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Zeynep Teymuroglu* (teymurz@email.uc.edu), Department of Mathematical Sciences,
University of Cincinnati, 2855 Campus Way, PO Box 210025, Cincinnati, OH 45221. *Continuum
Models for the Spread of Alcohol Abuse*. Preliminary report.

Alcohol abuse is an important social problem and peer influence is thought to be a key factor in its spread. A recent paper (Braun, Wilson, Pelesko, Buchanan and Gleason, Applications of small world network theory in alcohol epidemiology, *J. Alcohol Studies*, 67 (2006), 591-599.) introduces a simple network model for this phenomenon consisting of a large system of ordinary differential equations. A mechanism to simulate the treatment of the most serious abusers is also provided. We introduce a spatially continuous version of the Braun model and an associated treatment scheme. Our model involves an integro-differential equation. Using perturbation and phase plane techniques as well as scientific computations, we investigate solution behavior and, in particular, look for traveling waves. (Received August 23, 2007)