

Studying the effect of COVID in Suicide-Related Emergency Calls

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Suicide is a major social and public health problem, accounting for more than 700.000 deaths worldwide every year, according to the World Health Organization (2021). In Spain, suicide has become the leading cause of external death, with 11 people who died by suicide each day (INE, 2022). Several studies have been published studying risk factors both at individual (family history, alcohol abuse, mental illness...) and community level (i.e., social deprivation and social fragmentation). In addition, official data is showing an increasing trend in the last decades and there is a rising concern about the impact of COVID and the restrictive policy measures adopted on mental health. However, data is usually scarce and takes several years to be able to detect the real effects on the population.

Taking all of this into consideration we present a research project focused on studying the effect of COVID in mental health, using suicide-related calls to the 112-emergency service, which depends on the Valencian Regional Government, from 2018 to 2023. This project, which is currently in progress, is focused on using a Bayesian approach, through the Integrated Nested Laplace Approximation (INLA), to understand the spatio-temporal distribution of suicide calls. We will perform different type of analysis:

- **Temporal Evolution:** study of seasonality and trend, group by days, weeks, age and sex.
- **Spatial Distribution:** several spatial models will be implemented, taking into account spatial confounding and age standardization, and studying the effect of community-level risk factors.
- **Spatio-Yemporal Analysis:** spatio-temporal models, with different types of spatio-temporal interactions and mandatory restrictions will be implemented.
- **Multivariate Spatial Distribution:** taking advantage of the information given by the original database, we will split the data in 2x2x2 categories, according to the type of caller (victim vs witness callers), the gender of the victim (male vs female) and period (pre-COVID vs COVID) to analyze the shared spatial component.

In this session we will present the project, whose preliminary results showing a drastic increase in the number of calls coinciding with the beginning of lockdowns in Spain, which continued to increase after returning to the new normality. There are, however, clear differences between males and females. The future lines of research will also be presented.

Keywords: Suicide, INLA, Disease Mapping