Density profiles and partition coefficients are obtained for hard-sphere fluids inside hard, spherical pores of different sizes by grand canonical ensemble Monte Carlo calculations. The Monte Carlo results are compared to the results obtained by application of different kinds of integral equation approximations. Also, some exact, analytical results for the partition coefficients are given, which are valid in the case of (very) small pores or at low density, respectively. The Journal of Chemical Physics is copyrighted by The American Institute of Physics.