

TREND OF TICK-BORNE ENCEPHALITIS INCIDENCE IN THE BOREAL REGION OVER THE PAST 30 YEARS: OFFICIAL STATISTICS DATA FROM 1995 TO 2024 (LITHUANIA CASE)

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Background: Over the past three decades, tick-borne encephalitis (TBE) cases in Europe have increased significantly, with an exceptionally high incidence in Central and Northern European countries (including the Boreal region countries). Sweden, Finland, Lithuania, the Czech Republic, and Germany stand out in these European regions, where the highest incidence of TBE has been recorded. The increase in TBE cases is associated with the onset of climate change, which increases average air temperatures, lengthens the vegetation period of plants, and extends the active period of insects.

Aim: This work aims to determine the TBE rates and assess the trends in the incidence of TBE in Lithuania (as one of the Boreal region countries) from 1995 to 2024. The study was funded by the European Union (HORIZON-AURORA under Grant Agreement N° 101157643).

Methods: Official TBE incidence data were obtained from the Institute of Hygiene and the National Center for Public Health under the Ministry of Health for the period 1995-2024. The TBE incidence was estimated per 100,000 population per year. Incidence trends were assessed using linear regression by calculating the natural logarithm of the incidence rate, and its changes were presented by evaluating the average percentage change per year.

Conclusions: It has been found that the incidence of TBE in Lithuania has increased significantly over the past 30 years, and rural residents have TBE more often than urban residents. This phenomenon could be attributed to the effects of climate change that have occurred in recent years.

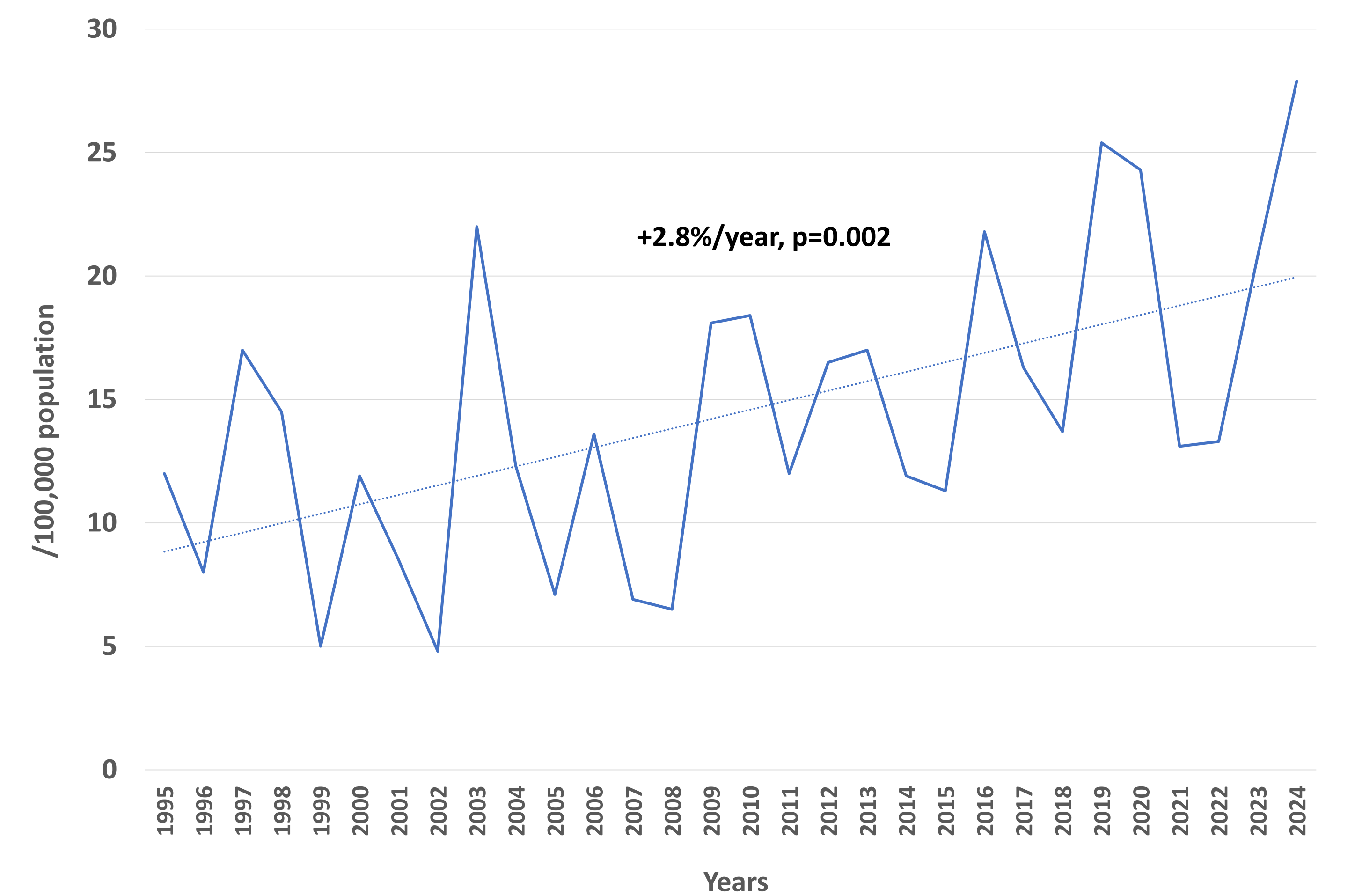


Fig. 1. Trends of tick-borne encephalitis among the Lithuanian population during 1995-2024

Results: During the years 1995-2024, the average incidence of tick-borne encephalitis was 14.4/100,000 population. During the study year, the difference between the lowest and highest TBE incidence rates was as much as 5 times. The lowest incidence of TBE was recorded in 1999 and 2002, when this rate was 5.0 and 4.8/100,000 population, respectively, and the highest incidence of TBE was recorded in 2024 - 27.9/100,000 population. When assessing changes in TBE incidence during 30 years, it was found that the incidence of TBE increased significantly by an average of 2.8% per year (95% CI 1.1-4.6%, p=0.002, R²=0.285) (Fig. 1). In Lithuania, the incidence of TBE was twice as high among rural residents as among urban residents.