

Illicit IPTV in Europe

Economic Report

December 2022

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Acknowledgments

The author is grateful for comments on the draft report from Professor Dinusha Mendis, Director, CIPPM, Bournemouth University; and Sheila Cassells, Executive Vice President, AAPA.

This Report benefited from consultations with Professor Maurizio Borghi, University of Turin; Mark Mulready, Vice President - Cyber Services, Irdeto and Co-President, AAPA; Pedro Bravo Martins, Content Protection, NOS; Neil Atkinson, Synamedia; JJ Gee, NAGRA Kudelski Group; Bruno Noel, Altice France; Lee Kent, Content Protection Manager, beIN; Addy Verma, Legal Director, Warner Bros. Discovery; and Dr Agnes Schneeberger, Market Analyst, European Audiovisual Observatory.

FOREWORD

Internet Protocol Television (IPTV) is a technology that utilizes internet connections to broadcast television content. Over the last decade legitimate internet-based TV services have proliferated. Flexible television streaming options are more ubiquitous to a growing consumer base, replacing traditional broadcasting methods such as satellite or cable. At the same time, illicit IPTV services have been on the rise.

The Audiovisual Anti-Piracy Alliance (AAPA) is leading the fight against audiovisual piracy across Europe and the Middle East, supporting law enforcement and building partnerships to better tackle piracy. AAPA seeks to raise awareness in its efforts to discourage piracy.

This Report provides the latest economic assessment of the scope of illicit IPTV in Europe. The study estimates that EUR 1.06 billion of unlawful revenue was generated by copyright infringing IPTV providers in Europe in 2021. A substantial number of people in Europe access and, hence, finance illicit IPTV services. This Report reveals that illicit IPTV services are used by 17.1 million Europeans (4.5 % of the EU27+UK population). Among the young population (aged 16-24) this share is even higher – 11.8%, amounting to 5.9 million young individuals who engage in the use of illicit IPTV in Europe.

IPTV piracy is harmful to the providers of audiovisual services, including rights owners, broadcasters, and Pay-TV operators. Financial losses that legitimate audiovisual service providers sustain are high. Likewise, governments loose substantial amounts in tax revenue. This Report estimates that due to this form of piracy alone legitimate providers in Europe suffer losses that potentially reach EUR 3.21 billion in annual revenue in 2021. It is important to emphasise that unrealised revenue potential translates into fewer profits directed toward content creators and less investment in innovation. This is also detrimental to the users who are the end consumers of audiovisual content.

Illicit IPTV is a relatively recent phenomenon in the realm of digital piracy. Several factors contribute to its proliferation, including the low entry barriers for pirate services and the high rewards with limited risk of enforcement. Technical and legislative challenges make fighting this form of piracy difficult.

It is important to note, however, that dedicated websites providing illicit IPTV services are not the only means of accessing pirated content. Social media platforms and apps, for example, provide relatively easy unauthorised access to content. Unauthorised providers also profit from advertising and malware. Thus, the revenue earned by pirates and potential losses to the industry are greater than those estimated in this report.

In the face of current challenges, the efforts of AAPA are ever more required to promote efficient and effective legislation and intellectual property rights enforcement. This research acts as an information tool to raise awareness among European citizens, policymakers, law enforcement and the industry.

Sheila Cassells

Executive Vice President

The Audiovisual Anti-Piracy Alliance (AAPA)

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LIST OF ABBREVIATIONS

AAPA	Audiovisual Anti-Piracy Alliance
AV	Audiovisual
CIPPM	Centre for Intellectual Property Policy & Management
EMPACT	European Multidisciplinary Platform Against Criminal Threats
IP	Intellectual Property
IPTV	Internet Protocol Television
EAO	European Audiovisual Observatory
EU	European Union
EUPO	European Union Intellectual Property Office
EUR	Euros
TV	Television
UK IPO	The Intellectual Property Office of the United Kingdom
VoD	Video on Demand

LIST OF COUNTRIES

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic / Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom
EU28	28 Member States of the European Union (pre-Brexit)
EU27	27 Member States of the European Union (without the UK)
EU27+UK	27 Member States of the European Union with the UK

EXECUTIVE SUMMARY

This Report encompasses research on IPTV (Internet Protocol Television) piracy in Europe. The aim of the report is to present reliable and up-to-date results of the magnitude of illicit IPTV, as well as to contribute to the understanding of the phenomenon.

The economic analysis is carried out to estimate three key elements:

- **Number of users accessing unauthorised IPTV content.**
- **Revenue generated by copyright infringing IPTV subscription providers.**
- **Potential losses in revenue incurred by legal Pay-TV providers due to unauthorised IPTV subscriptions.**

The assessment has been carried out for the entire EU27+UK (former EU28)[1] market, and for each individual economy. Due to the sensitive nature of the estimates the potential losses are provided for the aggregate EU27+UK only.

It is important to note that the methodology is based on the methodological approach applied by the EUIPO in 2019 report *Illegal IPTV in the European Union* to estimate users of illicit IPTV and the illicit revenue generated by copyright infringing IPTV providers. This Report presents updated results that can be compared with EUIPO (2019) report[2]. Moreover, the current study is developed further. The report estimates the potential losses in revenue suffered by legitimate audiovisual content providers in Europe. In the estimations of the number of users engaged in illicit IPTV consumption, this Report also identifies IPTV piracy consumption among the younger population (aged 16-24) in European countries

The Report greatly benefits from expert consultations and data provided by Audiovisual Anti-Piracy Alliance (AAPA) Members[3] and European Audiovisual Observatory (EAO)[4].

[1] European Union (EU28 until 2020) Member States that include all current EU27 countries and the UK.

[2] EUIPO: 'Illegal IPTV in the European Union', November 2019

[3] Altice France, beIN, Irdeto, LaLiga, NAGRA Kudelski Group, Synamedia, and Warner Bros. Discovery – leading companies in Media, AV services, digital software security and cybersecurity.

[4] The author is grateful to data and information provided by Dr Agnes Schneeberger (European Audiovisual Observatory).

Main findings

- **Estimates show that in 2021 nearly 17.1 million individuals (4.5% of the EU27+UK population) were using illicit IPTV services.**
- The share is even higher among young Europeans – **11.8% of people aged 16-24 opted to access unauthorised IPTV**. This represents nearly 5.9 million young individuals engaging in the use of unlawful IPTV in Europe.
- This Report estimates **EUR 1.06 billion of unlawful revenue** was generated by copyright infringing IPTV providers in Europe in 2021.
- **On average, a single user spends EUR 5.22 per month** to access IPTV content that is provided by unauthorised providers.
- **Legal Pay-TV providers incurred potential losses in revenue of EUR 3.21 billion** in 2021 due to pirated IPTV in Europe.



17.1 million persons (aged 16-74) use Illicit IPTV in Europe.

This represents 4.5% of European population.



5.9 million young persons (aged 16-24) use Illicit IPTV.

This represents 11.8% of young European population.



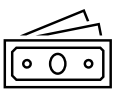
1.06 billion



Illicit Revenue generated by copyright-infringing IPTV providers



3.21 billion



Losses in Revenue suffered by legal Pay-TV providers

INTRODUCTION

Background

The growth and use of digital media platforms has led to an increase in digital piracy. New paradigms of social life and audiovisual (AV) entertainment consumption have been established as young populations and heavy internet users see newly flexible working arrangements. This has been aggravated by the pandemic period which imposed restrictions on the consumption of certain legal access to audiovisual entertainment such as cinema and live sports events. Average television viewing time per person has experienced a revival. The average time spent in front of TV screens by consumers in the Europe[5] was 3h43 in 2020, a 4% increase compared to the year before[6].

The pattern of combining legal AV sources with illicit ones existed before the pandemic. The EUIPO (2020) findings[7] suggests that people in Europe switch between both legal and illicit sources to access the content they need; thus, augmenting the base of users to the benefit of the providers of unauthorised AV content. The EUIPO (2022)[8] survey reveals that the majority of respondents had intentionally accessed content via illicit sources: 61% for films and 52% for TV series and shows. Significant increases in Film and TV piracy since the Covid-19 lockdown in March 2020 is also emphasised by Sandvine[9].

It is important to state that the pandemic period has created a spike in AV content consumption and, in turn, increased piracy. The pandemic, however, cannot be deemed the main cause behind the increase in the unauthorised consumption of AV content. For example, the EUIPO (2020) *European citizens and Intellectual Property. Perception, awareness and behaviour* report shows that percentage of people in Europe who admit using illegal online sources for digital content was at high 10% in 2013 and 2017 and slightly lower 8% in 2020. This share is much higher among young populations in Europe: a third (33%) of those respondents had used digital content illegally in 2022, in line with 2019 survey results.

Piracy can be driven by overall perception. EUIPO (2020) reports that more than a quarter of Europeans still agree that it is acceptable to obtain pirated online content when there is no readily available legal alternative or when it is for personal use. The main reasons that drive piracy among European youth (as revealed by EUIPO Youth Scoreboard (2022 and 2019)) are the lower price of illegal content compared with the legal options (over 55% respondents mentioned this) and that the desired content was only available through illegal sources

[5] Europe here includes the EU27, Switzerland, Georgia, Iceland, North Macedonia, Norway, Turkey, and UK.

[6] European Audiovisual Observatory: 'Yearbook 2021/2022 Key Trends', 2022

[7] EUIPO: 'European citizens and Intellectual Property. Perception, awareness and behaviour', November 2020

[8] EUIPO: 'Intellectual Property and Youth Scoreboard', June 2022

[9] https://www.sandvine.com/inthenews/movie-and-tv-piracy-sees-an-unprecedented-spike-during-quarantine

(referred to by about 25% of respondents). Moreover, young Europeans did not see any wrongdoing if the content was for personal use only (as claimed by 24% respondents).

Illicit IPTV

Internet Protocol television[10] is the delivery of television content over Internet Protocol networks. IPTV refers to streaming scheduled and video-on-demand (VoD) TV programmes. IPTV offers the ability to stream the source media continuously, unlike downloaded media. IPTV - Internet Protocol Television - is a technology that enables the distribution of audiovisual content through the internet, instead of traditional methods, such as satellite or cable[11].

