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EPIDEMIOLOGICAL PROFILE OF FATAL TRAFFIC ACCIDENTS IN RIO VERDE (GO): ANALYSIS AND PREVENTION STRATEGIES

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ABSTRACT

The present study analyzes traffic accidents with deaths in the municipality of Rio Verde (GO) from January to October 2024, using data from the Life in Traffic Program (PVT). Brazil is among the countries with the highest traffic mortality rates, which directly impact public health and the economy. The survey covered the profile of the victims, temporal and spatial distribution of accidents, risk factors, and socioeconomic impacts. A total of 47 deaths were recorded in the period analyzed, with a predominance of male victims (74.46%) and those aged 20 to 59 years (55.31%). Accidents were more frequent in rural areas (61%), and collisions were the most lethal type (57.44%). The analysis indicated that excessive speed (27.65%) and low visibility (19.14%) are determining factors, 27.65% of the deaths were work-related. Most fatal accidents occurred on Sundays, possibly due to increased recreational traffic and alcohol consumption. As for the day, the morning had the highest incidence of deaths (27.65%). The lack of accurate information in the records, such as the performance of alcohol tests, compromises the analysis and formulation of preventive policies. The study reinforces the need for inspection, education, and infrastructure actions to reduce traffic mortality. The data presented are fundamental for formulating strategies aimed at minimizing the incidence of accidents and their impacts on the population of Rio Verde.

Keywords: Accidents. Epidemiology. Program. Transit. Life.

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INTRODUCTION

Brazil is one of the countries with high mortality rates from Traffic Accidents (RTA), making up the ranking of the 10 countries that have almost half of the deaths recorded due to RTA (Rios *et al*., 2019, 2020). Traffic is a global issue that directly affects the safety, health, and well-being of the population. Data from the World Health Organization (WHO) show that traffic accidents are the leading cause of death for men between 15 and 29 years old (Who, 2002, PAHO, 2020, 2021).

The magnitude of traffic accidents worldwide, especially in developing countries, is expressed through the large number of deaths, disabilities, and psychological sequelae in the population directly affected, as well as their families, by OA. (Marin *et al*., 2000)

This article describes and evaluates the available data on traffic accidents with death in the municipality of Rio Verde (GO). The primary data come from the Life in Traffic Program (PVT), which is an international initiative, coordinated by the World Health Organization (WHO), which the Brazilian government has committed to developing in the country (Morais Neto, 2015). The main objective of this program is to reduce accidents, especially those that result in deaths and serious injuries. It is articulated with the traffic safety action plan adopted in several Brazilian municipalities. In the case of Rio Verde (GO), the program was implemented in 2023, through the integration of several institutions and public sectors: Civil Police, Federal Highway Police, Fire Department of the State of Goiás, Municipal Traffic Agency (AMT), Mobile Emergency Care Service (SAMU), Health Surveillance, Primary Health Care and Reference Center for Workers' Health (CREST).

The objective of this study is to outline the epidemiological profile of fatal victims of Traffic Accidents (RTA) in the city and, based on this, to discuss solutions that can contribute to reducing both the number of accidents and mortality itself. By better understanding the causes and contexts of RTA, it is possible to develop strategies that contribute to increasing road safety.

METHODS

This article has a descriptive-analytical nature based on data from the Life in Traffic Program (January to October) 2024 for the municipality of Rio Verde (GO). The PVT systematically collects data on traffic accidents, both through the Integrated Accident Registry (RAI), made at the place of occurrence, as well as through the Mortality

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Information System (SIM) and records of hospital care, issued by the Health Units, and the reports of the Technical-Scientific Police.

After collecting these data, the present study analyzed the profile of the victims (age group, gender, race, profession, and situation of the victim at the time of the accident), the month, day of the week, and time of the occurrences, the place of death and the risk factors (speed, alcohol, visibility, type of vehicle, driver's license or not, among others) that contributed the most to TA. Based on this, educational and preventive recommendations were made for the different agencies involved in the PVT, the adequacy of public policies for accident prevention was evaluated and a profile of the most vulnerable groups was outlined. The results were compared with other national studies to identify common trends and discrepancies. Finally, recommendations were made to improve traffic safety policies in the city.

