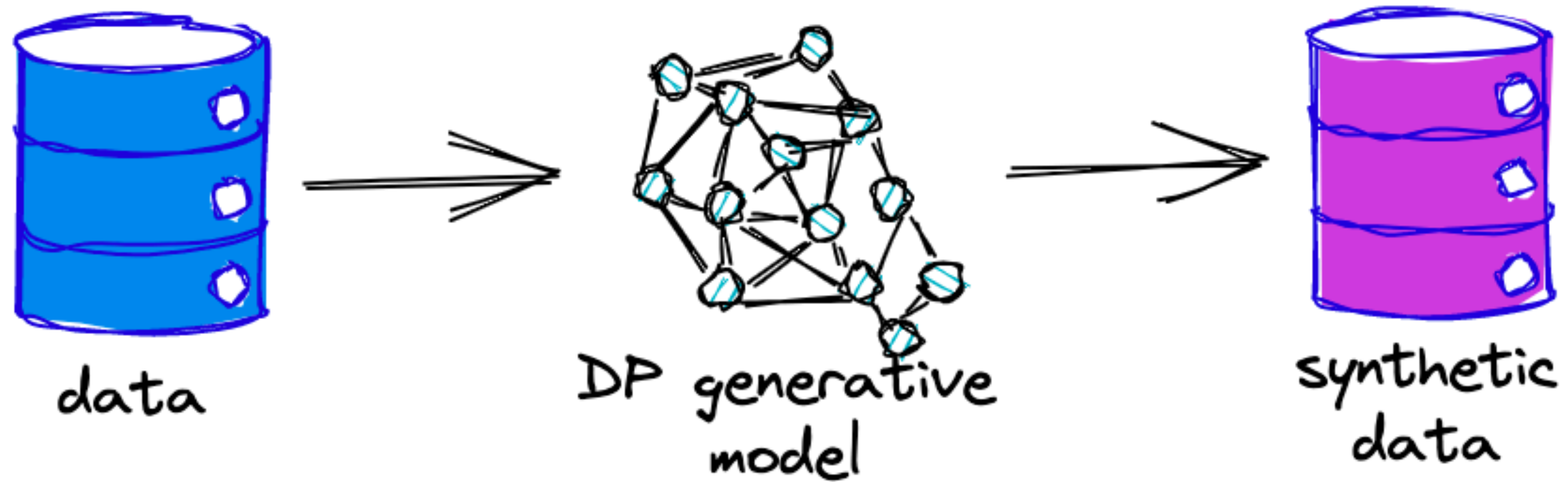


Differentially Private (DP) Synthetic Data

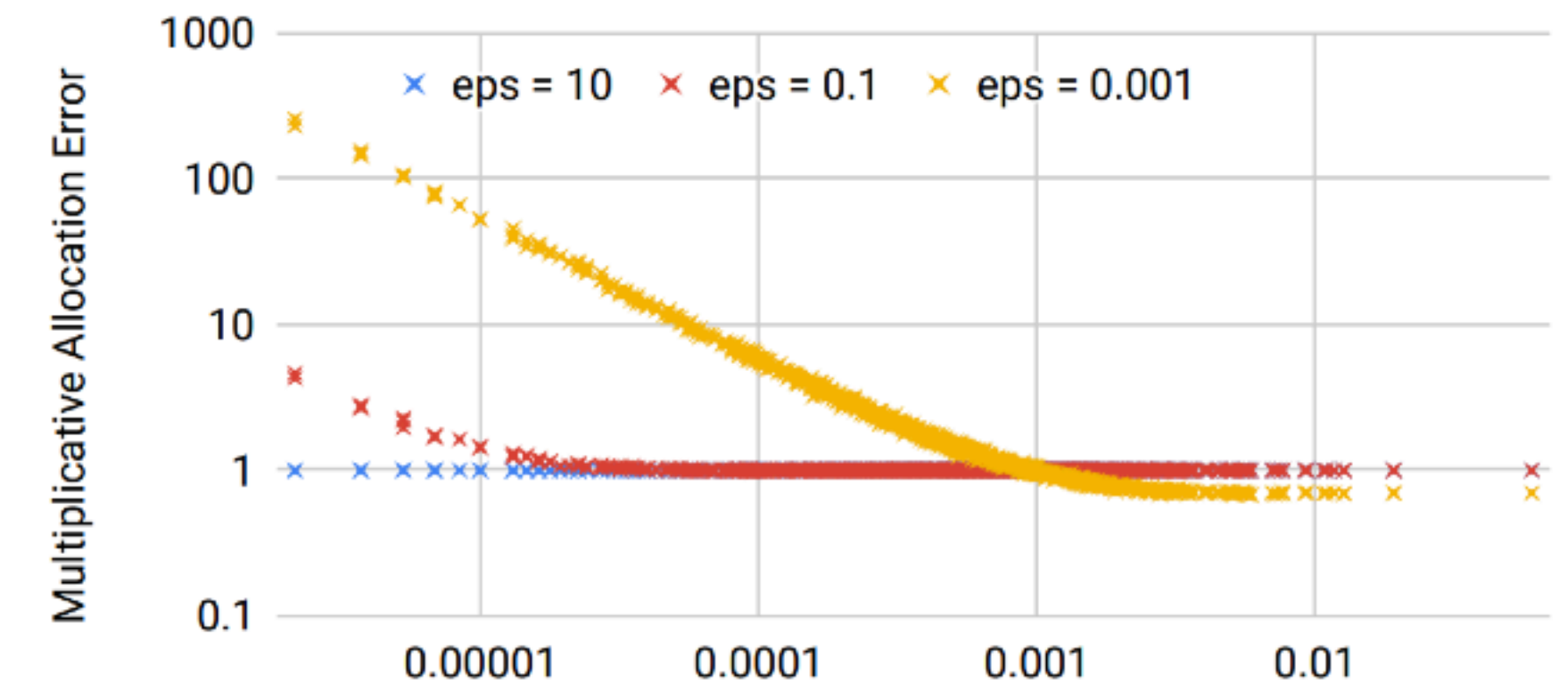


