## Appendix 1 – Additional analyses

*Table S1 Knowledge about drug purchase.*

|  |  |  |
| --- | --- | --- |
| **variables** | **n** | % |
| **where to find information** |  |  |
| friends | 625 | 64.36% |
| family | 140 | 14.42% |
| TV | 673 | 69.31% |
| social network | 432 | 44.49% |
| specialized blog | 78 | 8.03% |
| internet | 374 | 38.52% |
| specialized shop | 26 | 2.68% |
| drug dealer | 76 | 7.83% |
| no information | 256 | 26.37% |
| **where to buy drugs** |  |  |
| street/park | 775 | 79.90% |
| discos | 700 | 72.17% |
| friends | 348 | 35.88% |
| family | 13 | 1.34% |
| internet | 313 | 32.29% |
| shop | 146 | 15.05% |
| no information | 121 | 12.47% |

*Table S2 Knowledge of people that used substances and which substances they have consumed.*

|  |  |  |
| --- | --- | --- |
| **variables** | **n** | **%** |
| **friends use** |  |  |
| no | 161 | 16.67% |
| yes | 758 | 78.47% |
| no information | 48 | 4.97% |
| **substances** |  |  |
| NBOMe | 10 | 1.19% |
| 2CB | 11 | 1.31% |
| 4-HO-MET | 12 | 1.43% |
| DMT | 16 | 1.91% |
| alpha-PVP | 3 | 0.36% |
| amphetamine | 182 | 21.70% |
| BZP | 10 | 1.19% |
| THC | 592 | 69.37% |
| cocaine | 505 | 60.19% |
| heroin | 204 | 24.31% |
| GHB | 26 | 3.01% |
| JWH-018 | 10 | 1.19% |
| JWH-250 | 3 | 0.36% |
| ketamine | 137 | 16.33% |
| khat | 16 | 1.91% |
| kratom | 18 | 2.14% |
| LSD | 259 | 30.87% |
| MDMA | 270 | 32.18% |
| MDPV | 9 | 1.07% |
| mephedrone | 11 | 1.31% |
| metamphetamine | 92 | 10.97% |
| metoxetamine | 7 | 0.83% |
| oxicodone | 49 | 5.84% |
| ocfentanyl | 15 | 1.79% |
| PCP | 18 | 2.15% |
| popper | 219 | 26.10% |
| ritalin | 47 | 5.60% |
| salvia | 67 | 7.99% |
| no information | 78 | 9.30% |

*Table S3. Firth’s penalised model for current use of NPS. Bold characters indicate a p-value < 0.05. 95%CI, 95% confidence interval; ED, Emergency department; BIC, Bayesian Information Criterion; M&Z, McKelvey and Zavoina; OR, Odds Ratio; ref, reference.*

