ERANID-IDPSO- Illicit Drug Policies and Social Outcomes

Indicators and new indicators for evaluation of drug policy

(WP5 - Assessing the impact of drug policies on key social indicators)

Summary

Authors 2

Preface 2

The general objective of the WP5 of Eranid-IDPSO 2

WP5 mainly related to Italy 2

Law in books and perceptions of drug policy 2

Quantitative and qualitative analysis of the impact of drug laws and policies in Italy. 4

Italian Drug Policy evaluation (1991-2018) 277

Appendix: New indicators of health applied to adolescent drug users and evaluation of drug policies comparing countries 2828

References 366

Authors

The working group consisted of:

Carla Rossi, University of Rome "Tor Vergata", President of Centro Studi Statistici e Sociali.

Fabio Massimo Lanzoni, Head of Consorzio per lo sviluppo delle metodologie e delle innovazioni nelle pubbliche amministrazioni;

Francesca De Marinis, University of Naples Federico II;

Francesco Fabi, Centro Studi Statistici e Sociali and Consorzio per lo sviluppo delle metodologie e delle innovazioni nelle pubbliche amministrazioni;

Giada Minelli, Istituto Superiore di Sanità, Head of the Statistics Office;

Valerio Manno, Istituto Superiore di Sanità, Statistics Office;

Preface

As there has not been regular collaboration in the framework of the project, all the information related to the evaluation of the different laws in force in Italy is provided, using the indicators, Some of which reported in WP4, to allow the coordinator to use them for modelling and applications in the comparison of the 7 partner countries.

The general objective of the WP5 of Eranid-IDPSO

The final step in the analysis combines the work developed in WP2, WP3 and WP4, with the objective of understanding the links between national drug policies and social indicators, considering the complex interrelationships that exist between the variables.

Firstly, we will carefully analyse the relationships that exist between 'law in books' (WP2) and perceptions of drug policy (WP3). Indeed, it is crucial to understand whether the leximetrics database constructed in WP2 is a good reflection of drug policy perceptions in each country and, if not, in what dimensions they differ.

Secondly, advanced techniques must be used to understand how the various dimensions under analysis interact in each country: (i) demographic, cultural and economic characteristics, (ii) drug policy, (iii) perceptions of drug policy and (iv) social indicators.

Thirdly, advanced techniques may also be used to understand how key social indicators may be explained by the specific characteristics of national drug policies (as well as other explanatory variables).

WP5 mainly related to Italy

Law in books and perceptions of drug policy

The drug laws can be summarized as follows:

1. The law n. 162 of 1990 started a period of increased repression compared to the previous one, we detected this trend especially from the conduct of detention for personal use that, both for

cannabis and hard drugs, was considered a criminal offence if the amount held exceed the defined "daily average dose".

2. In 1993 intervened a referendum that abolished the limit of the "daily average dose" so that personal consumption was decriminalized regardless the amount owned.
   It also abolished the article 72 of the law mentioned: a "manifesto norm" that expressed the policy climate of the 'war on drugs'.

   It started a period, that lasted until 2006, that we can define characterized by a less severe degree of repression against the drug related behaviors, at least for personal use.

3. The 2006 represents a turning point in the Italian drug legislation due to the law 49/2006 that provided the same criminal penalties for all the conducts of possession, traffic, cultivation, production and distribution regardless the kind of drug the conducts were related to. It means that the cultivation of cannabis also for personal use was potentially punished with a period of prison from 6 to 20 years. From 2006 to 2014 it has been the most repressive period in Italy.
4. In 2014 (February 12th) the Constitutional Court, with the sentence n. 32, declared anti-constitutional the law n. 49/2006 so that now is once again applied the law that comes out from the referendum of 1993, partially modified by the law n. 79/2014.

The perception of drug laws and policies in Italy by experts is quite homogeneous. Many are the criticisms for the extreme repressiveness, in particular related to law 49/2006. With respect to the proposed legalization of cannabis most experts are in favour and the Antimafia and Antiterrorism Directorate has also expressed a favourable opinion. Unfortunately, however, restrictive measures still remain in force with respect to consumers and sellers. Such measures are "unreasonable" and absolutely ineffective in practice, as the indicators show, even if policy is very expensive and even with great social costs.

Ineffectiveness makes the law less repressive actually, due to the inability of law enforcement agencies to enforce it effectively and also due to the big influence of criminal organisations, through money laundering and, in particular, corruption (Caserta and Rossi, 2013, 2018).

Perceptions, investigated through surveys, are not particularly informative if one excludes the new assessment of probability, which indirectly relates to the efficiency of the police forces, with respect to the sale of cannabis, which correspond perfectly to the indicators of effectiveness of police agencies in quantitative analysis.

The three laws, in force, during the period studied in Italy, were considered in defining the pilot leximetric scale for Italy with respect to consumers, with respect to sellers and global. The pilot scale used in Italy has been linked to the indicators in relation to both consumers and pushers; although some indicators are not affected by changes in the law, but follow their own trend independently. This has been shown in WP4 reporting the second recent wave of the heroin and opioids epidemic, which is observed in all 7 partner countries, although they have different laws and policies, at least in the books, but obviously not enough to stop the new epidemic wave.

Quantitative and qualitative analysis of the impact of drug laws and policies in Italy.

Table 1 contains the indicators most sensitive to changes in the laws in Italy and the cooresponding pilot leximetric values for Italy.
Simple regressions and analysis of ratios between leximetric values and indicator values can be made, but it is more meaningful to make qualitative interpretations of sensitive indicators than to apply simple statistical methods.
Advanced mathematical-statistical methods are applied to specific analyses, for example by introducing new indicators, both with respect to users (demand indicators) and with respect to the repressive law enforcement (supply indicators).

Table 1. Some social cost indicators conditioned by laws and pilot leximetric value of Italy.

Leximetric values and Indicators related to Social costs	**D.P.R. 309/90 (1990-2005)**	**Law 49/2006 (2006-2013)**	**Law 79/2014 (2014--)**
Global leximetric level	62	76	70
leximetric level referring to users	5	13	13
leximetric level referring to pushers	57	63	57
	DEMAND REDUCTION (users)		
Administrative sanctions for those reported art. 75 (average % over the period)	36.6	76.6	91.4
Change in annual incidence in therapeutic public services over the period (%)	+5.8	-20.8	-31.
Change annual prevalence in therapeutic public services over the period (%)	+72.9	+3.7	-12.5
Average expected duration of therapies over the period (in years)	4.2	5.1	6.5
Average social cost over the period (Prevalence multiplied by expected therapy duration)	571,696	862,847	877,603
Poly-drug use indicator PDS (on personal health) at 15 years (ESPAD) (average over the period)	N.A. it is known that poly-drug use in the '90s was not widespread	0.47 (linked to the market: poly-drug supply induced poly-drug use)	0.38 (poly-drug supply is hampered and poly-drug use is reduced)
	SUPPLY REDUCTION (pushers)		
Average number of market workers at risk of entering prison for art.73 (estimated)	N.A.	585,444	487,306
Average number of market workers aged<20 at risk of entering prison for art.73 (estimated)	N.A.	29,800	11,200

Average effectiveness of the actions for the repression of the retail market, i.e. percentage of identification of the subjects of the population at risk of imprisonment for art.73	N.A.	6.24%	6.65%
Average ratio (number reported arrested/ number reported at liberty)	2.7	3.7	2.4
Average duration in years of the proceedings with result of conviction for art.73	1.75 (since 2000)	1.82	1.85
Prevalence of persons in prison for art.73 (average)	19,115	23,074	18,153
Percentage of persons in prison for art.73 (average)	36.3	38.9	33
Restricted Italian subjetcs for art.73 (average prevalence)	12,402	14,297	6,934
Restricted strangers for art.73 (average prevalence)	19,116	26,013	25,088
Istat estimate of annual market growth in the period (average of revenue for criminal organisations)	No estimate yet	+0.65 miliardi	+0.43 miliardi

The indicator given by the percentage of sanctions for those reported as users has a trend that changes in relation to the entry into force of Law 49/2006 and also remains with Law 79/2014; these changes depend on the blocking of therapies, following reports to suspend the sanctions, present in these two laws.
The poly-drug use indicator for 15-year-olds, not available in the period 1991-2012, used for a pilot analysis, undergoes a change in the transition from Law 49/2006 to Law 79/2014 and this depends on the equivalence of soft and hard substances for Law 49/2006 and not equivalence for all other laws.
An indicator of social cost, and also financial cost, similar to the sanctions for users reported, derives from the arrest or freedom for those reported as pushers and is highlighted by calculating the ratio (number of reported arrested/number reported at liberty). As shown in Table 1, the average value of the indicator, over the three periods corresponding to the different laws, varies as leximentric values related to pushers.
The number of the population of workers, at the medium-low level of the market, who are at risk of imprisonment for Art.73, decreases on average by 17%, passing from Law 49/2006 to Law 79/2014, and by 62% for those aged <20 years, while the effectiveness of the repressive actions increases by 6.2%; This small increase in effectiveness stems directly from the continuing equivalence of the police agencies' efforts on a smaller population.
For the prevalence of all restricted for art.73 there is an increase of 21% from the first to the second period and a decrease of 21% from the second to the third period.
For the percentage of all restricted for art.73 there is an increase of 7.2% from the first to the second period and a decrease of 15.2% from the second to the third period.
For the percentage of Italians restricted for art.73 there is an increase of 15% from the first to the second period and a decrease of 51% from the second to the third period.
For the percentage of strangers restricted for art.73 there is an increase of 36% from the first to the second period and a decrease of 3.6% from the second to the third period.
The annual growth of the market, as estimated by Istat, according to Eurostat methodology, is 0.65 billion under Law 49/2006 and 0.43 billion under Law 79/2014 (-33%).

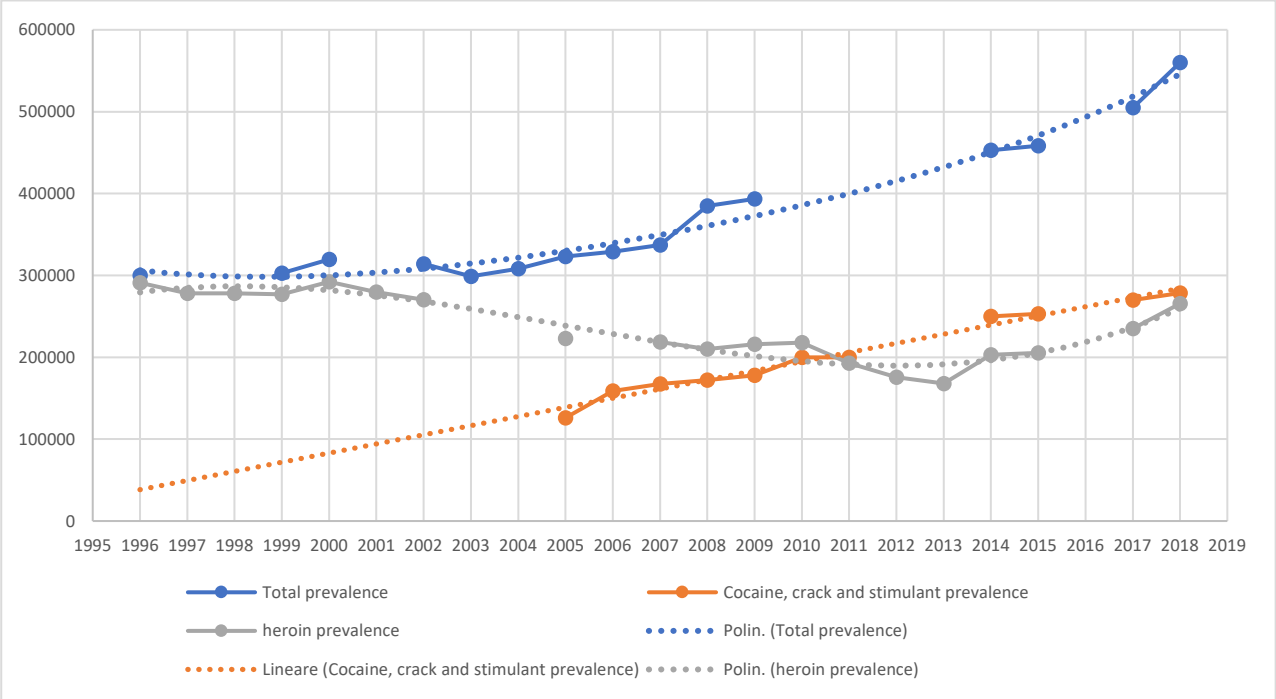
All the other indicators, reported in the national report, do not show trends closely linked to the laws in force, but show in general a continuous expansion of the market and of the use of illegal substances and also, in recent years, the supply and consumption of new substances (NPS).
The trends in the supply and use of illegal substances and the demographic and socio-economic variables, that have an influence on these phenomena, have been studied since 1992 in Italy under various national research projects.
The methodology mainly used belongs to multivariate statistics and is related to models of structural equations (SEM). The data used were first at regional level and then data related to provincial observations.
A specific study of the first years was based on data related to male subjects aged 18 years old who were visited for military service, which was compulsory at that time, and to whom a questionnaire was submitted that collected socio-demographic and substance use information, with controlled reliability also with toxicological analysis of urine
In quite recent years such analyses have not been repeated , as the data were no longer available.
No results are reported here, but they can be provided if necessary at the request of Prof. Goncalves.
Let us now examine in more detail the classic and new indicators used for evaluation.

Analysis of indicators related to demand reduction policy

Let us consider the indicators linked to events that are influenced by demand reduction interventions, that will allow us to evaluate the policies that have implemented them.

Prevalence of high risk users
Figure 1 shows the estimated annual prevalence of consumers, first PDU and then HRDU, officially sent by the Focal Point to EMCDDA from 1996 to 2018. The prevalences are total (HRDU) and for the substances that explicitly appeared in the PDU consumer definition: heroin and cocaine in particular (PDU). Estimates are missing for some years.
As can be clearly seen, only problematic heroin consumption has a fluctuating decrease until 2013 and a steady increase thereafter, even higher in 2019, although the value cannot be explicitly included until delivery to EMCDDA. Total prevalence is always increasing related to cocaine.
In any case, the estimated prevalences of these consumers are not linked, in their trends, to the different versions of drug laws in Italy, but follow directly the growth of the market. The market is controlled by traffickers and criminal organizations, regardless of the laws in force and, presumably, in a similar way in other western countries, although with different dynamics.
Such data are not mentioned in the WP4 report, while the most important indicator, mentioned there, concerns deaths and lost lives (as social cost), which we do not report also here. Let us instead consider the indicators related to morbidity.

Figure 1. Estimated prevalence of consumers, first PDU and then HRDU.



