Electron-electron interactions are generally expected to produce diffusive transport and a finite dc conductivity. However, some integrable one dimensional systems are known to exhibit ballistic transport with the conductivity containing a Dirac delta-function term at zero frequency at all temperatures. I will review recent progress on these issues and its application to the nuclear magnetic relaxation rate, $1/T_1$, of the one dimensional spin-$1/2$ antiferromagnet $\text{Sr}_2\text{CuO}_3$. 