|  |  |  |  |
| --- | --- | --- | --- |
| **variables** | **unadjusted**  **OR [95%CI]** | **model 1 adjusted**  **OR [95%CI]** | **model 2 adjusted**  **OR [95%CI]** |
| **age** | 0.99 [0.95 - 1.04] | - | - |
| **sex**  female  male  intersexual | (ref.)  **2.53 [1.12 - 5.74]**  4.26 [0.22 - 81.22] | (ref.)  1.44 [0.55 - 3.76]  5.58 [0.24 – 129.55] | - |
| **sexual orientation**  heterosexual  homosexual  bisexual  other | (ref.)  **4.61 [1.58 - 13.50]**  1.71 [0.31 - 9.31]  5.79 [9.29 - 115.83] | (ref.)  2.28 [0.62 - 8.37]  3.27 [0.53 - 21.15]  39.67 [1.04 - 1510.18] | (ref.)  2.40 [0.71 - 8.11]  1.20 [0.36 - 11.22]  4.10 [0.15 – 108.96] |
| **Italian nationality**  no  yes | (ref.)  **0.07 [0.18 - 0.24]** | (ref.)  0.073 [0.006 - 0.195] | (ref.)  **0.05 [0.01 - 0.23]** |
| **parents’ nationality**  both Italians  mixed  both foreigners | (ref.)  2.38 [0.43 - 13.07]  5.33 [0.92 - 31.02] | - | - |
| **housemate**  alone  partner  own family  sons  family of origin  friends  flatmate  other | (ref.)  0.52 [0.17 - 1.630]  0.69 [0-04 - 12.74]  4.01 [0.18 - 91.22]  **0.35 [0.13 - 0.99]**  1.82 [0.54 - 6.12]  3.16 [0.49 - 20.59]  2.23 [0.11 - 45.34] | (ref.)  0.30 [0.08 - 1.12]  0.74 [0.04 - 14.74]  5.00 [0.18 - 139.82]  0.12 [0.03 - 0.51]  1.44 [0.39 - 5.32]  0.76 [0.03 - 22.77]  1.27 [0.04 - 41.59] | (ref.)  0.45 [0.14 - 1.40]  0.72 [0.04 - 13.35]  4.18 [0.18 - 95.54]  **0.25 [0.08 - 0.76]**  1.62 [0.47 - 5.55]  1.23 [0.09 - 17.67]  1.95 [0.09 - 42.80] |
| **living condition**  own house  rented house  other | (ref.)  **3.46 [1.49 - 8.04]**  1.46 [0.08 - 25.87] | (ref.)  1.00 [0.33 - 3.03]  0.73 [0.04 - 13.35] | - |
| **educational level**  lower secondary  higher secondary  bachelor  master  postgraduate | (ref.)  0.86 [0.11 - 7.02]  0.23 [0.01 - 3.79]  0.90 [0.11 - 7.33]  0.03 [0.01 - 9.05] | - | - |
| **work**  independent  employee  student  retired  unemployed  homemaker  other | (ref.)  0.95 [0.32 - 2.79]  0.66 [0.20 - 2.25]  3.92 [0.18 - 87.81]  0.41 [0.02 - 7.80]  1.02 [0.05 - 19.92]  3.05 [0.14 - 65.65] | - | - |
| **monthly income**  < 500€  501€-1200€  1201€-2300€  2301€-4500€  4501€-6250€  >6251€ | (ref.)  0.48 [0.07 - 3.05]  1.60 [0.52 - 4.89]  2.68 [0.75 - 9.53]  1.74 [0.09 - 34.03]  2.47 [0.12 - 49.35] | - | - |
| **alcohol – ED**  no  yes | (ref.)  2.17 [0.95 - 4.97] | - | - |
| **substances – ED**  no  yes | (ref.)  1.54 [0.09 - 26.82] | - | - |
| **psychiatric history**  no  yes | (ref.)  1.16 [0.52 - 2.57] | - | - |
| **psychiatric history, relatives**  no  yes | (ref.)  1.17 [0.47 - 2.89] | - | - |
| **nicotine consumption in the previous 6 months**  no  yes | (ref.)  2.27 [0.99 - 5.20] | - | - |
| **binge alcohol in the previous 6 years**  no  yes | (ref.)  **2.91 [1.20 - 7.04]** | (ref.)  1.78 [0.68 - 4.66] | - |
| **M&Z pseudo-R2** | - | 0.277 | 0.155 |
| **BIC** | - | 295.070 | 290.561 |

*Table S4 Firth’s penalised model for lifetime use of NPS. Bold characters indicate a p-value < 0.05. 95%CI, 95% confidence interval; ED, Emergency department; BIC, Bayesian Information Criterion; M&Z, McKelvey and Zavoina; OR, Odds Ratio; ref, reference.*

|  |  |  |
| --- | --- | --- |
| **variables** | **unadjusted**  **OR [95%CI]** | **model 1 adjusted**  **OR [95%CI]** |
| **sex**  female  male  intersexual | (ref.)  **2.50 [1.69 - 3.67]**  0.75 [0.04 – 13.48] | (ref.)  **2.31 [1.52 - 3.51]**  0.97 [0.05 - 18.65] |
| **sexual orientation**  heterosexual  homosexual  bisexual  other | (ref.)  **2.69 [1.36 - 5.33]**  2.01 [0.91 - 4.44]  4.19 [0.55 - 32.09] | (ref.)  **2.54 [1.23 - 5.25]**  1.54 [0.61 - 3.89]  4.07 [0.41 - 40.61] |
| **Italian nationality**  no  yes | (ref.)  0.42 [0.12 - 1.44] | - |
| **parents’ nationality**  both Italians  mixed  both foreigners | (ref.)  1.04 [0.33 - 3.27]  0.91 [0.16 - 5.10] | - |
| **educational level**  lower secondary  higher secondary  bachelor  master  postgraduate | (ref.)  0.47 [0.19 - 1.17]  0.86 [0.33 - 2.21]  0.44 [0.18 - 1.09]  0.72 [0.28 - 1.88] | - |
| **alcohol – ED**  no  yes | (ref.)  **3.60 [2.42 - 5.36]** | (ref.)  **3.34 [2.21 - 5.04]** |
| **substances – ED**  no  yes | (ref.)  0.83 [0.15 - 4.62] | - |
| **psychiatric history**  no  yes | (ref.)  **1.51 [1.03 - 2.23]** | (ref.)  **1.57 [1.04 - 2.39]** |
| **psychiatric history, relatives**  no  yes | (ref.)  1.07 [0.70 - 1.63] | - |
| **M&Z pseudo-R2** | - | 0.165 |
| **BIC** | - | 669.474 |