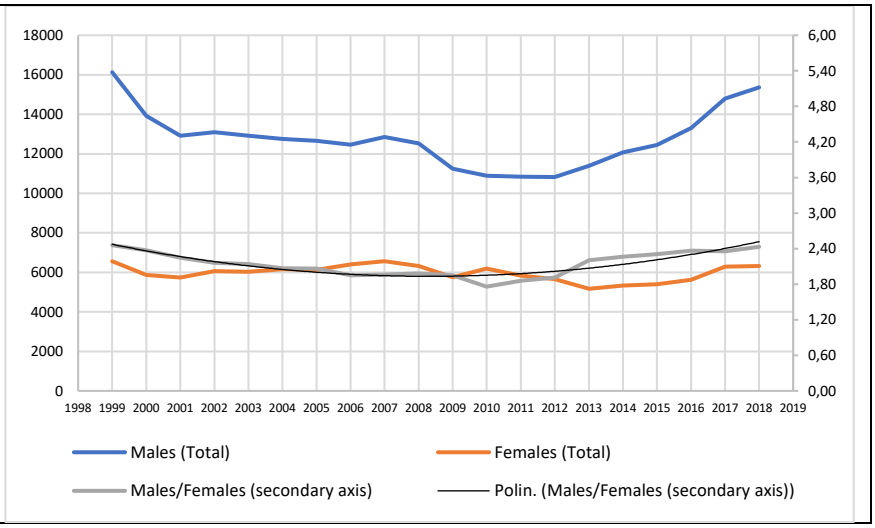
Morbidity indicators

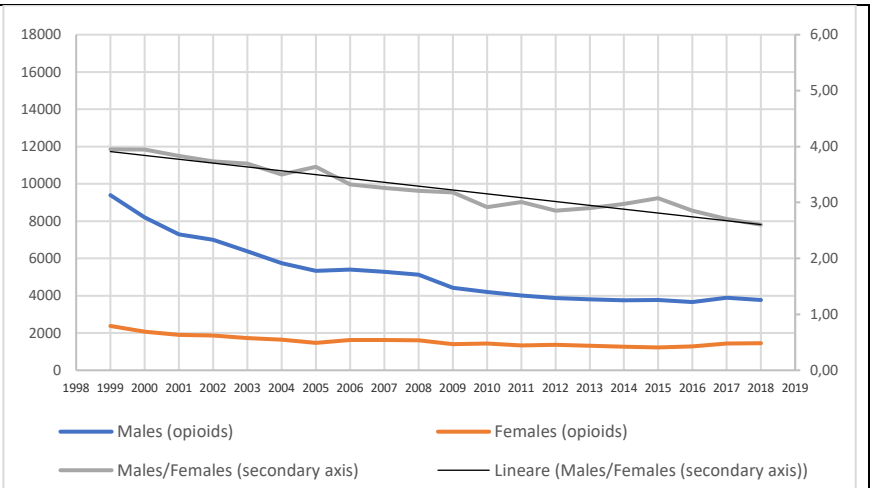
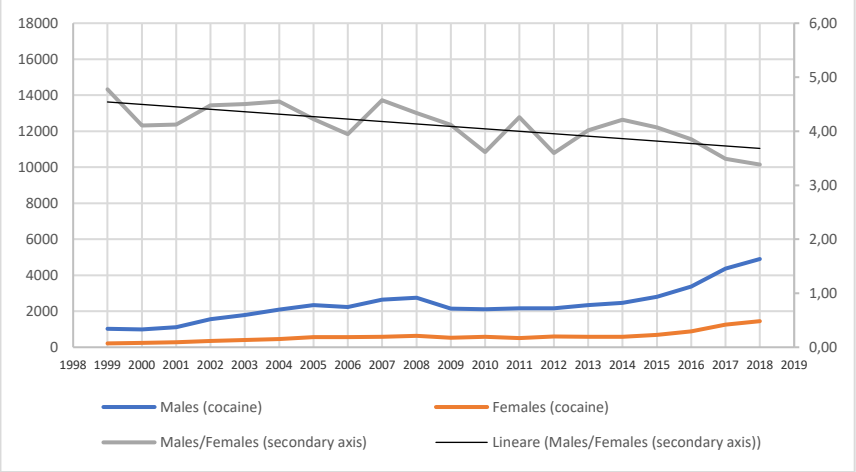
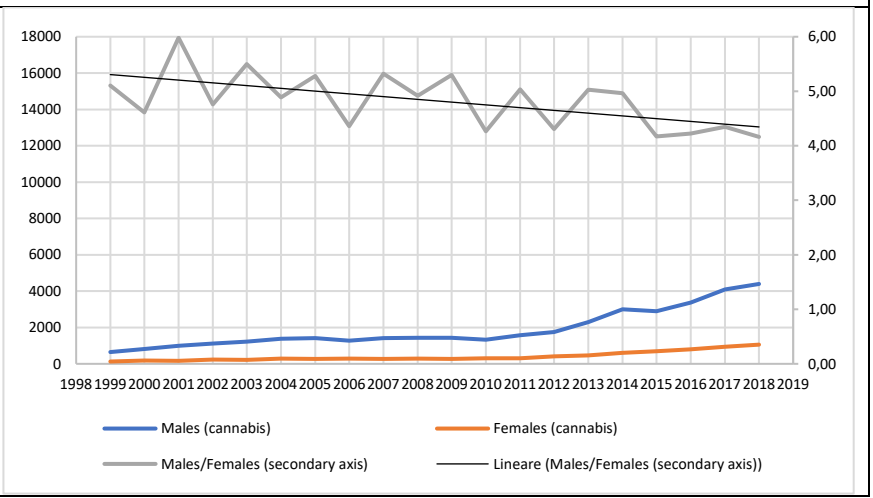
We will then move on to the indicators of morbidity and treatment for consumers in public and private therapeutic services.

The first analysis concerns hospitalisation and discharge data. In Figure 2 we report the main morbidity indicators related to hospitalizations related to drug use, specifying the main substances mentioned in the diagnostic reports (source Istat).

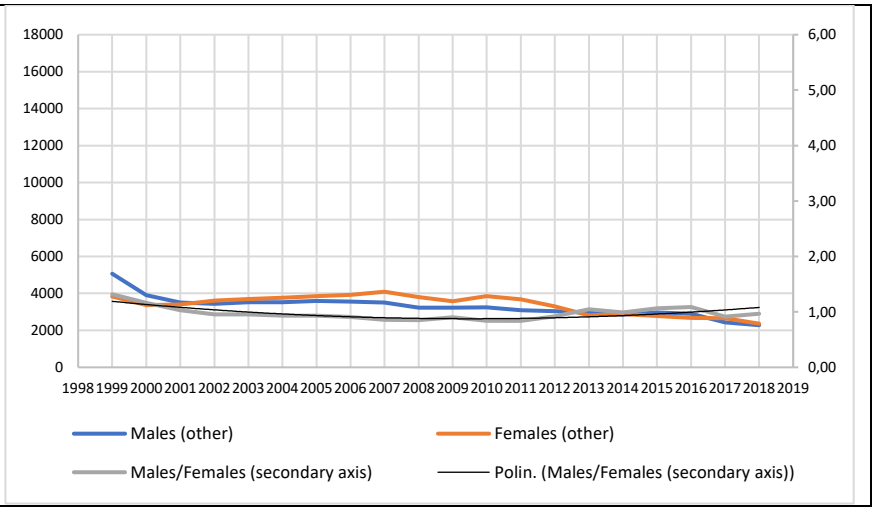
Figure 2. Main statistics on hospitalizations related in particular to opioids, cocaine, cannabis and other substances.

As can be seen, the trend of total hospitalizations follows a parable, both for the absolute frequencies of males and for the ratio of males to females, as females are about constant.



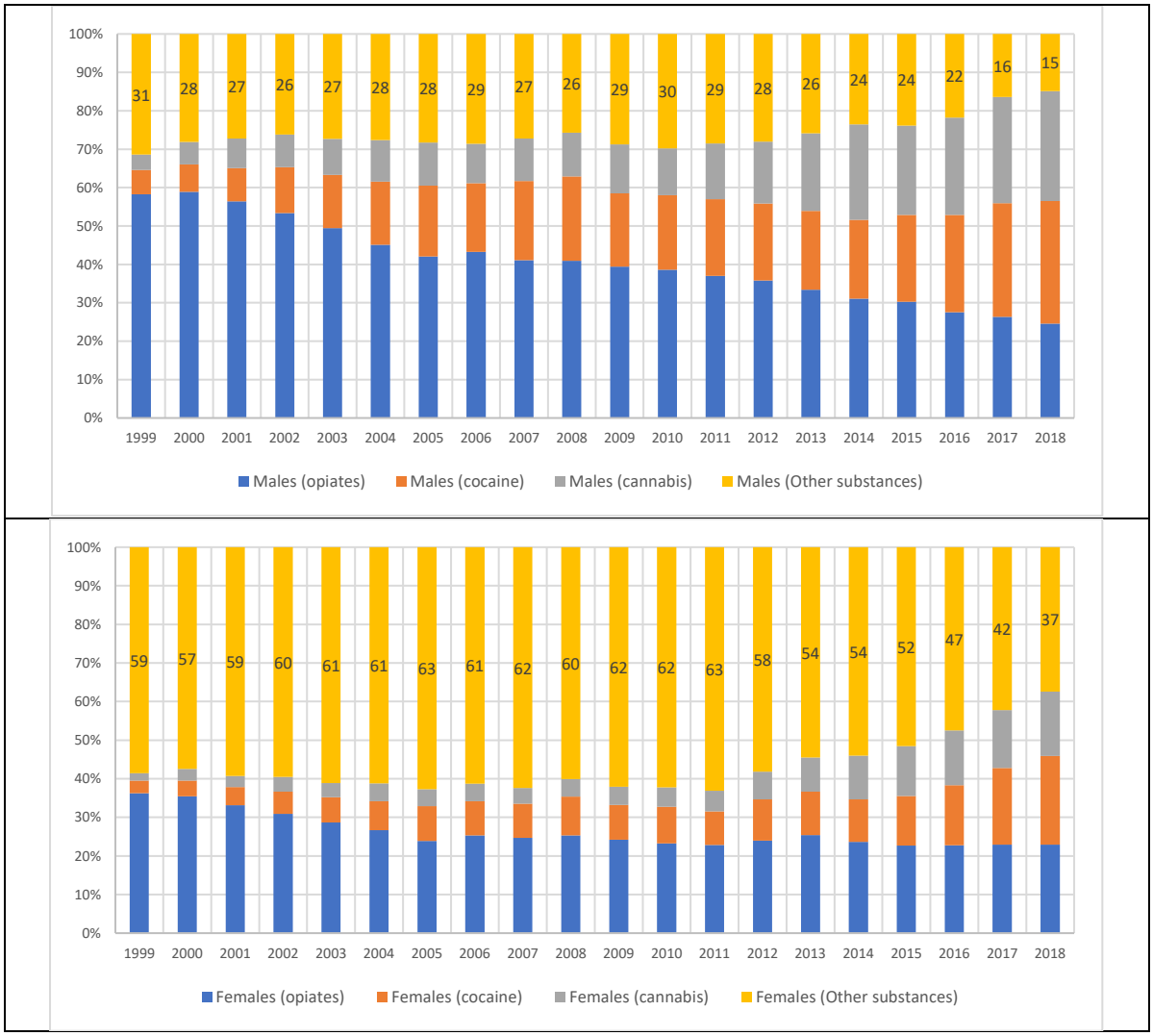
The trends related to the use of opioids are decreasing until 2013 and then slightly increasing, especially for females, whose trend is less decreasing until 2013 and more increasing in the following years, as shown by the always decreasing trend of the ratio of males to females.	
On the contrary, for cocaine there are increasing trends for hospitalizations, but decreasing for the ratio of males to females, which shows that the use of cocaine, causing hospitalization by females, is more increasing than that of males.	
The same trend is observed in the data for cannabis.	

The other substances have a very different trend, as can be seen in the graph.
The other substances are mainly amphetamines, hallucinogens and substances not expressly declared.



The percentage distributions with respect to the substances for both males and females are reported in Figure 3. The percentage distributions show clearly the lower use for females of historical substances, opioids, cocaine and cannabis, while the use of other substances is much higher.

Figure 3. Percentage distributions with respect to the substances for males and females



Insights and analyses, with respect to age and diseases related to the use of the different substances, are reported completely in the Italian report and can be sent, if they are important for the final work, at the request of the coordinator Prof. Goncalves.

Therapy services

As regards public therapeutic services for users of illegal substances in Italy, Figure 4 shows the incidences and prevalences and expected therapy duration.

The most useful function to study the effects of laws and policies is the incidence that suffers a small decrease since 2006, when the law came into force which hinders the entry into therapy of subjects reported for personal use (art.75). The cause indicator is shown in WP4 (Figure 5) and prevents a small number of users from entering therapy, as was instead possible until 2006.
We speak of a small number because it is shown, in the national report, that the subjects reported as users each year are less than 1% of the user population.

Figure 4. Time series relating to incidence, already assisted users, prevalence and expected duration of therapy.

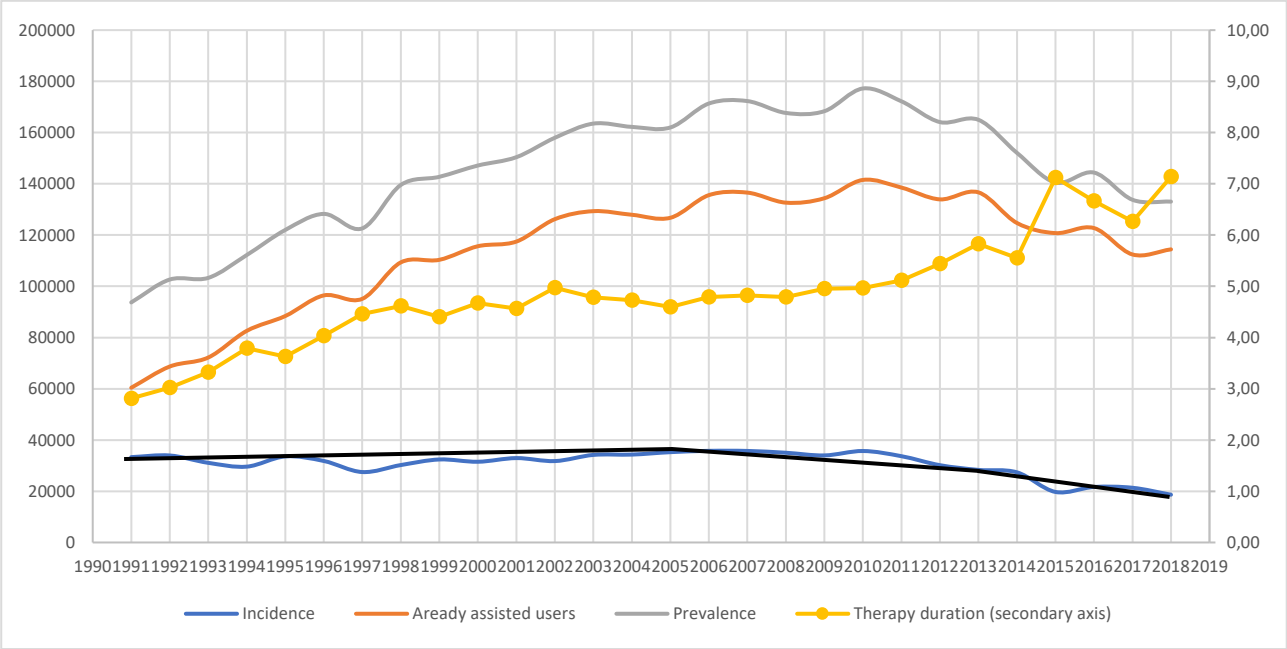


Figure 5 shows the average ages of the subjects of incidence and prevalence.
Significant is the decrease in the average age of subjects entering therapy in recent years, that coincides with the growth of heroin and opioid use (second epidemic wave).
The percentage distribution of primary substances that induce therapy is shown in Figure 6.

As it appears it is always the heroin use that induces in therapy, much more than all the other substances together, and it does not undergo any change related to the laws in force.
It must always be kept in mind that what appears in the data regarding therapies, and also deaths, is a delayed image of the beginning of use, the average latency time for heroin therapy is about 8 years in Italy, for other substances even longer.

