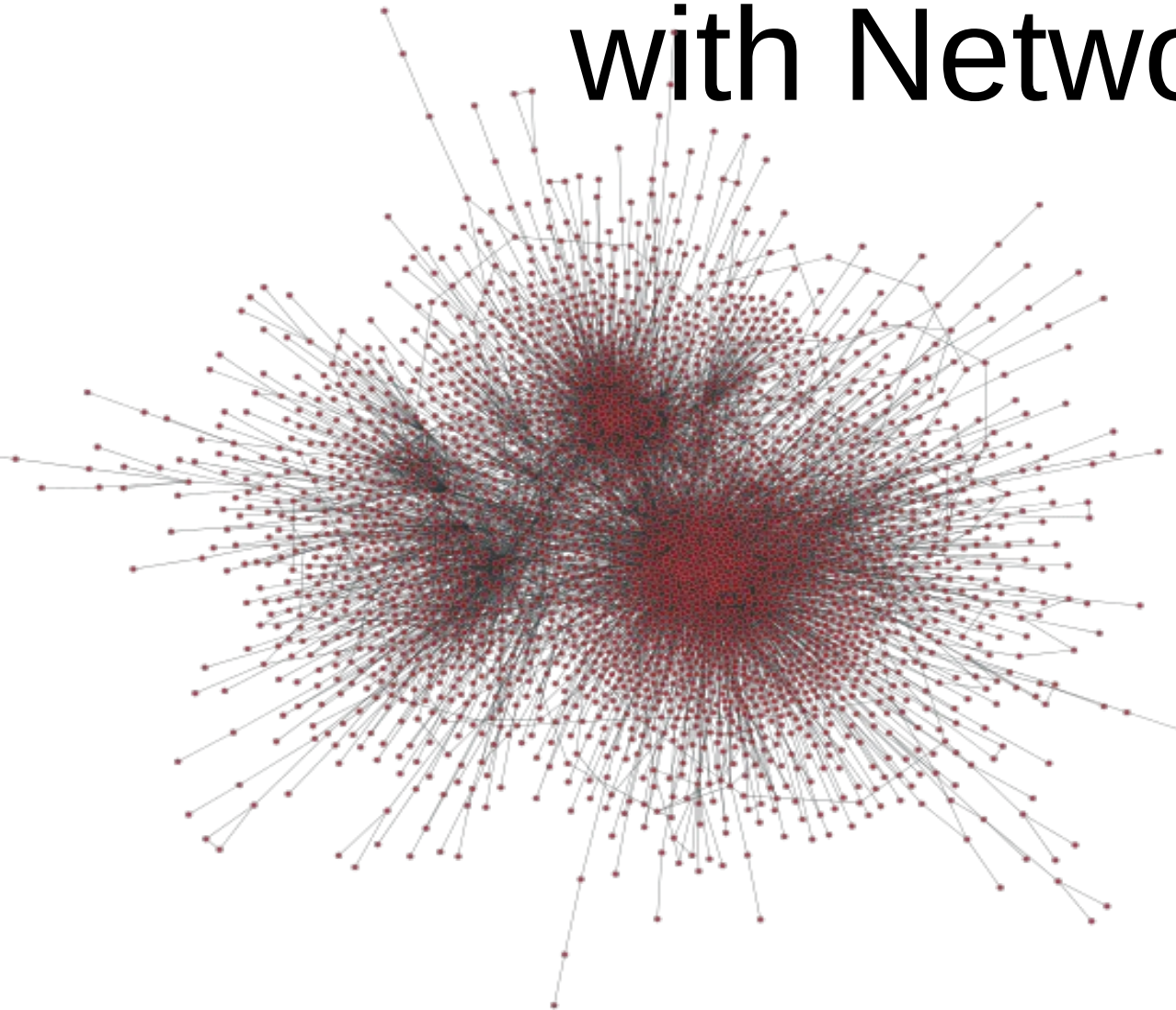


# Exploring Recommenders with Networks



By Suhan Ree

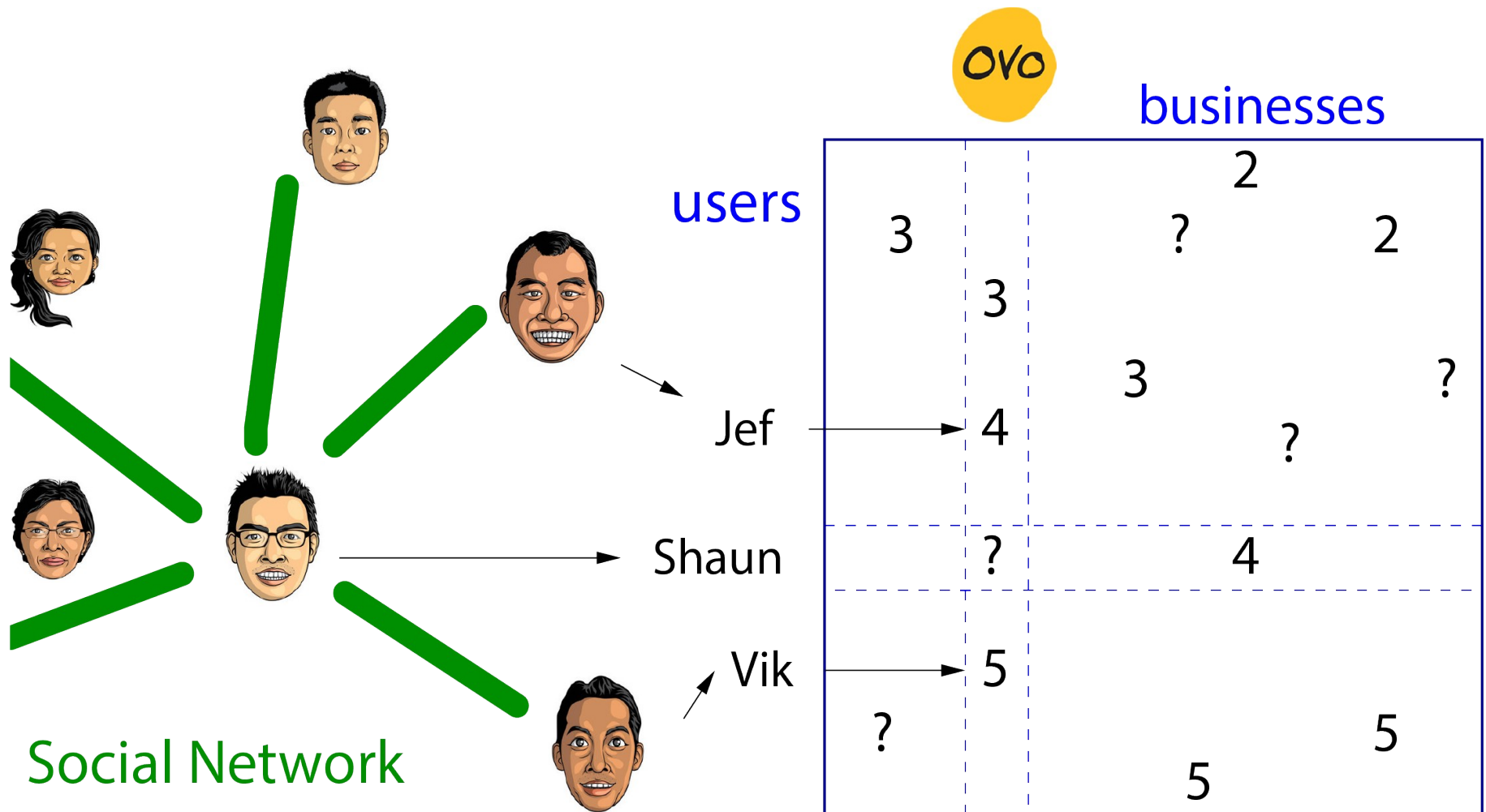
At Galvanize

07/01/2015

