2012 Kellogg Marketing Leadership Summit

Inventing the Future of Marketing

SPEAKER

James Fowler

Professor of Medical Genetics and Political Science, UCSD

From Theory to Practice: How Social Networks Shape Our Lives

Egon Zehnder International

McKinsey&Company

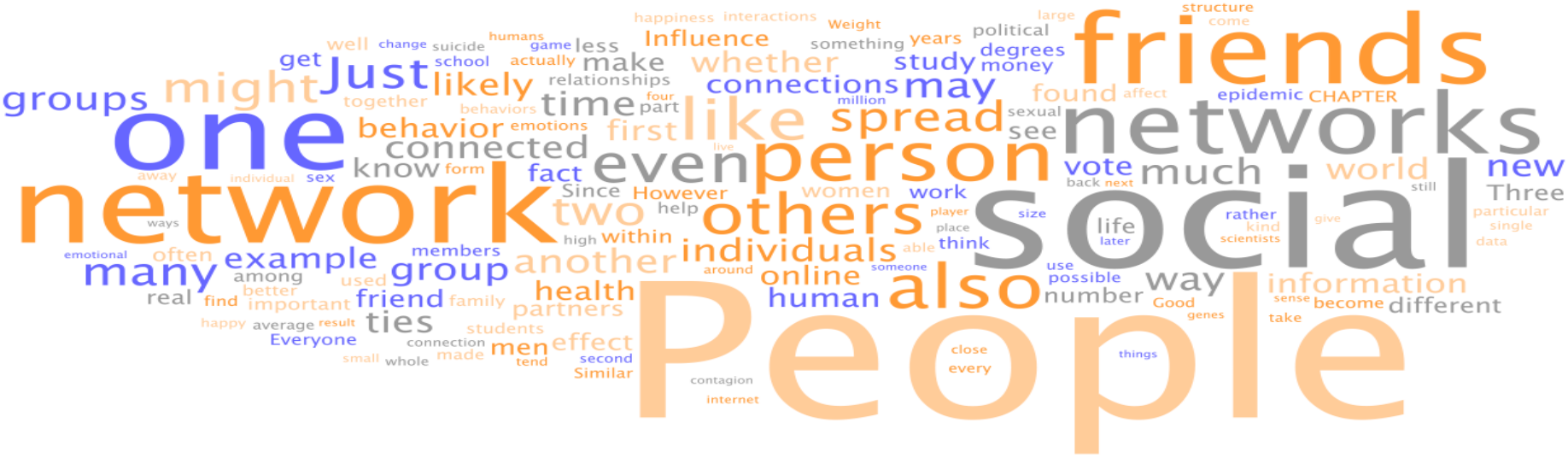
NORTHWESTERN UNIVERSITY

Kellogg School of Management

Connected

The Surprising Power of Our Social Networks and How They Shape Our Lives

NICHOLAS A. CHRISTAKIS, MD, PhD
AND JAMES H. FOWLER, PhD



http://www.wordle.net

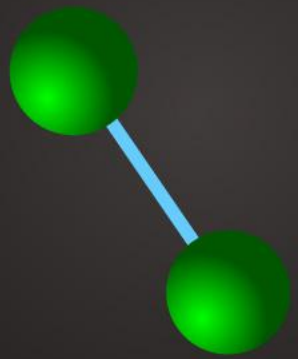
Block Area

Who are YOUR Friends?

Who do you discuss **Important Matters** with?

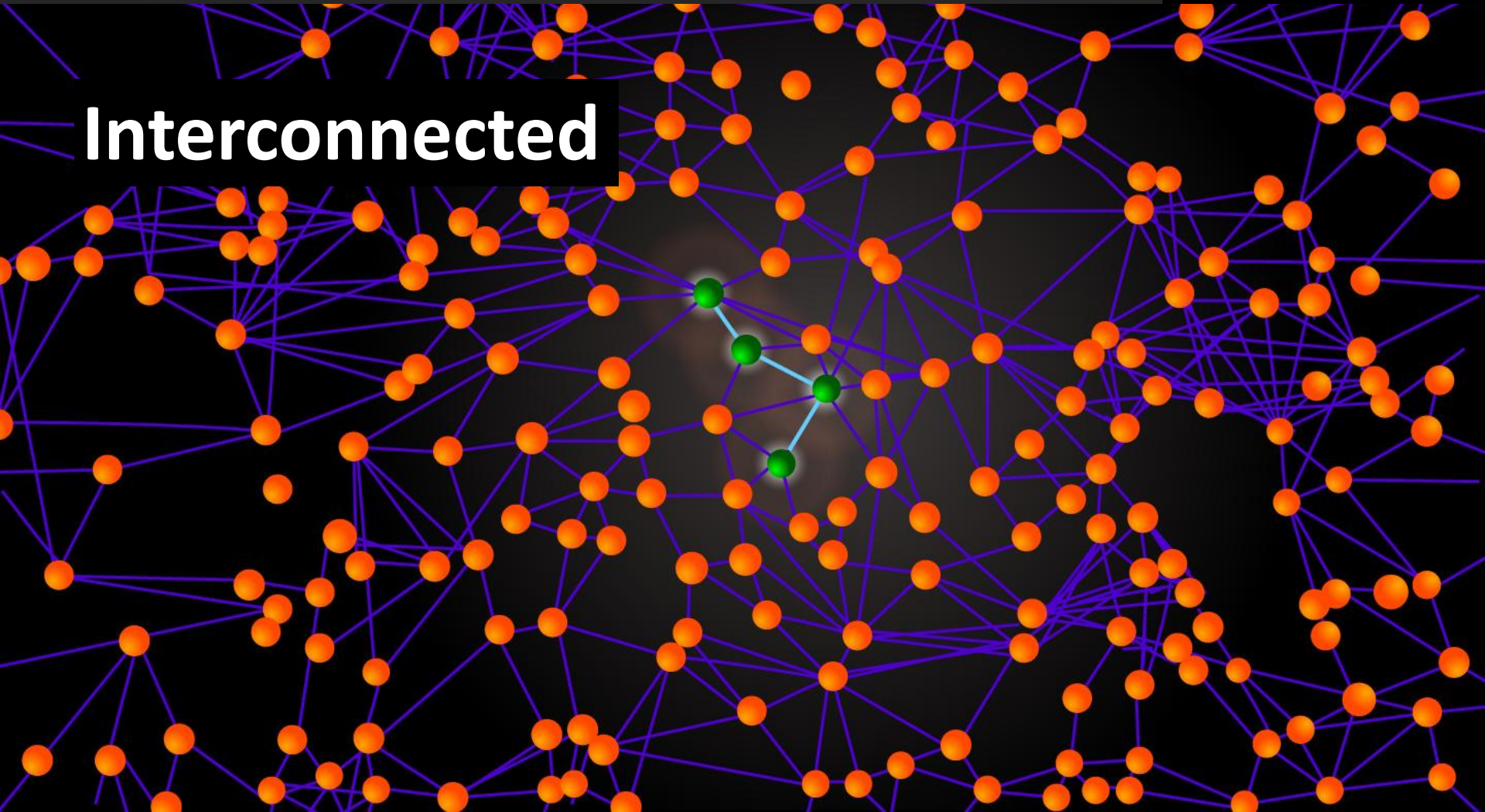
Who do you spend your **Free Time** with?