Figure 5. Time series of the average ages of the subjects entering therapy and of the subjects that are part of the prevalence

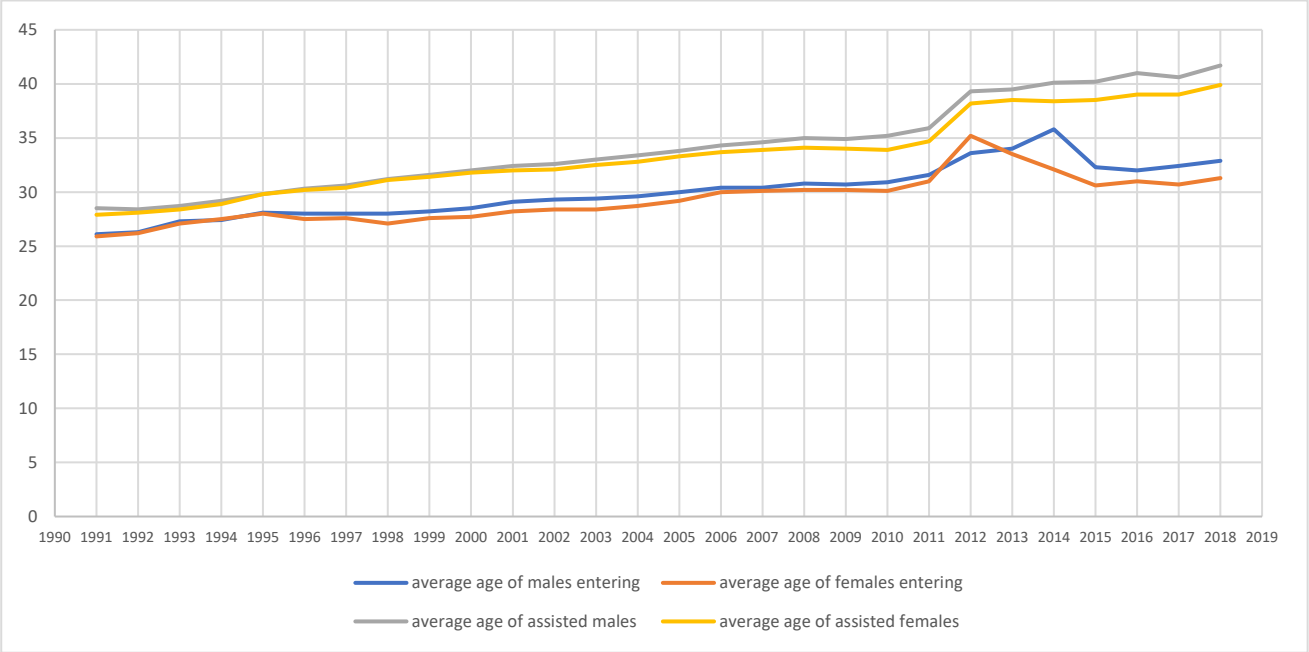
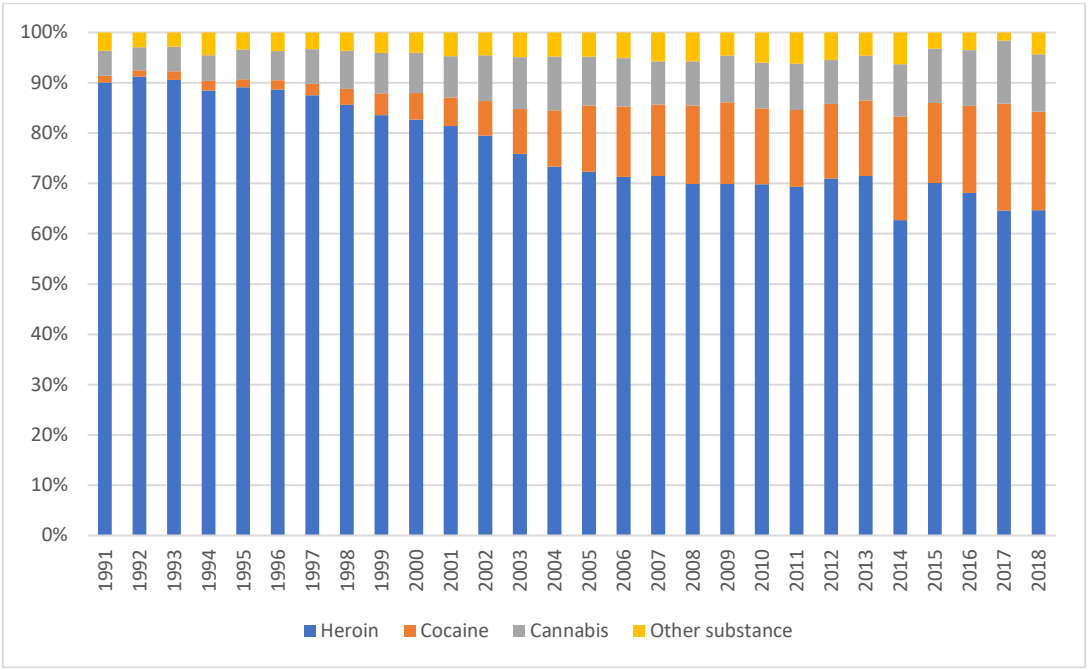


Figure 6. Percentage distribution of primary substance causing therapy need.



In addition to the subjects in therapy at the public services there are about 25,000 subjects in therapy and rehabilitation at the communities, including private ones, of which little is known about the results.

Of the infectious diseases that affect users of substances, in particular by injection, it can be said, on the basis of the data, that their incidence has been very decreasing since the 1990s, due to the great efforts of harm reduction organisations that have achieved positive results, regardless of the laws in force.
Data appear in the national report, but it is not important for policy evaluation. Further tables and graph are available anche can be sent, if necessary, upon request by Prof. Goncalves.

Harm reduction efficacy

In Italy, the need to contain the spread of human immunodeficiency virus (HIV), among intravenous heroin users in the early 1990s, led to the establishment of awareness programmes and Low Threshold Centres providing clean injection and drug equipment and secondary prevention. This was the beginning of a change towards "contact and care" for those who did not receive similar treatment from drug treatment services.

This harm reduction approach was further consolidated in 1999, which added harm reduction to the range of services provided by the public drug addiction system. A recent key step was the inclusion, by decree of the President of the Council of Ministers of 12 January 2017, of harm reduction services among the essential levels of health care (LEA), thus guaranteeing harm reduction services to all citizens in Italy... just in books at least.

Despite this progress, there are not dedicated public centres and centralised data on interventions, the entities that provide them and the people assisted. Surveys on these subjects would be very important for the planning of evidence-based secondary and indicated prevention interventions. It can only be acknowledged that the interventions carried out were important for the prevention of diseases such as HIV, HBV and HCV among drug users and for the prevention of overdose deaths using naloxone.

This can be observed in the death indicator (Figure 7). Following the opioid deaths curve a significant decrease is observed in 2009, followed by regular growth until 2017 (second epidemic wave of heroin and opioids).

If we assume information about naloxone sales in the years around 2009, we find that the great growth takes place in 2009, maintained in the following years (Figure 8).

Figure 7. Deaths from drug use (source: Istat)

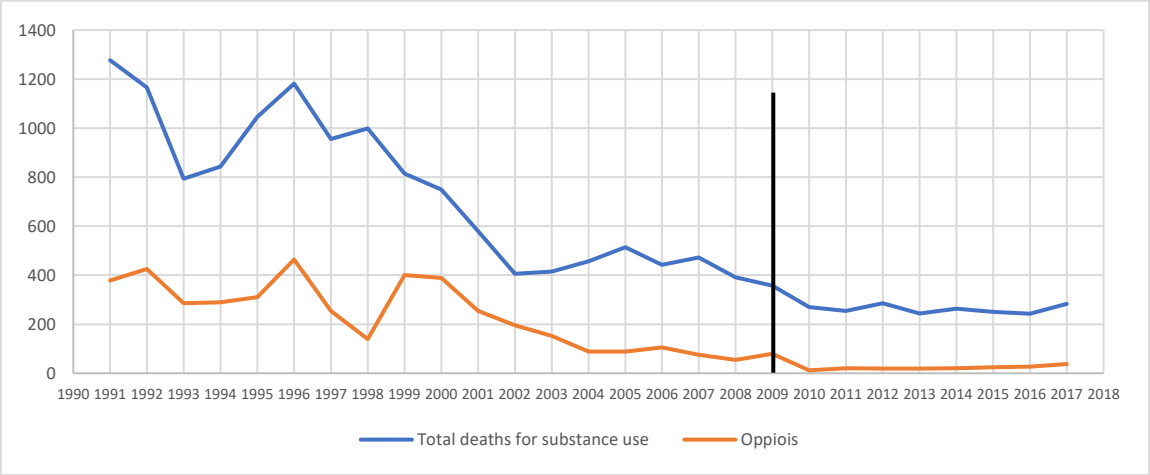
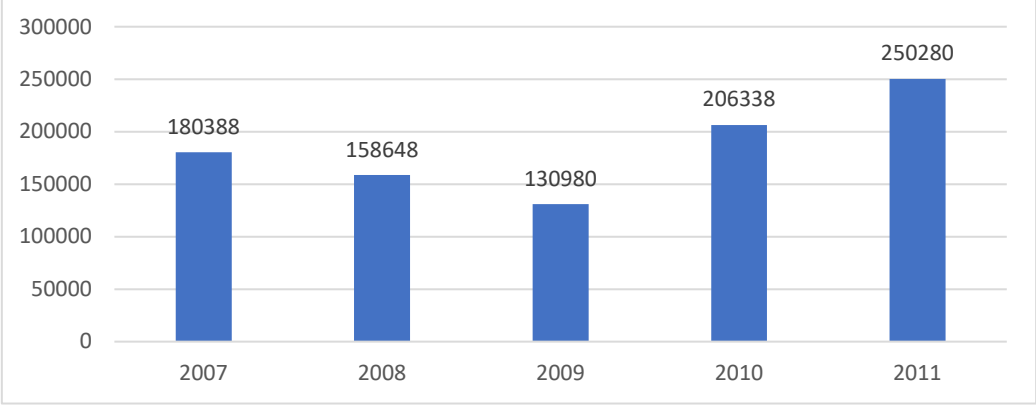


Figure 8. Naloxone packs sold annually in Italy from 2007 to 2011.



This is also reported in an important Italian publication of 2016 by Forum Droghe, in collaboration with Eclectica, Dipartimento Dipendenze ASL ex Torino 2, Dipartimento Dipendenze ASL Torino 3 and Dipartimento Dipendenze ASL Napoli 1, on a research, conducted during 2016, between operators and consumers on the Italian naloxone distribution system (Take Home Naloxone, THN), in order to evaluate its strengths and weaknesses and to identify prospects for innovation and greater adequacy and effectiveness of operating models:

..." Italy has historically been ahead of its time in allowing the free and non-prescription distribution, as an over-the-counter drug, of naloxone for injection (while elsewhere it is more strictly regulated, and in some cases also very expensive). This is both in pharmacies open to the public, and in harm reduction services, which in some of the five hundred and passes SerT territorial (with unfortunately uneven distribution)." (file:///D:/1%20February%2020/Eranid%202/Report-IT%20(1).pdf).

An EMCDDA publication in 2015 deals with the subject in a quantitative and scientific way by reporting on the effectiveness of the study and reporting that:

*"The risk of mortality from opioid overdose is significantly lower in communities providing naloxone and training for use and overdose management than in communities without program implementation. This was shown in a study that examined over 2900 subjects from 19 communities with a 7-year follow-up (Walley et al., 2013)." (*https://www.emcdda.europa.eu/system/files/publications/2089/TDXD15020ENN.pdf).

Prevention efficacy

Over the years, universal prevention campaigns have been carried out, aimed indiscriminately at Italians of all kinds, age groups and socio-cultural conditions. The result has been that these campaigns, aimed at preventing drug use, have in fact resulted in a reassuring message, not very incisive towards those who were directed and, at most, appreciated by the adult world.

Universal prevention activities are often implemented in schools by teachers, as well as by local health authorities, law enforcement agencies and private social agencies. They are mostly focused on providing information. Interactive methods and peer-to-peer activities are limited in scope and frequency, although they are known to be more effective. Universal prevention activities, which target the community, focus on young people through the use of peer groups in extracurricular settings, counselling, recreational and cultural activities and local projects carried out through the media and the Internet. Media campaigns are a central element of the prevention strategy in Italy, in particular the use of IT platforms such as video-conferencing and mobile applications.

Secondary prevention was foreseen by Presidential Decree 309/90 and was carried out by Drug Addiction Operational Units (NOT) trying to influence the reported consumers to reduce their use or send them to therapy to avoid sanctions. This behaviour remained in force and was used until Law 49/2006, which no longer allowed the start of therapy to avoid sanctions. This characteristic still remains today, limiting secondary prevention.

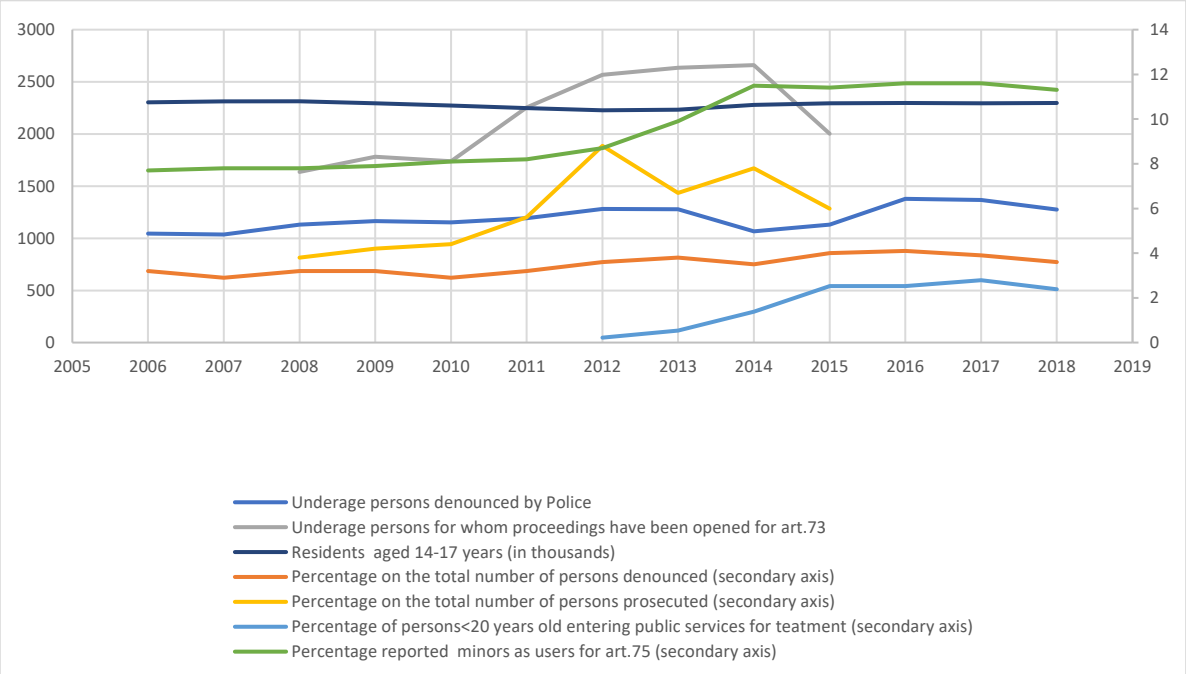
The prevention indicated is provided by some local programs, which focus exclusively on people at risk of consuming substances. The interventions try to identify people, showing early signs of substance use and their problematic behaviour, and work to improve the situation. This behaviour was the one applied by NOT before 2006; Law 49/2006 set limits to the interventions by eliminating the possibility to send to therapy the subjects for having been reported as users for art.75.

The absolute ineffectiveness of prevention interventions in Italy is evident from the trend of all the indicators relating to users and pushers where, since 2005, there has been a wide involvement of minors in all activities as reported in Table 2 and Figure 9.

Table 2. Trends in reports for art.75, therapies in public services, complaints and proceedings for art.73 with respect to minors since 2006

Year	Underage persons denounced by Police	Percentage on the total number of persons denounced	Underage persons for whom proceedings have been opened for art.73	Percentage on the total number of persons prosecuted	Percentage of persons<20 years old entering public services for teatment	Percentage of minors reported as users for art.75	Thousands of residents aged 14-17 years
2006	1046	3.2				7.7	2304
2007	1036	2.9				7.8	2313
2008	1132	3.2	1636	3.8		7.8	2313
2009	1164	3.2	1782	4.2		7.9	2295
2010	1151	2.9	1740	4.4		8.1	2273
2011	1193	3.2	2254	5.6		8.2	2247
2012	1281	3.6	2566	8.8	0.22	8.7	2227
2013	1277	3.8	2635	6.7	0.54	9.9	2233
2014	1066	3.5	2660	7.8	1.38	11.5	2279
2015	1131	4.0	2003	6.0	2.52	11.4	2294
2016	1378	4.1			2.53	11.6	2298
2017	1367	3.9			2.79	11.6	2295
2018	1275	3.6			2.39	11.3	2298

Figure 9. Trend of Table 2 curves



All the specific indicators are widely covered in the Italian report and can be requested, if they are important for the final report of the project, by the coordinator Prof. Goncalves.
The treatment of prevention on the basis of the poly-drug use indicator is reported in the appendix, so as not to interrupt the evaluation on the basis of the classical indicators.

