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Lessons from France on the regulation of Internet pornography: How displacement effects, circumvention, and legislative scope may limit the efficacy of Article 23

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Abstract

In 2020, the French Parliament passed an amendment that put the country at the forefront of attempts by democratic states to restrict young people's access to legal online pornography. This study examines the necessity for and potential efficacy of the amendment, Article 23, through a comparative analysis of emerging legislative and regulatory approaches in France, the UK, Canada, Utah, and Germany, and through a survey of French 15-, 16-, and 17-year-olds. Among other things, our survey shows that 41% of 15-, 16-, and 17-year-olds in France visit dedicated pornographic sites, on average monthly and often much more frequently. However, the range of media platforms via which French adolescents are exposed to pornography, their knowledge about technologies that could circumvent age verification, and the power, scope, and implementation of Article 23 may limit the legislation's efficacy. Our findings suggest the mechanisms that may limit its efficacy include media displacement, socio-technical circumvention, and the Article's relatively broad and imprecise nature. This study has implications for legislators and regulators in democratic countries beyond France as they too grapple with the challenges of regulating online pornography. Furthermore, it extends the often contradictory and/or limited evidence that exists about adolescents' consumption of pornography.

KEYWORDS
adolescents, age verification, Article 23, Digital Economy Act (Part 3), Jugendmedienschutz-Staatsvertrag (JMStV), online pornography, Online Safety Bill, VPNs

INTRODUCTION

In July 2020, the French Parliament passed an amendment to an Act that protects victims of domestic violence. It required online publishers to prevent those under 18 accessing pornographic content (Légifrance, 2020), and meant that if publishers fail to do so, access to their services from within France can be terminated. Although the amendment, which became Article 23 of the Act, encompasses any online public communication service—including websites, apps, and email newsletters (CPPAP, n.d.)—the French regulator—the Autorité de régulation de la communication audiovisuelle et numérique (ARCOM), formerly the Conseil Supérieur de l'Audiovisuel (CSA)—has, initially, been targeting eight high-traffic, dedicated pornographic websites (Vinocur, 2021).

The adoption and implementation of Article 23 puts France at the forefront of attempts by governments, legislators, and regulators in a number of democratic countries to restrict children's and adolescents' access to legal online pornography. It is in this context that the present study examines the necessity for and potential efficacy of Article 23. We do this through a comparative analysis of emerging legislative and regulatory approaches in five democratic countries, including France, and through a representative survey of French 15-, 16-, and 17-year-olds.

Our comparative analysis shows important differences in who and what is being regulated, in what is required of publishers, and in the proposed sanctions for noncompliance. Our survey reveals the media platforms through which French adolescents are exposed to pornography,[1] the frequency and duration of that exposure, and the proportions who use or are aware of technologies that can be used to circumvent age-based restrictions on legal online pornography.

Taken together, the analysis and evidence demonstrate both the need for, and the limitations of, such restrictions. We find, for example, that 41% of 15-, 16-, and 17-year-olds in France visit dedicated pornographic sites, on average monthly and often much more frequently. However, our findings on the range of media platforms via which French adolescents are exposed to pornography and on their knowledge of location-masking technologies, as well as on the power, scope, and implementation of Article 23, show how the efficacy of the legislation may be limited by media displacement, socio-technical circumvention, and the Act's relatively broad and imprecise nature. Our survey also provides baseline data with which Article 23's efficacy could, eventually, be tested.

This study has implications for legislators and regulators in democratic countries beyond France as they too grapple with the challenges of regulating online pornography. Furthermore, it extends the often contradictory (Peter & Valkenburg, 2016) evidence that exists about adolescents' consumption of pornography and adds to the limited data (Nash et al., 2015, p. 6) we have on the platforms through which that consumption takes place.

COMPARING EMERGING LEGISLATIVE AND REGULATORY APPROACHES

To help evaluate how successful Article 23 might be in preventing under-18s accessing online pornography in France, we compare it in this first section with contemporary legislative and regulatory approaches in four other democratic states: the UK, Utah,

Canada, and Germany. Specifically, the UK's Digital Economy Act (Part 3) and its Draft Online Safety Bill; Utah's Device Filter Amendments Bill; Canada's Bill S-210, An Act to Restrict Young Persons' Online Access to Sexually Explicit Material; and Germany's Interstate Treaty on the Protection of Minors in the Media (JMStV). For purposes of concision, abbreviations will be used to refer to these pieces of legislation. These abbreviations are presented in Table 1, along with the original titles and references to their full texts.

Legislative status

The status of the legislation under discussion is varied (see Table 2). France's Article 23 was, by amendment, incorporated into an Act that was adopted on July 30, 2020. The treaty at the heart of attempts in Germany to regulate legal online pornography—the JMStV—dates back further, the current version having been in force since October 1, 2016. Utah's H.B. 72 was signed into law by the State Governor on March 23, 2021, but will only come into effect if at least five other US states enact similar laws. Part 3 of the UK's Digital Economy Act is also in a state of limbo. Although, along with the rest of the Act, it was passed by both Houses of Parliament and received Royal Assent on April 27, 2017, the implementation of Part 3 was repeatedly delayed and eventually indefinitely postponed, with the UK government now proposing its repeal in favor of the Online Safety Bill, which is still in draft form. At the time of writing in February 2022, Canada's Bill S-210 has completed its second of three readings in the Canadian Senate but has yet to be considered by the House of Commons.

TABLE 1 Legislation analysed in this article

Country	Full name of bill, Act, or treaty	Abbreviated name used in this article	Reference to full text
UK	Digital Economy Act (Part 3)	Digital Economy Act	TSO (2017)
UK	Draft Online Safety Bill	Online Safety Bill	DCMS (2021)
France	LOI no 2020-936 du 30 juillet 2020 visant à protéger les victimes de violences conjugales, Article 23 (Act no. 2020-936 of July 30, 2020 to Protect Victims of Domestic Violence, Article 23)	Article 23	Légifrance (2020)
US state of Utah	H.B. (House Bill) 72: Device Filter Amendments	H.B. 72	State of Utah (2021)
Canada	Bill S-210: An Act to Restrict Young Persons' Online Access to Sexually Explicit Material	Bill S-210	Senate of Canada (2021)
Germany	Staatsvertrag über den Schutz der Menschenwürde und den Jugendschutz in Rundfunk und Telemedien (Jugendmedienschutz-Staatsvertrag—JMStV) (State Treaty on the Protection of Human Dignity and the Protection of Minors in Broadcasting and Telemedia [Interstate Treaty on the Protection of Minors in the Media—JMStV])	JMStV	KJM (2020)

TABLE 2 Characteristics and status of legislation designed or being used to restrict access to legal online pornography in the UK, France, Utah, Canada, and Germany, February 2022

Country/state	UK		France	Utah	Canada	Germany
Legislation	Digital Economy Act	Online Safety Bill	Article 23	H.B. 72	Bill S-210	JMStV
Legislative and implementation status						
Enacted			X			X
In limbo	X			X		
Not yet passed		X			X	
Implementation currently restricted to a small number of dedicated pornographic sites?			X			
Prohibited content						
Just pornography	X		X	X	X	
A wider range of "harmful" content inc. pornography		X				X
Restricted to smartphones and tablets?				X		
Sanctions						
Fines	X	X		X	X	
Blockage of sites from users in country	X	X	X		X	X
Other business disruption measures	X	X	X			
Media platforms targeted						
Any online platform		X	X	X	X	X
Only commercial sites	X				X	
Only sites with >33% pornographic content	X					
What is required of publishers/ manufacturers						
Pre-install pornography filters on mobile devices				X		
Prevent children accessing in-scope content	X	X	X		X	X
Other measures		X				

