

## SUICIDES IN LITHUANIA: RATES, METHODS AND DISTRIBUTION BY AGE, GENDER AND SETTLEMENT, 2012-2016

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### Abstract:

**INTRODUCTION:** According to the World Health Organisation regarding suicide rate, Lithuania was on the top in 2016 with 31.9 suicide events per 100 000 people of the population. This research was aimed at analysing the situation including methods of suicide and its distribution between different age, gender and settlement groups in Lithuania.

**METHODS:** 4610 particular suicide cases were found and analysed from the given retrospectively collected data by the Hygiene Institute's Register of Death Causes in Lithuania from 2012 till 2016. These cases have been categorised into age (10-19 years old, 20-69 years old and >70 years old), gender and settlement groups. Chi-squared and Fisher tests were used to analyse the associations between the suicide methods used, sex, as well as age. A significance level of  $p < 0.05$  was used.

**RESULTS:** In total, 4610 suicide cases were registered in Lithuania in 2012-2016. People aged 20-69 years had the biggest proportion with 80%, followed by 16% for people older than 70 and 4% people aged 10-19. 82% of all cases were men. The most common method of suicides in all age groups was hanging, self-strangulation and self-suffocation; 92%. There is no statistical significant difference in methods used by the 10-19 years old group and above 20 years of age (20-70+). A difference was found between the groups under 70 years and above 70 years old. Moreover, the following difference was found between their genders ( $p = 0.0002$ ). In terms of using drugs and biological substances, women (54.24%) are more likely to commit suicide through these means than men in all age groups, while 100% of suicide methods by gas, steam or solvents were used by men. Though slightly more suicides were registered in cities, there was no statistically significant difference between people living in cities and in villages.

**CONCLUSIONS:** Despite the fact that incidences of suicides are gradually decreasing every year, the situation is not yet satisfactory. The pattern almost has not changed for years – the most inclinable person to commit suicide is a 50-59 years old man living in a city and the most used method is still hanging.

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**Keywords:** suicide, epidemiology, mortality, genders, Lithuania, self-harm.

### Introduction

Statistics regarding suicide still remain as a very delicate topic for Lithuania. According to the World Health Organisation regarding suicide rate, Lithuania was on the top in 2016 with 31.9 suicide events per 100 000 people of the population; and the second in 2015 with 32.7 suicide events per 100 000 people of the population. The same statistics reveal that the suicide rate in Lithuania exceeds the average world rate (almost triple) and more than double in Europe (WHO 2016; WHO 2018). The situation in Lithuania started to get worse after The Second World War and got its peak during the 1990s (Petrauskienė et al., 2004). Nowadays 800 000 deaths are caused by suicide every year worldwide, which is 1.4% of all deaths and takes 18<sup>th</sup> place in the list of death causes (WHO 2016). It is the second most common death reason for people between 15-29 year old (WHO 2014). Even though it is a worldwide problem, the greatest numbers of suicides are registered in low and middle economically developed countries. In highly economically developed countries, the proportion of men and women is 3:1, while this ratio is less than 1.5 in low and middle economically developed countries. Globally, the highest rates are in people older than 70 years and the most common methods are poisoning by pesticides, hanging and usage of a shotgun or explosive (WHO 2014). Based on mentioned studies, the effective prevention is possible only by knowing the most common suicide methods and mechanisms and the general social pattern of a person (WHO 2014; Mann et al., 2005; Stack et al., 2005). The aim

