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An Analysis of Multiple Treatment Effects for Recidivism in the State of Washington

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An Analysis of Multiple Treatment Effects for Recidivism in the State of Washington



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INTRODUCTION

- Various correctional programs are implemented to reduce the likelihood of post-release recidivism (i.e., new conviction of criminal offences) of the offenders in the state of Washington.
- Most of the correction programs are evaluated on a stand-alone basis without regard of the other programs, even though the offenders take more the one program during imprisonment.
- Therefore, our study investigates the interaction effects when multiple correction programs are administered to the offenders, and to econometrically quantify the magnitude of such effects.

OBJECTIVES

- Specify an econometric model that identifies the independent (i.e. stand-alone) and interaction (i.e. concurred with others) treatment effects of different types of correctional programs.
- Propose the optimal combination of correctional programs that attain the greatest efficacy in reducing post-release recidivism.

DATA

- A total of 25,644 offenders released from the Washington State Department of Corrections (WADOC) during a seven-year observation period from September 2008 to August 2015.
- Weekly hours recorded for the offenders' participation in correctional programs during the terms of imprisonment.
- A list of variables to control for individual characteristics:

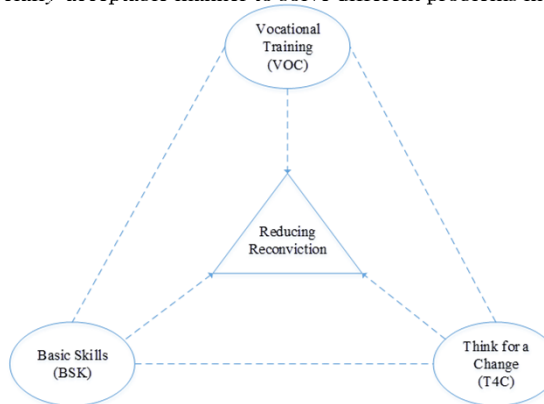
- Gender
- Hispanic Origin
- White Color
- Birth Country
- Birth State
- Residence
- Homelessness
- Gang Membership
- Number of Visits
- Education Level
- Age at Admission
- Violent Infraction
- Non-violent Infraction
- Solitary Confinement



STUDY DESIGN

The following programs are considered for evaluation purposes:

- **Basic Skills (BSK)** is a well-rounded education program that teaches offenders the fundamental academic and pre-occupational skills; with an emphasis on reading, mathematics, writing, and basic computer literacy that can be geared towards test preparation or General Education Development (GED).
- **Vocational Training (VOC)** is an apprenticeship program that prepares offenders for higher skilled and occupation-oriented works that qualify them for living wage jobs upon release.
- **Think for a Change (T4C)** is an integrated behavior-cognitive change program that encourages thorough reflection of the offenders in the way they think through different risk-triggering situations. In a group setting, this empowers them to re-think in a socially-acceptable manner to solve different problems in life.



METHODOLOGY

We use multiple treatment effects model with logistic specification to estimate the joint effects among different intervention programs.

$$\text{Prob}(y_i = 1 | t_i, x_i) = \Lambda(t_{Ai}\gamma_A + t_{Bi}\gamma_B + t_{Ai}t_{Bi}\gamma_{AB} + x_i\beta)$$

- y_i represents the occurrence of post-release new conviction
- t_{Ai} represents the hours of participation in program A
- t_{Bi} represents the hours of participation in program B
- x_i represents the list of control variables
- γ_A is the *independent* treatment effect of program A
- γ_B is the *independent* treatment effect of program B
- γ_{AB} is the *interaction* treatment effect of programs A and B
- β is the regression coefficient for each of the controls

RESULTS

| Variable | BSK x VOC | BSK x T4C | VOC x T4C |
|------------------------|------------|------------|------------|
| | Odds Ratio | Odds Ratio | Odds Ratio |
| BSK | 0.999 *** | 0.999*** | - |
| VOC | 0.986 *** | - | 0.986*** |
| T4C | - | 0.996 | 0.997 |
| BSK x VOC | 0.999 ** | - | - |
| BSK x T4C | - | 0.999 | - |
| VOC x T4C | - | - | 0.618 |
| Gender | 1.407 *** | 1.427*** | 1.384*** |
| Hispanic Origin | 0.826 *** | 0.837*** | 0.801*** |
| White Color | 1.081 ** | 1.070** | 1.111*** |
| Birth Country | 1.886 *** | 1.879*** | 1.988*** |
| Birth State | 1.251 *** | 1.262*** | 1.257*** |
| Residence | 0.686 *** | 0.678*** | 0.680*** |
| Homelessness | 1.458 *** | 1.467*** | 1.445*** |
| Gang Membership | 1.611 *** | 1.625*** | 1.608*** |
| Number of Visits | 0.999 *** | 0.999*** | 0.999*** |
| Education Level | 0.976 ** | 0.958*** | 0.999 |
| Age at Admission | 0.879 *** | 0.883*** | 0.875*** |
| Violent Infraction | 0.991 | 0.988 | 0.984 |
| Non-violent Infraction | 1.027 *** | 1.026*** | 1.025*** |
| Solitary Confinement | 1.001 | 1.001 | 1.001 |

Note: * p-value < 0.1, ** p-value < 0.05, *** p-value < 0.01

CONCLUSION

- BSK and VOC are **significant** on its own merit, and the joint implementation of both exhibits **positive joint effect**.
- T4C also reduces recidivism on its own and in conjunction with other programs, in spite of its statistical insignificance.
- Policymakers should **implement programs with positive, synergistic effects** to seek greatest reduction in recidivism.