RESULTS AND DISCUSSION

In the municipality of Rio Verde, from January to October 2024, 47 deaths from RTA were recorded. As shown in graph 01, the months of March and October had the highest values in the analyzed period, with 8 deaths in each month (44%), and it is not possible to identify relationships with seasonal events in the city or specific traffic conditions that justify this increase in that month.

The graph shows deaths from traffic accidents according to the same age groups used by the IBGE for population analysis of Brazilian municipalities (IBGE, 2022). From this, there was a higher occurrence of fatalities between 20 and 59 years of age, which represented more than 55.31% of deaths. The detailed analysis of the data also showed that within this age group, the economically active population is predominantly between 20 and 39 years old, which is close to the literature that highlights the population between 25 and 44 years old with greater vulnerability due to the combination of factors such as the intense use of vehicles, professional activities and a lifestyle that increases exposure to traffic. (Jorge *et al*., 1996) As a result, there is a need for more prevention, inspection, and guidance actions aimed at this portion of the population.

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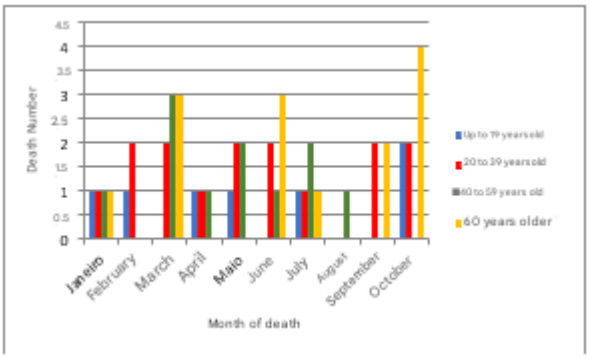
Graph 1 – Numbers of deaths from traffic accidents according to age and month of occurrence



Source: Parreira G.L, *et al*., 2024. Based on LUV Vida Trânsito in the municipality of Rio Verde (GO).

When analyzing the information regarding the sex and race of the victims, it is observed that there is a preponderance of males (74.46%) about females (25.53%), 55.31% of deaths were of brown people, and 38.29% of white people, and 6.38% records of black people fatal victims of OA in the municipality. The fact that the number of deaths is higher among men and brown people also follows a common trend observed in traffic statistics, in which men appear more involved in driving activities and are more prone to risky behaviors (Biffe *et al*., 2012).

In the municipality of Rio Verde, when analyzing the causes of OA that led to death, it was observed that 13 (27.65%) of them were related to occupational accidents, considering in this group those that occurred during the exercise of a professional activity or on the way to and from the workplace (Malta *et al*., 2022). These numbers indicate a significant link between traffic accidents and the work environment, especially in contexts in which professional activities involve constant commuting, such as cargo transportation, delivery services, or outdoor work.(Oliveira *et al., 2007)*

Regarding the place of occurrence of OA in cases of accidents with fatal victims, the data indicated that 29 (61%) of them occurred in rural areas, while 14 (29.78%) occurred in urban areas and the remaining 4 (8.51%) on highways. These values demonstrate the severity of accidents that occur in rural areas, resulting mainly from the distance from these places to urgent and emergency services, which hinder care and increase risks. In addition, the data referring to the place where the death occurred reinforces this observation, since 28 (59.57%) of the deaths occurred at the place of the accident or when traveling to the health unit, while the remaining 19 (40.42%) occurred later in a hospital or care unit.