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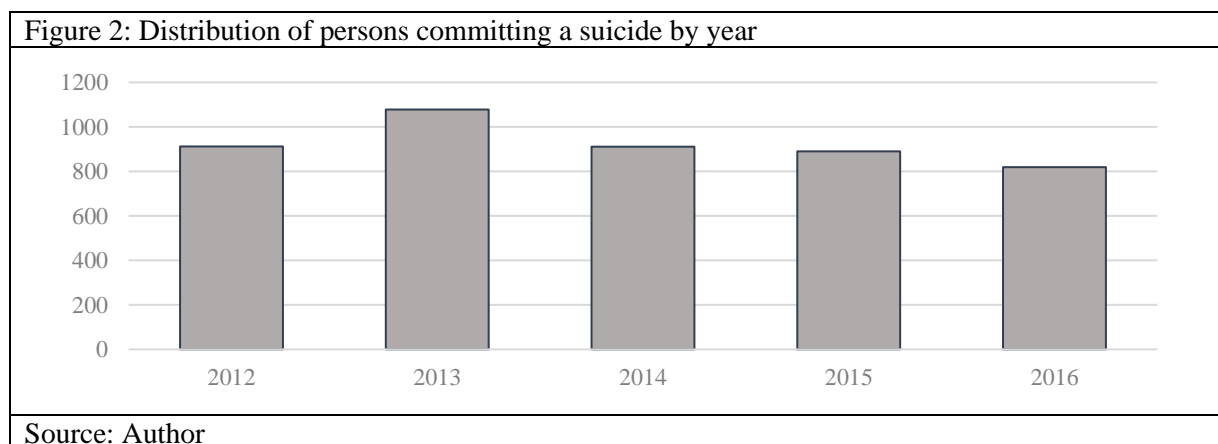
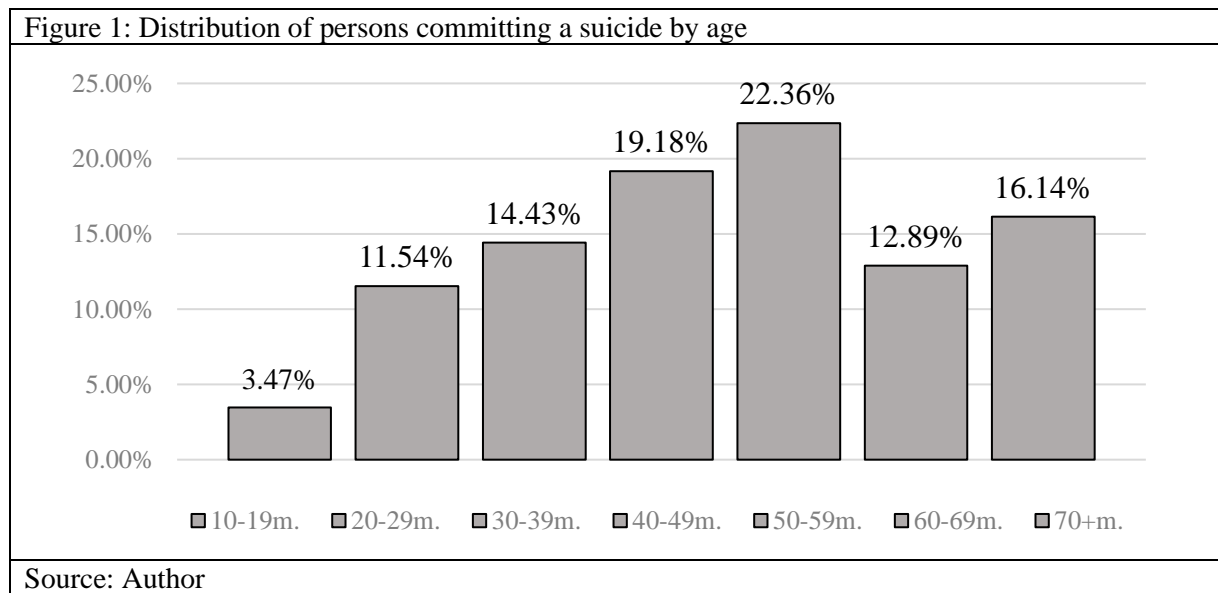
of this retrospective descriptive study is to investigate one of the types of violence – violence against yourself – peculiarities in Lithuania, the methods of suicide, distribution by gender, age and settlement.

