LONG-TERM EVALUATION OF WARSAW (POLAND) BUS LANES - RIDERSHIP AND ATTITUDE

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Extended Abstract

1. Introduction and literature review

Dedicated public transport bus lanes and Bus Rapid Transit systems gained already a lot of attention in scientific community (Levinson et all, 2002; Truong et all, 2022). Poland as a country came late with its implementations of dedicated bus lanes and priorities for public transport. First exemplary implementations in Poland appeared after 2004. Warsaw started to implement priorities for public transport busses in 2006 with 6km bus lane on Modlińska Street. Later it followed with more bus lanes and tram lanes and now has 83 km of bus lanes (Biuro Strategii…, 2022).

One of the most contested and successful implementation of a bus lane was Łazienkowska Street and Bridge development from 2009. This 7 km long bus lane was assessed in a short term – after a year of operation by various transport consultancies cooperating with the city hall. The assessment study shown, that bus lane brought positive change for the public transport system at least in the following categories:

1. Public transport speed rose by 35% and on average became faster than 24km/h.
2. Public transport readership rose by about 20% and as a result public transport share in the passenger morning traffic rose from 48% to 55% immediately after opening and 67% a year after opening.
3. Higher punctuality of the busses. (AECOM, 2009)

Authors of the report expected that the bus lase should have also a longer term positive effect on the ridership as well as positive result in the attitude to public transport (Bednarczyk, 2011), but their opinion was never fully verified. This article aims to verify this opinions.

2. Methods and data sources

Authors of the article completed, verified and organized data from further years before and after the opening of bus lane on Łazienkowska Street on various issues and from various data sources. The following issues were analysed:

1. Possible occurrence of the induced passenger traffic due to the higher capacity of the transport system with the bus lane.
2. Attitude of Warsaw inhabitants towards privileges for public transport before and after opening of the bus lane.

2.1 Induced passenger traffic

Data collected for the analysis of the first issue came from different car and passenger traffic measurements made in Warsaw between 2005-2017. Those were the following data sets:

1. Warsaw Traffic Research made in 2005 and 2015 which results are publicly available (Monkiewicz, 2005; Kostelecka, 2015).
2. Warsaw Public Transport Authority measurements of passenger traffic in public transport vehicles made each year on various bus stops in Warsaw by means of personal account. The data was obtained by the author through a correspondence with the authority.
3. Warsaw Roads Authority measurements of car traffic on the roads and bridges in Warsaw between 2005-2017. The data was obtained through a correspondence with the authority.

To analyse the induced passenger traffic on Łazienkowski Bridge it was assumed, that it would be enough to exclude occurrence of the two following results of the bus lane creation:

1. New passenger traffic both in private cars and public transport that appeared on the bridge during morning rush hours was not redirected from the nearest parallel bridges and roads, that were: Poniatowski Bridge and Siekierkowski Bridge.
2. New passenger traffic both in private cars and public transport during morning rush hours was not a result of time shift of the passenger travel on the bridge. It would be enough to show, that the passenger traffic rose also outside the morning rush hours.

Author prepared the summary of the number of passengers on busses riding between the stops on Łazienkowska Street and Bridge as well as the nearest parallel bridges between 2005 and 2014. The same was made with passenger traffic on private cars, with the assumption that each car carries 1,2 passengers. The data allowed also for analysis of the passenger traffic on busses by the hours between 2006 and 2013. In both analyses year of the introduction of the bus lane – 2009 – was not taken into account due to inconsistency of the data.