Prohibited content

The legislation in our sample targets either just pornographic content or a wider range of content—including pornography—that may be harmful to children and adolescents (see Table 2). France's Article 23 takes the first approach, referring simply to "contenu

pornographique" [pornographic content]. The UK's Digital Economy Act also just applies to "pornographic material," which the Act defines in detail, mostly with regard to whether it was "produced solely or principally for the purposes of sexual arousal" (TSO, 2017, p. 18). Canada's Bill S-210 covers "sexually explicit material," as defined in 171.1(5) of the Canadian Criminal Code (Minister of Justice, 2021, p. 204). Utah's H.B. 72 relates to content that is "harmful to minors," but this is actually a euphemism for pornography as defined in the Utah Criminal Code (2013, p. 361). The German JMStV also refers to "harmful" content. However, its definition of content that is harmful to the development or education of children and adolescents includes not only legal "pornographic" content, but also other material such as that which denies the Holocaust or glorifies violence. The UK's Online Safety Bill also applies to a range of "legal but harmful content." Although pornography was not specifically mentioned in the bill's first draft, in February 2022 the UK government announced that it would add a stand-alone provision to the bill so that it expressly covers "pornographic content" (DCMS, 2022).

Territorial scope

The EU's Audiovisual Media Services Directive (AVMSD) states that member states shall "take measures … [such as] age verification" to ensure that minors will not normally hear or see "harmful content, such as … pornography" on audiovisual media, including on-demand services (EU, 2018, p. 83). Although France is in the process of transposing the directive into French law (Guillaume & de Saint-Pern, 2020), the AVMSD only applies to audiovisual media from providers under the jurisdiction of EU states (EU, 2018, p. 83), and many pornographic sites are based outside the EU (DCMS, 2017, p. 4).

The jurisdictional limits of both the AVMSD and of existing domestic laws that prohibit the dissemination of pornography to minors—such as Article 227-24 of France's penal code (Légifrance, 2021)—were part of what prompted the UK's Digital Economy Act and Online Safety Bill, and France's Article 23 (Sénat, 2020). These legislative instruments provide for sanctions—such as the blocking of sites—that are not hampered by limits to jurisdictional reach, unlike sanctions such as fines, which are.

In Germany, too, the JMStV—in combination with the Interstate Treaty on the Media (Die medienanstalten, 2020), or MStV for short, and the Telemedia Act (Bundesamts für Justiz, 2007)—allows sites outside the EU to be blocked if they do not comply with German law. As enforcement against content providers based outside the EU is often difficult, German regulators can enforce the law by insisting that other service providers, such as web hosting companies and internet service providers, block noncompliant sites to German users.

Utah's H.B. 72 only applies to smartphones or tablets sold and activated in the state, although it requires all pornography to be filtered, irrespective of geographical source.

Computing devices in scope

Utah's H.B. 72 bill is unique amongst the five legislative approaches we are considering in being restricted to particular computing devices through which online pornography may be viewed. It applies to smartphones and tablet computers only. Laptop and desktop computers are not covered by the bill.

Sanctions

Sanctions for noncompliance with the legislation under consideration include fines, business disruption measures, and imprisonment, but penalties vary considerably from state to state (see Table 2). France's Article 23 allows courts to order that noncompliant sites be blocked to users within France and delisted by search engines and directories. Individuals could already be imprisoned and fined up to €75,000 (companies could be fined €375,000) under the existing French penal code (Hammadi & Licata Caruso, 2021). The blocking of sites and their delisting from search engines are also allowed by the UK's Digital Economy Act, as are other business disruption measures, including preventing noncompliant sites from using third-party advertising and also financial and other support services. The Act allows fines of up to £250,000 or 5% of global turnover, whichever is greater. The UK's Online Safety Bill allows for similar business disruption measures to the Digital Economy Act and even larger fines—of up to £18 million or 10% of global turnover, whichever is greater. In addition, criminal action may be taken against senior managers whose companies do not comply with requests from the regulator. The only penalty provided under Utah's H.B. 72 is a US$10 fine per violation—up to a maximum of US$500—for manufacturers who fail to enable a pornography filter on any smartphone or tablet sold and activated in the state. Canada's Bill S-210 would allow for larger fines, of between CA$250,000 and CA$500,000 for corporations. In addition, the bill allows the Federal Court to order internet service providers to prevent access to noncompliant online content. In Germany, the JMStV—in combination with the MStV and Telemedia Act—allows noncompliant sites to be blocked from users in Germany.

What is required of publishers or manufacturers?

France's Article 23 takes an outcome-based approach, simply requiring that publishers do not allow minors to access the prohibited content. Although Canada's Bill S-210 and Germany's JMStV have the same ambition, they provide for a defence if the accused has, in the case of Bill S-210, “implemented a prescribed age-verification method to limit access” or, in the case of the JMStV, sought to ensure “that such content is accessible for adult persons only.” The UK's Digital Economy Act allows for a similar defence, and, furthermore, gives powers for an “age-verification regulator” to be established who should issue guidance on suitable age-verification methods.

Utah's H.B. 72 relates not to publishers but to computer device manufacturers, who are required to ensure that their smartphones or tablets, when sold and activated in the state, automatically enable pornography filters. However, it also requires that those filters can be deactivated and that users are notified when content is filtered.

The UK's Online Safety Bill is more stringent than the other legislation in what it requires of publishers, who, in general terms, would have to take proportionate steps to mitigate and manage the risk to children, and the impact of harm on them, in line with a risk assessment they would be obliged to undertake. More specifically, depending on the severity of the harmful content, they would have to use proportionate systems and processes to prevent children of any age or in at-risk age groups from encountering harmful content. They would also have to specify how children are protected in their terms and conditions. Furthermore, they would need to allow the easy reporting of harmful content and have a process in place to receive complaints about any content that was taken down due to the legislation.

Media platforms targeted

The legislation under consideration varies in the types of media platforms targeted (see Table 2). France's Article 23 targets all online public communication services, including websites, apps, and email newsletters (CPPAP, n.d.). Germany's JMStV has a similarly wide scope, applying to all telemedia (electronic information and communication media) as well as broadcasting services. So too does Utah's H.B. 72, if the services or platforms are accessible via a smartphone or tablet.

Although Canada's Bill S-210 applies to any "sexually explicit material available on the Internet," the content is in scope only if it is made available "for commercial purposes," which, in some circumstances, may include or exclude particular media platforms. The UK's Digital Economy Act also only applies to pornographic material on the internet if it is made available "on a commercial basis." Subsequent clarification (TSO, 2019) made it clear that this excluded any websites or apps whose content is less than one-third pornographic. The designated regulator, the British Board of Film Classification (BBFC), considered this to mean that search engines and social media were not in scope of the Act (BBFC, 2019). However, the UK government decided not to implement Part 3 of the Digital Economy Act, in part because it did not cover social media platforms, believing it was better to "deliver on the objectives of [Part 3 of] the Digital Economy Act" in a "coherent" and "comprehensive" manner through what became the Online Safety Bill (Morgan, 2019). The Online Safety Bill's targeting of search engines and user-to-user services (that allow the uploading and sharing of user-generated content) means that, unlike the Digital Economy Act, it does bring social media platforms and search engines into scope. Initially the Online Safety Bill only covered dedicated pornographic websites that allow user-generated content to be uploaded and shared. Although many such sites do allow this, the first draft of the bill did not cover sites that only offer professionally- rather than user-produced pornographic content. This changed in February 2022 when the UK government announced that a new stand-alone provision would be added to the proposed legislation so that it covered all "providers who publish or place pornographic content on their services" irrespective of whether the content was user-generated or not (DCMS, 2022).