Another relevant point is the fact that the city of Rio Verde is the fourth most populous municipality in the state of Goiás, having a prominent role in the Southwest region

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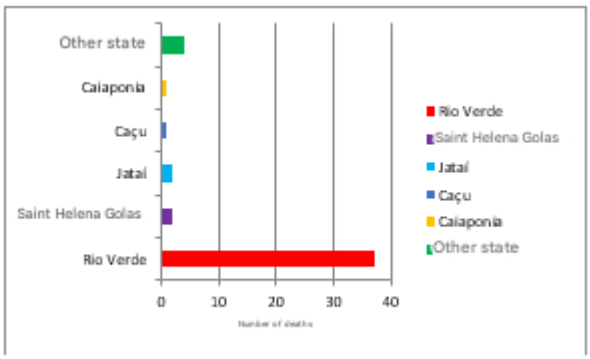
(IBGE, 2022). This, combined with the fact that the city concentrates on several activities related to the agribusiness sector, causes a greater flow of people through it. As a result of this prominent role of the city in the regional and state context, there are several agreements with other cities in the state to provide access to medium and high-complexity health services, meeting the care needs of those patients who cannot be treated in their municipalities of origin. Given all this, it is also necessary to evaluate the municipality of residence of the fatal victims of OA, as shown in Graph 2.

Graph 2 – Numbers of traffic accidents with fatalities according to the municipality of residence



Source: Parreira G.L, *et al.*, 2024. Based on the LUV of the Vida Trânsito Program of the municipality of Rio Verde (GO).

When analyzing the data presented above, it can be seen that 10 (22%) of the fatal victims were residents of other municipalities, reinforcing the need to provide traffic education measures and public health policies to deal with the consequences of OA integrated with other municipalities in the state.

Regarding the condition of the victims at the time of the TA, it was observed that 24 (51%) of them were the drivers of the vehicles involved in accidents such as collisions, run over, and tipping. According to Cucci Neto (1996), collision "is the impact of two or more vehicles moving in the same direction or opposite directions, in the same lane of the road, facing or rear". Running over, in turn, refers to the "accident in which a vehicle, motorized or not, in motion, picks up a person or animal, on the road or sidewalk", while overturning "occurs when the moving vehicle turns in any direction, with the wheels up" and overturning "occurs when a moving vehicle overturns sideways or frontally and remains immobilized in that position".

The values found show that pedestrians, awaken to the need for educational measures for traffic behavior and investment in adequate infrastructure for their safe displacement.

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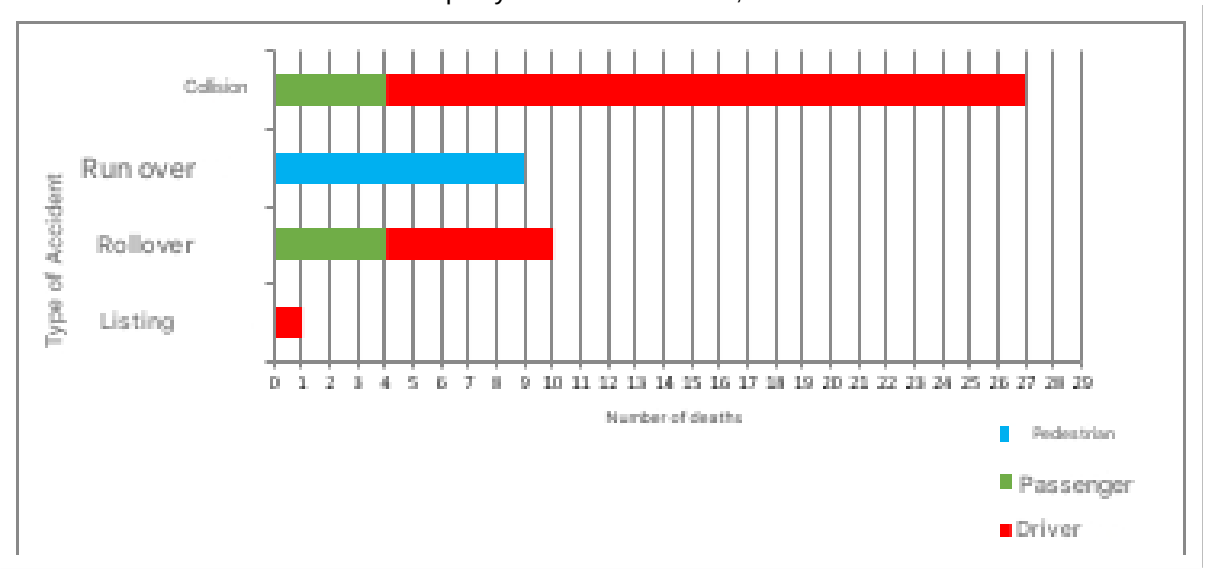
Graph 3 – Total number of deaths from accidents from January to October according to the type of accident and the situation of the victim in the municipality of Rio Verde – GO, 2024



Source: Parreira G.L, *et al*., 2024. Based on the LUV of the Vida Trânsito Program Worksheet of the municipality of Rio Verde (GO).

