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**Daniel Fiorilli\*** (fiorilli@umich.edu). *Elliptic curves of unbounded rank and Chebyshev's bias.*

We establish an equivalence between quantitative unboundedness of analytic ranks of rational elliptic curves and the existence of highly biased elliptic curve prime number races. For this purpose we study the bias in the count of local points of a rational elliptic curve  $E$  created by its analytic rank. We show that conditionally on a Riemann Hypothesis and on a hypothesis on the multiplicity of the zeros of  $L(E, s)$ , large analytic ranks translate into a significant Chebyshev bias. Conversely, we show under a linear independence hypothesis that if highly biased elliptic curve prime number races do exist, then the Riemann Hypothesis holds for infinitely many elliptic curve  $L$ -functions and there exists elliptic curves of arbitrarily large rank. (Received December 04, 2012)