How to Take Expert Uncertainty into Account: Economic Approach Illustrated by Pavement Engineering Applications

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Abstract. In many application areas, we rely on expert estimates. For example, in pavement engineering, we often rely on expert graders to gauge the condition of road segments and to see which repairs are needed. Expert estimates are imprecise; it is desirable to take the resulting uncertainty into account when making the corresponding decisions. The traditional approach is to first apply the traditional statistical methods to get the most accurate estimate and then to take the corresponding uncertainty into account when estimating the economic consequences of the resulting decision. On the example of pavement engineering applications, we show that it is beneficial to apply the economic approach from the very beginning. The resulting formulas are in good accordance with the general way how people make decisions in the presence of risk.