1114-11-276   **Nathan Kaplan*** (`nckaplan@math.uci.edu`), Department of Mathematics, University of California, Irvine, Irvine, CA 92697. *Rational Point Counts for Varieties over Finite Fields.*

We discuss several questions in arithmetic statistics about families of varieties over a fixed finite field $\mathbb{F}_q$. For example, what is the average number of $\mathbb{F}_q$-rational points on an elliptic curve with a rational 5-torsion point? What is the probability that two plane cubic curves intersect in exactly 9 $\mathbb{F}_q$-points? How many collections of 10 points in $\mathbb{P}^2(\mathbb{F}_q)$ have no three on a line? We will also discuss connections to coding theory and the Eichler-Selberg trace formula. (Received August 30, 2015)