Implementation

As we have seen with the case of Part 3 of the UK's Digital Economy Act, the fact that legislation reaches the statute book does not necessarily mean that it gets implemented, and even if it does, how that implementation is executed may play a crucial role in determining its effects. Although France's Article 23 encompasses any online public communication service, the French regulator, ARCOM, has, initially, only been targeting eight high-traffic, dedicated pornographic websites (Vinocur, 2021). Of the other legislation this essay has considered, only that in Germany is, at the time of writing in March 2022, being implemented. Similar to the French case, the legislation covers all telemedia (electronic information and communication media), but the regulator, the Kommission für Jugendmedienschutz (Commission for the Protection of Minors in the Media), or KJM, initially took action only against "four major pornography websites" (Burgess, 2021). However, by February 2022 that initial narrow focus had widened to include some social media platforms, such as Twitter, which, as a result, started to block some pornographic content for German users (Burgess, 2022).

A SURVEY OF 15-, 16-, AND 17-YEAR-OLDS IN FRANCE

We can see, then, that the drafting and implementation of legislation in Western Europe and North America to restrict young people's access to legal online pornography varies, including in the media platforms and devices targeted. The UK government's focus has switched from commercial dedicated pornography sites to social media and search engines and then to all sites that publish pornography. Legislators in Utah are focussing on mobile devices, while Canadian legislators and German and French regulators are pursuing dedicated commercial pornographic websites.

The efficacy of these emerging legislative and regulatory approaches will depend, therefore, on the platforms and devices through which children and adolescents are exposed to pornography. Currently, there is a relative paucity of evidence in this area, a gap this study aims to help fill via a survey of 15-, 16-, and 17-year-olds in France. France was chosen for this study because—unlike in the UK, Utah, and Canada—legislation has not only reached the statute book, but is being implemented, with an initial, exclusive focus on eight dedicated pornographic websites. Indeed, at least three of those sites have, since the amendment was passed, implemented age-verification controls: users who want to access more than the "soft" versions of jacquieetmicheltv.net, jacquieetmicheltv2.net, or jacquieet-michel.net have to prove that they are at least 18 years of age with a My18Pass, which can only be obtained after a check of an applicant's bank card or identity document (My18Pass.com, 2021).

To help interrogate the potential efficacy of Article 23 and its implementation, and to provide baseline data for future studies on its actual effects, our survey aims to answer this first research question:

> RQ1: Which media platforms do 15-, 16-, and 17-year-olds in France use to view pornographic videos or pictures and how recent is the use of each platform for this purpose?

Our survey defined pornography as either sexually explicit videos or pictures seen on online pornographic websites or sexually explicit pornographic videos or pictures seen on at least one of seven other media platforms.

In our operationalization of "media platforms," we distinguish not only between various on- and offline platforms but also between the eight dedicated pornographic websites being targeted by the French regulator and other dedicated pornographic websites.

To understand not just whether—and if so how recently—French adolescents have been exposed to pornography, but also the length of their exposure, our survey also seeks to answer this second research question:

> RQ2: How much time do 15-, 16-, and 17-year-olds in France spend viewing sexually explicit videos or photos in any media?

This question helps to address the fact that "few studies have considered the length of time spent viewing pornography" by children and adolescents (Horvath et al., 2013, p. 22), an important omission given there is some (albeit "weak") evidence of associations between time spent viewing pornography and problematic pornography use (Chen et al., 2021, p. 2).

Finally, our survey attempts to answer this final research question:

> RQ3: What proportions of 15-, 16-, and 17-year-olds in France are aware of, or have used, a VPN or Tor browser?

This research question relates to concerns (see, e.g., Matthews-King, 2018) that age-verification controls on online pornography could be bypassed using technologies such as VPNs (virtual private networks) and Tor browsers. There is, to date, only one study of which we are aware (Thurman & Obster, 2021) that has gathered evidence on adolescents' actual use of such technologies, and that study was specific to the UK.

Survey methodology

The survey was fielded in April 2021 by the Institut français d'opinion publique (IFOP), an international polling and market research firm that adheres to the ESOMAR code on market and opinion research (ESOMAR, 2007). IFOP used the 750,000-strong Bilendi online panel, the largest in France. Panellists earn points for participating in surveys, which they can then swap for gifts.

The selection of panellists for the survey aimed to achieve a final sample that matched the spread of ages, genders, parental socio-professional status, and distribution regionally and in terms of settlement size found among the population of 15-, 16-, and 17-year-olds in France. Quotas were set on these variables and, once a quota was met, no further respondents were recruited.

Because the quotas were not met exactly (see Table 3), the responses were weighted using the same variables so that the results would be more representative of the wider population of 15-, 16-, and 17-year-olds in France. After data cleaning, the final sample contained 999 responses.

Only potential respondents in the Bilendi panel who were recorded as being 15-, 16-, or 17 years old were invited to participate in the survey. As a further check on the ages of potential respondents, a filter question at the beginning of the survey screened out anyone not in our target age range. Regulations in France permit individuals aged 15 and above to take surveys without their parents' consent or presence.

Participants had to confirm their wish to participate in the survey after being presented with information about the purpose of the study, its content, the possible advantages and disadvantages of participating, and the fact that participation was voluntary. The page that gathered informed consent also explained that participants were free to withdraw from the study, without explanation, at any time and that their data would be handled confidentially (in accordance with the 2016 EU General Data Protection Regulation and the 1978 French Data Protection Act).

To reinforce the fact that participation was voluntary, and to allow participants to withdraw at any time, each question contained an “I do not wish to respond” option, and another option allowing the respondent to exit the survey immediately.

At the end of the survey, respondents were provided with an email address (of the data protection officer at IFOP), which they were told they could use if they wanted to contact someone about any of the issues addressed in the survey. Furthermore, a free-text box was provided that they could use to leave comments for the researchers about the survey.

The first set of questions asked whether, and if so how recently, respondents had seen sexually explicit videos or photos on a range of media platforms: dedicated pornographic websites, social media platforms, search engines, TV or DVDs, messaging apps, YouTube, email, and magazines. The question on dedicated pornographic websites was in two parts. The first concerned the eight sites that ARCOM had issued warnings to, and the second concerned all other dedicated pornographic websites. The next question asked how many minutes per month respondents spend viewing sexually explicit videos or photos in any media. Subsequently, respondents were asked whether they were aware of, or had ever used, VPNs or a Tor browser, technologies that can be used to sidestep age verification.

