



The impact of fireworks regulations: case studies



CRIME AND JUSTICE

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Purpose of the paper

This paper consists of seven case studies, each one aligned to one or more of the legislative options that have been considered by the Firework Review Group¹. Taking each case study in turn, the paper outlines the relevant fireworks regulations in the respective country before assessing the impact and effectiveness of the regulations. One or more of the case studies includes the ‘best available’ evidence on the following: fireworks-related injuries², crime³, anti-social behaviour, emergency services (fire, ambulance, and police), the environment and firework imports. For some countries there is more or less evidence on each area than others. Where relevant, the case studies also include evidence on the effectiveness of mitigating actions in addition to the implementation and enforcement of regulations. The paper intended to aid the Group’s evidence informed appraisal of the legislative options.

The legislative options that have been considered are outlined in the table below, with each one assigned a reference letter. The current fireworks regulations in each of the case study countries are matched with these options where relevant. None of the case study countries included currently have regulations in place concerning the use of fireworks on private property (option C) or a proxy purchasing offence for supplying fireworks to those under 18 (option G).

Aligned Legislative Options	Reference	Case Study*
Ban on sale of fireworks to general public	A	
Licencing the sale of fireworks	B	
Restrictions on the use of fireworks on private property	C	None
Restrict times and days when fireworks can be set off	D	

¹ The [Firework Review Group](#) was established in 2019 to look at options for legislative change and to provide clear, evidence based recommendations to Scottish Ministers on tightening legislation on fireworks in Scotland. The Group is externally chaired and has representation from a number of key stakeholder organisations including the fireworks industry, animal welfare representatives, the Scottish Fire and Rescue Service and NHS Scotland. The Group submitted their final report and recommendations to Ministers at the end of October 2020.

² In some countries fireworks related eye injuries are looked at separately from injuries as a whole.

³ The specific aspects covered within this area varies according to the case study country and the available data.

Notification system before fireworks can be used	E	
No fireworks areas or zones	F	
Proxy purchasing offence in relation to the supply of fireworks to those under 18	G	None
Restrictions on times fireworks can be sold	H	
Restrictions on volume of fireworks that can be purchased	I	
Mandatory conditions at point of sale	J	
Other	K	

*  = Australia  = Finland,  = Germany  = Netherlands,  = New Zealand,  = Northern Ireland,  = Rep. of Ireland

Countries included

Individual case studies are included for each of the following: Australia (states and territories), Finland, Germany, the Netherlands, New Zealand, Northern Ireland and the Republic of Ireland.

In October 2019 the Scottish Government published [Fireworks legislation and impacts: international evidence review](#), which considered the regulations on the sale and use of fireworks in a number of countries. From the evidence review, it emerged that the regulations adopted in these seven areas were most aligned with the legislative options being considered by the Fireworks Review Group.

Methodology/Approach

The case studies were devised between April and August 2020, using a desk-based research approach consisting of two broad parts:

- 1) published research/data
- 2) information requests

The former involved sourcing and consulting relevant publically available research and data for each country. To help with this the Scottish Government library team carried out a literature search across several databases. In addition, some departments and organisations had publically available data, mostly via online portals and publications. Whilst this yielded a number of useful resources, a large part of the project involved requesting information directly from individual public sector departments, bodies and organisations. Those contacted varied according to the area but generally included: government departments, emergency services, health boards, regulators, statistical agencies and research centres. On several occasions this resulted in a 'snowball effect' whereby original contacts suggested other people or organisations to get in touch with. Through this process, over 90 organisations or individuals were contacted directly. Several contacts shared data and/or provided anecdotal and contextual information.

The 2019 Scottish Government evidence review referenced above formed the basis for much of the contextual information included such as the current regulations in each country. A number of the sources consulted as part of the evidence review were also considered as part of the case studies.

Notes on the evidence

There are two EU Pyrotechnic Directives which standardise EU member states' regulations on fireworks⁴:

- [Directive 2013/29/EU](#) sets harmonised rules for fireworks in the EU
- [Directive 2014/58/EU](#) establishes a system for the traceability of fireworks on the market

Directive 2013/29/EU sets out essential safety requirements for the design, manufacturing, labelling and supply of fireworks in the EU. Importers and distributors of fireworks must ensure that fireworks available on the market have followed the conformity assessment procedures.

Under the Directive, fireworks are divided into four categories and minimum age limits are set for the purchase of each category which importers and distributors must adhere to:

- Category F1: 12 years
- Category F2: 16 years
- Category F3: 18 years
- Category F4: Professionals

⁴ <https://www.gov.scot/publications/fireworks-legislation-impacts-international-evidence-review/pages/3/>

Although the impact and effectiveness of the Directives is not within the scope of this paper, it is probable that the requirements will have contributed to some of the findings presented in this paper for EU countries. It is not possible to separate any impact of the Directives from the impact of country specific firework regulations or other external factors.

The below table summarises the EU fireworks categories and the corresponding terminology used at times throughout the paper. Although the categories are fixed, the accompanying descriptions varied at times by country.

EU Categorisation	Commonly referred to
F1	indoor fireworks, sparklers, novelties
F2	consumer, public, garden, retail, type 2
F3	display
F4	display, professional

There are a number of other important points about the evidence base that need to be borne in mind. Taken together, these issues mean that the evidence is incomplete. Yet, in spite of this, the case studies move us away from relying solely on anecdotes and they provide an overview of the best available evidence in this area.

Anecdotal evidence: A handful of public sector agencies/bodies and government departments responsible for the regulations included anecdotal evidence in their response to information requests, and this was mainly provided in the absence of data. Only anecdotal evidence sourced in this way is included and it is clearly stated when the paper is drawing on this type of anecdotal evidence.

Attribution vs Contribution: As is the case with most social policy interventions, the evidence included was not able to definitively (in a purist sense) attribute any changes to the impact of regulations per se, because none of the evidence sourced was able to control or account for the possible influence of external factors. Rather, the evidence is better placed to highlight instances where regulations may have contributed to an observed change, although in some cases there would appear to be a strong correlation between the introduction of regulations and a change. Conversely, there are number of instances where the evidence is more suggestive and therefore should be interpreted with caution.

COVID-19: This research was carried out over the period of the COVID-19 pandemic. Consequently, resources were diverted in a number of the organisations contacted for information, meaning that they did not have the capacity to deal with the request at the time.

Imperfect evidence: The quantity and quality of evidence available varied between and within countries, with more or 'better' evidence available for some areas than others. In addition, the measures and time periods covered varied according to the source. In many instances, data was not available for before and after the implementation of regulations, making it difficult to assess their effect.

Police recorded crime data: This only includes crimes which come to the attention of the police and the numbers can be affected by reporting behaviours, public awareness, police activity and legislative changes.

Small numbers: Much of the evidence included deals with relatively small numbers, making it more susceptible to annual fluctuations. This can make it more challenging to identify if a new regulation has contributed to an observed change. In many instances, a longer term view may be required to ascertain the effect of regulations.

Time restrictions: The research was carried out in a relatively short period of time, meaning that it does not amount to an exhaustive review of the evidence in each country. Consequently, it is likely that not all relevant evidence was captured by the case studies.

Translation: Whilst the majority of the information concerning Finland, Germany and the Netherlands was available in English, there were a number of sources which required translation. With the Netherlands in particular there were a number of additional sources which could not be readily translated, therefore they could not be included.

Whole evidence base: This paper is not intended to be viewed in isolation, rather it should be considered alongside the other forms of evidence that have been considered by the Group.

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Main points from the case studies

Aligned Legislative Options	Reference	Case Study*	Evidence summary
General		General	<ul style="list-style-type: none"> • The evidence concerning the implementation and impact of fireworks regulations is imperfect and incomplete, but the research moves us beyond relying solely on anecdotal evidence. • Countries have introduced a range of different measures to tackle the negative consequences of fireworks use and there are indications that some may have had a positive impact. However it can be challenging to establish the effect of these over the long term – especially if they are enacted alongside other initiatives or there is insufficient data. • Linked to the above, there is a lack of metrics in place to monitor and evaluate the impact of fireworks regulations. • Only studies in the Netherlands and Northern Ireland look at the impact of a single aligned legislative option. However, social policies are not introduced in isolation from external factors and activities. Consequently, the studies are not able to account for the possible influence of other factors, as is the case with most policy interventions. • The majority of the evidence included does not concern the possible impact or effectiveness of a single regulation, as a number of measures were enacted at the same time, as is more often the case with new regulations. • Although the evidence base does not allow us to categorically conclude that regulations alone have led to an observed change, there are a number of instances where it appears there is a clear association between regulations being enacted and a change occurring.

			<ul style="list-style-type: none"> • The majority of the available evidence examines the possible impact of regulations on fireworks-related injuries (as a whole and specific to eye injuries). • It is likely that the police figures on firework crimes and offences only captures a portion of illegal firework activities.
Ban on sale of fireworks to general public	A		<ul style="list-style-type: none"> • The number of firework-related offences reported to or becoming known to the police has been markedly lower following the ban on consumer fireworks in the Australian Capital Territory (ACT) in 2009. • The number of firework seizures carried out by police in the ACT has been largely unchanged following the fireworks ban. • In Ireland, the 2005 consultation process which concluded with the introduction of new firework offences, increased penalties and greater Gardaí investigative powers, was initiated on the back of growing concerns around illegal fireworks and the misuse of fireworks, especially against the emergency services.
Licensing the sale of fireworks	B		<ul style="list-style-type: none"> • Following the introduction of the Northern Ireland licensing system in 2002, there was an immediate marked reduction in the number of people sustaining injuries caused by fireworks⁵. • Rigorous evidence shows that since the introduction of a licensing system in Northern Ireland, the number of persons injured by fireworks has been lower compared to before the regulations were enacted⁶. • In Northern Ireland the number of recorded offences for buying/possessing/using fireworks without a valid licence increased

⁵ Around the Halloween period, 17 October to 14 November each year.

⁶ With the exception of 2007.

			<p>consecutively from 2006 to 2011. Since then there has been no clear trend, although the figures have remained below the 2011 peak.</p> <ul style="list-style-type: none"> No available evidence on the licensing system in Tasmania (Australia) could be sourced.
Restrictions on the use of fireworks on private property	C	None	N/A
Restrict times and days when fireworks can be set off	D		<ul style="list-style-type: none"> Evidence from Finland indicates that there was a marked decline in the number of bystanders and firework users sustaining fireworks-related eye injuries following the enactment of measures in 2010. These included time restrictions on when fireworks can be used on New Year's Eve. In the Netherlands, the number of people sustaining fireworks-related injuries (as a whole and eye injuries) has been consistently lower following the 2015 reduction in the usage period on 31 December from 16 hours to 8 hours, with the decline most pronounced amongst bystanders. During this time there was a number of firework safety campaigns, which may have had an effect also. In Germany, the public use of fireworks on 31 December and 01 January (the only permitted time) contributes to a spike in fine-particle emissions. In Germany, a three year study of fireworks-related eye injuries sustained over the New Year period found that minors were disproportionately affected and the majority of those injured were bystanders, leading the study to raise concerns as to whether existing regulations are sufficient. Data from the Netherlands suggests that regulations restricting when fireworks can be used coincided with a marked decline in the volume of firework imports. There are signs however that this is recovering.

