



## Violent Death in Latin America – The Impact on Life Insurance Products

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Of the 50 most violent cities in the world, 43 are located in Latin America and the Caribbean, according to a comparison of the death rates attributable to interpersonal violence there against other countries around the globe.<sup>1</sup> Clearly, interpersonal violence – and murder in particular – has a strong impact on the region. Over time, the rates and patterns of violent deaths vary widely between countries, as do the prevailing socio-political factors. This illustrates the inherent difficulty in identifying the specific causes of this violence or drawing generalised conclusions that explain it.

While bearing in mind the tragic and social consequences of violent death, it is vital for the insurance industry to understand that its products are all affected by this phenomenon to some extent. This article examines the patterns of violent death in various countries in Latin America and the Caribbean followed by the implications for the development of life insurance products in the region.

### Distinguishing types of violent death

The World Health Organization (WHO) categorises three types of violent death: interpersonal violence (e.g. murder), self-directed violence (e.g. suicide), and collective death (e.g. war).<sup>2</sup> The definition of interpersonal violence itself is also broad. It includes various kinds of violence that are often overlooked due to the attention received by other types of violence in the media – such as assaults against intimate partners, family members and children, and gender violence – which result in not only loss of life but victimisation of families.<sup>3</sup> For this article, however, we examined data on deaths due to interpersonal violence, and excluded those attributable to wars, suicides and legal interventions.

### Geographical variation

Interpersonal violence in Latin America and the Caribbean is a complicated phenomenon to describe, so measuring it is also complex. Death rates vary between countries in the region (see Figure 1).<sup>4</sup> For example, there were around three deaths per 100,000 residents in Peru in 2015, whereas almost 19 times as many people (roughly 60 per 100,000 residents) died of the same cause in El Salvador.

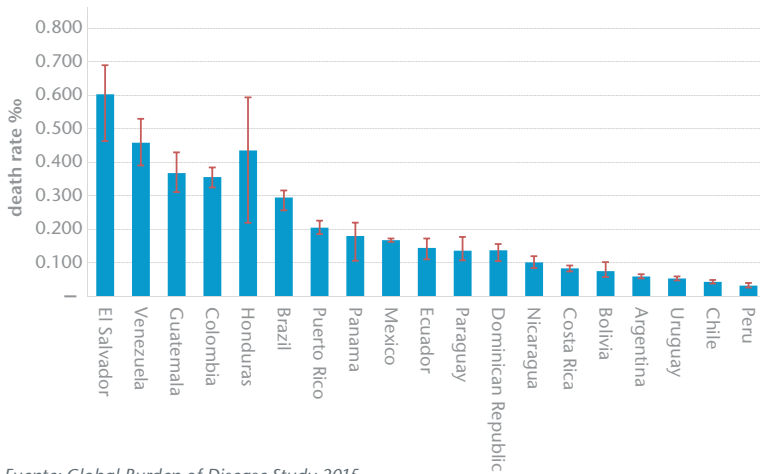
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### About This Newsletter

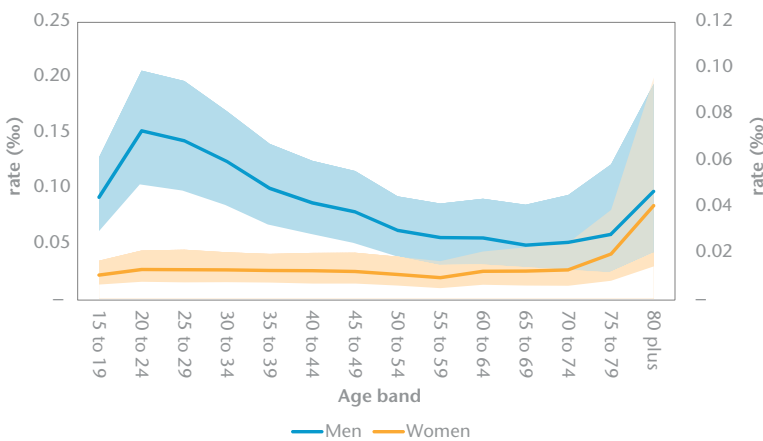
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Figure 1 – Rate of violent deaths in 2015 in Latin American countries, (confidence interval 95%)



