Assessing the Causes and Impacts of Increasing Road Traffic on the Environment and Individual in London

Introduction

This literature review will assess the causes and impact of increasing road traffic on the environment and individual in London to assist informing individuals and policy makers on this issue. This is necessary as London is one of the biggest cities in the world with a population of 8.9 million, road traffic can have a lot of impact on the individual health and the environment due to the CO2 emissions and how traffic conditions can impact an individual travelling within London. Alongside the most common effect of increased road traffic being pollution from CO2 and NO there is also noise pollution from traffic that occurs in result of this and potential economic issues to address as well such as the ULEZ and the congestion charge.

Existing Literature

The literature we will focus on to discuss the causes and impacts of increasing road traffic on the environment and individual London are going to be on the following topics and their effects: pollution, noise and economy.

What causes increased road traffic?

At the London Assembly in 2016 there was a discussion of increased road congestion was discussed where the mayor was asked to address the issues surrounding road traffic. Sadiq Khan stated this as from 2008 there have been 56,000 more private hire drivers leading to increased amounts of road traffic in the centre of London with the rise of apps such as Uber (Khan, 2016). Delivery vehicles have also increased by 11% between the years of 2012 and 2015 which means more deliveries are being made throughout the day as delivery vehicles make up 17% of road traffic. This means that the ride in deliveries being made is an additional issue. Alongside this to help remove cars off of the road the mayor's scheme to add a cycle superhighway has caused traffic due to the construction of these but also speaks to the issue of construction in London causing increased traffic (Khan, 2016). Having the London Mayor speak on the issue shows that it is an issue that is being looked into with the statistics to back it up giving a close to the issue account which is valuable when the government releases data to support the cause of issues.

What is the impact on the individual and environment?

CO2 emissions have cause issues where there is "epidemiological evidence for adverse health effects of long-term exposure to air and noise pollution from traffic is not coherent" (Carey et al., 2016). This reflects a serious issue that the individual living in London can cause long-term health issues as there is an increased risk of cardiovascular diseases. This is problematic as London citizens as long-term exposure and the failure to decrease however this paper also notes that the adverse health effects are inconsistent, but increases could become an issue in the long-term (Carey et al., 2016). Other sources suggests that this may also be an equity issue meaning that depending on the type of individual you are you could face more issues when it comes to traffic emission than others (Dietz & Atkinson, 2014). Where Dietz and Atkinson note that lower income areas and areas with larger than average ethnic minority populations have a higher amount of pollution (Dietz & Atkinson, 2014). This indicates that local environments in poorer areas are more adversely affected than those considered richer.

Noise pollution is another issue that causes not only an annoyance or sleep disturbance it can cause serious issues with health and wellbeing such as stroke, heart disease, diabetes, depression and anxiety. This shows that alongside emissions pollution that noise pollution is also a major concern with London having the most concentrated noise pollution (UK Health Security Agency, 2023). This is indicated by London having the most Disability Adjusted Life Years lost which is where a year of life of lost due to noise pollution with London having the highest concentration of these (UK Health Security Agency, 2023).

To assist in tackling road traffic there have been multiple economic policies have been brought forward to help reduce traffic in London these being the congestion charge and the ultra-low emission zone.

The congestion charge was introduced in 2003 and it has been studied and has had some positive effects since it reduces the amount of travel miles and therefore reducing pollution. Meaning those who use their car in the congestion charge zone are driving more efficiently (Green et al., 2020). It was also observed that there was a reduction in pollutants in comparison to other cities over the same period of time, it has allowed for there to be an overall social benefit since there has been a reduction in road traffic as there is a reduction in pollution per mile when the congestion charge was introduced (Green et al., 2020).

Later on the Ultra Low Emission Zone was introduced in 2019 in order to reduce air pollution in London and increase air quality. When inside the ULEZ the car must meet certain emission standards or pay a charge of £12.50 to drive within the zone. The effectiveness of the introduction of this zone had a study conducted by Ma et al which they observed that the ultra-low emission zone was effective that there were changes in air pollution in various locations in London, but the results were seen as marginal and that a multiple faceted approach is required in order to reduce emissions such as the 2030 government deadline for there to be no more petrol and diesel cars to be sold in the UK (Ma et al., 2021). This is supported by another study which conducted a state-space time series model which measured the ULEZ policy which measured Nitrous Dioxide (Diesel) and the modelling used showed there was a reduction in diesel emissions (Hajmohammadi & Heydecker, 2022).