Motivation

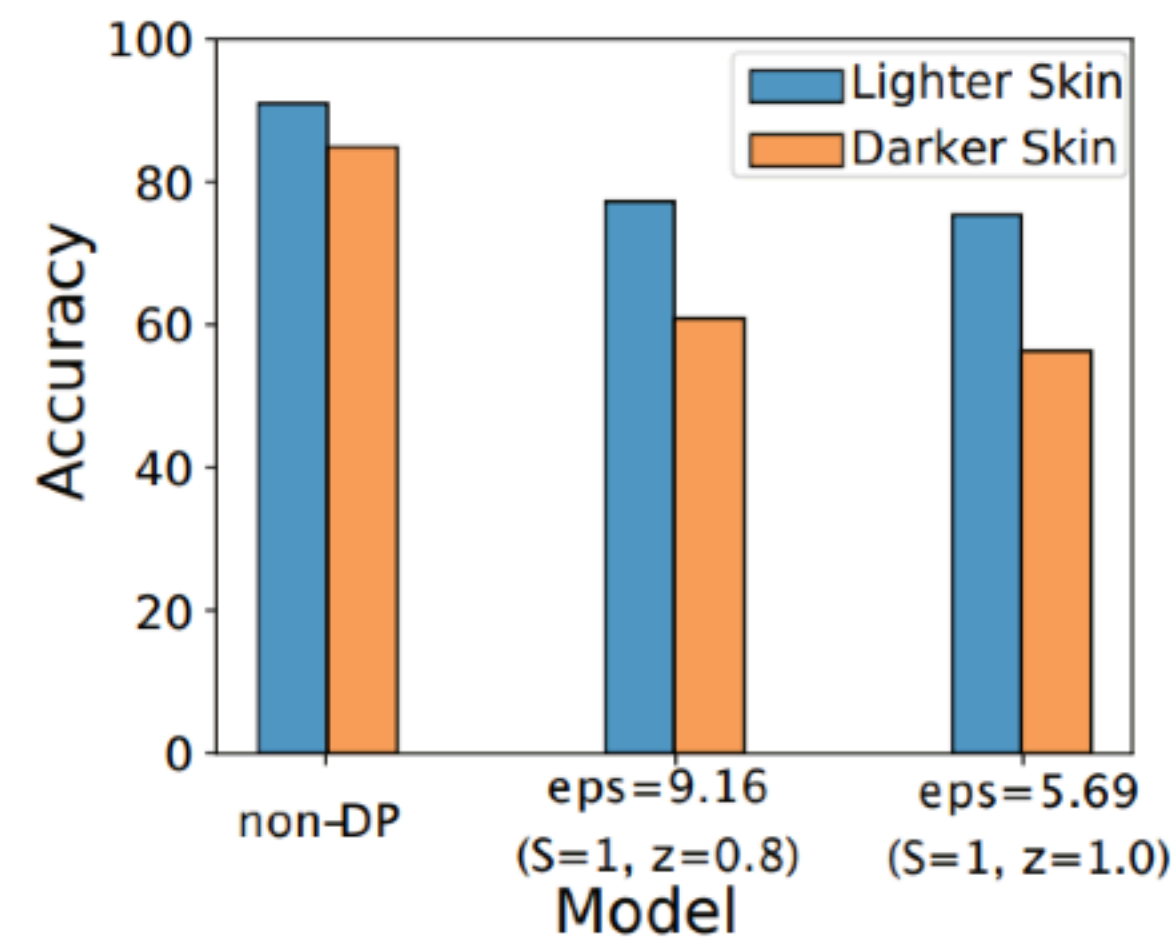
DP has a disparate effect¹ on:

