

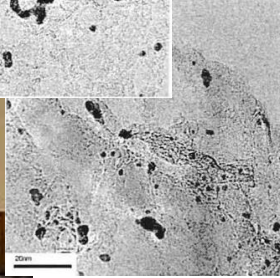
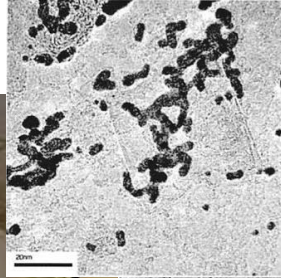
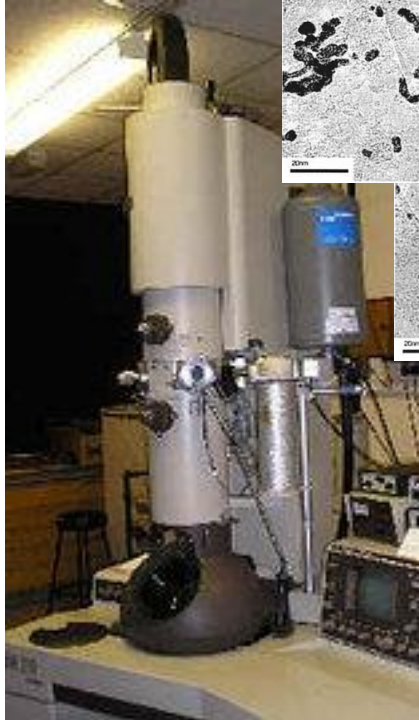


PRIVITAR

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Suzanne Weller, Software Engineer

