

STANCE – Program: Studying social services, treatment and other interventions for Alcohol and Narcotics and resulting health outcomes – Age, Gender, education and country of birth differences in health outcomes of adults with risky substance use or substance use disorder.



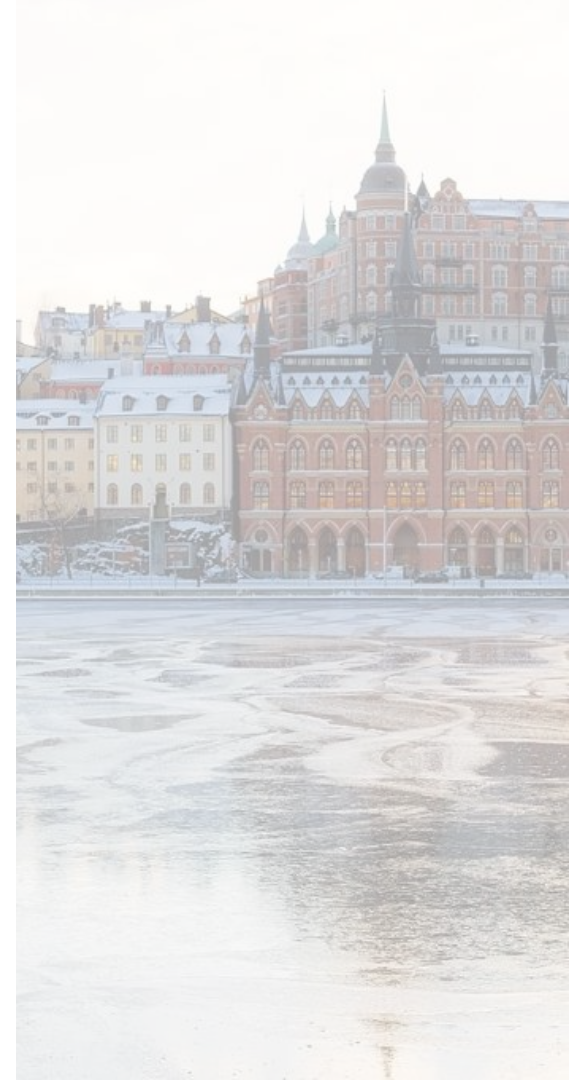
UNIVERSITY of
DENVER

BUTLER INSTITUTE FOR FAMILIES
Graduate School of Social Work



Our research program

- **PROJECT 1. RETROSPECTIVE STUDY (2000-2017) OF HEALTH OUTCOMES OF SWEDISH ADULTS ASSESSED FOR A SUBSTANCE USE DISORDER WITH ASI. (focus of this presentation).**
- **PROJECT 2. IMPLEMENTATION OF NATIONAL REGISTRY OF SOCIAL SERVICES INTERVENTIONS “U-BOAT”**
- **PROJECT 3. PROSPECTIVE STUDY OF RELATIONSHIP BETWEEN SOCIAL SERVICES INTERVENTIONS AND HEALTH OUTCOMES**

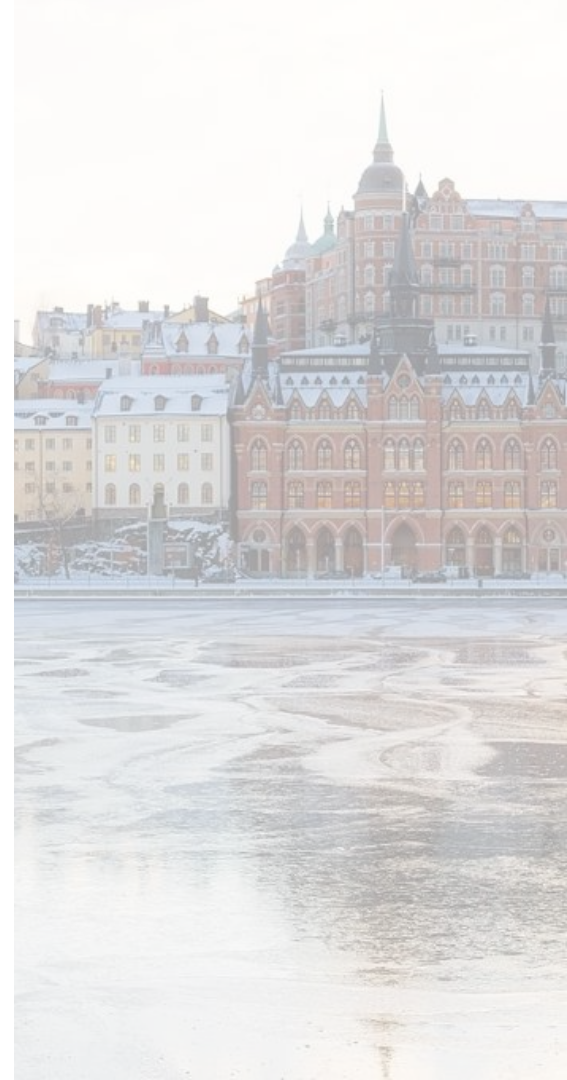


Background

A majority of municipalities in Sweden use, since the late 1990s, the Addiction Severity Index as their assessment tool for risky substance use and substance use disorder.