One Pair

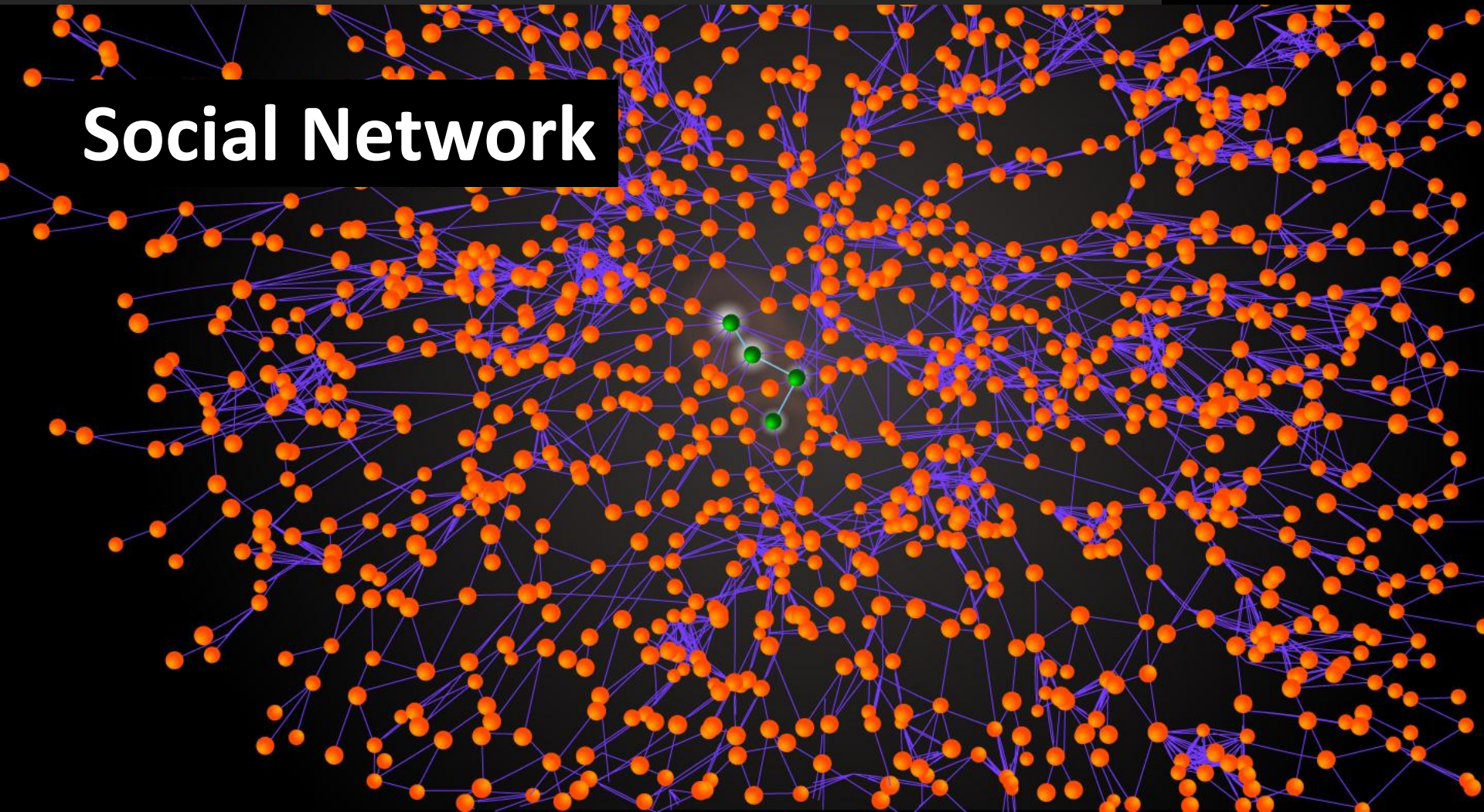


Many Pairs

Interconnected



Social Network



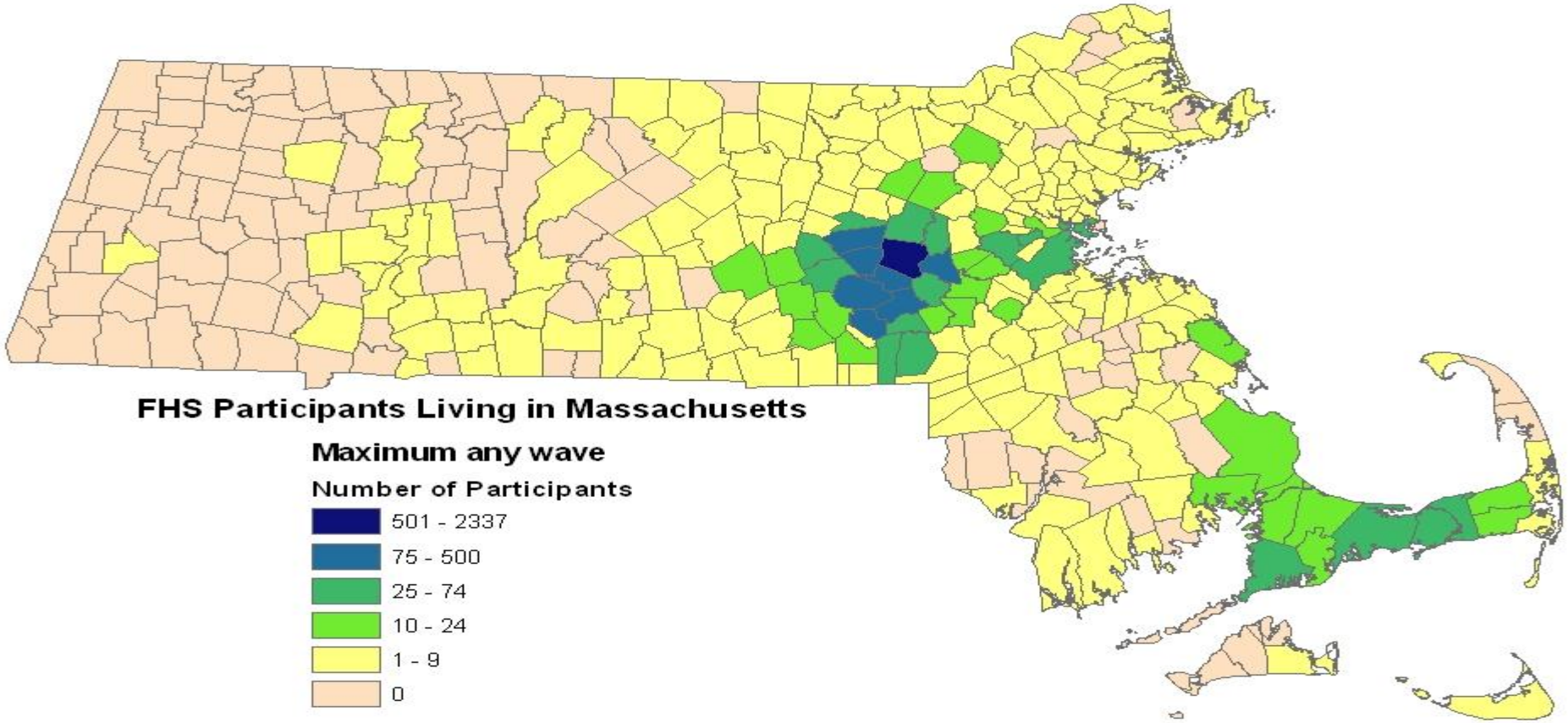
Connected

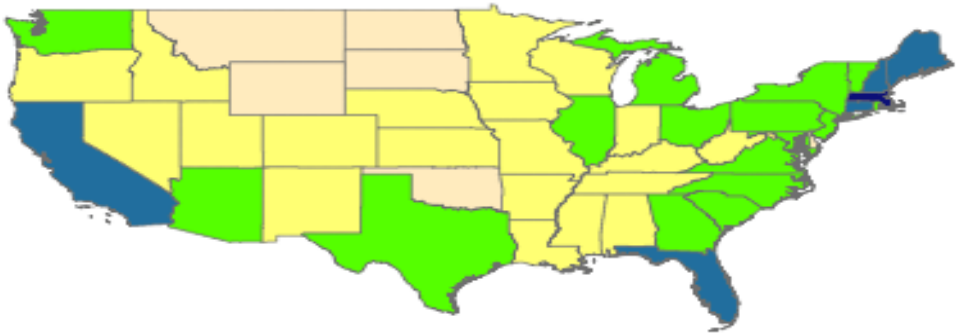
The Framingham Heart Study

Original Cohort
1948
N = 5,209

Offspring Cohort
1971
N = 5,124

Gen 3 Cohort
2002
N ~ 4,000

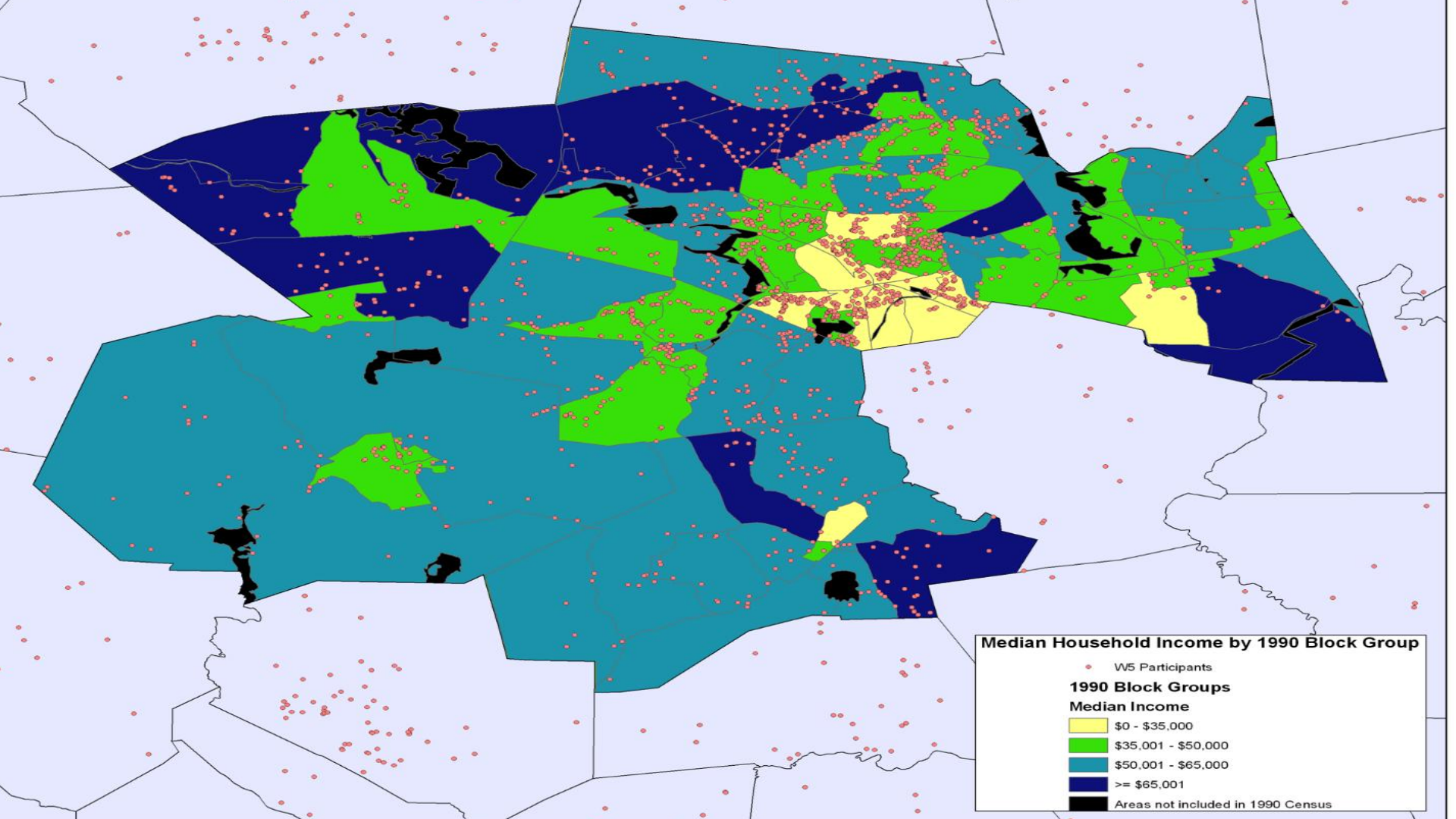

FHS Participants Living in Massachusetts
Maximum any wave
Number of Participants
501 - 2337
75 - 500
25 - 74
10 - 24
1 - 9
0

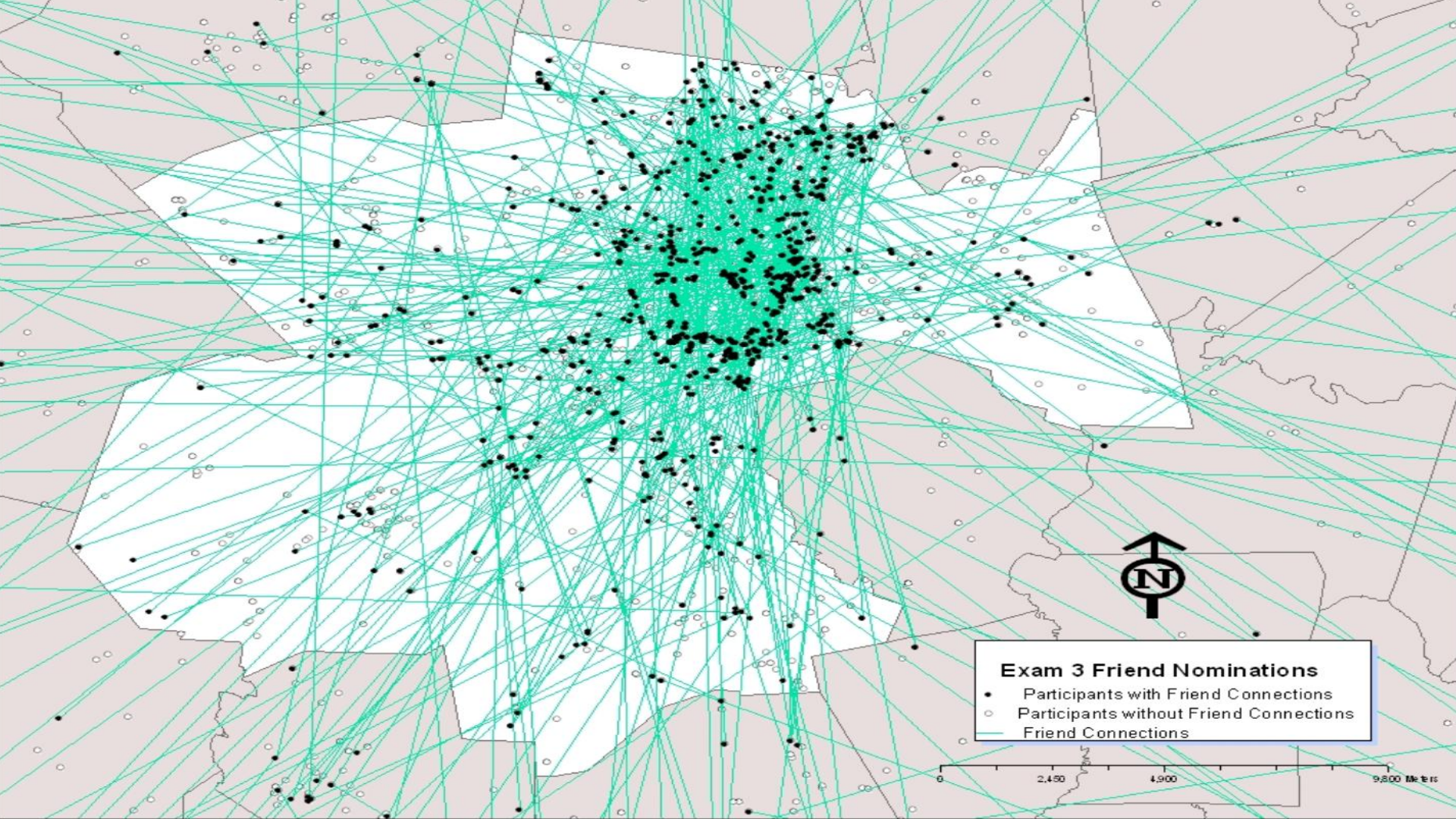


FHS Participants in US States

Number of Participants at Wave 7

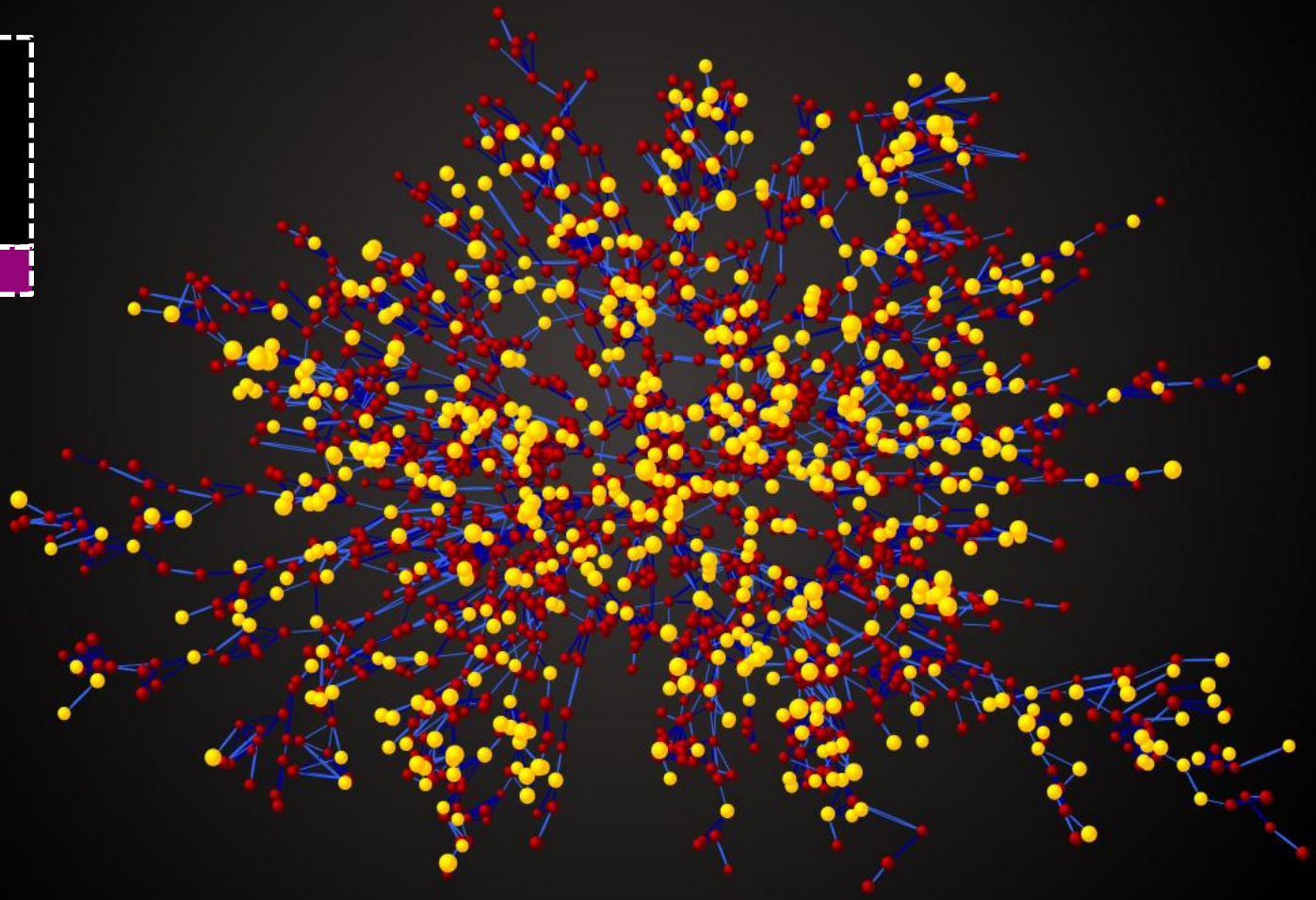
- **0**
- **1 - 10**
- **11 - 75**
- **76 - 500**
- **501 - 3339**


Median Household Income by 1990 Block Group
W5 Participants
1990 Block Groups
Median Income
$0 - $35,000
$35,001 - $50,000
$50,001 - $65,000
>= $65,001
Areas not included in 1990 Census


N
Exam 3 Friend Nominations
Participants with Friend Connections
Participants without Friend Connections
Friend Connections
0
2,450
4,900
9,800 Meters