Most of the deaths 55.31% occurred in accidents involving light vehicles, which suggests a greater vulnerability, 14 of the deaths (29.78%) occurred with motorcycles and mopeds, also representing a significant part of the fatalities, and heavy vehicles are associated with the lowest number of deaths 9 (19.14%), possibly due to the greater protection offered by these vehicles. It also illustrates how different types of accidents contribute to traffic deaths, highlighting the severity of accidents, and deaths that occurred in the municipality of Rio Verde-GO, 2024 57.44% (27 deaths) collision/collision is the type of accident with the highest number of deaths, which may indicate a high risk of fatality, run over 19.14% (9 deaths) reflecting the vulnerability of pedestrians, overturning 21.27% (10 deaths), sinking 3.6% (1) with a smaller share of the total deaths.

It is observed that deaths are distributed about the time and place of death, highlighting the severity of accidents and the importance of fast and effective care. And that most deaths occurred at the scene of the accident 59.57% (28 deaths), showing that these accidents were extremely serious, and 40.42% (19 deaths) occurred after the accident, indicating that the victim survived the initial impact.

Graph 4 highlights the critical days of the week about deaths due to traffic accidents, helping to identify temporal patterns that can be addressed with specific safety measures, shows the prevalence of deaths on Sunday with 17 deaths, which may be related to the increase in recreational activities, greater alcohol consumption, and trips that increase the risk of fatal accidents, followed by Wednesday and Monday, may suggest that factors such

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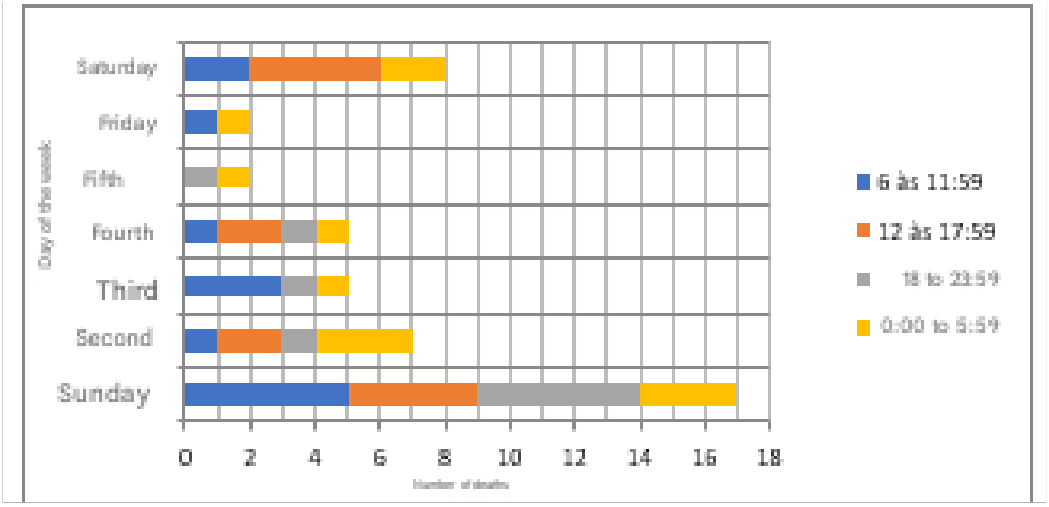
as a work week, or routines that involve work trips, accumulated tiredness, this contribute to accidents.

Graph 04: Number of Deaths, by traffic accident related to the day of the week and time, January to April - 2024, Rio Verde-GO



Source: Parreira G.L, *et al*., 2024. Based on the LUV of the Vida Trânsito Program Worksheet of the municipality of Rio Verde (GO).