The following points describing IPTV can be specified:

- Television service is delivered over the Internet.
- IPTV service includes internet streamed TV (live or catch-up). It can be coupled with an on-demand streaming (VoD), and other types of AV content such as music or even video games.

Illicit IPTV is the distribution of television content without the copyright owner's permission. The proliferation of unauthorised IPTV services has become an increasing trend around the globe. Its scale is notable in Europe. Illicit IPTV activities are causing significant damage to rights holders and content creators. It can also be harmful to the users (through loss of personal data and malware[12]).

Objectives of the Economic Report

The aim of this Report is to shed light on the magnitude of illicit IPTV in Europe. Three key elements are measured:

(i) the number of users who access illicit IPTV;
(ii) the illicit revenue generated by illicit IPTV subscription providers in the Europe; and
(iii) the potential financial losses incurred by legal Pay-TV providers in Europe.

[10] ITU (2020); https://www.pcmag.com/encyclopedia/term/iptv

[11] Eurojust (2022): https://www.eurojust.europa.eu/publication/flyer-how-identify-Illicit-iptv-services

[12] AAPA: 'Audiovisual Piracy Cyber Risk for European Consumers', September 2022

Methodology

The report is based on the original quantitative methodology explained in the Annex A. The methodological approach is based on the (2019) approach regarding estimation of users of illicit IPTV and the illicit revenue generated by copyright infringing IPTV providers. In addition, this Report estimates the potential losses in revenue suffered by legal Pay-TV providers in Europe. In the estimations of the number of users engaged in illicit IPTV consumption, this Report also considers IPTV piracy among young populations (aged 16-24) in European countries.

The Report is structured as follows. Section 1 provides an estimate of the magnitude of illicit IPTV in Europe in terms of users. The assessment is carried out for the whole of EU27+UK[13]. Furthermore, the assessment is provided for each individual country. Section 2 provides an estimate of unlawful income gained by unauthorised IPTV subscription providers. Section 3 provides an estimate of aggregate potential losses in revenue suffered by AV content providers in Europe due to illicit IPTV access. The Report findings are summarized in the Executive Summary and the Conclusions. The methodology is explained in detail in the Annex A.

[13] The UK left the EU on 31 January 2020. The transition period that was in place – during which nothing changed – ended on 31 December 2020.

1. USERS OF ILLICIT IPTV

This section provides estimates of the magnitude of illicit IPTV. Two metrics are considered:

- number of individuals who use an unauthorised IPTV service; and
- the percentage share of population who access unauthorised IPTV.

In addition, a third metric is introduced in accordance with the distribution of users of illicit IPTV by age group. The estimation is carried out for the EU27+UK in 2021. Furthermore, estimations are provided for each country. Three age groups are considered:

- 16-24 years old (youth);
- 25-64 years old; and
- 65-74 years old.

The methodology is described in Annex A1. The share of population that uses illicit IPTV is estimated based on the data of population watching Internet streamed television (Eurostat). IPTV piracy is estimated based on online piracy rates provided by EUIPO (2020) report *European citizens and Intellectual Property. Perception, awareness and behaviour,* and EUIPO (2022) report *Intellectual Property and Youth Scoreboard*.

Main findings

4.5% of the population[14], representing 17.1 million persons, is estimated to watch internet streamed TV (live or catch-up) from unauthorised online sources in Europe (EU27+UK) in 2021.

11.8% of the younger population (aged 16-24) are engaged in the consumption of illicit IPTV services in Europe. This population share represents nearly 5.9 million young individuals in Europe (EU27+UK) in 2021.



17.1 million persons (aged 16-74) use Illicit IPTV in Europe.

This represents 4.5% of European population.

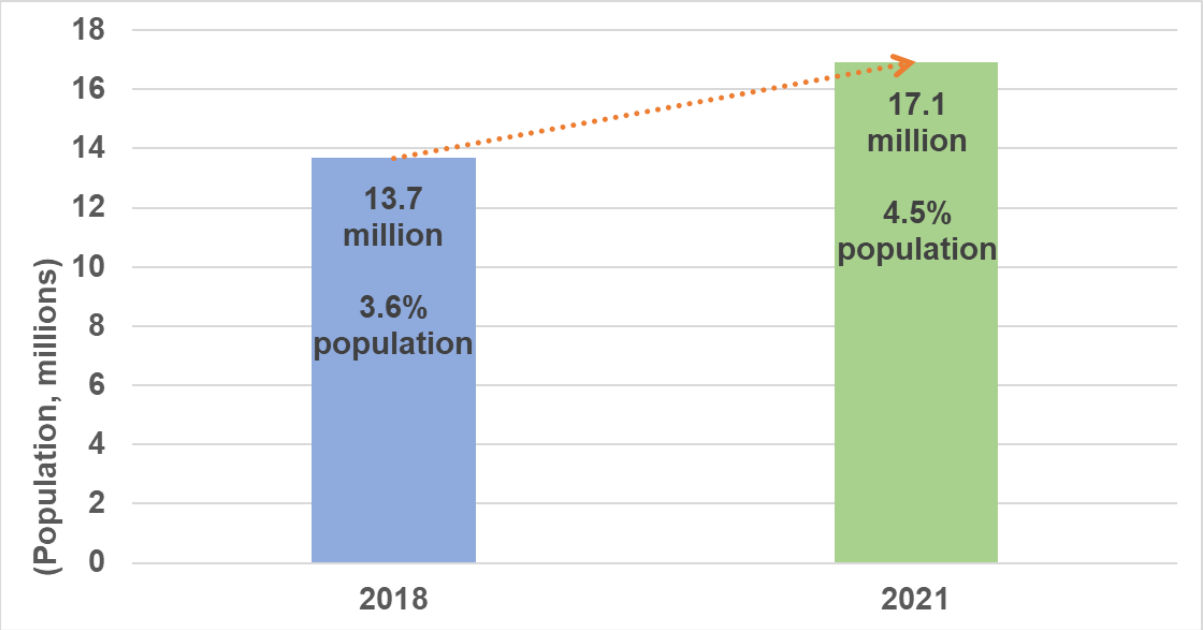


5.9 million young persons (aged 16-24) use Illicit IPTV.

This represents 11.8% of young European population.

[14] Population aged 16-74.

Figure 1.1 USERS OF ILLICIT IPTV IN EUROPE IN 2018 AND 2021



Note: Population aged 16-74. 2018 data is from EUIPO (2019a). 2021 data is from this Report.

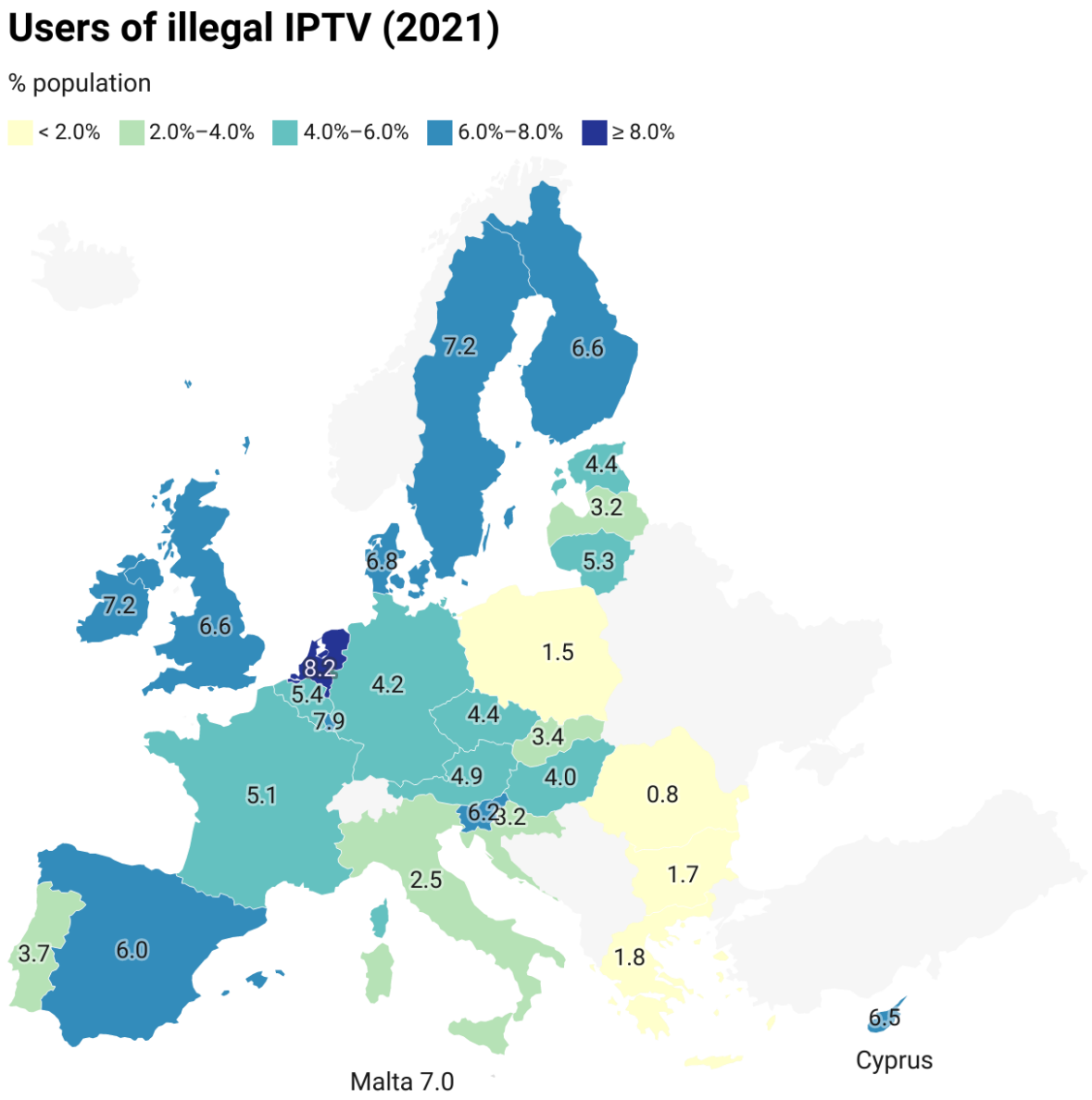
Based on EUIPO (2019a) estimates 13.7 million individuals (representing 3.6% population) in the EU28 were streaming illicit IPTV. This Report shows that in 2021 there were 17.1 million individuals using illicit IPTV (4.5% of the EU27+UK population). It represents a 25% increase compared to 2018. This increase is accounted for by the increased population using the illicit IPTV services. In addition, an update in the methodology used in this Report is a relevant factor[15].