**Data and methodology**

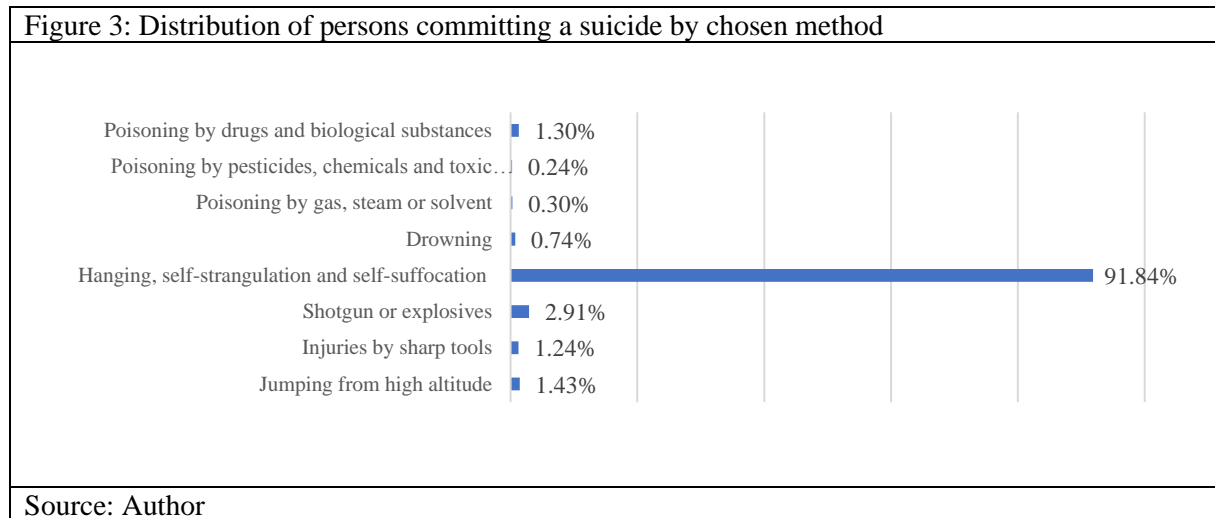
The retrospective research was conducted by analysing the Hygiene Institute’s Register of Death Causes data in Lithuania from 2012 till 2016. The cases with X60 -X84 codes (intentional injuries (suicides)) by ICD-10-AM coding were collected. 4610 nationally representative particular suicide cases were found. These cases have been categorised into three age groups (10-19 years old (people going to school), 20-69 years old (working age people) and >70 years old (retired people)), two gender groups (male and female) and two settlement groups (bodies found in the rural areas and bodies found in cities). These characteristics were studied with a purpose of describing the group which mostly needs interventions and preventive tools. Chi-squared and Fisher tests were used to analyse the associations between the suicide methods used by genders as well as age. A significance level of  $p < 0.05$  was used.

**Results**

4610 suicide cases were registered in Lithuania from 2012 to 2016. People aged 20-69 years had the biggest proportion with 80% (n=3706), followed by 16% (n=744) for people older than 70 and 4% (n=160) for people aged 10-19. To be more precise, as shown in Figure 1, the biggest groups comprised of 50-59 years old people (22.36%), 40-49 years old people (19.18%) and over 70 years old people (16.14%). The highest suicide rate of all age groups was registered in 2013 (n=1078) (Figure 2), while the lowest suicide rate of all age groups was registered in 2016 (n= 819). The highest suicide rate of 20-69 years old people was registered in 2013 (n=885), while the lowest suicide rate of the same group was registered in 2016 (n= 647). Suicides of people aged 10-19 (the highest rate) was registered also in 2013 (n=44).

