

**Do global temperatures really affect Italian suicides? —
comments on “Global warming possibly linked to an enhanced risk of
suicide: Data from Italy, 1974–2003”**

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Introduction

Recently, Preti et al. (2007) conducted a comparison between monthly surface temperature data and monthly suicide rates in Italy. While any study suggesting a possible link between environmental conditions and behavioral responses is deserving of copious attention in the scientific literature, previous research suggests that the causal mechanisms behind suicides are complex, often driven by numerous, incalculable variables (IPCC 2001; Deisenhammer et al. 2003; Deisenhammer 2004; Sher 2004; IPCC 2007). For that reason, there are several problems with the objectives, methods, and results of Preti et al. (2007).

Preti et al. (2007) provide a handful of statements, assumptions, and conclusions that are simply inaccurate or controversial. These errors include effects of temperature on mortality, the understanding of global climate change, and the interpretation of statistical analyses. The authors include several caveats at the end of the paper, and some of the shortcomings are accounted for by these caveats. Nevertheless, some of the problems should be addressed.

Effects of temperature on suicide

In the first sentence of the paper, Preti et al. (2007) claim that total mortality is highest during “hot temperatures.” While it is true that periods of extreme heat result in abrupt increases in human mortality, total mortality rates in the winter far exceed those in the summer. As a result, several studies have argued that cold conditions lead to increased mortality (Eurowinter Group 1997;

Danet et al. 1999; Grech et al. 2001; Keatinge 2002; Laaidi et al. 2006).

However, it should be noted that studies claiming an increased mortality rate due to cooler air are likely the result of false correlations between low temperatures and high mortality. Mortality is consistently higher during winter, even in locations with little or no seasonality in temperatures, thus suggesting that extreme cold is not solely responsible for the observed increase in winter mortality (Sheth et al. 1999; Gemmell et al. 2000; Rau and Doblhammer 2003; Dixon et al. 2005). Such false correlations are common whenever a variable, such as suicide, displays seasonality as most correlations with temperature likely result in positive results despite no causal relationship.

Along these lines, Dixon et al. (2007) show that temperature variation has little, if any, effect on suicide in the United States despite significant seasonal signals in both male and female suicide rates. Therefore, it may be accurate to claim that “hot temperatures associate to an increased risk of suicide mortality,” but there is certainly a strong chance that these prior associations are simply coincidental and that suicide seasonality is actually controlled more by seasonal social variables (academic year, agriculture, holidays, etc.).

Questionable Results

With respect to the analyses conducted by Preti et al. (2007), there is no explanation of the decrease in male and female suicide rates since the early 1990s, a period in which surface temperatures have continued to warm. Unless there is a quantified reason for the dramatic change in trends, the other

conclusions of the study must be questioned as global change patterns have not weakened in recent years (IPCC 2007). Even if statistical relationships are “significant,” it is irresponsible to use the title of a research article to imply that suicides are increasing due to global warming while suicide rates have been consistently decreasing for more than 10 years.

Preti et al. (2007) spend some time explaining the negative correlation between temperature and suicide during January. Despite the fact that these correlations are reversed for both December and February, it is argued that this relationship is due to the fact that most suicidal patients will be closely monitored by friends and family as they spend more time indoors during the cold days of January. However, if the primary claims of Preti et al. (2007) are true, then increasingly warm temperatures in January should provide more opportunities for patients to escape the observation of friends and family (as compared to previous years), which should lead to a stronger positive correlation than other months that are not typically affected by indoor isolation. In addition, the argument of increased surveillance during cold months supports the idea that any effects of temperature on suicide are likely secondary to social variables. In this case, the colder temperatures might force people to spend time inside, but it is the patients’ social networks that ultimately have the stronger impact on suicide rates. Still, it remains unclear why December and February would experience positive correlations with suicides, while January exhibits the opposite.

Finally, it is not possible to directly relate a single small-scale effect (e.g., suicide rates in Italy) to a large-scale phenomenon (e.g., global warming). Places around the planet are responding differently to climate change; some are warming, some are drying, some are cooling, and some are experiencing increased precipitation (Karl et al. 1996; IPCC 2001; Easterling 2002; Zhang et al. 2004; IPCC 2007). In order to have any confidence in a claim that relates suicide to global warming, the study would have to include analyses of numerous locations from various parts of the world. Similarly, no description is given of the variance in temperature or suicide rates across Italy. Are some regions with increasing urbanization and temperature affected more significantly than others? Are the results of this study strongly affected by one or two locations? Did any locations experience results that are in opposition to the conclusions of Preti et al. (2007)?

Discussion

The changing climate of our planet is undoubtedly a serious subject that deserves much scientific research and political attention. In fact, the IPCC (2007) outlines several likely effects of increasing temperatures across various regions of Earth, including southern Europe. These include increased mortality due to heat waves, droughts, and changes in the spatial distributions of some infectious disease vectors. Conversely, some portions of the globe are expected to reap benefits from climate change (IPCC 2007). Unfortunately, Preti et al.

(2007) includes no analyses of data outside of Italy, yet the title mentions “global warming.”

It is understood by most readers that the title of the paper in question was likely meant to draw media attention to the research conducted by Preti et al. (2007). There is not necessarily anything wrong with making the public more aware of one’s research. However, this attempt at self promotion actually makes the article less credible. The title would be much more accurate if it were, “Temperature variations linked to suicide rates in Italy.” Unfortunately, such a title would have most likely been considered less interesting by most readers.

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