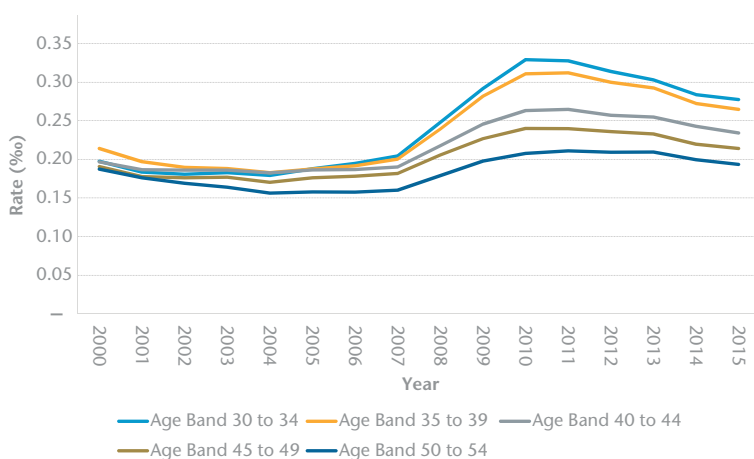
Fuente: Global Burden of Disease Study 2015.

Figure 2 – Gender disparity: violent death rates in 2015 in Chile (confidence interval 95%)



Fuente: Global Burden of Disease Study 2015.

Figure 3 – Sudden differences in violent death rates in Mexico



Fuente: Global Burden of Disease Study 2015.

The variation apparent at a national level can also be observed within different sub-regions of each country. For example, both Mexico and Brazil demonstrate a large degree of regional variation. In Mexico, the murder rates in the states located in the north and on the southwest coast are at least 10 times higher than those of certain central regions.<sup>5</sup>

### Varying demographic impact

Violent deaths do not affect all groups within a population equally. In 2015 the rate of deaths caused by interpersonal violence in Mexico was 5.9 times higher among men than the rate recorded for women. Likewise, a comparison of the varying levels of violent deaths in different age groups shows that age also plays an important role. For example, although Chile is a country with one of the lowest rates of violent deaths in the whole of Latin America and the Caribbean, the rate among men aged between 30 and 34 was 2.26 times higher in 2015 than the rate recorded for men aged between 60 and 64, as is illustrated in Figure 2.

### Variation over time

Interpersonal violence is linked to changing socio-political factors, which means that levels vary over time. Sometimes change comes about suddenly, such as the increased prevalence of murder experienced in Mexico in 2008. The violence rates there rose considerably in the years following the government's decision to intensify its efforts to eradicate the influence of the various drug cartels in the country. Although a declining trend is evident at present, rates recorded in 2015 were still higher than the ones observed prior to the conflict. Violent death rates for men between 30 to 34 years of age at the height of the conflict in 2010/2011 proved to be 84% higher than the average for the years 2001 to 2006 in the same age group (see Figure 3). This tendency was evident both among younger members of the population and (to a lesser extent) older age groups.

### Long-term trends

Other factors than sudden changes have an impact on violent death rates, and certain noticeable long-term tendencies reveal the heterogeneous nature of this phenomenon.

Based on population statistics, for example, long-term tendencies can be clustered in different groups (see Figures 4 and 5):

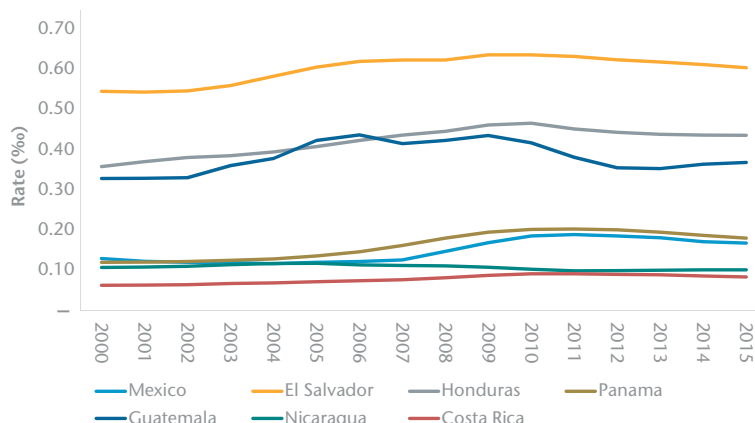
- Among the countries experiencing a decline in violent death rates, Colombia has seen the most significant drop over the past 13 years. Efforts to resolve the armed conflicts within the country are undoubtedly reflected in this trend. Reductions are not only evident in Colombia; the rates in countries such as Brazil, Ecuador and Paraguay have also been in decline – albeit at a slower pace – since 2008.
- Chile, Bolivia and Peru also have reduced levels of violence and are examples of countries where the rates have remained stable over the time.
- In contrast some countries have experienced an increase in violence over the same period, including Mexico, El Salvador, Panama and Guatemala.

