Navier-Stokes equations when the density is not square integrable

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We consider the steady compressible Navier-Stokes equations in the isentropic regime in a bounded domain of R^3. We show that the renormalized continuity equation holds even if the density is not square integrable. We use this result to prove existence of weak solutions under the sole hypothesis $\gamma > \frac{3}{2}$ for the adiabatic constant. It is a joint work with S. Novo.