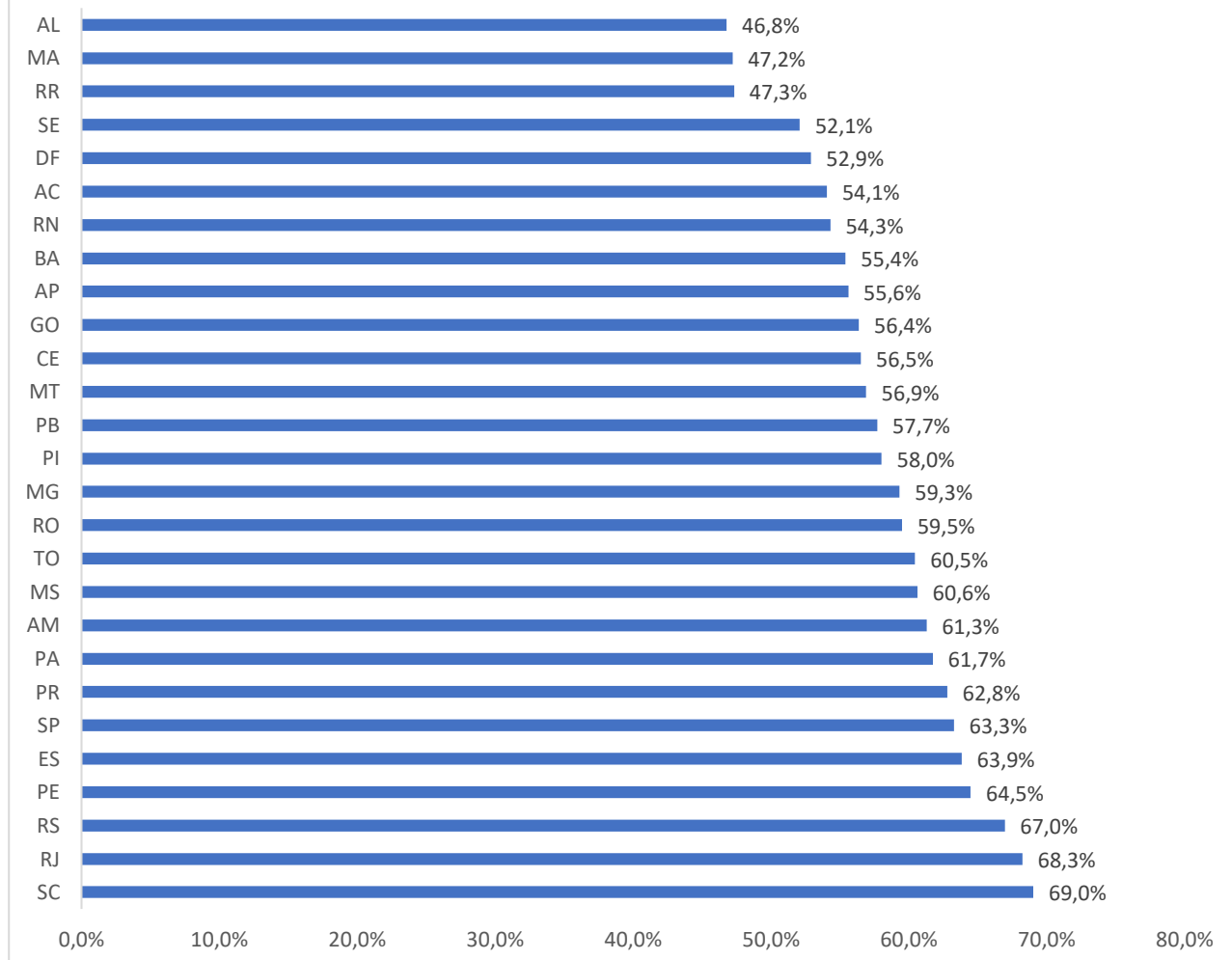
The results of EPICOVID19-BR for Sao Paulo, the country's most populous city with 12.2 million people, show 3.1% prevalence of SARS-CoV-2 antibodies in the population, equivalent to an estimated 380 thousand infections in that city. In Rio de Janeiro, with 6.7 million people and 2.2% prevalence of antibodies, the estimated number of people currently or previously infected with the virus is 147 thousand.