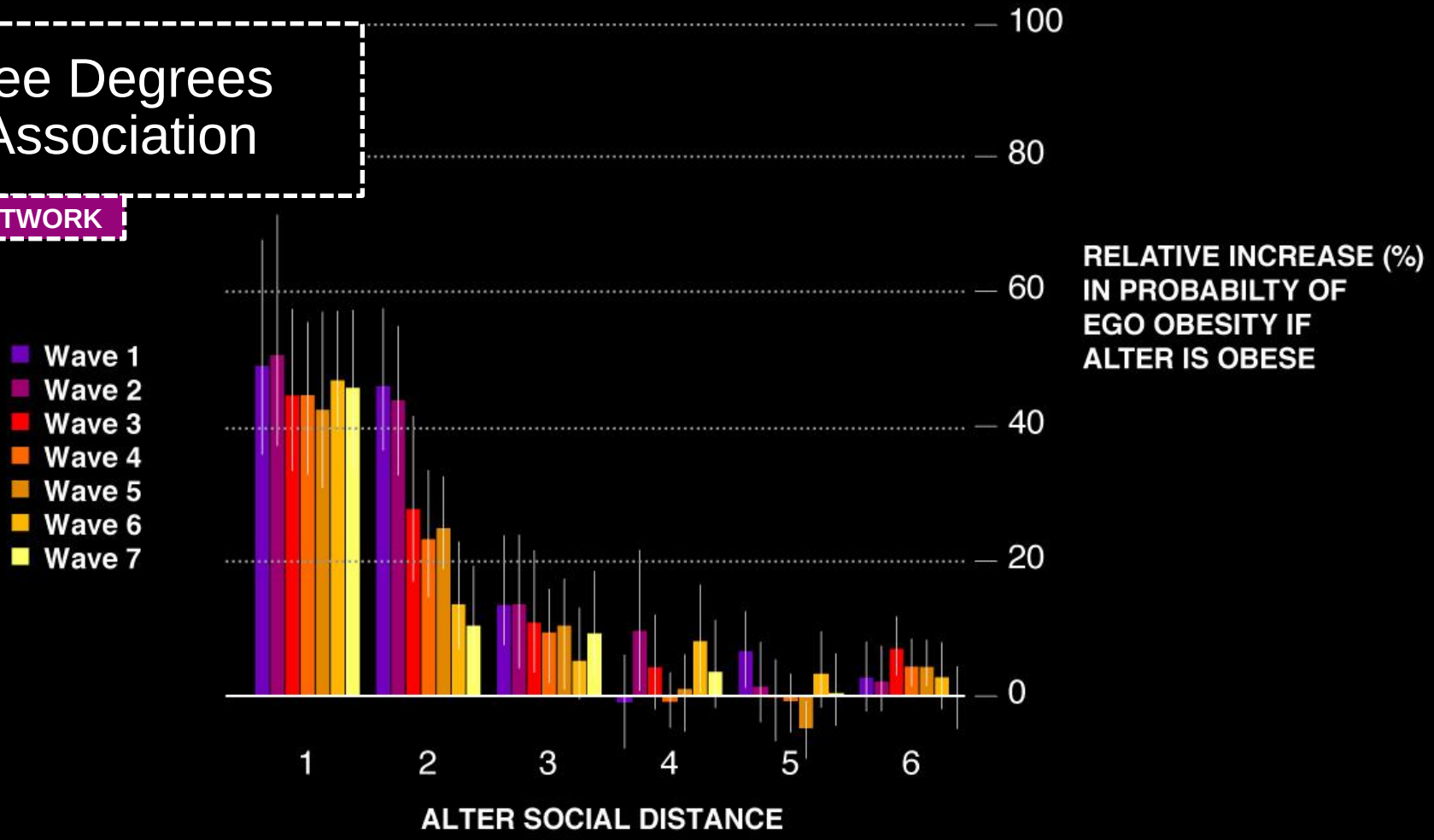
Obesity Clusters

FHS NETWORK



Three Degrees Of Association

FHS NETWORK



Causes of Similarity and Clustering

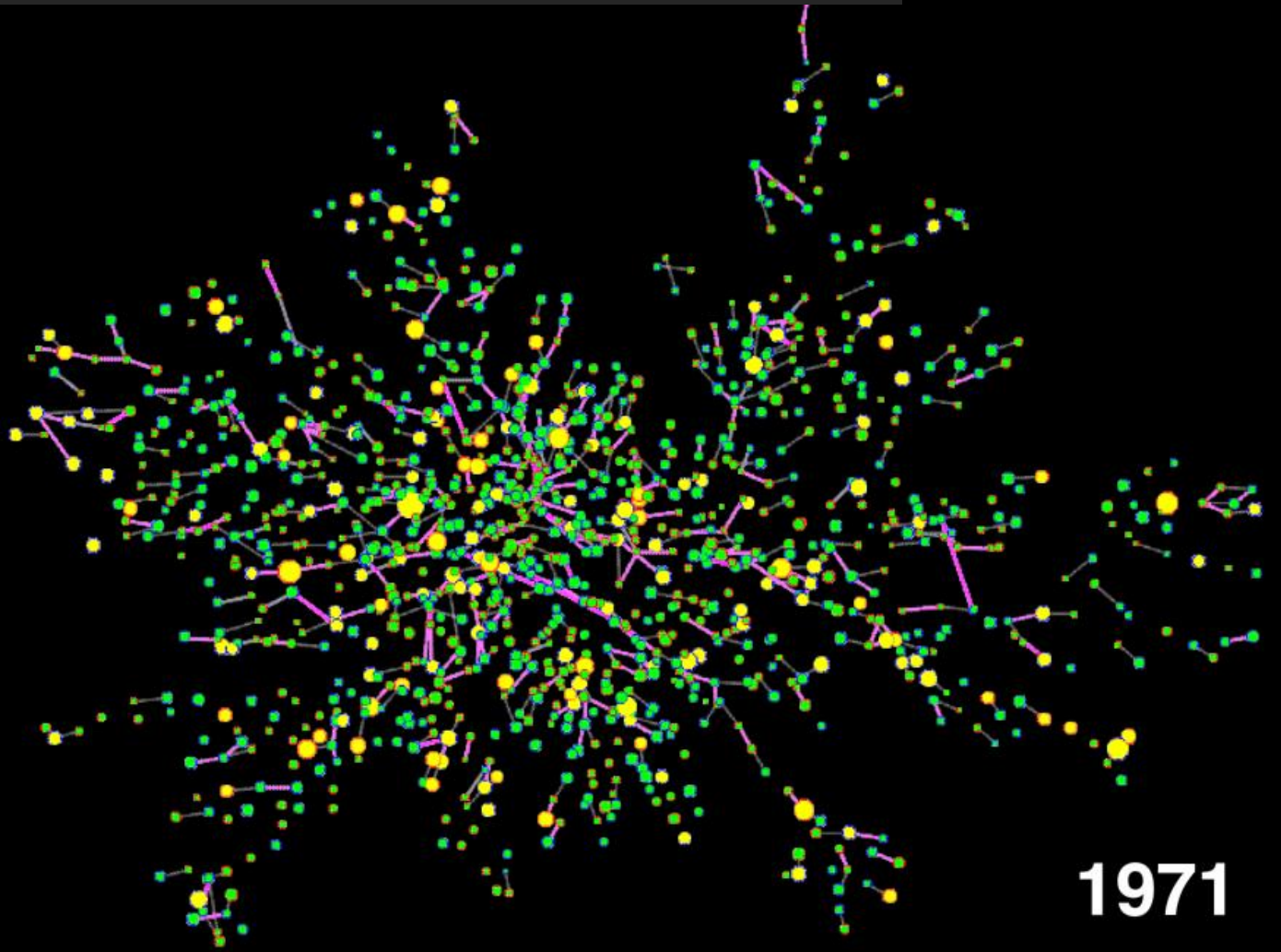
INFLUENCE

HOMOPHILY

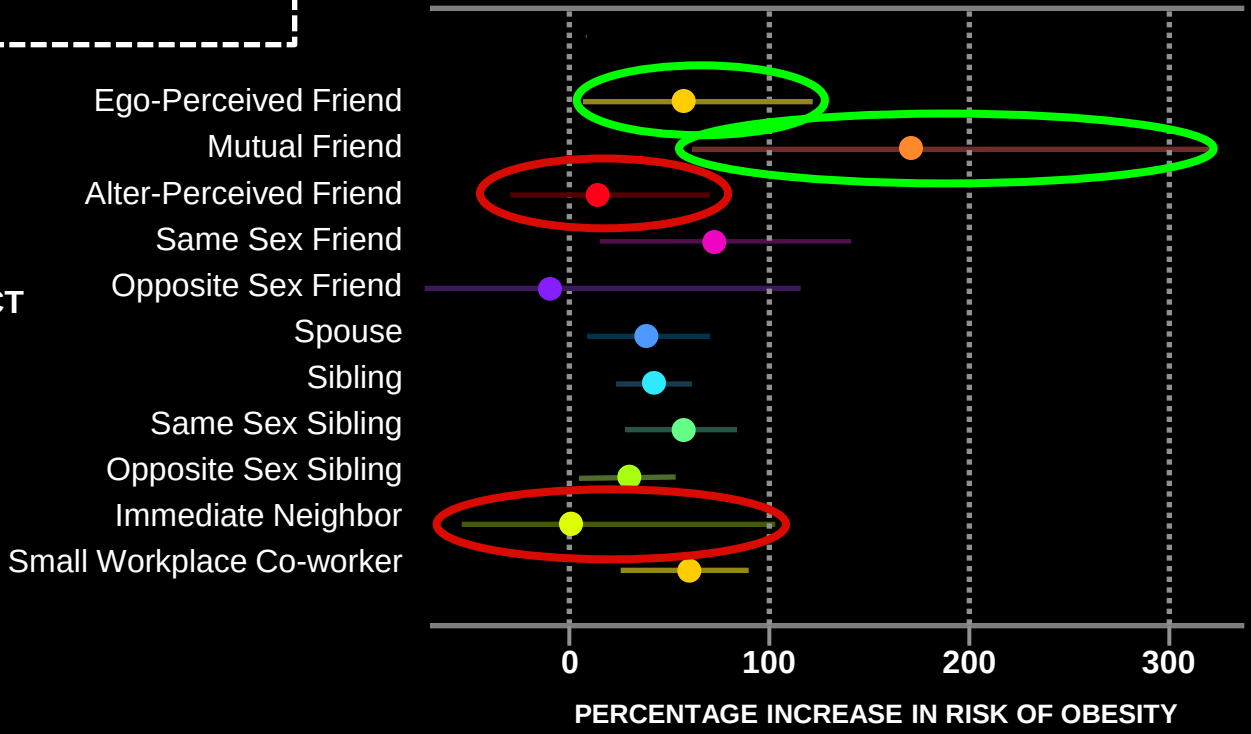
CONTEXT

The Spread Of Obesity

FROM 1971 TO 2003



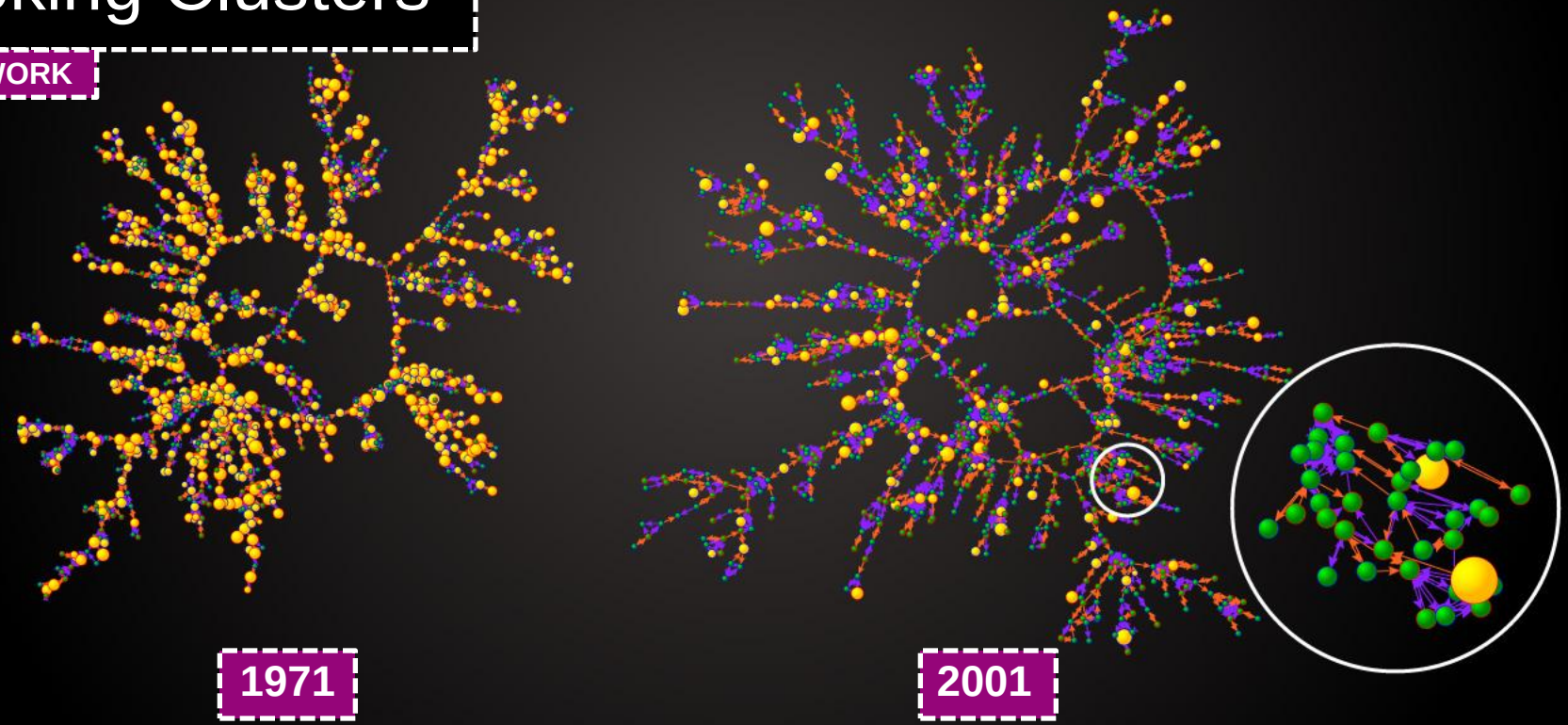
Spread of Obesity



NA Christakis and JH Fowler, "The Spread of Obesity in a Large Social Network Over 32 Years," *New England Journal of Medicine* 2007; 357: 370-379