The continuing and growing threat caused by AV piracy and the associated criminality has been recognised by the inclusion of this type of IP crime in Europe's EMPACT priorities.

A number of factors come into play when defining the reasons for the increase in users of pirated IPTV. It is important to emphasise the overall proliferation of IPTV services. Consumers have become more familiar with accessing AV content by this means. Based on Eurostat data, in 2016 only 30% of the EU28 population was watching internet streamed TV, this had increased to 41% in 2021. Consumer perception toward copyright and online infringement also plays an important role: according to EUIPO (2020), 8% of Europeans are engaging in online piracy. Furthermore, according to Eurojust (2022), infringers and online criminals have become increasingly sophisticated. Users are often misled by some illicit IPTV services looking rather professional.

[15] Quantifying based on the methodology applied by EUIPO in 2019, the number of illegal users is 13.7 million individuals – same as reported for 2018. Introducing the update in methodology and applying the specific precision piracy rate to the age group of youth (16-24) allows capturing more accurately the full scale of the piracy and identifying the more precise differences among countries as well.

Map 1.1 USERS OF ILLICIT IPTV IN EUROPE (2021)



Map: AAPA. Source: Bournemouth University, Gobelin House SLU.

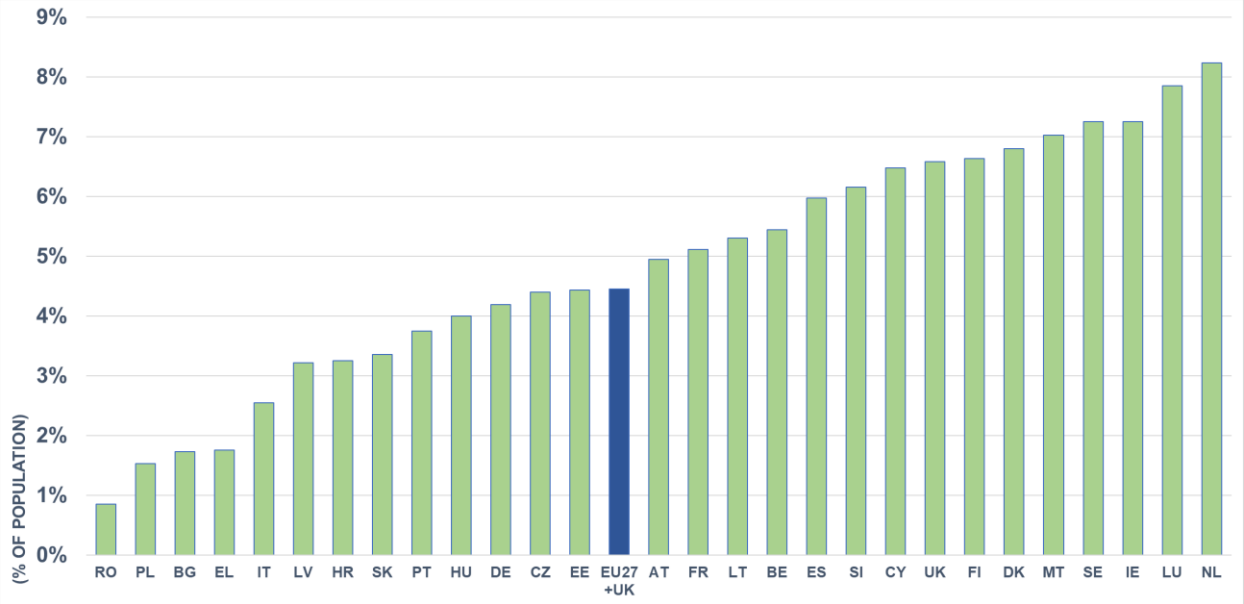
Map 1.1 shows the share of population that uses illicit IPTV services in European countries in 2021.

In the Netherlands 8.2% of the population use illicit IPTV: the highest share in EU27+UK market. Economies where IPTV piracy is high (ranging from 6% up to 8%) include Luxembourg (7.9%), Ireland (7.2%), Sweden (7.2%), Malta (7%), Denmark (6.8%), Finland (6.6%), the UK (6.6%), Cyprus (6.5%), Slovenia (6.2%), and Spain (6%).

Close to European average of 4.5% are Belgium (5.4%), Lithuania (5.3%), France (5.1%), Austria (4.9%), Estonia (4.4%), Czechia (4.4%), Germany (4.2%), and Hungary (4%).

The lowest rate of IPTV piracy is discovered in Romania (0.8%), Poland (1.5%), Bulgaria (1.7%), and Greece (1.7). Other countries with below-average engagement in the illicit use of IPTV services are Italy (2.5%), Latvia (3.2%), Croatia (3.2%), Slovakia (3.4%), and Portugal (3.7%).

Figure 1.2 USERS OF ILLICIT IPTV BY COUNTRY (2021)



Note: Percentage of population aged 16-74.

Figure 1.2 and Map 1.1 (above) outline the relative share of the total population accessing copyright infringing IPTV. In Europe, 4.5% of the population[16], representing 17 million persons, is estimated to watch internet streamed TV (live or catch-up) from unauthorised online sources. This is a considerable share considering that the European (EU27+UK) market consists of 161 million people who watch internet streamed TV overall[17].

[16] Population aged 16-74.

[17] Based on Eurostat Household Survey 2020.

Table 1.1 POPULATION STREAMING ILLICIT IPTV IN EUROPE (2021)

Country	Country code	Share of population accessing unauthorised IPTV	Number of individuals accessing unauthorised IPTV
Europe	**EU27+UK**	**4.5%**	**17,064,300**
Austria	AT	4.9%	330,492
Belgium	BE	5.4%	457,062
Bulgaria	BG	1.7%	90,926
Croatia	HR	3.2%	99,089
Cyprus	CY	6.5%	43,680
Czechia	CZ	4.4%	353,264
Denmark	DK	6.8%	290,579
Estonia	EE	4.4%	43,096
Finland	FI	6.6%	270,046
France	FR	5.1%	2,452,134
Germany	DE	4.2%	2,573,908
Greece	EL	1.8%	137,660
Hungary	HU	4.0%	296,975
Ireland	IE	7.2%	260,436
Italy	IT	2.5%	1,140,489
Latvia	LV	3.2%	44,766
Lithuania	LT	5.3%	109,740
Luxembourg	LU	7.9%	37,561
Malta	MT	7.0%	27,748
Netherlands	NL	8.2%	1,071,371
Poland	PL	1.5%	444,143
Portugal	PT	3.7%	287,725
Romania	RO	0.8%	123,137
Slovakia	SK	3.4%	140,787
Slovenia	SI	6.2%	96,330
Spain	ES	6.0%	2,110,667
Sweden	SE	7.2%	536,776
United Kingdom	UK	6.6%	3,193,709

Note: Population aged 16-74.

The situation in Europe is not uniform. As evidenced in Table 1.1, countries differ in their relative and absolute shares of users accessing unauthorised IPTV. In absolute terms, countries with the highest number of persons streaming copyright infringing IPTV are the United Kingdom (3.2 million), Germany (2.6 million), France (2.5 million), and Spain (2.1 million). Over 10 million individuals are estimated to have streamed unauthorised IPTV in these four countries in 2021. Together they comprise over a half (61%) of the European total population engaged in copyright infringing IPTV consumption.

Slovakia, Greece, Romania, Lithuania, Croatia, Slovenia, Bulgaria, Latvia, Cyprus, Estonia, Luxembourg, and Malta each represent less than 1% of the total European population engaged in IPTV piracy. Together these twelve countries represent a rather negligible share (less than 6%) of the entire European population streaming illicit IPTV. Less than 150,000 individuals are estimated to access copyright infringing IPTV content in each of these Member States.

Sociodemographic differences

Estimations for users of illicit IPTV are analysed by age group. Three age groups are considered: (i) 16-24 years old (youth); (ii) 25-64 years old; (iii) 65-74 years old. Assessments for the EU27+UK as well as for each individual economy are shown in Table 1.2.

Table 1.2 POPULATION STREAMING ILLICIT IPTV BY AGE GROUP (2021)

Country	Country code	Share of population accessing unauthorised IPTV by age group				Number of individuals accessing unauthorised IPTV by age group			
		16-24	25-64	65-74	Total	16-24	25-64	65-74	Total
Europe	**EU27+UK**	**11.8%**	**3.7%**	**1.9%**	**4.5%**	**5,874,984**	**10,140,899**	**1,048,417**	**17,064,300**
Austria	AT	9.4%	4.7%	1.9%	4.9%	82,106	232,244	16,142	330,492
Belgium	BE	14.8%	4.3%	2.0%	5.4%	174,378	259,845	22,839	457,062
Bulgaria	BG	5.4%	1.5%	0.3%	1.7%	29,959	58,588	2,378	90,926
Croatia	HR	11.8%	2.3%	0.3%	3.2%	46,949	50,634	1,507	99,089
Cyprus	CY	15.6%	5.2%	2.5%	6.5%	16,136	25,426	2,118	43,680
Czechia	CZ	10.0%	4.2%	1.6%	4.4%	86,048	247,220	19,995	353,264
Denmark	DK	14.8%	5.8%	3.1%	6.8%	96,160	174,330	20,090	290,579
Estonia	EE	12.8%	3.7%	1.5%	4.4%	14,431	26,518	2,148	43,096
Finland	FI	13.8%	5.8%	4.3%	6.6%	75,948	163,421	30,677	270,046
France	FR	16.8%	3.3%	2.0%	5.1%	1,189,220	1,116,672	146,242	2,452,134
Germany	DE	8.0%	3.9%	2.1%	4.2%	627,307	1,767,347	179,254	2,573,908
Greece	EL	8.0%	1.0%	0.3%	1.8%	79,545	54,583	3,532	137,660
Hungary	HU	9.0%	3.6%	1.7%	4.0%	84,465	193,357	19,153	296,975
Ireland	IE	21.0%	5.0%	2.7%	7.2%	118,544	130,738	11,154	260,436
Italy	IT	10.8%	1.6%	0.5%	2.5%	575,448	528,124	36,917	1,140,489
Latvia	LV	7.3%	3.0%	1.2%	3.2%	11,248	31,117	2,402	44,766
Lithuania	LT	10.1%	5.2%	1.4%	5.3%	26,278	79,440	4,023	109,740
Luxembourg	LU	12.9%	7.6%	3.4%	7.9%	8,358	27,504	1,699	37,561
Malta	MT	30.1%	4.2%	1.5%	7.0%	14,882	12,000	866	27,748
Netherlands	NL	16.9%	7.1%	4.8%	8.2%	329,664	648,713	92,994	1,071,371
Poland	PL	5.9%	1.1%	0.2%	1.5%	203,268	230,804	10,071	444,143
Portugal	PT	10.0%	3.2%	0.8%	3.7%	99,456	178,763	9,505	287,725
Romania	RO	3.4%	0.6%	0.1%	0.8%	61,454	59,166	2,517	123,137
Slovakia	SK	5.8%	3.4%	1.0%	3.4%	28,978	105,975	5,835	140,787
Slovenia	SI	8.6%	6.5%	2.7%	6.2%	15,226	74,825	6,279	96,330
Spain	ES	17.5%	4.8%	2.1%	6.0%	745,302	1,267,491	97,874	2,110,667
Sweden	SE	12.0%	6.9%	4.3%	7.2%	124,367	364,851	47,558	536,776
United Kingdom	UK	12.9%	5.8%	3.8%	6.6%	909,859	2,031,205	252,645	3,193,709

