

Principales tendencias de las tasas de suicidio en Chile: 1921-2020*

Main trends in Chile's suicide rates: 1921-2020

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Resumen

Los principales objetivos de este artículo son proporcionar la serie más larga jamás realizada para un país latinoamericano sobre el número y la tasa de suicidios, desde 1921 hasta 2020, identificando sus principales tendencias y cambios en la mortalidad por suicidio tanto en el corto como en el largo plazo; y desagregar estas series por género y grupos de edad, para identificar los principales patrones y cambios a lo largo del tiempo para estas variables, incluyendo cambios en la brecha de género. Encontramos que durante el último siglo ha habido cambios importantes en el perfil de suicidio de Chile y su importancia relativa como causa de muerte. Durante la década de 1920-1940, alrededor de dos de cada 1.000 muertes (0,2%) fueron resultado de suicidio en Chile. Esa tasa ha sido aproximadamente diez veces mayor (2%) durante las últimas dos décadas. La tasa actual de suicidio para el país es superior a 10 por cada 100.000 habitantes, por encima del promedio mundial. La tasa de suicidios entre los hombres durante las dos últimas décadas es de alrededor del 18%, frente al 3,6% entre las mujeres: se trata de la brecha más grande jamás

Abstract

The main objectives of this article are to provide the longest ever series for any Latin American country on both the number and rate of suicides, from 1921 to 2020, identifying their main trends and changes in suicide mortality in both the short and the long term; and to disaggregate these series per gender and age groups, to identify the main patterns and changes over time for these variables, including changes in the gender gap. We found that during the last century there have been important changes in Chile's suicide profile and its relative importance as cause of death. During the 1920s-1940s, around two in every 1.000 deaths (0.2%) were the result of suicide in Chile. That rate has been around tenfold higher (2%) during the last two decades. The current suicide rate for the country is above 10 suicides per 100.000 inhabitants, above the world average. The suicide rate for males during the last two decades is around 18, as against 3,6 for females: this is the largest gap ever observed since the 1920s. During the 2010s, over half of all suicides (53%) were committed by people aged 40 or above, an increase from 23% during the 1920s. Finally, an overwhelming majority of suicides in Chile are committed by males over 50 years old: 29% of all suicides during the 2010s (as against 10% in the 1920s).

* Article funded by Anillos ANID PIA SOC180001.

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observada desde la década de 1920. Durante la década de 2010, más de la mitad de todos los suicidios (53%) fueron cometidos por personas de 40 años o más, un aumento respecto del 23% durante la década de 1920. Finalmente, una abrumadora proporción de suicidios en Chile son cometidos por hombres mayores de 50 años: el 29% de todos los suicidios durante la década de 2010 (frente al 10% en la década de 1920).

Palabras clave: Chile, suicidio, historia, desigualdad, brecha de género

Key words: Chile, suicide, history, inequality, gender gap

Received: October 16th, 2024

Accepted: December 16th, 2024

1. Introduction

Within a short period of time, the last two generations, Chile experienced its epidemiologic transition (ET) at an accelerated pace, thus fitting best within the ‘contemporary-delayed’ model of the ET (Mackenbach, 2020; Omran, 1971, 1998). Up to the 1950s, over 40% of all deaths were due to infectious diseases. Now, though, cancer and diseases of the circulatory system are the most common causes of death, followed by “external causes of morbidity” such as accidents, homicides and suicides (Llorca-Jaña et al, 2023). Out of these “external causes of morbidity” (also known as “violent deaths”), suicides have gained increasing importance. For the last year for which definitive official statistics are available (2020), suicides accounted for nearly a quarter of all deaths within this group in the International Classification of Diseases. Equally striking is the fact that from the 1960s onwards more people have died from suicide than from homicide in Chile every year, despite extensive press coverage of the recent increase in violent homicides in that country. But perhaps the most worrisome fact is that while in the 1920s suicides accounted for 0,1% of all deaths in Chile, this ratio increased to 1,8% during the 2010s. Suicidal behaviour constitutes a major public and mental health problem in Chile, which ranks in the top5 Latin American countries with higher suicide mortality rates (for analysis of Chile in relation to global suicide rates over time, see Ilic & Ilic (2022), Liu (2009), Lester & Yan (2005), Schmidtke et al (1999), La Vecchia et al (1994), among

other studies)¹. Suicides are tragic events that impact heavily on families, societies and the economy (Kronenberg, 2021), and thus call for our attention. It is essential for practitioners and researchers in the field to know more about the main trends in suicides in Chile: a deep understanding of changes over time can illuminate future public policies.