TABLE 3 Composition of sample ($N = 999$) aimed for and achieved (before weighting applied)

Demographic variable	% aimed for	% achieved
Gender		
Males	51.30	45.64
Females	48.70	54.35
Age		
15	33.70	31.13
16	33.50	45.25
17	32.80	23.62
Parental socio-professional status		
Executives (Cadres)	18.60	22.32
Independent business owners (Artisans)	8.80	5.51
Farmers (Agriculteurs)	2.50	1.20
Middle-class employees (Intermédiaires)	18.20	21.42
Working-class employees (Employés)	15.20	21.72
Lower-working-class employees (Ouvriers)	24.40	15.92
Retired (Retraités)	4.50	2.60
Other (Autres)	7.80	9.31
Urban size[a]		
CC1–Rurales	23.69	22.12
CC2–20,000	17.45	19.12
CC3–20/100,000	11.88	13.81
CC4–+100,000	29.64	28.43
CC5–RP	17.32	16.52
Region		
Parisien	19.86	18.52
Nord	6.26	6.31
Est	8.30	7.41
Bassin Parisien Est	8.27	7.81
Bassin Parisien Ouest	8.99	10.41
Ouest	13.22	17.12
Sud Ouest	9.67	10.01
Sud Est	12.17	12.11
Méditerranée	13.24	10.31

[a]An Insee (French National Institute of Statistics and Economic Studies) classification based on settlement size and extent of continuous built-up area.

Given that Rasmussen et al. (2018) found evidence of "a statistically reliable social desirability bias against reporting the consumption of pornography" among undergraduates, we might expect our results to underestimate actual consumption, especially because the minors in our study should not legally have access to pornographic material.

Because of the different types of measures used (e.g., ever seen pornography, number of days since last exposure to pornography, and time spent using pornography) and their different measurement scales (binary and count), it was necessary to vary our analysis methods. For example, we used logistic regression for the binary variable and inverse Gaussian regression and log-linear regression for the count variables. All our statistical analyses are based on generalized linear models (McCullagh & Nelder, 1989). The data were analysed in R (R Core Team, 2021). In the results section, the estimated coefficients are reported on a logarithmic scale and will therefore act as additive terms to the linear predictor in the case of the log-linear and inverse Gaussian models. β is the coefficient of either (1) the log-linear regression model; (2) a generalized linear regression model assuming binomial distribution and using a logistic link function for predicting the probabilities in the case of binary responses (logistic regression); or (3) a generalized linear regression model assuming inverse Gaussian distribution and using a log link function as an alternative to the log-linear regression model in the case of count responses (inverse Gaussian regression).

For the purposes of our analysis, values for the variable concerning respondents' parental socio-professional status were consolidated into five categories (see Table 4).

In addition to gender, age, and parental socio-professional status, a variable corresponding to respondents' residential setting (with six values ranging from rural through suburban to urban) was used in our regression analyses, as was the data we collected on respondents' knowledge about and use of VPNs and Tor browsers. Because the parental socio-professional status and residential setting variables were only weakly correlated, both were used in our models.

Survey results

RQ1: Which media platforms do 15-, 16-, and 17-year-olds in France use to view pornographic videos or pictures and how recent is the use of each platform for this purpose?

TABLE 4 Parental socio-professional status categories used in our analysis

Consolidated categories	Original values[a]
Executives	Executives (Cadres)
Independent business owners	Independent business owners (Artisans) Farmers (Agriculteurs)
Middle-class employees	Middle-class employees (Intermédiaires)
Working-class employees	Working-class employees (Employés) Lower-working-class employees (Ouvriers)
Other	Retired (Retraités) Other (Autres)

[a]As used by the French National Institute of Statistics and Economic Studies in their official household census and surveys (Insee, 2003).

Overall, 53% of 15-, 16-, and 17-year-olds in France said they had seen, at least once, sexually explicit videos or pictures on at least one of the on- and offline media platforms listed in the survey. Among this small majority, their last exposure was, on average, 25 days previously. However, this mean figure was raised by several respondents whose last exposure was months ago. The median number of days since their last exposure was six.

The figures for online pornography[2] are almost identical, with 51% of respondents having been exposed at least once—on average 26 days previously—and the median number of days since last exposure being six.

The gender, age, residential setting, and parental socio-professional status of respondents made no significant difference (using logistic regression) to whether they had ever been exposed to pornography (see Table S1). However, there were some significant differences (using inverse Gaussian regression) between respondents in terms of how recently they had last viewed pornography on any platform (see Table S2). For example, females had been exposed significantly ($\beta = 1.1451$, $p < 0.0001$) longer ago than males, and the oldest cohort in our sample, 17-year-olds, significantly more recently ($\beta = -0.5162$, $p = 0.0138$) than 15-year-olds. It was also the case with online[2] pornography that females had been exposed significantly ($\beta = 1.0758$, $p < 0.0001$) longer ago than males, and the oldest cohort in our sample, 17-year-olds, significantly more recently ($\beta = -0.5783$, $p = 0.0077$) than 15-year-olds.

With regard to the individual platforms via which exposure took place, it was most likely for 15-, 16-, and 17-year-olds in France to have been exposed, at least once, to sexually explicit pornographic videos or pictures via dedicated pornographic websites (41% had), followed by social media platforms (31% had), search engines (30%), and messaging apps (24%). YouTube (18%), TV and DVDs (16%), and in particular email (9%) and magazines (8%) were less likely to be vehicles of exposure. It was equally likely that respondents had seen pornography on at least one of the eight dedicated pornographic websites targeted by ARCOM (31% had) as on a dedicated pornographic website *not* targeted by ARCOM (see Table 5 and Figure 1).

The gender, age, residential setting, and parental socio-professional status of respondents made no significant difference (using logistic regression) to whether they had ever been exposed to pornography via each of the individual media platforms (see Table S1).

As well as being the most common vehicle for exposure, dedicated pornographic sites were the media platform most recently used to access pornography, on average 30 days previously. However, this mean figure was raised by a number of respondents whose last visit was months ago. The median number of days since the last visit was four.[3] On average, the last visit to at least one of the eight dedicated pornographic sites targeted by ARCOM was 41 days ago, compared with 30 days for any other dedicated pornographic site. The median figures were 6 and 3[3] days, respectively (see Table 5 and Figure 1).

Social media platforms (mean = 43 days, median = 14 days) and search engines (mean = 43 days, median = 15 days) were slightly less recent sources of pornography, as were YouTube (mean = 59 days, median = 15 days), email (mean = 66 days, median = 11 days), messaging apps (mean = 73 days, median = 15 days), TV or DVDs (mean = 124 days, median = 24 days), and in particular magazines (mean = 1524 days, median = 30 days) (see Table 5 and Figure 1).

There were some significant differences (using log-linear regression) between respondents in terms of how recently they had last viewed pornography on any dedicated pornographic site, with females being exposed significantly ($\beta = 0.4498$, $p = 0.0038$) longer ago than males and respondents in working-class households significantly more recently ($\beta = -0.48461$, $p = 0.0225$) than those in executive households (see Table S3). Using inverse Gaussian regression, we find that, for the eight pornographic sites targeted by ARCOM, females had also been exposed

TABLE 5 Reach of, and recency of exposure to, sexually explicit pornographic videos or pictures via eight media platforms among 15-, 16-, and 17-year-olds in France, April 2021

Media platform	% who've seen sexually explicit pornographic videos or pictures on media platform(s)	Days since last exposure to sexually explicit pornographic videos or pictures on media platform(s)	
		Mean	Median
One of eight specific dedicated pornographic sites[a]	31.1	41.0	6.0
Any other dedicated pornographic site	30.7	30.1	3.0
Any dedicated pornographic site (the two categories above combined)[b]	41.4	29.6	4.0
Social media (like Instagram, Twitter, or Reddit)	30.5	42.8	14.2
Internet search engines (like Google)	29.5	43.7	15.0
TV or DVDs	16.1	124.2	23.6
Images or videos that someone downloaded or sent to you (e.g., via WhatsApp or Snapchat)	24.0	73.3	15.0
YouTube	17.6	58.9	15.0
Email	8.9	65.8	10.7
Magazines	7.8	1524.0	30.0
Any of the eight media platforms above[c]	53.0	24.8	6.0
Any of the five online platforms[d,c]	51.0	25.5	6.0

Note: all results weighted.

