

Lotka-Volterra系统下的社会型危机信息扩散模型

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Social-pattern crisis information diffusion model under Lotka-Volterra system

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- 摘要
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全文: PDF (777 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 危机信息在扩散过程中的失真会导致社会型危机的损失呈几何级数扩大,研究危机信息的扩散规律有助于社会型危机的应对.将危机信息分成真实信息和虚假信息两大类.从生态学角度来看,可以把社会型危机信息扩散过程看成是真实信息和虚假信息争取灾民信任的动态竞争过程.在Lotka-Volterra模型的基础上建立了社会型危机信息扩散模型,并进行仿真研究和实证分析.结果表明,危机信息扩散过程中的平衡状态只与替代系数相关,达到平衡的时间与扩散率间的差值正相关,而拐点由替代系数、扩散率和初始状态决定.最后提出了通过建立危机信息共享制度、危机信息发布制度和多元参与机制以有效应对危机.

关键词: 社会型危机信息 信息扩散模型 Lotka-Volterra模型 仿真

Abstract: The loss of social-pattern crisis will be extremely increased because of the distortion of crisis information in the diffusion process. Study on the diffusion rule of crisis information will contribute to active response to social-pattern crisis. There are two types of crisis information: true information and false information. The diffusion process of social-pattern crisis information is viewed as the dynamic competitive process of crisis information diffusion between true information and false information which strives for trust of victims based on ecology. This paper posits a social-pattern crisis information diffusion model based on Lotka-Volterra model. Then it conducts simulation and empirical study utilizing this model. The results show that the equilibrium state is only related with the substitute coefficient. The time achieving the balance is positively related with the difference of diffusivity; and the inflection point in the diffusion process of crisis information is decided by the substitute coefficient, diffusivity and initial state. We put forward some suggestions which establish the sharing system of crisis information, release system of crisis information and multiple-participation mechanism for crisis responses.

Key words: social-pattern crisis information crisis information diffusion model Lotka-Volterra model simulate

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