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SPATIAL AND TEMPORAL STUDY OF ABSENTEEISM DURING THE PANDEMIC OF THE VIRUS H1N1 IN 2009. THE CASE OF CENTRAL MACEDONIA

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A (Methods and Modelling) - A1 Spatial Models

Résumé / Summary

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Summary

The pandemic flu A (H1N1) of 2009, which was first detected in Mexico and spread rapidly throughout the whole world, is considered the fastest flu in history. On August 10 in 2010, WHO announced that the virus H1N1 had completed its circle and the pandemic was over. (WHO, 2009). The pandemic virus started to be transmitted in Europe around 16th week of 2009. On 27 April 2009, Spain officially reported the first laboratory-confirmed case of the new influenza A(H1N1) virus infection in EU/EEA, in a traveler returning

from Mexico (Surveillance for A(H1N1) in Spain, 2009). Later that same day, the first two confirmed United Kingdom cases of new influenza A(H1N1) virus infection were reported in Scotland in a couple also returning from visiting Mexico (Health Protection in UK, 2009). In Greece the first known case of the virus H1N1 was reported by a young 19 year old boy on May 18th in 2009, who had returned two days earlier from New York. On the 26th and 27th May the second and third incident was diagnosed in two university students who had returned from the UK. These two cases were the first cases of the virus imported from another country within the European Union, as mentioned in the article of Panagiotopoulos et al. (2009). In national studies, around 25 to 30% of deaths attributed to the pandemic were in entirely healthy young adults and outside the traditional risk groups (ECDC, 2010). In Greece, concerning the pandemic, according to the last epidemiological report of HCDCP on 26 May 2010, during the period 2009-2010, 18.230 laboratory confirmed cases were reported (average age 21 years old) (HCDCP, 2010). These numbers significantly underestimate the true frequency of the new epidemic A (H1N1), since their symptoms were mild and in the majority of cases no laboratory confirmation was made. The epidemic was at its peak during the 48th- 49th week of 2009. It is estimated that the clinical rate infestation was higher for children aged 5-19 (range 27-57%), whereas it was lower for people aged 64 (HCDCP). Glezen (1996) compares the pandemics H1N1 during the years 1892, 1918, 1936, 1957 per age and concludes by reviewing the special infection rate per age, that school children hold the highest infection rate during the pandemics (and inter – pandemics). In 2009 Pandemic, young children experienced the highest rates of disease, and country reports reveal that the highest rates of infection were in school-aged children (ECDC, 2010). For example, a study from USA with 99 patients with laboratory confirmed H1N1 admitted to New York City hospitals showed that approximately 60% of admitted patients were younger than 18 years of age. The most common age group was the 5–17 year olds (CDC, 2010). Another study from the UK showed that those aged 5–14 and 15–24 had the highest estimated incidence rates and the lowest estimated CFR (Pebody et al, 2010; Donaldson et al, 2009). As a result, for the 2009 pandemic, schools (Health Protection in West Midlands, 2009) and households (Nishiura et al, 2009) were especially important. This particular assignment conducts a spatial analysis on the total number of absences in primary school per week and per Kapodistrian municipality boundaries during the onset of the pandemic in a Greek Region, Central Macedonia, from October to December 2009. The documentation of the specific data was done by the Institution of Computer and Technology center in Patra (CTI) in cooperation with HCDCP, the National school of Public Health and the Ministry of Education and Lifelong Learning. The week when the most laboratory confirmed cases were reported coincides with the week when the number of absences in primary school were at their highest. This fact presents a great interest in the search of and the correlation of potential outbreaks of the disease that were mostly affected by the particular virus. On average, absences from 8.610 school units were documented electronically (73,7% in all of Greece) of a total 587,498 students. Our study uses the relative specific subset of data for Central Macedonia and focuses on the corresponding spatial analysis (e.g. thematic mapping, spatial autocorrelation, and the comparison of averages across time and space). In continuity, we illustrate and annotate the main findings of this spatial pattern. It's worth noting that in the years 2009 - 2011 Central Macedonia had an average of 44 deaths / per year from H1N1 with a mortality ratio higher by 33% than the entire country (Doukissas et al, 2016). The prompt detection of infection among school units is a challenge for future epidemic waves. Having as a primary goal a more efficient coordination among the responsible authorities (prompt intervention and briefing, vaccination, etc) mitigation in a future epidemic can be achieved.

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