This paper provides an overview of existing approaches to construction time and cost estimates. While the deterministic estimates are commonly based on analysis of data (average performance of the construction in past projects), the variability of the construction performance has not been studied systematically. The inputs for the probabilistic models of time and costs presented in the past have been typically assessed based on expert judgement and the models therefore do not provide a full estimate of the uncertainty in tunnel construction. A statistical study of the construction performance data has been thus carried out. The paper shows some results of this study estimating unit time (i.e. time for construction of a tunnel segment with given unit length), the failure rate (i.e. expected number of construction failures such as cave-in collapses etc.) and the delay caused by a failure. The probabilistic estimate of tunnel construction time using data from past tunnels is then demonstrated on a case study of a 610 m long road tunnel.