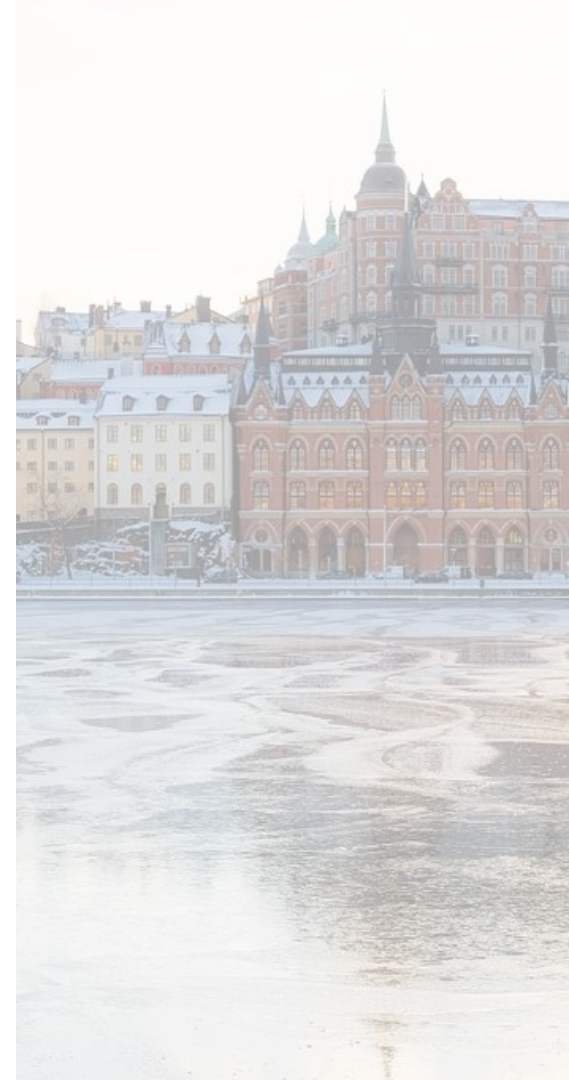
In our research program we have merged ASI assessment data from 2000-2017 with health outcomes registry data for 15,060 adults age 18 and over from 65 municipalities.

These 15,060 adults represent between 35-45% of individuals assessed with ASI for this time period.



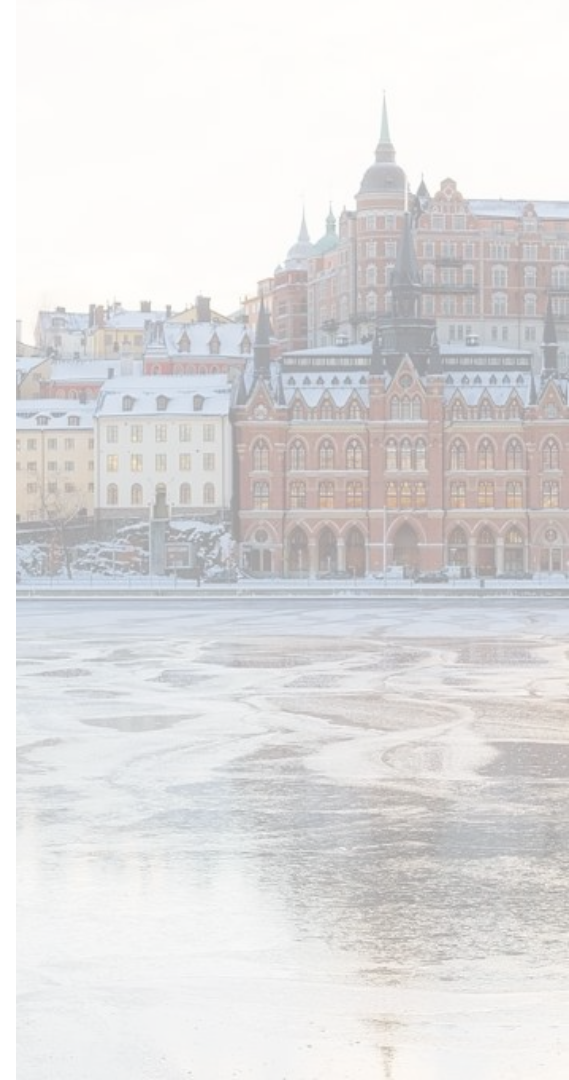
Background

- Registry data on:
- Mortality data including ICD-10 codes for primary and secondary diagnoses.
- Hospitalization data for both physical, mental health, substance use disorder (primary and secondary diagnosis, length of stay, number of stays)
- Disability data, days of sickness data per year, employment, unemployment.
- Extensive data on criminal justice including imprisonment, parole etc.
- From ASI:
- Entire ASI including self report of prior history of mental health and SUD treatment (MAT and psycho-social treatment), mandatory treatment, 7 ASI SCs, ASI interviewer scores etc.



Background

- Our program is funded by the Swedish Council for Health, Working Life and Welfare.
- All data analysis is conducted in Sweden, due to EU laws.
- Our research is to have real world impact with the aim to use results to better target social welfare and addiction treatment to populations at the highest risk for negative health outcomes.



Immigration status and country of birth differences in alcohol and narcotic related mortality.