Costs of social and health interventions in Italy

In the Annual Report to Parliament on drug addiction in Italy 2019, as similarly in previous Reports, Table 3 is presented.

Table 3. Distribution of costs for social and health care by care provider

Service provider	Costs	Percentage
Public services	1.436.733.804,21	79,4%
Communities	289.683.594,94	16,0%
Hospital	84.016.098,69	4,6%
Total	**1.810.433.497,84**	**100,0%**

and commented on:

*"An estimate that is certainly underestimated quantifies the annual cost for the treatment of drug addiction at just under EUR 2 billion. This estimate does not take into account, for example, the pathologies related to all those risk behaviours linked to consumption." (*http://www.politicheantidroga.gov.it/it/dpa-in-sintesi/attivita-e-progetti/relazioni-annuali-al-parlamento/relazione-annuale-al-parlamento-sul-fenomeno-delle-tossicodipendenze-in-italia-anno-2019-dati-2018/).

And can be added our comment saying just that there's a lack of all the services of harm reduction and a complete lack of emergency room that often receives requests, at least for fatal or non-fatal overdose; in addition to the lack of costs for infectious diseases related to the use of substances.

The study could be further investigated by the Anti-Drug Policy Department in collaboration with Istat, but, for now, it is completely lacking (http://www.politicheantidroga.gov.it/it/).

We conclude by saying that for the evaluation of drug policies, in force from 1991 to 2018, the financial costs, for social-health assistance, cannot be included in the social costs, since there are no reliable historical estimates and sufficient data to proceed.

Let us now consider the indicators related to supply reduction interventions.

Analysis of indicators related to supply reduction

Supply reduction measures are mainly based on operations, which are described in detail by the Antidrug Police in its annual report. Complaints, which are reported in the reports, are then followed by trials, convictions and entry and stay in prison. In the national report these events are described in depth and data are used to calculate the indicators and assess the interventions and also to evaluate the social costs. Here just a summary of the indicators is reported.

The evaluation of supply reduction interventions has as tools the new indicators linked to the estimation of the market value and the effectiveness of the contrast to supply (supply reduction). These estimates form the basis of new qualitative and quantitative indicators, indicated by the European Commission following two international conferences and the commitment of various working groups at EMCDDA. Specifically, these are the "European key indicators on drug market, crime and supply reduction", in short "Supply Indicators".

Three indicators have been officially introduced, divided into sub-indicators, which identify useful data, estimates to be made and qualitative information: Drug Markets (DM), Drug Supply Reduction (DSR) and Drug Related Crime (DRC).

In Lisbon 2019, Prof. Ricardo Goncalves indicated only two indicators relating to supply reduction interventions, not including the market, which we estimated for the period of interest on the basis of data

on seizures and complaints. In addition, the effectiveness of supply reduction interventions was also assessed, as desired by the European Commission.
Recently (December 2018) the EMCDDA published a report on developments in supply indicators, which states at the beginning:

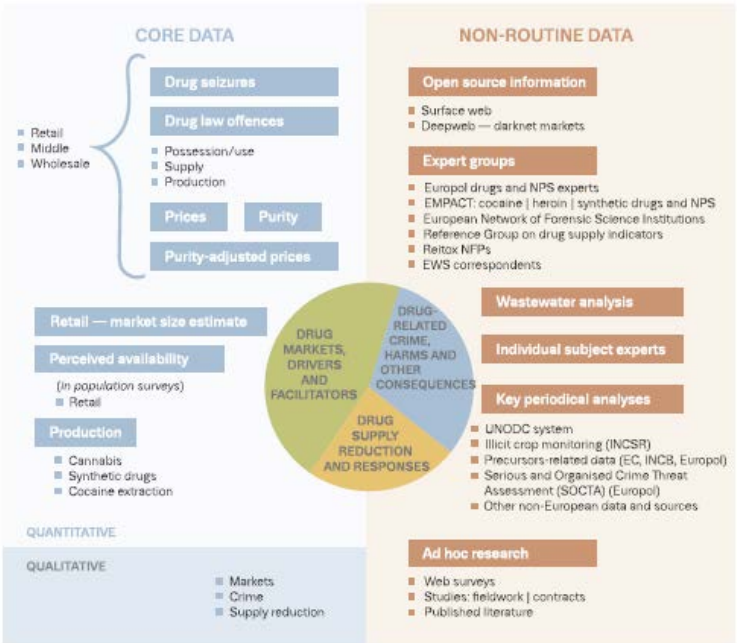
"It should be stressed that making sense of supply indicators for research or development, monitoring and evaluation of policies is a challenging task. However, this data provides an important window into an otherwise hidden area, with the aim of improving the quality of the data collected and broadening the scope of collection, which should be a priority for those seeking to understand drug markets and/or plan or evaluate supply reduction activities."
(https://www.emcdda.europa.eu/system/files/publications/10178/Improved%20drug%20supply%20indicators%20for%20Europe_Joint%20publication.pdf)

The current conclusion is that the supply indicators should be based on a set of core data, that is regularly collected, working on improving the quality and assessing the relevance of some of the data sets, available in different countries:

- **drug seizures (datasets relevant to the drug market and supply reduction indicators);**
- **drug prices (data set relevant to the drug market indicator);**
- **dismantling of drug production facilities (datasets relevant to the drug market indicator and supply reduction indicators);**
- **drug-related crime (datasets relevant to the drug market, drug-related crime and supply reduction and effectiveness indicators).**

For Italy we analysed all the sets, except the third that is not very important in the country. However, these data are not collected regularly for monitoring and evaluation, but only for administrative purposes, which makes interpretation and, above all, benchmarking difficult. Nevertheless, they provide important information for monitoring and estimating markets and assessing the effectiveness of drug supply reduction. A summary of the work, which is still ongoing, can be found in the EMCDDA report of 2018 and in the work of Nicola Singleton et al., published in the International Journal of Drug Policy in 2018, from which Figure 10 is taken.

Figure 10. Summary of data to be collected to assess supply indicators (Source: Singleton et al. 2018).



Police operations and consequences

The efficiency and effectiveness of drug enforcement operations was almost constant throughout the period. In particular, the average value of the subjects reported for supply (Art.73) in each operation oscillates around 1.6 (average=1.6) as shown in Figure 11.

The substances seized from persons reported for sale are shown in Figure 12 and the quantities of substances seized in Figure 13.

Figure 11. Number of drug operations, number of complaints and average number of complaints per operation over the period 1991-2018

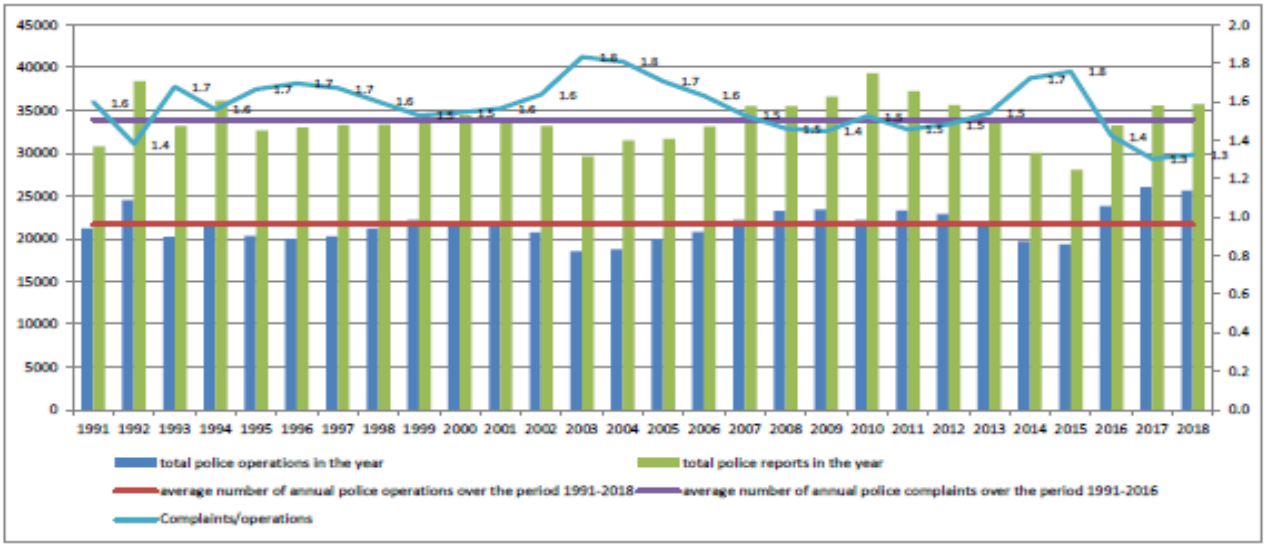
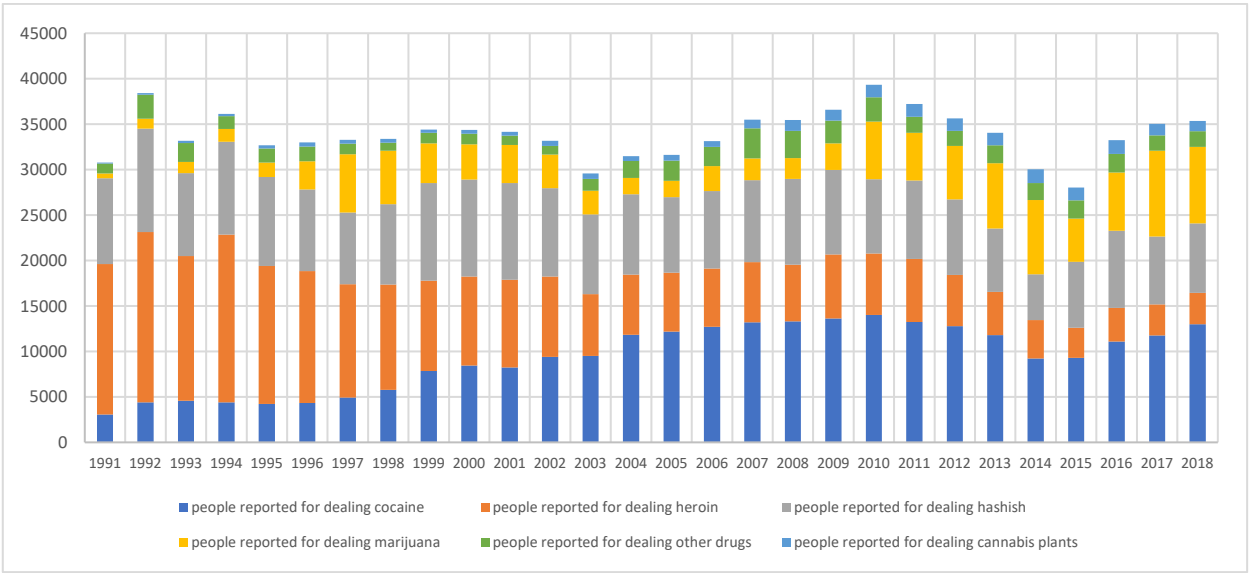


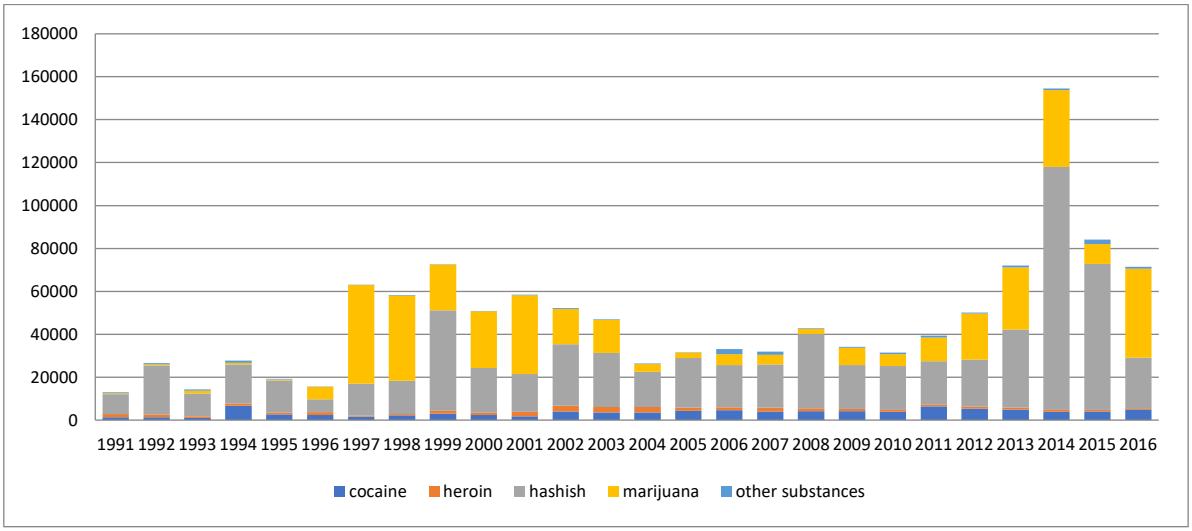
Figure 12. Substances confiscated from drug dealers



From the analysis of the substances related to the denounced (Figure 12) and of the seized quantities (Figure 13) it can be seen that no changes, except those introduced by the market trend, enter into the mode of police operations. In other words, the different laws do not influence the police procedures. It is sufficient to specifically check that the changes with respect to the treatment of supply of cannabis, reintroduced in the law since 2014, which reduce the criminal consequences for cannabis dealers, do not

reduce the distribution of the substances related to the reported and seized. In fact, about half of those reported had been dealing cannabis since 2010 and even more since 2014.

Figure 13. Distribution of seized substances



In order to evaluate the effectiveness of the police operations, it is appropriate to use effectiveness indicators (Farina Coscioni and Rossi, 2016) and to check whether the effectiveness is different with the different laws in force.

Effectiveness indicators

An evaluation indicator, even a very simple one, must have at least two components such as the two example indicators:

1. the ratio between the number of subjects commiting drug crime reported and the total number of subjects committing same drug crime, to be estimated, as reported in Bouchard and Tremblay (2005) and used also for Italy by Mascioli and Rossi (2015);

2. the ratio between the number of drug crimes reported and the total number of same actions; it is necessary to identify such crimes over the same period.

The effectiveness indicator described in point 1 is more informative than the second and also easier to estimate.

For the methodology, please refer to the scientific texts in the references, here only the results are reported.

The population, which it has been possible to estimate for the availability of data in the appropriate form, is the population of those who commit crimes (dealing drugs) and is prosecuted under current drug law such that they are at risk of entering prison for art.73.

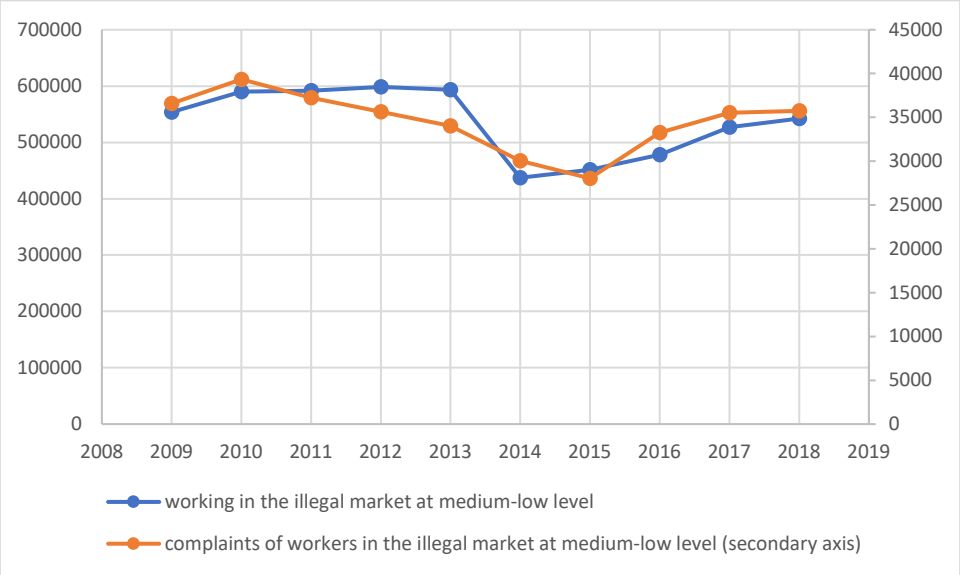
Such population is reduced when Law 79/2014 comes into force, due to the reduction of penalties for dealers of limited values of cannabis with respect to law 49/2006. Table 4 shows the annual estimates of the population of drug dealers who, if reported, risk entering prison and the number of police reports, from which the efficiency of police operations is calculated (percentage ratio). Figure 14 show both: population estimated and police reports.