Notification system before fireworks can be used	E		<ul style="list-style-type: none"> No available evidence on this option could be sourced.
No fireworks areas or zones	F		<ul style="list-style-type: none"> Anecdotally, authorities in Berlin and Munich have reflected positively on the introduction of firework free zones for New Year's Eve, notwithstanding the additional resources required to enforce them. The zones are to remain in force going forward. Anecdotal evidence from the Dutch Police suggests that introduction of firework free zones resulted in a shift in hot spots for firework use.
Proxy purchasing offence in relation to the supply of fireworks to those under 18	G	None	N/A
Restrictions on times fireworks can be sold	H		<ul style="list-style-type: none"> There is no clear indication that the two day sales period introduced in 2003 in the Northern Territory (Australia) had an impact on the number of people injured by fireworks. Evidence from the Northern Territory indicates that the number of persons with firework-related injuries declined sharply in 2008 coinciding with the sales period being reduced to one day and the legal purchasing age being raised to 18. Although any affect appears to have weakened by 2011. In Germany, a three year study of fireworks-related eye injuries sustained over the New Year period found that minors were disproportionately affected and the majority of those injured were bystanders, leading the study to raise concerns as to whether existing regulations are sufficient. Evidence shared by the Dutch Police notes that the number of incidents occurring in the vicinity of firework retailers, is 3-5 times higher during the permitted fireworks sales period compared to when they are not for sale.

			<ul style="list-style-type: none"> • Evidence from New Zealand indicates that fireworks-related hospital discharges during the permitted sales window have been consistently lower since it was reduced to four days and the legal age for purchasing raised to 18. However this could partly reflect the fact that there are fewer days in which discharges can be recorded as occurring during the sales window, rather than the effectiveness of the regulations per se. • Evidence shows that a decline in the number of firework-related incidents attended by the New Zealand Fire and Emergency Service throughout November coincided with the enactment of regulations which reduced the sales window and raised the legal age. However, in both instances it would appear that any effect was not fully sustained over the longer term. • Data indicates the value of New Zealand firework imports initially declined following the narrowing of the sales window and raising the minimum age (both in 2001 and 2007) before fluctuating thereafter.
Restrictions on volume of fireworks that can be purchased	I		<ul style="list-style-type: none"> • No available evidence on this option could be sourced.
Mandatory conditions at point of sale	J	   	<ul style="list-style-type: none"> • No available evidence on the licensing system in Tasmania (Australia) could be sourced. • Due to the infancy of regulations in the Netherlands regarding the compulsory provision of safety goggles, ignition fuses and user manuals by retailers (enacted in 2019), there isn't yet any evidence regarding the impact of these measures. • Following the introduction of the Northern Ireland licensing system in 2002, there was an immediate marked reduction in the number of people sustaining injuries caused by fireworks⁷

⁷ Around the Halloween period, 17 October to 14 November each year.

			<ul style="list-style-type: none"> • Evidence shows that since the introduction of the licensing system in Northern Ireland, the number of persons injured by fireworks has been lower compared to before the regulations were enacted. • In Northern Ireland the number of recorded offences for buying/possessing/using fireworks without a valid licence increased consecutively from 2006 to 2011. Since then there has been no clear trend, although the figures have remained below the 2011 peak.
Other	K		<ul style="list-style-type: none"> • Evidence indicates that following the enactment of a set measures in 2010 which included the mandatory wearing of safety goggles for firework users, there was a marked decline in the number of people sustaining fireworks-related eye injuries. • Evidence suggests that the mandatory wearing of safety goggles for firework users, helped mitigate against more severe eye injuries being sustained.

*  = Australia  = Finland,  = Germany,  = Netherlands,  = New Zealand,  = Northern Ireland,  Rep. of Ireland

AUSTRALIA

Main points

- With the exception of the Northern Territory and Tasmania, public use of fireworks is banned in all states and territories.
- The number of fireworks related offences reported to or becoming known to the police has been markedly lower following the ban on consumer fireworks in the Australian Capital Territory (ACT) in 2009.
- The number of firework seizures carried out by police in the ACT has been largely unchanged following the fireworks ban.
- In the Northern Territory there is no clear indication that the two day sales period enacted in 2003 had an impact on the number of people sustaining fireworks injuries.
- Evidence indicates that the number of persons with firework-related injuries declined sharply in 2008 coinciding with the sales period being reduced to one day and the legal purchasing age being raised to 18. Although any affect appears to have weakened by 2011.
- Since 2011 there has been no increasing or decreasing trend in the number of people with fireworks-related injuries in the Northern Territory.
- The most prevalent recorded fireworks offence in the Northern Territory concerns 'possessing fireworks outside the approved period'.
- In recent years, a similar number of firework-related disturbances in the Northern Territory occurred in July (fireworks season) as throughout the rest of the year.
- No relevant evidence could be sourced concerning the impact of regulations in Tasmania.

Current fireworks regulations

Fireworks regulations are devolved to the individual Australian states and territories. With the exception of the Northern Territory and Tasmania, the use of fireworks by the public is banned in all jurisdictions⁸, with only small novelties such as party poppers and sparklers

⁸ Consumer fireworks were banned in Western Australia in 1967, Queensland 1972, Victoria 1985, New South Wales 1987, South Australia 2001 and the Australian Capital Territory 2009.

legal. Generally speaking⁹, only trained and licensed pyrotechnicians are permitted to possess and use fireworks. With the exception of the Australian Capital Territory (ACT), the limited available evidence from these jurisdictions can be found in Annex A. The ACT was the latest jurisdiction to prohibit consumer fireworks, with the ban introduced in 2009. Owing to the timing of the ban and availability of evidence, the ACT is included in the main paper- aligned legislative option A.

In the Northern Territory¹⁰:

- Consumer fireworks can be bought and used by the public on 01 July only (in celebration of Territory Day)
- They are only permitted to be bought by persons aged 18 and over, from 9 am to 9 pm and used between 6 pm and 11 pm
- Consumer fireworks can only be possessed by the public from 9 am on 01 July to 12 noon on 02 July
- Any consumer fireworks unused during the approved period must be handed into designated offices by 12 noon on 02 July
- People aged 12 and over can possess consumer fireworks in the Northern Territory
- Aligned legislative options: D, H

In Tasmania¹¹:

- Anyone aged 18 and over can apply for a permit to hold a fireworks display (Type 2) on 'Cracker Night' (24 May)
- Applications must be submitted at least 21 days in advance
- WorkSafe Tasmania issues approximately 600 Type 2 permits per year¹²
- All other firework displays must be conducted by a pyrotechnician endorsed by WorkSafe Tasmania or another regulator and for an 'approved purpose' only e.g. community fair, Chinese New Year etc.

⁹ Some exceptions exist e.g. in New South Wales a person can apply for a fireworks single use licence if they are holding a public display and have successfully completed training/instruction given by a person with a current pyrotechnicians licence or pyrotechnicians permit. Other conditions also apply.

¹⁰ <https://worksafe.nt.gov.au/safety-and-prevention/fireworks>

¹¹ <https://worksafe.tas.gov.au/topics/licensing-permits-and-registration/fireworks-permits>

¹² Information provided by WorkSafe Tasmanian via email, 31 July 2020.

- All permit holders (including public 'Cracker Night' permits) must comply with a number of conditions including notifying necessary authorities¹³ seven days in advance, holding their display between 6 pm and 10 pm for a maximum of 30 minutes and having the necessary fire equipment on site.
- Aligned legislative options: B, D, J

No relevant evidence from Tasmania could be sourced for this paper.

Australian Capital Territory- policy background

From 2002-2008 a number of regulatory changes were made, with each firework season operating under an ever tightening system. By 2008 consumer fireworks could only be sold by licensed sellers to ACT residents aged 18 and over, from 8 am Friday- 5 pm Sunday of the Queen's Birthday weekend (June)¹⁴. Fireworks could only be used between the hours of 5 pm and 9 pm on the Saturday and Sunday of that weekend, with use generally only permitted in private gardens¹⁵. Yet evidence suggested that continuing to allow fireworks, while amending and tightening the existing regulations, did not have the desired impact. On the contrary, there was a marked increase in the number of fireworks related complaints (includes discharge of fireworks outside the permitted times, noise and to damage caused by fireworks), fires and dog incidents in 2007 and 2008, with firework sales also rising. Amid growing concerns amongst the ACT community, coupled with the evidence, the ACT government banned the importation, sale and use of consumer fireworks in 2009¹⁶.

Impact of regulations: crime

Australian Capital Policing provided data on the number of firework-related offences reported to or becoming known to the police. The data covers 2005 to 2019, allowing for a comparison before and after the ban on consumer fireworks in 2009. As we can see from Table 1, the number of offences has been markedly lower following the ban. Since the 7 offences recorded in 2010, there has been 3 or fewer offences each year, compared to an average of 18 for 2005-2008.

¹³ Includes: police, fire service, local council and local property/land owners.

¹⁴ Previously could be sold for a week from 8 am on the first Monday in June until 5 pm on the second Monday in June.

¹⁵ <https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwikj5fygvLqAhUjQUEAHXdED6QQFjAAegQIAxAB&url=http%3A%2F%2Fwww.legislation.act.gov.au%2Fsl%2F2008-21%2F20080514-36588%2Fpdf%2F2008-21.pdf&usq=AOvVaw2wLbQxqctPCC3n80R36vbh>

Previously could be used on three nights on the Queen's Birthday long weekend (Saturday, Sunday and Monday).

¹⁶ <https://www.abc.net.au/news/2009-08-24/act-bans-fireworks/1402218#:~:text=The%20ACT%20Government%20has%20banned,of%20fireworks%20in%20the%20Territory.>

Table 1: Firework-related offences reported to or becoming known to the police, 2005-2019

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Firework-related offences	26	14	11	22	23	7	3	2	3	1	3	3	2	1	2

Source: Australian Capital Policing, PROMIS

Australian Capital Policing also shared figures detailing the number of firework seizures from 2005 to 2019. This data concerns the number of seizures carried out and is not a measure of the volume of fireworks seized. Table 2 shows that there is no increasing or decreasing trend in the number of seizures conducted by the police. Furthermore, excluding the outliers of 2008 and 2009, the figures have been fairly unchanged following the fireworks ban.

