



Recidivism and Social Interactions

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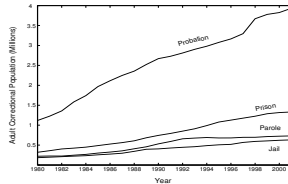
Abstract

Faced with overcrowded prisons, the courts have been increasingly passing probation sentences for adults convicted of felony crimes. Using a national sample, this paper identifies the risk factors for recidivism among Female, Male, Black, White and Hispanic felony probationers. Individual hazard function is assumed to depend on individual and neighborhood characteristics as well as social interactions among probationers. In selecting the covariates from a set of potential candidates, Bayesian model averaging is used both to account for model uncertainty and the subsequent inference. The results point to social interactions as one of the most significant factors affecting recidivism among all gender, ethnicity and race groups. When a frailty parameter is introduced into the model to account for the possibility of unobserved risk factors shared by probationers within neighborhoods, the empirical results remain robust indicating negligible unobserved neighborhood-level heterogeneity.

Introduction

Prison Overcrowding

- > 482 prison inmates per 100,000 U.S. residents in 2003, as opposed to 292 in 1990.
- > By the end of 2003, the state prisons were operating between 1% and 16%, while the federal prisons were operating 39% above capacity. 49% of all probationers were convicted of a felony.



Felony Probation

- > Recidivism by felony probationers is a potential threat to the public safety
 - ✓ Irish (1989), Petersilia (1985)
- > Felony probation is not only a viable, but also a cheaper and perhaps more rehabilitative alternative to incarceration
 - ✓ Clarke *et al.* (1988), McGaha *et al.* (1987) Vito (1986), Whitehead (1991)

This study...

- > aims to identify risk factors for recidivism among Female, Male, Black, White and Hispanic felony probationers.
- > contributes to earlier research in
 - ✓ modeling recidivism within an interactions framework
 - ✓ implementing Bayesian Model Averaging (BMA) to account for model uncertainty
 - ✓ employing a national sample and studying recidivism separately for each gender, ethnicity and race group.

Prior Research

Criminology

- > relied mostly on data from a single state or a number of counties
- > reported significant spatial differences in recidivism rates:
 - ✓ 22% in Kentucky (Vito, 1986) to 65% in California (Petersilia, 1985)
- > ignored interactions and focused mostly on individual characteristics and criminal history of probationers
 - ✓ Petersilia (1985), Vito (1986), McGaha *et al.* (1987), Clarke *et al.* (1988), Irish (1989), Benedict and Huff-Corzine (1997)

Economics

- > has more recently turned to models which incorporate various types of interactions in order to explain criminal behavior.
 - ✓ Sah (1990), Freeman *et al.* (1996), Glaeser *et al.* (1996)
- > Though, there exists a substantial literature on crime, recidivism of felony probationers remains to be studied.

Social Interactions...

- > arise when the choices made by an individual are affected, not through the market transactions, by the actions of the others.
 - ✓ social learning, conformity, sanctions
- > are endogenous
 - ✓ social multipliers
 - multiple equilibria
- > Social effects (Manski, 1995): endogenous (social interactions-Brock and Durlauf (2001a,2001b)), contextual (exogenous), correlated

Social Interactions and Recidivism

- > Social interactions are modeled as affecting the probability of transition from one state (remaining crime free) to another (recidivating).
 - ✓ Cox proportional hazard
- > Hazard function for probationer i depends on
 - ✓ i 's individual characteristics,
 - ✓ characteristics of i 's neighborhood (jurisdiction that passed the probation sentence),
 - ✓ i 's subjective expectation of a neighborhood behavioral measure (proportion of probationers who recidivate by some duration τ in i 's neighborhood and the average time to recidivate among them).
- > All probationers are assumed to possess rational expectations.
- > Identification is not an issue as the group versus individual determinants of individual behavior turn out to be nonlinearly related.

Methods

Model selection

- > Typical approach is to find the 'best' fitting model (usually with stepwise methods)
 - ✓ ignores *between* model uncertainty
 - ✓ underestimates overall uncertainty; overestimates confidence in a particular model being "correct"; and leads to riskier decisions and poorer predictive ability
 - Draper (1995), Chatfield (1995), Madigan and Raftery (1994), Volinsky *et al.* (1997).

Bayesian Model Averaging (BMA)...

- > employs a set of models, instead of only one and makes inferences based on a weighted average over the set of models under consideration, with weights based on the posterior probabilities of the models
- > accounts for model uncertainty in both predictions and parameter estimates.
- > The study employs BMA for Cox Proportional Hazard developed by Volinsky *et al.* (1997).

Data

- > U.S. Dept. of Justice, Bureau of Justice Statistics. Recidivism of Felons on Probation, 1986-1989: [United States] [Computer file]. Conducted by Mark A. Cuniff and the National Association of Criminal Justice Planners. 2nd ICPSR ed. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [producer and distributor], 1994.
- > City and County Data Books
- > Missing data are imputed with the expectation maximization with importance sampling (EMIS) algorithm (King *et al.* 2001)

Results

- > Social interactions emerge as one of the most significant contributor to recidivism among all gender, ethnicity and race groups.
- > Among other significant factors are:
 - ✓ being male, having a drug abuse history and prior felony convictions for Blacks
 - ✓ being young, having prior felony convictions and the lack of employment for Whites
 - ✓ being young and the type of crime resulted in the probation sentence for Hispanics
 - ✓ supervision level and living in neighborhoods with high percentages of female-headed households for Females
 - ✓ lack of employment, prior felony convictions, having a drug abuse history and living in neighborhoods with high property taxes for Males
- > The evidence from the data is inconclusive as to the effects of some variables on recidivism. Among these are:
 - ✓ employment history and age for Females
 - ✓ percent owner-occupied housing and percent persons with 12 years or more schooling in the jurisdiction for Males
 - ✓ percent non-White population and unemployment rate in the jurisdiction for Hispanics
 - ✓ drug abuse history and percent female-headed households in the jurisdiction for Whites
 - ✓ percent non-White population and percent property taxes in the jurisdiction for Blacks.
- > The empirical results remain robust when a frailty parameter is added to account for the possibility of unobserved risk factors shared by probationers within neighborhoods.
- > Moreover, Bayesian model averaging results in improved risk assessment for potential recidivists compared to traditional analysis which typically identifies risk factors using stepwise methods