

Insecurity Health Care Index: an outline for the assessment of the scarcity of medical workforce in non-metropolitan areas in Brazil.

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The implementation of a national policy to promote health care safety for the National Health System (SUS) by the Brazilian Federal Government requires the identification of geographic areas and populations suffering of severe shortage of health professionals, especially primary care physicians. Combined with other socioeconomic and health needs, primary care physician shortages (PCPS) aggravates the essential deprivation status that affects these populations. This study intends to identify the municipalities with PCPS in order to support the rational allocation of federal resources (deployment of professionals, net safety programs and projects) in national territory.

- **To Identify municipalities that experience primary care physician shortage – PCPS - situations;**
- **To create an Index (or scale) to measure the intensity of primary care physician shortage – PCPS - faced by municipalities;**

The definition of shortage/scarcity took into account three dimensions: the availability/supply of primary healthcare, the existence of health high needs and socioeconomics deprivations.

For each one of these dimensions the following indicators were defined:

- **Population-to-primary care physician ratio: number of inhabitants per physician (adjusted for full time equivalent (FTE) - outpatient hours in general medicine, pediatrics and family medicine), 2008;**
- **Infant mortality rate per 1000 live birth 2007**
- **Percentage of households in poverty: proportion of municipalities with family per capita income below to the poverty level (up to monthly US\$80)**

Were considered as municipalities with shortage of PCP:

- **Municipalities with population-to-physician ratio over 3000 or with no physicians**
- **Municipalities with population-to-physician ratio between 1.500 and 3000 and IMR over 100% above national average;**
- **Municipalities with population-to-physician ratio between 1.500 and 3000 and over 50% of households in poverty;**

1.280 municipalities met the above criteria and had the PCPSI calculated. The selected indicators were classified in a gradient from 0 to 5 in accordance with the chart below:

Selected indicators classification

Indicator name	Categories	Categories name
Number of inhabitants per physician for primary healthcare (adjusted for full time equivalent (FTE))	0	Up to 3000 inhabitants per physician
	1	Over 3.000 up to 4.000 inhabitants per physician
	2	Over 4.000 up to 5.000 inhabitants per physician
	3	Over 5.000 up to 10.000 inhabitants per physician
	4	Over 10.000 up to 15.000 inhabitants per physician
	5	Over 15.000 inhabitants per physician
Infant Mortality Rate (IMR)	0	IMR under national average
	1	IMR up to 10% above national average
	2	IMR over 10% up to 25% above national average
	3	IMR over 25% up to 50% above national average
	4	IMR over 50% up to 100% above national average
	5	IMR over 100% above national average
Proportion of households in poverty eligible for the Programa Bolsa Familia in 2006 – with family income per capita up to monthly \$80	0	Under 10% of poor households
	1	From 10% to under 20% of poor households
	2	From 20% to under 30% of poor households
	3	From 30% to under 40% of poor households
	4	From 40% to under 50% of poor households
	5	50% or more poor households

The index varies from 1 to 15. The closer to 1, the lower the degree of shortage, the closer to 15, the higher the degree of shortage. The values were divided in 5 categories, each one conjugating 3 grades of the index for better visualization of the values in the shortage map.

Distribution of Brazilian Municipalities with Primary Care Physician Shortage
According to the Shortage Definition Criteria