Smoking Clusters

FHS NETWORK

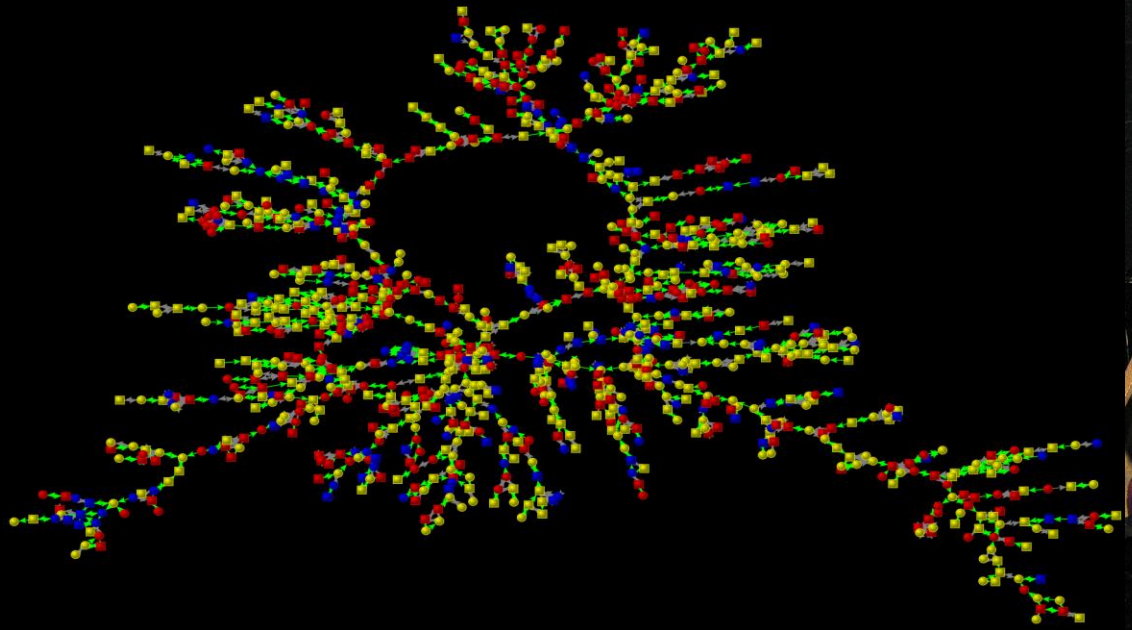


1971

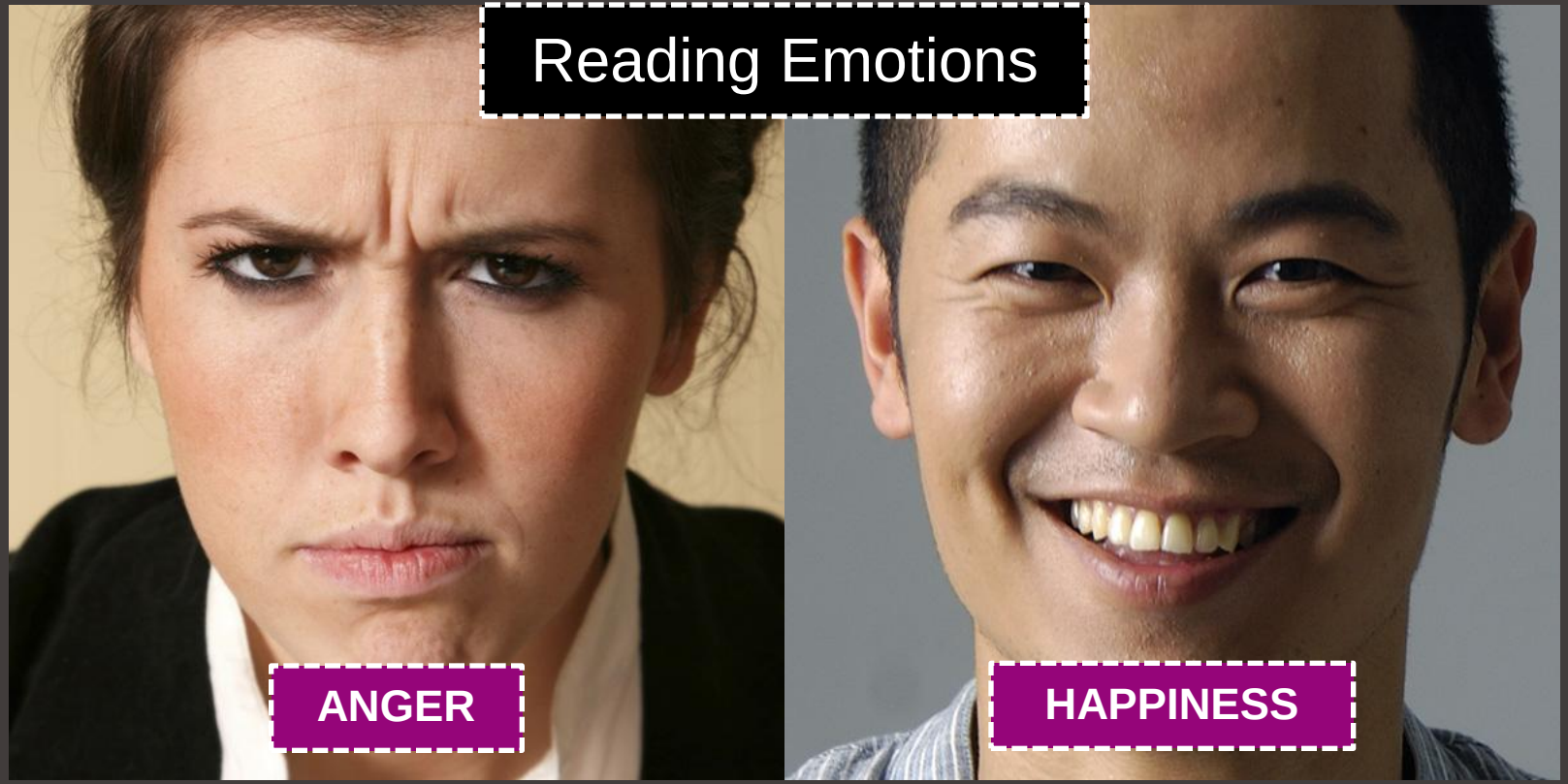
2001

Drinking Clusters

FHS NETWORK

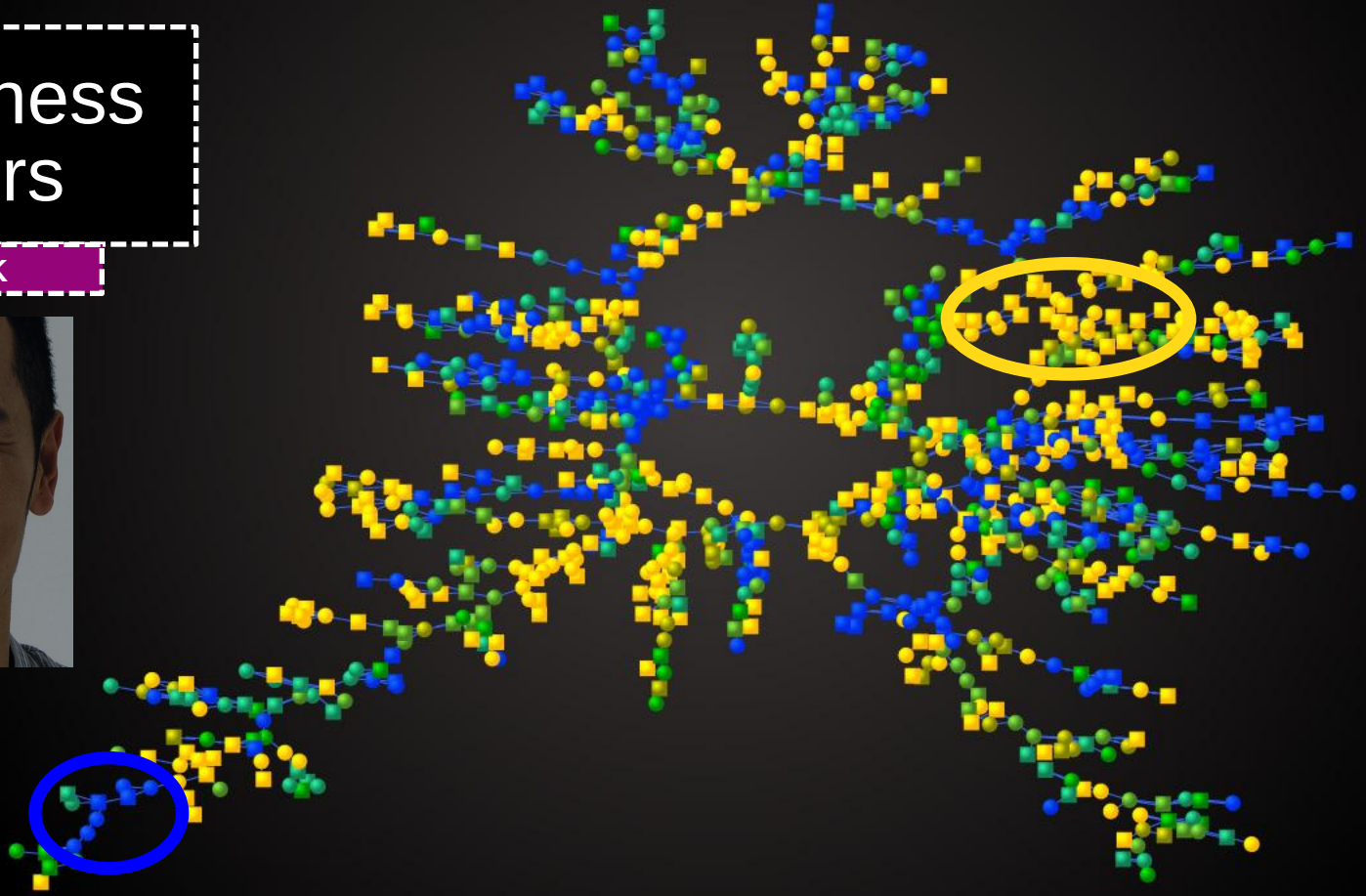


Reading Emotions



Happiness Clusters

FHS NETWORK



Generosity Cascades

EXPERIMENTAL NETWORK

PERIOD 1 PERIOD 2 PERIOD 3 PERIOD 4 PERIOD 5 PERIOD 6

Eleni

EFFECTS PERSIST OVER TIME

1 Lucas → Lucas → Lucas → Lucas → Lucas → Lucas

Lysander Bemy Sebastian Nicholas

2 Erika → Erika → Erika → Erika

Harla James

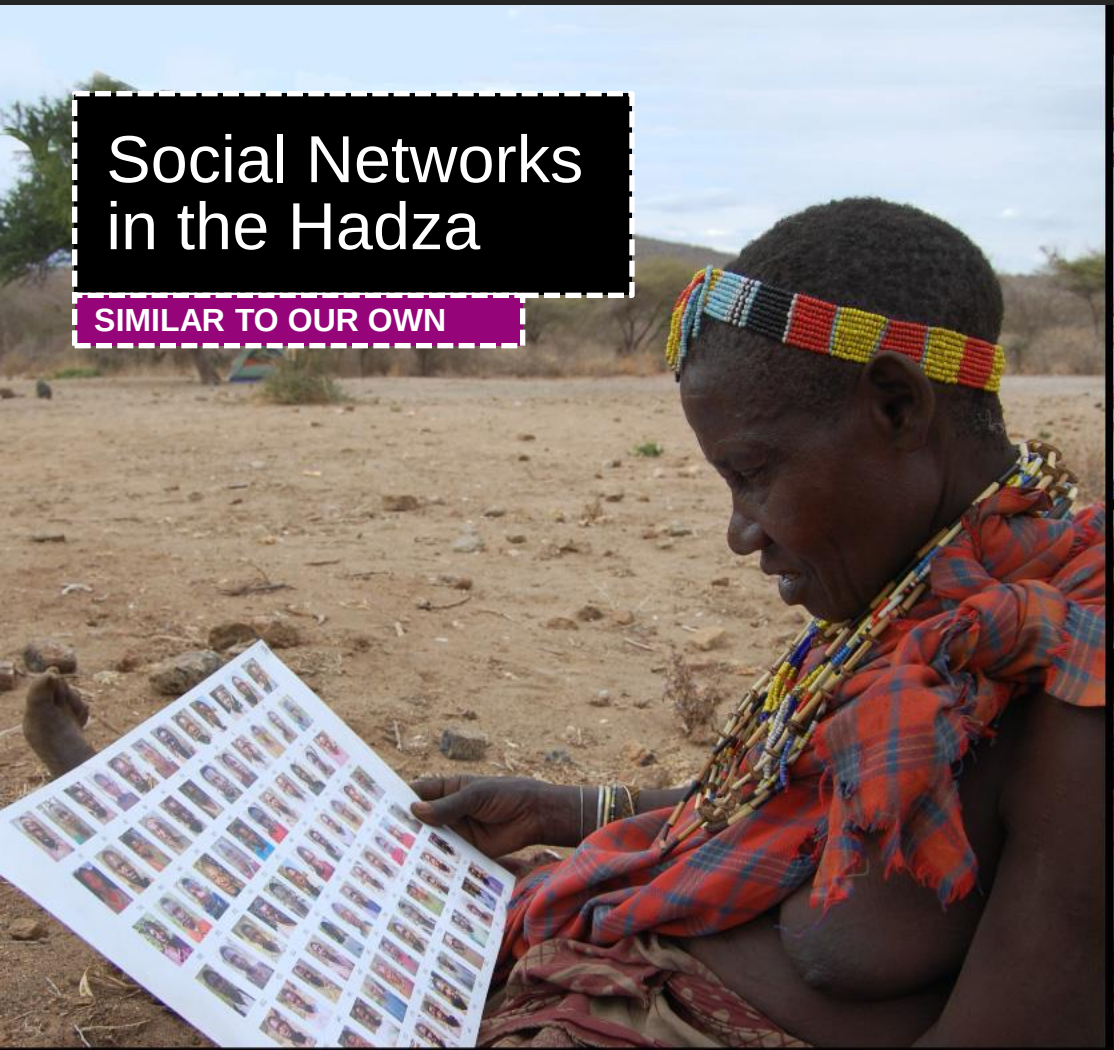
DEGREES OF SEPARATION FROM ELENI → 3 Jay → Jay

Brecken

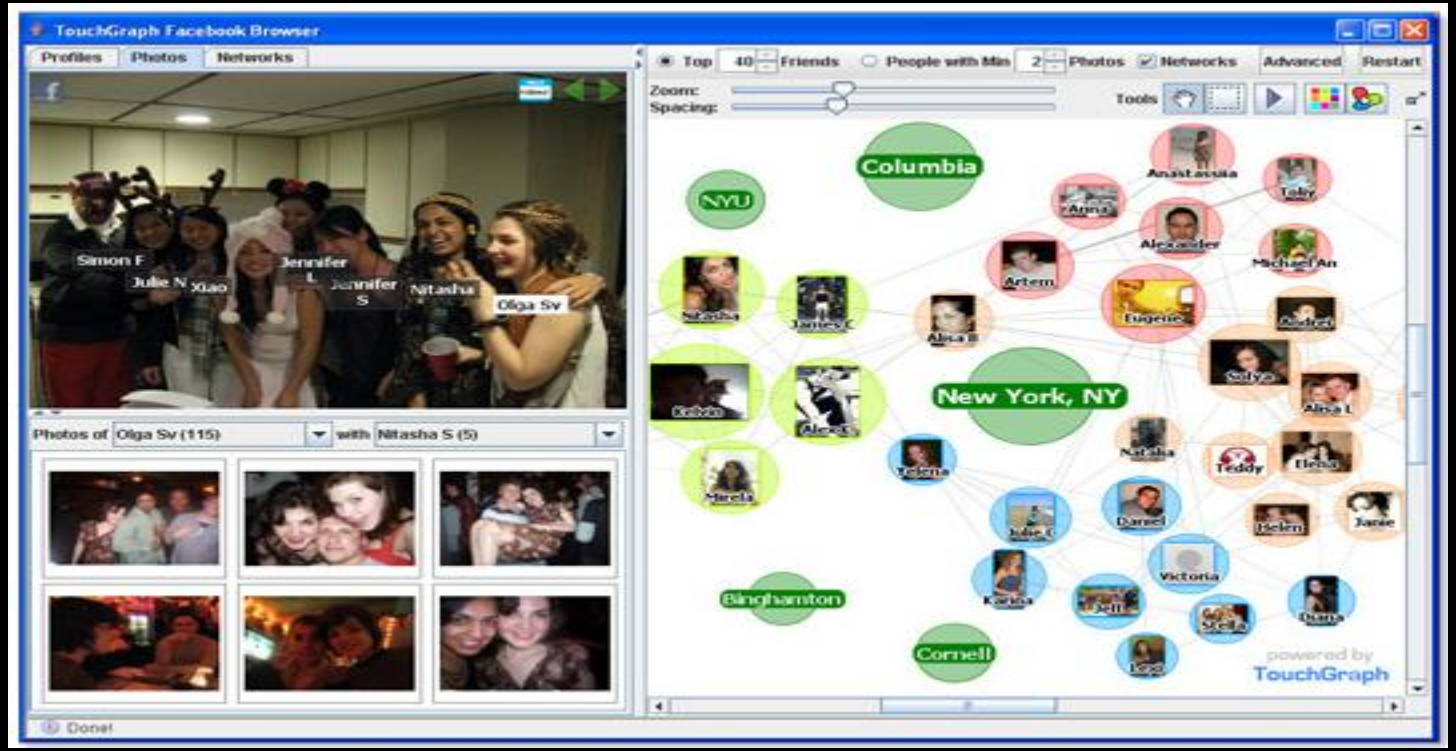
BEHAVIOR SPREADS 3 DEGREES OF SEPARATION

Social Networks in the Hadza

SIMILAR TO OUR OWN



How Do We Take Our Natural Social Networks Online?



WHO'S THE
BOSS?

CHARMED

Alyssa Milano

www.alyssa.com

twitter

Home Profile Find People Settings Help Sign out

Websites you may enjoy:
http://alyssa.com
http://alyssa.mlblogs.com
http://www.fandalia.com

Alyssa_Milano

Follow Lists

Followed by @wigsonlinestore, @SummerAnneRoss, @PreChannel, and 4 others

That's a wrap. Seeps not wakes.
Xo.

★ Connected: The Surprising Power of Our Social Networks & How They Shape Our Lives☛ http://is.gd/f8nP8 /via @brainpicker
11:50 AM Sep 14th via TweetDeck

Bill Plaschke: ... Stanley's public stand http://lat.ms/aO2Oea /via @LATimessports #dodgers
about 9 hours ago via Twittelator

AlyssaDotCom Extra! Extra! Exciting #SundaysAtTiffanys casting news ☛ http://is.gd/feiNV
about 10 hours ago via Twittelator
Retweeted by Alyssa_Milano and 27 others

Working. Should be wrapped by now but there are military helicopter exercises overhead. Can't shoot until it stops

Verified Account

Name Alyssa Milano
Location Los Angeles
Web http://Alyssa.com
Bio ☮, ♥, and BASEBALL. This is my official page. I tweet a lot. Consider yourself forewarned.