(a version of this paper presented at the NIDA international forum)



Lena Lundgren, Mojgan Padyab, Mikael Sandlund, Marcus Blom Nilsson, Nancy Lucero, Bengt-Ake Armelius, Kerstin Armelius, Siv Nystrom



UNIVERSITY of
DENVER

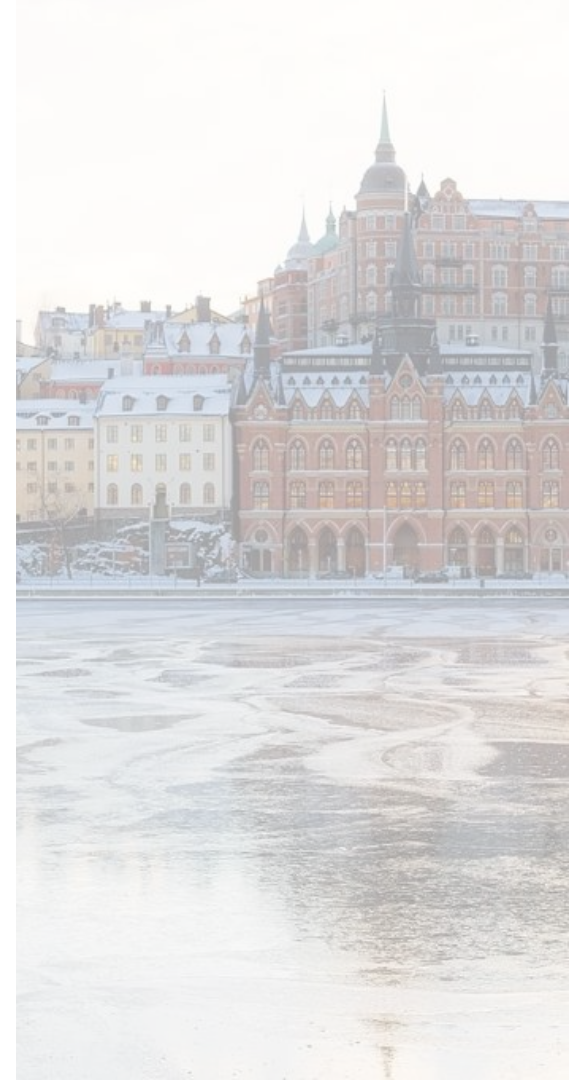
BUTLER INSTITUTE FOR FAMILIES
Graduate School of Social Work



Background

A prior national Swedish ASI study by the authors identified that second generation immigrants from non-Nordic countries assessed for a substance use disorder (SUD) were significantly more likely to report a history of court-mandated care due to severity of SUD (Lundgren et al., 2011).

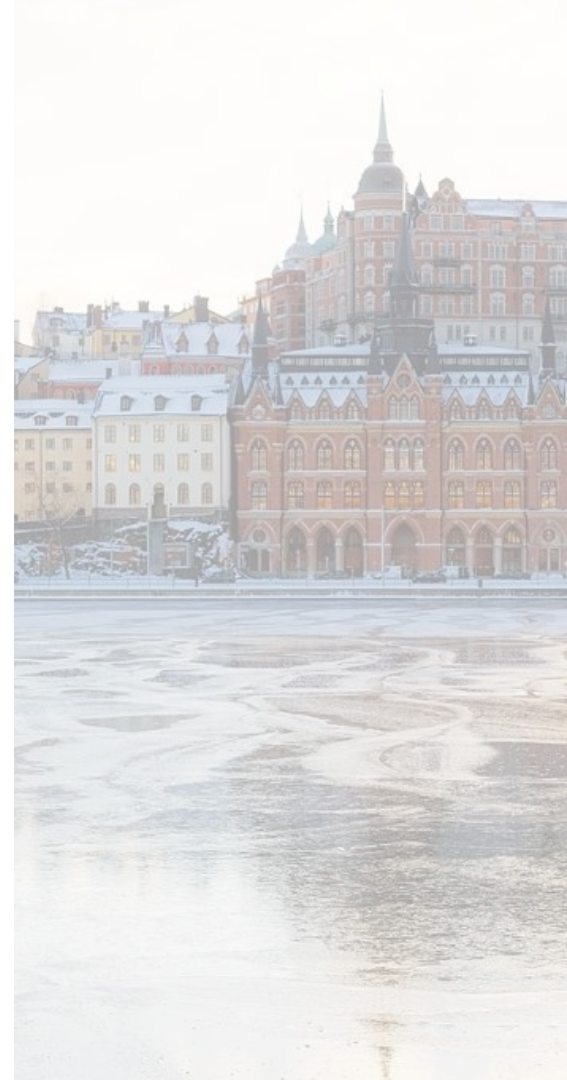
Sweden is one of the countries in Europe who have welcomed the largest number of asylum seekers. One concern is that this population have high levels of trauma, which often goes untreated and therefore may be accompanied by high levels of substance use in this population.



