Scientific Appendix

A. Frequency of use

The table below shows how often annual MDMA use was self-reported. Please note that self-reported substance use tends to be an underestimate of actual substance use. Future work might also consider other sources, such as pills sold by a pilot vendor or hair testing.

Use-per-year	Respondents	Perc.Total
1	305	22.4
2	294	21.6
3	196	14.4
4	106	7.8
5	53	3.9
6	198	14.5
7	17	1.2
8	21	1.5
9	9	0.7
10	9	0.7
11	1	0.1
12	87	6.4
14	2	0.1
15	8	0.6
16	1	0.1
17	1	0.1
18	26	1.9
20	5	0.4
24	4	0.3
25	1	0.1
26	11	0.8
30	1	0.1
36	1	0.1
52	2	0.1
60	1	0.1
78	1	0.1
Total valid	1361	100

Table 1. Data collected from partypanel[17].

Note that, in calculating the variation in state-revenue by randomly sampling frequency, the five highest frequency responses (30-78 times per year) were excluded.

[17] Peters, G. J., & Noijen, J. (2016). Party Panel 15.1 Rapportage voor de deelnemers. URL: http://www.partypanel.nl/resultResources/15.1/Party% 20Panel, 20(15.1).

B. Intensity, Market Capture Rate, Price and Costs

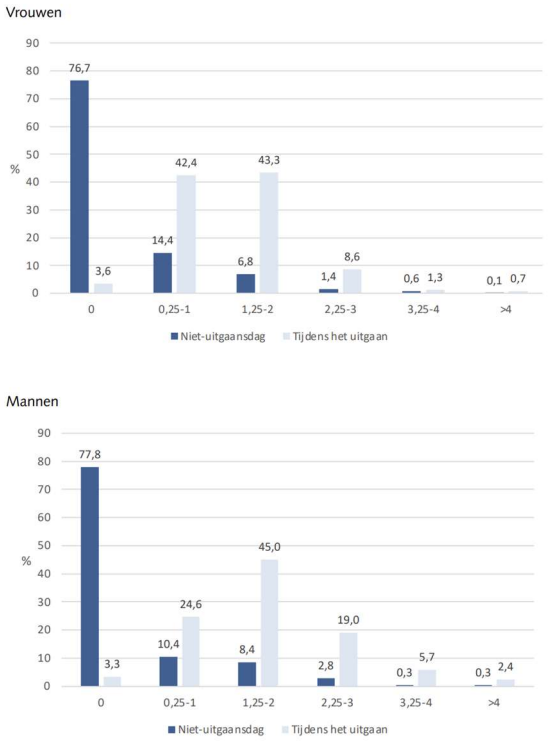
Intensity

As mentioned in the main text, several sources report on the amount of MDMA consumed per usage occasion. Data from *Het Grote Uitgaansonderzoek* is presented in the figures here. The figures show that there is significant variability in MDMA consumption per session according to gender and setting.

However, although it is known that MDMA is more commonly consumed at parties and by men, the available data does not provide sufficient information to determine the exact relationship between consumption setting and frequency. In other words, if someone takes MDMA four times a year, how often do they take it at a party compared to at home?

For the sake of simplicity, and since no modelling of the relationship between intensity and frequency has been attempted, the current analysis uses simulated intensity data (see Table 2). We recommend that future work consider the relationship between frequency and intensity more thoroughly, for example, by modelling different types of users.

Figuur 5.4 Gebruikshoeveelheid ecstasy (aantal pillen) op dagen dat men wel en op dagen dat men niet uitgaat onder laatste-jaar-gebruikers, voor vrouwen (n=1380) en mannen (%, n=1915)



Market Capture Rate, Price and Costs

The current report aims to illustrate what a regulated MDMA market could entail while remaining neutral on the specifics of MDMA regulation. Therefore, the figures used to estimate the financial revenues of a state-run MDMA monopoly are only approximate. To account for the inherent uncertainty of the current results, financial revenues have been re-estimated across a range of values (see Table 2).

