Baseline Treatment Completion is associated with lower hazards of experiencing posterior contacts with justice system that ended in a sentence or imprisonment.

Assessing the impact of substance use treatment for preventing criminal justice system contact in Chile

M. Mateo Piñones [1, 2, ID]
✉ mariel.mateopinones@griffithuni.edu.au

A. González–Santa Cruz [1, 3]
✉ gonzalez.santacruz.andres@gmail.com

[1] Young Researcher, Millennium Nucleus for the evaluation and analysis of Drug Policies;
[2] Ph.D. student, School of Public Health, Universidad de Chile
[3] Ph.D. student, Griffith University, Australia

Background

Extensive research has shown that reducing substance abuse through effective treatment leads to a reduction in criminal activity[1]. However, most of this evidence comes from developed countries, and results from the Latin American context are largely unknown[2]. The structural, economic, epidemiological context and substance use treatment (SUT) policy response are different in this region, making the question about SUT effectiveness through locally based data relevant[3].

Objectives

We analyse Chile as a case study and examine the impact of SUT on the prevention of contact with the criminal justice system in the short (3 and 6 months), middle (1 year), and long term (3 years).

Methods

This research relies on a population-based record-linkage retrospective cohort design. We used a deterministic linkage process (using encryption of the Chilean Unique National ID) to merge electronic records of individuals in publicly funded Chilean SUT programs with the Prosecutor's Office data at the national level between 2010 and 2019. Survival analysis is used to determine the extent to which treatment and numerous covariates were associated with time until contact with the criminal justice system (outcome 1) and time until imprisonment (Outcome 2)[4].

Analyses are depicted in the following equations:

$$ln(H(t)|x_i)_{offense\ judged\ with\ condemnatory\ sentence} = s(ln(t)|\eta, k_0) + Bx_i$$

$$ln(H(t)|x_i)_{offense\ judged\ with\ prison\ sentence} = s(ln(t)|\eta, k_0) + Bx_i$$

$$x\hat{\beta}_i =$$

Treatment non − completion (Early)
Treatment non − completion (Late)
Age at admission to treatment
Educational attainment
Substance Use Onset
Primary Substance At Admission
Primary Substance at Admission Usage Frequency
Psychiatric Comorbidity
Biopsychosocial Compromise
Number of children
Substance use severity
Number of previous offenses (violent)
Number of previous offenses (acquisitive)
Number of previous offenses (SUD)

We described the cumulative incidence rate of offenses that ended with a condemnatory sentence and of offenses that ended with imprisonment after baseline treatment outcome, and its variation by baseline treatment outcome: Treatment completion, Late Discharge (>= 3months) Early Discharge (withdraw within the first 3 months of treatment.

Additionally, we conducted a logrank test by baseline treatment outcome. Posteriorly, we aim to calculate the association between Baseline treatment outcome and Contact with justice system through flexible Royston-Parmar models while adjusting for several covariates, as well as using a 2-step inverse probability weigthing Royston-Parmar survival regression and adjusting for covariates.

Results

Of the 85,048 SENDA patients, 70,863 (83%) were eligible to be matched with the Prossecutor's Office database. Of the sample, 22,287 (31%) had at least an offense that ended with a condemnatory sentence after baseline treatment. Those that had at least an offense that ended with imprisonment after baseline treatment were 5,144 (7%).

Table 1: Offending with condemnatory sentence from Baseline Treatment Outcome (x1000 person-years)

Outcome	Person-time	Event	Rate	LoCI95%	UpCI95%
Tr. Comp	63975	3825	60	58	62
Early Dis	46815	6130	131	128	134
Late Dis	118807	12326	104	102	106
Total	**229621**	**22287**	**97**	**96**	**98**

Table 2: Offending with imprisonment from Baseline Treatment Outcome (x1000 person-years)

Outcome	Person-time	Event	Rate	LoCI95%	UpCI95%
Tr. Comp	76631	664	9	8	9
Early Dis	65880	1711	26	25	27
Late Dis	160259	2766	17	17	18
Total	**302813**	**5144**	**17**	**17**	**17**

- Compared to those receiving no treatment (early drop-out), those completing SUT took longer to contact the criminal justice system (IRR [Incidence rate ratio]= 2.18 95% IC 2.09,2.27) and to commit an offence leading to imprisonment 2.90 (95% IC 2.64,3.18).

- Compared to receiving some treatment (late drop-out), those completing SUT took longer (IRR= 1.73 95% CI 1.67,1.80) to contact the criminal justice system and to commit an offence leading to imprisonment (IRR= 1.93 95% CI 1.77,2.10).