Objectives of Study

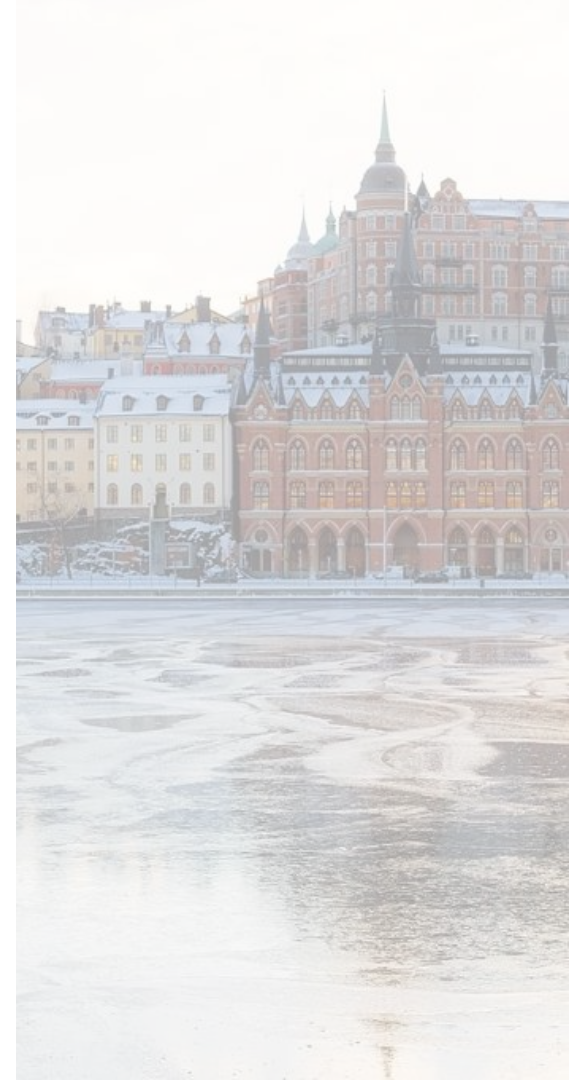
The study presented here examined if country of birth and first- or second- generation immigrant status also predict mortality caused by substance use. One consequence of severe substance use is early mortality due to factors such as accidental or intentional overdose and/or physical conditions such as heart disease and liver cirrhosis.

We also in these multivariate models included gender, age, education and the seven ASI composite scores.



Materials and Methods

1. Two logistic stepwise regression models examined the relationship between immigration status, gender, age, education, the seven ASI composite scores and death due to narcotics or alcohol use.
2. Less than 10% missing data.
3. The data represent between 35-45% of individuals in Sweden assessed for risky substance use or SUD for with ASI for the time period 2000-2017.



Sample Description

Table 1: Sample description (N=15,012)	
	% or mean (SD)
Age (years)	38.9 (13.7)
Gender	
Female	29
Male	71
Education (years)	11.3 (2.8)
Immigration status	
Individual and their parents born in Sweden	67
Individual born in either Norway, Denmark, or Finland	4.6
Individual born outside of Sweden, Norway, Denmark, and Finland	12.2
Individual born in Sweden and at least one parent born in Norway, Denmark, or Finland (and no parent born outside of the Nordic countries)	7.7
Individual born in Sweden and at least one parent born outside Sweden, Norway, Denmark, and Finland	8.5

RESULTS

Table 1: Bivariate descriptive statistics in relation to cause specific mortality			
<i>Alcohol-related mortality</i>	Still living % or mean (SD)	Deceased % or mean (SD)	Unadjusted logistic regression results OR (CI)
Age (years)	38.5(13.6)	51.1(10.3)	1.07(1.06–1.08)***
Gender			
Female	97.7	2.3	1 (Ref)
Male	96.8	3.2	1.4 (1.13–1.78)***
Education (years)	11.3(2.7)	11.2(2.9)	0.98(0.94–1.01)
<i>Immigration status</i>			
Individual and their parents born in Sweden	96.66	3.34	1 (Ref)
Individual born in either Norway, Denmark, or Finland	93.86	6.14	1.9(1.3–2.6)***
Individual born outside of Sweden, Norway, Denmark, and Finland	98.91	1.09	0.32(0.2–0.5)***
Individual born in Sweden and at least one parent born in Norway, Denmark, or Finland (no other country outside Sweden)	97.59	2.41	0.7(0.48–1.05)
Individual born in Sweden and at least one parent born outside Sweden, Norway, Denmark, and Finland	98.9	1.1	0.32(0.18–0.55)***
<i>ASI Composite Scores</i>			
Mental health	0.37(0.3)	0.28(0.2)	0.27(0.18–0.41)***
Family and social relationships	0.26(0.2)	0.19(0.2)	0.20(0.12–0.33)***
Employment	0.77(0.3)	0.78(0.3)	1.17(0.81–1.67)
Alcohol	0.33(0.3)	0.48(0.3)	4.78(3.46–6.62)***
Drug use	0.13(0.14)	0.04(0.1)	0.002(0.001–0.01)***
Health	0.35(0.3)	0.45(0.3)	2.23(1.69–2.92)***
Legal	0.13(0.2)	0.06(0.1)	0.12(0.05–0.23)***
*** p<0.001			