The aims of this article are manifold. First, it will provide the longest ever series for any Latin American country on suicide number and suicide rates, from 1921 to 2020, covering exactly a century². It is well known that suicide mortality varies in both the short and long term (Holopainen et al, 2013), so we wanted to identify the main changes in Chile, which like most developing countries, remains relatively obscure. This is an important contribution since most data/studies on suicide mortality over the last few decades have been published for several European and North American countries, while developing countries have been neglected (La Vecchia et al, 1994), even by Chilean scholars. Little has been written on overall trends in suicide in Chile (Duarte, 2017, 2007); a handful of valuable studies cover a few decades or provide a partial view e.g. (Araneda et al, 2021; Servicio Médico Legal, 2018, Otzen et al, 2014; Trucco, 1993, 1975)³. Second, we also wanted to examine the disaggregated series per gender and age group, to identify the main patterns and changes over time for these two variables, including changes in gender gap, in order to better inform public health policies. This analysis will also be an important contribution to the literature on mental health, gender and age inequality. We are not dealing with risk factors for suicide, methods used, seasonality, and other variables usually referred to in suicide studies, which would require micro data for each individual committing suicide, or a sample of them. That is beyond our ambitions, since it would require many years of data collection to be able to cover the whole century we are dealing with. Our study is a macro study of suicide trends and suicide inequality in a developing country: Chile.

2. Materials and methods

¹ See also World Population Review (2024). However, with the exception of Uruguay and Cuba, most Latin American countries have low suicide rates compared with most other regions of the world, and especially when compared with the worst performing countries (Duarte, 2007; Lester & Yan, 2005; La Vecchia et al, 1994).

² We wanted to cover as much time as possible, but we could not find data prior to 1921, as original intended.

³ Trucco is the only other author to cover a long period, but the data shown in his two main works is limited in scope, focusing on specific age ranges. There are many other important works on suicide in Chile, but they mainly cover specific regions e.g. Belmar Mac-Vivar (2015), Chávez & Ovalle (2015), Fabregat (2015), Flores (2015), Baader et al (2011), Madariaga et al (2010), Fernández (2006, 2004), Méndez et al (2001, 1997a, 1997b), Chuaqui et al (1967), or judicial aspects of the Chilean suicide profile e.g. Fabregat (2018, 2015), Piazzini (2016), Trucco (1975) or its psychology e.g. (Madariaga et al, 2016; Silva et al, 2013; Méndez et al, 1997a).

For statistics on total deaths and deaths by suicide, our source of information is the Vital Statistics Yearbooks published yearly by the Chilean National Statistics Office and available at the National Statistics Office's main library for 1921 onwards. These statistics are officially reported by Chile to the World Health Organization and other international organizations. The National Statistics Office obtains the primary information from the National Registry Office, based on causes of death certificates: by a national law, every deceased person must have a death certificate to be buried. This information follows the guidelines in the International Classification of Diseases, which allows us to clearly identify deaths by suicide. For each available year, during March-November 2023 we entered in Excel total deaths, as well as suicides per gender and age group from 1921 to 2020, except for the 1960s-1970s and 2004⁴, for which we were unable to find data of suicide per age. We have collected data from the national population censuses (household section) to gather information on total population per age group and gender, which were complemented with secondary literature (Díaz et al, 2019). The data on population allowed us to compute suicide death rates (i.e. number of suicides per 100.000 inhabitants) for our variables.