As evidenced in Table 1.2 above, the percentage of youth (aged 16-24) that access unauthorised IPTV is higher than the percentage of the overall population (aged 16-74) – 4.5%. Differences become more apparent when comparing people aged 25-64 (3.7% use illicit IPTV) and population aged 65-74, among which only 1.9% Europeans use illicit IPTV. Such differences are explained by not only a perception toward IP and piracy but also by other factors such as average income, internet use, and TV viewing habits that differ significantly between age groups.

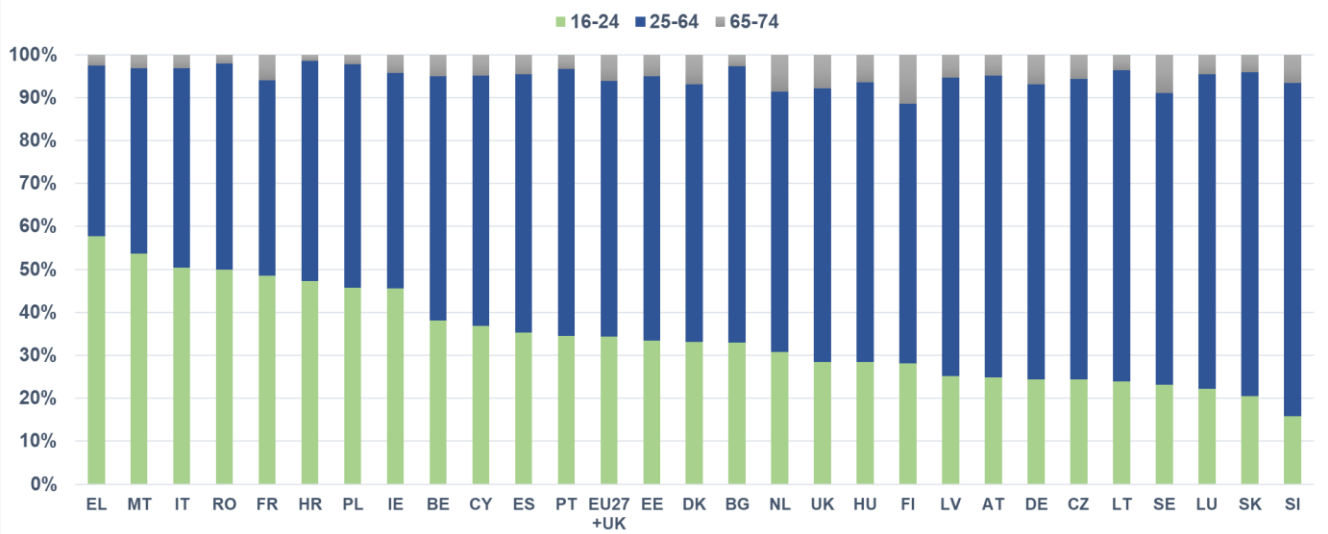
Overall, young Europeans have a more tolerant attitude towards pirated online content. The EUIPO (2022)[18] report suggests that more than 4 out of 10 (43%) of those aged between 15 and 24 'totally agree' or 'tend to agree' that it is acceptable to obtain content illicitly from the internet when there is no immediately available legal alternative. A similar proportion (41%) of those from the same age group also 'totally agree' or 'tend to agree' that it is acceptable to obtain content illicitly from the internet when it is for personal use.

As emphasised by the EUIPO IP Perception Report of 2020, young Europeans especially perceive the hypothetical drawbacks or limitations of IP. Noticeably, more than 6 out of 10 respondents aged 15 to 24 (61%) 'totally agree' or 'tend to agree' that the IP principles are not adapted to the internet. Such a perception has translated into wider economic and social effects when it comes to the use of illicit digital content.

Figure 1.3 below shows that the young population is more engaged in IPTV piracy in Greece, Malta, Italy, Romania, France, Hungary, Poland, and Ireland: over 40% of all people who access illicit IPTV are younger than 25 years old in these countries. On the other hand, a significant majority (70% or more) of individuals who use illicit IPTV services in Slovenia, Slovakia, Luxembourg, Sweden, Lithuania, Czechia, Germany, Austria, and Latvia, are aged 25-64.

[18] EUIPO: 'Intellectual Property and Youth Scoreboard', June 2022

Figure 1.3 USERS OF ILLICIT IPTV: DISTRIBUTION BY AGE GROUP (2021)

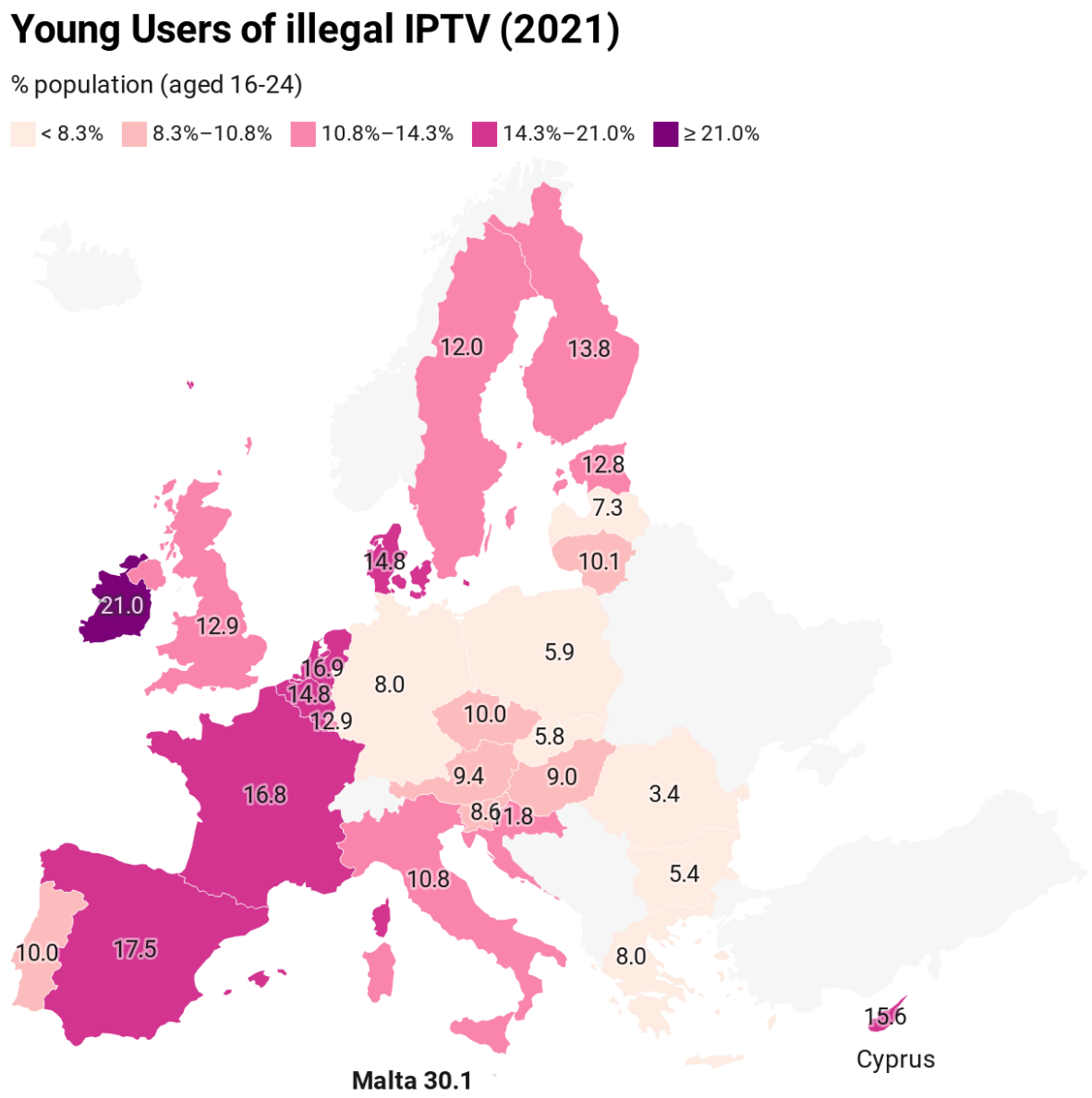


Note: age groups 16-24; 25-64; and 65-74.

The proportion of the population that access illicit IPTV varies by age group in each country. The average distribution in Europe shows that majority (59.4%) of people who access unauthorised IPTV are aged 25-64, 34.4% are aged 16-24, and the minority – 6.1% – are aged 65-74.