Table 2: Number of firework seizures carried out by police, 2005-2019

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Firework seizures	33	26	33	94	80	47	23	26	29	37	31	23	37	15	22

Source: Australian Capital Policing, PROMIS

Northern Territory- policy background

In January 1982, the Northern Territory Cabinet considered a submission in relation to public safety and nuisance issues arising from the public use of fireworks. At that time, fireworks could be let off by the public on two occasions each year: Territory Day on 01 July and Guy Fawkes on 05 November. The submission noted that the police, the fire brigade and the Department of Mines and Energy received many complaints regarding the use of fireworks outside the designated hours for the two celebrations. After considering a number of options the submission recommended banning the public sale of fireworks entirely. However Cabinet did not accept the recommendation and instead opted to limit the period in which the public could use fireworks to 01 July only¹⁷.

In 2003 the public sales period was reduced to two days and this was cut further in 2008 to 01 July only. At the same time the legal age to buy fireworks was raised from 16 to 18¹⁸. The Northern Territory Government has continued to allow permit free public access to consumer fireworks on 01 July, on the basis that it is an important local cultural event- celebrating the anniversary of self-government from the

¹⁷ <https://dtsc.nt.gov.au/arts-and-museums/northern-territory-archives-service/cabinet-records/1982-records/fireworks>

¹⁸ https://www.racp.edu.au/docs/default-source/events/congress-2019-presentations/racp-mon-6-priya--janagaraj.pdf?sfvrsn=4f93181a_2

Commonwealth of Australia in 1978. It is an offence for anyone under the age of 12 to be in possession of a fireworks in the Northern Territory¹⁹. It should also be highlighted that Northern Territory allows the sale and use of bangers, a product which is prohibited in the UK.

Impact of regulations: injuries

Since 1998 the Northern Territory Centre for Disease Control (CDC) has conducted a yearly survey of patients presenting to acute care health facilities with fireworks-related injuries during the fireworks season (the week around Territory Day)²⁰. Data from 1998 to 2019 is outlined in Graph 1.

From the data we can see that there is no increasing or decreasing trend in the number of persons presenting with firework-related injuries during the fireworks season. Instead, there has been yearly variation. Furthermore, it would appear that the regulations introduced in 2003, which saw the sales window reduced to two days, had no clear effect on the number of people sustaining fireworks injuries.

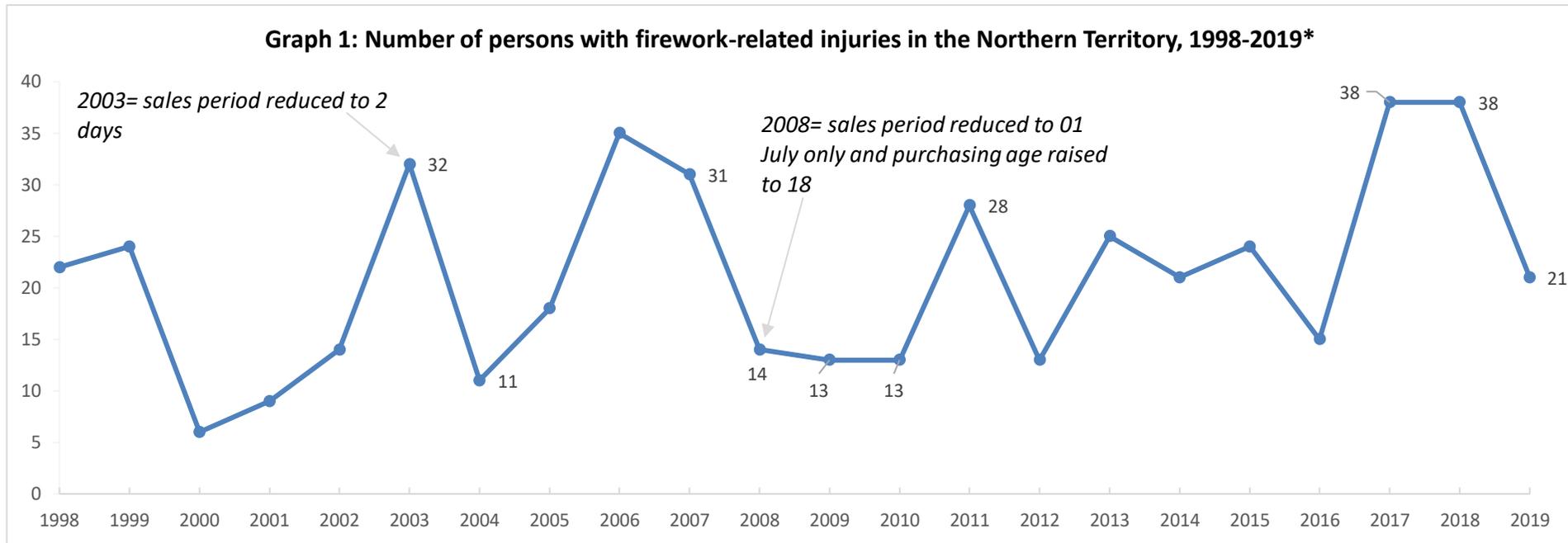
Yet, the number of persons with firework-related injuries declined sharply in 2008 coinciding with the sales period being reduced to one day and the legal purchasing age being raised to 18. The figure dropped from 31 in 2007 to 14 2008, and was 13 in 2009 and 2010. However any 'effect' appears to have weakened by 2011, as the number increased to 28 and remained above the 2009 and 2010 level thereafter (with the exception of 2012).

The 21 injured persons in 2019 was lower than in 2018 and 2017, when 38 people presented with firework-related injuries, the highest number on record. Following the findings for 2018, as part of its harm minimisation recommendations, the CDC said: "Regulation of sales limits of fireworks for individuals could potentially curb the oversupply and excess fireworks that may be available for use during the week after Territory Day." But the Health Minister stated that the Government had no plans to change Territory Day regulations.²¹

¹⁹ Compared to 18 years in the UK.

²⁰ The study is subject to a number of limitations including: it does not capture all injured persons as some people would present to their primary health care centre or not present at all, it is restricted to the days around Territory Day and there have been slight methodological changes over the years. In addition the small numbers involved renders further breakdowns and analysis difficult.

²¹ <https://www.abc.net.au/news/2018-10-19/territory-day-report-recommends-fireworks-restrictions-bans/10392362>



Source: The Northern Territory Disease Control Bulletin 1998-2019

*Yearly fireworks season.

Impact of regulations: crime

Northern Territory Police and the Department of the Attorney General and Justice provided a combined response to a request for information. The data they shared includes recorded offences since 2010 where the offence description is fireworks related²². The data is split into offences recorded in July and those recorded in the remainder of the year (Table 3).

Since 2013 the most common recorded fireworks-related offence has been 'possess fireworks outside approved period.' Focusing only on such offences recorded in July, the figures increased consecutively from 2012 to 2016, before declining. They have returned to 2013 levels in the last couple of years. Offences recorded out-with July were subject to a sizeable increase in 2014 and peaked in 2017. The number

²² Includes text strings 'firework', 'fire work' or 'f/work'.

almost halved in 2018 and was similar in 2019 but remains higher than pre-2014. For both July and rest of the year, the number of offences is relatively low²³.

Table 3: Police recorded firework related offences²⁴ in Northern Territory, 2010-2019

	2010 July	2011 July	2012 July	2013 July	2014 July	2015 July	2016 July	2017 July	2018 July	2019 July	Total
Throw/ignite/explode firework injure person(s)	0	0	1	0	1	1	1	1	1	1	7
Possess fireworks outside approved period	0	0	9	12	17	19	30	21	11	13	132
Throw/ignite/explode firework outside approved period	0	0	6	9	11	5	9	10	2	5	57
Throw/ignite/explode firework damage property	0	0	0	0	0	1	2	0	0	0	3
Use fireworks without a permit	0	0	1	1	0	1	1	0	0	0	4
Use fireworks at a time not permitted	11	12	10	3	1	4	4	4	2	1	52
Throw/ignite/explode firework injure person(s)	0	0	0	1	0	0	0	0	0	0	1
Possess fireworks outside approved period	0	0	10	6	36	41	40	45	24	28	230

²³ In 2018/19 a total of 29,619 offences were recorded by police in the Northern Territory. <https://pfes.nt.gov.au/police/community-safety/nt-crime-statistics>

²⁴ Excludes offences relating to fireworks that are recorded under another description, as there is no way to identify them as specifically related to fireworks.

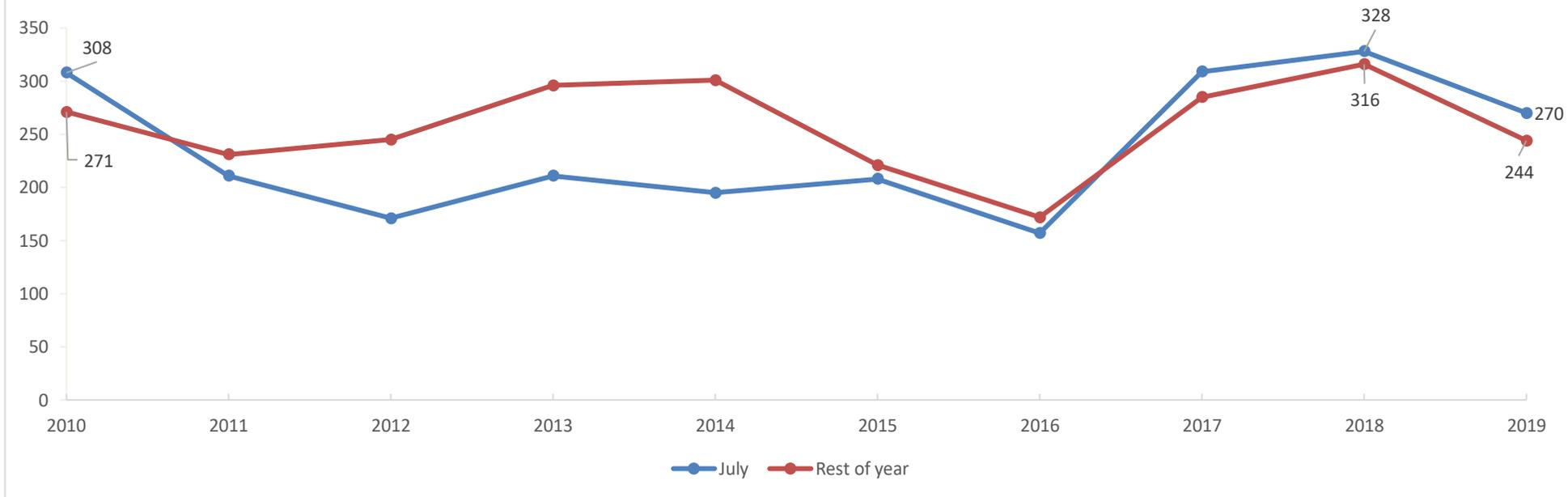
	2010 July	2011 July	2012 July	2013 July	2014 July	2015 July	2016 July	2017 July	2018 July	2019 July	Total
Throw/ignite/explode firework outside approved period	0	0	6	1	11	6	11	8	5	2	50
Throw/ignite/explode firework damage property	0	0	0	0	0	0	0	0	0	0	0
Use fireworks without a permit	0	0	0	0	1	0	2	0	0	0	3
Use fireworks at a time not permitted	14	6	14	2	1	5	4	3	5	3	57

Source: Northern Territory Police and Dept. of the Attorney General and Justice

An alternative measure on which data was provided concerns the number of firework-related disturbances²⁵, which incorporates police call outs. This data is presented in Graph 2 and is again separated into those incidents occurring in July and the rest of the year. Comparing 2010 and 2019 shows that the number of firework-related disturbances in July declined from 308 to 270, but during this time the number peaked at 328 in 2018- the 40th anniversary of self-governance. The number of such incidents occurring out-with the month of July also declined from 2010 to 2019, but likewise peaked in 2018, when there was 316 disturbances. Since 2015, the two have followed a similar trend. From 2017-2019, more incidents occurred in July than in the remainder of the year.

