1086-VO-2611 **Kevin Vissuet*** (kvissuet@ucsd.edu), 8540 Lemon Ave, La Mesa, CA 91941, and **Steven Miller** (steven.j.miller@williams.edu), 202 Bronfman Science Center, Williamstown, MA 01267. *Most Sets are Balanced in many Finite Groups.*

The sumset is one of the most basic and important objects in additive number theory. Many of the biggest problems (such as Goldbach's conjecture, the Twin Prime conjecture, and Fermat's Last theorem) can be formulated in terms of the sumset $S+S = \{x+y : x, y \in S\}$ of a set of integers S. A finite set of integers A is sum-dominated if $|A+A| > |A-A|$. Though it was believed that the percentage of subsets of $\{0, \dots, n\}$ that are sum-dominated tends to zero, in 2006 Martin and O'Bryant proved a very small positive percentage are sum-dominated if the sets are chosen uniformly at random. Though most sets are difference dominated in the integer case, this is not the case when we take subsets of many finite groups. We show that if we take subsets of larger and larger finite groups, then not only does the probability of a set being sum-dominated tend to zero but the probability that $|A+A| = |A-A|$ tends to one. We also show that in the Dihedral Group case, more sets are sum-dominated than difference-dominated. (Received September 25, 2012)