

# Reading Assignment 1 - Individual Risk Scores

Due May 27

## The problem

This reading assignment concerns the important and often misunderstood problem of interpreting probability. It is related to the problem 1.2.1 from Pitman. What does it mean for an individual to be more likely than not to commit a crime? How can one estimate such probability, and what logical assumptions are needed for the conclusions to be valid?

An attempt at this problem is the Actuarial Risk Assessment Instruments, also known as the ARAI risk scores. They are used to assess the propensity of an individual to commit violent crimes. These risk scores are used to make decisions about individual convicts. For making fair policies, it is important to understand what this risk score means, how to estimate it, and what kind of logical conclusions one can make of it.

Your job is to review the literature related to this problem, discover what controversies there are in the use of this kind of instruments, and what solutions have been proposed to remedy these issues. Write a 3 page summary of your findings. I have picked a select papers on this problem for you. The list is just a suggestion, but I would strongly encourage reading at least the first 3. You can also refer other papers you may find on the topic.

## References

- [1] The Economist Jun 21st 2007: *The Jailer's Dilemma* <https://www-economist-com.proxy.lib.duke.edu/science-and-technology/2007/06/21/the-jailers-dilemma>
- [2] Hart, Michie, Cooke: *Precision of actuarial risk assessment instruments* [http://www.defenseforsvp.com/Resources/Professional\\_Rpts\\_Misc/Precision\\_of\\_actuarial\\_risk\\_assessment\\_instruments.pdf](http://www.defenseforsvp.com/Resources/Professional_Rpts_Misc/Precision_of_actuarial_risk_assessment_instruments.pdf)
- [3] Dawid: *On individual risk* <https://link.springer.com/article/10.1007/s11229-015-0953-4>
- [4] Imrey, Dawid: *A Commentary on Statistical Assessment of Violence Recidivism Risk* <https://arxiv.org/pdf/1503.03666.pdf>

- [5] Faigman, Monahan, Slobogin: *Group to Individual (G2i) Inference in Scientific Expert Testimony* <https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=5834&context=uclrev>
- [6] Hanson, Howard: *Individual Confidence Intervals Do Not Inform Decision-Makers About the Accuracy of Risk Assessment Evaluations* [https://www.researchgate.net/profile/RKarl\\_Hanson/publication/44681301\\_Individual\\_Confidence\\_Intervals\\_Do\\_Not\\_Inform\\_Decision-Makers\\_About\\_the\\_Accuracy\\_of\\_Risk\\_Assessment\\_Evaluations/links/00b495217e389d4dbf000000.pdf](https://www.researchgate.net/profile/RKarl_Hanson/publication/44681301_Individual_Confidence_Intervals_Do_Not_Inform_Decision-Makers_About_the_Accuracy_of_Risk_Assessment_Evaluations/links/00b495217e389d4dbf000000.pdf)
- [7] Mossman: *From Group Data to Useful Probabilities: The Relevance of Actuarial Risk Assessment in Individual Instances* <http://jaapl.org/content/jaapl/43/1/93.full.pdf>