Graph 04 represents the time of the accident, helping to identify critical times, highlighting the morning and dawn as periods of greater risk, In the morning we had 27.65% (13 deaths), which may be related to the beginning of the day, heavier traffic, commuting from work or school, factors such as haste, tiredness, or less attention when driving, contributes to this increase in this period, while in the afternoon and night with 25.53% for each period (12 late deaths / 12 night deaths) can be considered less critical, but it is still important to have safety policies at this time, and 19.14% (9 deaths) occurred at night, especially early morning, which are associated with lower visibility, higher alcohol consumption, less presence of inspection.(Almeida *et al*., 2013).

Graph 05 lists which professional groups are most vulnerable in traffic accidents, which can guide public policies and awareness campaigns focused on protecting this population, the most prominent professions in the municipality were those related to agribusiness workers, representing the highest proportion 21.27% (10 deaths), this data is directly related to the economic profile of the region, which is strongly focused on agribusiness followed by housewife, general services and bricklayer 8.51% for each profession mentioned (4 deaths), many housewives may not have a CNH, which implies a lack of training and knowledge of traffic rules, many use the moped because they do not need the CNH, and these offer little protection in case of accidents, and age may also be

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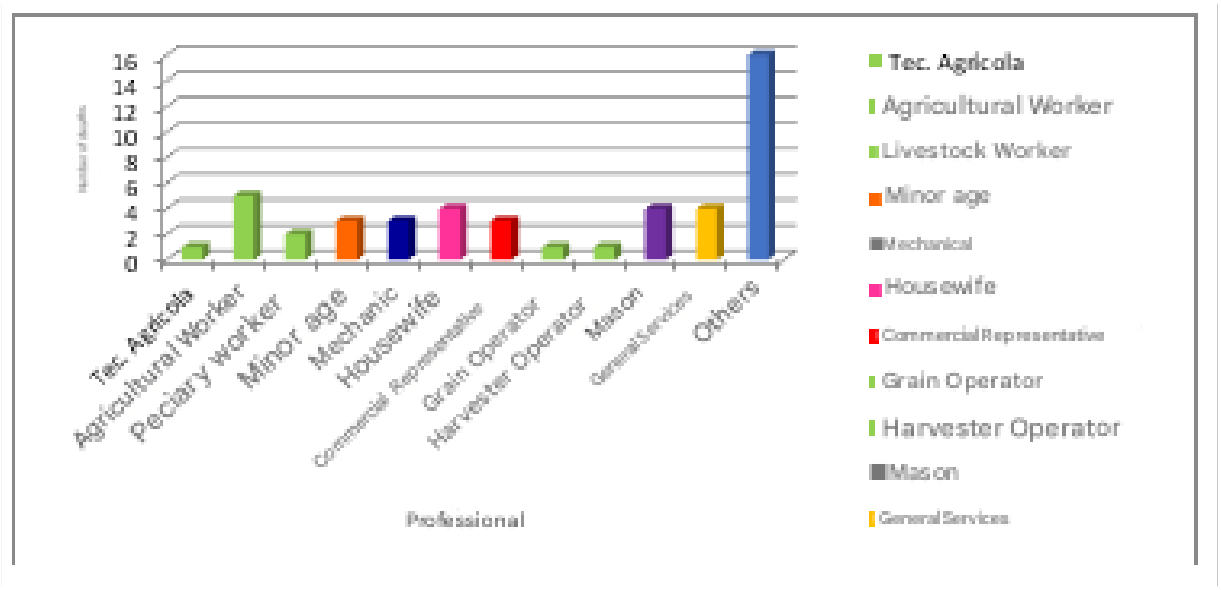
associated, by having slower reflexes, vision problems, and the group with 6.38% were mechanical, may reflect the risks associated with the environment or the type of transport used, 6.38% suggests that young people and children affected, such as passengers or accidents such as pedestrians.

Graph 05: Number of Deaths, due to traffic accidents related to Profession, January to October - 2024, Rio Verde-GO



Source: Parreira G.L, *et al*., 2024. Based on data from the Vida Trânsito Program Worksheet of the municipality of Rio Verde (GO).