*Table S5. Current use of traditional drugs.*

*Bold characters indicate a p-value < 0.05. 95%CI, 95% confidence interval; ED, Emergency department; BIC, Bayesian Information Criterion; H&L, Hosmer-Lemeshow; LR, Likelihood Ratio; M&Z, McKelvey and Zavoina; OR, Odds Ratio; ref, reference; \*retained model.*

|  |  |  |  |
| --- | --- | --- | --- |
| **variables** | **unadjusted OR [95%CI]** | **model 1 adjusted OR [95%CI]** | **model 2 adjusted OR [95%CI]\*** |
| **age** | **0.96 [0.93 - 0.98]** | 0.97 [0.91 - 1.02] | - |
| **gender**  female  male  intersexual | (ref.)  **2.86 [1.88 - 4.35]**  Empty | (ref.)  **3.2 [1.75 - 5.84]**  empty | (ref.)  **2.33 [1.41 - 3.88]**  empty |
| **sexual orientation**  heterosexual  homosexual  bisexual  other | (ref.)  1.21 [0.46 - 3.19]  **3.04 [1.36 - 6.77]**  3.88 [0.35 – 43.27] | (ref.)  0.97 [0.28 - 3.36]  1.39 [0.44 - 4.44]  7.44 [0.2 - 277.76] | - |
| **Italian nationality**  no  yes | (ref.)  0.6 [0.13 – 2.83] | - | - |
| **parents’ nationality**  both Italians  mixed  both foreigners | (ref.)  **2.73 [1.05 - 7.11]**  1.55 [0.33 - 7.18] | (ref.)  2.17 [0.54 - 8.7]  2.14 [0.11 - 40.61] | - |
| **housemate**  alone  partner  own family  sons  family of origin  friends  flatmate  other | (ref.)  1.39 [0.73 - 2.65]  1.48 [0.3 - 7.05]  empty  0.91 [0.49 - 1.67]  **3.04 [1.37 - 6.76]**  2.90 [0.54 - 15.57]  8.69 [0.52 - 145.7] | (ref.)  1.94 [0.82 - 4.60]  7.37 [0.93 - 58.43]  empty  0.83 [0.34 - 2.18]  1.78 [0.57 - 5.55]  3.40 [0.38 - 30.57]  empty | - |
| **living condition**  own house  rented house  other | (ref.)  **2.38[1.56 - 3.63]**  1.05 [0.24 - 4.62] | (ref.)  1.57 [0.76 - 3.25]  1.11 [1.15 - 8.24] | - |
| **educational level**  lower secondary  higher secondary  bachelor  master  postgraduate | (ref.)  0.66 [0.24 - 1.84]  0.91 [0.31 - 2.67]  0.70 [0.25 - 1.94]  0.66 [0.21 - 1.98] | - | - |
| **work**  independent  employee  student  retired  unemployed  homemaker  other | (ref.)  1.51 [0.77 - 2.98]  1.70 [0.83 - 3.45]  empty  0.33 [0.04 - 2.64]  empty  3.40 [0.32 - 35.46] | - | - |
| **monthly income**  < 500€  501€-1200€  1201€-2300€  2301€-4500€  4501€-6250€  >6251€ | (ref.)  1.59 [0.84 - 3.0]  1.34 [0.77 - 2.33]  0.65 [0.26 - 1.57]  1.56 [0.32 - 7.51]  **5.14 [1.15 - 23.07]** | (ref.)  1.39 [0.55 - 3.51]  1.02 [0.40 - 2.61]  0.29 [0.06 - 1.34]  1.07 [0.1 - 11.35]  3.72 [0.55 - 25.04] | - |
| **alcohol - ED**  no  yes | (ref.)  **3.60 [2.35 - 5.5]** | (ref.)  **2.34 [1.29 - 4.22]** | (ref.)  **2.41 [1.45 - 4.0]** |
| **substances - ED**  no  yes | (ref.)  **5.44 [1.69 - 17.48]** | (ref)  1.62 [0.37 - 7.15] | - |
| **psychiatric history**  no  yes | (ref.)  1.1 [0.83 - 1.9] | - | - |
| **psychiatric history, relatives**  no  yes | (ref.)  1.21 [0.41 - 1.91] | - | - |
| **nicotine consumption in the previous 6 months**  no  yes | (ref.)  **4.93[3.19 - 8.39]** | (ref)  **5.17 [2.84 - 9.43]** | (ref)  **4.36 [2.65 - 7.19]** |
| **binge alcohol in the previous 6 months**  no  yes | (ref.)  **5.27 [3.31 - 8.39]** | (ref.)  2.31 [1.27 - 4.23] | - |
| **LR Chi2 (p value)** | - | 0.0000 | 0.0000 |
| **H-L Chi2 (p value)** | - | 0.3242 | 0.4934 |
| **M&Z pseudo-R2** | - | 0.4339 | 0.3025 |
| **BIC** | - | 495.432 | 461.321 |

