

The Effect of Using Intelligent Transportation Systems on Transportation–Sustainable Development in Egypt

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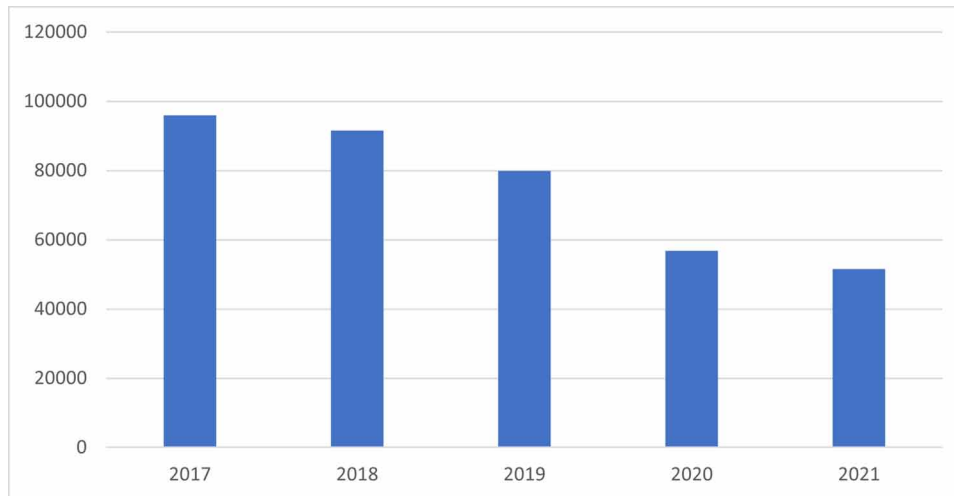
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EXECUTIVE SUMMARY

Roads have a significant positive impact on social and economic development and provide various advantages. There are several reasons why modern transportation is not sustainable. One of the most significant causes is the traffic congestion issue, since its effects severely harm both the environment and the entire community. As a technology that improves transportation quality or accomplishes other goals using programmes that watch over, manage, or enhance transportation networks, an intelligent transportation system is a crucial idea that aids in the development of sustainable transportation. Every kind of intelligent transportation used in Egypt, including the monorail, runs on electricity and requires no fuel, helping to save the environment. By encouraging people to take public transit instead of driving their own automobiles, intelligent transportation systems and methods can ease traffic congestion. This reduces congestion and protects the environment from pollution brought on by vehicle emissions and exhaust.

Figure 1. The number of injuries in road accidents during the period (2017-2021)

Source: CAPMAS (2021)



INTRODUCTION

What is facing road development in this period is not limited to an expansion only, but also to find a solution to the traffic crisis and the disasters and damages caused. Because roads contribute decisively to growth, economic, environmental, and social development and achieve many countless benefits. According to (youmatter, 2021), sustainability also plays an important role alongside technology, as sustainable development is an organizing principle to achieve human development goals while preserving the ability of natural systems to provide natural resources and ecosystem services. Many causes lead to Transportation unsustainability, including road congestion and road accidents, as their consequences are harmful.

Most of the causes of traffic congestion are accidents that occur on the roads as a result of the collision and the presence of unqualified roads. In addition, the aggressive behavior of some drivers leads to a traffic crisis. Road safety is a measure to reduce the risk of road accidents and roadside injuries due to people's driving mistakes. Traffic accidents cost Egypt more than thirty billion pounds (\$1.82 billion) each year and a large number of injured people as shown in figure one. The deployment of traffic laws and monitoring systems on new roads and axes has minimized the human factor as one of the key causes of accidents. Hisham Hassan explained that applying advanced technology, such as intelligent transportation systems, has an effective role and will help solve this crisis (Essam, 2020).

As well as dealing with a transportation network that respects humanity, preserves life, attracts national, and foreign investments, and reconstructs the country. From an economic perspective, the injured people cost medication, salaries, repairing cars, repairing roads, and other related costs. While from a social perspective, drivers make unethical behaviors by driving or taking medications to stay awake and drive for a long journey, which also decreases their focus on the roads. From the environmental perspective, trucks mainly use diesel as a fuel source which harms the environment and causes emissions, besides the danger of the movement of gas cars that, their accidents cause serious and catastrophic damage to people and roads (Osama, et al 2022).

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