### Relative impact on the population

Knowing the absolute rates of violent deaths would reveal the scale of the problem, but the figures fail to show what percentage of *all* deaths is due to violence of some particular kind. In other words, what is its relative impact? At first glance it might appear that violence is a peripheral cause among many others. For example, in El Salvador just 3% of all deaths among men during 2015 resulted from interpersonal violence. The data reveals that the proportion of violent death is largely dependent on the age of the victims. In certain countries, such as Guatemala, Honduras and El Salvador, murder is one of the most common causes of death in men under 45 years old. In El Salvador, although 42% of all deaths in men aged between 30 and 34 in 2015 were the result of violence, this same cause of death only accounted for 7% of deaths in the 55-to-59 age group. And in other countries, such as Chile (or e.g. Peru), where murder is of considerably less significance with regard to overall mortality rates, this cause of death also appears to have a greater impact among young men and tends to disappear in older age groups (see Figure 6).

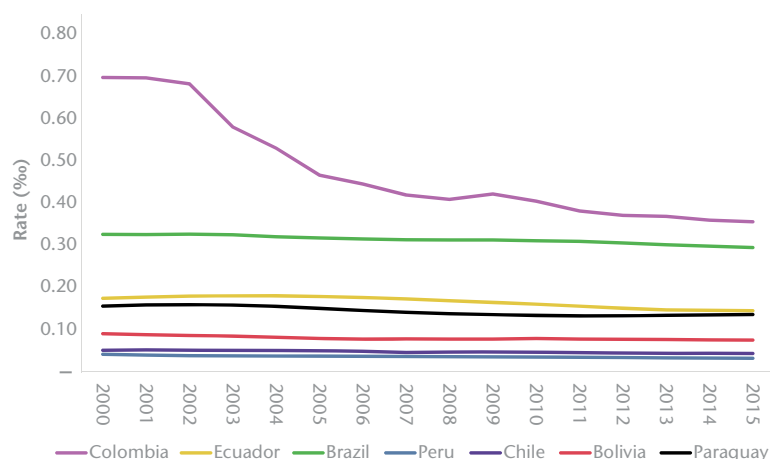
Taking into account the incidence of violent death can fluctuate widely over time, it can be very helpful to know how substantially it affects the various age groups in order to understand the volatility of the claims experience within a particular group.

Figure 4 – Trends in violent death rates in Mexico and various Central American countries



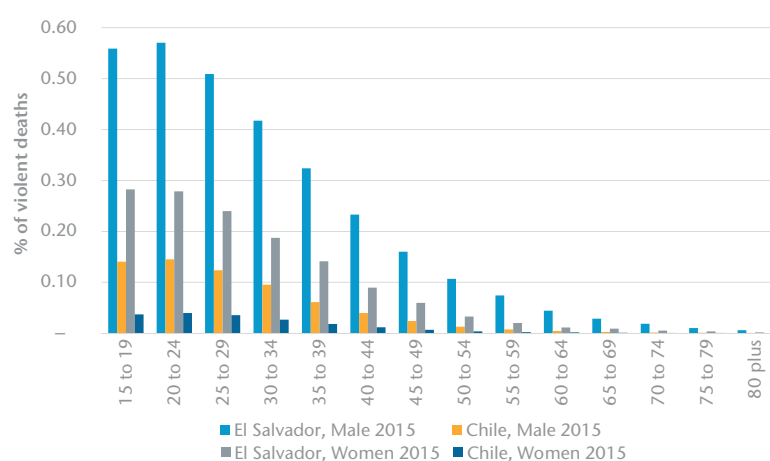
Fuente: Global Burden of Disease Study 2015.

Figure 5 – Trends in violent death rates in certain South American countries



Fuente: Global Burden of Disease Study 2015.

Figure 6 – Relative impact of violent deaths by age group in El Salvador and Chile in 2015



Fuente: Global Burden of Disease Study 2015.

## Differences between the general population and the insured population

Despite growth over recent years in premium of direct life insurance in Latin America and the Caribbean, and the higher premium per capita than the global average of the emerging markets, the penetration of life insurance in the region (percentage measurement based on the ratio of premiums to the GDP) is still relatively low.<sup>6</sup> It accounted for 1.23% of the GDP in 2014 compared with other regions, such as North America (3.02%) and Europe (4.08%).<sup>7</sup>