²⁵ Relates to the description given to the incident. Not all incidents result in offences being recorded.

Graph 2: Firework-related disturbances in Northern Territory, 2010-2019



Source: Northern Territory Police and Dept. of the Attorney General and Justice

FINLAND

Main points

- Evidence indicates that there was a marked decline in the number of bystanders and firework users sustaining fireworks-related eye injuries following the enactment of a set measures in 2010. These included: mandatory wearing of safety goggles for firework users, time restrictions on use on New Year's Eve, minimum age of 18 and prohibition of certain fireworks.
- Evidence suggests that the mandatory wearing of safety goggles for firework users, helped mitigate against more severe eye injuries being sustained.
- By far the two most common firework offences concern those under 18 possessing fireworks and using fireworks out-with the designated window on 31 December and 01 January, both have varied annually with sizeable rises and falls.
- The annual volume (Kgs) of firework imports has generally been lower since 2013 compared to before the introduction of regulations in 2010.

Current fireworks regulations

- All firework users must wear safety glasses
- Consumer fireworks cannot be bought or used by those aged under 18
- It is illegal to sell or pass on fireworks to anyone aged under 18
- Local rescue authorities must be notified about the use of consumer fireworks at least five days before the event. The rescue authorities may prohibit the use of fireworks, or set the user some terms and restrictions necessary to their safety.
- Consumer fireworks can be used without notification from 18:00 on 31 December until 02:00 on 01 January
- Some municipalities have banned the use of fireworks, whilst others have prohibited their use in city centres
- Aligned legislative options: D, E, K (mandatory use of safety goggles)

Policy background

In Finland the use of safety goggles had been advocated by safety campaigners since 1999 and in 2010 it became mandatory by law for everyone igniting a firework to wear them. In addition to the laws on safety goggles, a number of other significant changes were made to

fireworks regulations in 2010. It became illegal to either sell fireworks or give them to persons younger than 18 years of age; two classes of smaller fireworks were banned (Roman candles²⁶ and bottle rockets) and the time restrictions on when fireworks can be used on 31 December-01 January were introduced²⁷.

Impact of regulations: eye injuries

The Finnish Ophthalmological Society has collaborated with the Finnish Safety and Chemical Agency and the Helsinki University Eye Hospital for two decades, organising national data collections. This includes an annual survey of fireworks-related eye injuries treated in all hospitals by ophthalmologists²⁸. As part of a combined study with the Netherlands (covered in the Netherlands case study), *de Faber et al*²⁹ analysed data from 2009-2019 in order to assess the influence of fireworks regulations and safety campaigns on eye injuries.

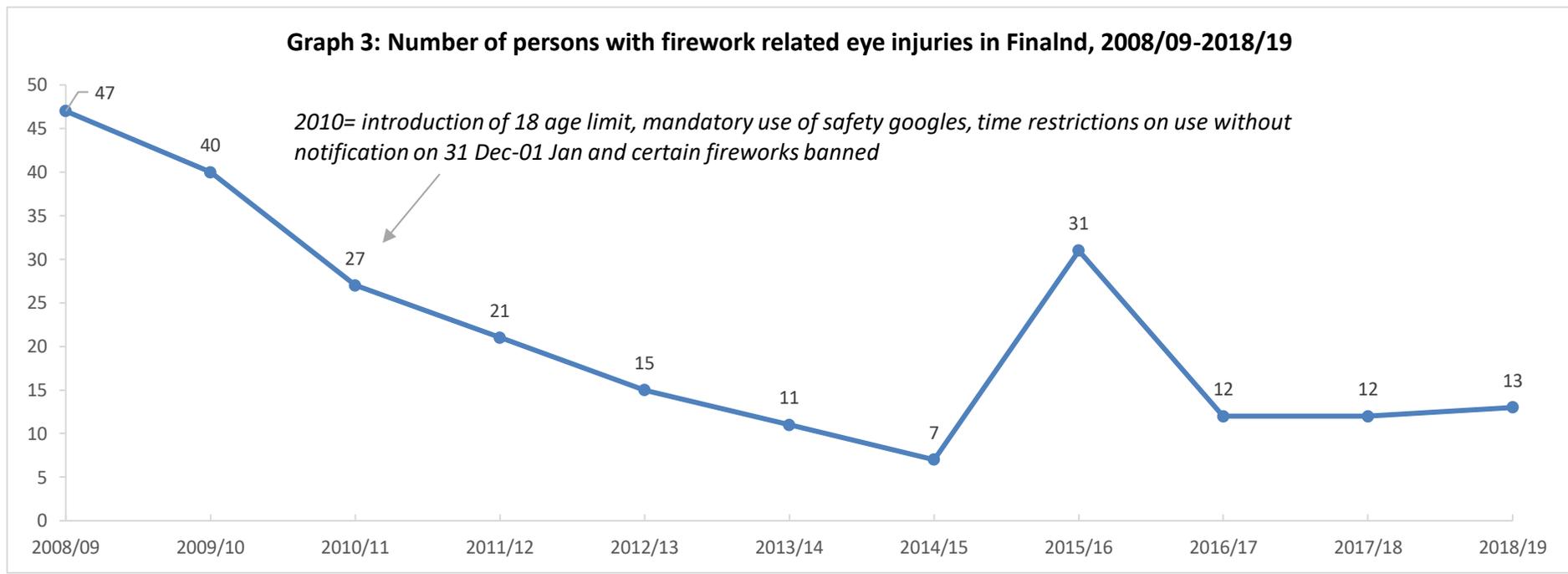
Trend data for 2008/09-2018/19 is presented in Graph 3. The graph shows a substantial drop in 2010/11 (from 40 to 27) in the number of persons treated by an ophthalmologist in hospital for a firework-related injury, coinciding with the implementation of regulations including the mandatory use of safety goggles, time restrictions, minimum age raised to 18 and the prohibition of certain fireworks. From 2011/12 there was a steady annual decrease, suggesting the 2010 changes were having a continued effect. The figure has remained steady since 2016/17. Looking across the span of the time series, the number of persons treated decreased from 47 in 2008/09 to 13 in 2018/19.

²⁶ Less than 20 mm in diameter.

²⁷ de Faber, J.T., Kivelä, T.T. & Gabel-Pfisterer, A. National studies from the Netherlands and Finland and the impact of regulations on incidences of fireworks-related eye injuries. *Ophthalmologie* 117, 36–42 (2020)

²⁸ Does not include very minor injuries that may be managed without consulting an ophthalmologist.

²⁹ de Faber, J.T., Kivelä, T.T. & Gabel-Pfisterer, A. National studies from the Netherlands and Finland and the impact of regulations on incidences of fireworks-related eye injuries. *Ophthalmologie* 117, 36–42 (2020)



Source: National studies from the Netherlands and Finland and the impact of regulations on incidences of fireworks-related eye injuries, 2020

Table 4 provides a breakdown of the figures according to whether the injured person was a bystander or a fireworks user. This shows that the number of bystanders and firework users (self-inflicted) experiencing fireworks-related eye injuries, has been lower following the introduction of the 2010 regulations, although the numbers have varied annually. The 2015/16 spike in the total number would appear to have been largely driven by a sizeable increase amongst firework users, as the number increased from 3 in 2014/15 to 23 in 2015/16, compared to an increase from 4 to 8 amongst bystanders.

Table 4 also includes information on the category of eye injury sustained: mild, moderate and severe. Across the time series, there has been a decline in all three. Whilst a gap in the data for this breakdown (2010/11) makes it more difficult to assess the immediate influence of the 2010 regulations, it would appear that they had some effect as the figures from 2011/12 onwards tend to be somewhat lower than earlier years. The study notes that those who sustained eye injuries following the mandatory requirement for safety goggles to be worn, typically have not worn them or wearing the glasses mitigated against a more severe injury. The authors conclude that the use of safety goggles has helped reduce the number of people suffering severe eye injuries. However, the study was not able to isolate the impact of safety goggles from the other measures introduced simultaneously.

Table 4: Persons with firework related eye injuries in Finland, 2008/09-2018/19

2010= introduction of 18 age limit, mandatory use of safety goggles, time restrictions on use without notification on 31 Dec-01 Jan and certain fireworks banned

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Injured persons	47	40	27	21	15	11	7	31	12	12	13
Self-inflicted	31	~	20	14	11	4	3	23	7	6	10
Bystanders	16	~	7	7	4	7	4	8	5	6	3
Mild eye damage	24	23	~	13	5	8	3	16	5	6	2
Moderate eye damage	12	13	~	4	5	2	3	10	5	4	8
Severe eye damage	11	4	~	4	5	1	1	5	2	2	3

~ denotes years when there was incomplete data from one or more hospitals.

Source: 'National studies from the Netherlands and Finland and the impact of regulations on incidences of fireworks-related eye injuries', 2020

Impact of regulations: crime

Statistics Finland were able to provide data relating to specific fireworks offences from 2010 to 2019 and this is presented in Table 5. Across the time series, by far the most common reported firework offences concern failing to comply with the restriction on when fireworks can be used and possessing fireworks when under the age of 18. There is no increasing or decreasing trend for either offence, instead both have varied annually with sizeable rises and falls. The number of violations of the other firework provisions are low.