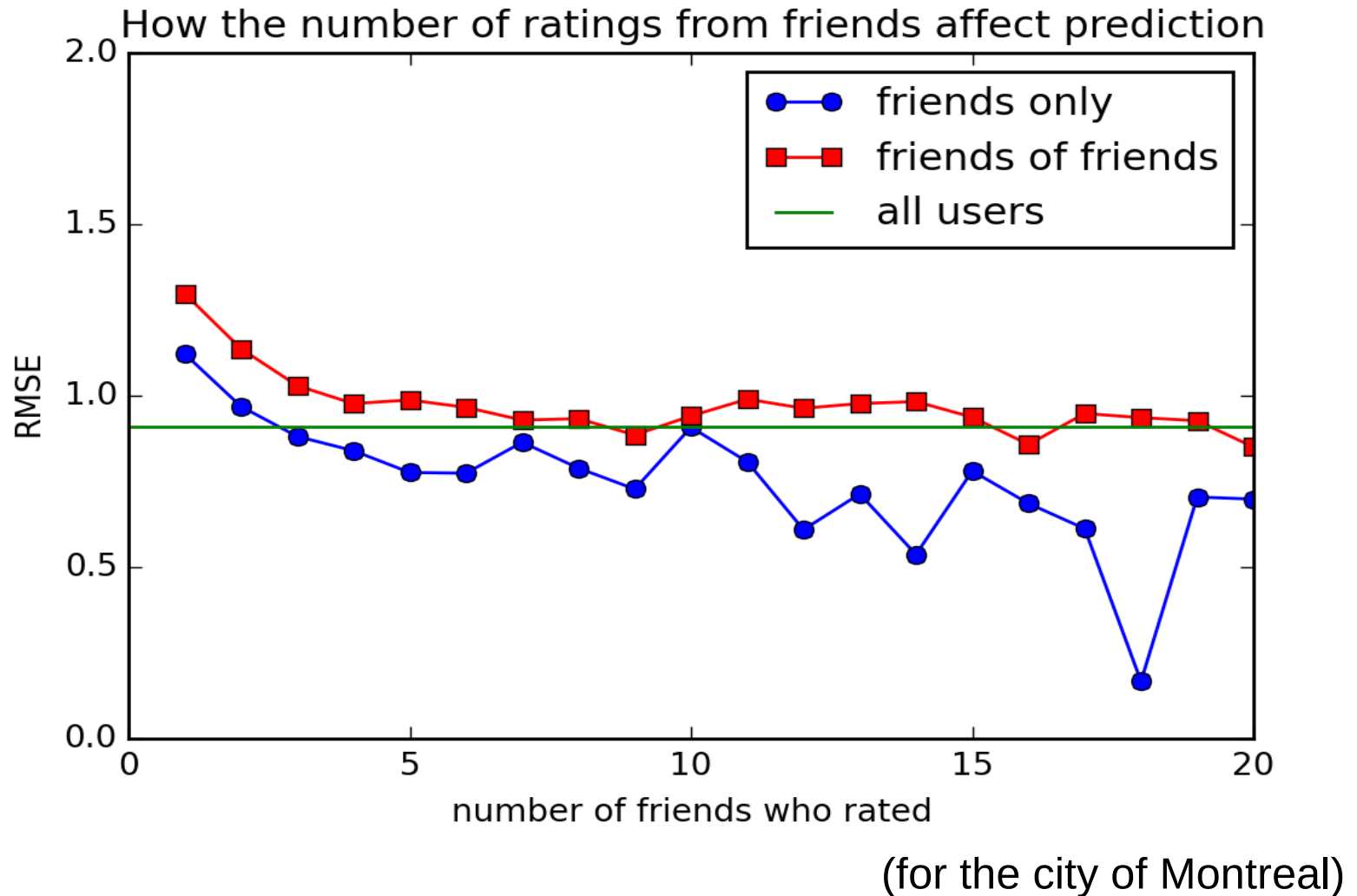
If we know friend relationships between users, can it improve recommendation systems?

YES, apparently, but how?

# How it works.



# Why it might work.



# Data from Yelp Dataset Challenge

- Ratings: 1.6 M (10/12/2004 ~ 01/08/2015)
- Businesses: 61K (on 10 cities)
- Users: 366K with social network (2.9M edges)