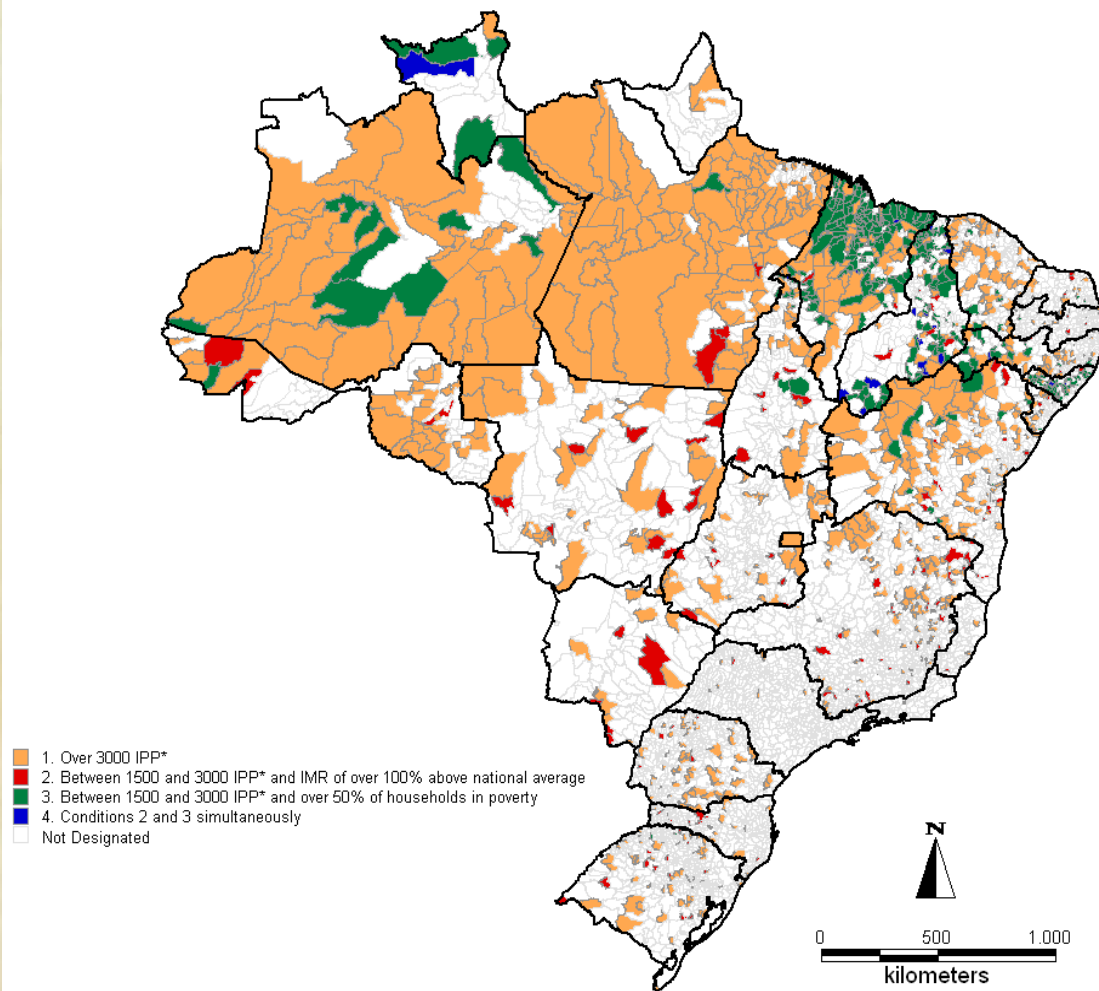
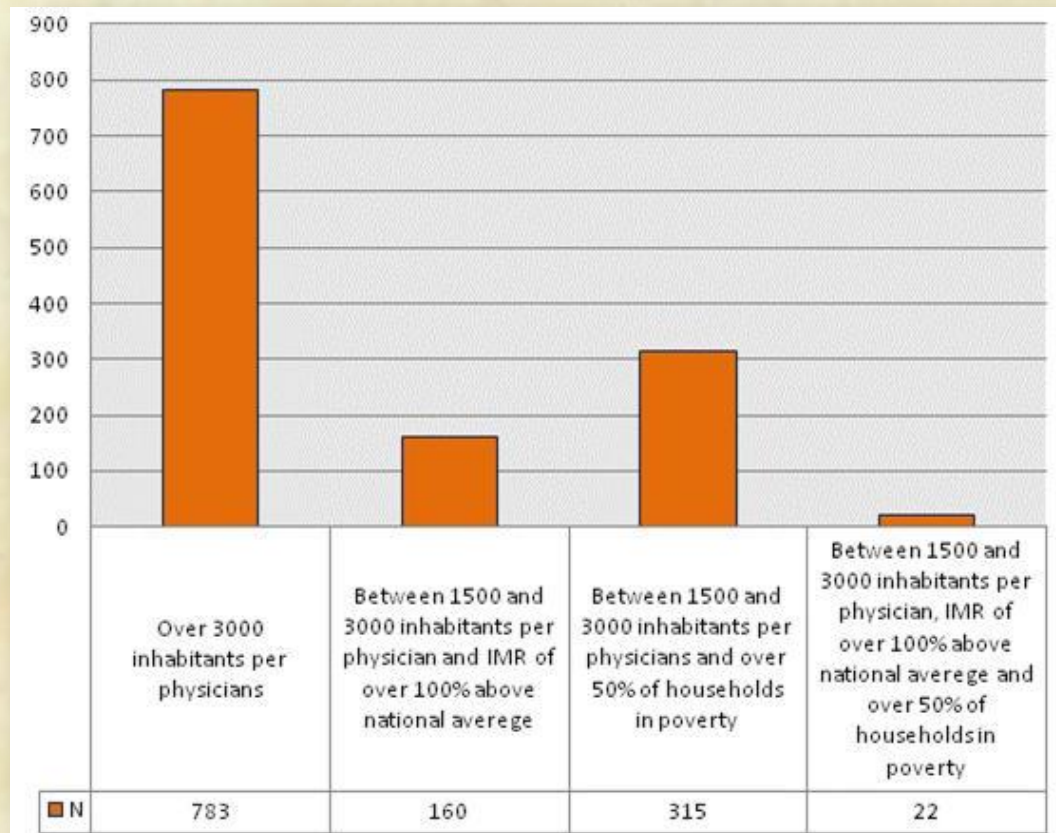
