



Contribution ID : 14

Type : **Talk**

Machine learning for modeling mortality with respect to smog and ambient air temperature.

Wednesday, 14 September 2022 09:40 (30)

Poor air quality and its negative impact on health is currently one of the civilizational problems in Poland. The aim of this study was an attempt to verify and examine, on the basis of data on the number and causes of deaths registered in Bielański Hospital in Warsaw, the increase in the number of deaths in Poland in January 2017 recorded by Statistics Poland.

We analysed the data on the number and causes of deaths in the hospital from 2013 to 2018 using the methods of searching for anomalies and building models of the number of deaths depending on ambient temperature and air pollution levels.

We found that the increase in the number of deaths observed in the hospital in January 2017 was caused by respiratory system-related deaths. A model utilizing air temperature is not enough to explain the increase, but adding PM10 air pollution levels to the temperature model was sufficient to achieve this. Such a model attributes 8.3% of all deaths observed in January 2017 to air pollution.

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Session Classification : Machine Learning in Medical Applications 1

Track Classification : Machine Learning in Medicine