The graph clearly shows how the change in the law, in 2014, changes the composition and number of the population of pushers at risk of entering prison, if reported, which is still a growing population both before and after.

Table 4. Estimation of the prevalence of medium-low level workers in the drug market (art.73 of the anti-drugs laws), complaints from police and index of the effectiveness of drug operations (complaints/estimates ratio).

year	workers in the illegal market at medium-low level	complaints of workers in the illegal market at medium-low level (secondary axis)	police effectiveness indicator
2009	553480	36581	6.61%
2010	590061	39340	6.67%
2011	591728	37226	6.29%
2012	598454	35617	5.95%
2013	593497	34041	5.74%
2014	437314	30036	6.87%
2015	451373	28047	6.21%
2016	477980	33267	6.96%
2017	527241	35517	6.74%
2018	542623	35745	6.59%

Figure 14. Trend in the prevalence of workers and the prevalence of complaints.



The denounced subjects then undergo a trial and eventually enter and remain in prison for a period of time.

Independently of the laws in force, some relevant trends have been observed that demonstrate the ineffectiveness of any law in force in Italy to control the market of illegal substances.

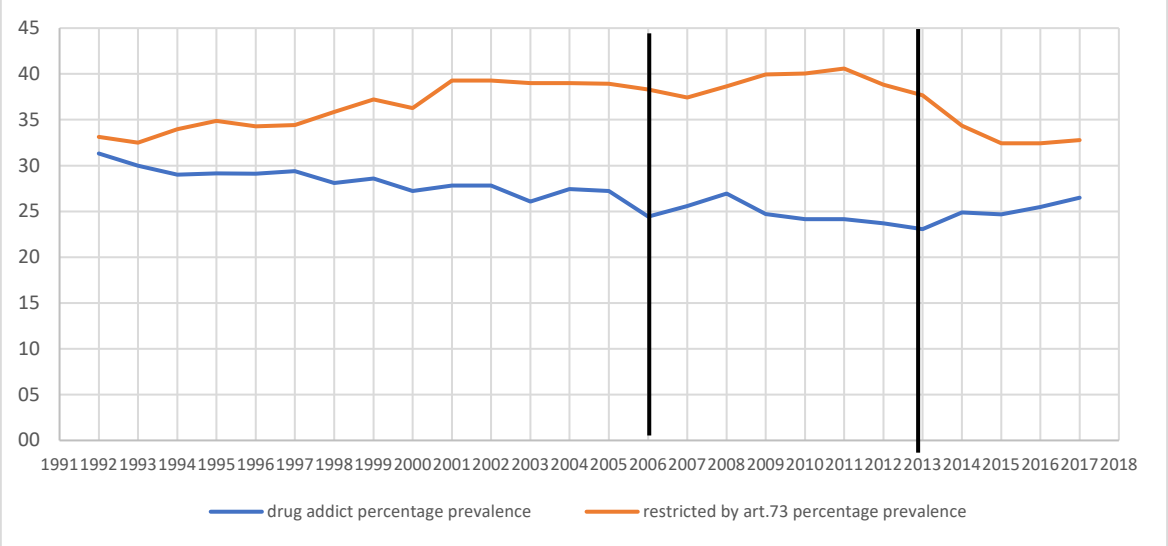
In particular:

1. The market for illegal substances has never been reduced, but has only shifted through the various substances, introducing many new ones as well (national report).
2. Workers in the medium-low market have increasingly seen the employment of foreigners and minors, as shown in Table 1. The population estimate in Table 4 is also stratified for Italians and foreigners, for males and females and for different age classes (national report).

3. The duration of the processes has always shown an increase, with significant differences between the durations for Italians and foreigners and for males and females (national report).
4. The length of time spent in prison has always seen an increase in the period studied (national report).
5. The prevalence of drug addicts in prison is influenced by the laws in force, as is the prevalence of those restricted by art.73 (Figure 15).

Figure 15 shows completely different trends with respect to the art.73 restrictions and drug addicts restrictions, which confirms that most of them go to jail for other crimes, in particular acquisitive ones.
It can therefore be seen that the percentage of restricted, with respect to the art.73, increases with Law 49/2006 in force and, due to this increase, the percentage of drug addicts decreases; on the other hand, Law 79/2014, which decreases the penalties for drug dealing, causes a decrease in the percentage of restricted with respect to the art.73 and an increase of percentage of drug addicts.
Further analysis and graphs are included in the national report and can be provided at the request of Prof. Goncalves.

Figure 15. Percentage prevalence og drug addicts and restricted by art.73 of the law in force.

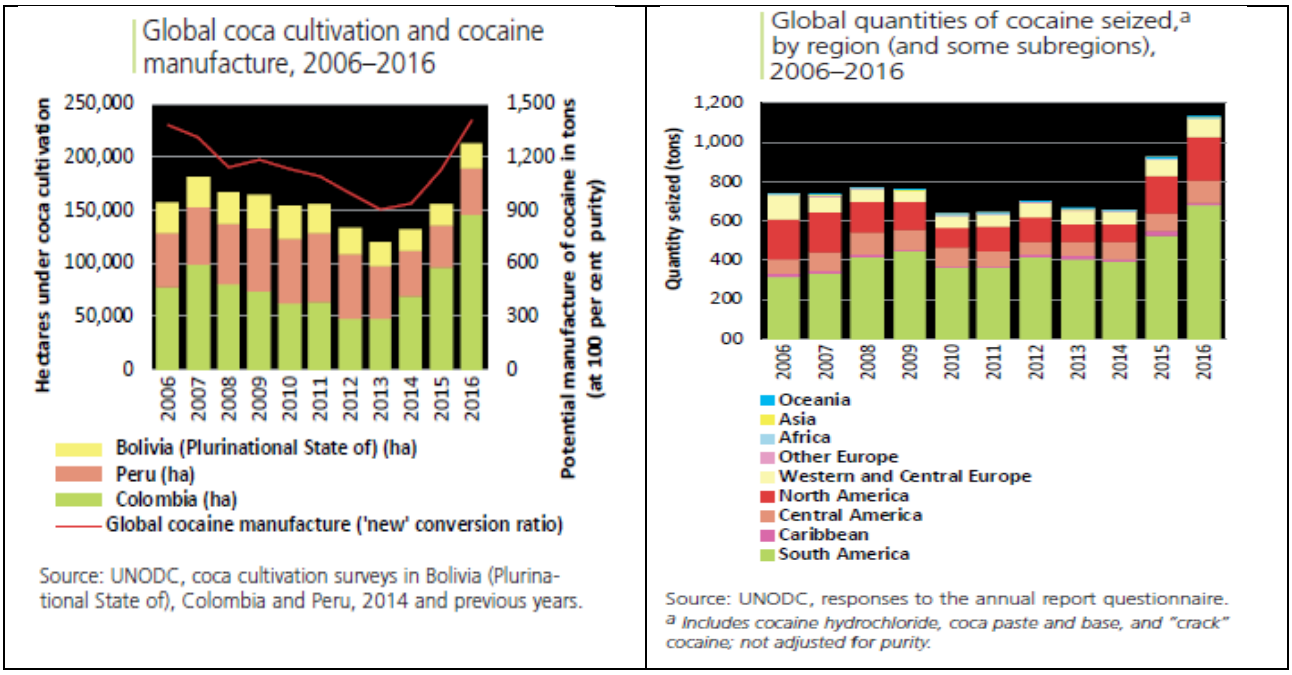


To complete the analysis of the phenomenon related to the supply and use of drugs, in relation to the different laws in force, we report the estimate of the market of the different substances, obtained using the data related to the seizures of illegal substances, in the period of interest.

Illegal market estimate on the basis of seizures data and comparison with Eurostat method estimate
In order to better assess the effectiveness of the fight against the illegal market, it is essential to consider the performance of operations in relation to the different substances. This is also essential for the knowledge of the overall drug market trend and its estimation.

The effectiveness of police reports of drug dealers has already been assessed and fluctuates around 6.5%.
On the basis of the estimated prevalence of drug dealers it is also possible to estimate the quantity of drug supply, if the information on the quantities sold in general, in a week, in a month etc. is available. This has been possible, on the basis of a specific survey on HRDU in harm reduction services and communities, and results in the paper by Rossi (2013). Usually it is not possible to have surveys on HRDU in harm reduction services or drug dealers in jail, providing data on quantities sold in a specific period, but it is possible to proceed on the basis of the seized substances, if approximately the rate of seizure is estimated.
Just to give an idea of how the trend of market is correlated with the seizures, we can consider Figure 16.

Figure 16. Global coca cultivation and seizures (time series 2006-2016)



For the effectiveness of the quantities seized in Italy, reference should be made to the annual reports of the Anti-Mafia Investigation Department, which one is cited here:

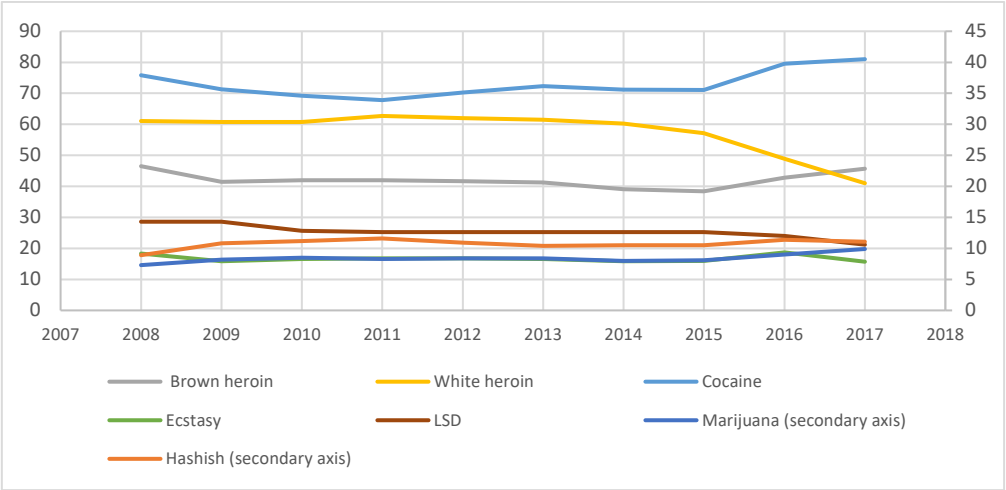
…. Among the data in possession to be considered more reliable in order to understand in which direction the market is moving, there are those related to narcotics seizures carried out on the national territory that therefore (mostly) photograph the supply of narcotics.

….

It is considered prudentially, at least at the Italian level and at least currently, that, as a rule, a given quantity of narcotic drug seized corresponds to a quantity of narcotic drug placed on the market equal to about 10/20 times that seized. (2015)

The constant trend in the seizure rate is confirmed by the constant retail price for doses of the most widely used substances and, also, recently the decrease in the price of white heroin, in accordance with the growth of the market (Figure 17).

Figure 17. Recent retail price of various substances (source: police data).

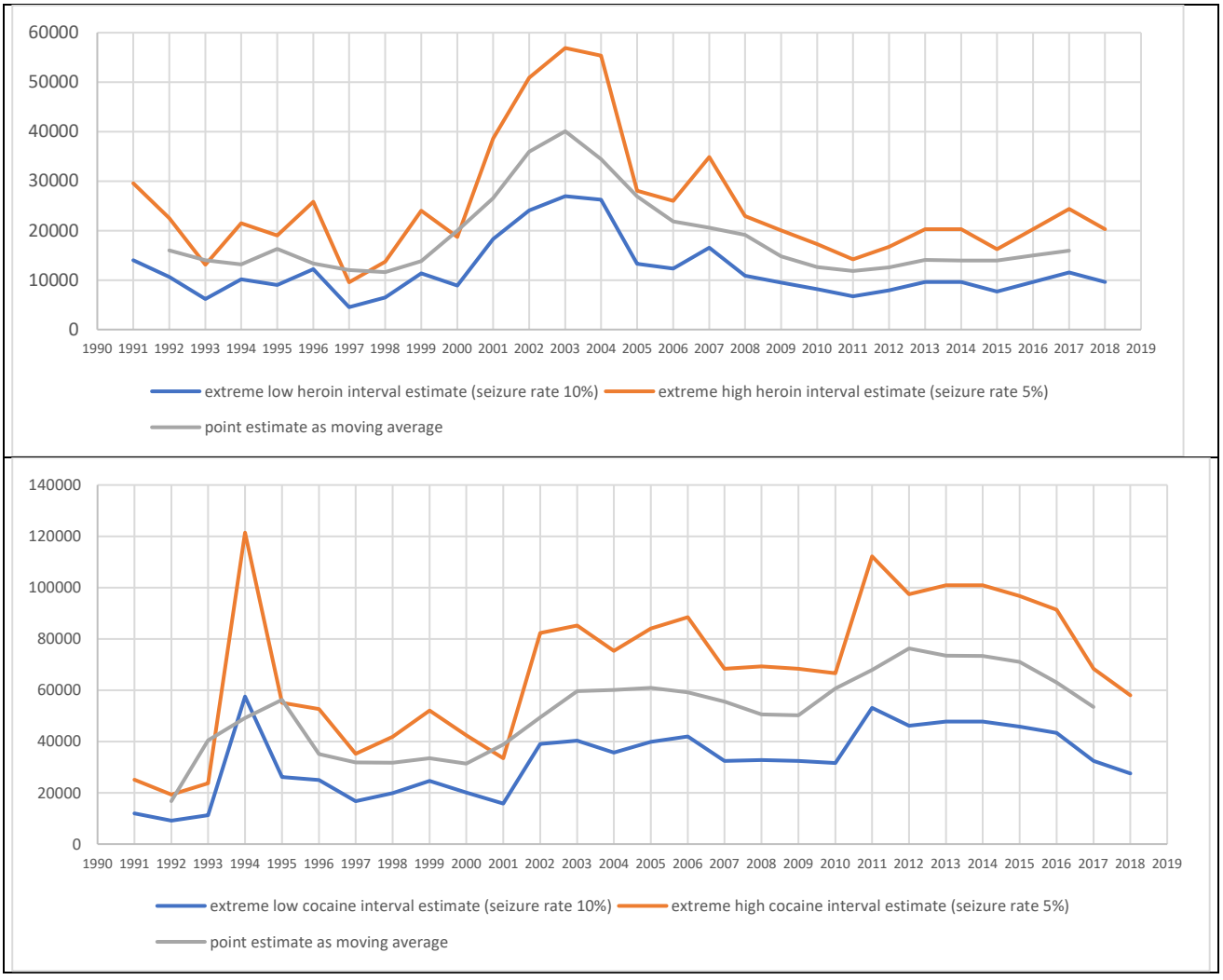


Given that the number of operations, conducted annually and dedicated to the various substances, varies over the years, it is necessary, in order to correctly estimate the development of supply, to normalise seizures and complaints. In order to do this, it is necessary to evaluate the effectiveness per operation in relation to the seizures and quantities seized each year, assessing the average per operation of seizures each year. Then the average number of operations over the whole period should be calculated and the annual average per operation of seizures multiplied by the average number of operations over the period. This normalises the quantities seized for each substance. To get the interval estimate of the quantity of substances on the market it is necessary to multiply by 10 and 20 and subtract the quantity seized.The point estimate is given by the median point. If it is necessary to have a more regular trend, it is sufficient to consider the point estimate with a moving average, for example, over 3 years. This method has allowed to obtain the estimates for Italy from 1991 to 2018 for the most used substances, mainly used by HRDU consumers. We report the estimates for heroin and cocaine, obtained using the data of the police forces on seizures (Figure 18).