U.K.: Edinburgh

Germany: Karlsruhe

Canada: Montreal and Waterloo

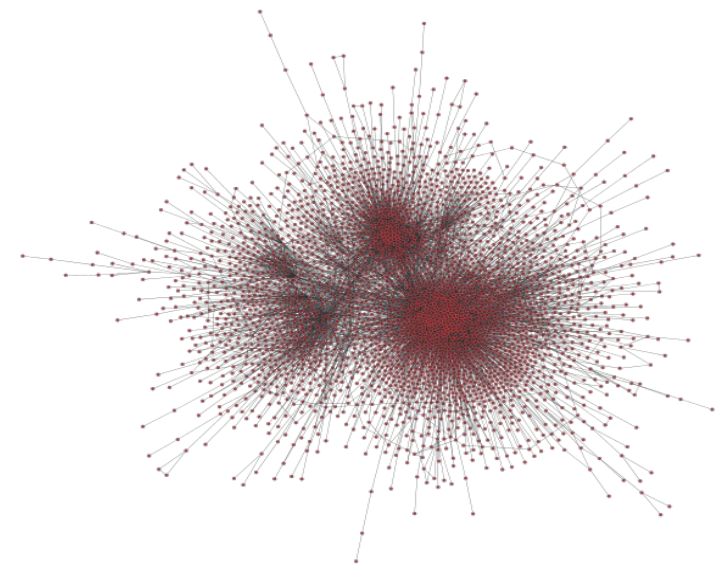
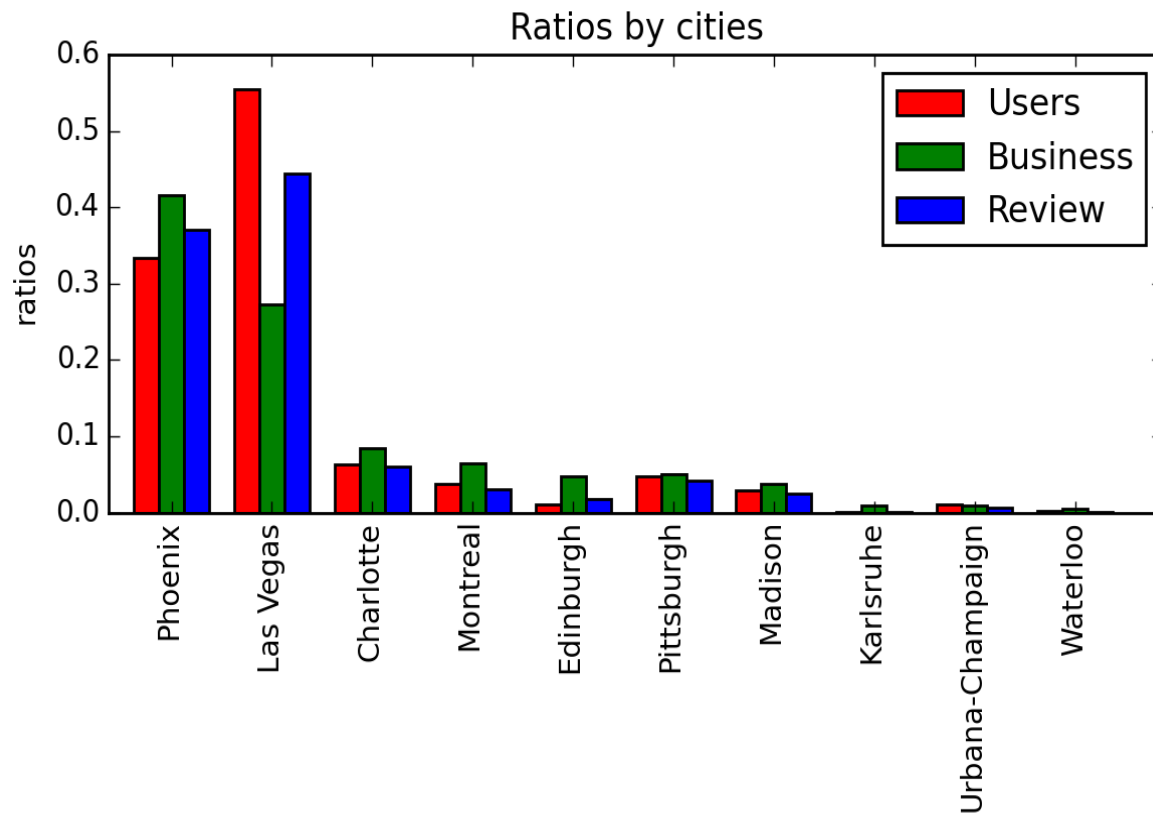
U.S.: Pittsburgh, Charlotte, Urbana-Champaign, Phoenix, Las Vegas, Madison



(Image from Yelp)

