

Appendix. ARIMA models

A) All suicides ARIMA model $(0,0,1)(0,1,1)_{12}$

$$(1 - B^{12})y_t = \vartheta + (1 - \theta_{12}B^{12})a_t$$

B) Male suicides ARIMA model $(0,0,0)(0,1,1)_{12}$

$$(1 - B^{12})y_t = \vartheta + (1 - \theta_{12}B^{12})a_t$$

C) Female suicides ARIMA model $(1,0,1)(0,1,1)_{12}$

$$(1 - B^{12})y_t = \vartheta + \frac{(1 - \theta_1 B)(1 - \theta_{12} B^{12})}{(1 - \phi_1 B)} a_t$$

D) All suicides + potentially misclassified suicides
ARIMA model $(1,0,1)(0,1,1)_{12}$

$$(1 - B^{12})y_t = \vartheta + \frac{(1 - \theta_1 B)(1 - \theta_{12} B^{12})}{(1 - \phi_1 B)} a_t$$

FINAL MODELS

$$U_t = W_t + f(I_t)$$

where

$$W_t = Y_t - Y_{t-12}$$

and $f(I_t)$ is the intervention component of the model

Intervention components

a) Abrupt sustained

$$f(I_t) = \omega_0 I_t$$

where I_t is a step function such that

$I_t = 0$ prior to the event

$= 1$ thereafter

b) Gradual sustained

$$f(I_t) = \frac{\omega_0}{1 - \delta_1 B} I_t$$

where I_t is a step function such that

$I_t = 0$ prior to the event
 $= 1$ thereafter

c) Abrupt temporary

$$f(I_t) = \frac{\omega_0}{1 - \delta_1 B} (1 - B) I_t$$

where I_t is a pulse function such that

$I_t = 0$ prior to the intervention
 $= 1$ at the moment of the intervention
 $= 0$ thereafter

ARIMA Models Including Intervention Component

A) All suicides

$$U_t = \vartheta + (1 - \theta_{12} B^{12}) a_t + \omega_0 I_{342}$$

B) Male suicides

$$U_t = \vartheta + (1 - \theta_{12} B^{12}) a_t + \omega_0 I_{310} + \omega_0 I_{342} + \frac{\omega_0}{1 - \delta_1 B} (1 - B) I_{352}$$

C) Female suicides

$$U_t = \vartheta + \frac{(1 - \theta_1 B)(1 - \theta_{12} B^{12})}{(1 - \phi_1 B)} a_t + \omega_0 I_{341}$$

D) All suicides + potentially misclassified suicides

$$U_t = \vartheta + \frac{(1 - \theta_1 B)(1 - \theta_{12} B^{12})}{(1 - \phi_1 B)} a_t + \omega_0 I_{353}$$

References

1. Kondilis E, Giannakopoulos S, Gavana M, Ierodiakonou I, Waitzkin H, Benos A. Economic crisis, restrictive policies, and the population's health and health care: the Greek case. *Am J Public Health*. 2013;103(6):973-980.
2. Stuckler D, Meissner C, Fishback P, Basu S, McKee M. Banking crises and mortality during the Great Depression: evidence from US urban populations, 1929-1937. *J Epidemiol Commun H*. 2011:1-10.
3. Kentikelenis A, Karanikolos M, Papanicolas I, Basu S, McKee M, Stuckler D. Health effects of financial crisis: omens of a Greek tragedy. *Lancet*. 2011;378:1457-1458.
4. Fountoulakis KN, Koupidis SA, Grammatikopoulos IA, Theodorakis PN. First reliable data suggest a possible increase in suicides in Greece. *BMJ*. 2013;347:1-2.
5. Stuckler D, Basu S, Suhrcke M, Coutts A, McKee M. Effects of the 2008 recession on health: a first look at European data. *Lancet*. 2011;378:124-125.
6. Hyphantis T. The "depression" of mental health care in general hospitals in Greece in the era of recession. *J Psychosomatic Research*. 2013;74:530-532.
7. Fountoulakis KN, Grammatikopoulos IA, Koupidis SA, Siamouli M, Theodorakis PN. Health and the financial crisis in Greece. *Lancet*. 2012;379:1001-1002.
8. Economou M, Madianos M, Theleritis C, Peppou LE, Stefanis CN. Increased suicidality amid economic crisis in Greece. *Lancet*. 2011;378:1459.
9. Horton R. Offline: Looking forward to some surprises. *Lancet*. 2011;377:2164.
10. Anonymous. Regulation of the Statistical Obligations of the Agencies of the Hellenic Statistical System (ELSS). Piraeus: Hellenic Republic. Hellenic Statistical Authority.; 2011:1-8.
11. Anonymous. European Statistics Code of Practice for the National and Community Statistical Authorities: European Statistical System Committee; 2011:1-7.
12. Zacharakis CA, Madianos MG, Papadimitriou GN, C.N. S. Suicide in Greece 1980-1995: patterns and social factors. *Soc Psychiatry Psychiatr Epidemiology*. 1998;33:471-476.
13. Värnik P, Sisask M, Värnik A, et al. Suicide registration in eight European countries: A qualitative analysis of procedures and practices. *Forensic Science International*. 2010;202:86-92.
14. Claassen C, Yip P, Corcoran P, Bossarte R, Lawrence B, Currier G. National suicide rates a century after Durkheim: do we know enough to estimate error? *Suicide and Life-Threatening Behavior*. 2010;40:193-223.
15. Warshauer M, Monk M. Problems in suicide statistics for whites and blacks. *American Journal of Public Health*. 1978;68:383-388.
16. Rockett I, Smith G. Suicide misclassification in an international context. . Paper presented at: Proceedings of the International Collaborative Effort on Injury Statistics 1995; Hyattsville, Maryland, USA.
17. Chang S, Stuckler D, Yip P, Gunnell D. Impact of 2008 global economic crisis on suicide: time trend study in 54 countries. *BMJ*. 2013;17:347-362.
18. Branäs CC, Nance ML, Elliott MR, Richmond TS, Schwab CW. Urban-rural shifts in intentional firearm death: different causes, same results. *Am J Public Health*. Oct 2004;94(10):1750-1755.
19. Rockett I, McKinley T. Reliability and sensitivity of suicide certification in higher-income countries. *Suicide Life-Threatening Behavior*. 1999;29:141-149.
20. Stylianidou S. Terminal cancer patients and euthanasia — The church's position. *Hellenic Journal of Surgery*. 2013;85(2):105-108.
21. Kentikelenis A, Karanikolos M, Papanicolas I, Basu S, McKee M, Stuckler D. Health and the financial crisis in Greece — Authors' reply. *Lancet*. 2012;379:1002.