[a]pornhub.com, xhamster.com, xvideos.com, xnxx.com, tukif.com, jacquieetmichel.net, jacquieetmicheltv.net, and jacquieetmicheltv2.net.

[b]The median number of days since last exposure is slightly higher for the "Any dedicated pornographic site" category than for one of its constituent categories ("Any other dedicated pornographic site") because not every respondent answered every question.

[c]The median number of days since last exposure is slightly higher for "Any of the eight media platforms above" and "Any of the five online platforms" than for one of the constituent media platforms ("Any other dedicated pornographic site") because not every respondent answered every question.

[d]Any dedicated pornographic site, social media, search engine, images or videos that someone downloaded or sent to you, and YouTube.

significantly ($\beta = 0.9412$, $p = 0.0035$) longer ago than males; respondents from working-class ($\beta = -1.5258$, $p = 0.0019$), independent business owner ($\beta = -1.4514$, $p = 0.0086$), and "other" ($\beta = -1.9832$, $p = 0.0001$) households significantly more recently compared with those from executive households; and 17-year-olds ($\beta = -0.9306$, $p = 0.0096$) significantly more recently compared with 15-year-olds (see Table S2). There were also some significant differences (using inverse Gaussian regression) according to respondents' residential setting, with those in rural areas ($\beta = -1.8711$, $p = 0.0017$), isolated towns ($\beta = -1.5180$, $p = 0.0375$), and upper- ($\beta = -2.1721$, $p = 0.0009$) and middle-class ($\beta = -3.0291$, $p < 0.0001$) suburbs exposed significantly more recently compared with those in city centers.

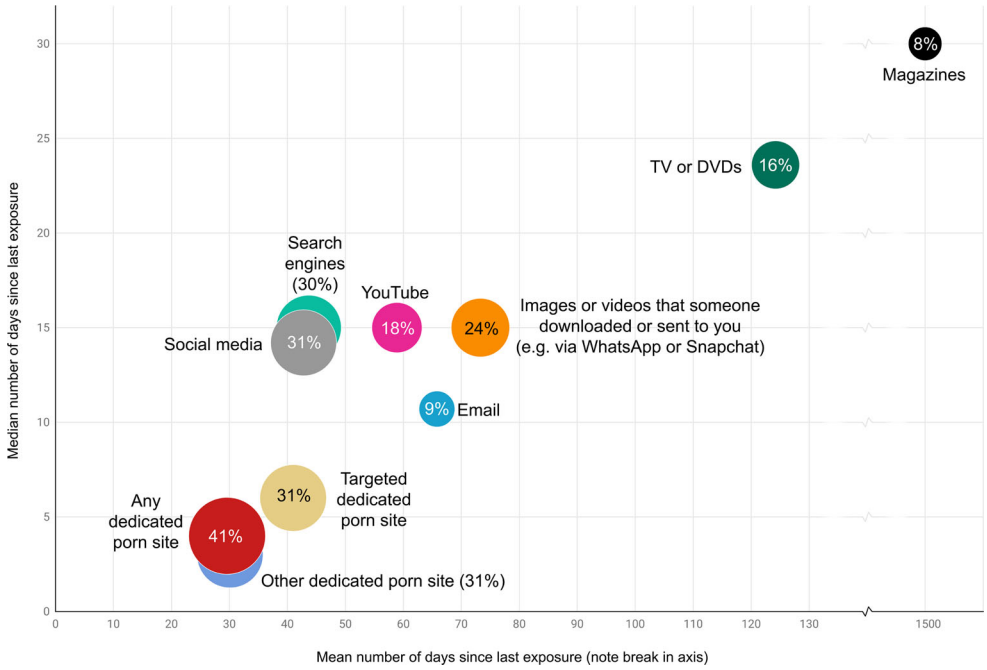

FIGURE 1 Reach of—and recency of exposure to—pornography via each of eight media platforms among 15-, 16-, and 17-year-olds in France (N = 999). *Note*: The size of the bubbles indicates the proportion who have had any exposure. The position of the bubbles indicates the mean and median days since last exposure

For other pornographic sites (i.e., not those targeted by ARCOM) we find, using inverse Gaussian regression, that 17-year-olds were last exposed significantly ($\beta = -2.3684$, $p < 0.0001$) more recently than 15-year-olds, and working-class ($\beta = -1.8299$, $p < 0.0001$) and "other" ($\beta = -1.4246$, $p = 0.0010$) households significantly more recently compared with those from executive households. The only significant difference between respondents in different residential settings is that those in middle-class suburbs were last exposed to any other pornographic site significantly ($\beta = -0.6598$, $p = 0.0455$) more recently compared to those in city centers.

Inverse Gaussian regression revealed some significant differences in the recency with which respondents of different genders, ages, parental socioeconomic status, and residential settings had been exposed to pornography on the other media platforms covered by our survey. There is no space to comprehensively describe these differences; however, the most consistent pattern was gender-based, with females having seen pornography significantly longer ago than males on social media, search engines, TV or DVDs, YouTube, magazines, and messaging apps. Differences due to residential setting were mostly that those in isolated towns, rural areas, and, in particular, suburban settings had been exposed to pornography on the various other media platforms more recently than those in city centers (see Table S2).

Differences due to parental socio-professional status were mixed. Those in some nonexecutive households had been exposed to pornography significantly more recently on social media, search engines, and YouTube, but significantly less recently via TVs and DVDs and magazines, than those from executive households.

Differences due to age were less uniform, indicative, perhaps, of how sources of pornography change with age. For example, using inverse Gaussian regression, we find that 16-year-olds had been exposed to pornography on YouTube significantly ($\beta = 1.8043$,

$p = 0.0132$) longer ago than 15-year-olds, but significantly ($\beta = -2.3220$, $p = 0.0018$) more recently via magazines.

> RQ2: How much time do 15-, 16-, and 17-year-olds in France spend viewing sexually explicit videos or photos in any media?

The 15-, 16-, and 17-year-olds in France who consume pornography say they do so for an average of 1 h 21 min per month. That average is raised by some who reported much longer durations. The median amount of time spent was 30 min per month.

The gender, age, and residential setting of respondents made no significant difference (using log-linear regression) to how long they spend watching pornography. However, those who had used a VPN or Tor browser spent significantly longer ($\beta = 0.8118$, $p = 0.0032$) than those who did not know about or had not used these technologies (see Table S4).

> RQ3: What proportions of 15-, 16-, and 17-year-olds in France are aware of, or have used, a VPN or Tor browser?

VPNs and Tor browsers enable users to mask their location and, it has been claimed, may provide a means for users to circumvent country-specific controls on online pornography. Among 15-, 16-, and 17-year-olds in France, 9% had used a VPN or Tor browser, 33% knew what they were but had not used them, and 58% neither knew what they were or had used them.

DISCUSSION

This survey's results show that just over half (51%) of French 15-, 16-, and 17-year-olds have been exposed to online pornography and that for that small majority exposure is, on average, at least monthly and considerably more frequent for many, with the median number of days since last exposure being six.