Young Users of Illicit IPTV

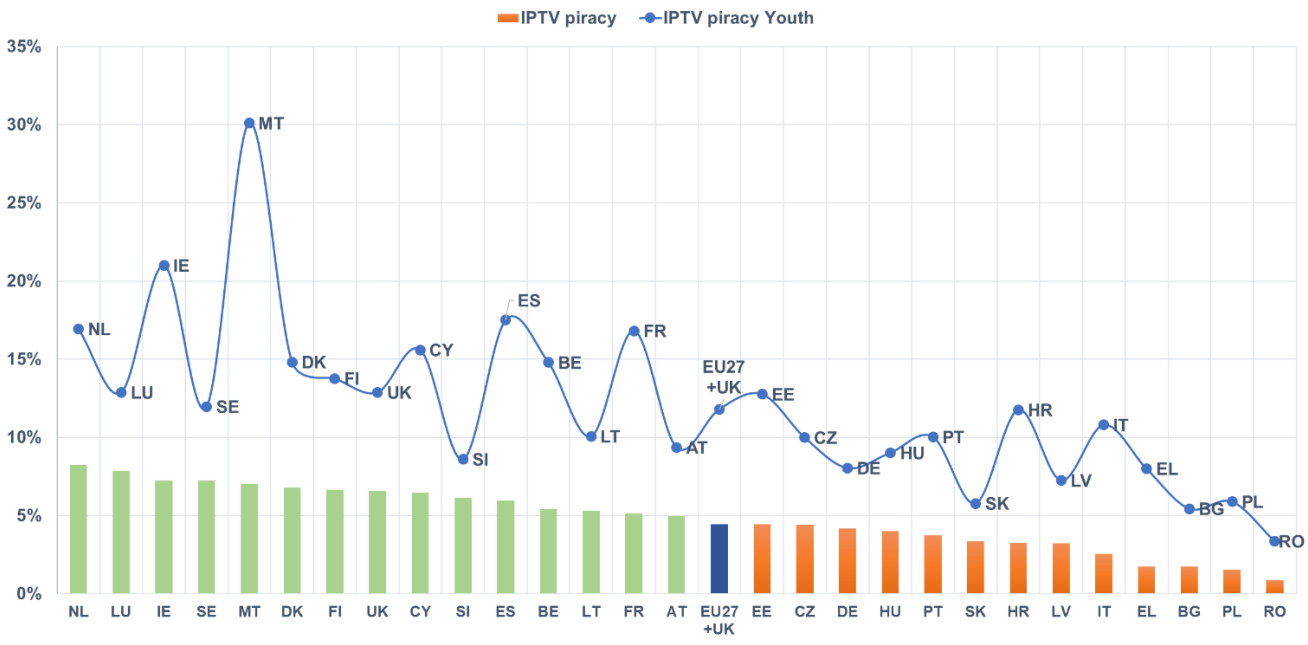
Map 1.2 YOUNG USERS OF ILLICIT IPTV IN EUROPE (2021)



Map: AAPA. Source: Bournemouth University, Gobelin House SLU.

Map 1.2 above shows that the hotspot for youth IPTV piracy in Europe is Malta with 30.1% of young population (aged 16-24) accessing illicit IPTV. Ireland ranks second (21%), while Spain (17.5%) is the third highest country. On the lower end feature Romania (3.4%), Bulgaria (5.4%), Slovakia (5.8%), and Poland (5.9%). Nevertheless, the share of young people significantly surpasses that of the total population using illicit IPTV in every European country.

Figure 1.4 YOUNG USERS (AGED 16-24) OF ILLICIT IPTV BY COUNTRY (2021)



Certain economies show uneven distribution of IPTV piracy engagement by age groups. For instance, as stated above young Maltese aged 16-24 are highly engaged in IPTV piracy (30.1%) yet its overall population share is just 7%.

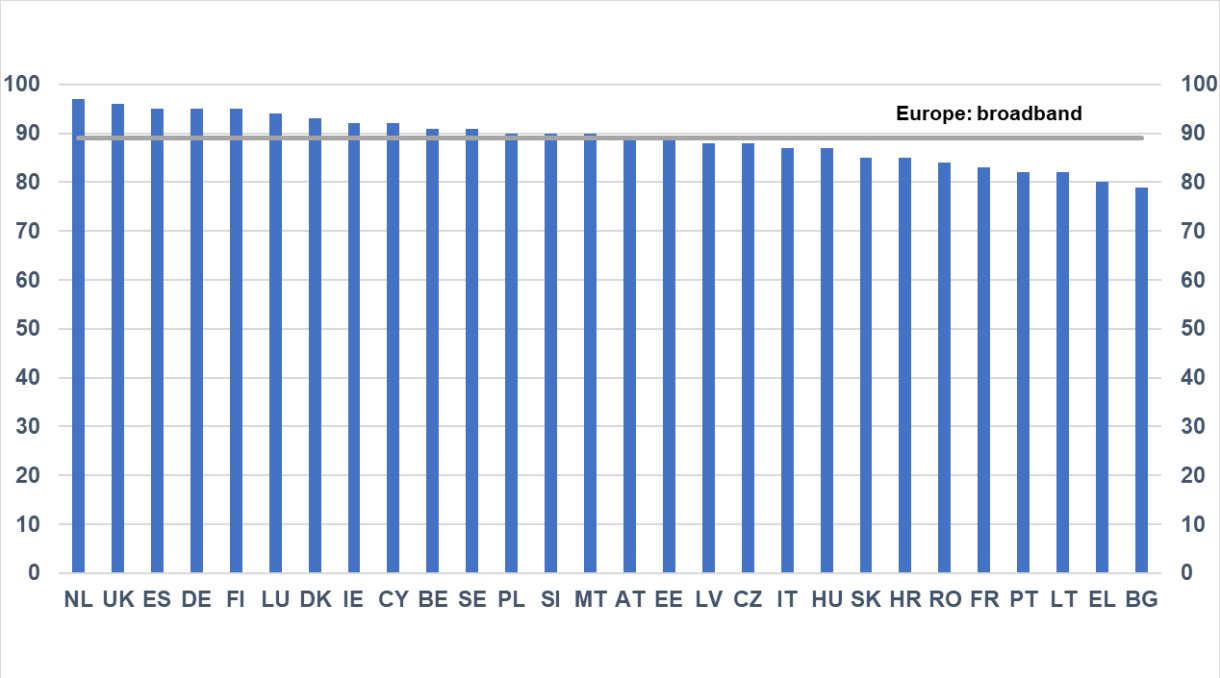
Spain, Italy, Portugal, France, Hungary are the countries where similar patterns are observed where the young population is significantly more engaged in accessing pirated IPTV content compared to their overall population (aged 16-74). Conversely, Sweden, Luxembourg, Slovenia, Lithuania, and Austria see a trend where the youth opt to access illicit IPTV at a lesser rate than European average (11.8%), while its whole society tend to access illicit IPTV more willingly than an average European (4.5%).

Illicit IPTV use is below the European average in both age groups in Estonia, Germany, Slovakia, Latvia, Greece, Bulgaria, Poland, and Romania.

Broadband penetration and IPTV access

Many factors come into play in influencing people's willingness to access illicit IPTV. The quality of internet infrastructure and the penetration of fast broadband can play a role, as well as society's' attitude to IP infringement.

Figure 1.5 BROADBAND ACCESS BY COUNTRY



Note: Eurostat data. Broadband access is percentage of households with broadband internet connection. Data is for year 2020. Data for France and UK is from 2019. Europe (EU27+UK) – average broadband penetration is 89%.

As evidenced in Figure 1.5 above, on average 89% of European households have access to a broadband internet connection (either fixed or mobile). Broadband access levels vary from 97% in Netherlands (the highest in the EU) to 79% in Bulgaria (the lowest level in the EU). Other countries that have relatively lower than European average access to broadband are Greece, Portugal, Lithuania, France, and Romania. Overall, broadband penetration level in Europe is high and does not always correlate with IPTV proliferation.

Countries such as Bulgaria, Greece, Portugal, and Romania have a low rate of population using IPTV overall. These countries also feature relatively lower in terms of EU's average broadband penetration rate and tend to have less online infringement than the European average.

Romania is the only state in the EU that is still in the progress of ending analogue broadcasting. Cable television features low prices in Romania and still forms a high market share, pertaining to more than half of the households' subscriptions in 2018. Satellite

subscriptions hold second place and are mainly popular in rural areas[19]. After Romania, Poland is the second country in the EU with lowest share of population opting for illicit IPTV – (1.5% population). In 2020, 70% of respondents used cable or satellite television in Poland.[20]

Bulgaria is at similar level to Poland: 1.7% of the population access illicit IPTV. This country features one of the most dynamic TV markets in Europe, thanks to its loose regulatory framework[21]. At the end of 2020, there were 1.87 million[22] pay TV subscribers in Bulgaria, out of which nearly half were subscribers for satellite television. Satellite and cable have held relative parity for a decade now. IPTV services which are slowly on the rise in Bulgaria face strong competition from other types of television distribution.

Another group of countries, like Finland, Sweden, Denmark, Netherlands, and UK have the highest share in Europe of individuals opting to watch TV via internet, both via legal and illicit means. Well over 90% households have broadband access in these countries.

[19] https://en.wikipedia.org/wiki/Television_in_Romania

[20] https://www.statista.com/statistics/1223795/poland-cable-or-satellite-tv-use/

[21] https://www.ses.com/bulgarian-tv-market-well-established-yet-exciting

[22] European Audiovisual Observatory, December 2020

2. ILLICIT IPTV REVENUE

This section provides estimates the revenue that is generated by providers of unauthorised IPTV subscription services. The assessment is carried out for the EU27+UK, as well as for each individual country.

The methodology is described in Annex A2. The revenue that is generated by illicit IPTV service providers is estimated on the basis of the population using illicit IPTV. The unauthorised IPTV subscription user base is assumed to be one per household. The subscription prices charged and the share of users opting for either pay or free unauthorised IPTV are estimated based on 1480 suspected, unauthorised IPTV websites supplied by AAPA members.

Main findings

Sales of copyright-infringing IPTV service subscriptions generated EUR 1.06 billion of unlawful revenue in Europe (EU27+UK) in 2021.