# MY CAREER PATH



TouchClarity



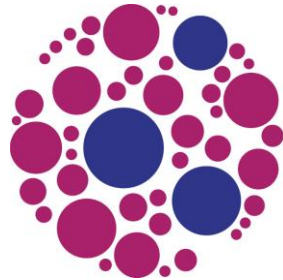
OMNITURE®



causata



NICE®



PRIVITAR

## IS PRIVACY IMPORTANT?

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Democracy

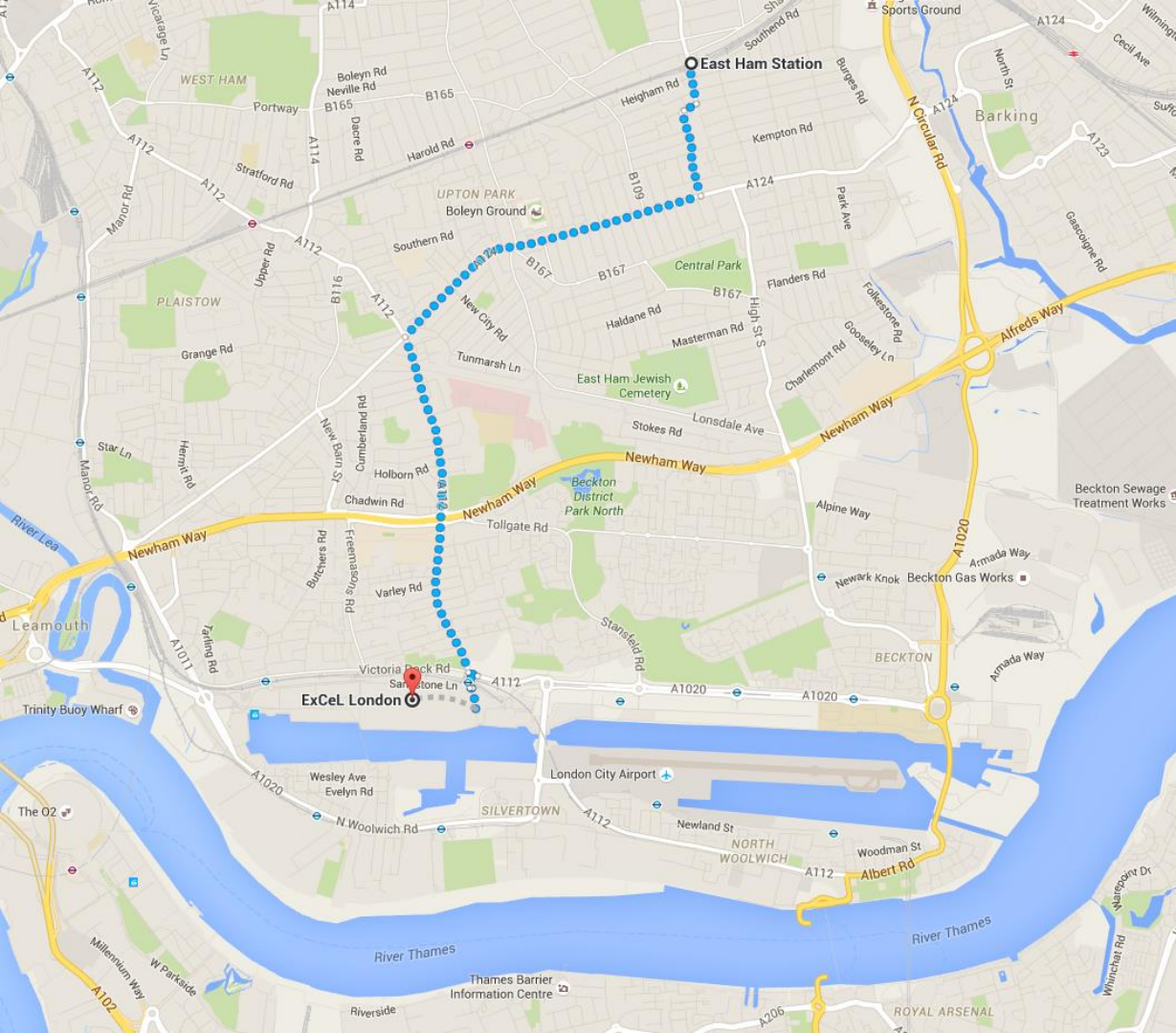
Freedom from discrimination

Freedom to think differently, to challenge the status quo

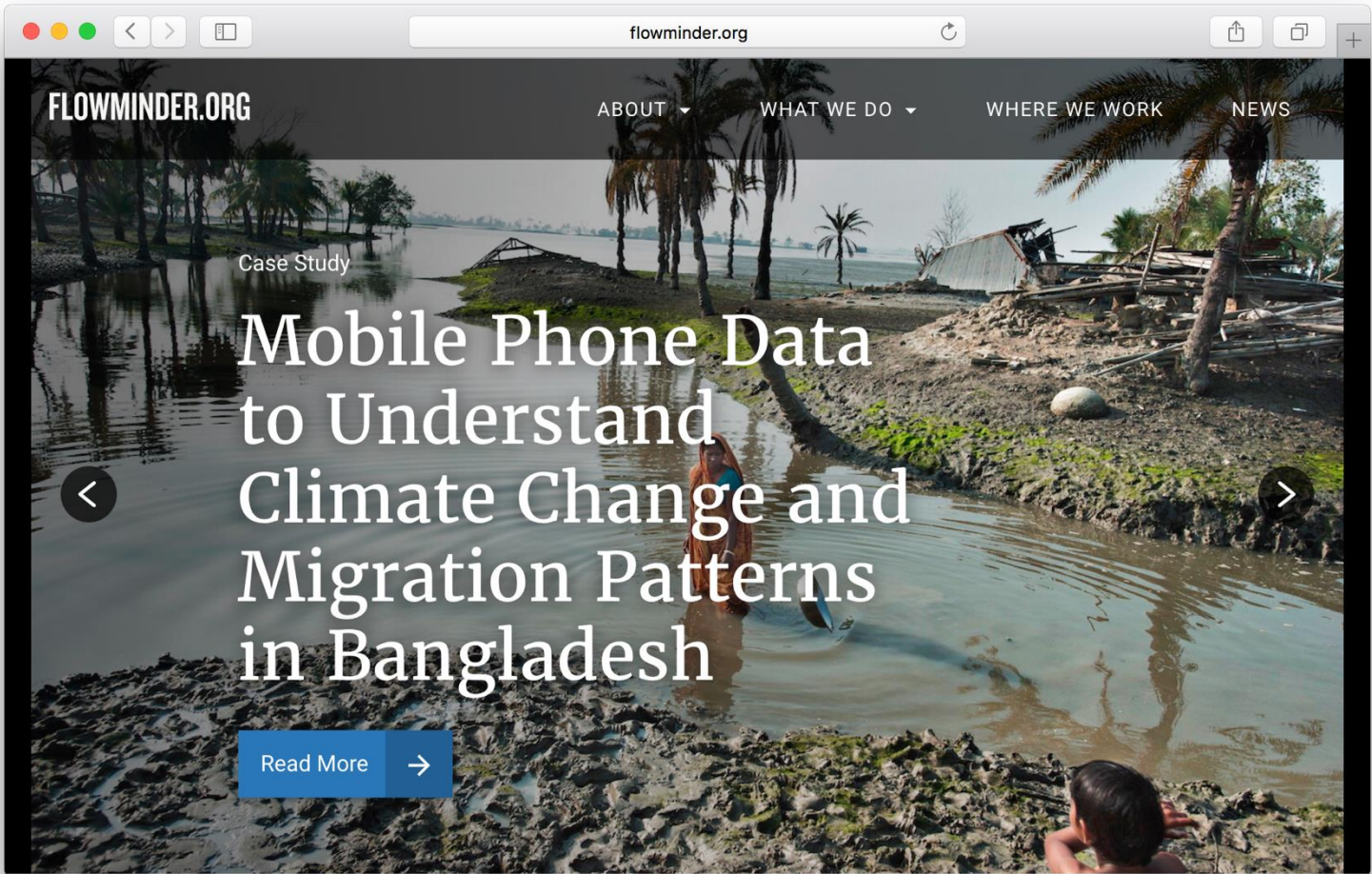
Address public concerns about contributing data for the common good