RESULTS

Table 2. Narcotic-related mortality			
Age (years)	39.04(13.6)	33.5(11,2)	0,97(0,95-0,98)***
Gender			
Female	98,5	1,45	1 (Ref)
Male	97,1	2,92	2,1(1,6-2,7)***
Education (years)	11.2(2,8)	10.9(2,5)	0,96(0,92-1,0)
<i>Immigration status</i>			
Individual and their parents born in Sweden	97,5	2,5	1 (Ref)
Individual born in either Norway, Denmark, or Finland	97,5	2,5	0,99(0,61-1,63)
Individual born outside of Sweden, Norway, Denmark, and Finland	98,1	1,9	0,73(0,51-1,05)
Individual born in Sweden and at least one parent born in Norway, Denmark, or Finland (no other country outside Sweden)	96,5	3,5	1,39(0,99-1,95)
Individual born in Sweden and at least one parent born outside Sweden, Norway, Denmark, and Finland	97,5	2,5	1,0(0,69-1,5)
<i>ASI Composite Scores</i>			
Mental health	0.36(0.27)	0.42(0.25)	2,2(1,5-3,3)***
Family and social relationships	0,26(0,23)	0,26(0,22)	0,92(0,57-1,5)
Employment	0,77(0,29)	0,89(0,21)	7,8(4,4-13,5)***
Alcohol	0,34(0,29)	0,26(0,28)	0,39(0,26-0,58)***
Drug use	0,13(0,14)	0,20(0,15)	23,4(11,7-46,5)***
Health	0,35(0,34)	0,42(0,34)	1,7(1,3-2,3)***
Legal	0,13(0,22)	0,21(0,26)	3,6(2,4-5,5)***
*** p<0.001			

Results

Table 3: Multivariate Stepwise regression model: Odds ratio (95% CI) for alcohol related mortality in relation to immigration status

Age (years)	1,05(1,04-1,06)***		
Gender			
Female	1 (Ref)		
Male	1,3(0,9-1,8)		
Immigration status			
Individual and their parents born in Sweden	1 (Ref)		
Individual born in either Norway, Denmark, or Finland	1,56(1,03-2,37)*		
Individual born outside of Sweden, Norway, Denmark, and Finland	0,51(0,26-1,0)		
Individual born in Sweden and at least one parent born in Norway, Denmark, or Finland (no other country outside Sweden)	0,81(0,47-1,4)		
Individual born in Sweden and at least one parent born outside Sweden, Norway, Denmark, and Finland	0,54(0,25-1,18)		
ASI Composite Scores			
Mental health	0,64(0,34-1,20)		
Family and social relationships	0,21(0,10-0,42)***		
Employment	-		
Alcohol	2,89(1,83-4,56)***		
Drug use	0,04(0,01-0,2)***		
Health	1,69(1,15-2,5)***		
Legal	0,63(0,25-1,59)		
*p<0,05 ** p<0,01 *** p<0,001			

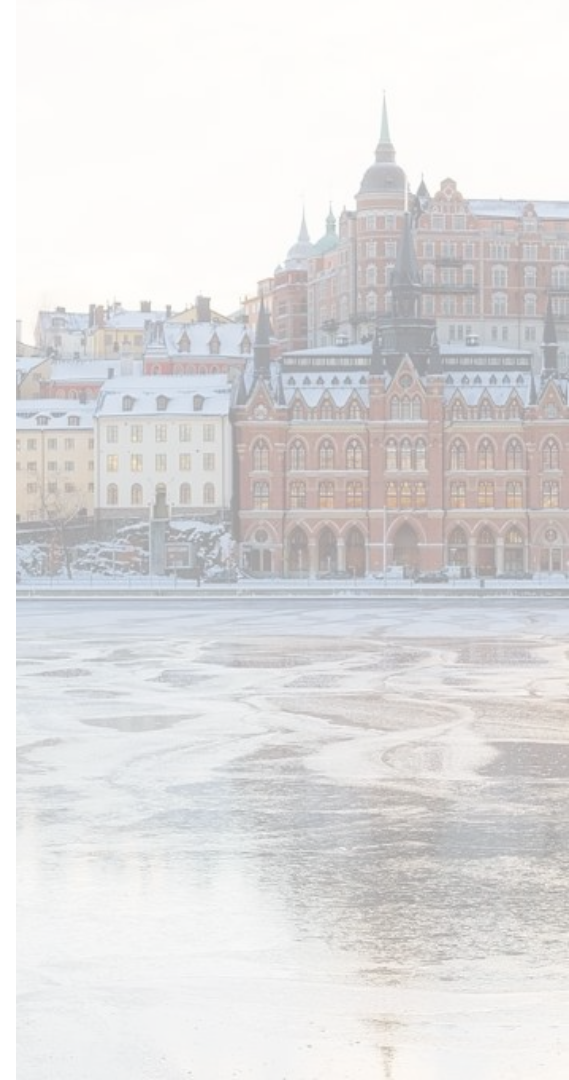
Results

Table 4: Multivariate Stepwise regression model : Odds ratio (95% CI) for the narcotic related mortality in relation to immigration status

Age (years)	0,97(0,96-0,98)***
Gender	
Female	1 (Ref)
Male	1,94(1,37-2,75)***
Immigration status	
Individual and their parents born in Sweden	1 (Ref)
Individual born in either Norway, Denmark, or Finland	2,07(1,18-3,63)*
Individual born outside of Sweden, Norway, Denmark, and Finland	0,43(0,25-0,73)**
Individual born in Sweden and at least one parent born in Norway, Denmark, or Finland (no other country outside Sweden)	0,97(0,61-1,53)
Individual born in Sweden and at least one parent born outside Sweden, Norway, Denmark, and Finland	0,40(0,22-0,73)**
ASI Composite Scores	
Mental health	1,06(0,61-1,86)
Family and social relationships	-
Employment	4,57(2,33-8,96)***
Alcohol	0,68(0,41-1,15)
Drug use	6,83(2,76-16,9)***
Health	1,73(1,15-2,61)**
Legal	0,87(0,48-1,57)