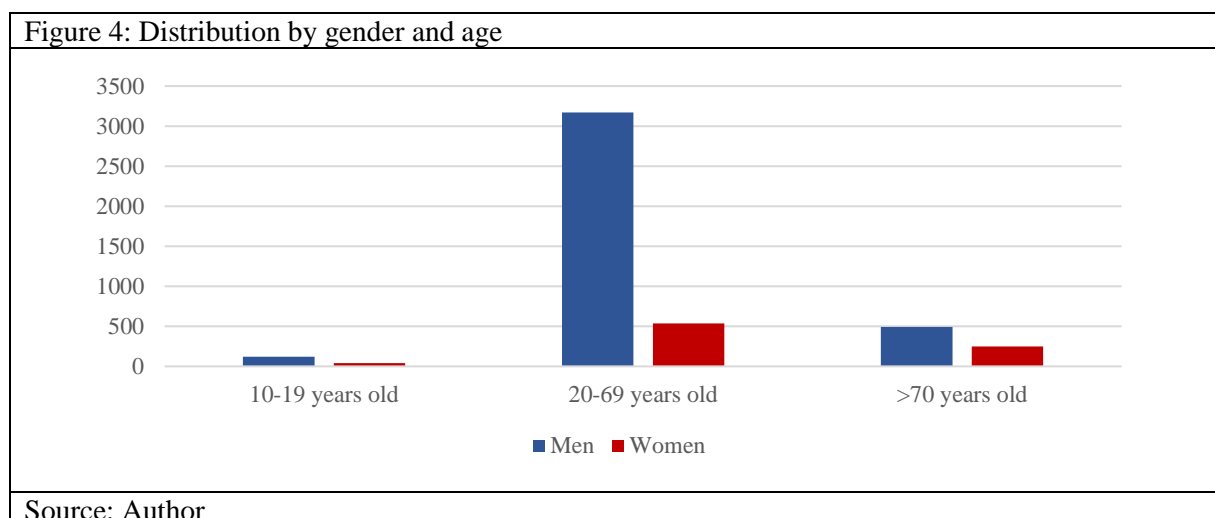


In all age groups, out of all suicide methods, the largest proportion standing out clearly represents hanging, self-strangulation and self-suffocation – almost 92% of cases (n=4234) (Figure 3). Shotguns and explosives were used in 3% of all cases (n=134), while the proportions of other methods represent jumping from high altitude – 1.4% (n=66), drugs and biological substances – 1.3% (n=60) and injuries with sharp tools – 1.2% (n=57). Other methods (poisoning by gas, steam, solvents, pesticides, chemicals and drowning) were less than 1%.

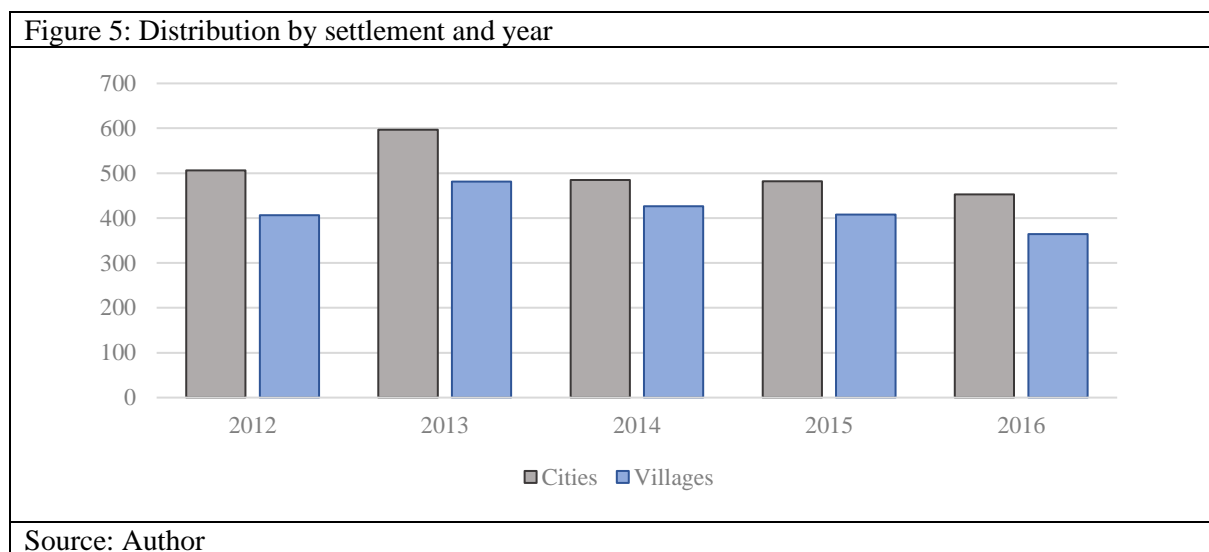


Young people aged 10-19 had most commonly chosen hanging, self-strangulation and self-suffocation (93.13%, n=149), drowning and usage of shotgun or explosive usage – 1.88% of all cases (n=3). 20-69 years old people had also chosen hanging, self-strangulation and self-suffocation (92.26%, n=3419) and usage of shotgun or explosive – 2.86% (n=106). This group slightly more often than other groups had used drugs or biological substances – 1.4% (n=52). Elderly people, more than 70 years old., as well as other groups mentioned above had most commonly chosen hanging, self-strangulation and self-suffocation (89.52%, n=666), shotgun or explosive usage – 3.36% (n=25) and jumping from high altitude – 2.55% (n=19). There is no statistical significant difference in methods used by the 10-19 years old group and above 20 years of age (20-70+). A difference was found between the groups under 70 years and above 70 years old.