“These differences across cities confirm that there are multiple epidemics in a single country. On one hand, some cities present high prevalence figures, comparable to those from New York of Spain. On the other hand, some cities present low prevalence, similar to those seen in other Latin American countries, for example”, researchers highlight.

At the end of the document, a table with prevalence data for each of the 90 cities in which 200 or more tests were performed is presented.

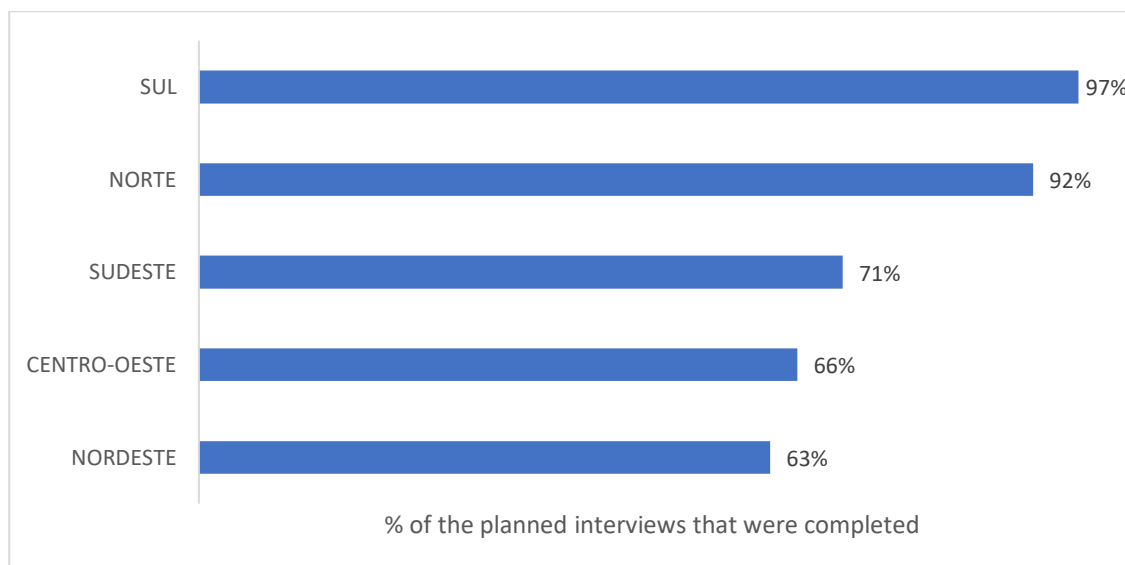
EPICOVID19-BR also evaluates the proportion of the population reporting to stay home all the time or leaving only for essential activities, by state. In the states of Rio Grande do Sul, Rio de Janeiro and Santa Catarina, over 65% of those interviewed reported to stay home all the time or leave only when absolutely needed. In Alagoas, Maranhão and Roraima, less than half of the participants reported to comply with these social distancing measures.