Spending to access illicit IPTV is estimated to average EUR 5.22 per month, accruing to EUR 62.64 annual expenditure per individual in Europe in 2021.

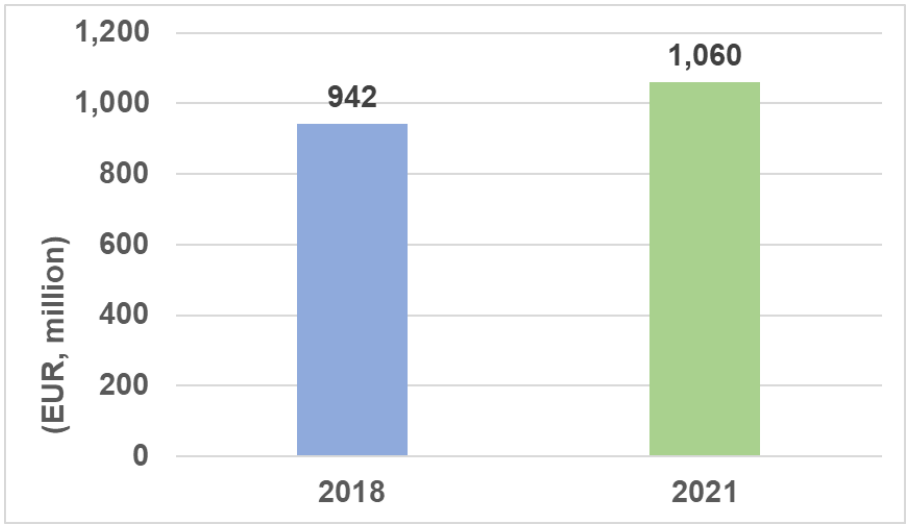
€ **1.06 billion** 

Illicit Revenue generated by copyright-infringing IPTV providers

€ **5.22** 

One user spends per month on Illicit IPTV in Europe

Figure 2.1 ILLICIT ANNUAL IPTV REVENUE IN EUROPE IN 2018 AND 2021



Note: 2018 data is from EUIPO (2019a). 2021 data is from this Report.

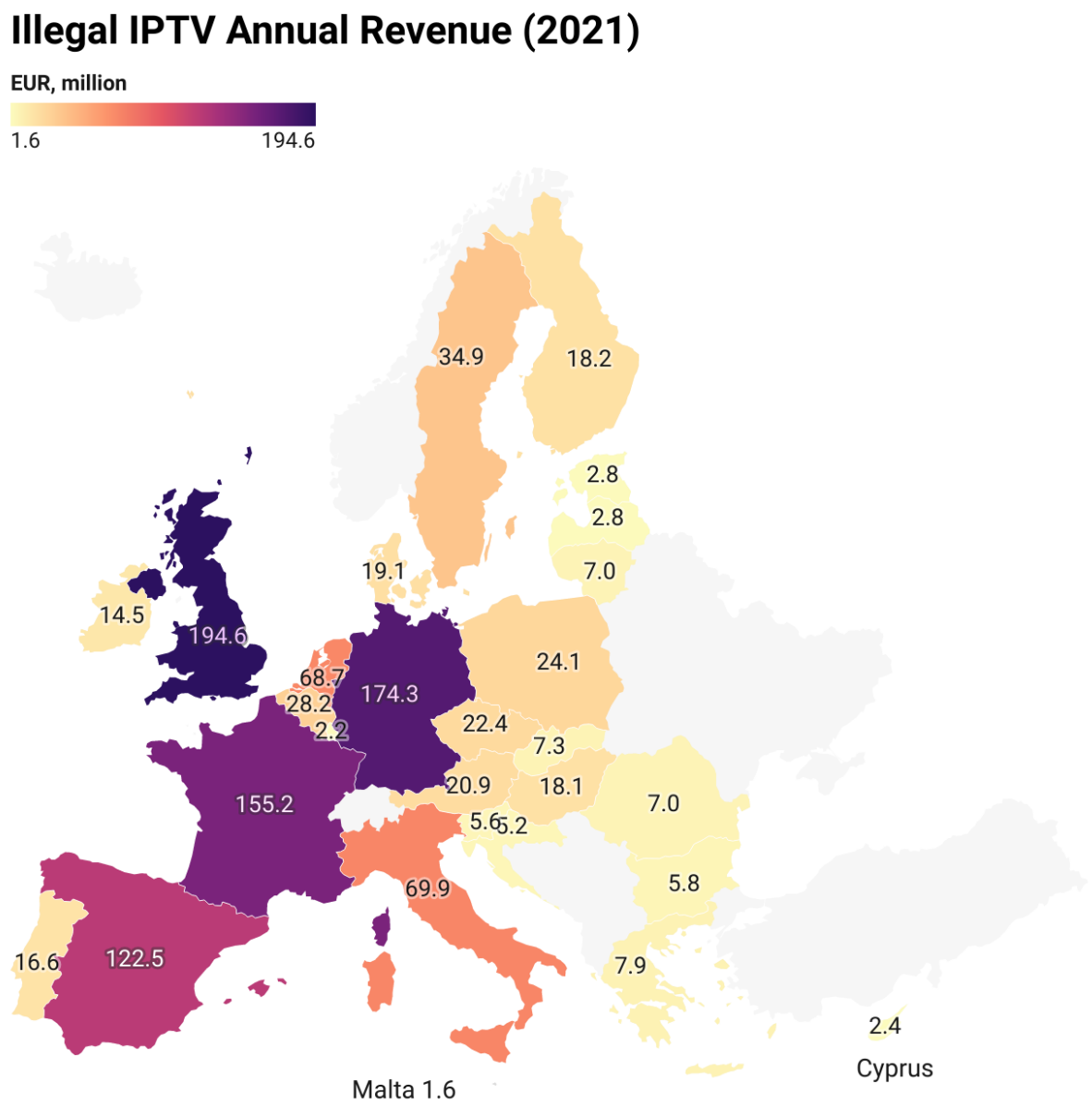
Providers of unauthorised IPTV subscriptions generated EUR 942 million untaxed revenue in 2018 as estimated by EUIPO (2019a). Illicit revenue has increased to EUR 1.06 billion in 2021 (a 12.5% increase over 3 years). The loss of tax revenue remains significant.

The proliferation of illicit IPTV services by providers without the correct authorisations has become an increasing trend in Europe. As outlined by Eurojust (2022), these illicit activities can cause significant damage to rights holders and users (through loss of personal data and malware[23]). Moreover, the profits generated by illicit IPTV providers can fuel other forms of organised crime, including fraud, corruption, money laundering and drug trafficking.

The following section discusses the differences between European countries based on their share of revenue generated by illicit IPTV.

[23] AAPA: 'Audiovisual Piracy Cyber Risk for European Consumers', September 2022

Map 2.1 ILLICIT ANNUAL IPTV REVENUE IN EUROPE (2021)



Map: AAPA. Source: Bournemouth University, Gobelin House SLU.

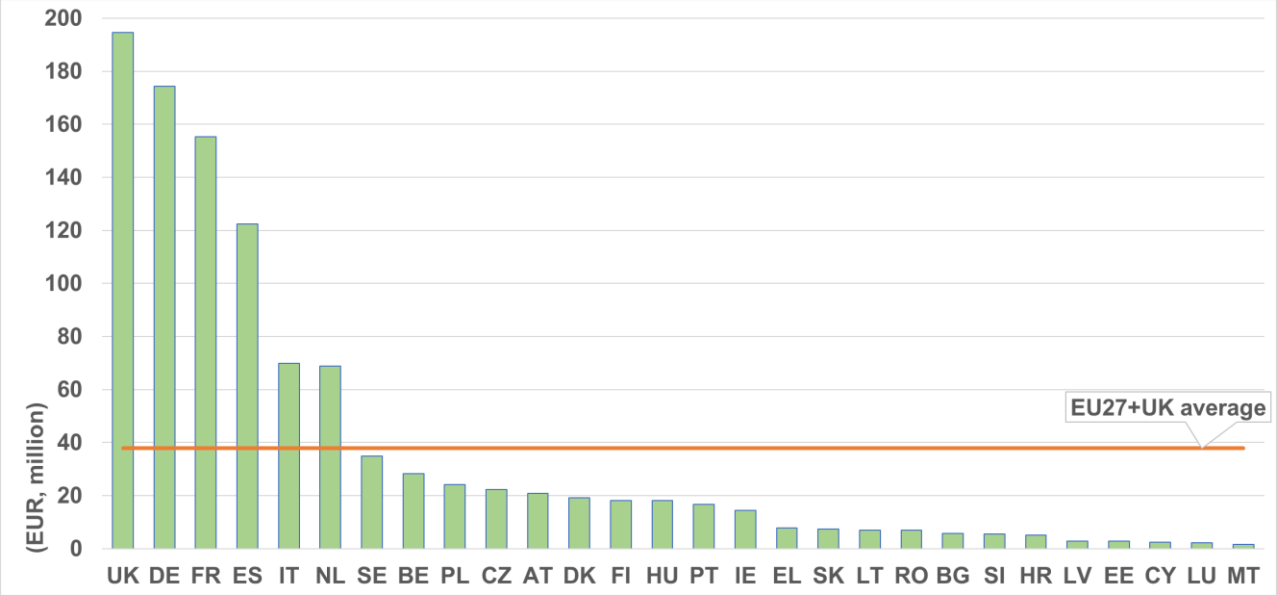
The UK, Germany, France, and Spain are the countries that generate the highest revenue for the providers of illicit IPTV subscriptions. Together these four economies generated almost EUR 647 million (nearly 50%) of the income earned by illicit IPTV providers. Countries with relatively smaller populations such as Malta, Cyprus, Estonia, and Latvia generate less income for illicit IPTV providers.

To provide the context, this is a largely significant amount that compares to the budgets of top European AV services. For instance, EUR 647 million accounts for nearly half of annual

operating revenue generated by Telia Company (Sweden) and slightly exceeds the NOS (PT) annual operating revenue[24].

Figure 2.2 outlines the magnitude of illicit IPTV in terms of income accrued from selling unauthorised IPTV subscriptions.

Figure 2.2 ILLICIT ANNUAL IPTV REVENUE BY COUNTRY (2021)



Note: Revenue generated from unauthorised IPTV subscription sales in European countries in 2021.