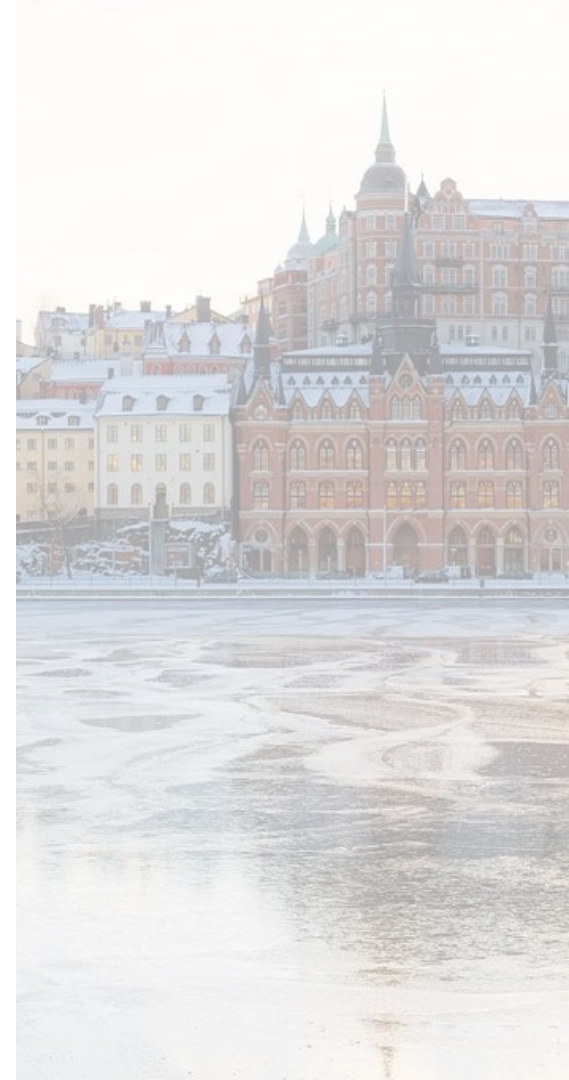
Study 2: Examining the predictability of the Addiction Severity Index on future inpatient mental health hospitalization: (Padyab, Lundgren et al., 2018)

- The co-occurrence of alcohol, other drug, and psychiatric disorders has been widely recognized, with the most consistently documented comorbidity disorders being mood and anxiety disorders and depressive disorders.
- To expand on the usefulness of ASI as an assessment tool for predicting mental health among those assessed for a SUD in Sweden, we initially developed a pilot study to examine, using a convenience sample of 233 adults assessed with ASI, the predictability of ASICS and MHD hospitalization.



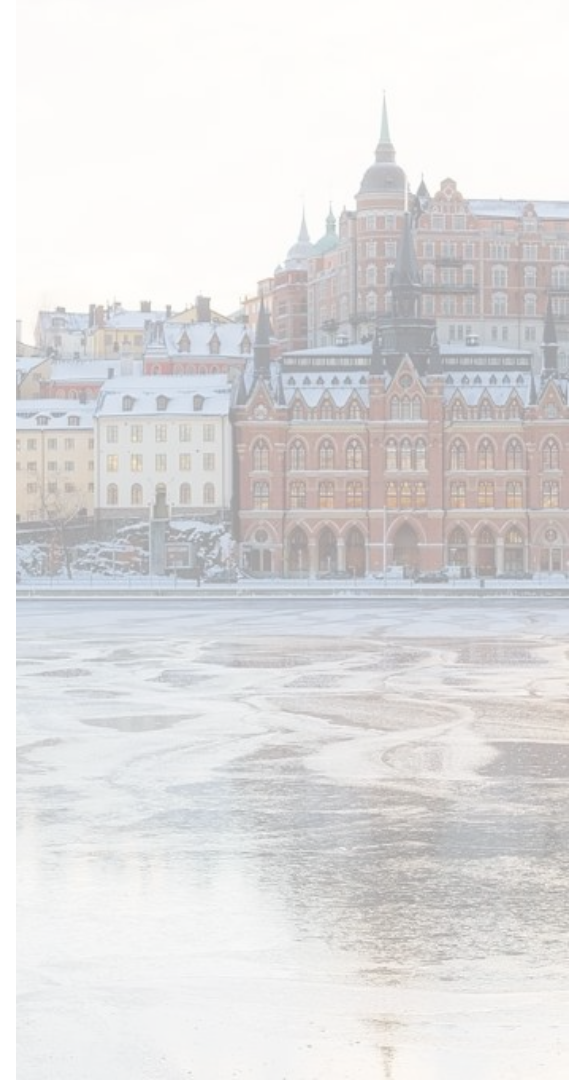
Results from pilot study

- Our pilot study identified that having had a MHD hospitalization two years prior to the ASI baseline assessment, higher ASI CSs on drug use, employment and mental health, and, male gender were significant predictors of future MHD hospitalization seven year's post ASI assessment. (Padyab et al., 2018)
- The study presented here replicates this pilot study using a national sample of 15061 individuals assessed for an SUD between 2003-2017



