

Primes congruent to 3 modulo 4 tend to be more frequent than those congruent to 1 modulo 4. This phenomenon, later known as Chebyshev's bias, has been extensively studied and generalized by many number theorists. Deligne and Sarnak's seminal work in 1973 provided a heuristic to quantify the size of this bias. Motivated by this, Mazur and Murty, in 1997, studied those

primes  $p$  for which  $a_p(E) < 0$ , where  $a_p(E)$  is the number of points on  $E$  over the finite field  $\mathbb{F}_p$ . With the collaboration of a of and Florent Jouve, we study a further analogue of the bias for elliptic curves and prove many results which are much more unconditional than their counterparts in the number field setting. We specialize in Ulmer's family of elliptic curves and show that the biases in this family behave in a variety