- Statistics²
- Deep learning classifiers^{3,4}

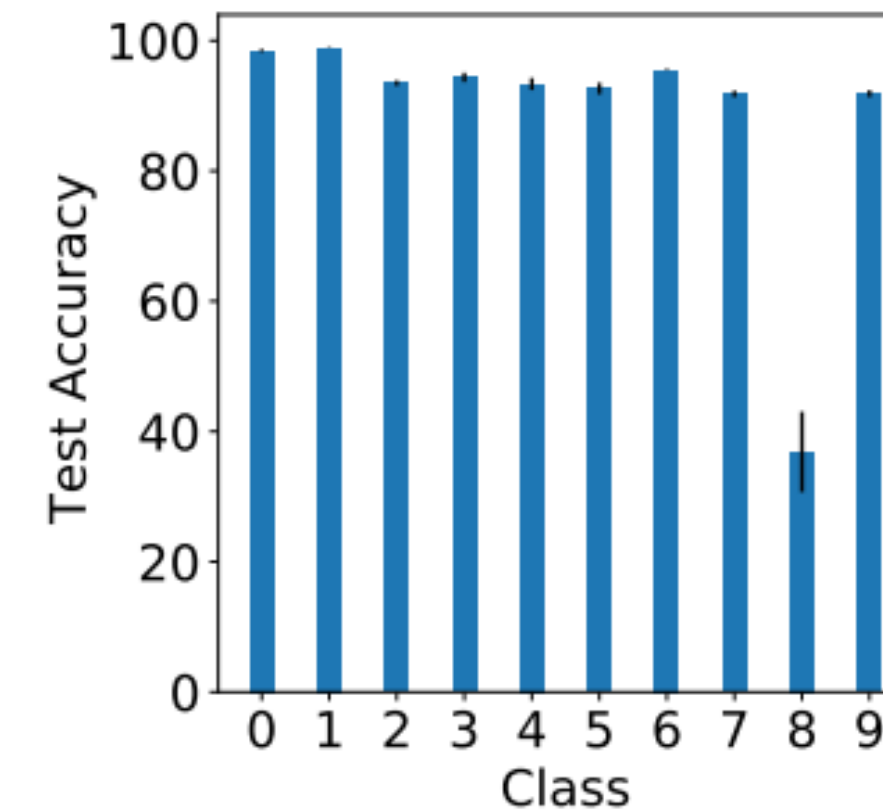
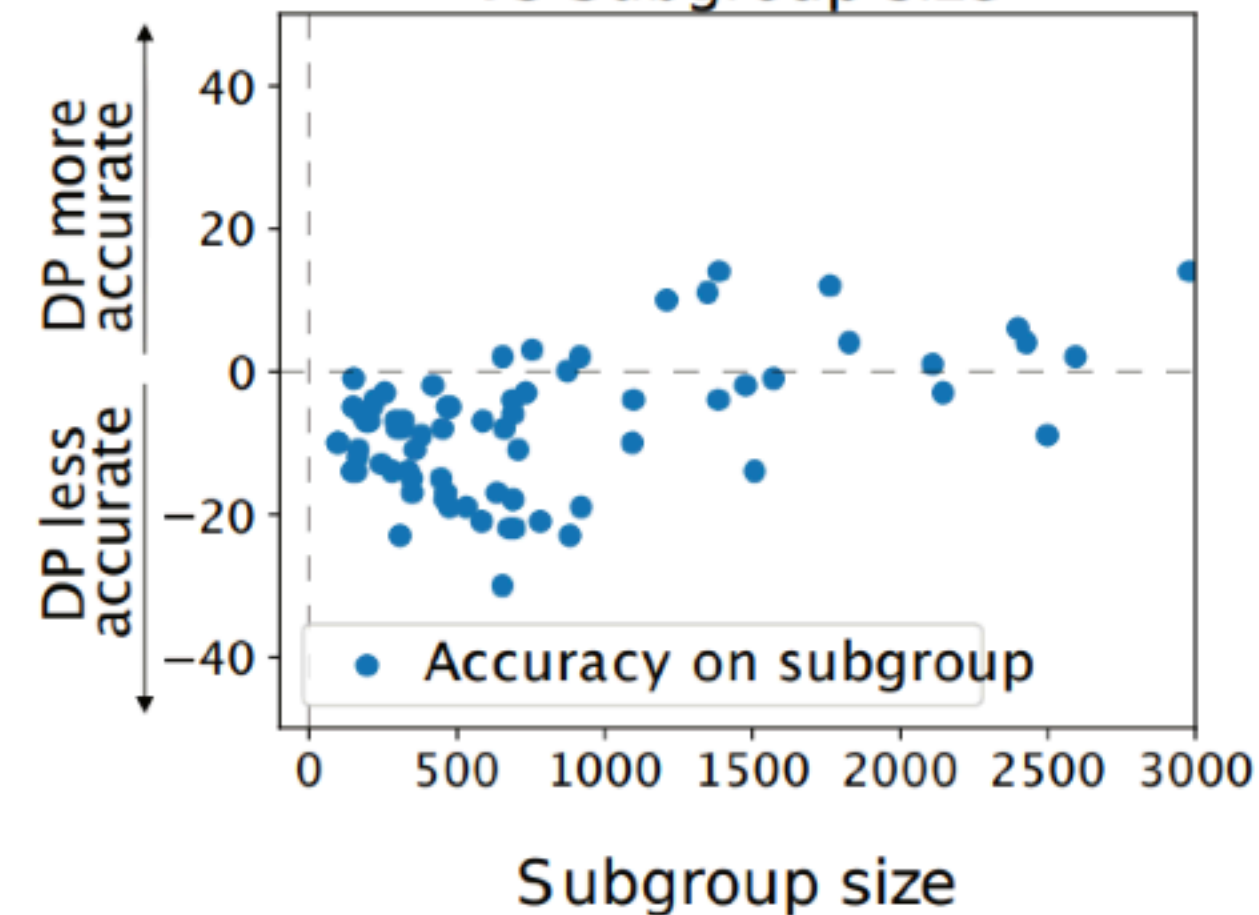
Multiplicative Allocation Error in Michigan with Laplace