22. Kastanaki AE, Kranioti EF, Theodorakis PN, Papadomanolakis A, Michalodimitrakis M. Accuracy of official suicide mortality statistics in Greece: findings from the Island of Crete. *9th Annual Meeting of the Balkan Academy of Forensic Sciences (BAFS)*. Istanbul, Turkey 2013:31.
23. Ifanti AA, Argyriou AA, Kalofonou FH, Kalofonos HP. Financial crisis and austerity measures in Greece: their impact on health promotion policies and public health care. *Health Policy*. 2013;13:154-168.
24. Anonymous. Quarterly national accounts: 2nd Quarter 2013 (Provisional). http://www.statistics.gr/portal/page/portal/ESYE/BUCKET/A0704/PressReleases/A0704_SEL84_DT_QQ_02_2013_01_P_EN.pdf; Hellenic Statistical Authority; 2013.
25. Wearden G. Greece debt crisis: timeline. *The Guardian*. May 5, 2010.
26. Anonymous. Timeline: Greece's economic crisis. *Reuters*. Feb 3 and Mar 11, 2010.
27. Klimes M. Timeline: Greek austerity strikes and protests. *International Business Times*. Nov 6, 2013.
28. Anonymous. More riots in Greece over fatal police shooting of teen. *USA Today*. Dec 7, 2008.
29. McCleary R, Hay R. *Applied time series analysis for the social sciences*. Beverly Hills: Sage Publishing; 1980.
30. McDowall D, McCleary R. *Interrupted Time Series Analysis*. Vol 21. London: Sage Publishing; 1980.
31. Lopez Bernal JA, Gasparrini A, Artundo CM, McKee M. The effect of the late 2000s financial crisis on suicides in Spain: an interrupted time-series analysis. *European J Public Health*. 2013;23(5):732-736.
32. Kondilis E, Ierodiakonou I, Gavana M. Suicide mortality and economic crisis in Greece: men's Achilles heel. *J Epidemiology Community Health*. 2013;67:e1.
33. Kastanaki AE, Kranioti EF, Papavdi A, Theodorakis PN, Michalodimitrakis M. Suicide by firearms on the island of Crete. *Crisis*. 2010;31(1):43-52.
34. Kastanaki AE, Kranioti EF, Theodorakis PN, Michalodimitrakis M. Patterns of suicide in Cretan women. In: Vieira DN BA, Cusack D, Beth P, editors, ed. *Acta Medicinae Legalis et Socialis*: Coimbra University Press; 2010:157-164.
35. Faresjo A, Theodorsson E, Chatziarzenis M, et al. Higher Perceived Stress but Lower Cortisol Levels Found among Young Greek Adults Living in a Stressful Social Environment in Comparison with Swedish Young Adults. *Plos One*. 2013;8(9):1-8.
36. Madianos M, Economou M, Alexiou T, Stefanis C. Depression and economic hardship across Greece in 2008 and 2009: two cross-sectional surveys nationwide. *Soc Psychiatry Psychiatr Epidemiology*. 2011;46:943-952.
37. Michas G. Suicides in Greece: a light at the end of the tunnel. *BMJ*. 2013;347:f6249.
38. Christensen H, Farrer L, Batterham PJ, Mackinnon A, Griffiths KM, Donker T. The effect of a web-based depression intervention on suicide ideation: secondary outcome from a randomised controlled trial in a helpline. *BMJ Open*. 2013;3(6):1-9.
39. Niederkrotenthaler T, Voracek M, Herberth A, Till B, Strauss M, Etzersdorfer E, Eisenwort B, Sonneck G. Role of media reports in completed and prevented suicide: Werther v. Papageno effects. *British Journal of Psychiatry*. 2010;197:234-243
40. Pirkis J, Francis C, Blood RW, Burgess B, Morley B, Stewart A, Putnis P. Reporting of suicide in the Australian media. *Aust N Z J Psychiatry* 2002; 36:190-7.