

Original Research

## The quality of life in the regions of Brazil and suicide and homicide rates

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**Abstract:** This study examined the associations between two indices of the quality of life and suicide and homicide rates in the 27 Brazilian states and in the 26 Brazilian capital cities. The results indicated a positive association between the quality of life and suicide rates, replicating previous research on nations and on the American states, but homicide rates were not consistently associated with the quality of life in the Brazilian states. No associations were found, however, for the capital cities.

**Keywords:** quality of life, suicide, homicide, Brazil

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Henry and Short's (1954) theory of suicide assumes that the basic and primary target of aggression is another person rather than the self. What enables the child to develop so that his primary response to frustration, that of other-oriented aggression, is seen as legitimate, while other children develop in such a way that this primary response is inhibited and self-directed aggression becomes legitimate? Sociologically, Henry and Short proposed that the strength of external restraint was the primary basis for the legitimization of other-oriented aggression. When behavior is required to conform rigidly to the demands and expectations of others, the share of others in the responsibility for the consequences of the behavior increases, thereby legitimizing other-oriented aggression. When external

restraints are weak, the self must bear the responsibility for the frustration generated, and other-oriented aggression fails to be legitimized.

Common sense suggests that, as we improve conditions in the world, people should be much happier. If we can eliminate poverty and oppression (such as sexism and racism), if we clean up the environment, if we improve the educational and cultural offerings for our citizens, if we do all this, then we should be much happier. Then, as the quality of life increases, life should be more worth living and suicide less common.

However, from Henry and Short's theory, it can be argued that when external conditions are bad, we have a clear source to blame for our own misery, and this makes us outwardly angry rather than inwardly angry or depressed. When times are good, there is no clear external source of blame for our misery, and so we are more likely to become inwardly angry or

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depressed and less likely to be outwardly angry. Henry and Short would argue that a higher quality of life would lead to higher rates of suicide and lower rates of homicide, whereas a lower quality of life would lead to lower rates of suicide and higher rates of homicide. Lester (1989) reviewed several studies he had conducted which supported the hypothesis derived from Henry and Short's theory.

Another obvious prediction from Henry and Short's theory is that suicide and murder are opposite behaviors. Societies with high rates of one of the behaviors should have low rates of the other. Lester (1987) reviewed research on the sociological correlations between suicide and homicide rates, and several studies report opposite associations between social characteristics and suicide and homicide rates. For example, societies with a higher quality of life had higher suicide rates but lower homicide rates than societies with a worse quality of life. For other variables, however, the patterns of correlations were quite different for homicide and suicide, but not opposite.

Bando et al. (2012) found a spatial cluster of high suicide rates in the southern part of Brazil, the same region with the highest income per capita. Bando and Lester (2014) found that suicide and homicide were negatively correlated in Brazil and in, a multiple regression analysis, that suicide was related to high socioeconomic status. These studies suggest that the suicide rates of regions in Brazil may be associated with the quality of life in the regions. The present study was designed to explore whether suicide and homicide rates were associated with two indicators of quality of life in Brazilian states.

## Method

The present study is a cross-sectional ecological study using suicide, homicide and quality of life data in the 27 states and the 26 capitals of Brazil as the unit of analysis. Deaths considered to be suicide were those that used codes corresponding to "intentional self-harm" (X60 to X84); for homicide, the codes used were deaths due to "assault" (X85 to Y09) according to the International Classification of Diseases and Deaths (ICD-10). The mortality database utilized was that of the Ministry of Health Mortality Reporting System (DATASUS 2012). Sociodemographic data were extracted from the National Census (2010) from Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics, IBGE). We calculated the age adjusted rates of suicide and homicide using direct standardization. This approach adjusts crude rates according to the age distribution of one external, arbitrarily-defined population. In this case, Brazilian population in 2010 was used as a reference (Ahmad et al., 2001). However, these suicide rates do

not control for variations across the states and capitals in sex or ethnicity.

The Brazilian Human Development Index (HDI) follows the same three dimensions of the United Nations HDI - longevity, education and income - but modifies the methodology (PNUD 2013). The second indicator of quality of life was extracted from the Federation of Industries of Rio de Janeiro (FIRJAN, 2015). The Municipal Development FIRJAN Index (MDFI) was inspired by the HDI and includes the variable employment along with the income to compose the index.

The Brazilian HDI and the MDFI assume that, to measure progress in the quality of life of a population, it is necessary to go beyond the purely economic aspect and consider other social, cultural and political influencing the quality of human life. Both indexes range from 0 (low quality of life) to 1 (high quality of life). All the data used are available with free access.

The analyses were conducted with data for the years 2000, 20005, and 2009.

We collected the indicators according to the available period, the HDI for the years 1991, 2000, 2010 and the MDFI for the years 2000, 2005, 2009. Then we calculate the respective suicide and homicide age adjusted rates.

## Results and Discussion

The results are shown in Table 1. For the 27 Brazilian states, the higher the quality of life on both measures, the higher the suicide rates. The results for homicide rates were, however, inconsistent – a weak positive association in some years and a weak negative association in other years. The data for the 26 capital cities did not support an association between the quality of life and suicide or homicide rates.

		Capital cities (n=26)	States (n=27)
MDFI and			
Suicide rate	2000	-0.01	0.46*
	2005	0.12	0.32
	2009	0.02	0.29
Homicide rate	2000	-0.06	0.35#
	2005	-0.20	0.05
	2009	-0.17	-0.33#
HDI and			
Suicide rate	1991	-0.08	0.60***
	2000	0.06	0.51**
	2010	-0.14	0.31
Homicide rate	1991	-0.13	0.29
	2000	-0.03	0.35#
	2010	-0.42*	-0.37#

**Table 1:** Pearson correlations between the quality of life and suicide and

homicide rates in Brazil

# two-tailed  $p < .10$

\* two-tailed  $p < .05$

\*\* two-tailed  $p < .01$

\*\*\* two-tailed  $p < .001$

Previous research on the association between the quality of life and suicide and homicide rates used large areas – nations and states or provinces. It may be that breaking regions down into smaller units (in the present case, cities) eliminates these associations, although possible reasons for this are not immediately apparent. Future research should explore the role of the size of regional unit in the consistency of the associations between the quality of life and suicide rates. In addition, the present study failed to find a consistent association between the quality of life and homicide rates. Again, possible reasons for this inconsistency are difficult to discern, but the results do throw doubt on Henry and Short's thesis that suicide and homicide rates are opposed behaviors which show opposite correlations with social variables.

The present study has a limitation that is inherent to the ecological study design. An association observed between variables at the group level does not necessarily represent the association that exists at the individual level. This bias is known as the ecological fallacy. Furthermore the study was correlational in nature, and so none of the results presented should be interpreted as cause-and-effect statements since associations do not imply causality.

#### Declaration of interests

Daniel Bando and David Lester declare that they have no conflict of interest.

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