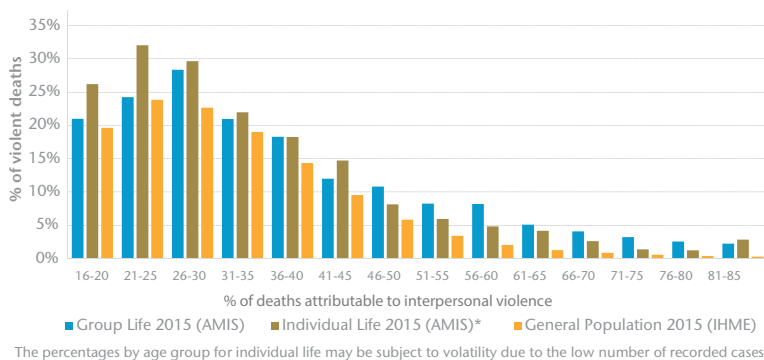
The patterns of mortality found in the general population do not necessarily reflect those in the insured population. Generally speaking, mortality from all causes is lower in individual life insurance

products due to such factors as underwriting or higher socioeconomic level, allowing improved access to healthcare. Group life insurance products also exhibit lower mortality than the population. Despite the underwriting process in group life being different from individual products, schemes cover a population group in active employment that normally enjoys better health than the population as a whole.

This does not mean the insured population escapes the violence in the region. Statistics from the Mexican Association of Insurance Institutions (AMIS) for 2015 measure the relative impact of violent death among insured lives. Figure 7 shows how violent death is also a significant cause of death within the insured population, above all causes for people aged up to 50. The general impact of violent death on individual life and group life insurance products alike is similar to the one observed on the general population.

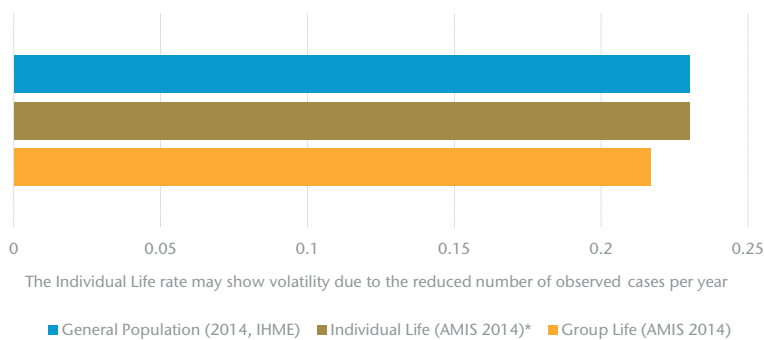
Gen Re has noted a significant impact on the mortality in certain portfolios due to violent death, particularly in Mexico and Central America. This impact is complex in its nature and varies depending on the type of insurance product (e.g. endowment vs ordinary life policies), composition by age, sex and occupation, and the average sums insured. Generally speaking, violent death rates are usually slightly higher in individual life insurance portfolios than in group life insurance portfolios. The reasons for this can vary, but there is a greater risk of adverse selection in individual products than in group life insurance products, where insurance cover is often automatic and linked to work at a particular company. This means the purchase trigger for group policies differs from that of individual products. For example, people who consider themselves particularly vulnerable to violence (perhaps based on their socioeconomic status or profession) are likely to purchase an ordinary individual life insurance policy to protect their potential future beneficiaries. Estimates based on 2014 AMIS data show that the violent death rate for individual is 6% higher than the rate recorded for group and is similar to the rate recorded in the general population (see Figure 8). Even if the exact number may be influenced by some volatility, we believe that the estimates are representative of the actual effects.

Figure 7 – Differences in the share of violent deaths in the general population and the insured population<sup>8</sup>



Fuente: Global Burden of Disease Study 2015. y Mexican Association of Insurance Institutions 2015.

Figure 8 – Violent death rate in Mexico in 2014



Fuente: Global Burden of Disease Study 2015 y Mexican Association of Insurance Institutions 2014.

## Variation in the quality of information

The models presented are only as good as the information on which they are based. Violent death statistics are regularly recorded for almost all countries of Latin America and the Caribbean.<sup>9</sup> However, the quality can vary considerably due to the process of collection, documentation and publication by institutions including the police and health ministry. Changes to government and collection methodologies, as well as incorrect classifications, can all negatively affect quality. Because of this ambiguity, it is difficult to precisely gauge the exact impact of violent death on the overall mortality rate in a country, and particularly on a given insured population. The error risk linked to the rate estimation can be modelled through the use of confidence intervals, which may show a different length between the countries (see Figure 1 and 2).