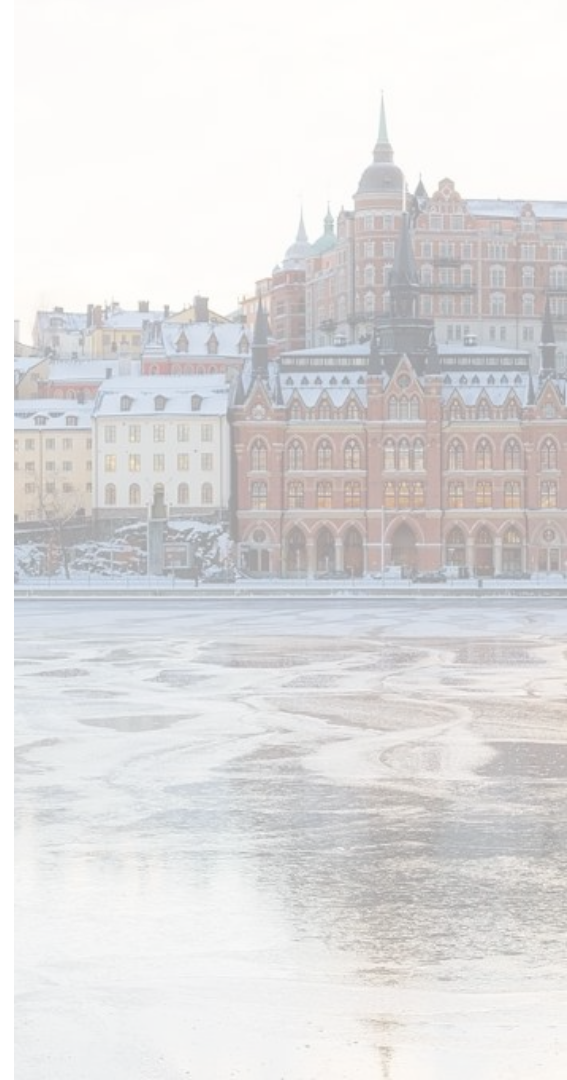
Methods

- ASI baseline data was merged with The National Patient Register available at the Swedish National Board of Health and Welfare (NBHW).
- Independent variables: ASI Composite Scores, ASI Interviewer severity ratings
- Control variables: prior MHD inpatient hospitalization, age, gender
- Dependent variable: occurrence of inpatient hospitalizations due to MHD within a 14-year interval after the first ASI interview date. Inpatient hospitalization data were extracted from The National Patient Register.
- International Classification of Diseases (ICD-10) primary diagnosis codes were used to identify individuals with inpatient hospitalization due to mental health.



Sample description

- About three quarters (71%) of the participants were men.
- 54% of the entire sample had at least one MHD inpatient hospitalization in the two years prior to ASI assessment.



Bivariate model

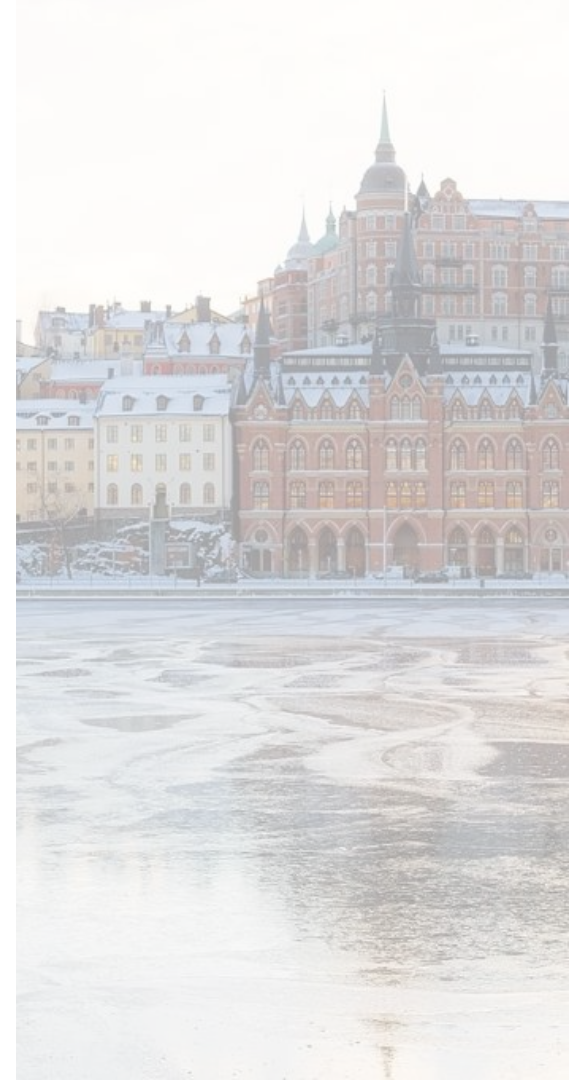
Bivariate associations between baseline ASI Composite Scores and subsequent mental health disorder hospitalization post baseline.			
	Subsequent mental health hospitalization post baseline		
	No (n = 7946)	Yes (n = 6968)	P-value
Male %	71	71	0,9
Age (Mean ± SD)	38.9 ± 13,8	38,9 ± 0,16	0,7
Prior mental health hospitalization (%)	39	69	<0.001
ASI Composite Scores (Mean ± SD)			
Mental health	0,29±0,24	0,35±0,24	<0,001
Family and social relationships	0,26±0,23	0,28±0,23	<0,001
Employment	0,74±0,31	0,81±0,26	<0,001
Alcohol	0,32±0,28	0,37±0,31	<0,001
Drug use	0,12±0,14	0,14±0,15	<0,001
Health	0,34±0,34	0,38±0,34	<0,001
Legal	0,13±0,22	0,14±0,22	0,1
ASI Interviewer severity rating (0-9)			
Mental health	3,77±2,55	4,31±2,53	0,001
Family and social relationships	2,92±2,35	3,20±2,35	0,001
Employment	3,20±2,49	3,37±2,48	0,001
Alcohol	3,68±2,75	4,19±2,83	0,001
Drug use	3,06±3,05	3,58±3,19	0,001
Health	2,18±2,21	2,46±2,27	0,001
Legal	1,50±2,18	1,53±2,17	0,4 (NS)