3. Results, 1921-2020

The average yearly number of suicides in Chile has increased steadily from the 1950s, but more importantly from the 2000s (Figure 1). Part of the increase in the last two decades has been attributed to underreporting until the late 1990s (Baader et al, 2011; Madariaga et al, 2010; Duarte, 2007; Méndez et al, 2001), although it is not possible to fully quantify this factor⁵. In 2000 there was an improvement in the way suicides were recorded in Chile, to avoid part of the underreporting detected until 1999⁶. Underreporting of suicides is not unique to Chile:

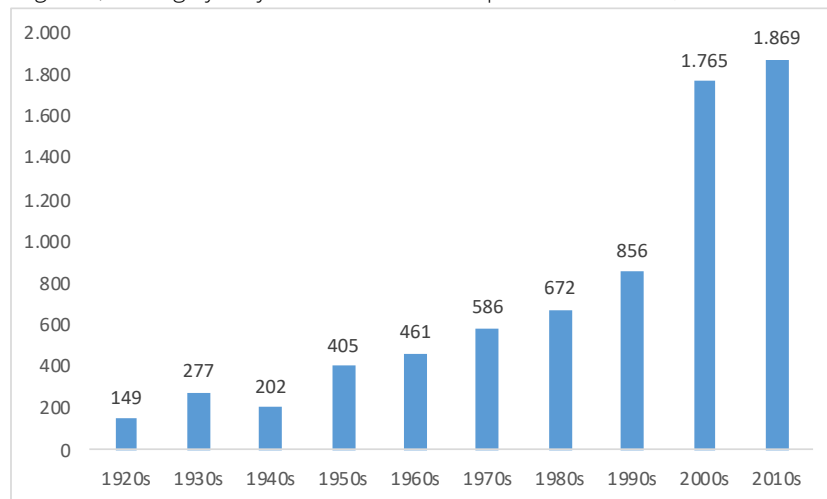
⁴ Unfortunately, for 2004 all the data on Vital Statistics for Chile was published as a broad summary only. The National Statistics Office is yet to publish the official detailed data for that particular year.

⁵ It would be ideal to know the share of unknown causes of deaths within total "external deaths", but that data is not readily available for Chile for most years included in our survey. For the entire period we only know the share of total unknown causes of deaths (some of which are hidden suicides) within total deaths, which is shown in Appendix B. It is evident from that data that this share has fallen gradually from the early 1980s to the mid-2000s, and stagnated thereafter. That is, it is clear that there was an overall improvement in Chilean statistics of causes of death, which surely impacted favorably on suicide data.

⁶ It has been argued that before 2000, within the "unknown violent deaths" officially recorded by Chile, some suicides were hidden. Likewise, most of Santiago's suicides were not recorded at all some years. Furthermore, it is also believed that some deaths reported as "accidental", and as such registered by the Register Office, were subsequently recorded as suicides by the judicial system, after reports received by either the police and/or the legal medical service, but the information on suicide numbers was not subsequently updated by the National

in most countries suicides have long been underestimated (Trucco, 1993; Schmidtke & Weinacker, 1991; Diekstra, 1989; Monk, 1987; Sainsbury & Jenkins, 1982).⁷ Regardless of this issue (which we are unable to correct on an annual basis), it seems undeniable that there is an increasing trend in the annual number of suicides in Chile from the 1950s. Furthermore, as a share of total deaths, the suicide rate also increased markedly during the 1930s, and again from the 1950s to the 2000s, and remained high during the 2010s despite a decline in the previous decade (Figure 2). During the last two decades, around 2% of all deaths in Chile have been due to suicide, a statistic which confirms the significance of suicide as a cause of death. This rate is also above the world average, which for 2019 was estimated at 1.3% (World Health Organization, 2021).

