



EXperimental
Learning

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Big Data and Social Analytics certificate course

MODULE 6 UNIT 1
Video 1 Transcript

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Speaker key

AP: Alex Pentland

HY: HapYak

AP: Welcome back. So now we're going to talk about how you use these sorts of social physics ideas, these analysis ideas, for changing behavior and particularly for marketing. So if you remember one of the main ways people make up their minds is by what do other people do. We play with lots and lots of ideas but that doesn't really change our behavior, it's when we see other people that are like us beginning to experiment with things or enjoying something, that really gets us to go and try it ourselves.

So what you have to do is you have to surround somebody with examples of people thinking about it or trying it in order to really change behavior. If you remember I talked about adopting apps, if the people around you had certain apps on their phone and you interact with those people then you're likely to have those apps too. And so if you know something like that, if you can predict that, then you can give those people for instance a small coupon to be able to tip and to begin to actually download the app.

So you can make your coupons far more efficient if there's social context. Of course the thing that you could do is create that social context and we've done that in several large ad campaigns where particularly for telcos or other things that know a lot of the social network what you do is you give coupons to everybody in a small social network. So if I know three people talk to each other a lot I give all three of them a coupon and then what ends up happening is they begin seeing that the other person is thinking about it.

Maybe one of them tries it and because they've all been exposed to it they reinforce each other and you get much more effect than if you gave just one person a coupon randomly. So you can use that in lots of different ways, one way is, as I said, you give clusters of people coupons rather than random people, another way is to look for clusters of people where there have been a few early adopters and what you're trying to do is to get their most contacted people, their most influenced people to adopt too.

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So you look for where there's a cluster with some adopters and you give coupons to the rest of them.

HY: What are the two effective ways to distribute coupons?

The first effective way to distribute coupons is to give clusters of people (who interact regularly, and exert social influence on each other) coupons. The second way is to look for clusters of people where



a few members have started using coupons, and leverage their social connection to influence their most contacted people to also use coupons.

AP: So if you use machine learning on these sorts of ideas you can sometimes get enormous effects. For instance with one large telco we were able to improve their data services uptake by factor of five. In another case we were able to improve their premium data service plans by a factor of 13. So the students that did this have gone off and founded a company called Endor, which now does this commercially.

To summarize this, people learn from each other and they change their behavior when they see other people experimenting with the idea. So you can either look for clusters of people where people are beginning to experiment with an idea and then offer coupons to people in that cluster of folks that interact, or you can offer coupons to clusters of people that have high interaction and try get them talking about it which means you'll get lots of adoption. And if you use sort of machine learning things on this to be able to optimize who you give coupons to when using techniques like dynamic programming and other things which we can't really explain here you can get sometimes enormous changes and increases in uptake.

HY: Why do you think it would be more effective to incentivize social relationships in order to influence individual behavior, rather than incentivizing the individual directly?

Thank you for your reflection. Please continue watching to learn more about a research study that incorporates this concept in a real-world scenario.

AP: So when we think about changing behavior, we think about giving a person a dollar or taking a dollar away, rewards or punishments, but we've also been talking about how people learn from each other and how their interactions with other people are incredibly valuable. And if we write down the value of those peer to peer interactions in the way economists write down incentives we find that the peer to peer things, the relationships with other people are actually more valuable in a typical case than direct incentives, individual incentives.

And what that means is if we can incentivize interactions in the right way we can be much more efficient with our marketing dollars than we can by giving coupons or punishments directly. So what are some of the things that we do? Let me give you a couple of examples. So in one community what I did is I gave everybody smart phones with little pedometers on them so they could see how active they were. And for half the community what I did is if they were more active than last week they got a dollar reward. Just a couple of dollars but they could see that on their smart phone. Oh, I've been more active than last week; I've made a couple of bucks.

In the other half of the community what I did is I made people pick some buddies, people they interacted with a lot, and I said if you're more active this week your buddies will get the money so they can see how active you were and if you got more active they got some money. And so that they did is they talked to you about it, they said hey, how're you doing, you sitting on the couch all the time or you getting out? And it was that social interaction that motivated people to become more active. And in fact that way of giving people incentives was almost an order of magnitude more dollar efficient than giving people incentives directly.



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And we've done this in a number of different cases, for instance we've done it online where people sign up with buddies and these have to be people that interact a lot so that they have tight social relationships, and reward the buddies rather than the person themselves. And in the cases we've done it's been enormously more dollar efficient than giving things to people directly. So that's what I mean by social incentives. And this can do all sorts of interesting things.

So one of the most interesting things was essentially a marketing campaign we ran for the large research organization in the American military called DARPA. And what they wanted to do was a contest to celebrate the 40th Anniversary of the internet. They put up a prize of \$40,000 for anybody who could find ten red balloons somewhere hidden in the United States by using social media. And what thousands of teams signed up to do was to use financial rewards. If you report a balloon to us you get some money.

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What we did was different, we said if you report a balloon you'll get some money but if you recruit a buddy and that buddy sees the balloon then not only does the buddy get money, but you get money. So this is a little like a Ponzi scheme, or multi level marketing, but upside down, has a fixed budget. But the amazing thing is that we were able to recruit almost two million people in something like a single day. And of course we won handily in this contest against hundreds of other teams because we were able to recruit such a large number of people to participate.

So what's happening there is the same sort of social incentive, when you recruit somebody you say well gee if you see a balloon you'll be doing me a favor and that incents you to do it. Same type of thing as when I give rewards to your buddies for you being more active; so other people have used this for marketing and been pretty successful at it and you might want to do the same sort of thing.