Of the 47 deaths, that occurred in the municipality of Rio Verde-GO, in the periods January to October 2024, only 5 of those involved were tested for alcohol, 3 of which were negative, 1 with a positive test with 0.69 alcohol, and 42 were not reported in the records, and this highlighted the importance of improving documentation and the performance of alcohol tests in traffic accidents. The lack of adequate information in the records hinders the analysis of the factors that contribute to fatal accidents and prevents the implementation of safety policies.

The last graph 06, shows the risk factors related to the accident, being the main cause, was speed at 27.65%, and suggests that speed control is a crucial factor in reducing fatal accidents, visibility also with 19.14%, highlighting the need for better lighting and signaling conditions on the roads, in addition to educating drivers about driving with caution in adverse conditions, and late absence of reaction 18% inadequate reaction time was a contributing factor, without a driver's license 11% reflects the seriousness of driving without

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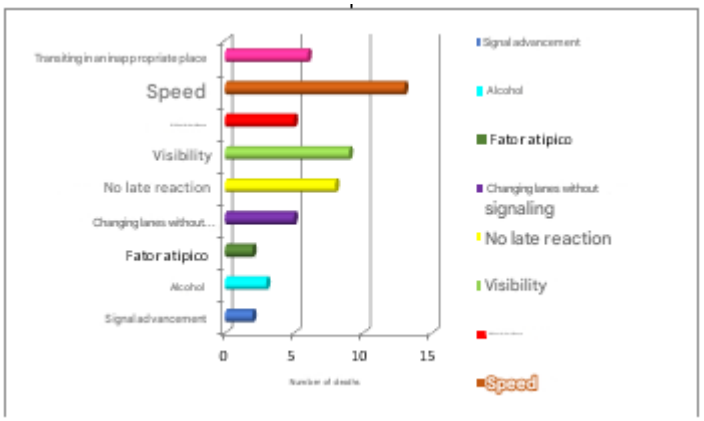
a license and the importance of reinforcing inspection and awareness of the need for formal training (Sousa, 2020, 2021).

It is important to emphasize that a single accident can be associated with multiple risk factors simultaneously, reduced visibility and alcohol consumption can significantly increase accidents, in addition to the related factors, there are others, less evident, that also contribute to accidents, including driver fatigue, poor maintenance of vehicles, use of electronic devices, the use of electronic devices can be decisive in certain situations and require continuous attention in the strategies of prevention and inspection.

Graph 06: Number of Deaths, due to Traffic accident related to Risk factors January to October - 2024, Rio Verde-GO



Source: Parreira G.L, *et al*., 2024. Based on the LUV of the Vida Trânsito Program of the municipality of Rio Verde (GO).

CONCLUSION

After analyzing the data related to traffic accidents, 47 deaths due to traffic accidents occurred in the municipality of Rio Verde-GO, we can conclude that the highest volume of accidents occurred in urban areas, in regions with a greater circulation of people due to the commercial flow, however, the highest volume of deaths occurred in rural areas. According to the conditions of the accident, the highest volume of accidents occurred on occasions of light vehicles at 55.31%, with the main fatal victims being the driver at 51%, by collision at 57.44%. Excessive speed, visibility, and lack of late reaction by drivers are one of the main crucial factors for traffic mortality in the municipality of Rio Verde-GO in the first months of 2024 about the profile of individuals involved in accidents, with fatal victims, we can relate that most correspond to 74.46% male individuals and aged between 21 and 50 years, 55.31% were brown and 27.65% were considered to have work-related traffic accidents, especially those that occurred on the way home and the workplace. The lack of accurate

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and complete information in documents related to traffic accidents is a significant challenge for public management, regarding the analysis and interpretation of data, this absence of data can directly impact the understanding of the causes of traffic accidents. Improving data quality is key to developing effective prevention policies. The information obtained and presented in this Bulletin may be used as a starting point for the evaluation and elaboration of strategies that can be articulated by members of various sectors involved in the theme for the elaboration, implementation, and implementation of an Action Plan to reduce the occurrence of traffic accidents to a minimum and, mainly, those of greater severity with the involvement of fatal victims.

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