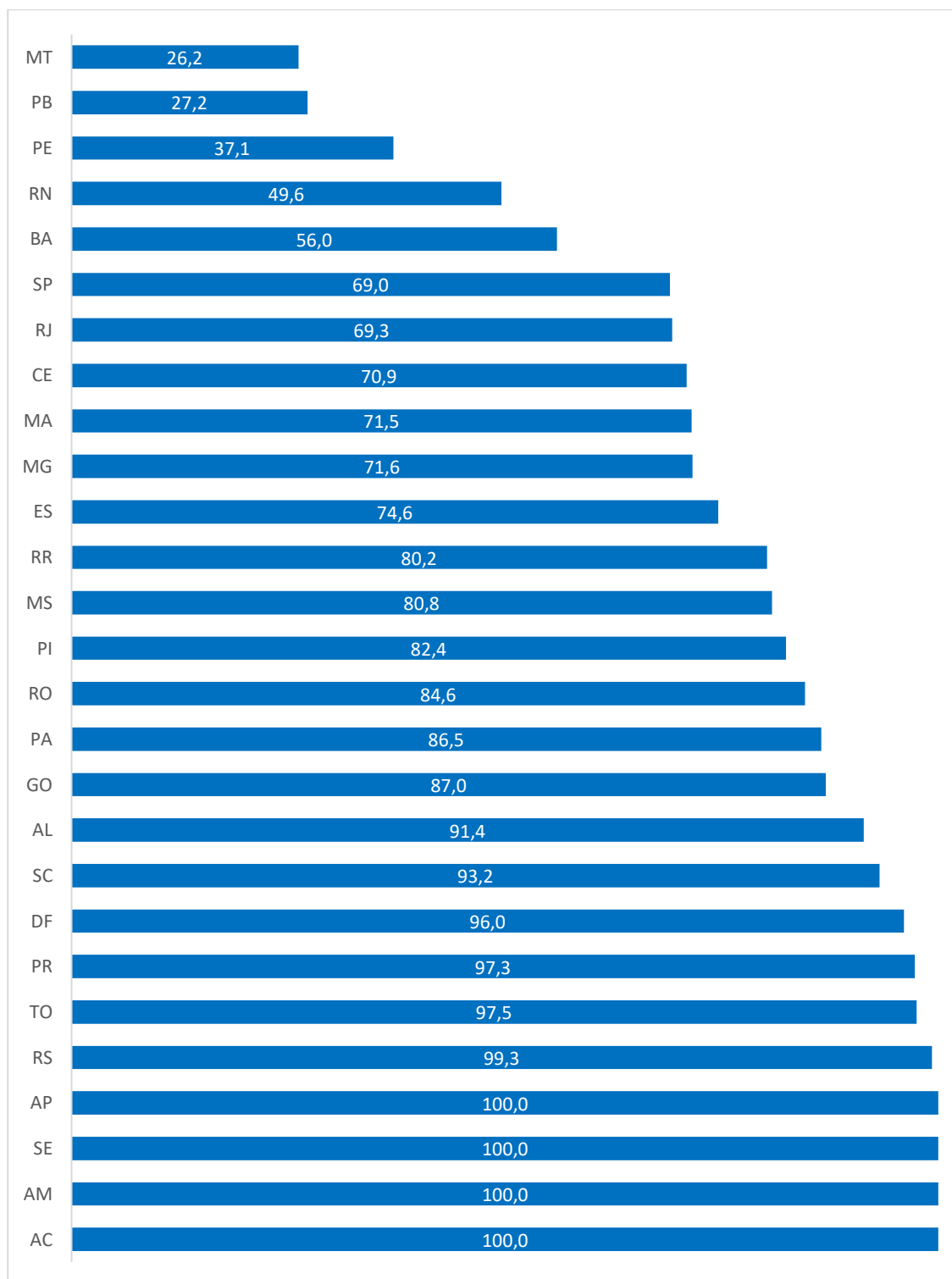
% da população cumprindo medidas de distanciamento por estado



Fieldwork progress

The figures below show the percent of planned tests/interviews that were completed in each of the country's regions and states. Representativeness was highest in the South and North, and lowest in the Northeast and Mid-West. Major reasons for failing to reach 200 interviews in 43 of the 133 cities in the survey included local lockdown measures that restricted the movement of the research team, the spread of disinformation regarding the goals of the survey, and difficulties in coordination and communication between federal, state, and municipal authorities.





The EPICOVID19-BR study is coordinated by the Center for Epidemiological Research of the Federal University of Pelotas. The study is funded by the Brazilian Ministry of Health. Additional support was provided by the Serrapilheira Institute, the Brazilian Society for Collective Health



(ABRASCO), the *Pastoral da Criança*, and a donation from the *JBS Fazer o Bem Faz Bem* program. Data collection was the responsibility of *IBOPE Inteligência*.