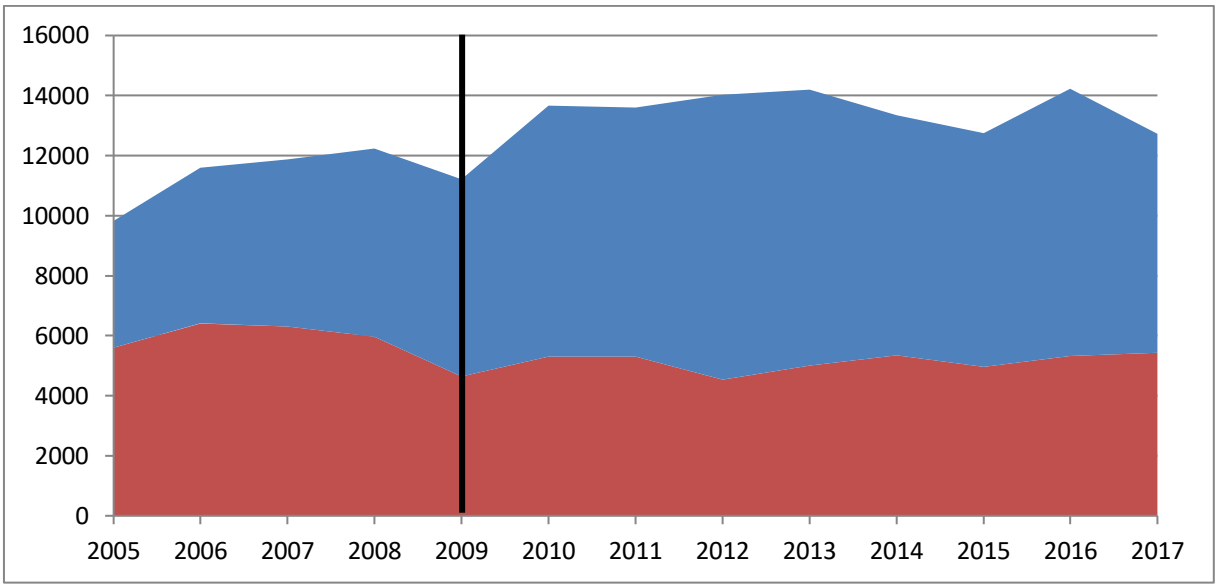
2.2 Attitude of the Warsaw inhabitants

Data collected to analyse the second issue was gathered through a correspondence with the city hall. It was a set of public opinion pools, made under the name "Warsaw Barometer", about various aspects of quality of living in Warsaw between 2008-2016 (Warsaw City Hall, 2008-2016). As the bus lane analysed was the only one created in 2009, it was possible to analyse the attitude of inhabitants before and after this year to show the differences and assume they result from this singe intervention. Attitude of the inhabitants is shown as the results of answers to the question "*Would you agree to privilege public transport or busses even if it would rise the car traffic disturbances?*".

3. Results

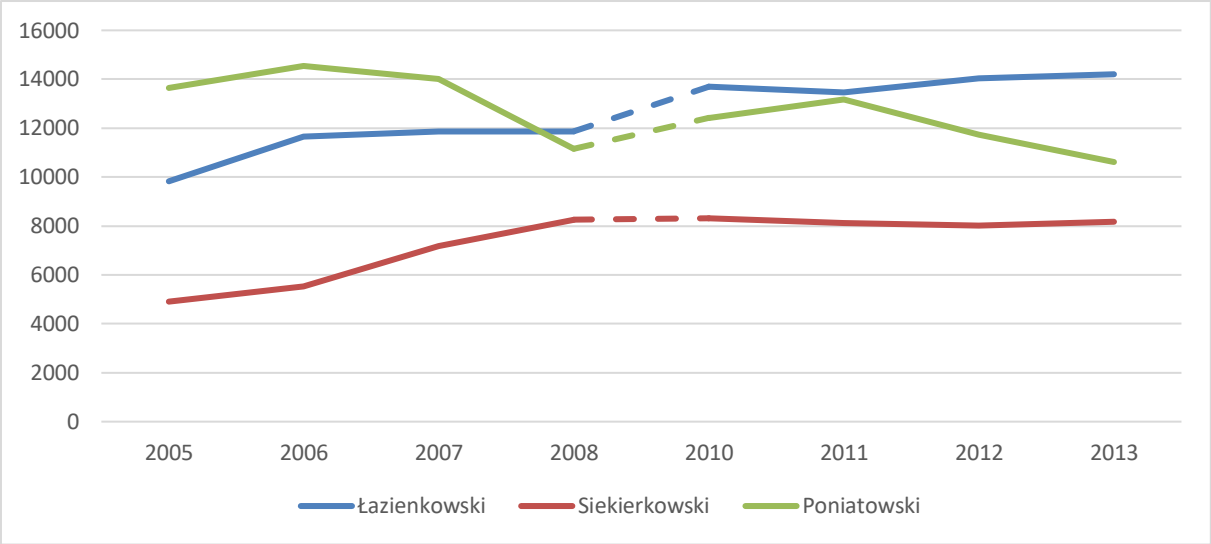
Graph nr 1 shows growth of the passenger traffic in public transport and passenger cars on Łazienkowska Street and Bridge between 2005-2017. The graph shows substantial rise in the overall number of car and bus passengers after opening of the bus lane in 2009. In fact 2009 is

the year with downturn of the ridership due to perturbation with car traffic because of bus lane introduction. The number of passengers remain higher than before the intervention over 5 years' time span.



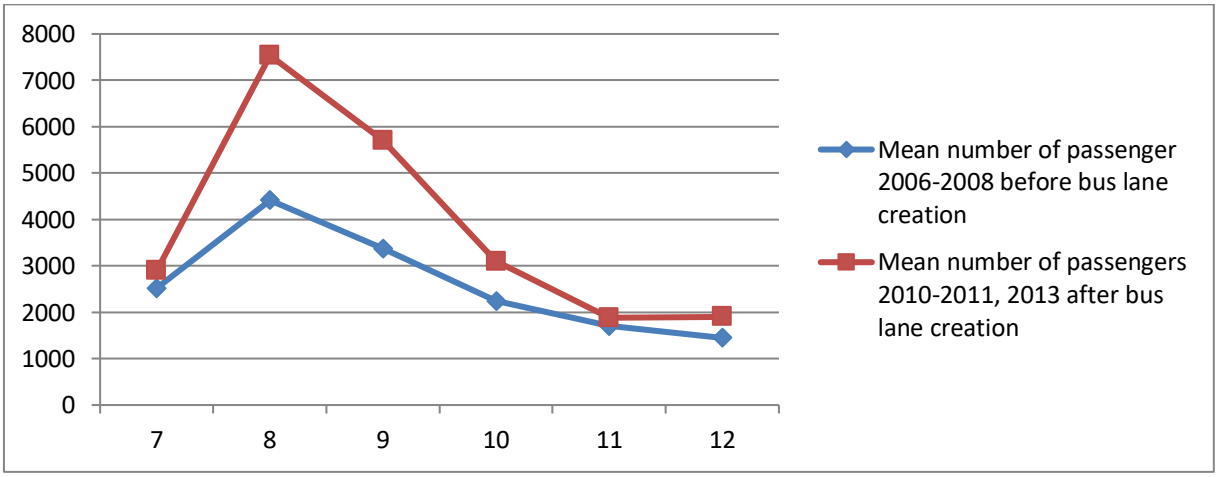
Graph 1 Passenger traffic (number of passengers) in public transport (blue) and private cars (red) on Łazienkowska Street and bridge 2005-2017 (black line is the bus lane creation year).