776 following | 1,058,725 followers | 536 listed

Tweets 11,745

Favorites

Lists

@Alyssa_Milano/followanyday

@Alyssa_Milano/i-love-animals

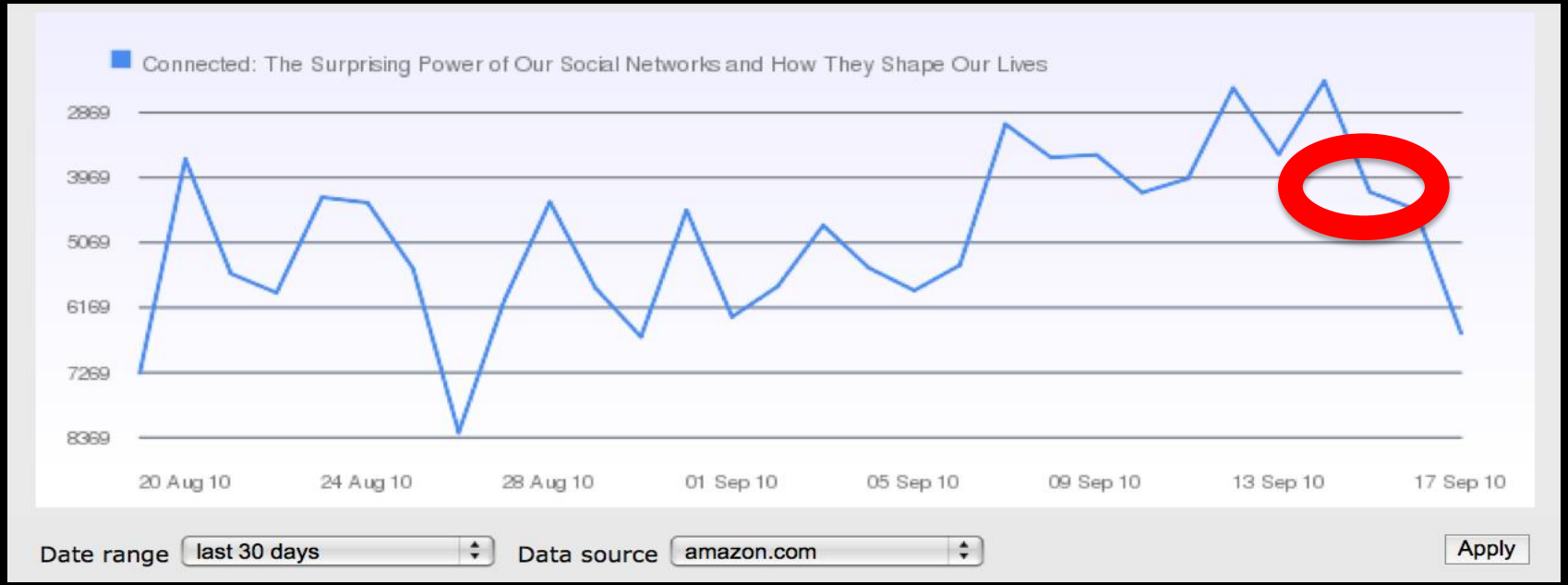
@Alyssa_Milano/makes-me-laugh

@Alyssa_Milano/twitter-related

@Alyssa_Milano/technology

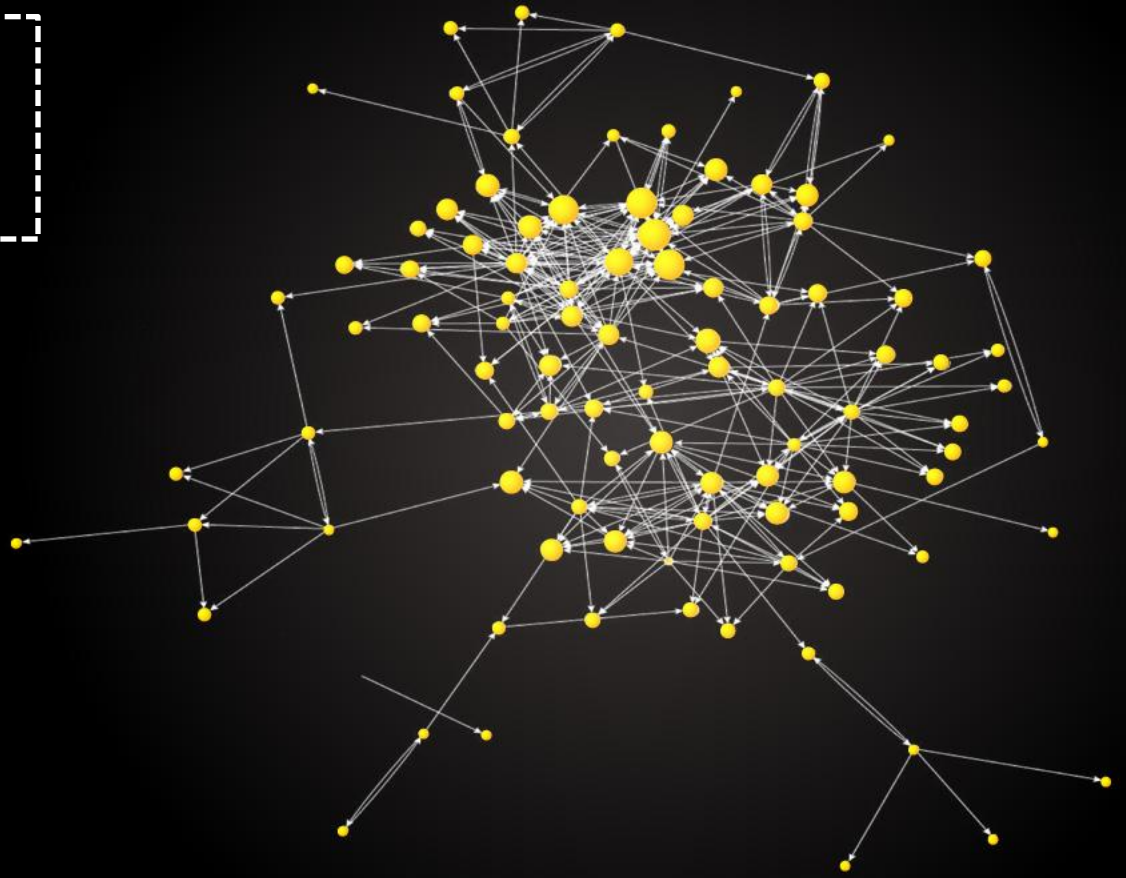
Online Networks

NO EFFECT!



Online Networks

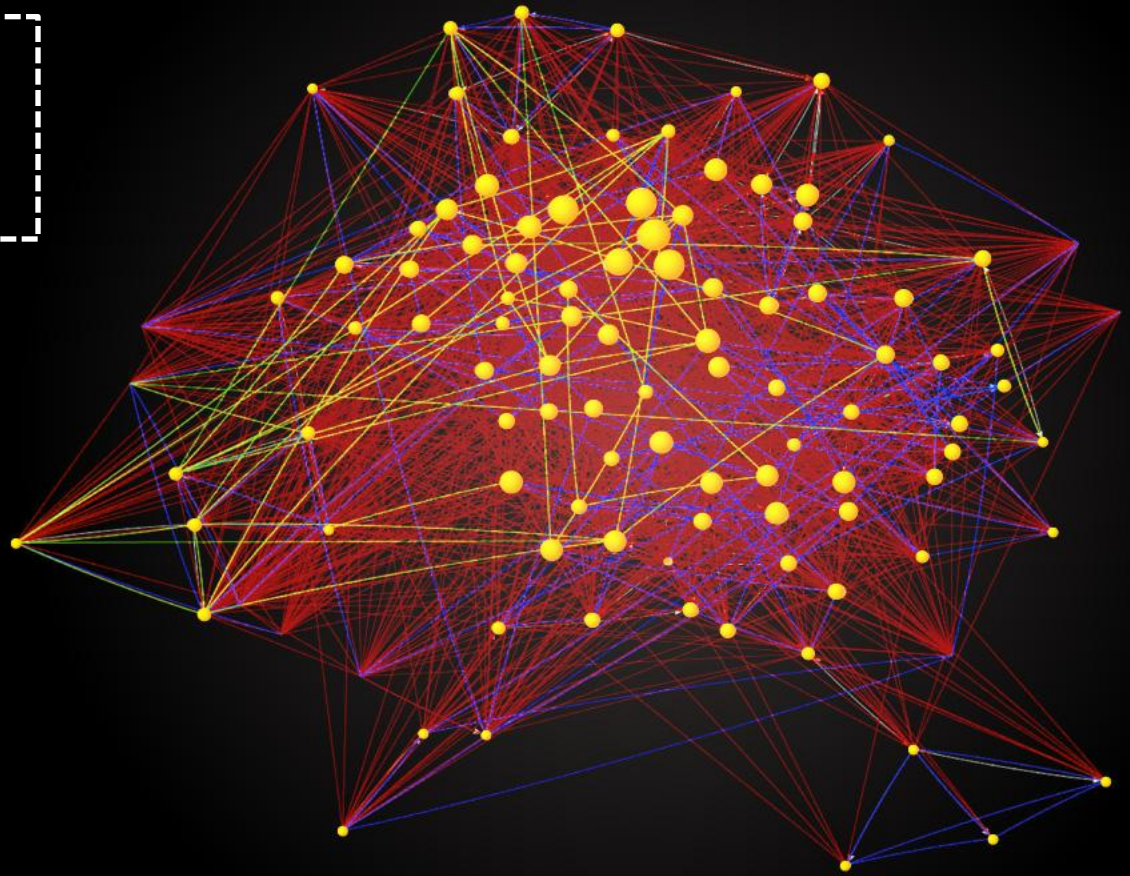
REAL FRIENDS



K Lewis, J Kaufman, M Gonzalez, A Wimmer, and NA Christakis, "Tastes, Ties, and Time," *Social Networks* 2008; 30: 330-342

Online Networks

FRIENDS PLUS FACEBOOK



K Lewis, J Kaufman, M Gonzalez, A Wimmer, and NA Christakis, "Tastes, Ties, and Time," *Social Networks* 2008; 30: 330-342