Many might consider such widespread and, for some, relatively frequent consumption to be problematic given the possible association between frequent pornography use by adolescents and problem behaviors (Svedin et al., 2011), and the content of some of the pornography to which children and adolescents are being exposed. For example, a study by Vera-Gray et al. (2021) of the titles of videos displayed, over a six-month period, on the landing pages of the three most popular dedicated pornography websites in the United Kingdom showed that 12% described what the authors deemed “sexual violence” (including incest, coercion, and exploitation).

This study's focus on the particular platforms through which adolescents' exposure takes place shows that dedicated pornographic sites, the subject of Vera-Gray et al.'s (2021) study, are not only the most common vehicle through which French 15-, 16-, and 17-year-olds are exposed to pornography (41% had been at least once) but also the most frequently used vehicle, with the most recent exposure an average of 30 days previously (four days previously if the median rather than the mean value is taken).

It is in this context that the French Senate adopted Article 23 in an attempt to reduce exposure to online pornography among French under-18s. Although the Article covers any online publication—including websites, apps, and email newsletters—the regulator, ARCOM, is, initially, targeting eight particular dedicated pornographic sites. Our survey shows that it was equally likely that 15-, 16-, and 17-year-olds in France had seen pornography on at least one of those eight sites (31% had) as on at least one other of the hundreds if not thousands of dedicated pornographic sites that exist.[4] This is not surprising

given that a high proportion of visits to adult websites are concentrated on a relatively small number of sites. For example, just six sites account for more than 75% of the total monthly visits to pornographic sites in the UK.[5]

If all eight of the sites targeted by ARCOM were to implement robust age verification (and, as of November 2021, three[6] have) the proportion of French adolescents exposed to dedicated pornographic websites could, in theory, fall by a quarter, from 41% to 31%. Further reductions may, theoretically, be possible if ARCOM started to target other dedicated pornographic sites. The effects of such a strategy may, however, follow the law of diminishing returns. There is a very long tail of hundreds if not thousands of dedicated pornographic websites. It is necessary for ARCOM to identify the owners of such sites in order that they can issue them with a formal notice ordering them to take measures likely to prevent minors accessing pornographic content. Furthermore, ARCOM must contact them in a way that allows the date of receipt of that notice to be established (Légifrance, 2020). Given "how tough it is to track down the owners" of pornographic sites (Woods, 2016) and the sheer numbers of pornographic sites, attempts to block noncompliant sites might proceed slowly.

The theoretical effect, described in the previous paragraph, of the current implementation of Article 23 on the proportion of French adolescents exposed to dedicated pornographic websites assumes two things. First, that age-verification checks are watertight and, second, that the imposition of age verification causes no displacement of consumption—that is, a shift of audience attention from dedicated pornographic websites that have imposed age-verification checks to those that have not.

How watertight age-verification checks are likely to be depends on a number of things. Firstly, whether the sites that implement them do so across all the territories they operate in. If they do not, the use of a VPN or Tor browser to mask a user's location may provide a means to circumvent country-specific age-verification controls. Our survey found that 9% of 15-, 16-, and 17-year-olds in France had used a VPN or Tor browser and 33% knew what they were but had not used them, the latter proportion being the same as found among 16- to 17-year-olds in one recent UK survey (BBFC, 2020, p. 56), although lower than in another (Thurman & Obster, 2021).

Many dedicated pornographic sites are strongly resisting the imposition of age-verification controls. In France, only three of the eight sites given a March 16, 2021 deadline by the French regulator to implement age verification (Vinocur, 2021) had done so 6 months later, and the three sites that did are all part of the same Jacquie et Michel stable. In Germany, none of the four dedicated pornographic sites contacted by regulators between March and June 2020 had, as of November 2021, implemented age verification, and they are now facing legal action (Burgess, 2021).

The strong resistance of many dedicated pornographic sites to the requirement that they implement age-verification controls—a change that would undoubtedly hurt their businesses—means that, even if they were forced to restrict access to their sites in certain jurisdictions, they would be unlikely to do so elsewhere,[7] leaving open the possibility that users could use a VPN or other technologies to continue to browse their sites.

Beyond the jurisdictional extent of the implementation of age-verification controls, how robust such controls are overall depends, secondly, on the strength of each of their component parts, both human and technical. For example, how rigorously will checks of a user's age, with reference, say, to official documents, be carried out? To what extent will credentials be passed from those over 18 to those under, either on the black market or within social networks? And how resistant will age-verification technologies be to hacking?

Because the implementation of age verification for online pornography is extremely rare, research on its efficacy is, as far as we can tell, non-existent. However, there is research on

the effectiveness of age-verification mechanisms that attempt to restrict the sale of age-restricted goods—such as alcohol, tobacco, DVDs, and cinema tickets—and on access to age-restricted online platforms such as video sharing and online shopping sites. In a recent rapid-evidence review, Smirnova et al. (2021) found that, for physical goods, age verification is "rarely implemented at the point of sale or on … delivery of goods … due to noncompliance with legal requirements and/or failure to follow established procedures." Furthermore, they concluded that the evidence showed that:

> children can use workaround strategies to challenge … age assurance system [s]. For example, some children were found to use parents' IDs or gift cards to purchase age-restricted goods. In most cases, the system was so easy to bypass that no sophisticated means were required to find a workaround.

A BBC investigation found that under-18s had used fake or borrowed identification to set up accounts on the subscription site OnlyFans, which is "best known for pornography, and requires users to be over 18" (Titheradge & Croxford, 2021). *The Guardian* was able to circumvent an age-verification system on a pornographic site by using the email address IAmUnder18@mailinator.com "in a matter of seconds by generating a non-existent credit card number" (Waterson, 2019). While some of the limitations of early age-verification systems are likely to be overcome as standards improve (see, e.g., ACCS, n.d.), there is still uncertainty about the efficacy of age-verification systems that may be used to restrict access to online pornography.

When considering the possible effects of the current implementation of Article 23 on the proportion of French adolescents exposed to dedicated pornographic sites, we must also consider the possibility of displacement effects. Given that there are hundreds, if not thousands, of dedicated pornographic sites, it seems plausible that, if the eight sites targeted by ARCOM were to implement age verification, then those French 15-, 16-, and 17-year-olds who have accessed them (and 31% have) may turn their attention to other such sites. After all, as this survey shows, those other such sites are, collectively, just as likely to have been accessed and are more frequently viewed.

It is also plausible that, if access to dedicated pornographic websites became more difficult, then there could be displacement to other media platforms on which pornography can be found. As this and other surveys (Thurman & Obster, 2021) have shown, Western European adolescents are being exposed to pornography on other platforms such as social media, search engines, YouTube, and messaging apps, and even offline, via magazines and DVDs (albeit infrequently among a small minority).

Article 23 does not attempt to regulate DVDs or magazines,[8] but it could, in theory, be used against social media platforms, search engines, and YouTube. However, it is a relatively blunt instrument for that purpose. It allows the regulator to ask the président du tribunal de judiciaire de Paris to order noncompliant sites to be blocked to users within France and delisted by search engines and directories. It seems unlikely, however, that there would be public support or political will to block entire social media platforms or search engines from French users just because they contained some pornographic content that was viewed by some under-18s. Under the existing French penal code, fines of up to €375,000 can be imposed on corporations for disseminating pornography to minors (Hammadi & Licata Caruso, 2021), a sanction that may not be much of a deterrent for tech giants like Twitter. By contrast, the UK's Draft Online Safety Bill would allow fines of up to £18 million or 10% of qualifying worldwide revenue (whichever is higher).

