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Michael E O’Sullivan* (mosullivan@mail.sdsu.edu) and **John Mackenzie**. *Violations of The Ingleton inequality and the inclusion-exclusion ratio*. Preliminary report.

The Ingleton inequality gives an inner bound for the space of entropy vectors associated to random n -vectors. Entropy vectors that are abelian group characterizable all satisfy the Ingleton inequality, and a natural question is to study constructions, using non-abelian groups, that violate the Ingleton inequality. We decompose the Ingleton ratio into the product of three simpler terms—two *inclusion-exclusion ratios*, and one *mixing ratio*. We show that each of these ratios is larger than 1 for an abelian group and we look for examples where these are smaller than 1. The smallest example is A_5 , the smallest non-abelian simple group. (Received September 21, 2016)