Table 5: Violation of the provision of fireworks- crimes reported to the police, 2010-2019

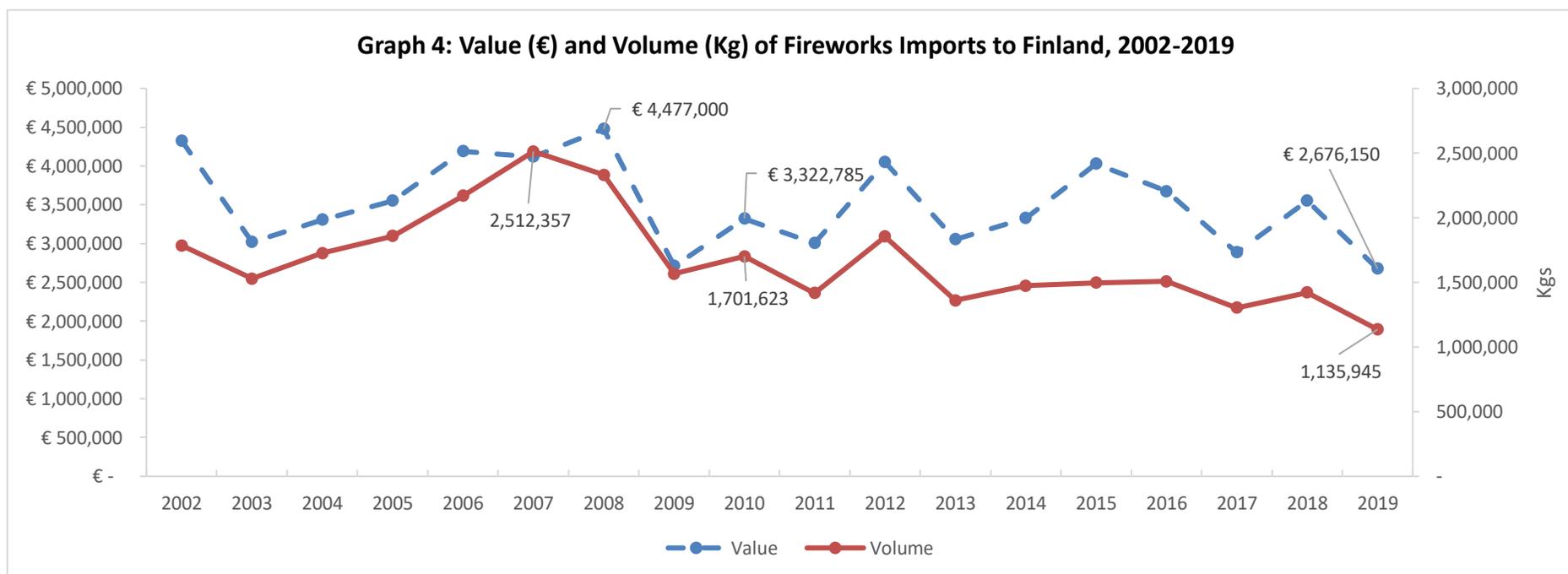
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Did not comply with the obligation to report the use of fireworks by firing fireworks at a time other than 31 December from 6pm to 2am	26	62	40	55	23	38	34	35	21	29
Did not comply with the obligation to wear goggles when using fireworks	3	2	3	8	2	1	4	4	2	2
Did not comply with the regional ban on the use of fireworks issued by the rescue authority	1	10	12	8	7	7	6	8	7	8
Delivered explosives (fireworks) to a person under the age of 18 with a delivery age of 18 years	3	15	14	12	6	6	4	-	6	2
Held fireworks under the age of 18 with a delivery limit of 18 years	25	74	55	43	31	41	21	25	49	29
In possession of fireworks intoxicated	4	10	8	12	4	3	6	2	-	3
Total	62	173	132	138	73	96	75	74	85	73

Source: Statistics Finland

Impact of regulations: imports

Finnish Customs publishes data on international trade, including the value (€) and volume (Kg) of fireworks³⁰ imports. Data from 2002 to 2019 is presented in Graph 4. It is important to note that this incorporates all firework imports, not just those for public use.

Generally speaking, the value and volume of fireworks imports to Finland have followed similar trends over the years. Both peaked prior to the introduction of restrictions in 2010 (value 2008, volume 2007) before a sizeable decline in 2009. The two measures increased in 2012 but were fairly stable until 2018 (with the exception of an increase in value in 2015). It is difficult to decipher how the fireworks regulations correspond to imports. The fact that the volume of imports has been consistently lower in recent years than the early to mid-2000s, could point to the regulations having a gradual effect.



Source: Finnish Customs, [ULJAS International Trade Statistics](#)

³⁰ Harmonised system code 360410. The International Harmonised System is a hierarchical classification for imported and exported commodities. Goods are assigned a numeric HS code according to their end use.

GERMANY

Main points

- A three year study of fireworks-related eye injuries sustained over the New Year period found that minors were disproportionately affected and the majority of those injured were bystanders, leading the study to raise concerns as to whether existing regulations are sufficient.
- The public use of fireworks on 31 December and 01 January (the only permitted time) contributes to a spike in fine-particle emissions.
- Anecdotally, authorities in Berlin and Munich have reflected positively on the introduction of firework free zones for New Year's Eve and they will remain in force going forward.
- There is no apparent increasing or decreasing trend in the volume (Kg) of firework imports.

Current fireworks regulations

- F2 fireworks can only be sold on the last three days of the year to those aged 18 and over (since 1986)
- F2 fireworks can only be lit on 31 December and 01 January, but not within the immediate vicinity of churches, hospitals, children's homes or old people's homes (since 1977)
- Although fireworks are regulated at a federal level, cities and municipalities have the authority to impose tighter restrictions on the sale and use of fireworks
- Some cities including Berlin, Munich and Hamburg have recently enforced a number of firework free zones on 31 December and 01 January
- F3 and F4 fireworks can only be imported and used by licensed professionals
- Aligned legislative options: D, F, H

Policy background

It is long-standing tradition in Germany to see-in the New Year with the private use of fireworks, with an estimated €130 million spent on legal fireworks in 2018³¹. However recent environmental and public safety concerns coupled with the strain on the emergency services has resulted in a number of cities imposing more stringent restrictions on the use of consumer fireworks. Although the Federal Government has given no indication that national restrictions are to be reviewed, a 2019 YouGov poll³² found that 57% of respondents were in favour of banning the public use of fireworks on New Year's Eve³³.

Impact of regulations: eye injuries

A three year study of patients treated at emergency eye clinics over the New Year period³⁴ from 2016/17 to 2018/19, concludes that its findings raise doubts as to whether existing fireworks regulations and their implementation are sufficient to protect people³⁵. During the study period 1,356 people were treated for eye injuries caused by fireworks. Each year, around a third (ranging from 33%-39%) of those injured were minors (0-17 years), meaning they are significantly over-represented compared to their share of German population (around 14%³⁶). Looking at the study period as whole, 60% of patients were bystanders and the same proportion were aged under 25 years. A study of New Year's firework eye injury patients at a clinic in Leipzig from 2007 to 2017, also found that the majority of those treated were bystanders³⁷.

Impact of regulations: environmental

According the Federal Environment Agency (UBA), fine-particle emissions spike in the days after the New Year's Eve, a consequence in part of the public use of fireworks during this time. Around 4,200 tons of fine particulate (dust) matter is released into the air by fireworks over the course of the New Year's celebrations, equating to about 2% of the total amount of fine dust released annually in Germany³⁸. This

³¹ <https://www.nytimes.com/2019/12/30/world/europe/germany-fireworks-ban.html>

³² Representative survey of 2,000 respondents, conducted December 2019.

³³ <https://www.thelocal.de/20191227/majority-of-germans-back-new-years-eve-fireworks-ban>

³⁴ Study carried out over the five days at the turn of the year.

³⁵ Gabel-Pfisterer, A., Böhringer, D. & Agostini, H. Three-year results of the Germany-wide survey on eye injuries caused by fireworks. *Ophthalmologist* 116, 1138-1151 (2019).

³⁶ <https://de.statista.com/statistik/daten/studie/1365/umfrage/bevoelkerung-deutschlands-nach-altersgruppen/>

³⁷ Jan Darius Unterlauff, Matus Rehak, Peter Wiedemann & Petra Meier (2018) Firework-Related Eye Trauma in Germany, *Current Eye Research*, 43:12, 1522-1528

³⁸ Emissions based on the statistical reported sales of approved fireworks in Germany.

amounts to as much as a quarter of the particle emissions given off yearly by all wood-fires in the country and is equivalent to two months of road traffic emissions. The UBA analysis further shows that in many parts of Germany, on 01 January air pollution with harmful fine dust is higher than it is throughout the year. In 2018/19, the extremely high concentrations of fine dust matter in the first hours of the New Year meant that approximately 10% of all measuring stations exceeded the daily mean values of 50 µg / m³. At numerous measuring stations, one of the 35 permissible exceedance days was 'used up' during this time³⁹⁴⁰.

Impact of regulations: firework free zones

Reflecting on the introduction of two firework free zones⁴¹ in 2019, Berlin Police have noted that the enforcement of the ban has been successful, with violations largely prevented. During New Year's Eve 2019/20, 88 people trying to enter the zones with fireworks voluntarily handed them over at designated checkpoints. A further 530 people refused to hand over their fireworks and were consequently refused access to the area. In these cases of voluntary surrender and/or voluntary departure from the prohibited area, the purpose of averting danger was achieved; thus no follow-up measures were necessary. The firework free zones were met with a positive reaction by local residents. The movement of firework activities to other areas could not be ascertained or connected with the firework free zones. There were however areas in Berlin where fireworks were improperly set off. The Berlin Police conclude that the zones have generally proven their worth and are suitable for ensuring public safety and order in recognised problem areas, notwithstanding the extra resources required⁴².

A similar positive experience was reported in Munich, where firework free zones were introduced for the first time on New Year's Eve 2019/20. During the course of the celebrations there were no significant public health and safety incidents within the prohibited zones and only a small number of violations were recorded by the Munich Police Department. Most likely, the district firework free zones will be in place for New Year's Eve 2020/2021. Since authorities are not aware of any other focal points that would justify an extension of the prohibition zone, there are no plans to extend the measures to other areas of the city⁴³.

³⁹ https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/hgp_wenn_die_luft_zum_schneiden_ist_2019.pdf

⁴⁰ The UBA report is currently awaiting peer review and any subsequent versions will be considered.

