



# TWITTER AND GENDER DISPARITY IN STEM FIELDS

THOMAS BECKLEY  
WILLIAM KWONG  
DANNY PECHERSKY

P.A.C.E.





CHAPTER 1

# THE PROJECT

The Ideology of the Project and the  
Power of Twitter



# GENDER AND SCIENCE

- Distinct gender disparity in stem fields
- less than 20% of graduates in computer science, engineering, and physics are female
- Fields such as medicine and law historically do not hold a gender disparity
- Interest in specific scientific fields may explain the gender disparity







CHAPTER 2

# THE DATA

The Datasets and Methodology



# Parsing Data

- Academic paper metadata source: Altmetric API
- Academic papers metadata parsed: 500,000
- Total tweets analyzed: 2,750,000
- Scientific disciplines investigated: 30
- Data analysis runtime: 35 minutes
- Software used: R, Python



# Classifying Subject

\$subjects

chemistry, biochemistry

physical and rehabilitation medicine

\$scopus\_subjects

Neuroscience

Earth and Planetary Sciences



# Parsing names

## Cleaning:

^(1st Lt|Adm|Atty|Capt|Chief|Cmdr|Col|Dean|Dr|Elder|Gen|Gov|Hon|Lt  
Col|Maj|MSgt|Prof|Rabbi|Rev) [[^A-Za-z ]