In all age groups, men took the biggest part – 82% of all cases (Figure 4). Also, a statistically significant difference was found in methods used by different genders (p=0.0002). In terms of using drugs and biological substances, women (54.24%) are more likely to commit suicide by these means than men in all age groups; along with drowning or jumping from high altitude. While 100% of suicide methods by gas, steam or solvents were used by men and 96% of those who used shotgun or explosive were also men.



People over 20 years of age were mostly living in cities (55.04%), while young people (10-19 years old) were mostly living in villages (53.13%). However, regardless of the fact that slightly more suicides were registered in cities, there was no statistically significant difference between people of all ages living in cities and villages ( $p=0.36$ ) (Figure 5).



## Discussion

### Differences between different time periods in Lithuania

Historically, according to research by Šopauskas (1939), suicide by hanging was the most common method (29.6% of all cases in 1936) since interwar times, nevertheless suicide rates were noticeably lower than today. Back in the 1990's when Lithuania gained independence, this method was becoming more and more often chosen. From 1993 to 1997, it kept on growing and reached 87.3%. In the period from 1998 to 2002, during the years of financial crisis, it became even higher at 90.1% (Petrauskienė et al., 2004). Such a big proportion is reported only for Eastern Europe countries such as Estonia, Latvia, Lithuania, Poland and Romania (Ajdacic-Gross et al., 2008). According to Petrauskienė et al. (2004), 8324 suicides were reported from 1993 to 1997 in Lithuania and from 1998 to 2002, 7823 suicides were reported, which is almost twice than that in our investigated period (2012-2016). From 1993 to 2002, the most common method in both genders was hanging (87.3 – 90.1%). Men were committing suicide 4.7 times more than women (13319 and 2828). What is more, there was a difference between methods used by different genders – in men, shotgun or explosive usage took second place, while in women, poisoning took second place after hanging. These tendencies were also seen from 2012 to 2016. Comparing our investigated period and the one mentioned before (1993-2002), the only change was the prevalence between settlements. From 1993 to 2002, more suicides were reported in villages, however slightly more suicides were reported in cities from in 2012 to 2016 (Petrauskienė et al., 2004).

### Differences between countries

A big influence on the chosen methods and suicide rates is made by country and living environment because certain tools are easier to access in different countries than others. As an example, in Hong Kong, Singapore, Luxemburg and Malta, where a lot of high buildings or bridges are available, jumping from high altitude prevails. Poisoning by pesticides prevails in agricultural countries – China (up to 62% by pesticides and other chemicals used in agriculture and animal husbandry), Pakistan, Sri Lanka and Latin America (Ajdacic-Gross et al., 2008; Wu et al., 2012). In economically developed counties, e.g. North Europe and United Kingdom, the often chosen method is poisoning by medical substances (Ajdacic-Gross et al., 2008). Ireland is unique as a lot of young people jump to the ocean or from bridges to rivers (Värnik et al., 2009). A big influence is also made by government control policies on guns and explosives and their availability in country. This is the reason why this method is often used especially in United States besides being a leading method in Argentina, Switzerland and Uruguay and a second leading method in Australia (20.9%) (Ajdacic-Gross et al., 2008; Koo et al., 2017). In Middle East countries where religion has a big influence such as Pakistan, Saudi Arabia, Turkey and Iran, suicide rates are perceptibly lower than in other countries (Wu et al., 2012). Notwithstanding, the dominant

method worldwide, especially in the Eastern Europe region (Lithuania, Latvia, Estonia, Poland, and Romania), is hanging. In this region, more than 90% of all suicide cases are committed by this method (Ajdacic-Gross et al., 2008). Our research represents the situation mentioned above. The most common method is hanging which can be described as cheap, easy, fast and an easily reachable method by various groups of people.

#### Distribution by age and gender

According to Vijayakumar (2008), elderly people are most commonly committing suicide. The reasons include more psychiatric diseases, social exclusion, low income, poor health and pain suffering (Van Orden et al., 2011; Van Orden et al., 2011). The most common methods in this group are hanging, shotgun or explosive usage and drug poisoning (Koo et al., 2017). Our research shows that more than half of cases (51.39% in total) included people older than 50. Mostly, they were 50-59 years old, which indicates that the situation is very similar worldwide.

