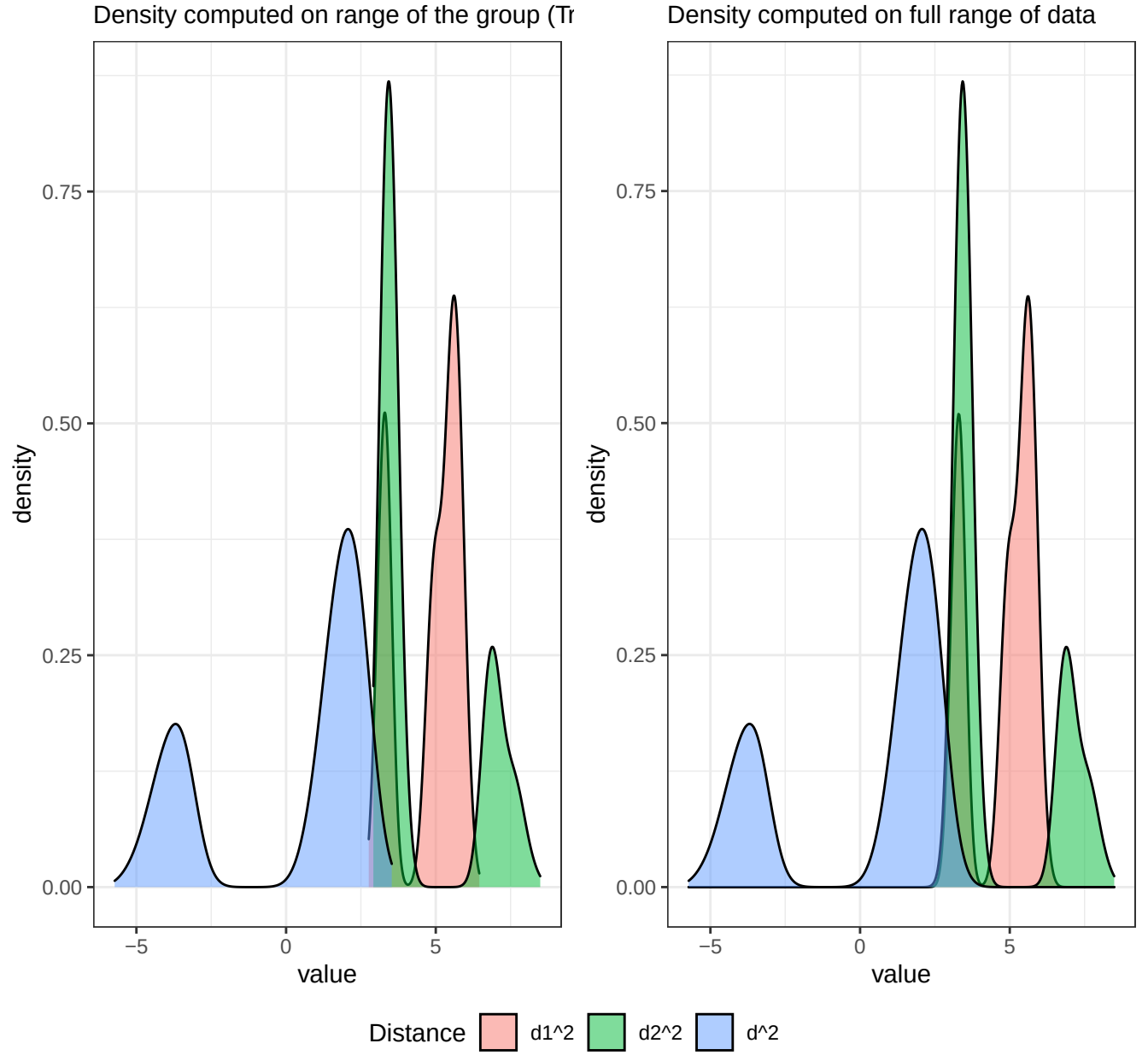Comparing densities of the three distances