State	City	Interviews done	Number of cases	% of population with antibodies
AC	CRUZEIRO DO SUL	250	1	<1%
AC	RIO BRANCO	250	12	5,4%
AL	ARAPIRACA	223	0	<1%
AL	MACEIÓ	234	3	1,3%
AM	LÁBREA	250	0	<1%
AM	MANAUS	250	27	12,5%
AM	PARINTINS	250	11	5,0%
AM	TEFÉ	250	42	19,6%
AP	MACAPÁ	250	21	9,7%
AP	OIAPOQUE	250	8	3,5%
BA	BARREIRAS	250	0	<1%
BA	GUANAMBI	245	0	<1%
BA	JUAZEIRO	250	0	<1%
BA	SALVADOR	250	0	<1%
CE	CRATEÚS	247	2	<1%
CE	FORTALEZA	225	17	8,7%
CE	QUIXADÁ	245	0	<1%
CE	SOBRAL	232	4	1,8%
DF	BRASÍLIA	240	0	<1%
ES	CACHOEIRO DO ITAPEMIRIM	250	0	<1%
ES	COLATINA	222	0	<1%
ES	VITÓRIA	250	3	1,2%
GO	GOIÂNIA	235	0	<1%
GO	IPORÁ	250	0	<1%
GO	ITUMBIARA	241	0	<1%
GO	PORANGATU	200	0	<1%
GO	RIO VERDE	202	0	<1%
MA	BACABAL	250	2	<1%
MA	CAXIAS	250	0	<1%
MA	PRESIDENTE DUTRA	250	1	<1%
MG	JUIZ DE FORA	250	1	<1%
MG	MONTES CLAROS	250	0	<1%
MG	PATOS DE MINAS	250	1	<1%
MG	POUSO ALEGRE	250	0	<1%
MG	TEÓFILO OTONI	242	1	<1%
MG	UBERABA	250	0	<1%
MG	UBERLÂNDIA	235	0	<1%
MG	VARGINHA	245	0	<1%
MS	CORUMBÁ	250	0	<1%

MS	DOURADOS	243	0	<1%
MT	CÁCERES	208	0	<1%
PA	ALTAMIRA	232	1	<1%
PA	BELÉM	247	32	15,1%
PA	BREVES	250	53	24,8%
PA	CASTANHAL	250	33	15,4%
PA	MARABÁ	250	18	8,3%
PA	REDENÇÃO	250	0	<1%
PE	RECIFE	240	7	3,2%
PI	CORRENTE	250	0	<1%
PI	FLORIANO	239	0	<1%
PI	PARNAÍBA	250	0	<1%
PI	SÃO RAIMUNDO NONATO	247	0	<1%
PI	TERESINA	250	1	<1%
PR	CASCADEL	248	1	<1%
PR	CURITIBA	217	0	<1%
PR	GUARAPUAVA	250	0	<1%
PR	LONDRINA	244	0	<1%
PR	MARINGÁ	250	0	<1%
PR	PONTA GROSSA	250	4	1,7%
RJ	PETRÓPOLIS	239	1	<1%
RJ	RIO DE JANEIRO	243	5	2,2%
RJ	VOLTA REDONDA	207	0	<1%
RN	NATAL	229	2	<1%
RO	JI-PARANÁ	250	0	<1%
RR	BOA VISTA	250	10	4,5%
RS	CAXIAS DO SUL	250	0	<1%
RS	IJUÍ	240	0	<1%
RS	PASSO FUNDO	250	1	<1%
RS	PELOTAS	247	0	<1%
RS	PORTO ALEGRE	248	0	<1%
RS	SANTA CRUZ DO SUL	250	0	<1%
RS	SANTA MARIA	250	0	<1%
RS	URUGUAIANA	250	0	<1%
SC	BLUMENAU	232	0	<1%
SC	CHAPECÓ	250	0	<1%
SC	CRICIÚMA	250	0	<1%
SC	FLORIANÓPOLIS	223	1	<1%
SC	JOINVILLE	250	0	<1%
SC	LAGES	234	0	<1%
SE	ARACAJU	250	1	<1%

SE	ITABAIANA	250	0	<1%
SP	BAURU	225	0	<1%
SP	CAMPINAS	237	2	<1%
SP	MARÍLIA	229	0	<1%
SP	RIBEIRÃO PRETO	239	1	<1%
SP	SÃO JOSÉ DO RIO PRETO	239	0	<1%
SP	SÃO PAULO	212	6	3,1%
TO	ARAGUAÍNA	238	0	<1%
TO	GURUPI	250	0	<1%
TO	PALMAS	243	0	<1%