Background
Study aims

• Classify typologies of substance use among a cohort of polysubstance users
• Examine the association between latent classes, potential risk factors for mortality and mortality

Methods

• A 30-year prospective registry study
  — Inclusion Sept-Nov 2013
• Interview data merged with data from the National population registry
  — Date of death
    • Inclusion-30. October 2015
Inclusion

• To have used illegal opioids and/or central stimulants in the four weeks prior to the interview
• Not in OST

• Recruited from
  – Low threshold services, housing facilities, street magazines, street

Questionnaire

• Interviewer-administrated
• Items
  – Substance use
  – Income and income sources
  – Level of education
  – Living situation
  – Overdose experience
• Approx 15 min
• 200 NKR (32 AUD) for participation
Statistical analysis

- Latent class analysis
  - Substances used previous 4 weeks
    - No use
    - ≤3 times a week
    - Daily or almost daily
  - 20% prevalence

- Cox survival analysis

Baseline characteristics

<table>
<thead>
<tr>
<th></th>
<th>n=527</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (sd)</td>
<td>40.3 (11.0)</td>
</tr>
<tr>
<td>Male</td>
<td>390 (74%)</td>
</tr>
<tr>
<td>Homeless or shelter user</td>
<td>190 (36%)</td>
</tr>
<tr>
<td>Theft</td>
<td>67 (13%)</td>
</tr>
<tr>
<td>Dealing</td>
<td>150 (28%)</td>
</tr>
<tr>
<td>Overdose in the previous 4 weeks</td>
<td>40 (8%)</td>
</tr>
</tbody>
</table>
### Selection of latent classes

<table>
<thead>
<tr>
<th>No of classes</th>
<th>Log likelihood</th>
<th>BIC</th>
<th>A-BIC</th>
<th>A-LMRT</th>
<th>BLRT</th>
<th>Entropy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 class</td>
<td>-3778.2</td>
<td>7669.3</td>
<td>7612.2</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>2 class</td>
<td>-3685.7</td>
<td>7603.2</td>
<td>7485.8</td>
<td>0.000</td>
<td>&lt;0.001</td>
<td>0.69</td>
</tr>
<tr>
<td>3 class</td>
<td>-3637.5</td>
<td>7626.0</td>
<td>7448.2</td>
<td>0.001</td>
<td>&lt;0.001</td>
<td>0.84</td>
</tr>
<tr>
<td>4 class</td>
<td>-3602.2</td>
<td>7674.4</td>
<td>7436.3</td>
<td>0.493</td>
<td>&lt;0.001</td>
<td>0.85</td>
</tr>
<tr>
<td>5 class</td>
<td>-3575.6</td>
<td>7740.4</td>
<td>7442.0</td>
<td>0.798</td>
<td>&lt;0.001</td>
<td>0.75</td>
</tr>
</tbody>
</table>

#### Polysubstance Injectors

- **No use**
- **≤ 3 times a week or less**
- **Daily or almost daily use**

#### Frequent Heroin Injectors

- **No use**
- **≤ 3 times a week or less**
- **Daily or almost daily use**

#### Low Frequent Injectors

- **No use**
- **≤ 3 times a week or less**
- **Daily or almost daily use**
Polysubstance Injectors

- Injected heroin
- Injected amphetamine
- Injected pills
- Alcohol
- Cannabis
- Non-inject amphetamine
- Non-inject pills
- Methadone
- Buprenorphine

Probability of use:

- No use
- ≤ 3 times a week or less
- Daily or almost daily use

Frequent Heroin Injectors

- Injected heroin
- Injected amphetamine
- Injected pills
- Alcohol
- Cannabis
- Non-inject amphetamine
- Non-inject pills
- Methadone
- Buprenorphine

Probability of use:

- No use
- ≤ 3 times a week or less
- Daily or almost daily use
### Probabilities of Baseline Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Polysubstance Injectors</th>
<th>Frequent Heroin Injectors</th>
<th>Low Frequent Injectors</th>
<th>X²</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (SE)</td>
<td>35.50 (0.89)</td>
<td>39.34 (1.03)</td>
<td>42.70 (0.63)</td>
<td>44.25</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Male</td>
<td>0.68</td>
<td>0.77</td>
<td>0.76</td>
<td>1.51</td>
<td>0.471</td>
</tr>
<tr>
<td>Homeless or shelter user</td>
<td>0.48</td>
<td>0.46</td>
<td>0.28</td>
<td>17.76</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>OD in the previous 4 weeks</td>
<td>0.15</td>
<td>0.09</td>
<td>0.04</td>
<td>7.25</td>
<td>0.027</td>
</tr>
<tr>
<td>Theft</td>
<td>0.26</td>
<td>0.07</td>
<td>0.09</td>
<td>11.36</td>
<td>0.003</td>
</tr>
<tr>
<td>Dealing</td>
<td>0.51</td>
<td>0.31</td>
<td>0.17</td>
<td>33.82</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Mortality risk

- 33 deaths
- Time at risk 1025.3 person-years
- IR 3.21 (95% CI 2.29; 4.53) per 100 PY

- Polysubstance injectors had a significantly higher probability of overdose in the past four weeks, do they have a higher risk of death?

Adjusted cox survival analysis

|                         | Haz. Ratio | [95% CI]      | P>|z|  |
|-------------------------|------------|---------------|-----|
| Male                    | 1.02       | 0.47; 2.26    | 0.949|
| age                     | 1.04       | 1.01; 1.08    | 0.016|
| Homeless or shelter user| 0.59       | 0.27; 1.31    | 0.196|
| Overdose past month     | 6.47       | 2.86; 14.65   | <0.001|
| Class 1: Polysubstance injectors | 1.37 | 0.60; 3.15 | 0.453|
Adjusted cox survival analysis II

|                        | Haz. Ratio | [95% CI]     | P>|z| |
|------------------------|------------|--------------|-----|
| Male                   | 1.02       | 0.46; 2.24   | 0.964 |
| Age                    | 1.04       | 1.01; 1.08   | 0.017 |
| Homeless or shelter user | 0.61      | 0.27; 1.37   | 0.229 |
| Overdose past month    | 6.71       | 2.93; 15.35  | <0.001 |
| Class 1: Polysubstance injectors | 1.25   | 0.52; 3.01   | 0.611 |
| Class 2: Frequent heroin injectors | 0.74   | 0.29; 1.92   | 0.541 |

Conclusion

- Three latent classes
  - Polysubstance injectors
  - Frequent heroin injectors
  - Low frequent injectors
- High mortality risk
- None of latent classes were associated with increased mortality risk
- Cause of death not available