Figure 1, Average yearly number of suicides per decade. Chile, 1920s-2010s



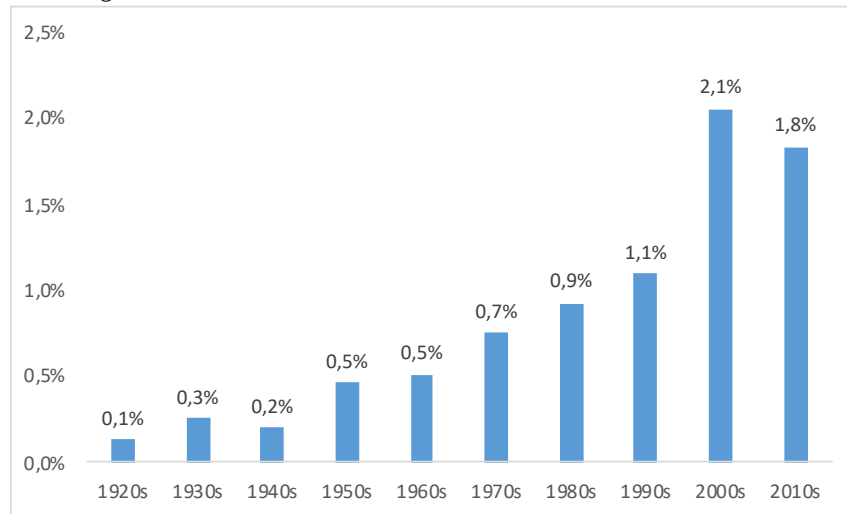
Source: Own calculations based on the above-mentioned data sources.

Note: See appendix A for annual data.

Statistics Office. To correct this, from 2000 the data on actual suicides are being automatically updated (thanks to a new process of online digitalization of death certificates), while Santiago's data is being fully entered, eliminating a great deal of the previous underreporting (Guajardo, 2017). To show the amount of underreporting before 2000, Duarte (2007) provides data for 1995-97, for suicides reported by both the Office of National Statistics and by the Judicial System. The latter data is 29% higher than the data reported by the Office of National Statistics for that triennium.

⁷ And indeed, underreporting may never be completely eliminated. See Tøllefsen et al (2012). The main issue for Chile was the underreporting of Santiago, which would be important before 2000 shall we analyze data per regions.

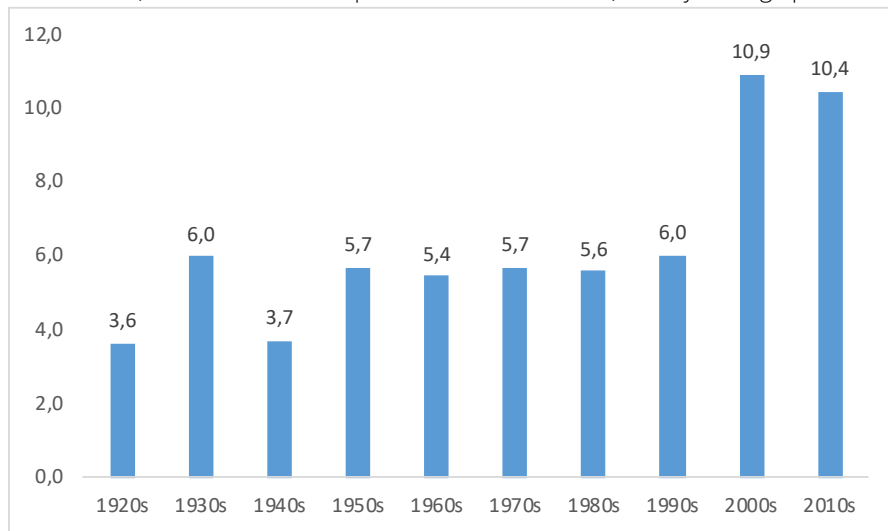
Figure 2. Suicides as a share of total deaths in Chile, 1920s-2010s



Source: Own calculations based on the above-mentioned data sources.

In relation to total population, one of the most commonly seen suicide indicators in the press, Chile's suicide rate (i.e. the number of suicides per 100.000 inhabitants) shows a slightly different pattern to that portrayed in Figures 1 and 2: between the 1950s and 1990s there is stability rather than an increasing trend, but the higher relative rate of the 1930s gains further importance (Figure 3). Finally, the marked increase during the 2000s-2010s suggests underreporting before 2000, as noted above. Chile's suicide rate during the last two decades is above 10, while global suicide rates for that period were around 9 (World Health Organization, 2021).