Estimates show that illicit IPTV subscription sales generated nearly EUR 1.06 billion annual revenue in Europe (EU27+UK) in 2021. This amounts to a monthly turnover of nearly EUR 88.3 million.

These incomes are untaxed and circle in criminal networks. It is difficult to trace the exact destination of these illicit revenues although law enforcement agencies have the powers to do so. Users frequently lack knowledge of the person or entity selling them an illicit IPTV subscription. Even though it is possible to purchase subscriptions directly from those operating illicit IPTV services, most subscriptions are provided by a reseller operating their own branded website or a mobile application. Resellers' connections to those operating IPTV services (servers and other infrastructure) are mostly limited to buying 'credits' from a self-serve web service at one price, and then reselling them to customers under their own branding, often at a higher price[25].

[24] European Audiovisual Observatory, December 2020.

[25] https://iptv.legal/index.php/2022/09/05/pirate-iptv-couple-sold-Illicit-subscriptions-laundered-money/

Table 2.1 ILLICIT IPTV REVENUE GENERATED BY ILLICIT IPTV SUBSCRIPTION PROVIDERS IN EUROPE (2021)

Country	Country code	Monthly Illicit Revenue (million EUR)	Annual Illicit Revenue (million EUR)
Europe	**EU27+UK**	**88.3**	**1,059.9**
Austria	AT	1.7	20.9
Belgium	BE	2.4	28.2
Bulgaria	BG	0.5	5.8
Croatia	HR	0.4	5.2
Cyprus	CY	0.2	2.4
Czechia	CZ	1.9	22.4
Denmark	DK	1.6	19.1
Estonia	EE	0.2	2.8
Finland	FI	1.5	18.2
France	FR	12.9	155.2
Germany	DE	14.5	174.3
Greece	EL	0.7	7.9
Hungary	HU	1.5	18.1
Ireland	IE	1.2	14.5
Italy	IT	5.8	69.9
Latvia	LV	0.2	2.8
Lithuania	LT	0.6	7.0
Luxembourg	LU	0.2	2.2
Malta	MT	0.1	1.6
Netherlands	NL	5.7	68.7
Poland	PL	2.0	24.1
Portugal	PT	1.4	16.6
Romania	RO	0.6	7.0
Slovakia	SK	0.6	7.3
Slovenia	SI	0.5	5.6
Spain	ES	10.2	122.5
Sweden	SE	2.9	34.9
United Kingdom	UK	16.2	194.6

Results in Table 2.1 above show both monthly and annual income accrued from sales of illicit IPTV subscriptions in European economies.

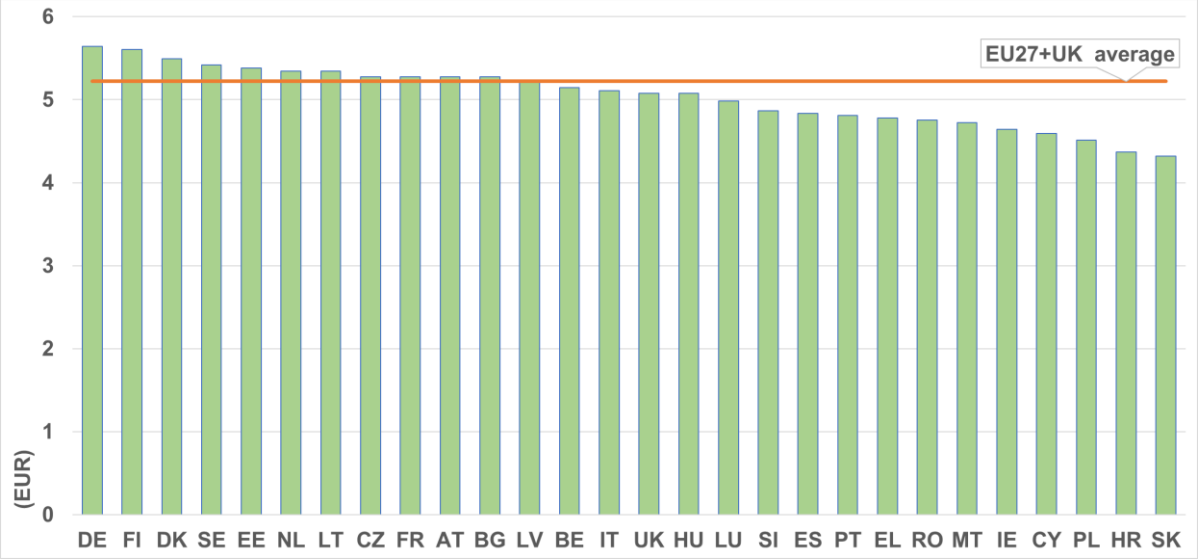
As noted above the size of the market is an important factor – larger European countries generate lion's share of the profits to illegal IPTV providers.

12 countries - Bulgaria, Croatia, Cyprus, Estonia, Greece, Latvia, Lithuania, Luxembourg, Malta, Slovakia, Slovenia, and Romania each generate less than 1% of total European illict revenue. Together these countries account for 5.4% of unlawful IPTV market income generated in Europe. This figure may seem as rather negligible. Users in 12 markets paid total EUR 57.6 million in 2021 for illegal IPTV. On average IPTV illegal providers earned EUR 4.8 million per month in these 12 relatively smallest European markets.

Illicit IPTV expenditure per user

Average monthly and annual spending on unauthorised IPTV is outlined in Table 2.2 and Figure 2.3. It represents the amount of revenue that illicit providers of IPTV subscriptions can expect to generate from a single user of unauthorised IPTV services.

Figure 2.3 AVERAGE MONTHLY ILLICIT IPTV EXPENDITURE BY COUNTRY (2021)



Note: average monthly unauthorised IPTV cost for single user in European countries in 2021.

Estimates show that single user accessing unauthorised IPTV in Europe spends EUR 5.22 monthly. This accrues to EUR 62.64 annual expenditure on illicit IPTV subscriptions.

Evidenced in Figure 2.3 above and Table 2.2 below are the estimates for different countries. There is no great variation in single-user expenditure between European countries. This varies

between a maximum EUR 5.6 in Germany and Finland, and minimum EUR 4.3 in Slovakia, EUR 4.4 in Hungary.

Users of illicit IPTV in most European economies spend a similar amount of money: spending close to European average of EUR 5.22 per month is observed in Czechia, France, Austria, Bulgaria, Latvia, Belgium, Italy, the UK, Hungary, Luxembourg, and Slovenia. Lower than average spending occurs in Spain, Portugal, Greece, Romania, Malta, Ireland, Cyprus, Poland, Croatia, and Slovakia. In contrast users tend to spend more on illicit IPTV than the European average in Germany, Finland, Denmark, Sweden, Estonia, the Netherlands, and Lithuania.

Table 2.2 AVERAGE MONTHLY ILLICIT IPTV EXPENDITURE PER USER IN EUROPE (2021)

Country	Country code	Monthly cost per user (EUR)	Annual cost per user (EUR)
Europe	**EU27+UK**	**5.22**	**62.64**
Austria	AT	5.28	63.31
Belgium	BE	5.14	61.71
Bulgaria	BG	5.28	63.31
Croatia	HR	4.37	52.42
Cyprus	CY	4.59	55.08
Czechia	CZ	5.28	63.31
Denmark	DK	5.49	65.88
Estonia	EE	5.38	64.57
Finland	FI	5.60	67.24
France	FR	5.28	63.31
Germany	DE	5.64	67.71
Greece	EL	4.78	57.35
Hungary	HU	5.08	60.94
Ireland	IE	4.64	55.71
Italy	IT	5.11	61.32
Latvia	LV	5.21	62.50
Lithuania	LT	5.35	64.14
Luxembourg	LU	4.98	59.82
Malta	MT	4.72	56.69
Netherlands	NL	5.35	64.14
Poland	PL	4.51	54.17
Portugal	PT	4.81	57.69
Romania	RO	4.75	57.02
Slovakia	SK	4.32	51.86
Slovenia	SI	4.87	58.38
Spain	ES	4.84	58.04
Sweden	SE	5.42	65.00
United Kingdom	UK	5.08	60.94

3. LOSSES INCURRED BY LEGAL PAY-TV PROVIDERS

This section provides estimates of the potential losses incurred by legal Pay-TV providers due to Europeans accessing illicit IPTV services. The assessment is carried out for the entire EU27+UK market.

The methodology is described in the Annex A3. The potential losses in monthly revenue that are incurred by legal IPTV service providers is estimated based on the number of households that use illicit IPTV services. We consider the share of users who are willing to pay for IPTV subscriptions based on data supplied by AAPA members. Legal Pay-TV provider information is obtained from European Audiovisual Observatory.

Main findings

Legal Pay-TV providers incurred potential losses in revenue of EUR 3.21 billion in Europe due to pirated services in 2021.



3.21 billion

Losses in Revenue suffered by legal Pay-TV providers

CONCLUSIONS

The studies aiming to quantify the magnitude and economic impact of Illicit IPTV coherently report on what seems to be a rising trend of unauthorised IPTV proliferation in global markets.

The aim of this Report is to act as an independent and up-to-date information tool for the industry, policy makers, academia, and a wider audience. The current Study estimates (i) the number of individuals that consume unauthorised IPTV, (ii) it also assesses the potential revenue generated by copyright-infringing IPTV providers; (iii) and provides an estimate of financial losses incurred by legal Pay-TV providers in Europe.

Quantitative estimates are based on official and harmonized data sources to ensure full comparability of the reported estimates among the countries. The report is based on the methodological approach developed in the EUIPO (2019) report on *Illegal IPTV in the European Union*[26]. This study also benefits from cooperation with the AAPA members and partners and relies on data and knowledge shared by experts. Valuable contribution has been provided by European Audiovisual Observatory.

The economic analysis provided in this Report offers a coherent estimate of the size of the problem of illicit IPTV in terms of number of users and illicit revenue generated:

- The number of users involved in unauthorised IPTV streaming is estimated to be 17.1 million persons[27], corresponding to 4.5% of the European (EU27+UK) population in 2021.
- The number of users younger than 25 years old who access illicit IPTV is estimated to be 5.9 million persons[28], corresponding to 11.8% of the European youth (EU27+UK) population in 2021.
- Providers of copyright-infringing IPTV subscriptions are estimated to have generated EUR 1.06 billion of unlawful revenue in Europe (EU27+UK) in 2021.
- On average, a single user spent EUR 5.22 per month in 2021 to access unauthorised IPTV online in Europe.
- Legal AV content providers incurred potential losses of EUR 3.21 billion in 2021 due to unlawful IPTV use in the market of the UK and EU27 countries.