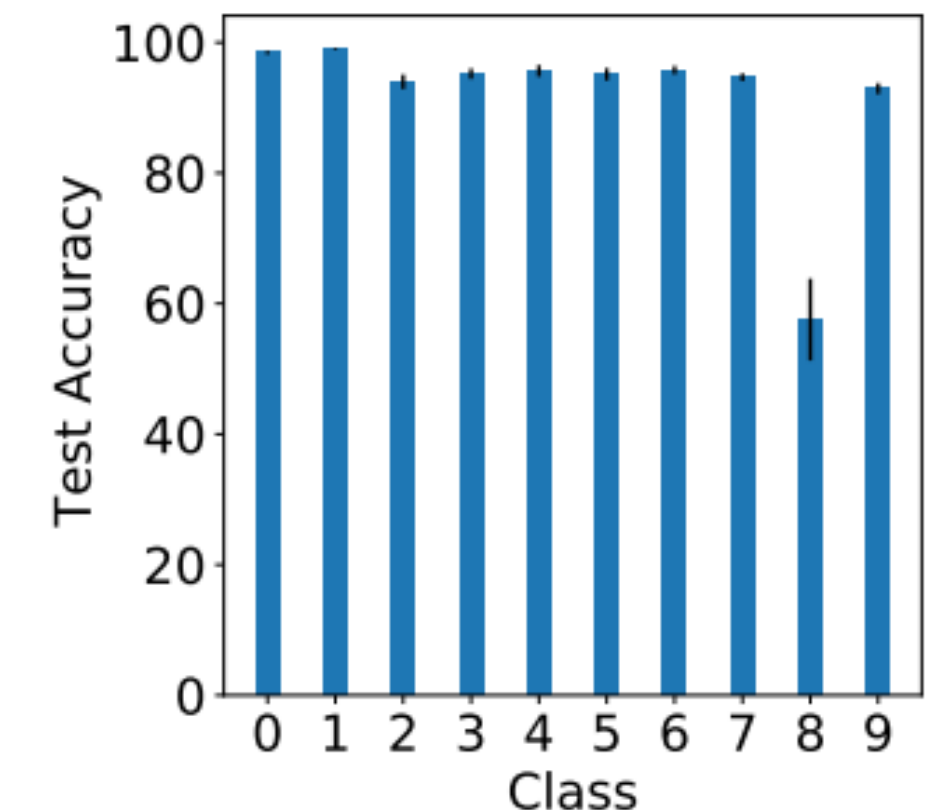
(a) Accuracy vs Model type



(b) DP model accuracy relative to non-DP vs Subgroup size



(b) DP-SGD for $\epsilon = 5$



(e) PATE for $\epsilon = 5$

¹Fioretto et al., Differential Privacy and Fairness in Decisions and Learning Tasks: A Survey

²Kuppam et al., Fair Decision Making using Privacy-Protected Data

³Bagdasaryan et al., Differential privacy has disparate impact on model accuracy

⁴Uniyal et al., DP-SGD vs PATE: Which Has Less Disparate Impact on Model Accuracy?