CAREER: Enhancing Mobile Authentication by Measuring the Authentication Life-Cycle

Challenge:

- How do users select and upgrade mobile authentication?
- Can we design mechanisms to improve mobile authentication choices?

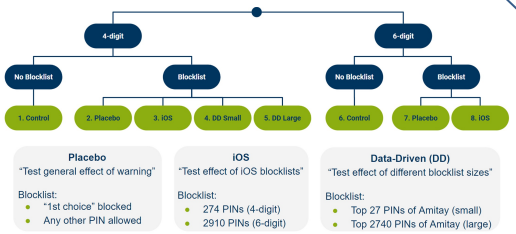
Solution:

- *Surveys* and *Controlled Experiments* to evaluate user selection of mobile authentication and upgrading authentication
- Highlight *key innovations* (new contributions)

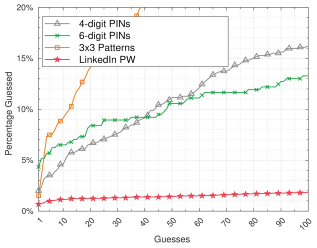
#1845300

The George Washington University

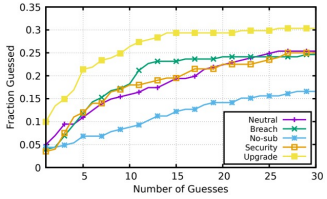
Experimental Results



Evaluating different blocklist treatments



Guessing rates for 4- and 6-digit PINS



Guessing 6-digit PINs based on knowledge of a prior 4-digit

Common 4- and 6-digit PINs word-clouds

Scientific Impact:

- The advantage of longer PINs, e.g., 6-digits, is grossly over estimated. Our work shows that developers should use 4-digit PINs with low thresholds of attempted guesses
- Current blocklists for PINs are inadequate and could have detrimental affects. Instead, these lists should be about 10% of the PIN space
- Upgrading PINs, e.g., from 4- to 6-digits, can lead to weaker PINs overall and similar to password rotation, could be considered harmful

Broader Impact and Broader Participation:

- Improved BlockLists
  - Which PINs/Patterns should really be blocked
- 4-digits is actually more secure over 6-digit for PINs in most settings
- REU Participation
  - Six undergraduate students have participated in undergraduate research
- Graduate Training
  - GRA Collins Munyendo has published 5 papers related to this research
- Eleven peer-reviewed publications resulting from this funding.