

9. **Isotonic regression for survival data**

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Brief description: In some statistical applications we wish to describe a distribution without imposing parametric assumptions, but still incorporating some constraints that we know about the distribution. For example, in studying mortality rates in some species we may have good reason to believe that mortality rates are increasing as a function of age.

Fitting this sort of model is called "isotonic regression". This project will involve learning the basic theory for some isotonic regression techniques, perhaps including asymptotics, and will test them out on simulated data.

Reference:

Barlow, Bartholomew, Bremner, Brunk (1972) *Statistical Inference under Order Restrictions*, John Wiley, esp. section 5.3.

Prerequisites: Lifetime models, simulation and/or statistical programming would help.

Computing: substantial, not advanced