Literature Evaluation

Strengths

The strength of the literature on the topic is that it covered with solid data as there is government data on the issue that outlines the adverse health effects of living in an area with high pollution levels and what are the contributing factors to these issues. These being things such as the significant increase in private hire drivers in central London which are a contributing factor to pollution which needs to be controlled otherwise can escalate.

With levy's such as the ULEZ the literature acknowledges that taxes such as this have only been a minor improvement and acknowledge that decreasing emissions in central London require more policies than just economic. However, do not go into depth is to what this approach should be.

Limitations

The literature however is limited in parts and there were a few discrepancies when it comes to the adverse health effects of individuals the “epidemiological evidence for adverse health effects of long-term exposure to air and noise pollution from traffic is not coherent” (Carey et al., 2016). Which causes some issue as this is a common effect when emissions and noise is discussed but the long-term effects being incoherent which means there needs to be deeper studies into the long-term effects of road traffic on health.

Conclusion

To conclude the adverse effects of living in London on the individual and environment are that there are many health issues associated from road traffic pollution that comes from emissions and noise pollution. These can be things such as strokes, cardiovascular, diabetes, depression and anxiety. When searching for papers on the issue there needs to be more studies on the issues in various local areas of London in help assess inequity of noise and CO2 pollution in different areas of London. This is essential as it will need to be investigated further is to why some groups in poorer areas are more harshly affected by emissions and noise pollution than others. These issues can be tackled by investing in infrastructure for the long-term by encouraging more people to take public transport or cycling. This can be done by having more frequent services for buses and extensions of more lines across the city. This has been assisted with lines such as the Elizabeth line expanding services and the addition of the Superloop which increases access to those on the outer boroughs of London making it easier to get to central London meaning the requirement for a car is reduced but as less people buy cars the demand for a private hire car goes up so this will need to be managed by local governments to ensure there aren’t issues with long-term health effects. It is also seen that the increase in private hire cars are on the rise and this likely needs to be controlled centrally by the mayor’s office to try and reduce the number of cars driving around London to help reduce the amount of traffic which will be assisted by more public transport and an overall improvement in service to make public transport more accessible and appealing to those travelling across London. This is assisted by the UK government not allowing the sale of petrol and diesel cars to be sold after 2030 but the effects of this won’t be seen for a while as there will still be petrol and diesel cars on the street.

Reference List

Carey, I.M. *et al.* (2016) 'Traffic pollution and the incidence of cardiorespiratory outcomes in an adult cohort in London', *Occupational and Environmental Medicine* [Preprint]. doi:10.1136/oemed-2015-103531.

Dietz, S. and Atkinson, G. (2014) *Public perceptions of equity in environmental policy traffic emissions policy in an english urban area*. S.l.: SSRN.

Green, C.P., Heywood, J.S. and Navarro Paniagua, M. (2020) 'Did the London congestion charge reduce pollution?', *Regional Science and Urban Economics*, 84, p. 103573. doi:10.1016/j.regsciurbeco.2020.103573.

Hajmohammadi, H. and Heydecker, B. (2022) 'Evaluation of air quality effects of the London ultra-low emission zone by state-space modelling', *Atmospheric Pollution Research*, 13(8), p. 101514. doi:10.1016/j.apr.2022.101514.

Khan, S. (2016) *The causes of Road Congestion | london City Hall*, *London Assembly*. Available at: https://www.london.gov.uk/who-we-are/what-london-assembly-does/questions-mayor/find-an-answer/causes-road-congestion (Accessed: 17 June 2024).

Ma, L., Graham, D.J. and Stettler, M.E. (2021) 'Has the ultra low emission zone in London improved air quality?', *Environmental Research Letters*, 16(12), p. 124001. doi:10.1088/1748-9326/ac30c1.

Transport for London (2019) *Ultra Low Emission Zone*, *Transport for London*. Available at: https://tfl.gov.uk/modes/driving/ultra-low-emission-zone.

UK Health Security Agency (2023) *Noise pollution: Mapping the health impacts of Transportation Noise in England*, *UK Health Security Agency*. Available at: https://ukhsa.blog.gov.uk/2023/06/29/noise-pollution-mapping-the-health-impacts-of-transportation-noise-in-england/.