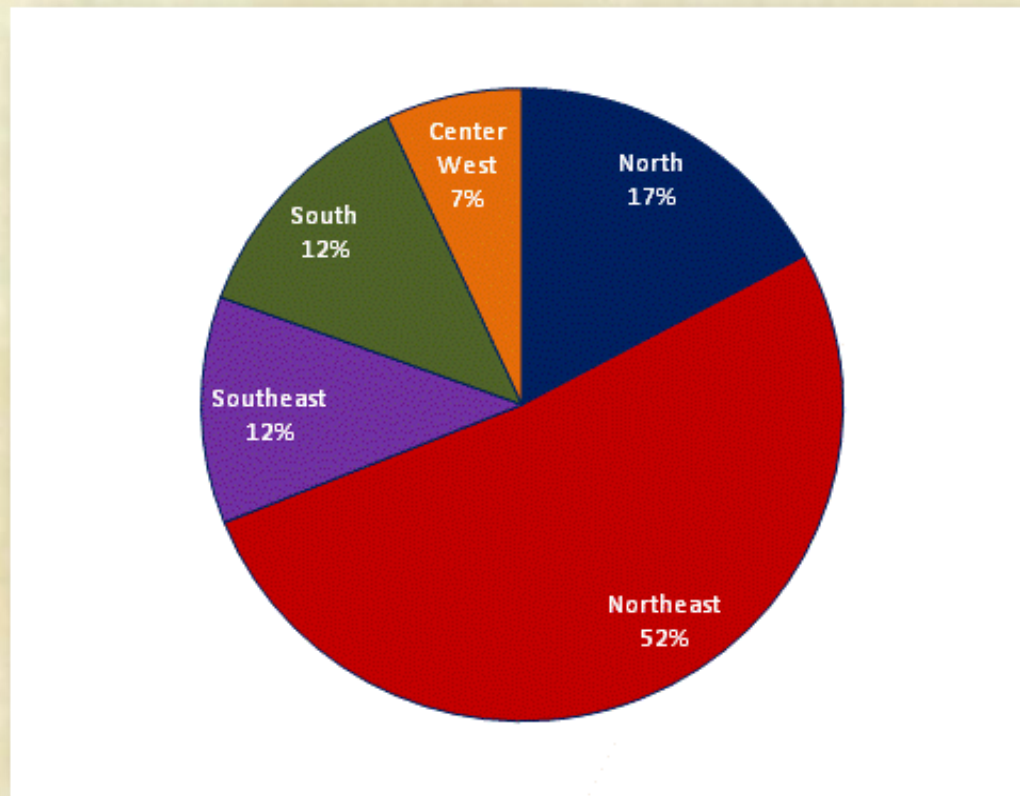