A major limitation of this approach is that the dynamic relationship between price, costs, and market capture rate has not been specified. While the relationship between price and market capture rate has not been investigated empirically, it is reasonable to assume that costs would decrease and the market capture rate would increase over time. Consequently, the price could be increased. We recommend modelling a dynamic MDMA market in future work.

	Point estimate	**Range**
Intensity	2 pills per session	Normally distributed $\mu = 2, \sigma = 0.5$
Market capture	80%	Uniform from 40% - 90%
Price	€5.00	Uniform from €3 - €8
Costs	€2.00	Uniform from €1 - €8

Table 2. Assumed variation in variables.

C. Variation in the estimate of financial revenues

To illustrate the range within which the financial revenues of a state-run MDMA monopoly might reasonably be expected to fall, the estimate was recalculated several times using a random sample from the empirical frequency distribution, as well as from the assumed distributions of intensity, market capture rate, price, and costs. The exact R code is accessible at github.com/timovanommeren/MDMA_financial_revenues_quickscan. We cordially invite you to re-run our analysis using different assumptions or to build upon our work.

The results are displayed in the graph below. As can be seen, most of the estimates fall between a few million and ten million euros, with the median lying around four million. It thus seems likely that the true annual revenue will eventually be in the several or perhaps tens of millions. A larger figure seems out of the question. Furthermore, some estimates are negative. While these estimates do not necessarily correspond to an undeveloped market (they may correspond to an estimate with costs slightly higher than the price but a high market capture rate), they lend weight to the idea that if losses were incurred in the first years of regulation, they would likely total several million euros at most.

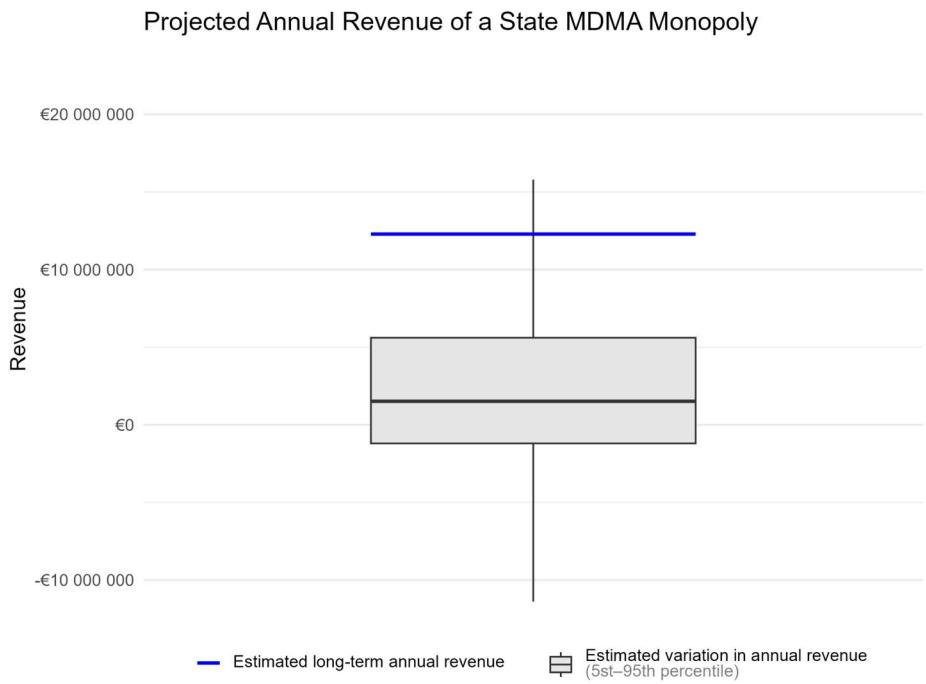


Figure 1. The projected annual revenue of a state-run MDMA monopoly.
Note that only the 5st - 95th percentile are shown in the figure above. This is because random samples led to extreme outliers. Please consult the GitHub page for a graph including outliers.