

Social networks

Centrality planning

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MOST OF us are familiar with film scenes in which a detective stands in front a corkboard covered with pictures of criminals. Bits of string join the different pictures indicating that suspects are connected or related to each other. The detective analyses the connections to figure out who the mastermind is; if she eliminates the mastermind, the whole criminal network will collapse. Some researchers now think that economic analysis could also benefit from such detective work.

In particular, economists can no longer ignore the fact that “people’s opinions, which products they buy, whether they invest in education, become criminals, and so forth, are all influenced by friends and acquaintances”, according to [Matthew Jackson of Stanford University](http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.28.4.3) (http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.28.4.3) . Over the past nine years, his team has investigated how social networks can promote the use of microfinance in poor Indian communities. Over a four-year period, they discovered that the friends of those who already used the loan programme were more likely to sign up to the scheme than the average person. They say that the correlation they observed is mainly due to villagers passing information about the scheme to each other by word of mouth—and that this can be harnessed to boost the uptake of microfinance with clever targeting.

Mr Jackson and his co-authors found that the variation in the use of microfinance across villages could be explained by how influential—or “central”—in the network the first borrowers are. The economists define “centrality” in a similar way to how Google ranks its search results. Your “centrality” depends on how “central” your friends are, and your friends’ “centrality” depends on your “centrality” and that of their other friends. For instance, Bill Gates has high “centrality” not only because he has many friends, but because his friends are very important and connected themselves. People who are more “central” in the social network create large “multiplier” effects, inducing many others to mimic their decisions, in this case by spreading the word about microfinance. [In one study](https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCgQFjAB&url=https%3A%2F%2Fwww.aeaweb.org%2Faea%2F2014conference%2Fprogram%2Fretrieve.) (https://www.google.co.uk/url?

sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCgQFjAB&url=https%3A%2F%2Fwww.aeaweb.org%2Faea%2F2014conference%2Fprogram%2Fretrieve.) conducted in rural China, each farmer who received financial education was found to have boosted the likelihood of his friends taking up weather insurance by 20%. Targeting the most “central” farmers can therefore produce the largest overall benefit at the lowest cost.

Unfortunately, social networks also exacerbate bad behaviour. [In one recent paper](http://people.su.se/~yvze0888/Liu%20et%20al%20Feb%202014.pdf)

(http://people.su.se/~yvze0888/Liu%20et%20al%20Feb%202014.pdf) , a group of economists analysed how adolescents make friends and sell marijuana in American schools. Many schoolchildren who sell weed have friends who do the same. This correlation can happen because dealers like spending time with other dealers and because kids often begin to deal when their friends start to. But when dealers get caught, schools do not usually expel children based on their friendships. The economists suggest that they should. Once the most active dealer is expelled, the remaining dealers form friendships among themselves and continue dealing. But the economists show that removing the most “central” dealer in the resulting social network can reduce drug-peddling activity by as much as 35% compared with the policy of expelling the most active recidivist. That is why economists, like detectives, should spend more time in front of corkboards.