Figure 1 – Distribution of Brazilian non-metropolitan municipalities according to the primary care physician shortage index



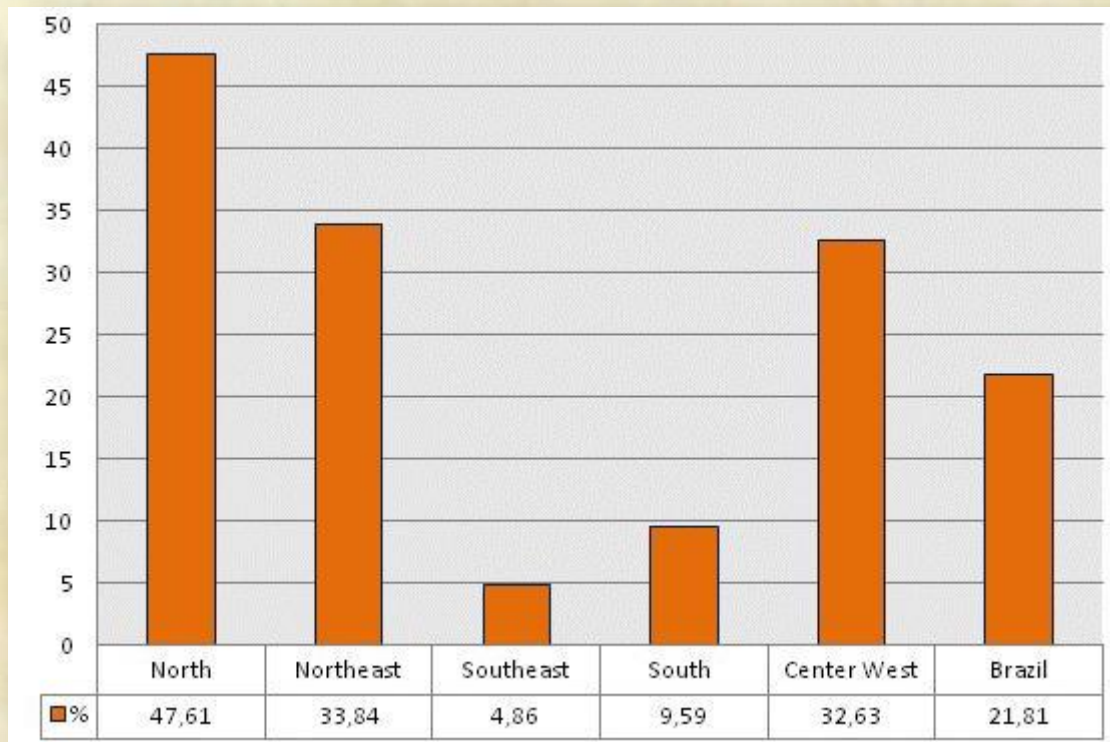
Source: CNES, SIM, SNASC, MDS e Contagem 2007.

Figure 2 - Distribution of Brazilian non-metropolitan municipalities with primary care physician shortage index according to geographic region



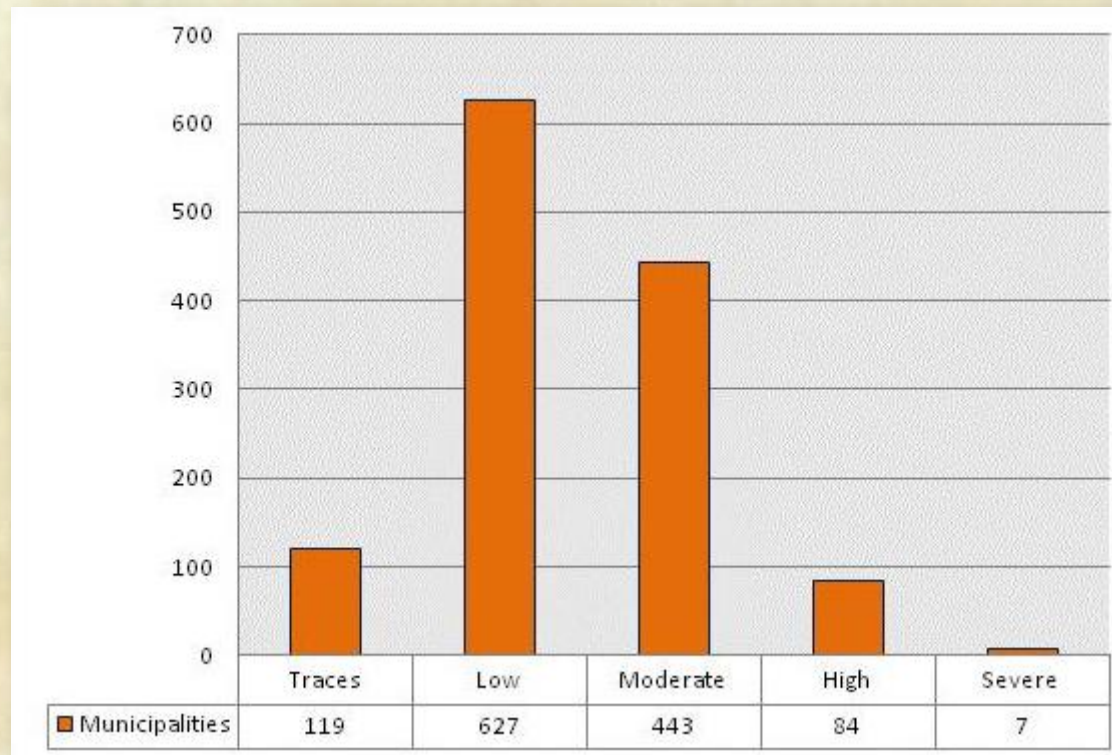
Source: CNES, SIM, SNASC, MDS e Contagem 2007.

