

The socioeconomic aspect of drowning death in Brazil: A huge unbalance

Organization: Brazilian Lifesaving Society - SOBRASA

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Abstract

*“Drowning is a serious threat to world health. United Nations world population projections mean we can anticipate that the drowning problem is going to get worse without significant intervention, especially in developing countries”* (1). The incidence of drowning seems to reduce as much general education and swimming lessons is received by a population. Education and swimming lessons availability increase with country’s economy. The World Bank’s classify economies as gross national income (GNI) per capita as low (less than \$995), middle (\$996 to \$12,195), or high (above \$12,196). Low and middle-income economies are also convenient referred to as developing countries. Per capita income is often used as a measure of the wealth of the population of a nation however it has several weaknesses as a measurement especially if income is not equally distributed(2). Brazil is a development country (2009 GNI/capita of US\$ 8,080) although may have areas with high income(3). Our objective is to find out if GNI per capita is a related risk of drowning death and if so, how much.

Methods: All drowning death (unintentional, intentional and unknown), population and GNI, from year 2006, in each 26 states and 1 Federal District(FD) of Brazil were considered using death certificates based on Health Ministry-DATASUS-[www.datasus.gov.br](http://www.datasus.gov.br) and Brazilian institute of Geographic and Statistic(IBGE)-[www.ibge.gov.br](http://www.ibge.gov.br). Each state is tabulated to his GNI/capita and death/100.000 population(De/P). Two groups of States were divided based on GNI/capita using a statistical test to find a cross-section by a univariate form through simple tables ('Mantel-Haenszel' method). The Odds Ratio (OR) and the value of P were evaluated. A significant GNI/capita value of  $P < 0.05$  (95% confidence interval (CI)) was considered to be of statistical significance.

Results: In 2006, Brazil population was 187 million with GNI/capita of US\$ 6,877 and 3.7/100.000 people died by drowning. A cross-section GNI/capita identified was US\$ 8,826 ((OR = 1.27 (95% CI = 1.03–1.55),  $P=0.01$ ). Six States and one FD (group 1) were equal or above this cross-section value with an average GNI/capita of US\$ 12.106 and 3.5(De/P). Group 2 (20 States) had an average GNI/capita of US\$ 5.047 and 5.0(De/P) (table 1 – shows all states with GNI/capita and death/100.000 population).

Conclusion: Per capita gross national income refers to how much each individual would receive if the yearly national income is divided equally among everyone. That’s the bias behind the numbers. Brazil has reached a reasonable socioeconomic achievement recently however a few progress on how income is distributed. In 2007, the average income of the richest Brazilian is 28 times of the poorest

ones (4). Gross National Income per capita is a determinant risk factor for drowning in Brazil, where we can see two different socioeconomic realities inside one country. States where GNI/capita is below US\$8,826 has a chance to die by drowning 27% more often. Cross-section GNI/capita can be different in countries and cities where more attention to education and to equality of income distribution among workers is achieved.

Bibliographical references:

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4. IPEA - Instituto de Pesquisa Econômica Aplicada

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World map showing countries above and below the world GDP (PPP) per capita, currently \$10,500.

Source: CIA World Factbook.

above world GDP (PPP) per capita

below world GDP (PPP) per capita

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