The quality of inspection techniques is generally expressed in terms of Probability of Detection (PoD) curves and sometimes in addition by the Probability of False Indication (PFI). Such a format facilitates a quantitative description of the inspection quality and allows for risk based inspection planning (RBI). Existing PoD curves describe the inspection quality implicitly assuming that the entire area or volume subject to possible defects is inspected. Such an assumption stands in gross contrast to most practical applications where full inspection coverage is hardly possible nor relevant and consequently only a percentage of the considered area is inspected. In the present paper an extension of the classical PoD / PFI concept to systems with only partial inspection is introduced based on theoretical considerations. The proposed approach takes into account the aspects of the interrelation of the spatial variability of the deterioration processes and the coverage of the performed inspections. It is illustrated on an example highlighting how this may be applied for the identification of the optimal inspection coverage in risk based inspection and maintenance planning.