Photo Tagging

FACEBOOK

Smiling Clusters

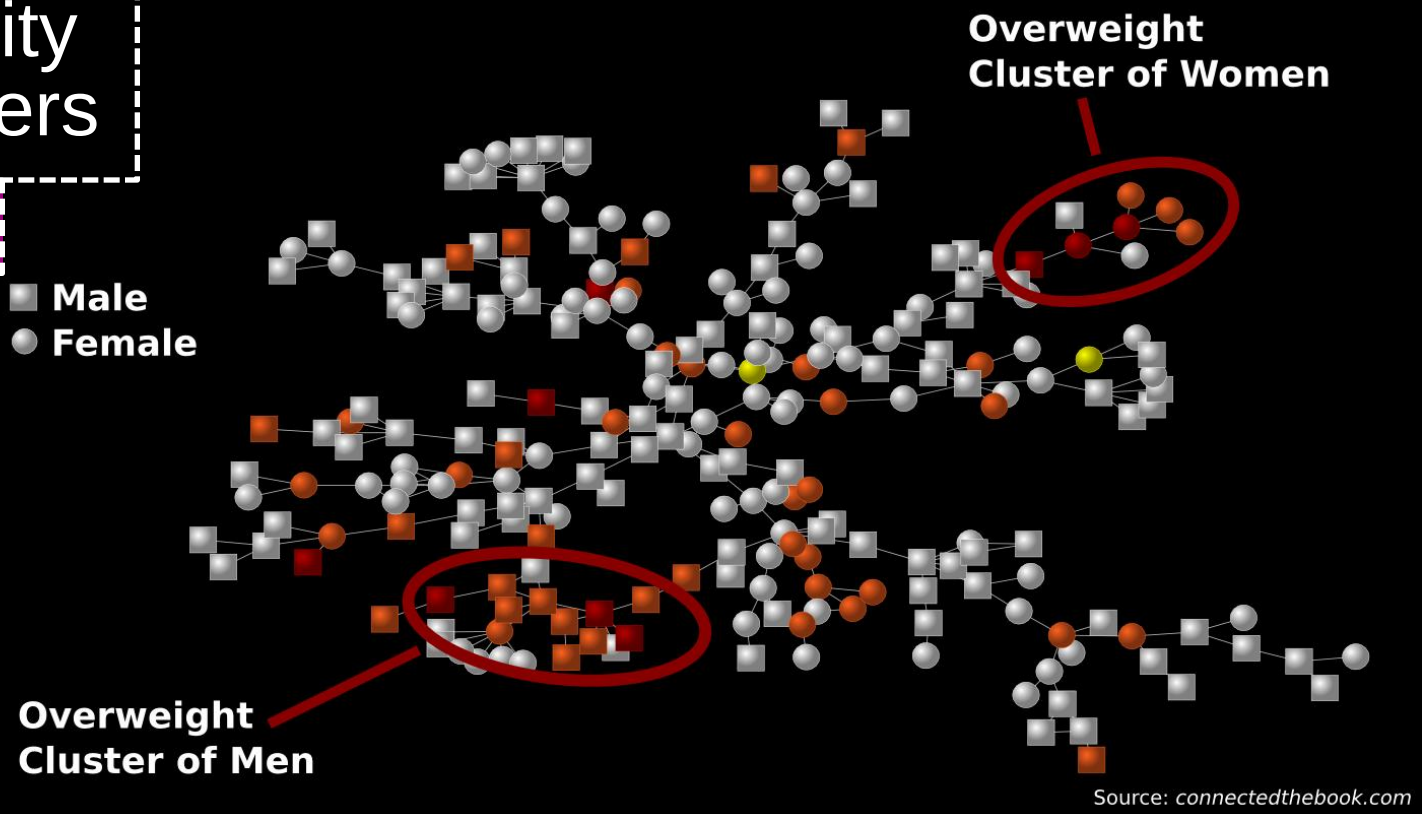
FACEBOOK NETWORK

Non Smilers

Smilers

Obesity Clusters

FACEBOOK NETWORK



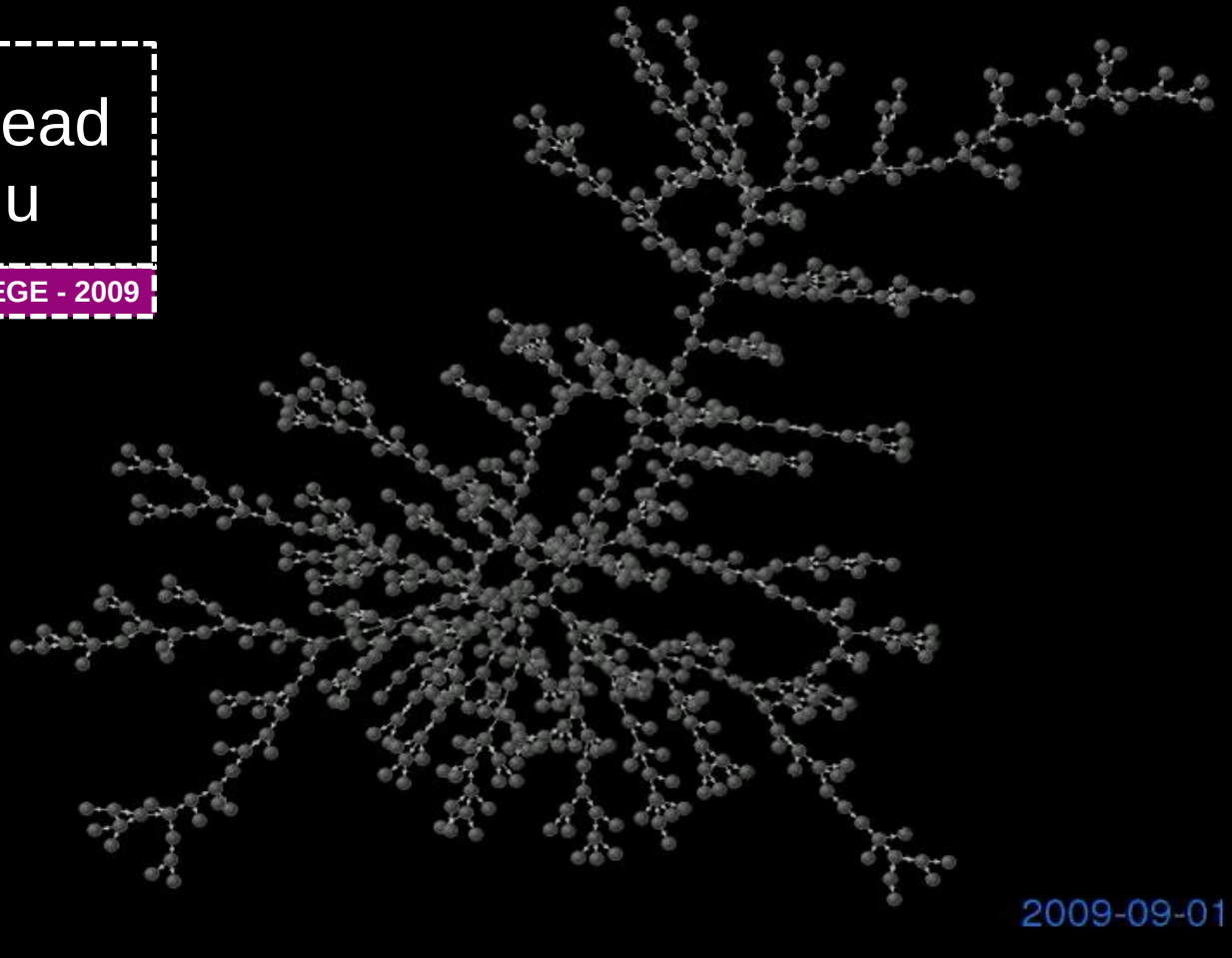
Intervening in Social Networks

Connection: changing the structure

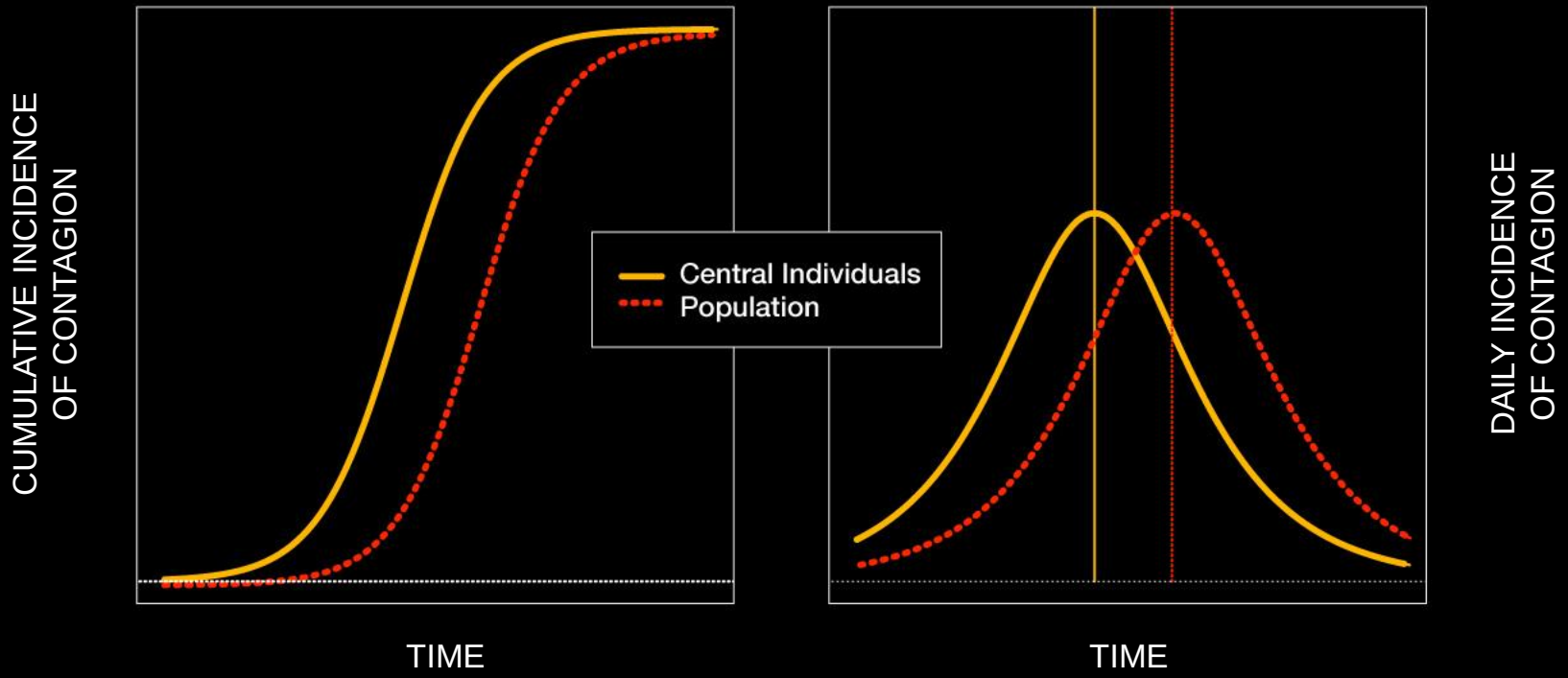
Contagion: changing the flow

The Spread of the Flu

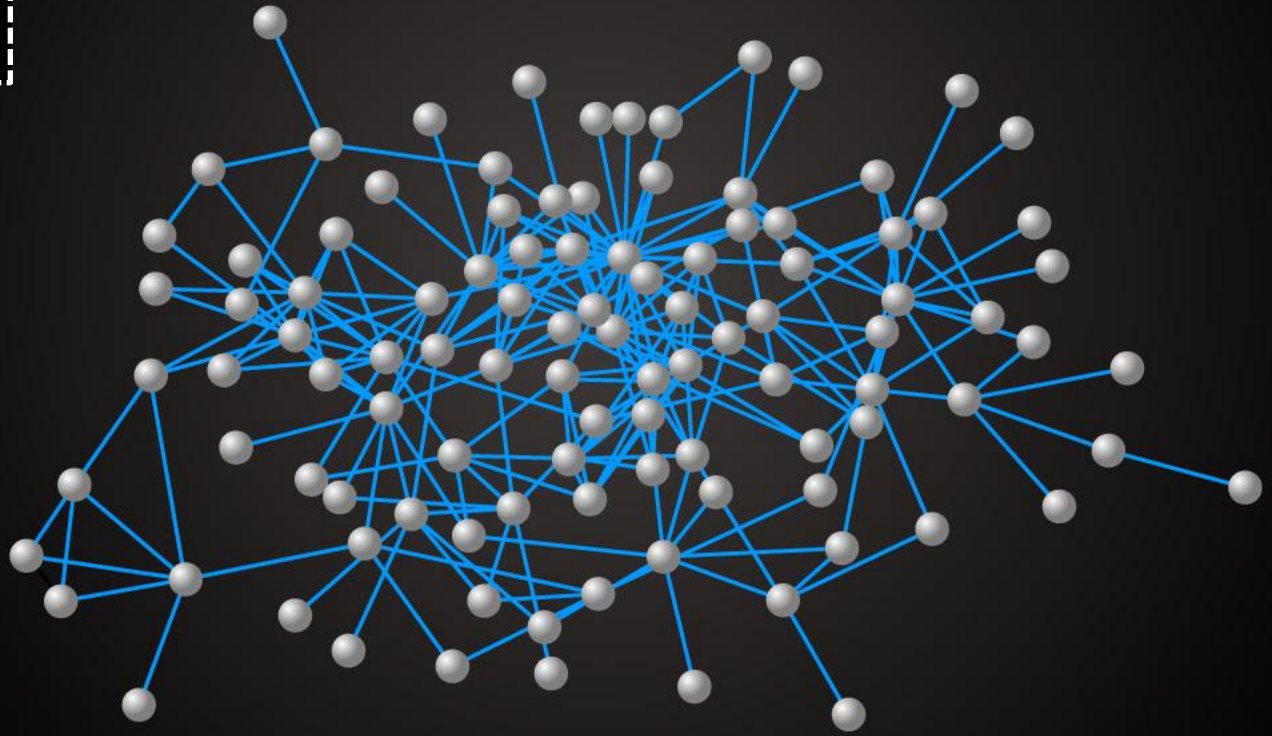
HARVARD COLLEGE - 2009



Theoretical Differences in Epidemic Curves



Network

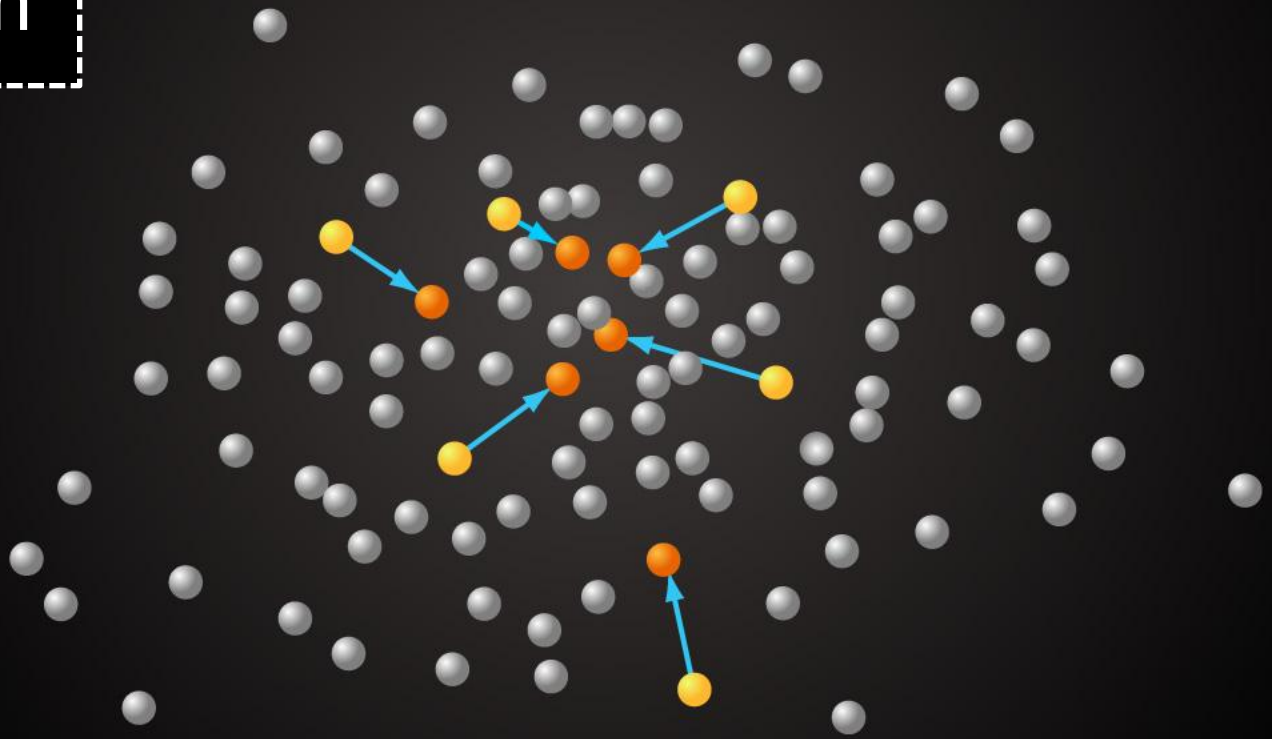


Population

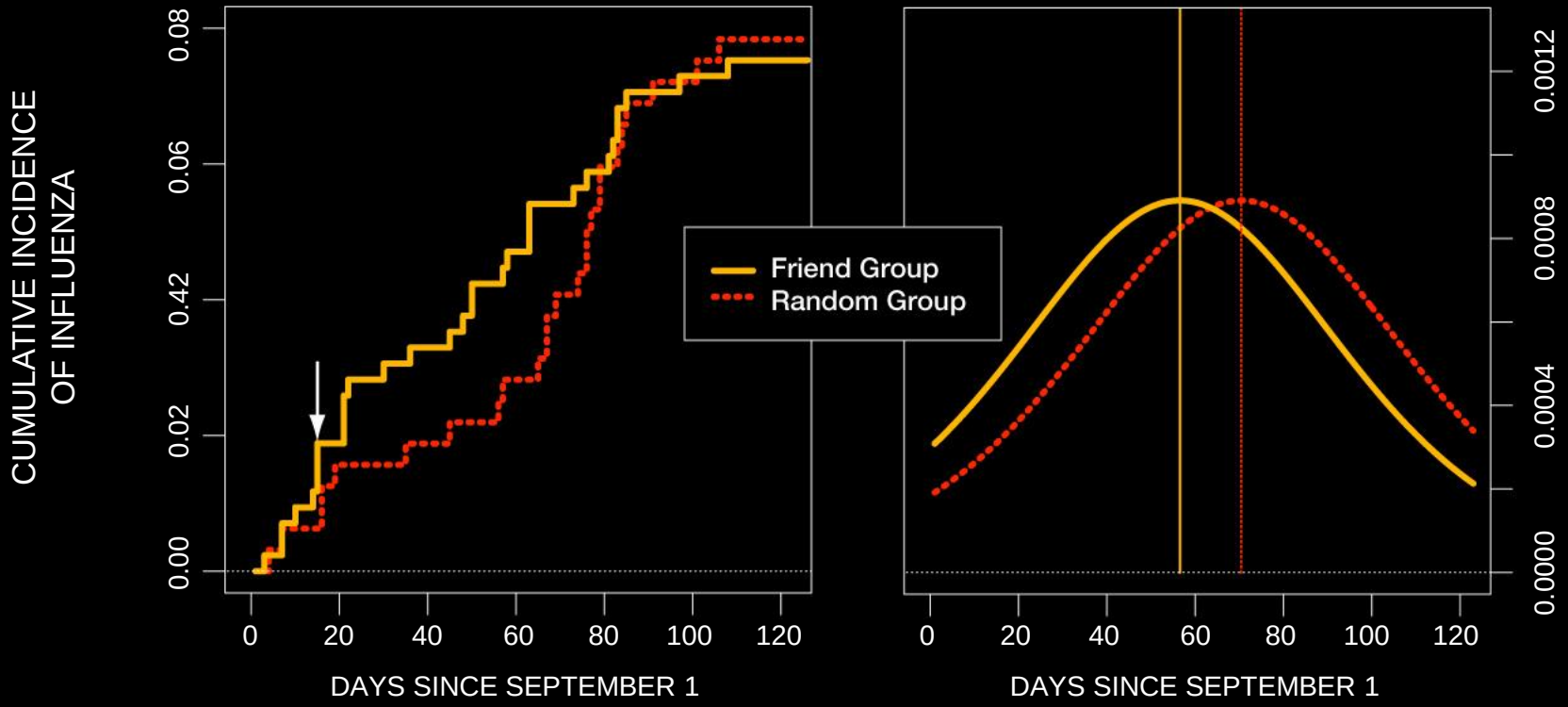
RANDOM PEOPLE

Population

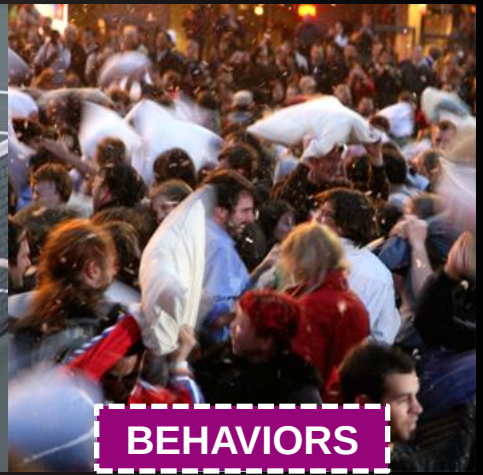
PEOPLE & FRIENDS



Observed Differences in Epidemic Curves

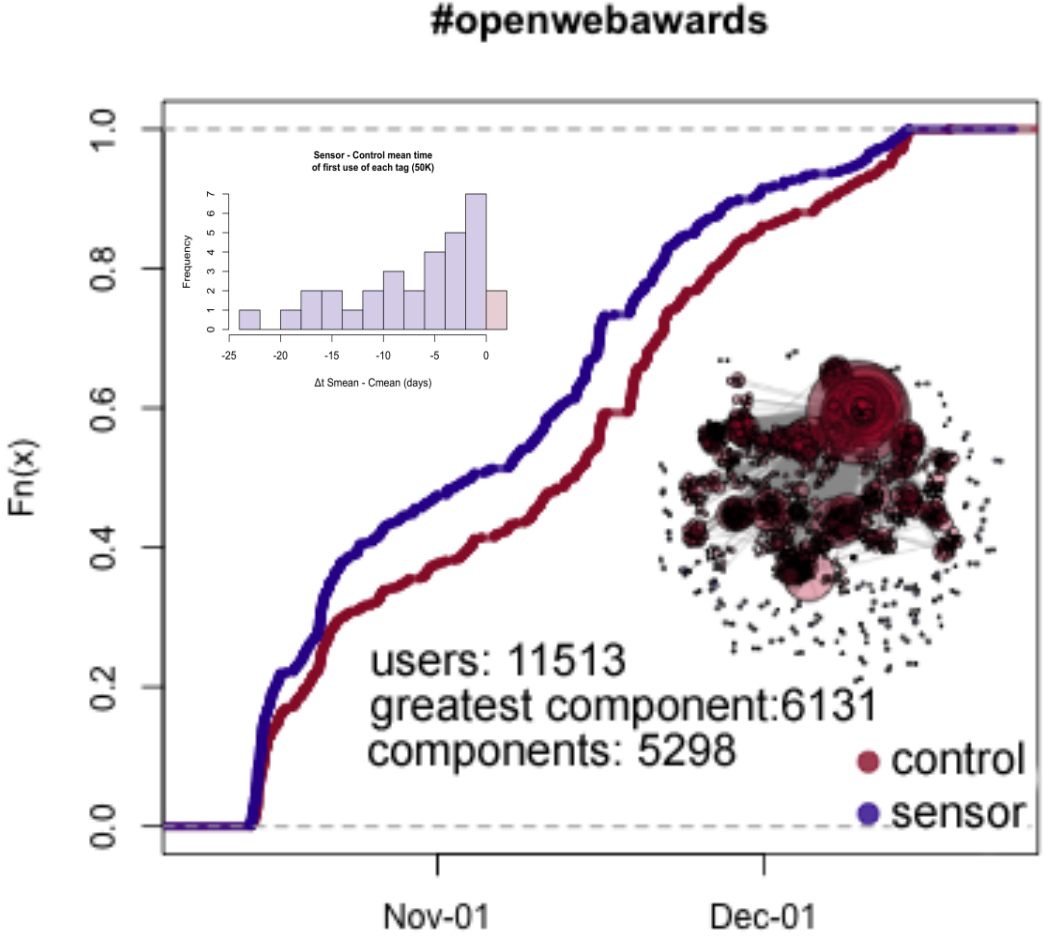


Contagious Outbreaks



Contagious Outbreaks

TWITTER NETWORK



Viral Voting

FACEBOOK NETWORK

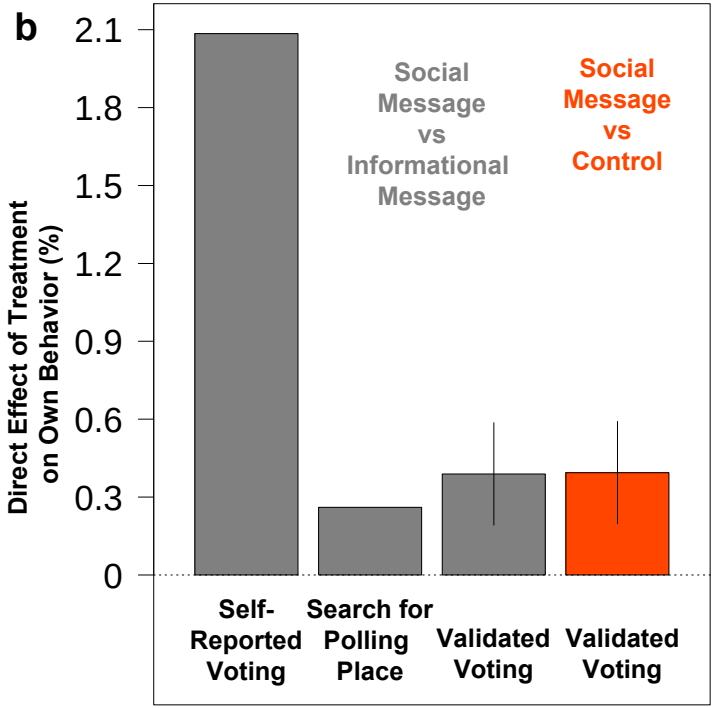
facebook

a

Informational Message

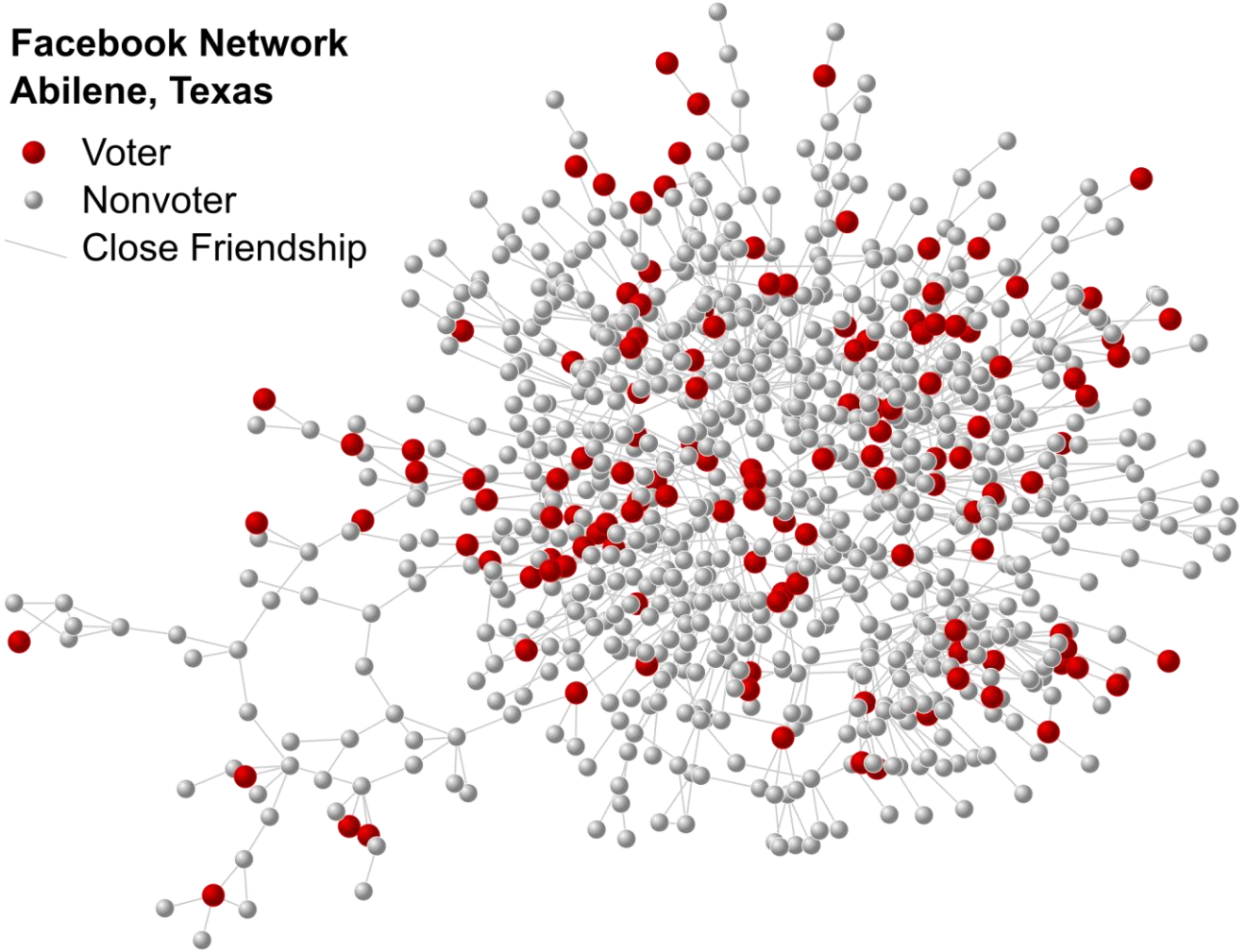
Social Message

b



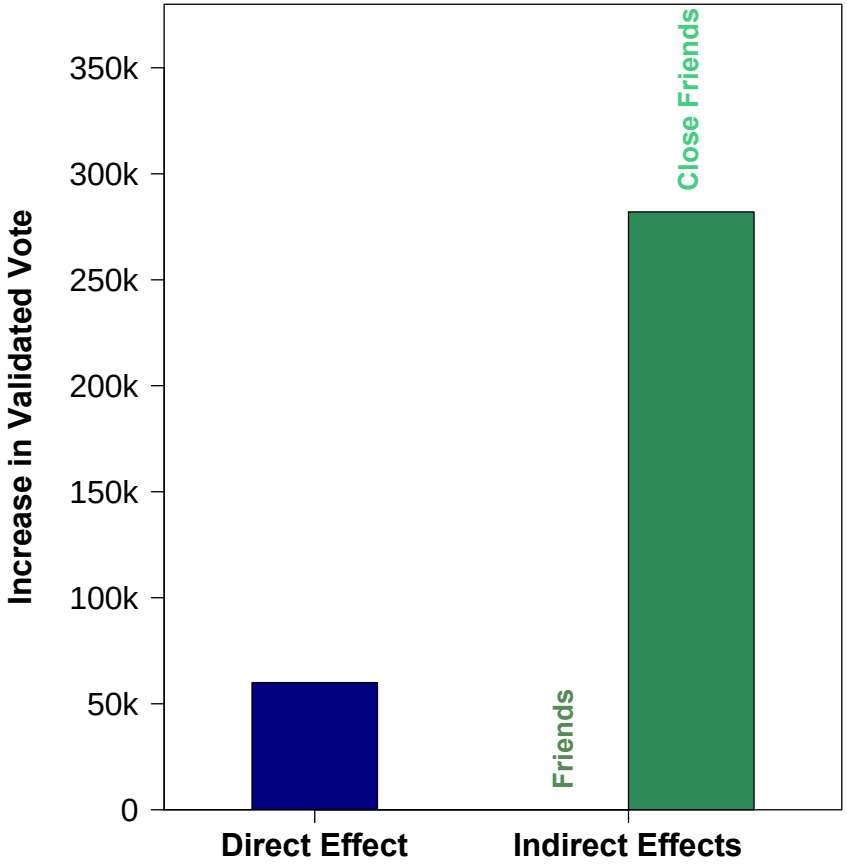
Viral Voting

FACEBOOK NETWORK



Viral Voting

FACEBOOK NETWORK

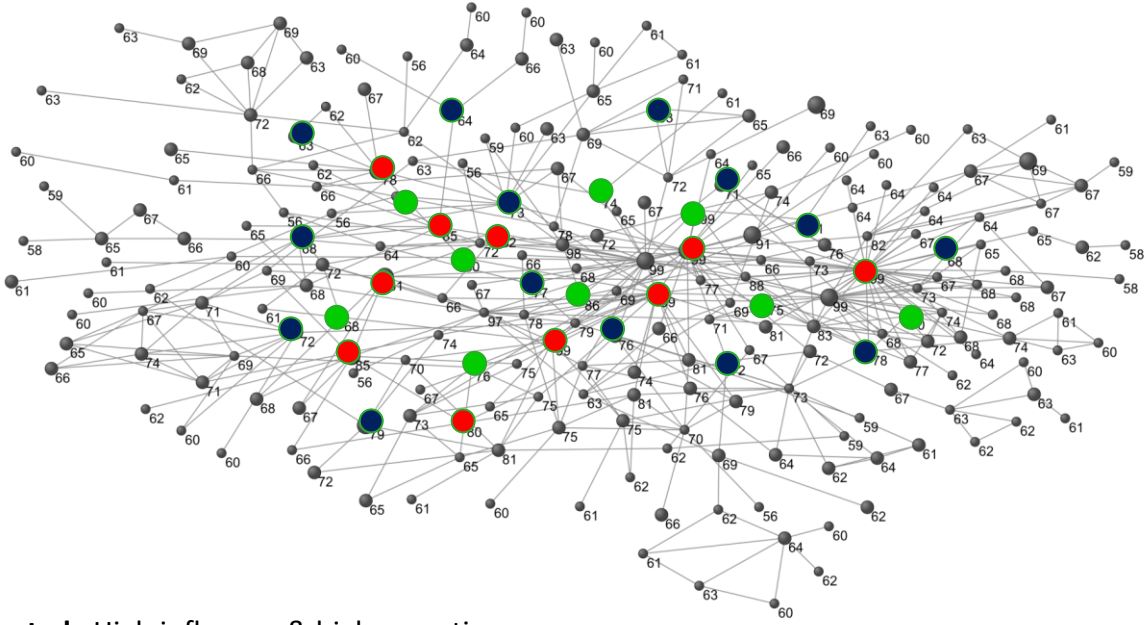


Understanding physician network structure allows:

- Identification of influencers and influencees