If it is necessary to calculate the expenditure for the purchase of the substances, as requested by Eurostat, it is sufficient to multiply by the unit price, officially provided by the police forces in Italy.

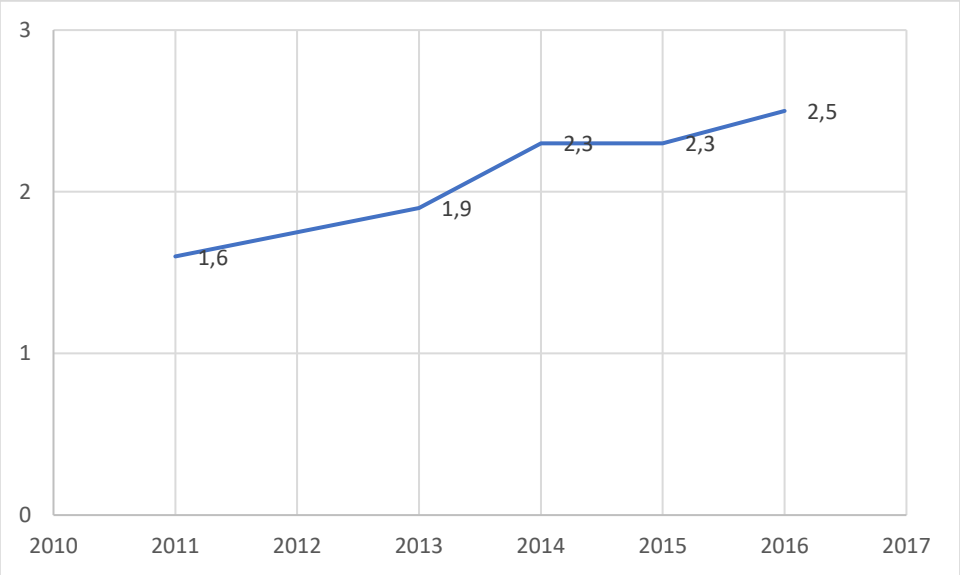
Market estimates, using the Eurostat method, are based not on supply but on demand, i.e. estimated populations of consumers, which are, in general, underestimated. For this reason, at scientific level, a minimum market estimate is defined, as reported in EMCDDA (https://www.emcdda.europa.eu/system/files/publications/3096/Estimating%20the%20size%20of%20main%20drug%20markets.pdf).

Figure 18. Estimate of supply of heroin and cocaine.



The national report also includes estimates using the Eurostat method (source: Istat) and comparisons for any substance for the period in which the two estimates are available.
The Istat estimate, related to heroin, is reported in Figure 19.
Recalling that the Eurostat estimate, based on the consumer estimate, shows the total cost of spending on retail purchases of the substance, it can be concluded that the heroin market in recent years has been increasing in Italy. This reinforces the conclusions regarding the second wave of the heroin epidemic; since the cost of heroin is also downward on average.

Figure 19. Eurostat estimate of heroin retail expenditures in billions (source: Istat).



The national report also shows the results for hashish and marijuana supply trends and also Eurostat estimates, as well as some information on NPS. These results can be provided, if useful for the final report, on the 7 partner countries to Prof. Goncalves.

Justice cost indicators

Here we present the first results of the estimates of direct costs, i.e. public finances related to the application of Italian legislation[1] on drugs in the three sectors of law enforcement and criminal justice:

- imprisonment costs;
- law enforcement agency costs;
- costs of criminal courts.

In particular, to refine the estimates, here we have chosen to use, where available and usable, the cost for Missions and Programs reported in the Italian Budget Laws. This choice, in perspective, could pave the way for a comparison at European level using the Cofog classification with which the classification for Missions and Programs at national level is connected[2].

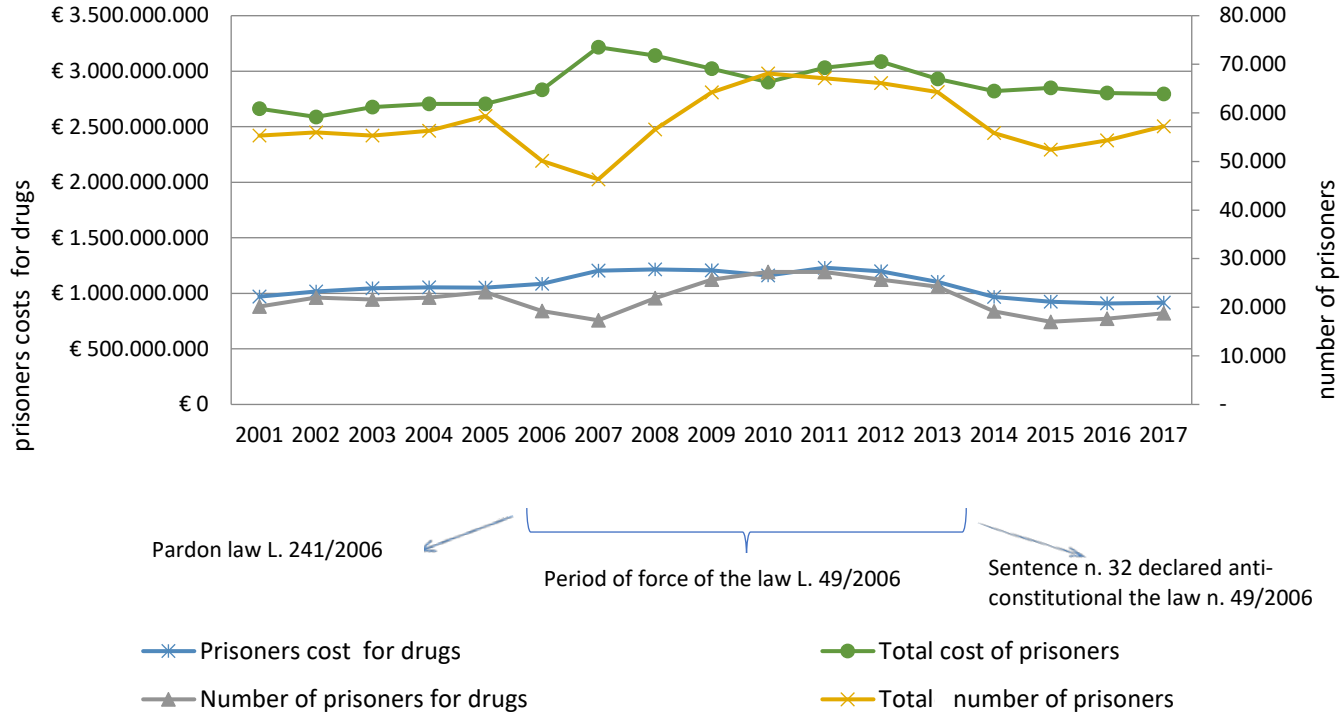
[1] The general outline of the analysis, with further refinements, was borrowed from the method of estimating the cost of crime, presented in the "Annual Report to the Italian Parliament on drugs and addictions 2015". See the Annual Report to Parliament on drugs and addictions 2015: a shared path with institutions and civil society (page 83 Estimate of the cost of crime). http://www.politicheantidroga.gov.it/media/1729/parte-i.pdf

[2] The classification of public expenditure by function used in national accounts refers to the Cofog (acronym of Classification Of Function Of Government), an international classification adopted as standard by the Sec95. The Cofog is divided into 3 levels of analysis: the first level consists of ten divisions, each of which is divided into groups, in turn divided into classes. According to article 14, paragraph 1, letter b) d. Legislative Decree 118/2011, each Program is linked to the relative codification of the second

Imprisonment costs

For the reclusion sector, the analysis conducted has made it possible to estimate the cost of prisoners resulting from the application of the legislation on drugs in Italy[3].
Errore. L'origine riferimento non è stata trovata.20 shows that in Italy a very large proportion of the cost of detention is determined by the legislation on drugs. In 2011 the total expenditure for detainees imprisoned for drugs reached a peak of € 1.2 billion, equal to 40.6% of total expenditure on prisoners and then decreased in recent years slightly above 30% (€ 0.9 billion).
Furthermore, **Errore. L'origine riferimento non è stata trovata.**20 shows that in the period 2007-2013, there was an increase in drug inmates, that peaked in 2011. due to the entry into force of the Law 49/2006, in force from 2006 to 2014, that has been the most repressive period Italy has lived. The sharp decrease in the prevalence of prisoners between 2006 and 2007 (including drug-related detainees) can be explained by a pardon for crimes committed up to 2 May of the same year, approved by Law 241/2006. However, in the following years, even following Law 49/2006, there was a rapid increase in the prison population.

Figure 20. Estimate of the annual cost of detention relating to prisoners for drugs, number of detainees for drugs and total detainees.



Source: Italian Ministry of Justice data processing

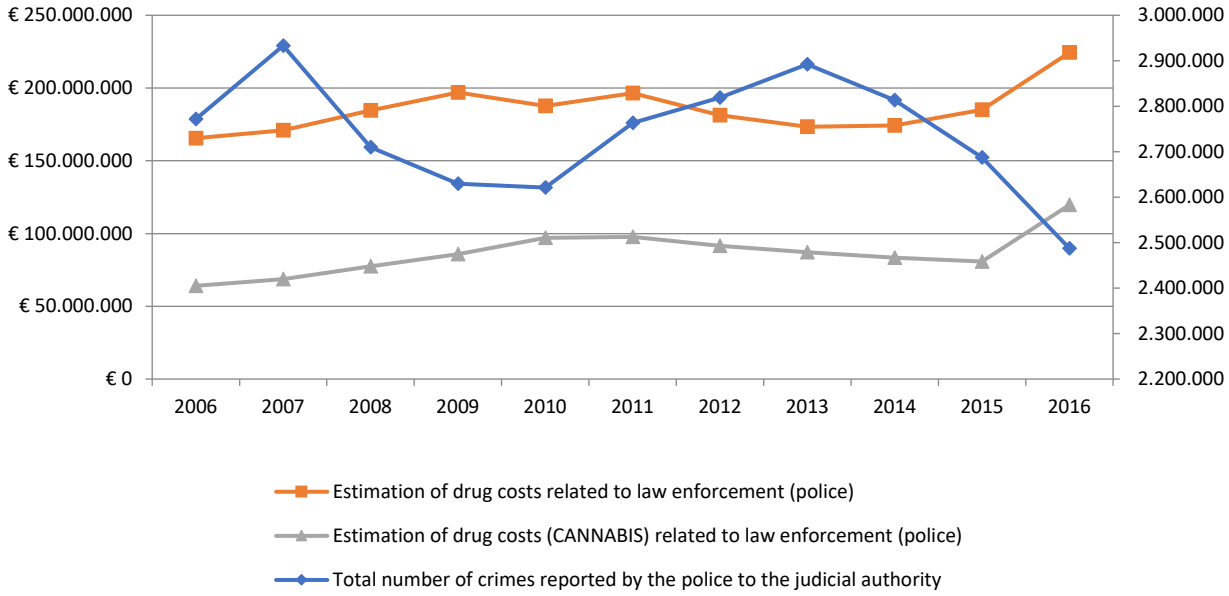
Law enforcement agency costs

The estimate on the costs of Italian police forces[4], related to the repression of the drug phenomenon, is represented in Figure 21, which shows that since 2006, the costs of law enforcement have increased progressively to stand in 2016 around € 220 million. The cost of repression related to the fight against cannabis trafficking, records the same trend and represents about half of the total cost. Moreover, the

level Cofog (Groups). In the case of non-univocal correspondence between Program and second level Cofog classification (Groups), the corresponding Cofog functions must be identified.
[3] The estimate for detention is the product of the number of prisoners for drug-related crimes for the average daily cost for a prisoner. The daily cost of all inmates for drugs (presences) was multiplied by 365, to get an estimate of the annual total.
[4] The estimate of police costs was obtained by dividing the cost of employees in the police sector (excluding the prison police whose costs are already included in the estimate for detention) for the total number of crimes reported by the police to courts of justice. The average cost was then multiplied by the number of crimes related to the drug legislation. The estimate of the cost of police related to cannabis trafficking was obtained, as for other sectors (detention and courts) using data on drug complaints (with indication of the substance) of the law enforcement authorities to the judicial authority.

total number of crimes reported has dropped sharply since 2013, while the number of reported crimes related to the legislation on drugs has grown, an element that justifies the growth of the estimated costs of the law enforcement related to the law enforcement activity to drug trafficking.

Figure 21. Estimated costs related to law enforcement drug enforcement activities.



Source: Processing on Italian Ministry of Economy and Finance data (Compartment Annual Account: Police and contract bodies: ppen - penitentiary police) and ISTAT (Dataset: Crimes reported by the police to the judicial authority)

Criminal courts costs

The estimate on the costs of criminal courts is only indicative and susceptible to further investigation[5]. The costs relating to criminal proceedings on drug legislation remain substantially stable over the period considered (2011-2016), coming to just over 120 million euro in 2016. About half of these costs are attributable to proceedings concerning cannabis.

Conclusion: justice costs

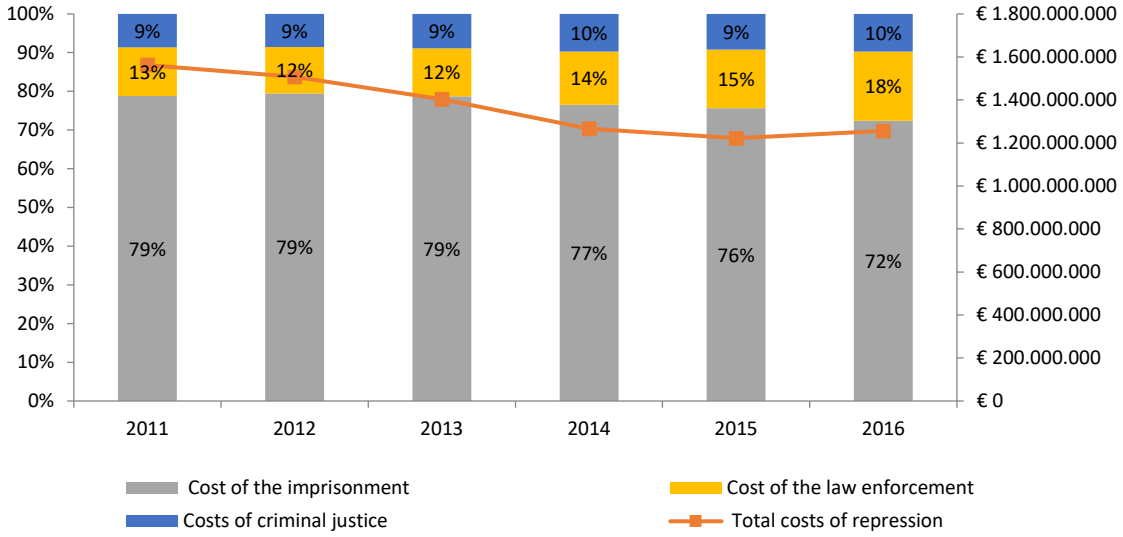
Summing up the estimates of costs about the three sectors of the law enforcement and criminal justice area: prison costs; police costs and costs of criminal courts, we obtain the estimate of the total costs for Italy relating to the contrast and repression of the drug phenomenon. With all the cautions already indicated above with regard to the estimate of the costs, which for some sectors (criminal courts and police) can be further refined, the estimates produced for the years 2011-2016 record an average annual cost (years 2011-2016) of 1.36 billion or 0.08% of GDP. The highest expenditure was recorded in 2011 with over 1.5 billion and then stood at over 1.2 billion in 2016.