It is not just the sanctions contained within the Draft Online Safety Bill that may make it a more effective instrument than Article 23 at preventing minors accessing pornography on social networking sites and search engines. Under Article 23, action can only be triggered

when minors have access to pornographic content. By contrast, the Draft Online Safety Bill targets a greater range of legal but harmful content such as online bullying and abuse, advocacy of self-harm, and disinformation and misinformation. The wider scope of the draft bill may give it, and any sanctions it triggers, greater public and political support.

Furthermore, the bar for contravening Article 23 is very low. Action can, in theory, be taken when an online publisher allows only two minors to have access to one piece of pornographic content. Setting such a low bar means those applying Article 23 might find it difficult to adhere to one of the core principles of the rule of law, that it be applied equally. Given that, as this survey has shown, it is not just dedicated pornographic websites that are in contravention of Article 23, but also social media platforms, search engines, and YouTube, the eight dedicated pornographic websites being targeted by ARCOM may argue that they are being unfairly singled out.

By contrast, the Draft Online Safety Bill only applies to services that have a significant number of users, and the requirements for in-scope services emphasize proportionality, differing depending on the type and severity of the content and the size and functionality of the service. The bill also emphasizes processes and procedures, recognizing the difficulties of preventing, entirely, children's exposure to harmful content and, instead, requiring that such exposure is minimized and such content identified and taken down. This graduated approach may provide any future regulator with a framework that can be more equitably applied than is the case with Article 23.

CONCLUSION

In general terms, this survey has furthered our understanding of the proportions of Western European adolescents who have been exposed to pornography, how frequent and long that exposure is, and what socio-demographic differences in consumption exist. Such data is needed, given that "exact aggregate figures about adolescents' pornography use seem difficult to derive from the literature" (Peter & Valkenburg, 2016), how "few studies have considered the length of time spent viewing pornography", and the discrepancies contained in the literature regarding the regularity of exposure (Horvath et al., 2013, p. 22).

More specifically, this study has extended the sparse evidence there is about the media platforms via which adolescents are accessing pornography. This is important, given that emerging legislative and regulatory attempts to limit the access to legal online pornography differ in the media platforms they target. This study's findings are, in some regards, in line with similar research from the UK (Thurman & Obster, 2021). The combined findings show, firstly, that dedicated pornographic sites are the most frequent source of pornography for UK and French adolescents, and that a substantial minority have visited such sites; and, secondly, that other online platforms, in particular social media and search engines, are also sources of pornography for substantial minorities or even majorities, although not as recently.

Such evidence has implications for legislators and regulators—such as those in Canada and France—whose legislation, and/or the implementation thereof, is focussed on a subset of online platforms, whether that be "commercial" pornographic sites (as in Canada) or a selection of dedicated pornographic websites (as in France). The variety of platforms on which adolescents are exposed to pornography means that the regulation of some platforms, but not others, could result in consumption being displaced from the regulated to the unregulated platforms. Furthermore, the evidence that this study has collected on the range of dedicated pornographic websites visited by French adolescents shows that, even if regulators succeed in getting the most visited of such sites to implement age verification, the proportion of adolescents exposed to dedicated pornographic websites may not fall a great

deal, given the possibility of displacement to sites that evade the regulators' attention and the possibility that age-verification controls are circumvented using social engineering or technical means.

In its comparison of emerging legislative approaches, this study has also highlighted differences in who and what is being regulated, in what is required of publishers, and in the proposed sanctions for noncompliance. We have made the case that targeting a wider range of "legal but harmful" content, making requirements for publishers more process-based and context-sensitive, and allowing regulators to take a risk-based prosecution strategy and to apply tougher sanctions may maximize the chances that regulation has the intended effects.

Of course, given that none of the emerging legislation discussed has, at the time of writing, had a significant impact on the accessibility of legal online pornography for under-18s, we can but speculate on its effects. However, if and when Article 23 prompts the implementation of age-verification systems on sites available in France that carry pornography, or the blocking of those sites if they do not implement such systems, the data this study has gathered will provide one way to quantify the effects of those changes.

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ENDNOTES

[1] Defined as either sexually explicit videos or pictures seen on online pornographic websites or sexually explicit porn videos or pictures seen on at least one of seven other online or offline media platforms.

[2] Defined as sexually explicit pornographic videos or pictures seen on dedicated pornographic sites, social media, search engines, or YouTube, or received via messaging apps. Email was not considered an online platform for the purposes of this analysis because, when it is used as a form of peer-to-peer communication, it is not regulated in the same way as content published online.

[3] The median number of days since last exposure is slightly lower for dedicated pornographic sites than for exposure via any media platform because not every respondent answered every question. Also, the median number of days since last exposure is slightly higher for the "Any dedicated pornographic site" category than for one of its constituent categories ("Any other dedicated pornographic site") because not every respondent answered every question.

[4] In October 2018, Comscore was tracking the use of 2406 "XXX Adult" websites by their UK panellists. In July 2021, this number was 723. This reduction does not necessarily mean there has been a reduction in the number of adult sites over that period. It may simply be reflective of the number of sites that Comscore, for their own reasons, choose to track.

[5] By UK visitors (aged 18+) via desktop PCs to websites in Comscore's "XXX Adult" category, October 2018.

[6] Jacquieetmichel.net, jacquieetmicheltv.net, and jacquieetmicheltv2.net.

[7] This said, the sites within the Jacquie et Michel stable that have imposed age-verification controls in response to Article 23 appear to have done so for all users, not just those within France.

[8] That pornography on these long-regulated offline platforms is still accessed by French minors is indicative of the limits of regulation.

REFERENCES

ACCS. (n.d.). *Age check certification scheme*. https://www.accscheme.com/about
BBFC. (2019). *Frequently asked questions*. https://www.ageverificationregulator.com/faq/#9
BBFC. (2020). *Young people, pornography & age-verification*. https://www.revealingreality.co.uk/wp-content/uploads/2020/01/BBFC-Young-people-and-pornography-Final-report-2401.pdf

Bundesamts für Justiz. (2007). *Telemediengesetz (TMG).* https://www.gesetze-im-internet.de/tmg/

Burgess, M. (2021). Germany is about to block one of the world's biggest porn sites. *Wired.co.uk*, 14 July. https://www.wired.co.uk/article/germany-porn-laws-age-checks

Burgess, M. (2022). Twitter has started blocking porn in Germany. *Wired.com*, 15 February. https://www.wired.com/story/twitter-porn-block-germany-age-verification

Chen, L., Jiang, X., Wang, Q., Bőthe, B., Potenza, M. N., & Wu, H. (2021). The association between the quantity and severity of pornography use: A meta-analysis. *The Journal of Sex Research*, 1–16. https://doi.org/10.1080/00224499.2021.1988500

CPPAP. (n.d.). *Définition d'un service de presse en ligne*. http://www.cppap.fr/definition-dun-service-de-presse-en-ligne/

DCMS. (2017). *Particulars of proposed designation of age-verification regulator*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669567/particulars_of_proposed_designation_of_age-verification_regulator_-_december_2017.pdf

DCMS. (2021). *Draft online safety bill*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/985033/Draft_Online_Safety_Bill_Bookmarked.pdf

DCMS. (2022). World-leading measures to protect children from accessing pornography online. https://www.gov.uk/government/news/world-leading-measures-to-protect-children-from-accessing-pornography-online