- Guidance of programs to take advantage of influence patterns
- Capture of the “multiplier effect”, i.e., social influence propagates behavior change throughout a community

The result: Greater *efficiency and effectiveness* in implementing programs for physicians, patients, plan members, etc

Express Scripts



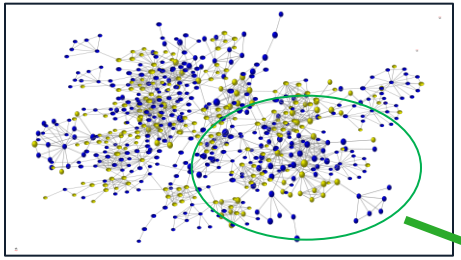
- **Initially targeted** High influence & high receptiveness
- **Second wave** More receptive
- **Third wave** Increasing acceptance

Measuring susceptibility--
Intervention is more effective

Activate Networks, INC.

MedNetworks is now Activate Networks

SCAN Arizona/SilverSneakers®



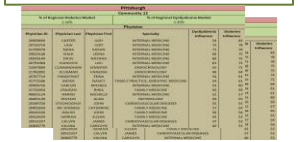
Regional level network map

Community of Practice A

Community of Practice B

Focus on non-high performing physicians who are influential in the cluster to promote adoption of quality practice

Influence Index and Optimized Targeting List



- Focus on influential high performing physicians
- Work through them to expand that behavior throughout the cluster

High Performing Physician
Non-High Performing Physician

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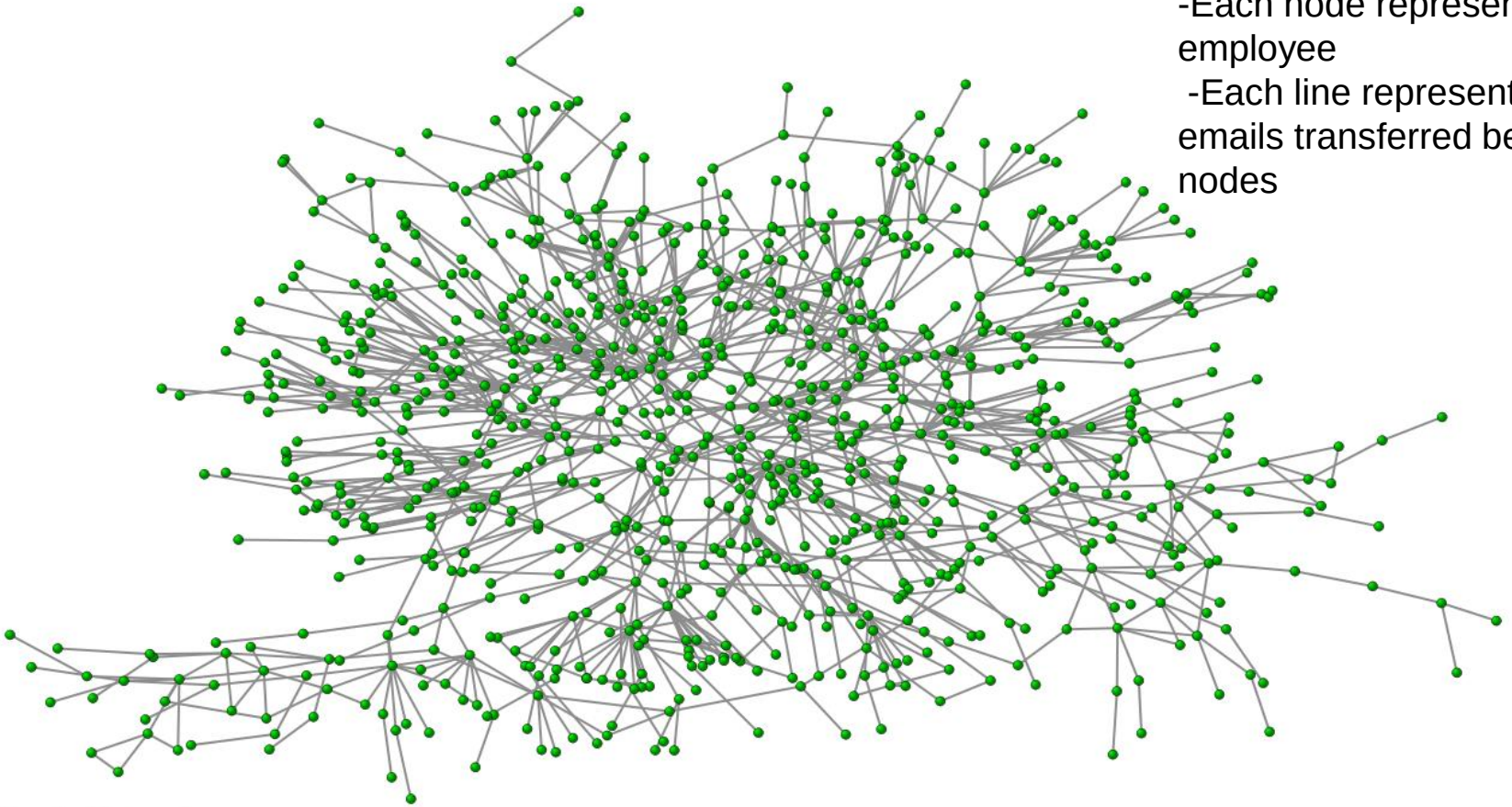
Email Data at Healthways