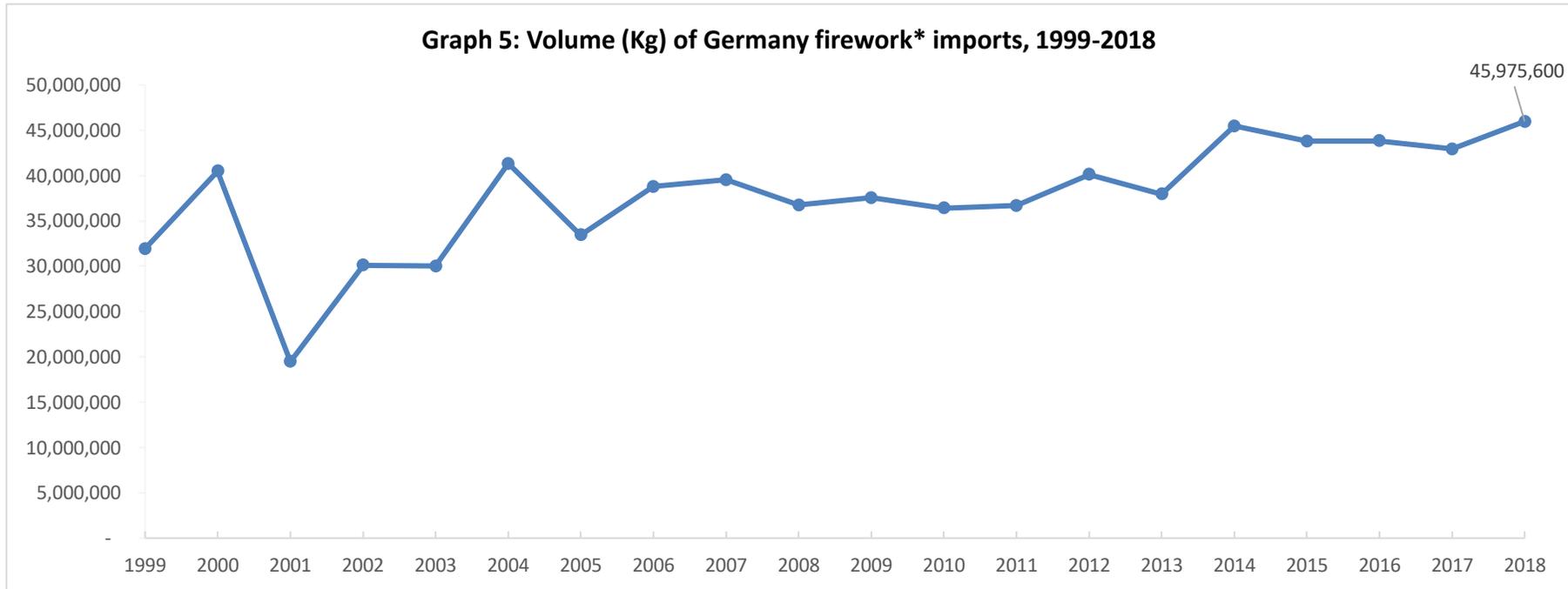
⁴¹ Alexanderplatz and Schoeneberg North. These were the first firework free zones introduced in a public space without a special reason e.g. a party. Prior to this there was a fireworks free zone around Brandenburg Gate due to the large NYE party and was controlled by private security companies.

⁴² Information provided by Berlin Police via email, 16 July 2020.

⁴³ Information provided by the City of Munich via email, 15 July 2020.

Impact of regulations: imports

The World Bank publishes figures on fireworks imports⁴⁴ via the World Integrated Trade Solution database. The volume (Kg) of German gross fireworks imports from 1999 to 2018 is presented in Graph 5. It is important to note that this incorporates all firework imports, not just those for public use. As we can see there is no increasing or decreasing trend in the volume of German firework imports. The figure was fairly stable between 2006 and 2011. Since 2014 the volume of imports has been consistently higher than in earlier years, with the figure peaking in 2018 at 45,975,600 Kg.



Source: World Integrated Trade Solution

* Harmonised system code 360410.

⁴⁴ Harmonised system code 360410. The International Harmonised System is a hierarchical classification for imported and exported commodities. Goods are assigned a numeric HS code according to their end use.

NETHERLANDS

Main points

- The number of people sustaining fireworks-related injuries (all and eye injuries) around New Year's Eve has been consistently lower following the introduction of regulations in 2015 which reduced the usage period on 31 December from 16 hours to 8 hours, with the decline most pronounced amongst bystanders. During this time there were a number of firework safety campaigns, which may have also contributed.
- Data suggests that the 2015 reduction in the time fireworks can be used may have contributed to a decline in the number of firework incidents recorded by the police.
- The number of police recorded firework crimes was on an increasing trend from 2014 to 2018. Until 2018, the majority of such crimes were recorded in December of each year.
- Evidence shared by the Dutch Police notes that the number of incidents occurring in the vicinity of firework retailers, is 3-5 times higher during the permitted fireworks sales period compared to when they are not for sale.
- The Dutch Police seized increasing amounts of illegal fireworks in 2018 and 2019, but the lack of time series data means it is not possible to associate this with any regulatory changes.
- Anecdotal evidence from the Dutch Police suggests that the introduction of firework free zones resulted in a shift in hot spots for firework use.
- The volume of firework imports significantly declined in 2015 and was a similar level in 2016, pointing to a possible association with the reduced usage public usage period introduced in 2015.
- Due to the infancy of 2019 regulations requiring retailers to provide safety goggles, a user manual and lighting fuse to those buying fireworks, there is not yet any evidence regarding their effectiveness.

Current fireworks regulations ^{45;46}

- Consumer fireworks (F2) can be purchased by the public (16 years and over) from licensed retailers on 29-31 December. If one of these days falls on a Sunday, no fireworks may be sold on that day. In that case, fireworks can be bought on 28 December.
- Consumer fireworks can only be used between 6 pm on 31 December and 2 am on 01 January
- Consumer fireworks sales cannot exceed 25 kilos per transaction/delivery
- As of 2019, it became mandatory for retailers to provide safety goggles, ignition fuses and user manuals to those buying fireworks
- As of 2020 the sale of F3 fireworks including bangers, firecrackers and rockets to the public is banned
- Many municipalities have restrictions in place around the use of consumer fireworks. In general, fireworks are prohibited near shopping centres, nursing homes, animal shelters and historic buildings and monuments.
- In 2020 Amsterdam and Rotterdam city councils approved plans for a complete ban on consumer fireworks in their respective areas⁴⁷
- Aligned legislative options: D, F, H, I, J

Policy background

Fireworks in the Netherlands are mostly regulated through the Fireworks Decree (Vuurwerkbesluit), enacted in 1993 but amended numerous times since, including in the wake of the 2000 Enschede disaster where 23 people died and almost 1,000 were injured following an explosion at a fireworks depot. In 2014 the decree was amended to reduce the period in which consumer fireworks could be used. Previously people could set off fireworks from 10 am on 31 December to 02 am on 01 January, but this was changed to 6 pm on 31 December, halving the permitted usage period. This change was effective from 2015.⁴⁸

⁴⁵ <https://business.gov.nl/regulation/fireworks/>

⁴⁶ <https://www.dutchnews.nl/news/2020/02/government-gives-in-to-pressure-brings-in-partial-firework-ban/>

⁴⁷ <https://nltimes.nl/2020/02/14/amsterdam-implement-complete-fireworks-ban>

⁴⁸ <https://zoek.officielebekendmakingen.nl/stb-2014-416.html>

In October 2019 it became compulsory for Dutch retailers to provide safety goggles, ignition fuses and user manuals to those purchasing fireworks⁴⁹. This followed the success of national safety campaigns and prior to it being mandatory, many firework retailers made safety goggles available to customers free of charge.

On the 31 January 2020, the Dutch Cabinet agreed to end the sale of bangers, firecrackers and rockets to the public from the 2020 New Year's sales period. The decision was in line with police and safety board recommendations, with the latter calling for the ban since 2017⁵⁰. Reducing the risk of injuries to the public and the dangers posed to the emergency services were the main policy drivers. Earlier this year, the city councils of Amsterdam and Rotterdam approved a total ban on consumer fireworks, effective from the 2020 fireworks sale period. Injuries, inconvenience to local residents and an 'atmosphere of lawlessness' were the primary motivations⁵¹. The number of injuries, police incidents and concerns around illegal fireworks means fireworks regulations are frequently debated and scrutinised in the Netherlands.

Impact of regulations: eye injuries

From 2008 to 2019 a yearly survey of fireworks-related eye injuries seen and treated by ophthalmologists around New Year's Eve⁵², was recorded in the Netherlands⁵³. Graph 6 shows that the number of persons sustaining eye injuries declined markedly in 2015/16, coinciding with the introduction of the reduced usage period. Since then there has been no definitive trend but the numbers have remained below pre 2015/16 levels, suggesting that the measure have had some impact. The study notes that during this time, there were a number of firework safety campaigns and although not a legal requirement until 2019, many retailers provided customers with safety goggles for free. Therefore it is possible that these factors also contributed to this decline.

⁴⁹ <https://ec.europa.eu/growth/tools-databases/tris/en/search/?trisaction=search.detail&year=2019&num=341>

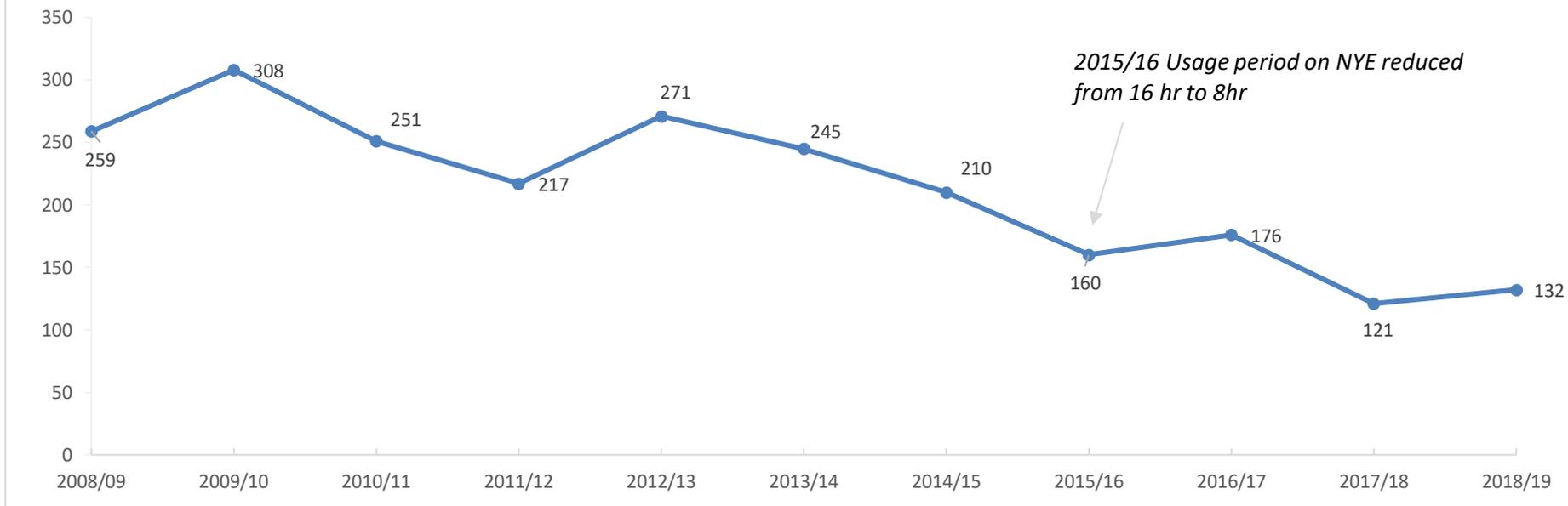
⁵⁰ <https://www.dutchnews.nl/news/2017/12/ban-rockets-and-firecrackers-on-new-years-eve-says-dutch-safety-board/>

⁵¹ <https://nltimes.nl/2020/01/08/rotterdam-first-large-city-completely-ban-consumer-fireworks>

⁵² Survey covered two weeks around New Year's Eve.