# Data preprocessing

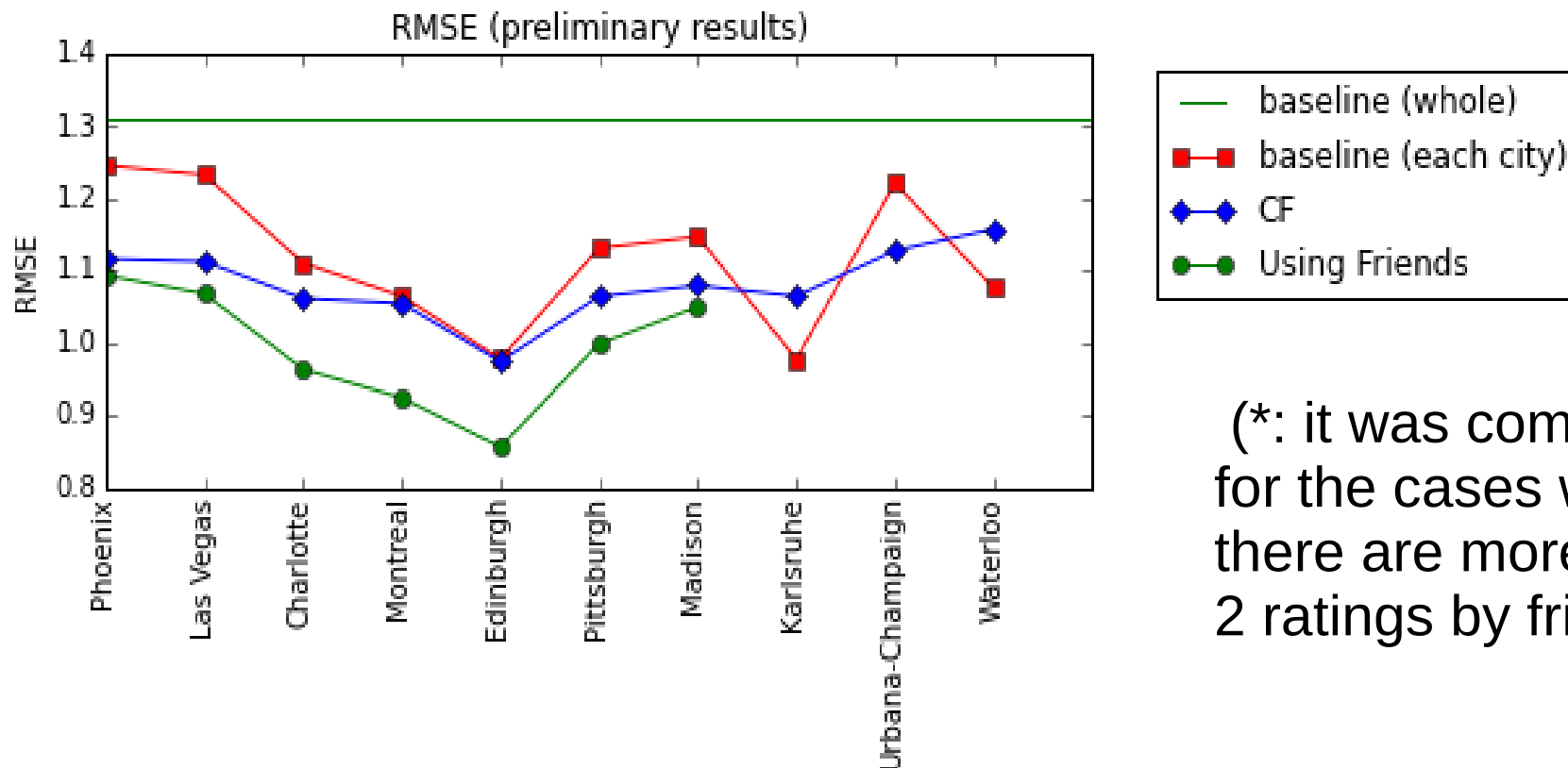
10 subsets of data, one for each city, are prepared.



social network  
for the city of  
Montreal.

# Comparing models

Computed average RMSE using K-fold cross validation at k=10 for each city.



(\*: it was computed for the cases when there are more than 2 ratings by friends)

# What we learned.

- Social networks can be useful for recommenders.
- There are many ways to incorporate them. More to explore, and many attempts are being made.

Ref) “A social network-based recommender system,”  
by Chu and He, Dissertation, UCLA (2010), and so on.

- Hybrid models should be considered.
- Many possible applications.