## Consideration of violent deaths in insurance product development

In light of this phenomenon and analysis, the question is: What measures can insurers take to enable development of life insurance products that correspond to the degree of risk they are prepared to take? The following gives a general outline of various applicable ideas:

- Trends in violent deaths differ greatly from other areas of mortality. With this in mind, it is important to analyse mortality rates and determine the anticipated mortality rates separately for each component of mortality depending on the insurance product in question. This is particularly relevant in countries with a high rate of violence, as is the case in Central America. One example of how this could be done: distinguish between three different types of mortality – deaths caused by disease, accidental deaths and violent deaths.
- For some countries in Latin America – notably Mexico and throughout Central America – it is a common practice to quote unique rates for products sold through special selling channels (e.g. bancassurance). Having in mind that violent death is a relevant cause of death in those countries and that the patterns change between age groups and sex, it is good practice to use separate rates for the different age

groups and sexes as this helps to mitigate the risk of error and changes in the composition of the portfolio itself. Although it is also possible for certain factors to be introduced to adjust the violent death rates at the regional geographic level, using these factors to calculate the premium may prove rather ineffective, particularly for individual life insurance products. In many cases, individuals can take out insurance cover in a different part of the country from the area in which they normally reside. The latter risk can, however, be mitigated during underwriting to clarify the relationship between the insured party's place of birth, place of residence, place of work and job description.

- The type of insurance (e.g. individual vs group, ordinary vs endowment) should be considered when deriving best estimates of violent death rates. For long-term individual life products in particular, it is important to analyse and consider your own portfolio experience. This includes correlations between the rate of violence and the sum insured and the policy year wherever possible, so as to prevent the possible impact of adverse selection.
- Safety margins may mitigate sudden changes and long-term trends in violent death, so it is crucial to take these into consideration. This is especially true given that violence rates may vary considerably with a change in political or social circumstances; for example, if a conflict erupts between rival criminal groups. This risk of change poses a major challenge when developing long-term products, or where there is no option to adjust the premiums throughout the contract term.
- The quality of information can vary considerably depending on the country and the information sources used to obtain the violent death rates. It is therefore important that the safety margins used to estimate the premium rates anticipate the possibility of error in these death rates.
- Depending on the product, it may be possible to adapt the underwriting process to reduce the impact of violent death on the loss experience. This may include reducing benefits in the case of murder or adding waiting periods to curb adverse selection at the point of sale.

## Conclusion

Despite all the measures that have been taken throughout Latin America and the Caribbean to reduce violence, it continues to exact a major impact, leaving profound scars in the social fabric of each country.

Especially for men, violent mortality rates exhibit very different tendencies compared with other components of mortality. This cause of death is far more common among younger age groups and tends to disappear in older ones.

Likewise, the mortality rates caused by this phenomenon can vary considerably over time. As such, it is essential for the development of products to make allowances for safety margins in order to curb these changes. And by the same token, the quality of the data varies substantially between different countries. The safety margins used when estimating the rates must therefore allow for the possibility of data error.

### About the Author

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Both the general population and the insured population are exposed to this phenomenon. As we have shown, the impact of mortality due to acts of violence in the different portfolios is complex and varies between nations. Factors that may play a significant role include product type (individual or group), composition in terms of age, sex and occupation, average amount insured and contract term. In certain countries within Central America and in Mexico, a higher rate of mortality can be attributed to violent acts in individual life insurance portfolios than in group life insurance portfolios.

### Endnotes

- 1 <http://www.businessinsider.com/the-most-violent-cities-in-the-world-2014-11?op=1/#-valencia-venezuela-had-3004-homicides-per-100000-residents-1>.
- 2 [http://www.who.int/violence\\_injury\\_prevention/violence/world\\_report/en/full\\_en.pdf?ua=1](http://www.who.int/violence_injury_prevention/violence/world_report/en/full_en.pdf?ua=1).
- 3 Global Study on Homicide 2013, Trends, Contexts and Data, UNODC.
- 4 Global Burden of Disease Study 2015 (GBD 2015) Results, Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2016. Available from <http://ghdx.healthdata.org/gbd-results-tool>.
- 5 Ibid endnote 3.
- 6 The denomination of emerging countries is in line with the conventions of the International Monetary Fund. Russia, the United Arab Emirates and South Africa are some examples of emerging economies. Ver <http://www.imf.org/external/spanish/pubs/ft/weo/2015/02/pdf/texts.pdf> (p. 167).
- 7 [http://media.swissre.com/documents/sigma4\\_2015\\_es.pdf](http://media.swissre.com/documents/sigma4_2015_es.pdf) p.45.
- 8 The factors for group life insurance and individual life insurance are our own estimates based on the information reported by the Mexican Insurance Association (Asociación Mexicana de Instituciones de Seguros or AMIS) for the year 2015.
- 9 Fearson JD, Homicide data, third revision. Background paper prepared for the WDR 2011 team, Stanford University, 2011.

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