⁵³ de Faber, J.T., Kivelä, T.T. & Gabel-Pfisterer, A. National studies from the Netherlands and Finland and the impact of regulations on incidences of fireworks-related eye injuries. *Ophthalmologie* 117, 36–42 (2020)

Graph 6: Number of persons with fireworks-related eye injuries in the Netherlands, 2008/09 - 2018/19



Source: 'National studies from the Netherlands and Finland and the impact of regulations on incidences of fireworks-related eye injuries', 2020

In addition to the total number of persons with eye injuries, Table 6 shows whether the person was injured through using a firework (self-inflicted) or as a bystander. In 2015/16, there was a sizeable drop in the number of bystanders injured, from 112 in 2014/15 to 65. Although the figures have varied in recent years, the number of persons with self-inflicted fireworks injuries and the number injured as bystanders have been consistently lower since the introduction of regulations in 2015/16.

As we can see, from 2008/09 to 2011/12 the split between self-inflicted and bystanders was fairly even. Since 2015/16, the majority of those presenting with eye injuries have been firework users, perhaps indicating that the regulations and safety campaigns have been most effective amongst bystanders. The study also found that across the 11 years, three types of fireworks have caused 71% of eye injuries, not all of which are legal: firecrackers (35%), bottle rockets (25%) and roman candles (11%).

Table 6: Number of persons with fireworks-related eye injuries in the Netherlands, 2008/09 - 2018/19

	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19
Persons with eye injuries	259	308	251	217	271	245	210	160	176	120	132
Self-inflicted	109	148	126	108	158	147	98	95	95	72	76
Bystanders	150 (58%)	160 (52%)	125 (50%)	109 (50%)	113 (42%)	98 (40%)	112 (53%)	65 (41%)	81 (46%)	48 (40%)	56 (42%)

Source: 'National studies from the Netherlands and Finland and the impact of regulations on incidences of fireworks-related eye injuries', 2020

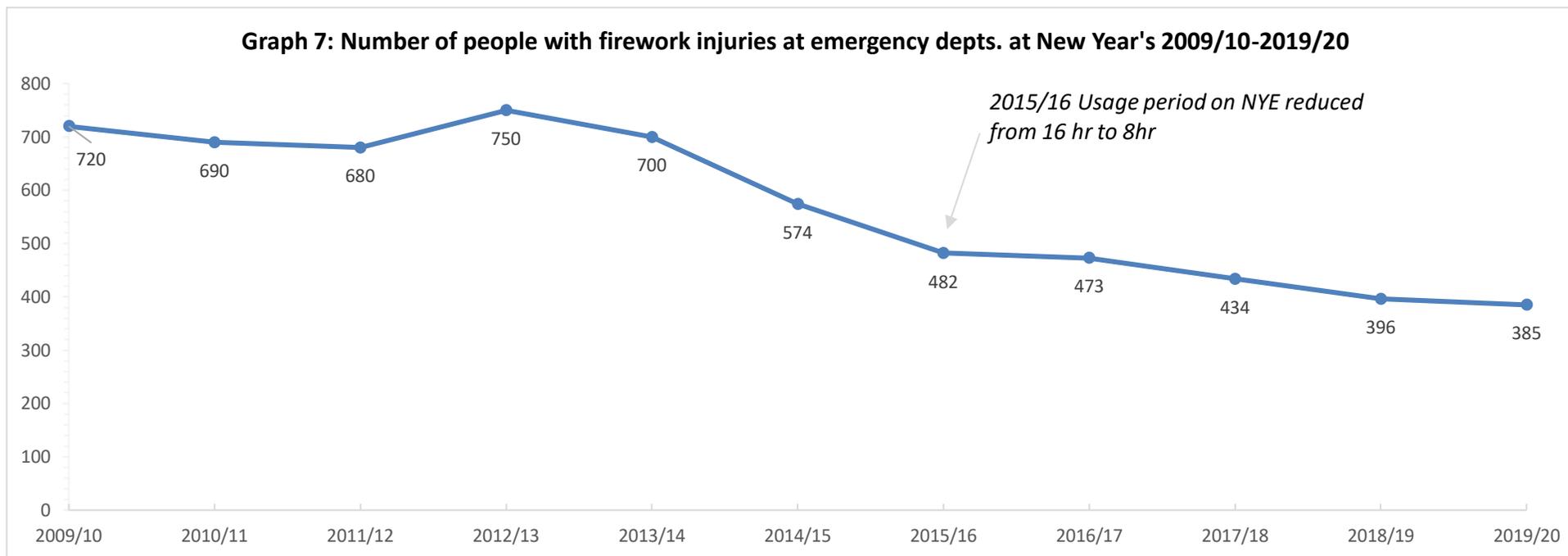
Impact of regulations: injuries

VeiligheidNL (Safety Netherlands) monitors all accidents in the Netherlands through the Dutch Injury Surveillance System (linked to emergency department data) together with other sources. Each year they report on the number of people treated for firework injuries at emergency departments on 31 December and 01 January. Figures from 2009/10 to 2019/20 are shown in Graph 7.

The number of people attending emergency departments with firework injuries during the New Year celebrations has been on a downwards trend since 2013/14. Consequently, 335 fewer people were seen at emergency departments in 2019/20 than in 2009/10, a 46% decrease. In 2019/20 hospitals recorded additional information on 245 patients with fireworks injuries, of which around a fifth (19%) had sustained injuries caused by illegal fireworks and half (51%) were bystanders⁵⁴.

The graph shows that 50 fewer people were injured in 2015/16 than the previous year, coinciding with the enactment of the reduced usage period and ongoing safety campaigns. The number of people presenting at emergency departments with fireworks injuries has been consistently lower since the introduction of the 2015 regulations concerning times of use.

⁵⁴ <https://zoek.officiëlebekendmakingen.nl/kst-28684-594.html>



Source: VeiligheidNL

Impact of regulations: crime

The Dutch Police publish information on the number of recorded police incidents⁵⁵ occurring from midnight on 31 December to 8 am on 01 January. The number of firework incidents for 2014/15 to 2019/20 is shown in Table 7. There was a sizeable decline in the number of firework incidents in the three years up to and including 2017/18, coinciding with the introduction of greater restrictions on when consumer fireworks could be used. The number has increased over the previous two New Year periods, although it is too early to say whether this amounts to an increasing trend. Irrespective of this recent rise, there was 33% fewer firework incidents during the 2019/20 New Year compared to 2014/15.

⁵⁵ Not all incidents are subsequently recorded as crimes.

Table 7: Number of police recorded firework incidents 31 Dec-01 Jan, 2014/15- 2019/20

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Number of firework incidents	5,068	4,131	3,573	2,687	3,129	3,375

Source: Dutch Police

Evidence shared by the Dutch Police notes that the number of incidents occurring in the vicinity of firework retailers is 3-5 times higher during the permitted fireworks sales period compared to when they are not for sale⁵⁶. During the course of New Year's Eve 2018/19, 10% of all fireworks-related nuisance occurred within a 250 meter radius of firework outlets. In addition, analysis shows that in areas where there is a lot of fireworks nuisance, the number of incidents and reports peaks twice on New Year's Eve: 1) between 1 pm and 3 pm, 2) between midnight and 2 am on 01 January. Elsewhere the number of incidents and reports generally increases as the day progresses.

In response to a request for information, the Dutch Police provided data on recorded firework crimes[^] and the numbers from 2012 to 2019 are included in Table 8. The data suggests that from 2014 to 2018 illegal firework activities were an increasing problem, as the total number of such crimes tended to increase each year, although part of this could be a reflection of policing activities and public reporting (see 'notes on evidence' section). It would appear that reducing the time in which fireworks could be set off for New Year 2015/16 did not have a noticeable impact on the number of recorded offences. Further data points are needed before it can be determined whether the sizeable decline in 2019 (31% decrease on 2018) is the start of a downwards trend.

The table also shows that until 2018, the majority of offences were recorded in December of each year. Again, further data is needed before it can be established if the shift (majority recorded out-with December) in 2018 and 2019 amounts to a trend. Although requested, it was not possible to disaggregate the data into specific firework offences.

Table 8: Police recorded* firework crimes[^], 2012-2019

	2012	2013	2014	2015	2016	2017	2018	2019
Total	587	513	563	607	606	820	1,065	730
December	338 58%	326 64%	351 62%	366 60%	341 56%	616 75%	447 42%	341 47%

Source: Dutch Police

*Recorded by police in official report.

[^]Includes crimes of 'illegal import or export as well as transportation of fireworks' and 'illegal possession, manufacture or delivery of fireworks.'

⁵⁶ Information provided by Dutch Police via email, 23 September 2020.

The Dutch Police also shared data concerning the volume of illegal fireworks they have confiscated in the past three years. As we can see from Table 9, the volume seized rose in 2018 and 2019. Earlier time series data is needed in order to assess the impact of legislative measures and to determine if any trend is apparent. The police noted that the majority of confiscated fireworks were F4 class fireworks (professional).

Table 9: Illegal fireworks seized by police, 2017-2019

	2017	2018	2019
Volume of illegal fireworks seized (KGs)	40,382	56,525	61,429

Source: Dutch Police

In the Dutch justice system approximately a third of minors (aged 12-17) who are arrested are referred to 'Halt punishment', a diversional measure where they undertake an alternative sanction, avoiding prosecution and a criminal record. Referrals for firework offences typically make up about 10% of the total Halt referrals each year. Table 10 outlines the number of firework referrals from 2015/16 to 2019/20. There is not yet enough data points to determine whether there is an increasing trend in the number of referrals for firework offences, but there was a sizeable increase in 2018/19 accompanied by a smaller rise in 2019/20. Consequently, there were 332 more referrals in 2019/20 than in 2015/16.