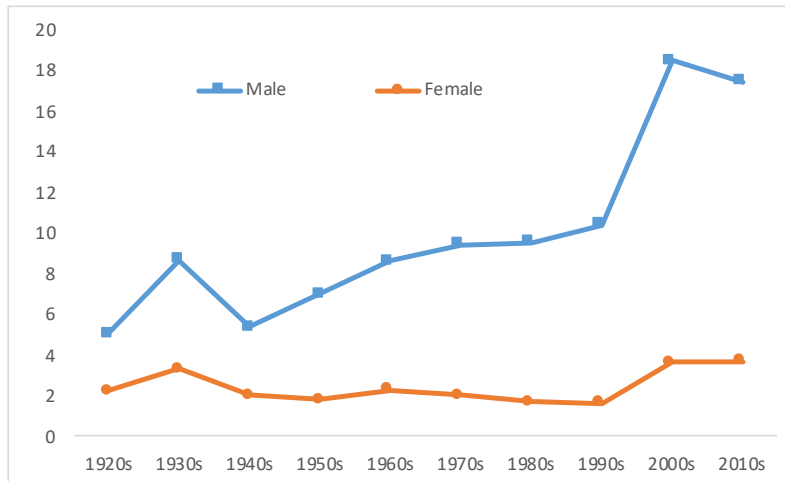
Figure 3. Chile's suicide rate (number of suicides per 100.000 inhabitants). Yearly average per decade, 1920s-2010s



Source: Own calculations based on the above-mentioned data sources.

Underreporting may cause problems with the interpretation of Figures 1, 2 and 3. However it does not impede the analysis of the evolution of suicide rates per gender and age groups over time, assuming that the underreporting did not affect any gender or age group in particular: Under-reporting before 2000 was unbiased for these two variables. There is general agreement within the literature that when there is under-reporting, it does not pose a problem for the analysis of general trends for a given country as it is unbiased (Trucco, 1993; Speechley & Stavraký, 1991).

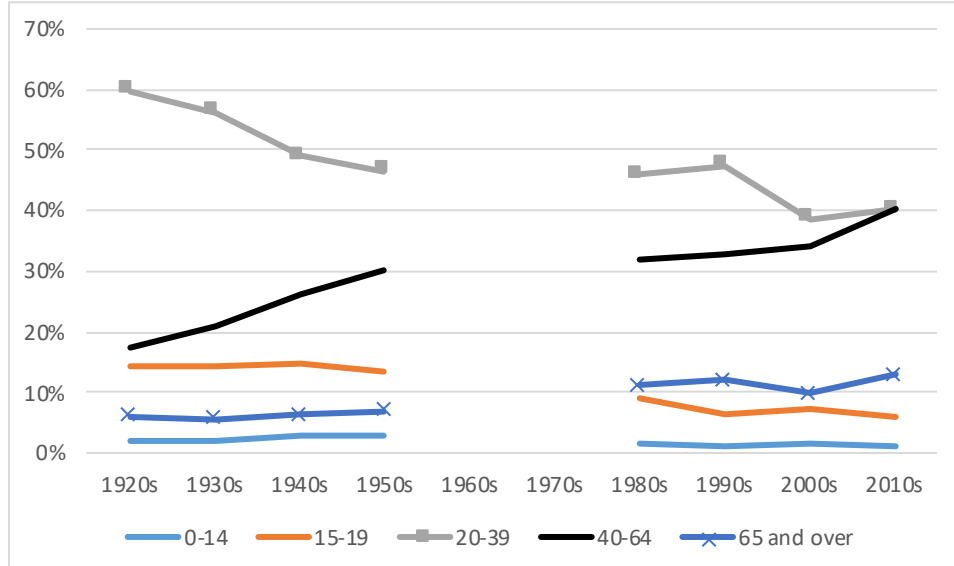
Figure 4. Chile's suicide rate per gender (number of suicides per 100.000 inhabitants). Yearly average per decade



Source: Own calculations based on the above-mentioned data sources.