Graph nr 2 shows growth of the cumulated passenger traffic in public transport and passenger cars on Łazienkowska Street and Bridge between 2005-2013 on the background of the passenger traffic on the parallel bridges (Siekierkowski, Poniatowski). It is clearly visible, that the new passenger traffic on Łazienkowska Street and Bridge did not diverge from the parallel bridges, where it remains the same before and after the bus lane creation or the changes in traffic occurred independently from bus lane creation.



Graph 2 Passenger traffic (number of passengers) in public transport and private cars on Łazienkowska Street and Bridge and parallel bridges between 2005-2013 (2009 excluded – period is shown with intermittent line).

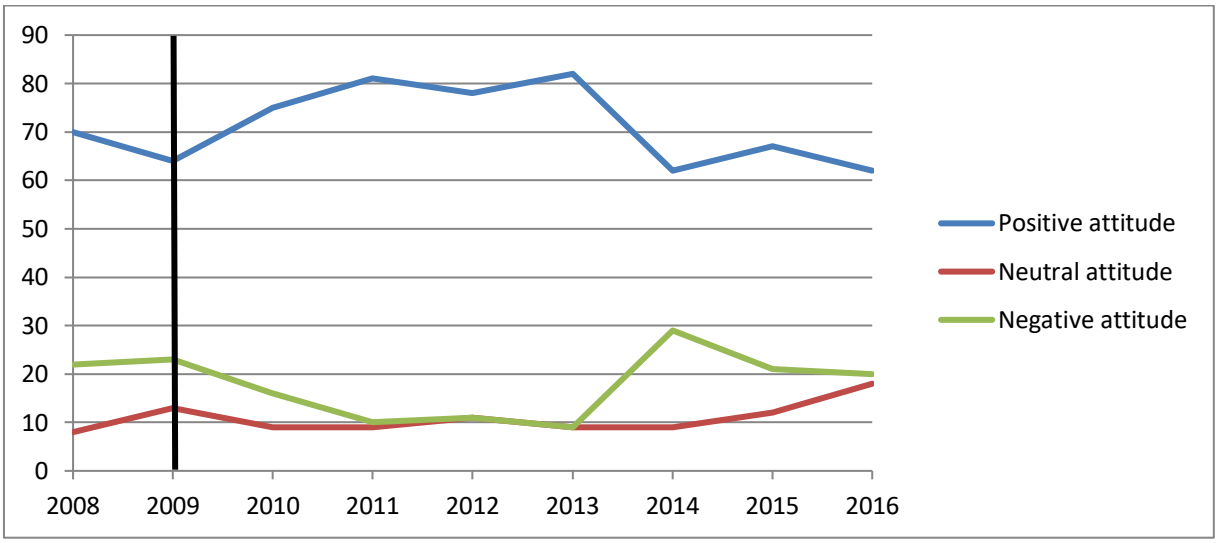
Graph nr 3 shows that growth of the passenger traffic in busses on Łazienkowska Street and Bridge was occurring on every hour of the measurements collected. The measurements were done only between 7AM up to 12AM. This is an argument that additional passenger traffic during rush hour was not a result of shift in time of people travel from other hours.



Graph 3 Hourly passenger traffic(number of passengers) since 7AM to 12 AM before and after creation of bus lane on Łazienkowska Street and Bridge.

Graph nr 4 shows that the attitude of Warsaw inhabitants towards bus lanes and privileges to public transport started to rise directly after introduction of the Łazienkowska Street and Bridge bus lane. This rise appeared after an episode of this attitude fall in 2009. In 2009 the discussion about the introduction of the bus lane on Łazienkowska Street and Bridge created an atmosphere

of fear among many inhabitants. That is shown in the 4 percent points higher number of people being against the solution in 2009 than in 2008. Since 2010 the attitude started to rise, which was mostly the result of many people moving from the neutral position. Further changes after 2013 occurred due other factors.



Graph 4 Attitude (%) of Warsaw inhabitants towards privileges for public transport 2008-2016 (black line is the bus lane creation year).

4. Conclusion

Bus lanes are effective way for stimulating use of public transport and results of their operation remain in the long term. New bus lanes can carry on induced mobility by public transport and improve people's attitude towards public transport.

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