[26] EUIPO: 'Illegal IPTV in the European Union', November 2019

[27] Persons aged 16-74.

[28] Persons aged 16-24.

ANNEX A – METHODOLOGY AND DATA

Annex A describes the methodology of estimating the scope of illicit IPTV in Europe. This Report assesses three elements:

i. Number of users involved in copyright-infringing IPTV consumption in the EU27+UK as well as in each economy in this European market.
ii. Volume of illicit revenue generated by unauthorised IPTV-subscription providers in the EU27+UK as well as in each economy in this European market.
iii. Potential revenue losses incurred by legal IPTV providers in the EU27+UK as well as in each economy in this European market.

A1 Illicit IPTV Users

The share of population that uses illicit IPTV is estimated based on equation number 1 as outlined below:

$$Share\ of\ population\ using\ illegal\ IPTV\ (N_{U-IPTV,i}) = Share\ of\ population\ watching\ Internet\ streamed\ TV\ (N_{IPTV,i}) \times Share\ of\ population\ streaming\ content\ from\ illegal\ online\ sources\ (P_i) \quad (eq.1)$$

The results of the equation 1 estimates are outlined in section 1 of this Report. Variables considered in equation 1 are the following:

$N_{U\text{-}IPTV,i}$ – stands for the share of population using illicit IPTV in a particular European country. This is the result obtained combining two factors described below.

$N_{IPTV,i}$ – stands for the share of population watching Internet streamed television[29] in a particular European country. This population comprises all users that stream IPTV paying for a legitimate subscription, from legal free online sources, or illicit online sources.

P_i – represents share of population that accesses or downloads or streams content from illicit online sources intentionally.

To estimate the share of users engaged in illicit IPTV streaming, the rate established by EUIPO Report *European Citizens and Intellectual Property: Perception, Awareness, and Behavior* (2020) is applied. This rate differs in each European country.

[29] Eurostat indicator 'Internet use: watching internet streamed TV (live or catch-up) from TV broadcasters'. Last update 30/03/2022.

To estimate the share of young (aged 16-24) users engaged in illicit IPTV streaming, the rate established by EUIPO Report *Intellectual Property and Youth Scoreboard* (2022). is applied. This rate differs in each European country.

Number of persons that use illicit IPTV is estimated based on equation number 2 as outlined below:

$$Population\ watching\ illegal\ IPTV\ (N_{P-IPTV,i}) = Share\ of\ population\ using\ illegal\ IPTV\ (N_{U-IPTV,i}) \times Total\ Population\ (TP_i) \quad (eq.2)$$

The results of the equation 2 estimates are outlined in section 1 of this Report. Variables considered in equation 2 are the following:

$N_{P\text{-}IPTV,i}$ – stands for the number of persons (in the age-appropriate population group) who are using illicit IPTV in a particular European country. This is the result obtained combining two factors described below.

$N_{U\text{-}IPTV,i}$ – stands for the share of population (in the age-appropriate population group) using illicit IPTV in a particular European country. This is the result obtained in equation 1.

TP_i – represents total population (in the age-appropriate population group) in a particular European country. Data is provided by Eurostat population projections and UK Office for National Statistics.

The factors described above allow for assessing the scope of illicit IPTV in each individual European economy, as well as in the whole EU27+UK market. For illicit IPTV quantitative estimation, coherent and comparable indicators throughout all Member States are required. This Report combines three EU-level surveys when assessing the share of population which streams unauthorised IPTV. First, the *Eurostat Household survey* (2020) provides the indicator of the overall share of population watching Internet streamed television. Second, *EUIPO IP Perception study* (2020) is applied as a source for the Member State level data on IPTV piracy. More specifically, the IP Perception survey defines the country level rates for unauthorised access to online content. These two indicators, despite arriving from three distinct surveys, provide reliable and comparable EU27+UK and country level metrics.

Methodological approach benefits from combining IP Perception factors together with *Intellectual Property and Youth Scoreboard* (2022). This survey provides country-level data on digital piracy rates for young (aged 15-24) population. This specific data was applied as a factor to generate more precise and up-to-date estimations in IPTV piracy for the whole population (aged 16-74).

A2 Illicit IPTV Revenue

The monthly revenue that is generated by illicit IPTV service providers is estimated based on equation number 3 as outlined below:

$$\begin{aligned} &Revenue\ generated\ by\ illegal\ IPTV\ providers\ (R_{IPTV,i}) = \\ &Population\ using\ illegal\ IPTV\ \left(N_{P-IPTV,i}\right) \\ &\div\ Average\ Household\ size\ (H_i) \\ &\times Share\ of\ population\ paying\ for\ illegal\ IPTV\ monthly\ subscription\ \left(S_{g,i}\right) \\ &\times Average\ Monthly\ subscription\ Price\ (P_{g,i}) \qquad (eq.3) \end{aligned}$$

The results of the equation 3 estimates are discussed in section 2 of this Report. Variables considered in equation 3 are the following:

$R_{IPTV,i}$ – stands for the revenue generated by illicit IPTV-subscription providers in a particular European country. This is the resulting indicator obtained combining the four factors described below.

$N_{P\text{-}IPTV,i}$ – stands for the population using illicit IPTV in a particular European country. These figures are computed based on equation 2 in this Report.

H_i – stands for the average number of adult equivalents in the household in each European country. This data is provided by Eurostat Household Survey 2020. One paid subscription per household is considered to adjust paid subscription estimation per household instead of relying on the individual person level. This approach results in a more conservative illicit IPTV spending estimate.

$S_{g,i}$ – represents the share of population that is willing to pay for a monthly illicit IPTV subscription. This is the opposite to an option to stream IPTV for free, e.g., from websites that allow direct streaming for certain channels. This share is computed based on a sample of 1480 websites that are suspected of providing unauthorised IPTV services. Data is provided by AAPA members Altice France, beIN, Irdeto, LaLiga, NAGRA Kudelski Group, Premier League, Synamedia, NOS, and Warner Bros. Discovery – leading companies in Media, AV services, digital software security and cybersecurity.

$P_{g,i}$ – represents the average unauthorised IPTV monthly subscription price. The prices are deducted based on data collection for 1480 suspected-unauthorised IPTV providing websites[30].

[30] Dataset is created by Gobelin House SLU and adapted based on representative sample on suspected unauthorised IPTV providers sourced by Altice France, beIN, Irdeto, LaLiga, NAGRA Kudelski Group, Premier League, Synamedia Ltd, NOS, and Warner Bros. Discovery – leading companies in Media, AV services, digital software security and cybersecurity.

The methodology described above allows assessing the scope of income accrued by unauthorised IPTV providers in each individual European economy, as well as in the entire EU27+UK market.

Revenue generated by unauthorised IPTV-subscription providers is estimated based on several data sources. First, the base of users that access unauthorised IPTV is estimated according to equations 1 and 2. Eurostat data was used to define average household size in EU countries. Average monthly subscription prices as well as the share of website traffic directed toward unauthorised IPTV subscription websites is estimated based on the original dataset built for the purpose of this Report.

Finally, the ratio between estimated revenue generated by illicit IPTV providers and number of individuals who use illicit IPTV in European countries is computed in each country based on equation 4 as outlined below:

$$C_{IPTV,i} = \frac{R_{IPTV,i}}{N_{P-IPTV,i}} \quad (eq.4)$$

The ratio is based on the amount of illicit revenue obtained in a particular European country ($R_{IPTV,i}$ – defined in equation 3) and number of individuals who are accessing illicit IPTV in this country ($N_{P\text{-}IPTV,i}$ – defined in equation 2). Resulting estimates are presented in section 2 of this Report.

A3 Losses Incurred by Legal Pay-TV Providers

The potential losses in monthly revenue that is incurred by legal Pay-TV service providers is estimated based on equation number 5 as outlined below:

$$\begin{aligned} &Potential\ losses\ in\ revenue\ incurred\ by\ legal\ Pay-TV\ providers\ (RL_{IPTV,i}) = \\ &Population\ watching\ unauthorized\ IPTV\ (N_{P-IPTV,i}) \\ &\div\ Average\ Household\ size\ (H_i) \\ &\times Share\ of\ population\ paying\ for\ unauthorized\ IPTV\ monthly\ subscription\ (S_{g,i}) \\ &\times Average\ Legal\ Monthly\ subscription\ Price\ (LP_{g,i}) \qquad (eq.5) \end{aligned}$$

The results of the equation 5 estimates are discussed in section 3 of this Report. Variables considered in equation 5 are the following:

$LR_{IPTV,i}$ – stands for the potential losses in revenue incurred by legal Pay-TV providers in a particular European country. This is the resulting indicator obtained combining the four factors described below.

$N_{P\text{-}IPTV,i}$ – stands for the population using illicit IPTV in a particular European country. These figures are computed based on equation 2 in this Report.

H_i – stands for the average number of adult equivalents in the household in each European country. This data is provided by Eurostat Household Survey 2020. One paid subscription per household is considered to adjust paid subscription estimation per household instead of relying on the individual person level. This approach results in a more conservative illicit IPTV spending estimate.

$S_{g,i}$ – represents the share of population that is willing to pay for a monthly illicit IPTV subscription. This is the opposite to an option to stream IPTV for free, e.g., from websites that allow direct streaming for certain channels. This share is computed based on a sample of 1480 websites that are suspected of providing unauthorised IPTV services. Data is provided by AAPA members and partners Altice France, beIN, Irdeto, LaLiga, NAGRA Kudelski Group, Premier League, Synamedia, NOS, and Warner Bros. Discovery – leading companies in Media, AV services, digital software security and cybersecurity.

$LP_{g,i}$ – represents the average legal Pay-TV monthly subscription price. The prices are deducted based on MAVISE dataset *Pay-TV packagers in Europe* (December 2020) provided by European Audiovisual Observatory.

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