Figure 3 – Percentage of the resident population in municipalities with primary care physician shortage related to the total population in non-metropolitan municipalities according to geographic region



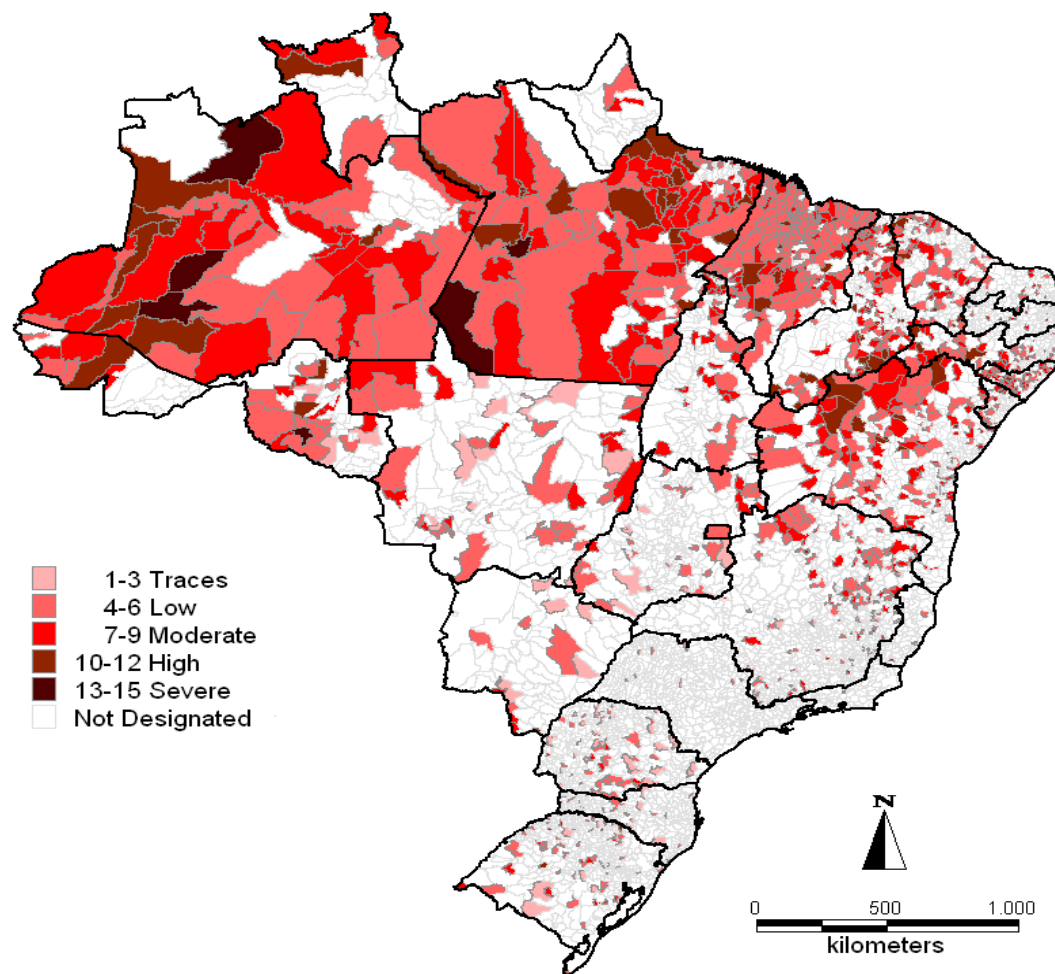
Source: CNES, SIM, SNASC, MDS e Contagem 2007.

Figure 4 – Distribution of Brazilian non-metropolitan municipalities with primary care physician shortage according to the index



Source: CNES, SIM, SNASC, MDS e Contagem 2007.

Distribution of Brazilian Municipalities According to the Primary Care Physician Shortage Index



- ✓ **The number of municipalities qualified as PCPS increased when health and social needs categories as IMR and poverty level were taken in account compared to the use of the population to PPC ratio criteria alone.**
- ✓ **The PCPS Index allows the establishment of priorities to deal with the shortage problems.**
- ✓ **There is a need to incorporate other variables such as midlevel professional providers; high need indicators as well as spatial accessibility definitions related to the health services deprivation.**

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Thank you!

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