Figure 22 shows the percentage incidence of the sectors: imprisonment, police and criminal courts on the total direct costs for the contrast and repression of the drug phenomenon. As you can see, the detention

[5] Two different types of estimates were used to define the annual cost of criminal proceedings relating to drugs:
- the first estimation method used data relating to expenditure for Missions and Programs reported in the Italian State Budget laws. The average cost of the criminal and civil proceedings was determined in advance, multiplied by the number of criminal proceedings related to the legislation on drugs, which determined the estimate of the annual cost of criminal proceedings relating to narcotic drugs and psychotropic substances (Law 309/90);
- however, given that the first method described above, underestimates the cost of the criminal trial, for reasons linked to the greater refinement and reliability of the estimates, it was decided to use the method based on the average cost Chart of the criminal trial (referred to the proceedings pursuant to art. 73/74 of Presidential Decree 309/1990) presented in the Annual Report to the Parliament on drugs and dependencies 2012 referred to the year 2010

sector absorbs most of the resources destined to combat and suppress the drug phenomenon (76% in 2016).

Figure 22. Percentages and total costs related to the activities of contrast and repression of the drug phenomenon: Area law enforcement and criminal justice costs.



Source: our elaboration on previous data

What derives just from these indicators, with respect to the evaluation of drug laws and policies, is that the laws have not produced major changes in these indicators and social costs, that seem to evolve independently moderate more by the interests of the illegal market than by policies in Italy.
It is important, however, to consider a special aspect of Law 49/2006.
Indeed, Drug Law 49/2006 has been, both in demand and in supply, more repressive, particularly with regard to cannabis. In fact, the consequences, both criminal and administrative, for sellers and users of cannabis, have been equated to those of other illegal substances. In particular cannabis and hard drugs, such as heroin, cocaine...etc., were considered equivalent, not applying the scientific classification, used in the rest of the world, first for culture and then for evidence, distinguishing the substances into "soft" and "hard", depending on the effects, health and social, resulting from use.
For drug traffickers, the greatest punitive aggravation has resulted from the amendment of Article 73: since 2006, the same penalties for the sale of all substances without distinction. Also for the consumers, the aggravation (modification of Art.75) was considerable: they could no longer avoid the administrative sanction (suspension of the driving licence, withdrawal of the passport, ...) accepting the therapeutic intervention to limit the use of the substance (secondary prevention), as was possible with the DPR 309/90. This limiting aspect of secondary prevention also remained in force with Law 79/2014.
The indicators directly dependent on these changes, such as, for example, the increase in the percentage of those in prison for Art.73 or the decrease in the number of drug addicts entering therapy, are shown in Table 1. But the induction to the poly-drug dealing and, consequently, to the poly-drug use, due to the equalisation of the substances, does not fall within the possibilities of representation of the standard indicators.
With regard to the poly-drug dealing, we limit ourselves to pointing out that between 2005 and 2006 the number of police operations that detected poly-drug dealing increased by more than 3%. With regard to the social and health consequences related to poly-drug use, appropriate indicators have also been introduced and used for comparison between 38 states, also five Eranid-IDPSO partner countries, in the 2011 ESPAD survey, of which we refer to in the appendix.
The application, over several years in the data of the annual school survey in Italy, is also mentioned in the appendix.

Appendix: New indicators of health applied to adolescent drug users and evaluation of drug policies comparing countries

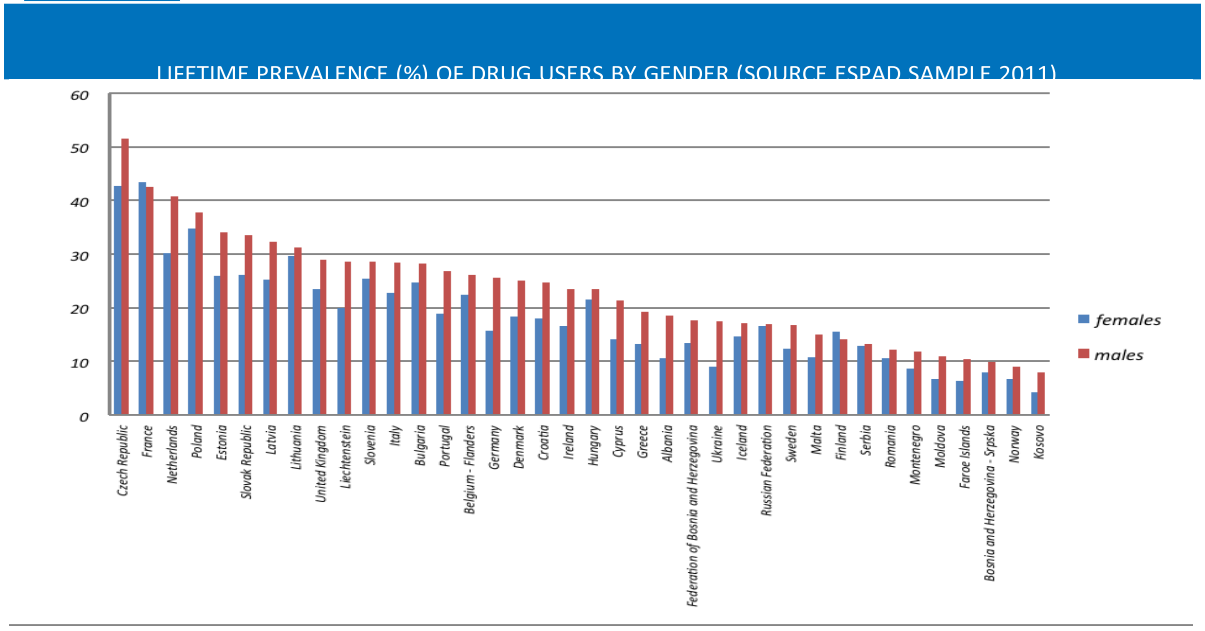
The standard epidemiological indicators, including those used by EMCDDA, are unfortunately based on the prevalence of users of each substance and the ranking of damage caused is based on a single analysis of the substance, so-called primary. Therefore, new indicators have been proposed in 2013 to assess the consequences of poly-drug use, comparing periods and countries and, indirectly, assessing the effectiveness of primary and secondary prevention interventions.
The approach was based on the analysis of the global frequency of use in a specific period, depending on data availability. Then the poly-drug use was taken into account by adding the frequency of use of any substance multiplied by the harm, health or social score, of the respective substance, according to the ranking developed by Nutt and van Amsterdam in 2010 and refined together in 2015. Each user was characterised by two scores: the global frequency of use, denoted by FUS, in the particular period of time, and the poly-drug use score. The poly-drug score increases with the frequency of use, the number of substances used and the harm score of the substances used.
The poly-drug score (PDS) for the *i-th* user was computed using the following formula:

$$PDS_i = \sum_{j=1}^{n} w_j FUS_{ij}$$

where *n* represents the number of substances used, in the time period considered, w_j is the W score of the *j-th* substance and FUS_{ij} is the frequency of use of the *j-th* substance for the *i-th* user in the same time period.
The important difference between the classical epidemiological indicators of EMCDDA and the indicators FUS and PDS is in the central stat-unit of the evaluation: for the classical indicators (prevalence, incidence) the substance is at the centre and the values obtained for the indicator are useful data for the estimation of the supply (market), while with the poly-drug use indicators FUS and PDS the consumer is at the centre and therefore the level of harm is evaluated and, above all, the effectiveness of prevention interventions can be evaluated and more effective interventions can be set up.
The standard indicators were developed in the 1980s, when users mainly used a single substance: heroin, cocaine, cannabis and therefore putting the substance at the centre of the evaluation was enough to describe both supply and demand. In recent years (after 2010), already the change in the definition of serious substance use from PDU, which was based on the serious use of individual substances, to HRDU, which is based on the risky behaviour of users, regardless of the substances, is a first step of EMCDDA towards the evaluation of subjects and not only substances. Poly-drug use indicators (Mammone et al. 2014; Ventura et al., 2015, Colasante et al., 2019) that introduce the harm levels of individual substances, measured scientifically (Nutt et al., 2010; van Amsterdam et al., 2010 and 2015), combining them in a personal average weighing for each user, allow to better understand the level of HRDU and compare the approaches, especially of prevention policy.
The indicators were applied using international data from the 2011 European School Survey Project on Alcohol and other Drugs (ESPAD). A full description of sampling and data collection procedures has been reported elsewhere (Hibell et al., 2012). ESPAD collects comparable data on substance use among 15- to 16-year old European students to monitor trends, within as well as between countries. The indicators FUS and PDS were calculated using lifetime consumption of 11 substances: cannabis, ecstasy, tranquilizers or sedatives (without doctor's prescription), amphetamines, LSD or other hallucinogens, crack, cocaine, heroin, "magic mushrooms", GHB, and anabolic steroids. Since respondents were aged 15 to 16 years at the time of the survey, "ever used" was considered representing recent consumption. Any lifetime drug use was defined as the positive response to at least one of the drugs listed above.
The results of the application show how different it is to use classical indicators, such as the prevalence of

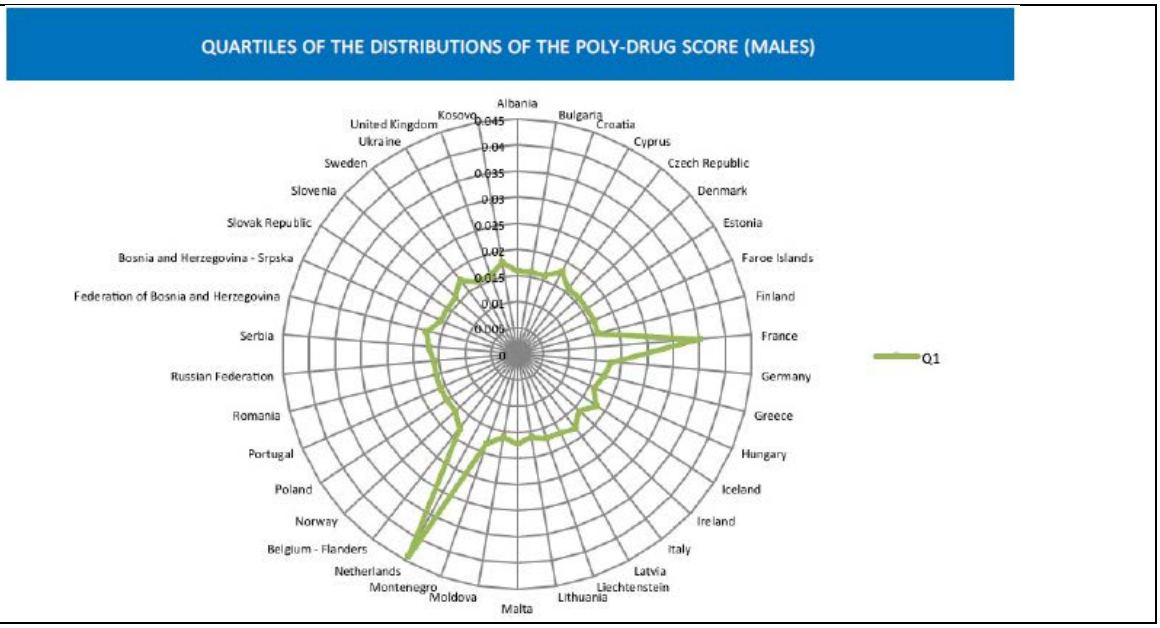
use of a substance or any substance, and FUS and PDS which measure the use and frequency of all substances by consumers.
Figure 1 illustrates the lifetime prevalence of any drug use for each country. Countries are sorted by male prevalence from high to low.
If analyses of the consequences of the law are based on prevalence only, then the Czech Republic, France, the Netherlands and Poland show the most serious situations (prevalence above 35%). Italy and Portugal have a similar prevalence (above 25% but below 30%), Ireland and Cyprus (above 20% and below 25%), Albania and Sweden (below 20% and above 10%) and Norway and Kosovo show the lowest values (less than 10%). If the impact of the law is assessed only on this indicator, which is the standard adopted, it can be very partial, as shown by the application of the FUS and PDS indicators.

FIGURE



Synthetic insight into the distribution of FUS and PDS by country can be gained by looking at the radar graphs, for example in Figures 2 reporting the quartiles for males.

Figure 2. Quartiles of PDS distribution



Looking at the three figures it is easy to distinguish between the countries, where the high or low PDS values regard uniformly the whole population, the three quartiles have the same behaviours (high or low) and those, where some quartiles are low and the other is high or the inverse situation. Just for example, the first group comprises France and Netherlands, the second one Kosovo, Czech Republic and Albania. The other two groups comprise: the first Montenegro and Malta and the second one Italy and Cyprus. Although there is a high correspondence of FUS and PDS within countries, patterns of harm evolve in some countries (e.g. Federation of Bosnia and Herzegovina, Serbia) where the frequency of use score is low. The overall rank order of countries by FUS and PDS is reported in Table 1 and Table 2 respectively.

Table 1. FUS INDICATOR (MEDIAN, MEAN), IN ORDER FROM THE HIGHEST TO THE LOWEST MEDIAN VALUE

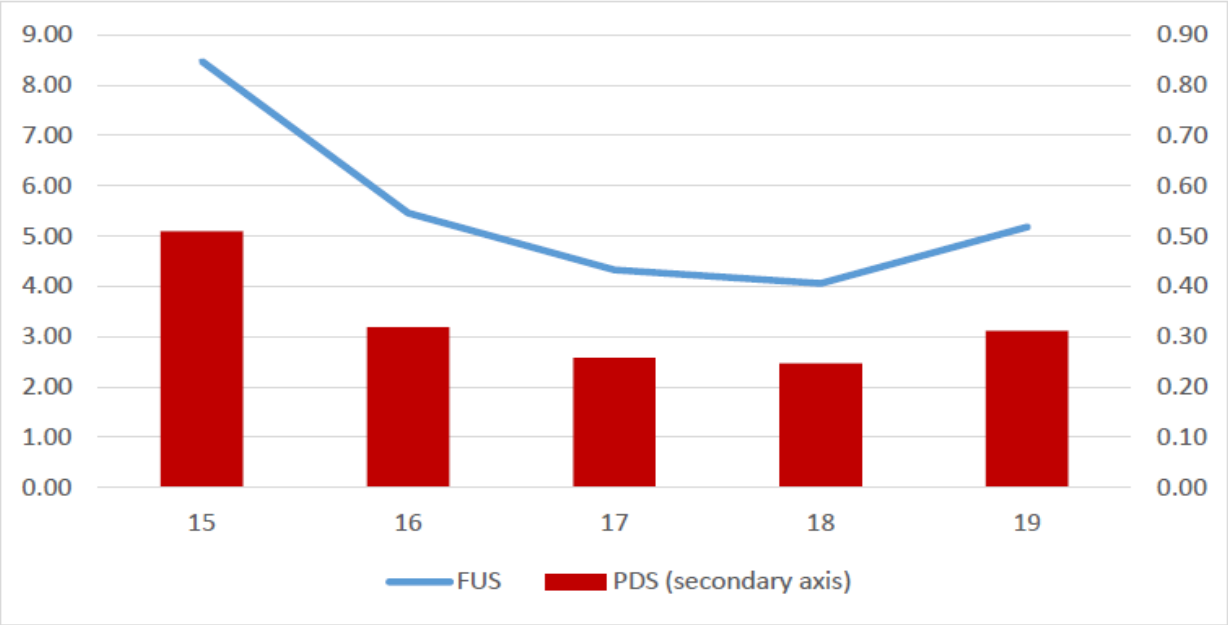
COUNTRY	FUS	
	MEDIAN	MEAN
FRANCE	7.5	19.94
NETHERLANDS	7.5	19.55
ITALY	7	21.89
CYPRUS	5.5	26.2
UNITED KINGDOM	5.5	18.65
BELGIUM - FLANDERS	5.5	17.74
MONTENEGRO	4	23.94
ICELAND	4	20.42
MALTA	4	18.25
BULGARIA	4	17.18
SLOVENIA	4	16.98
GERMANY	4	15.77
PORTUGAL	4	15.01
LIECHTENSTEIN	4	20.74
IRELAND	4	18.98
RUSSIAN FEDERATION	4	17.2
HUNGARY	4	15.76
CROATIA	4	15.04
DENMARK	4	13.98
LATVIA	4	13.95
SLOVAK REPUBLIC	4	14.67
POLAND	4	14.12
CZECH REPUBLIC	4	15.59
SWEDEN	4	13.66
FINLAND	4	12.09
ESTONIA	4	10.49
UKRAINE	3.5	13.24
FAROE ISLANDS	3.5	5.89
NORWAY	3	13.69
ROMANIA	3	10.42
SERBIA	3	15.16
GREECE	3	13.78
LITHUANIA	3	10.16
FEDERATION OF BOSNIA AND HERZEGOVINA	3	14.95
MOLDOVA	1.5	6.57
BOSNIA AND HERZEGOVINA - SRPSKA	1.5	11.9
ALBANIA	1.5	9.58
KOSOVO	1.5	11.63

