

Freeloaders beware: Incentives to foster cooperation are just around the corner

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In our society, there are always a certain percentage of people who adopt a freeloader attitude. They let other members of society do all the work and do not do their part. By not contributing their share of effort, to the detriment of the rest of society, freeloaders pose a serious social threat, and can even lead to social collapse. In a new study published in *EPJ B*, Chunpeng Du from Yunnan University of Finance and Economics, Kunming, China, and colleagues show that it is possible to incentivise members of society to cooperate by providing them fixed bonuses and, thus, prevent freeloader behaviour from becoming prevalent.

Darwinian evolutionary theory shows that reason alone does not encourage individuals to help potential competitors. Since [cooperation](#) is widespread in both biological and social systems, especially in human societies, many scientists have been working to explain why rational participants nonetheless cooperate extensively. In the real world, however, if [mutual cooperation](#) can maximise the collective interest, it is endangered when freeloaders put their personal interests before the common good.

In the study, the authors attempt to solve this problem by working with a model called the public goods game to study the [cooperative behaviour](#) of members of [society](#). To incentivise cooperation, the model features a system of rewards. In this case, the authors study a neutral reward system in which a few individuals reward most of the others. No matter whether a given individual is a cooperator or defector, as long as the number of that particular kind of individual is not dominant, they bear the cost of

the reward. This is a mechanism in which prosocial and antisocial behaviour coexist, making it suitable for exploring the evolution of cooperation.

Based on numerical simulations, Du and colleagues show that increasing the bonus directly promotes cooperation and resolves the social dilemma. Indeed, the system is such that players pursuing majority strategies in a group will be rewarded by other players pursuing minority strategies. And the dominant players will receive a fixed bonus provided by other vulnerable players. When the reward factor is large enough, it makes the income gap between cooperators and defectors become more noticeable. This means that such rules encourage the spread of those who cooperate, and cooperators will eventually take over the entire system. Therefore, they conclude, rewards for the majority of individuals can in fact promote cooperation.

More information: Chunpeng Du et al, The impact of neutral reward on cooperation in public good game, *The European Physical Journal B* (2018). [DOI: 10.1140/epjb/e2018-90052-6](https://doi.org/10.1140/epjb/e2018-90052-6)

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