Figure 4 shows suicide rates per gender. The first result to highlight is that, as in all countries for which there are series available, Chilean male suicide rates are far higher than female rates. The ratio of male to female suicide rates increased from 2,5-2,7 during the 1920s-1940s to around 4 during the 1950s-1960s and then up to 6,3 during the 1990s, and was around 5 during the last two decades. For every 1 female suicide, there were 5 male suicides during the first two decades of the twenty-first century.

Figure 5. Share of age groups for all suicides in Chile. Yearly average per decade, 1920s-2010s



Source: Own calculations based on the above-mentioned data sources.

Finally, the analysis of suicide per age group is a useful way to discover the relative proportion of people affected by suicides within different demographic groups. Figure 5 shows the share of suicides for the following age groups: 0-14 years (in which few suicides are found, for obvious reasons), 15-19, 20-39, 40-64 and over 64 (more detailed data is available upon request). The following facts are striking: the share of the age group 15-19 (late adolescents) fell from 14%-15% during the 1920s-1940s to 6%-7% during the last three decades (1990s-2010s); the share of the age group 20-39 (young adults) declined steadily from 60% in the 1920s to 39%-40% during the last two decades (2000s-2010s); the share of those aged 40-64 increased continuously from 17% in the 1920s to 40% in the 2010s; and the participation of the elderly (age group of 65 and over) also increased from 6%-7% during the 1920s-1940s to 10%-13% during the 1980s-2010s. That said, part of this is explained by the changing composition of Chilean population: elderly groups have gained increasing importance within the population's pyramid.

4. Discussion

As a share of total deaths, suicide has gained a relative degree of importance in Chile's causes of death profile and has become one of the leading causes of death. This is partly due to the country having experienced its epidemiologic transition (mainly in the 1940s), but it is also the case that suicide rates have further increased during the last two decades, when the epidemiologic transition had been completed (Llorca-Jaña et al, 2023). Suicide is a serious health issue that should not be ignored by local health authorities⁸.

The country has also experienced an accelerated demographic transition (including the aging of its population due to falling mortality, falling fertility rates, and an increase in life expectancy), which usually implies an increase in the share of older age groups within total deaths due to suicide. This does not mean that local health authorities should not provide specific funds to prevent suicides among middle-aged people and the elderly. In a country where pensions are very low, the elderly are particularly vulnerable to depression; individuals who suffer with depression are far more likely to die by suicide (Ferrari et al, 2014). The high suicide rates among men also deserve attention: Chilean health authorities should implement specific programs to prevent male suicides. Future research should investigate why male suicides rates increased so sharply during the 1950s-1990s, in particular when compared to the rate among women.

⁸ As late as in 2013 it was created the first National Program to Prevent Suicides in Chile.

The increase in suicides during the 1930s, both in absolute and relative terms, was probably a result of the negative economic impact of the Great Depression in Chile, when the Chilean economy collapsed, and unemployment increased dramatically. It is believed that there is usually an increase in suicide mortality during economic recessions, in particular because of the negative impact of unemployment on mental health (Borrell et al, 2017; Ceccherini-Nelli & Priebe, 2011; Trucco, 1993)⁹. During the Great Depression that started in Chile in late 1929, the number of suicides in the triennium after the crisis (1930-32) was 83% higher than in the triennium before the beginning of the crash (1927-29)¹⁰.

5. Conclusions

During the last century there have been important changes in Chile's suicide profile and the relative importance of suicide as a cause of death. In the early twentieth century (1920s) suicides accounted for a negligible share of total deaths (0.1%); now suicides account for an important share of all deaths (around 2% during the twenty-first century), thus becoming an important cause of death. Chile's suicide rates are now above the world average. Male suicide rates have increased far more sharply than female rates (in particular from the 1950s to the 1990s), widening the gender gap to the detriment of males, despite a small fall during the 2000s-2010s. Finally, with regard to age groups, the share of adolescents and those in their 20s has halved during the last century while the share of those over 40 (in particular those over 50 years old) has increased markedly. As a consequence, the most important share of suicides in Chile are those committed by males over 50 years: as much as 29% of all suicides during the 2010s (as against 10% in the 1920s). Several public policies recommendations emerged from our results: Chilean health authorities should channel more funds to prevent suicides among all age groups and both genders; special programs should be tailored to focus on the middle-aged and elderly population, and especially men belonging to these two groups. Based on the main trends we have found, future research agenda should focus on additional topics, such as regional inequalities on suicide rates. Likewise, recent literature has focussed on the impact of other variables that we have not considered. For example, psychological and epidemiological research in other countries has suggested that decreasing religiosity may be a factor to consider (Poorolajal, Goudarzi, et. al., 2022), as well as increasing divorce rates, decreasing family size (Wenz, 1983), and increasing social disconnection (Motillon-Toudic, Walter, et. al., 2022) in particular in developed nations.