# Using Private Data for Good







FLOWMINDER.ORG

ABOUT ▾

WHAT WE DO ▾

WHERE WE WORK

NEWS

Case Study

# Mobile Phone Data to Understand Climate Change and Migration Patterns in Bangladesh

Read More







Publish and be Damned?



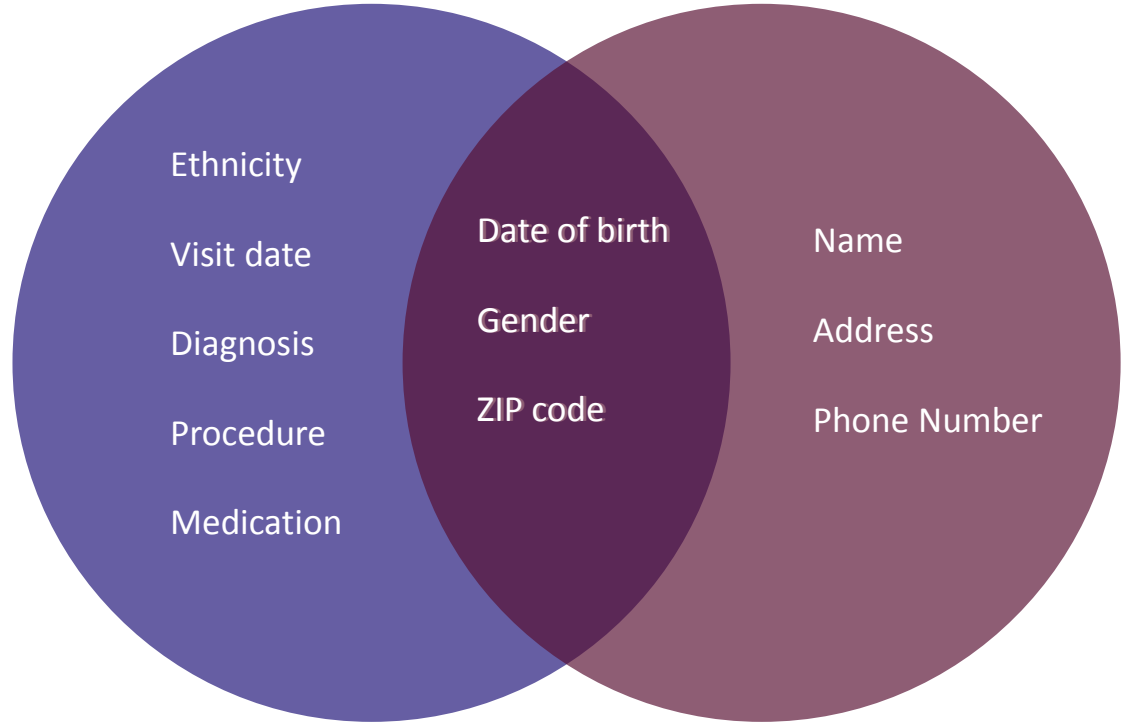


Credit: Matthew W. Hutchins, Harvard Law Record



## Hospital visits

## Voter registration



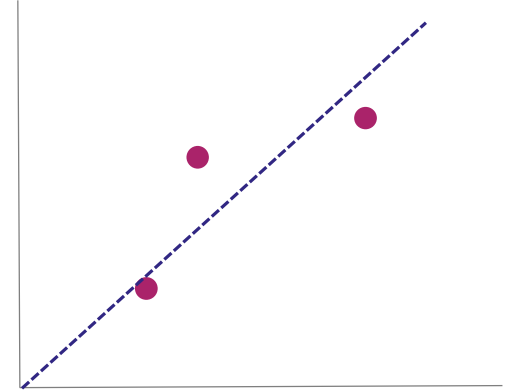
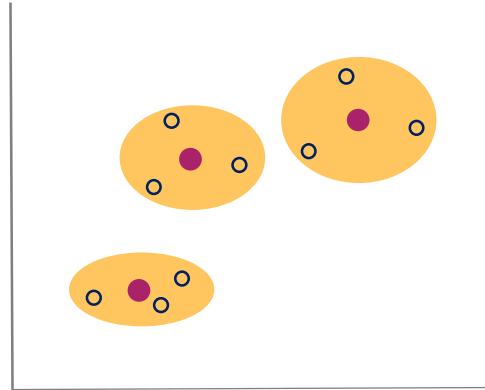
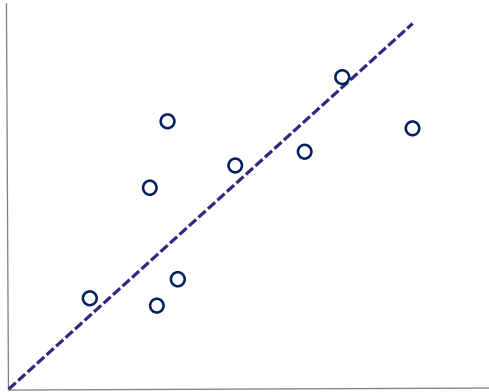
# STATISTICAL GENERALISATION (K-ANONYMITY)

33	Male	N6 6DT	Heart disease
39	Male	N6 5PA	Cancer
36	Female	N6 5LB	Asthma
38	Male	N6 4TA	HIV



30-39	*	N6	Heart disease
30-39	*	N6	Cancer
30-39	*	N6	Asthma
30-39	*	N6	HIV

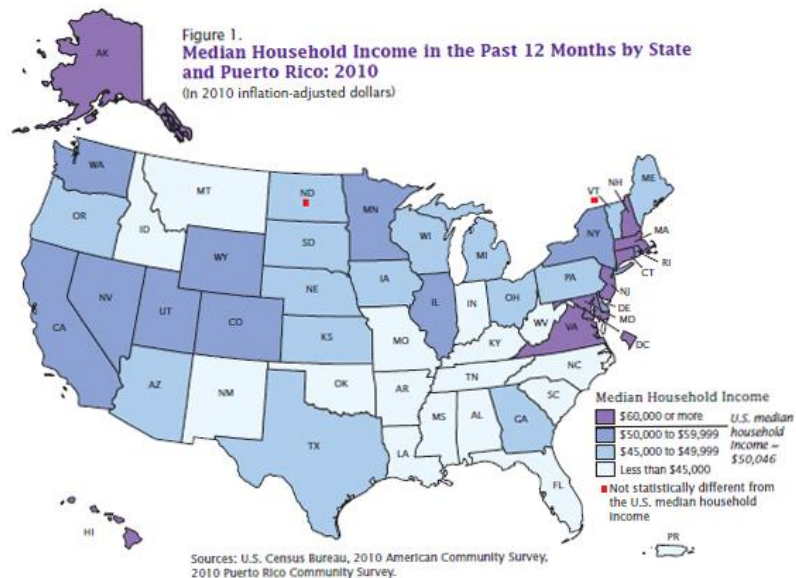
# ANALYSIS AND MACHINE LEARNING USING GENERALISED DATA



Common sense isn't enough



# ONLY REPORT AGGREGATES?



The 2010 US Census surveyed 308 million individuals.