## Male Prefix

^Brother|Father|Mr|Prince|Sir|Master

## Female Prefix

^Mrs|Ms|Sister|Miss|Dame|Mistress





CHAPTER 3

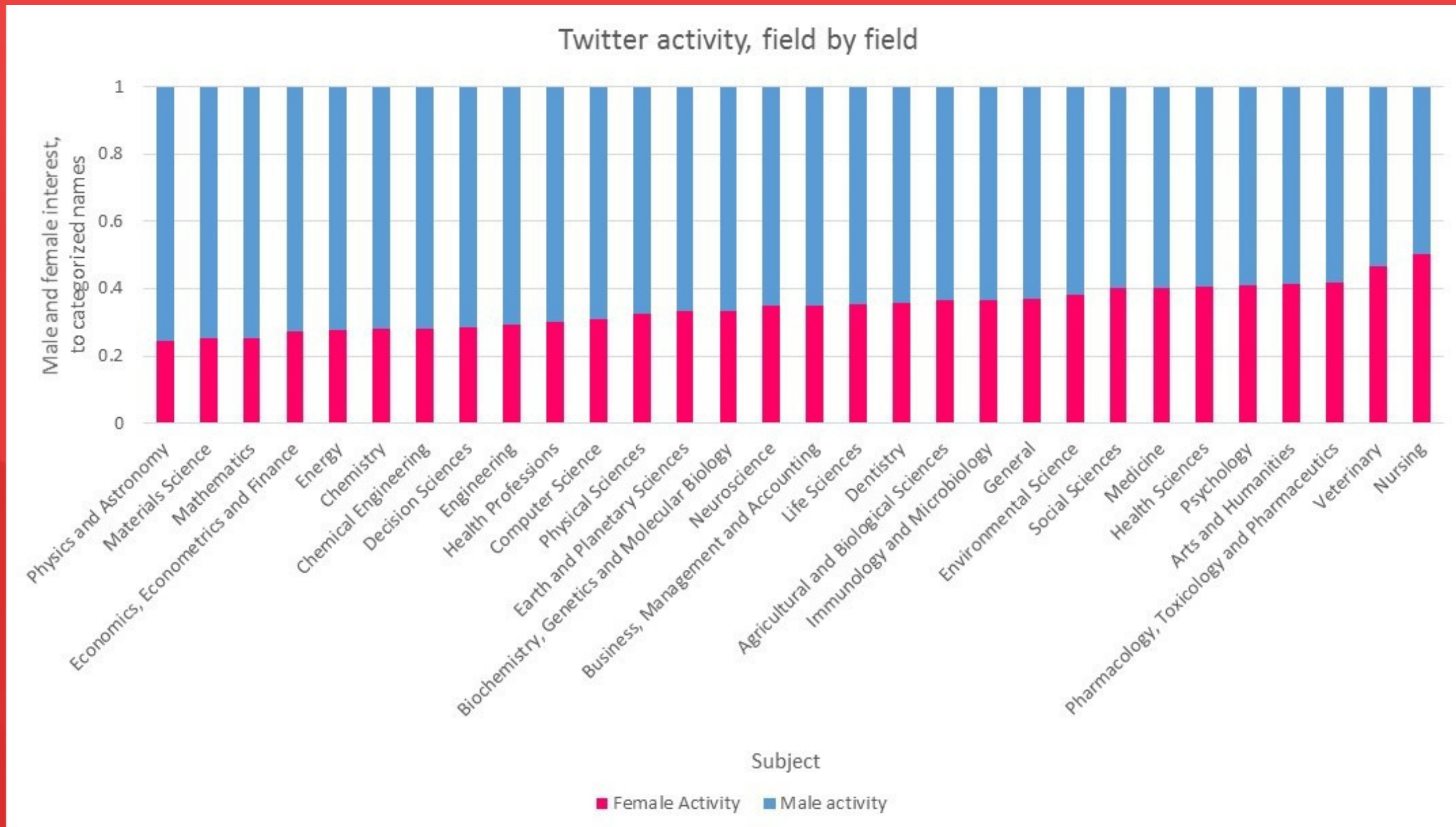
# THE RESULTS

The Numbers and the Findings



# THE DATA

Male and female twitter activity concerning  
Academic Papers

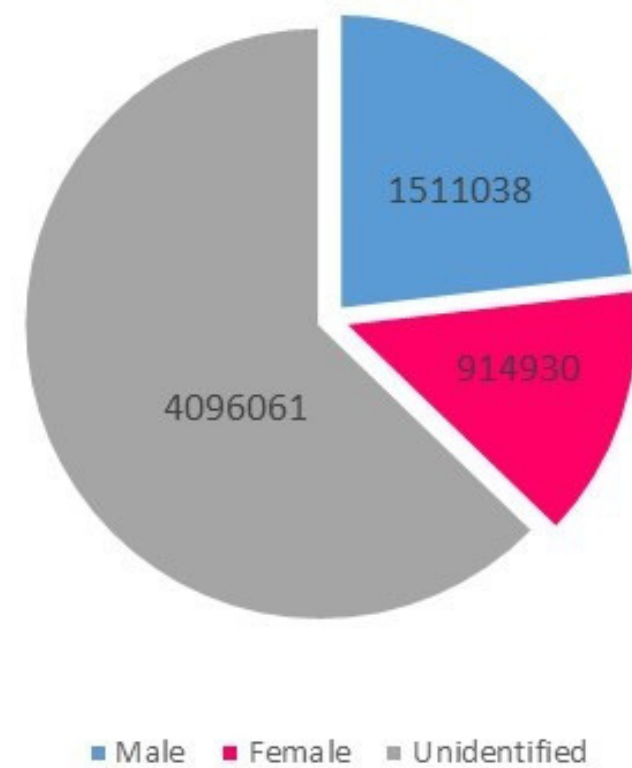




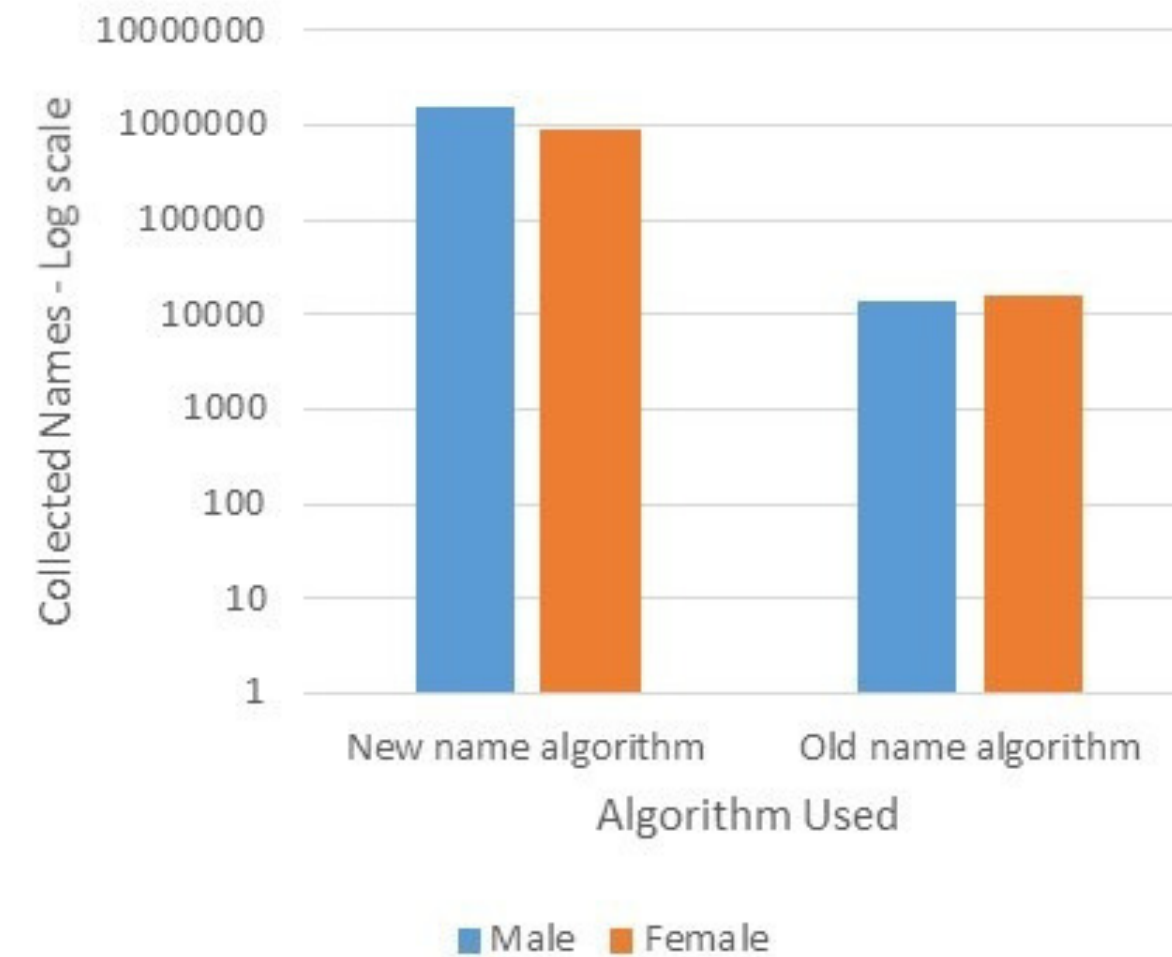
# DATA FACTS

Sample size and different algorithm returns

Authors of Tweets - By gender



Sample size with different parsing algorithms - Logarithmic Scale







## CHAPTER 4

# THE ANALYSIS

The Application of Results to the  
Real World and Next Steps





# ANALYSIS

- Females are more interested in medical fields and social sciences than males
- Greater interest in social fields explains the low numbers of female enrolment in tech fields
- Introduce more programs that encourage more females to pursue tech fields



# FINAL POINTS

- Data offers unique insight to the scientific interests of the current population
- Many females show interests away from stem fields
- Scientific interests can be determined for a portion of social media users







# THANK YOU

SPECIAL THANKS TO SAS, SCINET, AND  
SUPPORTERS OF THIS COMPETITION

P.A.C.E.