Systematic Approach to Knudsen Number and Viscosity Extraction  JAMIE NAGLE, University of Colorado, Boulder, PETER STEINBERG, Brookhaven National Laboratory, BILL ZAJC, Columbia University — We explore the determination of the Knudsen Number ($K$) and shear viscosity to entropy density ratio ($\eta/s$) from experimental data at the Relativistic Heavy Ion Collider. We detail the various inputs, assumptions, and uncertainties involved in the methods of Drescher et al. We extend these results to incorporate other functional Knudsen Number dependencies and a quantum limit on $\eta/s$.