*Table S6. Lifetime use of traditional drugs.*

*Bold characters indicate a p-value < 0.05. 95%CI, 95% confidence interval; ED, Emergency department; BIC, Bayesian Information Criterion; H&L, Hosmer-Lemeshow; LR, Likelihood Ratio; M&Z, McKelvey and Zavoina; OR, Odds Ratio; ref, reference; \*retained model.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **unadjusted OR [95%CI]** | **model 1 adjusted**  **OR [95%CI]\*** | **model 2 adjusted OR [95%CI]** |
| **gender**  female  male  intersexual | (ref.)  **1.63 [1.25 - 2.14]**  empty | (ref.)  **1.73 [1.25 – 2.4]**  empty | (ref.)  **1.61 [1.2 – 2.17]**  empty |
| **sexual orientation**  heterosexual  homosexual  bisexual  other | (ref.)  1.03 [0.55 - 1.93]  **4.18 [1.89 – 9.28]**  empty | (ref.)  0.87 [0.44 – 1.74]  2.33 [0.98 – 5.58]  empty | - |
| **Italian nationality**  no  yes | (ref.)  1.58 [0.46 – 5.42] | - | - |
| **parents’ nationality**  both Italians  mixed  both foreigners | (ref.)  **3.23 [1.26 - 8.26]**  0.38 [0.10 – 1.41] | (ref)  1.98 [0.65 – 6.06]  0.4 [0.08 – 2.09] | - |
| **educational level**  lower secondary  higher secondary  bachelor  master  postgraduate | (ref.)  0.80 [0.40 - 1.64]  1.16 [0.54 - 2.48]  1.04 [0.51 – 2.11]  1.45 [0.68 – 3.09] | - | - |
| **alcohol - ED**  no  yes | (ref.)  **3.5 [2.6 – 4.73]** | (ref.)  **2.93 [2.09 - 4.12]** | (ref.)  **3.29 [2.41 – 4.48]** |
| **substances - ED**  no  yes | (ref.)  **5.63 [1.23 – 25.83]** | (ref.)  3.32 [0.68 – 16.29] | - |
| **psychiatric history**  no  yes | (ref.)  **1.72 [1.31 - 2.25]** | (ref.)  **1.61 [1.17 - 2.22]** | (ref.)  **1.79 [1.33 – 2.39]** |
| **psychiatric history, relatives**  no  yes | (ref.)  **1.47 [1.09 - 1.99]** | (ref.)  1.22 [0.87 – 1.72] | - |
| **LR Chi2 (p value)** | - | 0.0000 | 0.0000 |
| **H-L Chi2 (p value)** | - | 0.9619 | 0.7594 |
| **M&Z pseudo-R2** | - | 0.1437 | 0.1245 |
| **BIC** | - | 970.409 | 1088.941 |