Multivariate model

Hazard ratios (95% CI) for the association between baseline ASI problem areas composite scores and Interviewer severity rating), prior mental health disorder hospitalization, and mental health disorder hospitalization post ASI interview		
	HR (95% CI) CS	HR (95% CI) ISR
Prior mental health inpatient hospitalization		
Yes	2.69 (2.51-2.88)***	2.85(2.69-3.02)***
No	1 (reference)	1 (Reference)
ASI problem area		
Mental health	1.47 (1.27-1.72) ***	1.03(1.01-1.04)***
Family and social relationships	1.03(0.89-1.19)	1.0(0.99-1.02)
Health	0.95(0.86-1.05)	1.0(0.99-1.02)
Employment	1.48 (1.31-1.67)***	0.99(0.98-1.0)
Alcohol	1.58 (1.42-1.77)***	1.04(1.03-1.05)***
Drug use	2.61 (2.07-3.29)***	1.04(1.03-1.05)***

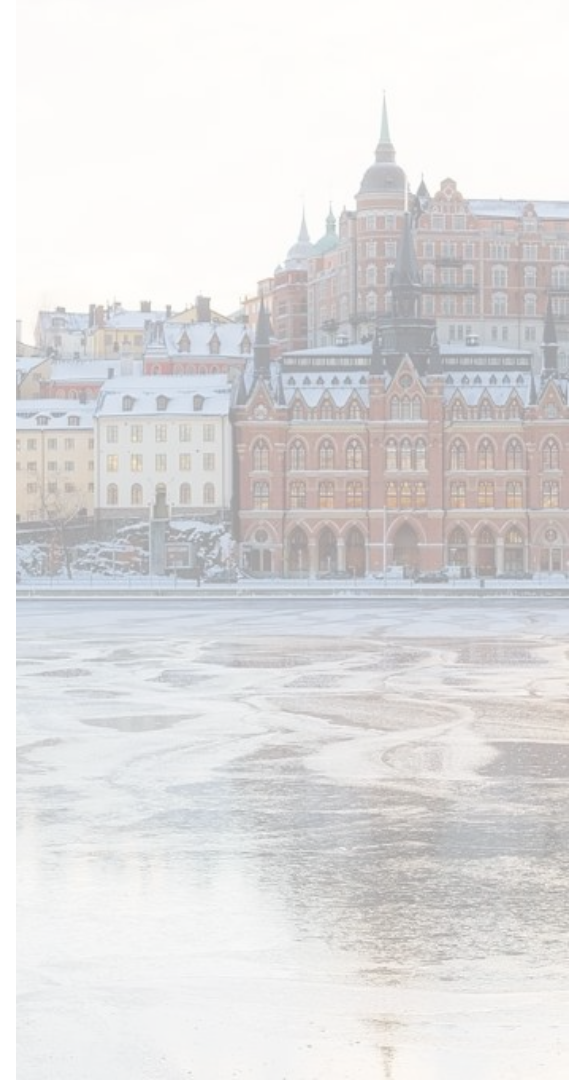
Discussion

- Men were more likely to die both from alcohol and narcotics related causes compared to women.
- No significant gender differences in inpatient hospitalization for mental health disorder post ASI assessment.
- Older individuals assessed for risky substance use or an SUD had a higher likelihood of alcohol related mortality. Age reversed with respect to narcotics related mortality. Those who were younger were more likely to die from narcotics related causes.
- Age was not associated with MHD inpatient hospitalization.
- Individuals born in Nordic countries excluding Sweden 1.56-2. times more likely to die of alcohol/narcotic related causes.
- Individuals born outside of the Nordic countries were significantly less likely to die of narcotics related mortality compared to those born in Sweden. (also true for second generation immigrants.)
- (Immigration status and country of birth not associated with inpatient hospitalization.)



Discussion

- Having a lower ASI SC for alcohol predicted higher likelihood of narcotics related mortality. Having a lower AS CS for narcotics predicted alcohol related mortality.
- Having a higher ASI CS for employment (more problems with employment) predicted narcotics related mortality.
- ASI CS health but not mental health scores were strongly associated with having a primary or secondary diagnosis of substance use related mortality.
- Higher ASI CS on mental health, alcohol and drug use predicted future inpatient hospitalization event.



Book 😊



SCREENING, ASSESSMENT, AND TREATMENT OF SUBSTANCE USE DISORDERS

Evidence-Based Practices, Community, and
Organizational Setting in the Era of Integrated Care

LENA LUNDGREN & IVY KRULL

OXFORD
UNIVERSITY PRESS