Die medienanstalten. (2020). *Medienstaatsvertrag (MStV)* [Interstate Treaty on the Media (MStV)]. https://www.die-medienanstalten.de/fileadmin/user_upload/Rechtsgrundlagen/Gesetze_Staatsvertraege/Medienstaatsvertrag_MStV.pdf

ESOMAR. (2007). *ICC/ESOMAR international code on market, opinion and social research and data analytics*. https://esomar.org/uploads/attachments/ckqtawvjq00uukdtrhst5sk9u-iccesomar-international-code-english.pdf

EU. (2018). Directive (EU) 2018/1808 of the European Parliament and of the Council. *Official Journal of the European Union*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L1808%26from=EN

Guillaume, E., & de Saint-Pern, C. (2020). Audiovisual: The French government implements the new version of the audiovisual media services directive. *Concurrences*. https://www.concurrences.com/en/review/issues/no-1-2021/case-comments/audiovisual-the-french-government-implements-the-new-version-of-the-audiovisual

Hammadi, A., & Licata Caruso, D. (2021). Accès des mineurs à la pornographie: 5 minutes pour comprendre l'assignation en justice des fournisseurs Internet. *Le Parisien*, 9 September. https://www.leparisien.fr/high-tech/acces-des-mineurs-a-la-pornographie-5-minutes-pour-comprendre-lassignation-en-justice-des-fournisseurs-internet-09-09-2021-IDCQWP744FA75KZZQAMJV5YUDI.php

Horvath, M. A. H., Alys, L., Massey, K., Pina, A., Scally, M., & Adler, J. R. (2013). *Basically… porn is everywhere: A rapid evidence assessment on the effects that access and exposure to pornography has on children and young people (Project Report).* Office of The Children's Commisioner for England. http://eprints.mdx.ac.uk/10692/

Insee. (2003). *Consulter la PCS 2003*. https://www.insee.fr/fr/metadonnees/pcs2003/categorieSocioprofessionnelleAgregee/1?champRecherche=true

KJM. (2020) *Staatsvertrag über den Schutz der Menschenwürde und den Jugendschutz in Rundfunk und Telemedien (Jugendmedienschutz-Staatsvertrag—JMStV)* [State Treaty on the Protection of Human Dignity and the Protection of Minors in Broadcasting and Telemedia (Interstate Treaty on the Protection of Minors in the Media—JMStV)]. https://www.kjm-online.de/fileadmin/user_upload/Rechtsgrundlagen/Gesetze_Staatsvertraege/Jugendmedienschutz-Staatsvertrag_JMStV.pdf

Légifrance. (2020). LOI no 2020-936 du 30 juillet 2020 visant à protéger les victimes de violences conjugales. *Journal Officiel de la République Française*. https://www.legifrance.gouv.fr/download/pdf?id=shLVial2GFAvXVHYawAie63PzXyh2U2x_naRfEud_Wg=

Légifrance. (2021). *Code pénal Article 227-24*. https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000043409165

Matthews-King, A. (2018). Porn site age verification to be in force by spring next year after delays, minister says. *The Independent*, 13 November. https://www.independent.co.uk/news/uk/home-news/porn-site-age-verification-uk-pornhub-sex-online-adult-video-government-id-a8631886.html

McCullagh, P., & Nelder, J. A. (1989). *Generalized linear models*. Chapman and Hall.

Minister of Justice. (2021). *Canada: Criminal code*. https://laws-lois.justice.gc.ca/PDF/C-46.pdf

Morgan, N. (2019). *Online Harms: Written Statement—UIN HLWS12*. https://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Lords/2019-10-16/HLWS12/

My18Pass.com. (2021). https://my18pass.com

Nash, V., Adler, J. R., Horvath, M. A. H., Livingstone, S., Marston, C., Owen, G., & Wright, J. (2015). *Identifying the routes by which children view pornography online: Implications for future policy-makers seeking to limit viewing*. Department for Culture, Media and Sport. http://eprints.lse.ac.uk/65450/

Peter, J., & Valkenburg, P. M. (2016). Adolescents and pornography: A review of 20 years of research. *Journal of Sex Research*, *53*(4–5), 509–531.

R Core Team. (2021). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. https://www.R-project.org/

Rasmussen, K. R., Grubbs, J. B., Pargament, K. I., & Exline, J. J. (2018). Social desirability bias in pornography-related self-reports: The role of religion. *Journal of Sex Research*, *55*(3), 381–394.

Sénat. (2020). Amendement. https://www.senat.fr/enseance/2019-2020/483/Amdt_92.html

Senate of Canada. (2021). *Bill S-210: An Act to Restrict Young Persons' Online Access to Sexually Explicit Material*. https://www.parl.ca/LegisInfo/en/bill/44-1/S-210

Smirnova, S., Livingstone, S., & Stoilova, M. (2021). *Understanding of user needs and problems: A rapid evidence review of age assurance and parental controls.* London School of Economics and Political Science (LSE). https://euconsent.eu/download/understanding-of-user-needs-and-problems-a-rapid-evidence-review-of-age-assurance-and-parental-controls/

State of Utah. (2021). *House Bill (H.B.) 72 Device Filter Amendments*. https://le.utah.gov/%7E2021/bills/static/HB0072.html

Svedin, C. G., Åkerman, I., & Priebe, G. (2011). Frequent users of pornography. A population based epidemiological study of Swedish male adolescents. *Journal of Adolescence*, *34*(4), 779–788. https://doi.org/10.1016/j.adolescence.2010.04.010

Thurman, N., & Obster, F. (2021). The regulation of internet pornography: What a survey of under-18s tells us about the necessity for and potential efficacy of emerging legislative approaches. *Policy & Internet*, *13*, 415–432. https://doi.org/10.1002/poi3.250

Titheradge, N., & Croxford, R. (2021). The children selling explicit videos on OnlyFans. *BBC News Online,* 27 May. https://www.bbc.com/news/uk-57255983

TSO. (2017). *Digital Economy Act 2017*. The Stationery Office. https://www.legislation.gov.uk/ukpga/2017/30/pdfs/ukpga_20170030_en.pdf

TSO. (2019). The Online Pornography (Commercial Basis) Regulations 2019. https://www.legislation.gov.uk/uksi/2019/23/pdfs/uksi_20190023_en.pdf

Utah Criminal Code. (2013). *Title 76. Utah Criminal Code*. https://le.utah.gov/xcode/Title76/C76_1800010118000101.pdf

Vera-Gray, F., McGlynn, C., Kureshi, I., & Butterby, K. (2021). Sexual violence as a sexual script in mainstream online pornography. *The British Journal of Criminology*, *61*(5), 1243–1260. https://doi.org/10.1093/bjc/azab035

Vinocur, N. (2021). French regulator issues age verification ultimatum to porn sites. *Politico.eu*, 16 March. https://www.politico.eu/article/french-regulator-issues-age-verification-ultimatum-to-porn-sites

Waterson, J. (2019). UK's porn age-verification rules can be circumvented in minutes. *The Guardian,* 19 April. https://www.theguardian.com/society/2019/apr/19/uks-porn-age-verification-rules-can-be-circumvented-in-minutes

Woods, B. (2016). The (almost) invisible men and women behind the world's largest porn sites. *The Next Web*, 3 March. https://thenextweb.com/news/the-almost-invisible-men-and-women-behind-the-worlds-largest-porn-sites

SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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