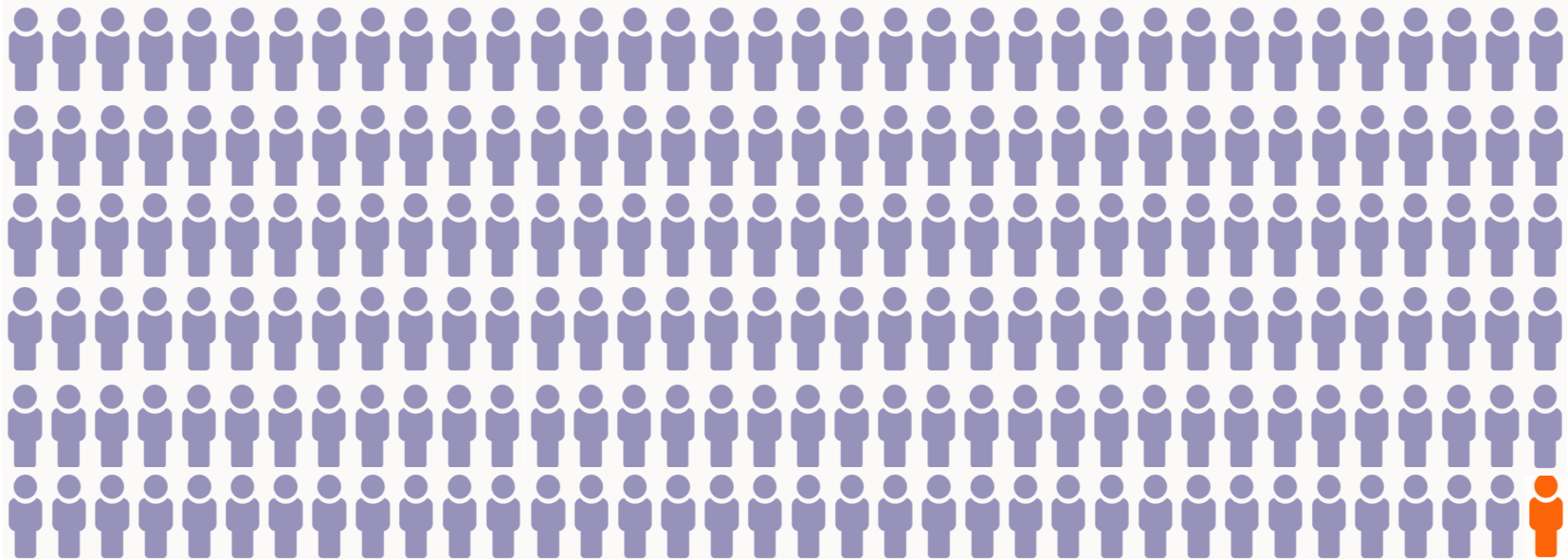
5.4 billion distinct statistical summary reports were released.

It is possible to **reconstruct** the database

# TRACKER ATTACK

**Average Salary = £38,000**

**Average Salary = £36,300**





# DIFFERENTIALLY PRIVATE MACHINE LEARNING

## Learning Differentially Private Language Models Without Losing Accuracy

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**Li Zhang**  
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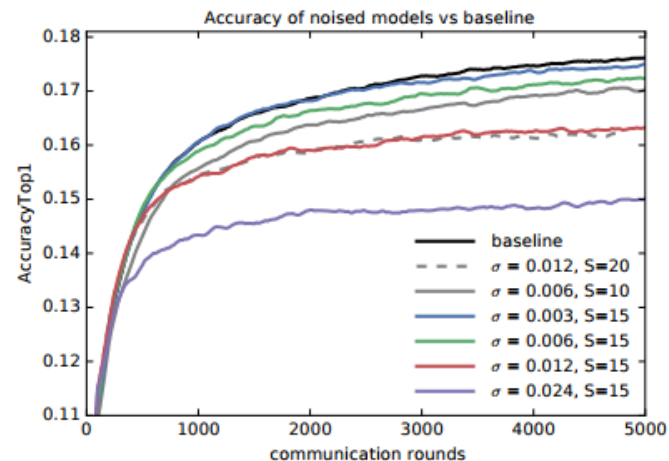


Figure 2: Noised training versus the baseline of Figure 1. The model with  $\sigma = 0.003$  nearly matches the baseline.

<https://arxiv.org/pdf/1710.06963.pdf>



THANK YOU

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[www.privitar.com](http://www.privitar.com)