Distribution by gender is not the same worldwide. As the WHO (2014) revealed, in highly economically developed countries, the proportion of men and women is 3:1, while this ratio is less than 1.5 in low and middle economically developed countries. After reviewing articles, we can find some commonalities for most of the countries. Almost in the entire world, men are committing suicide more often than women (Värnik et al., 2009). As per our results, the majority of victims were men (82%). Worldwide, hanging is the most common method in both groups. However, men choose shotguns or explosives as a second option, while women choose poisoning by medications (Ajdacic-Gross et al., 2008; Värnik et al., 2009). The outcomes of this research were analogous – hanging was the leading method, women were more likely to choose drugs or medications although men were more likely to choose gas, shotguns or explosives rather than women. It is considered that men choose more violent and lethal methods than women (Ajdacic-Gross et al., 2008; Värnik et al., 2009). The studies that analysed propositions revealed that using a shotgun is the result of impulsive behaviour, while hanging needs preparation, bravery and determination (Ajdacic-Gross et al., 2008). Additionally, before committing suicide, women have more often interpersonal conflicts and left letters or messages of intent (Koo et al., 2017).

#### Risk factors and prevention

The reduction and prevention of suicide rates is one of the biggest goals of the WHO (2014). According to previous studies' results, effective prevention is reducing accessibility to suicide methods and tools (WHO 2014; Mann et al., 2005; Stack et al., 2005). The examples could be difficulties in purchasing pesticides and guns, barriers and fences on bridges and high buildings and better regulation of medications – these would decrease the average suicide rates (Yip, 2012). Television and press play significant roles on suicide rates and methods (Wu et al. 2012; Chen, 2011). The Werther effect (or Copycat suicide) can be observed when a famous person commits a suicide and hence after, suicides among the population increase (Zimerman et al. 2018; Kim, 2013). Kapeckaite (2016) was investigating this effect in Lithuania after a famous actor's suicide in 2013. There were reported highly increased number of phone calls to the psychological hotline service "Vaikų linija". The same study also published increased number of suicides in 2013. The crossing effect is important to be considered – when the usage of one method is going down, other methods become more popular (Ajdacic-Gross et al., 2008; De Leo et al., 2003; Bridges et al., 2004). Therefore, it is important to investigate not only the most common methods for appropriate prevention, but also to find out which social groups are most likely to commit suicide and have risk factors for it (WHO 2014). Lee et al. (2018) were conducting research in South Korea which took 12 years. They found out that the suicide rate correlates with Parkinson's disease, depression and obsessive – compulsive syndrome, high level of liver enzymes, male gender and elderly age. Furthermore, smoking, alcohol, other psychiatric disorders, usage of benzodiazepines and BMI influence as well. Other studies showed that there is a connection between suicides and alcohol usage, smoking, depression, schizophrenia, usage of antidepressants and drugs for insomnia (Darvishi et al., 2015; Crump, 2014; Sun, 2016). Healthy lifestyle is named as one of the most protective factors by the WHO (2014) (e.g. appropriate nutrition, regular physical activity).

Recently, some steps have been taken for the prevention of suicides in Lithuania. Especially the Suicide Prevention Bureau provides educative information online (including email distributions). Also, by printed materials, it helps hospitals by conducting relevant sessions and consultations. In addition, by

hotline (State Mental Health Centre website), special methodical materials were prepared for schools (Klaipėda Pedagogical Psychological Service website) and suicide prevention trainings of international standards “safeTALK” and “ASIST” are held in Vilnius city (Vilnius Public Health Office website). However, the biggest problem of Lithuania in this sense is that the Ministry of Health has no national suicide prevention strategy, which means that there is no general or common direction for the whole country.

## Conclusion

Despite the fact that the incidences of suicide are decreasing gradually every year, the situation is not yet satisfactory. The pattern has almost not changed for years – the most inclinable person to commit suicide is a 50-59 years old man living in a city and the most used method is still hanging. As a result of the current situation in Lithuania, various preventive programmes have been started. To evaluate the results, similar studies should be conducted in upcoming years.

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