- However, the difference was lower when we compared those who received some treatment with those who no SUT for some period (late drop-out) regarding the time to contact the criminal justice system (IRR= 1.26 95% CI 1.22,1.30) and imprisonment (IRR= 1.50 95% CI 1.41,1.61).
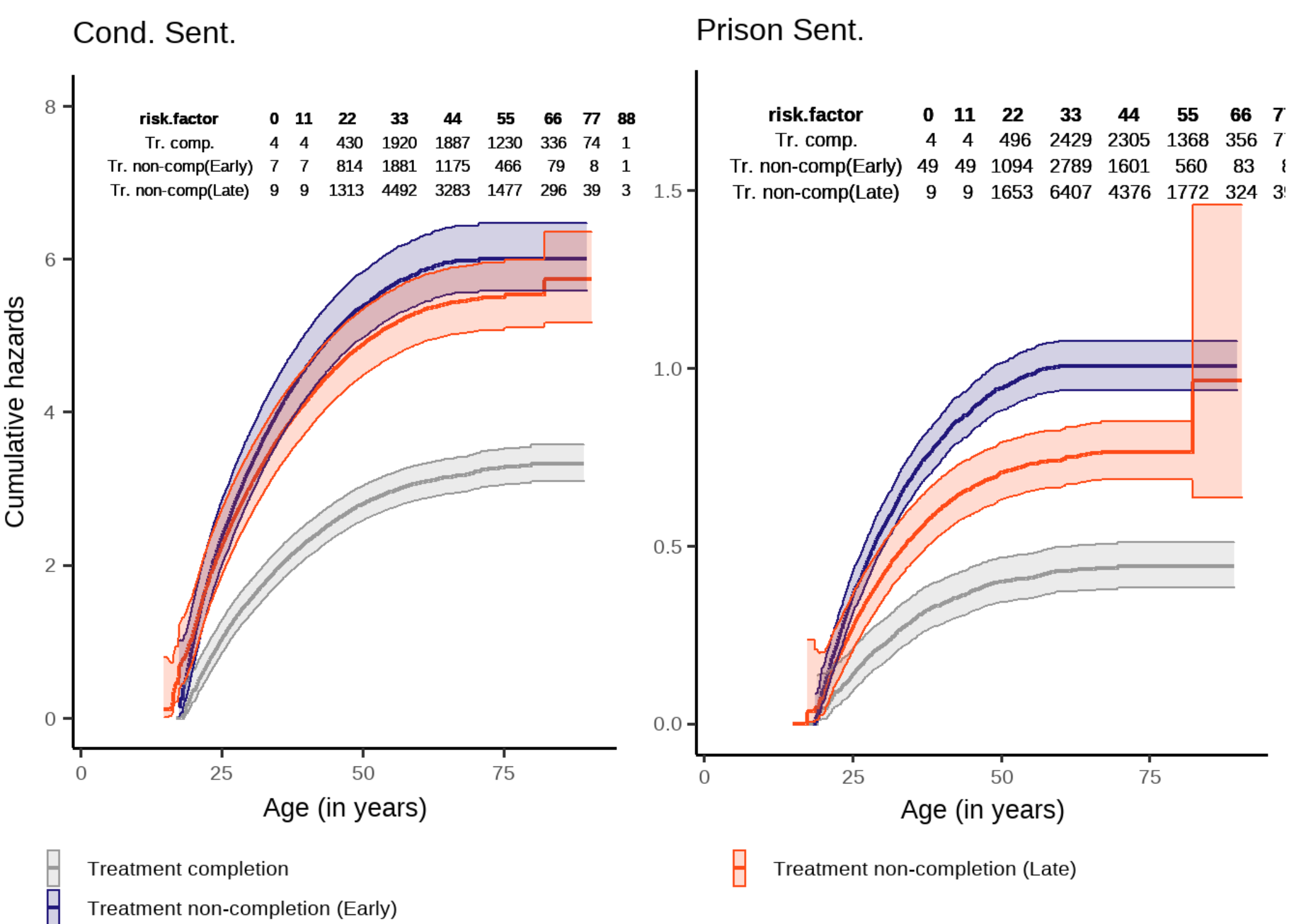
Figure 1: Cumulative Hazards of Offense (Difference with age of offense from baseline treatment outcome (Staggered entry)

References

[1] M. Prendergast, D. Podus, E. Chang, et al. "Erratum to The effectiveness of drug abuse treatment: a meta-analysis of comparison group studies". In: *Drug and Alcohol Dependence - DRUG ALCOHOL DEPENDENCE* 84 (sept.. 2006), pp. 133-133. DOI: 10.1016/j.drugalcdep.2006.02.002.

[2] H. Klingemann. "Successes and Failures in Treatment of Substance Abuse: Treatment System Perspectives and Lessons from the European Continent". In: *Nordisk Alkohol- and Narkotikatidskrift* 37.4 (2020), pp. 323-37.

[3] M. Mateo Pinones, A. González-Santa Cruz, R. Portilla Huidobro, et al. "Evidence-based policymaking: Lessons from the Chilean Substance Use Treatment Policy". En. In: *Int. J. Drug Policy* 109.103860 (nov.. 2022), p. 103860.

[4] J. In and D. K. Lee. "Survival analysis: part II - applied clinical data analysis". En. In: *Korean J. Anesthesiol.* 72.5 (oct.. 2019), pp. 441-457.