-Each node represents an employee

-Each line represents >100 emails transferred between nodes

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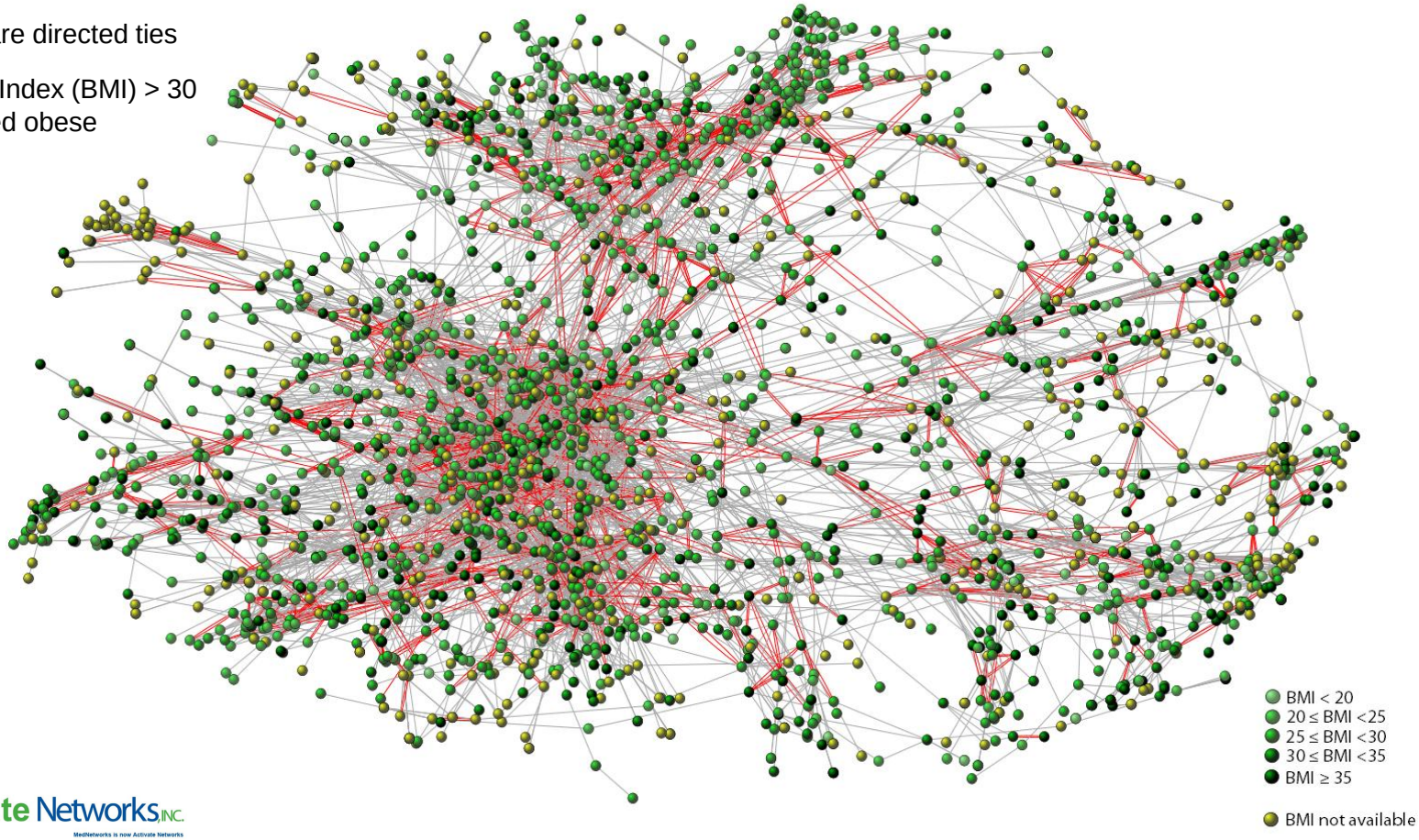
BMI Ranks and Obesity at Healthways

Red lines show bi-directional ties

Grey lines are directed ties

Body Mass Index (BMI) > 30 is considered obese



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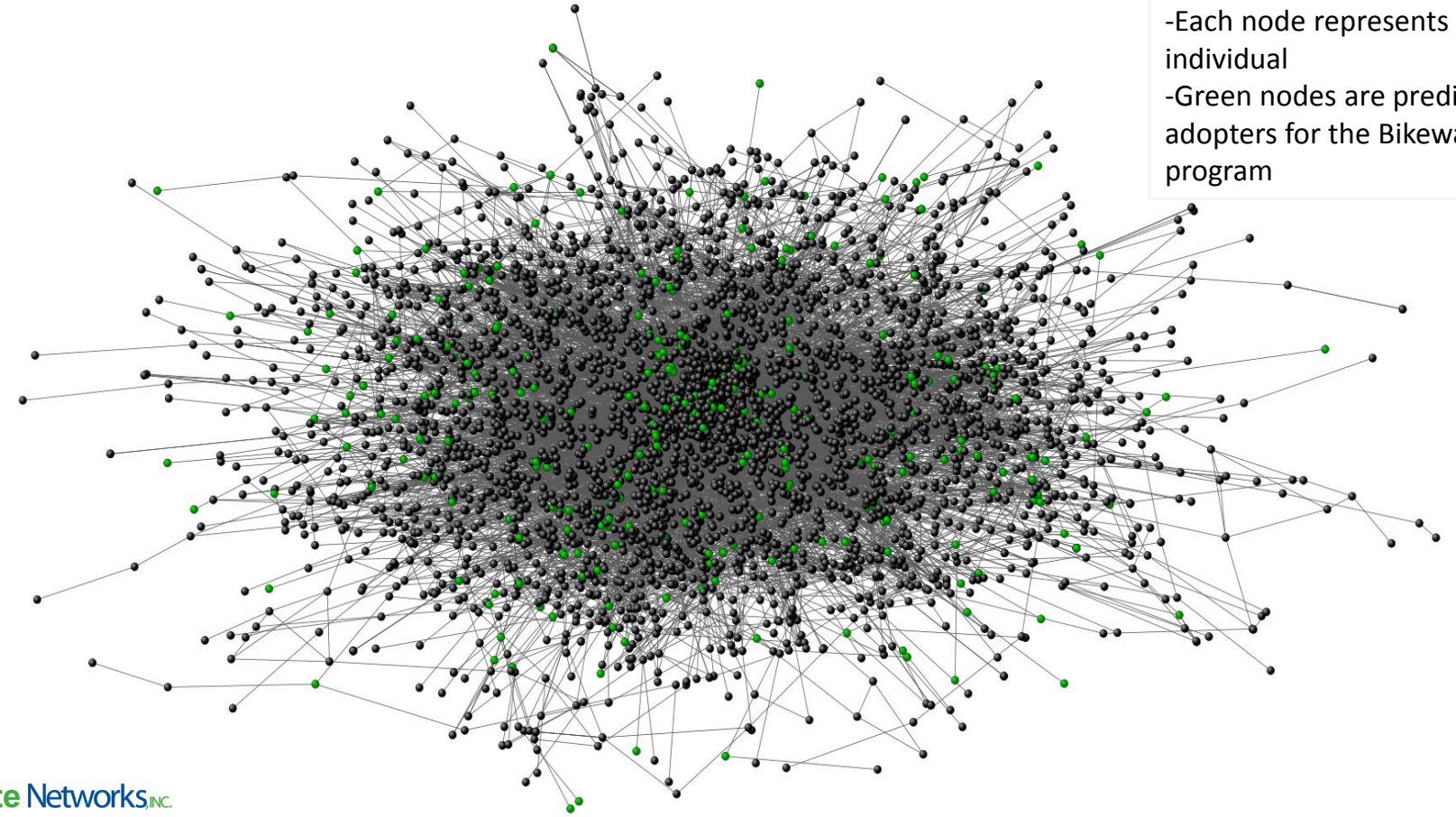
Bikewalk Program in Vitality Cities



-Each node represents an individual
-Green nodes are predicted adopters for the Bikewalk program

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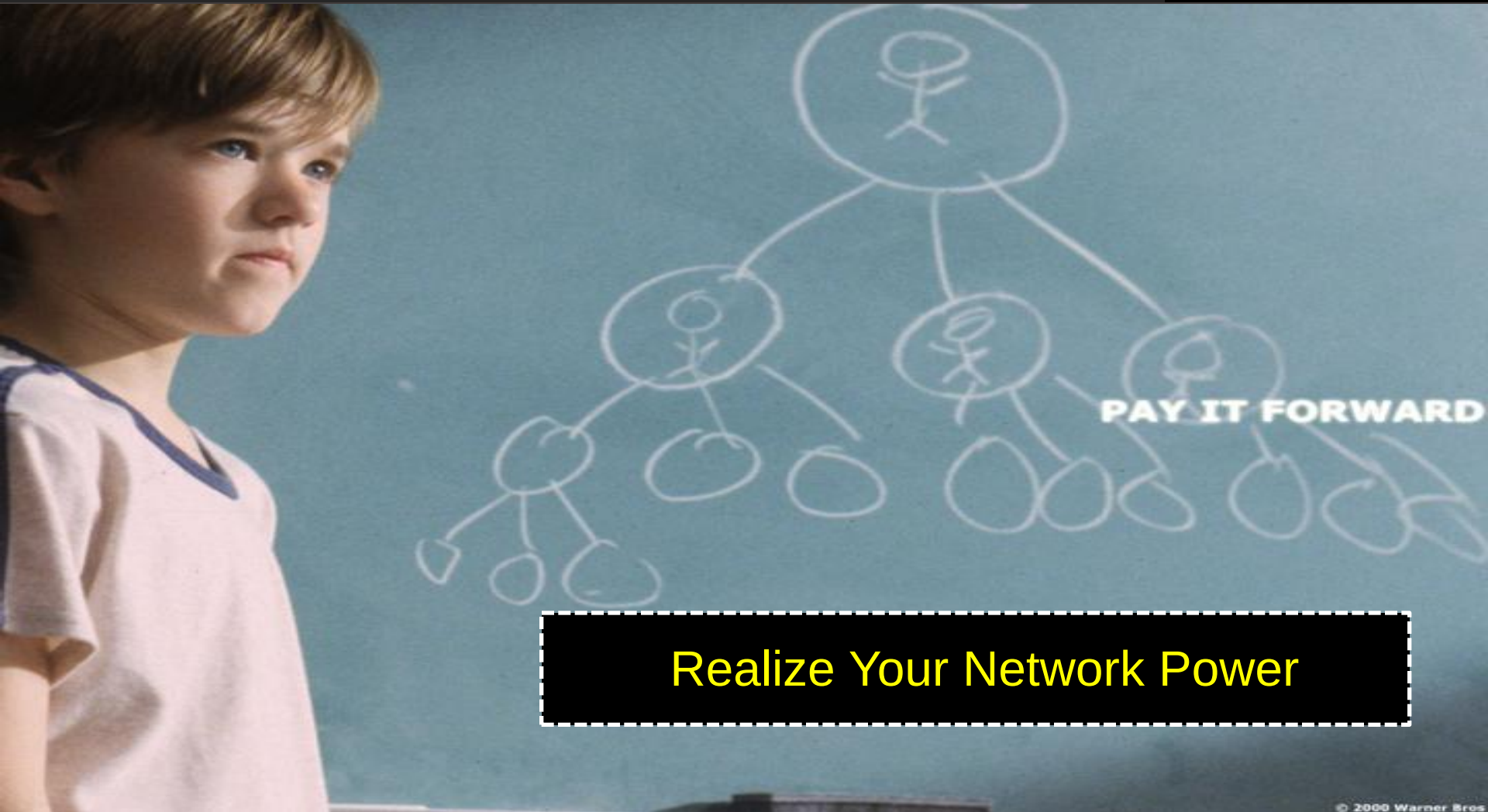
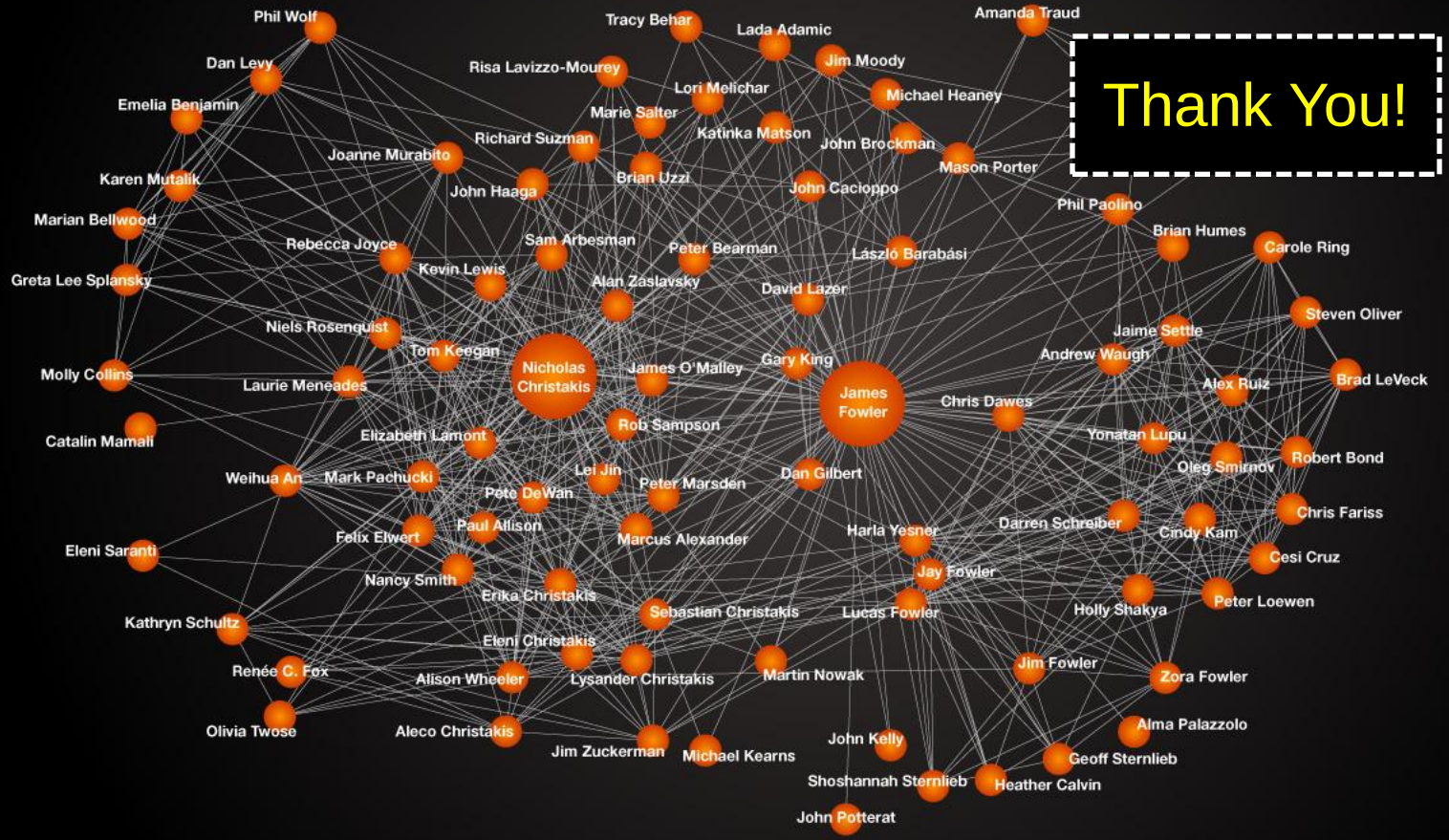
MedNetworks is now Activate Networks



Realize Your Network Power



Framingham Heart Study | National Institute on Aging | Add Health | National Science Foundation