Table 2. PDS NORMALIZED (MEDIA AND MEAN) IN ORDER FROM THE HIGHEST TO THE LOWEST MEDIAN VALUE

NORMALIZED POLY-DRUG SCORE (MEDIAN, MEAN), IN ORDER FROM THE HIGHEST TO THE LOWEST MEDIAN VALUE OF PDS		
COUNTRY	PDS	
	MEDIAN	MEAN
ITALY	0.27	0.44
FEDERATION OF BOSNIA AND HERZEGOVINA	0.19	0.44
ALBANIA	0.12	0.46
FRANCE	0.08	0.24
UNITED KINGDOM	0.08	0.23
NETHERLANDS	0.08	0.23
MOLDOVA	0.08	0.12
CYPRUS	0.07	0.34
BELGIUM - FLANDERS	0.07	0.21
MONTENEGRO	0.05	0.3
ICELAND	0.05	0.26
MALTA	0.05	0.24
BULGARIA	0.05	0.21
SLOVENIA	0.05	0.2
GERMANY	0.05	0.19
PORTUGAL	0.05	0.18
LIECHTENSTEIN	0.04	0.27
IRELAND	0.04	0.24
RUSSIAN FEDERATION	0.04	0.2
HUNGARY	0.04	0.2
CROATIA	0.04	0.18
DENMARK	0.04	0.17
LATVIA	0.04	0.17
SLOVAK REPUBLIC	0.04	0.17
POLAND	0.04	0.17
CZECH REPUBLIC	0.04	0.17
NORWAY	0.04	0.16
SWEDEN	0.04	0.16
UKRAINE	0.04	0.15
FINLAND	0.04	0.14
ROMANIA	0.04	0.13
ESTONIA	0.04	0.12
FAROE ISLANDS	0.04	0.07
SERBIA	0.03	0.19
GREECE	0.03	0.17
KOSOVO	0.03	0.15
LITHUANIA	0.03	0.13
BOSNIA AND HERZEGOVINA - SRPSKA	0.02	0.15

As we can see, the five European countries of the Eranid-IDPSO project are always in the first half of the 38 countries listed and always among the first ones, Italy, France, Great Britain and The Netherlands, which evidently have less effective drug policies on the heaviest consumption among the 16-year-old schoolchildren of the ESPAD survey, compared to Portugal which ranks 13th and 16th, with much lower indicator values. It can also be seen from the indicators that, while France, the Netherlands, Italy and the UK have similar and not much higher scores for frequency of use than Portugal, when it comes to the substances used and their personal harm score, Italy has the highest score, even by a lot, compared to all the other countries, which have substantially lower scores. This shows that in Italy more substances are used and also more harmful than the other 37 countries included in ESPAD 2011 by 16-year-olds.
The results obtained from the application to ESPAD data show, firstly, that prevention interventions in Portugal are more effective than in the other 4 countries and, in particular, than in Italy.
The indicators have recently been applied to various data sets. The application using ESPAD-Italy survey, which is conducted annually considering all high school students, between the ages of 15 and 19; in particular the results obtained using 2013 data are summarised below in Figure 3 (Colasante et al., 2019).

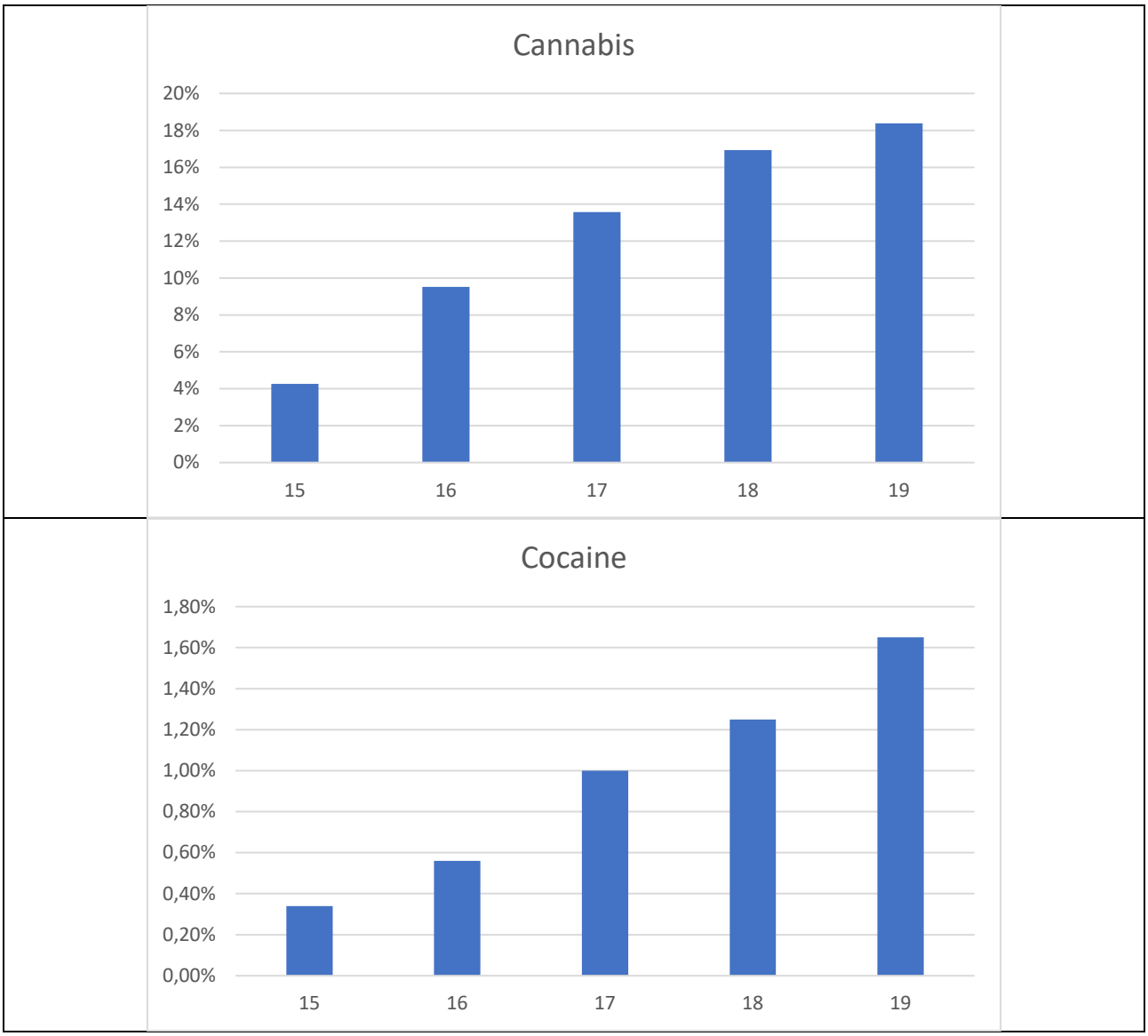
Figure 3. FUS and normalised PDS indicators, related to ESPAD Italy 2013 data, corresponding to various ages

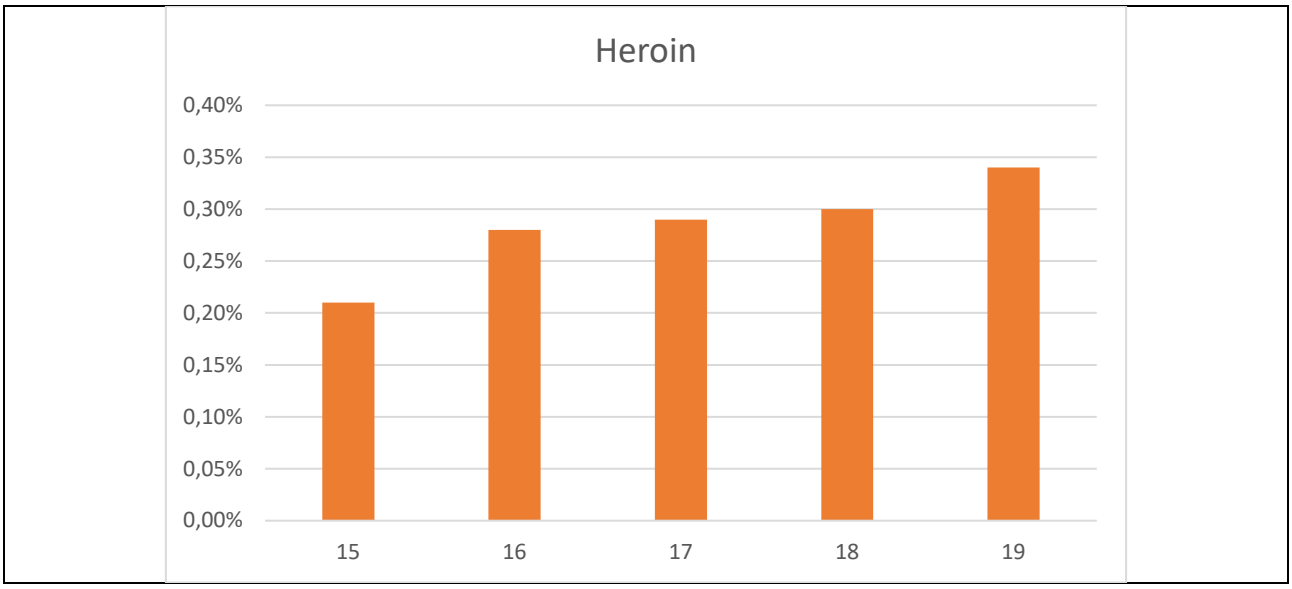


A similar U-shaped trend can also be observed for the indicators for the other years considered. Moreover, the indicator PDS of poly-drug use is, on average, higher for the years related to the application of Law 49/2006, without distinction between soft and hard drugs.
In the paper Ventura et al. (2015) the anti-drug laws and policies of Italy, the Netherlands, France and Portugal have been linked to the indicators for elaboration within the project JUST/2010/DPIP/AG 1410: New Methodological Tools for Policy and Programme Evaluation (2011-2013) (http://www.ce3s.eu/2012/01/27/eu-project-just2010dpipag-1410-new-methodological-tools-for-policy-and-programme-evaluation/, http://fileserver.idpc.net/events/New-methodological-tools-for-policy-and-programme-evaluation.pdf).
In order to understand the value of poly-drug use indicators for monitoring youth use of illegal substances and planning appropriate prevention interventions, let's consider the standard Tables, obtained on the basis of the data from ESPAD-Italy, which officially transmitted to EMCDDA (FONTE data set).
Figure 4 shows the results of the estimation of annual prevalence of use of the main substances, as the age of the students varies. It is evident that the simple prevalence, as a standard indicator, does not provide

adequate information as the new indicators. In particular, there is no evidence that the greatest harm from the use of more substances is done by the youngest students of all.

Figure 4. Prevalence of use of the main substances by students at different ages in the last 12 months in 2011.





In the national report, the highest values of indicators in the youngest individuals were analysed as an indication of ineffective prevention interventions, especially among the youngest people, who are also related to early school leaving. If it is interesting, some tables and figure can be requested by Prof. Goncalves.

References

Bouchard M., Tremblay P., (2005), Risks of Arrest across Drug Markets: A Capture-Recapture Analysis of "Hidden" Dealer and User Populations, *Journal of Drug Issues,* 35, 4, 733-754.

Caserta P., Rossi C., *Corruption, competitiveness and illicit drugs market. A quantitative analysis,* Universitalia di Onorati s.r.l. Roma, 2013.

Caserta. P., Rossi C., *Trasparenza vs Competitività e legami con l'economia "criminale",* XIV rapporto dell'Osservatorio Leggi Droga, Universitalia di Onorati s.r.l. Roma, 2018. https://www.partitoradicale.it/wp-content/uploads/2018/06/OLD-14-marzo-2018-TESTO.pdf

Colasante E., Fabi F., Molinaro S., Rossi C., Scalia Tomba G.. (2019), Updated indicators to evaluate harmful drug use, in particular poly-drug use, *Current Drug Research Reviews*, 11, 51-57. https://www.researchgate.net/publication/327868290_Updated_Indicators_to_Evaluate_Harmful_Drug_Use_in_Particular_Poly-Drug_Use

Farina Coscioni M.A., Rossi C., *Proibizionismo, criminalità, corruzione*, Universitalia. Onorati s.r.l., Roma, ISBN 978-886507-932-4, 2016.

Hibell, B., Guttormsson, U., Ahlström, S., Balakireva, O., Bjarnason, T., Kokkevi, A., & Kraus, L.,: (2012), The 2011 ESPAD Report. Substance use among students in 36 European countries. Stockholm: CAN.

Mammone A., Fabi F., Colasante E., Siciliano V., Molinaro S., Kraus L., Rossi C., (2014), New indicators to evaluate and to compare harmful drug use among adolescents in 38 European countries**,** *NORDIC STUDIES ON ALCOHOL AND DRUGS* VOL 31, 243-258. file:///C:/Users/User/Downloads/Mammone_2014.pdf

Mascioli F., Rossi C. (2015), Useful supply indicators for evaluating law enforcement efficacy, the size of the drug market and other issues, *Proceedings of the Eighth ISSDP Conference*, UniversItalia di Onorati s.r.l., Roma, 189-209.

Nutt D.J., King L.A., Phillips L.D. (2010), Drug harms in the UK: a multicriteria decision analysis, *Lancet*, 376, 1558-1565,
https://www.researchgate.net/publication/47635105_Nutt_DJ_King_LA_Phillips_LD_Drug_harms_in_the_UK_a_multicriteria_decision_analysis_Lancet_376_1558-1565

Rossi C., (2013), Monitoring the size and protagonists of the drug market: combining supply and demand data sources and estimates, *Drug Abuse Rev. Jun;6(2):122-129.*

Singleton, N. Cunningham, A., Groshkova, T., Royuela, L. and Sedefov, R. (2018), Drug supply indicators: pitfalls and possibilities for improvements to assist comparative analysis', *International Journal of Drug Policy* 56, pp. 131-136, https://doi.org/10.1016/j.drugpo.2018.02.003.

van Amsterdam J., Opperhuizen A., Koeter M., van den Brink W. (2010), Ranking the Harm of Alcohol, Tobacco and Illicit Drugs for the Individual and the Population. *Eur Addict Res* 16, 202-207, https://www.ncbi.nlm.nih.gov/pubmed/20606445.

van Amsterdam J., Nutt D.J., Phillips L.D., van den Brink W. (2015), European rating of drug harms, *J Psychopharmacol* 29(6), 655-660, https://journals.sagepub.com/doi/10.1177/0269881115581980.

Ventura E., Wagner H., Rossi C., (2015). New indicators of health among adolescent drug users and evaluation of drug policies comparing countries, *Epidemiology, Biostatistics and Public Health*, vol. 12-1, suppl.1. https://ebph.it/article/view/11174/10404

Walley, A. Y., Xuan, Z., Hackman, H. H. (2013), Opioid overdose rates and implementation of overdose education and nasal naloxone distribution in Massachusetts: interrupted time series analysis, *BMJ* 346, f174, 2013, https://www.bmj.com/content/346/bmj.f174.