# Data - Flickr

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- Source: http://socialnetworks.mpi-sws.org/data-wosn2008.html
- Paper: https://people.mpi-sws.org/~amislove/publications/Growth-WOSN.pdf
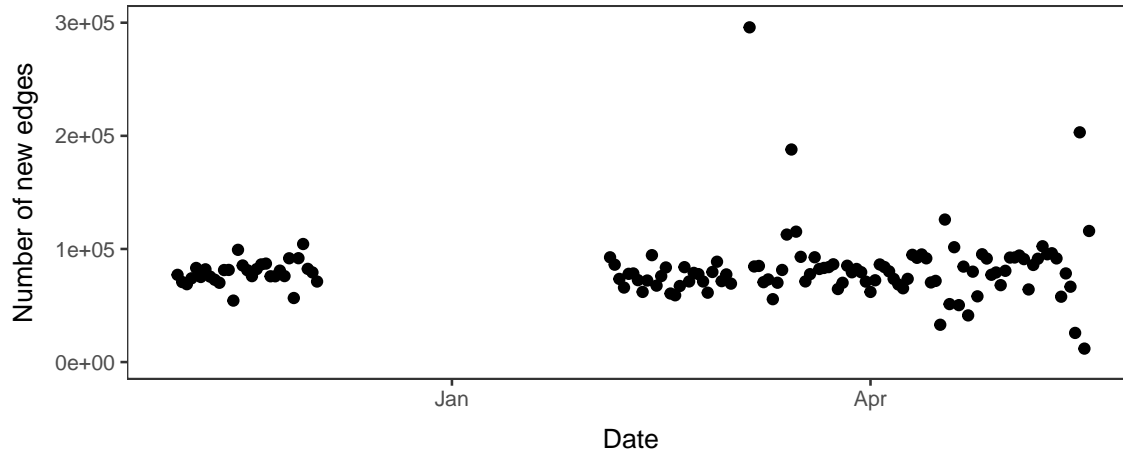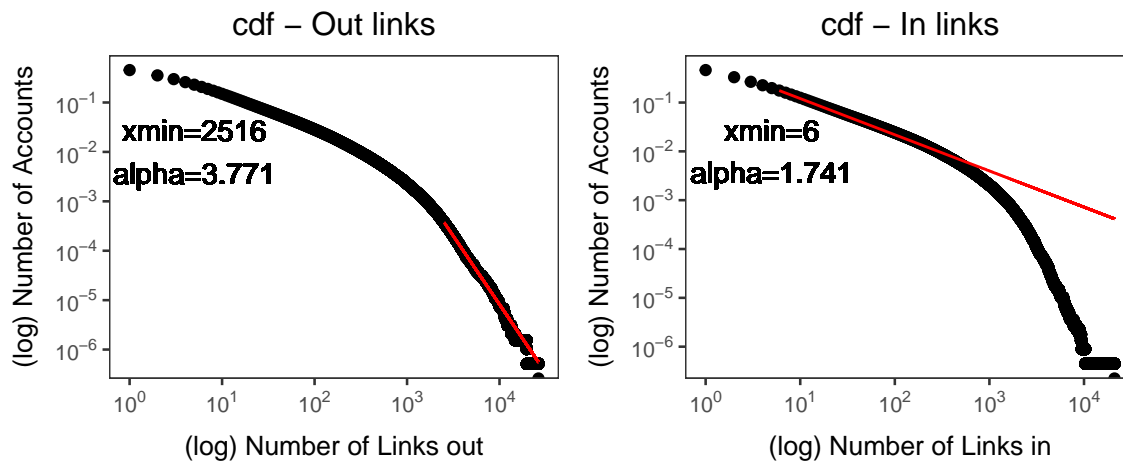
Read data

- total number of nodes: 2302925
- total number of edges: 33140018
- avg in-degree 14.3904026
- avg out-degree 14.3904026
- **why are they the same?**
    - about 60% of edges are reciprocated, so not 100%..
    - $\delta$ in/out seems reasonable in the extremes (natural limit to out, except for scammers)
    - overflow issue?

Number of connections by day



In/out degree

```
## [1] "plfit:  alpha=3.771   xmin=2516"
## [1] "plfit:  alpha=1.741   xmin=6"
```

## Jackson R

- Fitted $r^* = 1.09$
- Fitted $r = \frac{r^*}{1+r^*} = 0.522$

## Model results on 2016-11-05

```
## 
## ================================================
##                              y
##                    (1)        (2)        (3)
## ------------------------------------------------
## log In-Degree    1.077***   0.520***   0.451***
##                  (0.009)    (0.013)    (0.014)
## 
## Reciprocal       8.855***   8.491***   8.407***
##                  (0.362)    (0.383)    (0.388)
## 
## Is FoF                      4.586***
##                             (0.076)
## 
## 2 Hops                                 3.739***
##                                        (0.109)
## 
## 3 Hops                                -0.257***
##                                        (0.093)
## 
## 4 Hops                                -2.575***
##                                        (0.121)
## 
## 5 Hops                                -3.685***
##                                        (0.202)
## 
## 6+ Hops                               -4.515***
##                                        (0.286)
## 
## ------------------------------------------------
## Observations     10,000     10,000     10,000
## Log Likelihood -9,381.662 -5,836.939 -5,044.879
## ================================================
## Note:                *p<0.1; **p<0.05; ***p<0.01

## [1] "Train accuracy:"

## [1] "0.7508 & 0.8345 & 0.8212"

## [1] "Test accuracy:"

## [1] "0.7562 & 0.8422 & 0.8297"
```

## Model results on 2017-03-01

```
## 
## ================================================
##                                  y
##                  (1)           (2)           (3)
## ------------------------------------------------
## log In-Degree  0.943***      0.462***      0.364***
##                (0.008)       (0.011)       (0.012)
## 
## Reciprocal     10.081***     9.790***      9.731***
##                (0.581)       (0.590)       (0.611)
## 
## Is FoF                       4.726***
##                              (0.074)
## 
## 2 Hops                                     4.124***
##                                            (0.102)
## 
## 3 Hops                                     0.051
##                                            (0.084)
## 
## 4 Hops                                     -2.267***
##                                            (0.104)
## 
## 5 Hops                                     -3.318***
##                                            (0.156)
## 
## 6+ Hops                                    -4.595***
##                                            (0.282)
## 
## ------------------------------------------------
## Observations    10,000        10,000        10,000
## Log Likelihood -11,636.790 -7,370.326 -6,397.842
## ================================================
## Note:                   *p<0.1; **p<0.05; ***p<0.01
## [1] "Train accuracy:"

## [1] "0.6941 & 0.7987 & 0.7889"

## [1] "Test accuracy:"

## [1] "0.699 & 0.7998 & 0.791"
```