⁹ On the links between economic growth and suicide rates in Chile, see Moyano & Barría (2006). For the Spanish case, see Blázquez-Fernández et al (2017).

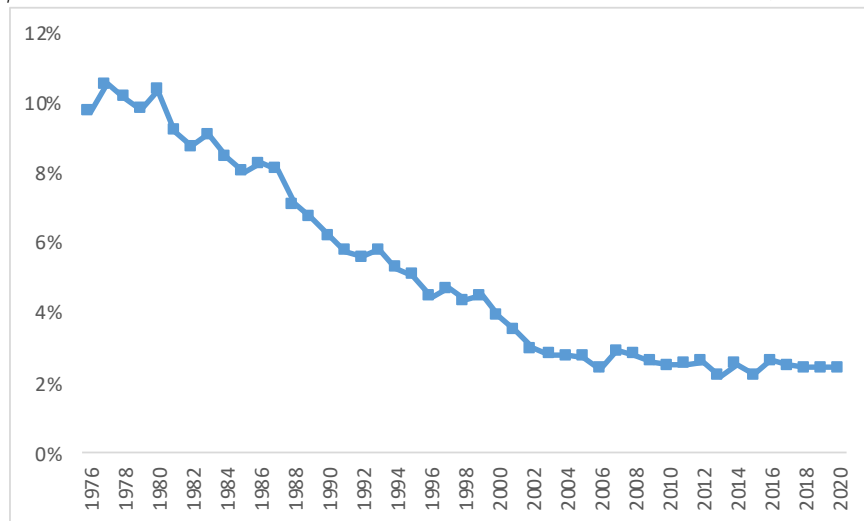
¹⁰ Studies have also shown that it is unclear whether there is a direct link between economic crises and changes in suicide rates over time (Fountoulakis et al, 2014).

Appendix A. Yearly number of suicides in Chile

Year	Suicides	Year	Suicides	Year	Suicides	Year	Suicides	Year	Suicides
1921	139	1941	177	1961	613	1981	651	2001	1.625
1922	189	1942	150	1962	529	1982	646	2002	1.603
1923	90	1943	161	1963	290	1983	691	2003	1.654
1924	120	1944	237	1964	249	1984	736	2004	1.735
1925	110	1945	247	1965	171	1985	683	2005	1.680
1926	142	1946	192	1966	594	1986	655	2006	1.795
1927	127	1947	169	1967	187	1987	693	2007	1.848
1928	211	1948	222	1968	755	1988	697	2008	2.088
1929	209	1949	227	1969	649	1989	725	2009	2.148
1930	254	1950	254	1970	579	1990	743	2010	2.001
1931	385	1951	284	1971	566	1991	787	2011	2.027
1932	360	1952	282	1972	558	1992	658	2012	1.841
1933	288	1953	279	1973	490	1993	740	2013	1.738
1934	248	1954	401	1974	555	1994	801	2014	1.789
1935	245	1955	524	1975	687	1995	930	2015	1.837
1936	284	1956	539	1976	587	1996	917	2016	1.858
1937	279	1957	496	1977	620	1997	910	2017	1.879
1938	228	1958	430	1978	567	1998	1.031	2018	1.823
1939	200	1959	558	1979	649	1999	1.041	2019	1.901
1940	235	1960	571	1980	540	2000	1.473	2020	1.602

Source: Own calculations based on the above-mentioned data sources.

Appendix B. Share of unknown causes of death within total deaths in Chile, 1976-2020



Source: Own calculations based on the above-mentioned data sources.

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