Table 10: Number of references to Halt Punishment for firework offences by minors*, 2015/16-2019/20

	2015/16	2016/17	2017/18	2018/19	2019/20
References to Halt Punishment	989	999	950	1,279	1,321

Source: Data request to Halt

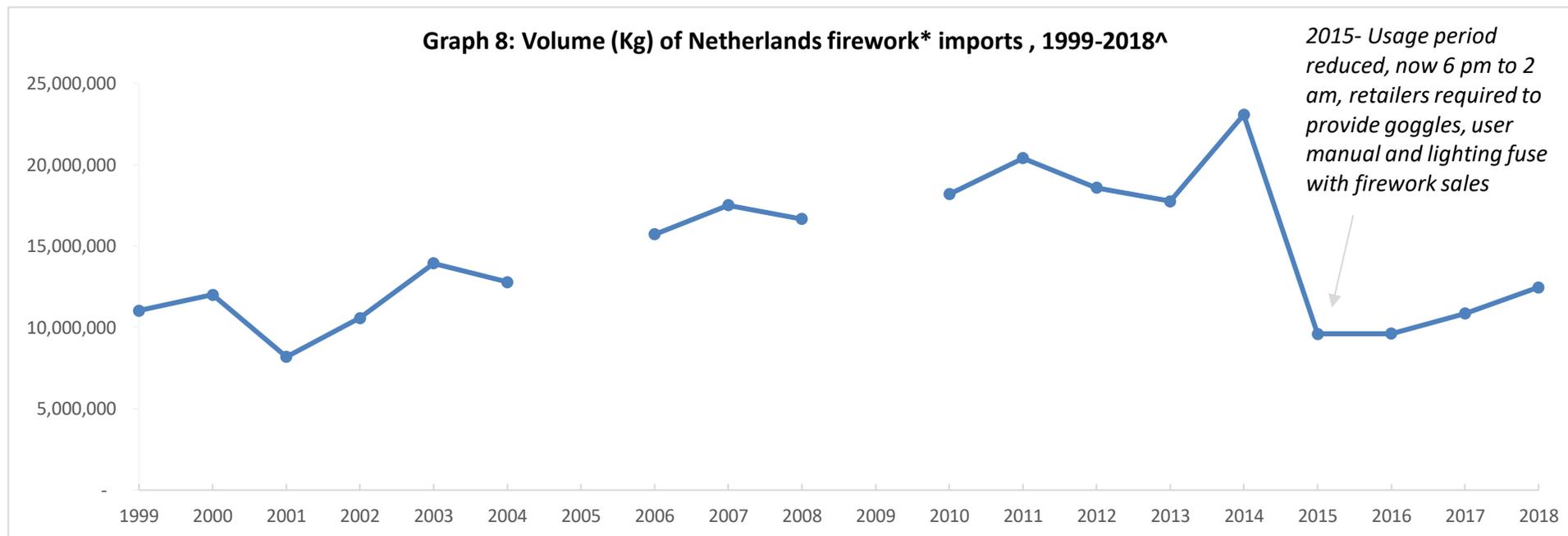
*Aged 12-17 years.

Impact of regulations: firework free zones

The Dutch Police provided anecdotal information regarding firework free zones. As noted earlier, many cities and municipalities have measures in place restricting the use of fireworks, including firework free zones. A study was carried out in 2019 to identify the effects of firework free zones. On the main conclusions was that the introduction of the zones had resulted in a shift in hot spots for firework use. For example in the city of Alkmaar the public experienced more negative effects just outside the firework free zones. The police were unable to share a copy of the study.

Impact of regulations: imports

The World Bank publishes figures on fireworks imports⁵⁷ via the World Integrated Trade Solution database. The volume (Kg) of Dutch gross fireworks imports from 1999 to 2018 is presented in Graph 8. It is important to note that this incorporates all firework imports, not just those for public sale/use. As we can see there was a significant decrease (approx. 13,500,000 Kg) in the volume of firework imports in 2015 and the figure was broadly similar in 2016. This coincides with the introduction of the reduced usage period for New Year's Eve 2015. Figures increased slightly in 2017 and 2018 but further data is required to see if this amounts to an increasing trend.



Source: World Integrated Trade Solution * Harmonised system code 360410.

[^] No data available for 2005 and 2010.

⁵⁷ Harmonised system code 360410. The International Harmonised System is a hierarchical classification for imported and exported commodities. Goods are assigned a numeric HS code according to their end use.

NEW ZEALAND

Main points

- There is no increasing or decreasing trend in the total number of people being discharged from hospital over the course of the whole year for injuries caused by fireworks following the introduction of regulations.
- The number of people discharged from hospital during the permitted sales window has been consistently lower since 2007 when the sales period was reduced to four days and the legal age for purchasing raised to 18. However, this could partly reflect the fact that since 2007 there are fewer days in which discharges can be recorded as occurring during the sales window, rather than the effectiveness of the regulations per se.
- Evidence shows that a decline in the number of firework-related incidents attended by the Fire and Emergency Service throughout November coincided with the enactment of regulations in 2001 and 2007 (sales window, legal age raised). However, in both instances it would appear that any 'effect' was not fully sustained over the longer term.
- The value (NZD \$) of fireworks imports declined markedly in 2007 and 2008 before generally increasing and peaking in 2015.

Current fireworks regulations

- Consumer fireworks can only be sold on the four days up to and including the 05 November
- Legal age of purchase is 18
- The explosive content of some consumer fireworks is decreased
- Individual sale of sparklers is banned, they must be sold as part of a pack containing other fireworks
- Aligned legislative options: H

Policy background

In 1994 and 1996 the New Zealand Parliament debated the question of banning the public sale of all fireworks. On both occasions it was decided that the irresponsible use of fireworks by a few could not justify depriving families of the enjoyment of fireworks through a total ban. In addition, firecrackers and skyrockets were banned in 1994. To address the harm caused by those who use fireworks irresponsibly, regulations were introduced in 2001 that:

- limited the total amount of explosive material allowed in any one firework, and the design and nature of fireworks acceptable for use by the public
- limited the period for which fireworks can be sold to the ten days prior to Guy Fawkes Night
- limited the sale to persons aged 14 years and over

In 2004 the Minister for the Environment called for research into the sale of fireworks by retailers and for solutions that would prevent fireworks being misused. The investigation was the result of increasing numbers of people, animals and property being harmed by fireworks⁵⁸. In 2006 a range of regulatory and non-regulatory options for retail fireworks was presented to Cabinet by the Minister for the Environment. Non-regulatory options including awareness campaigns were pursued for the 2006 firework season, with officials directed to undertake further analysis of possible regulatory options for 2007.

The 2006 fireworks season resulted in the highest number of firework-related call outs by the fire service since figures began in 1996- 1,729 call outs, 98 more than in 2005. The police also recorded an increase in call outs in 2006, up by 626 on 2005 to 1,815. In 2006, 1,763 tonnes of fireworks were imported into New Zealand, continuing the trend of increasing volume of firework imports (although the rate of growth had slowed compared to previous years).

A number of regulatory options were developed, with the intention of improving the management of the retail sale of fireworks and reducing the potential for their misuse. The options were balanced against the desire for families to continue to enjoy Guy Fawkes celebrations. Following an appraisal of the options and stakeholder engagement, the following relevant restrictions were introduced:

- legal age limit to purchase fireworks raised from 14 to 18 years
- the sale period for consumer fireworks reduced from 10 to the 4 days up to and including 05 November
- the individual sale of sparklers prohibited, they must be sold in packs with other fireworks

The above changes were enacted through 2007 amendments to the Hazardous Substances (Fireworks) Regulations 2001.

⁵⁸ <https://www.mfe.govt.nz/more/cabinet-papers-and-related-material-search/cabinet-papers/hazards/regulatory-options-reduce>

Impact of regulations: injuries

The Injury Prevention Research Unit at the University of Otago provided time series data on the number of discharges from public hospitals with a principal diagnosis of injury caused by fireworks⁵⁹. The annual figures are presented in Graph 9. Alongside the total number of injuries, the data from 2001 onwards is disaggregated into injuries occurring during the permitted fireworks sales period and those which happened out-with this time.

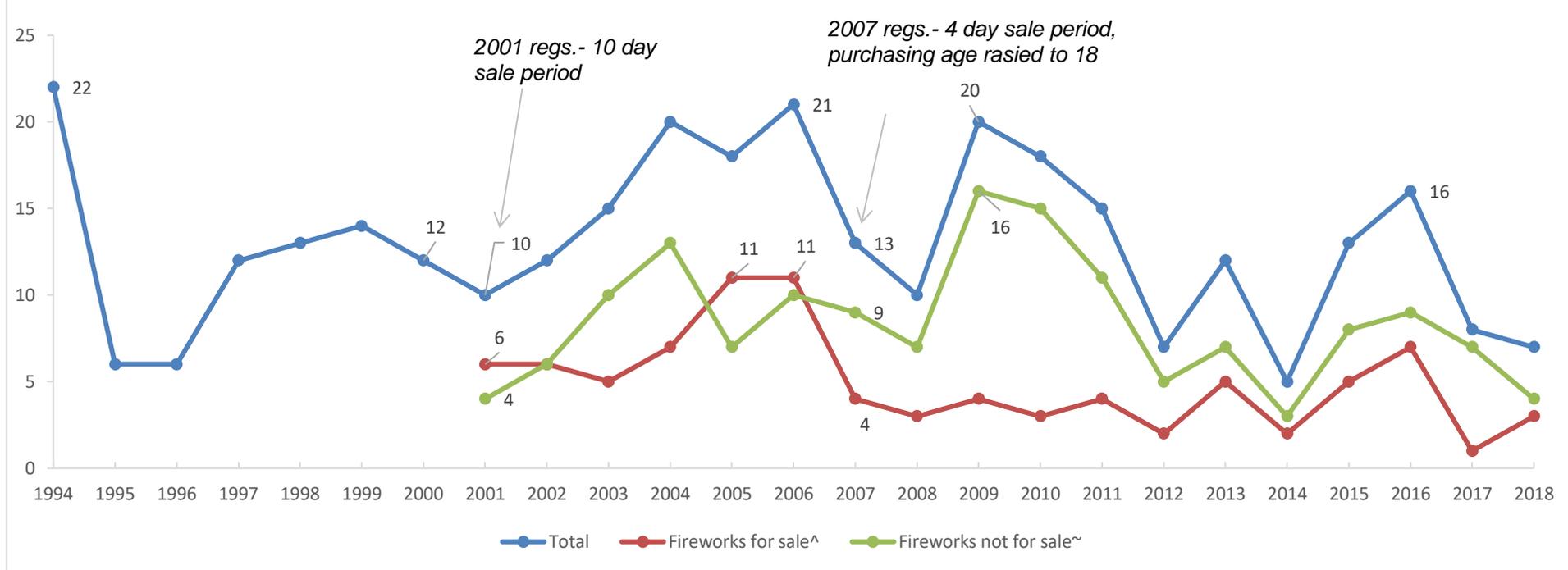
The total number peaked in 1994 when 22 people were discharged following a firework injury, since then there has been no distinguishable increasing or decreasing trend. Generally speaking, since 2001 the number occurring out-with the sales period has followed a similar pattern to the total number of discharges.

Since 2007 the number of discharges occurring whilst fireworks are not for sale has been higher than the number happening during the sales window, but the numbers are low for both. This could point to issues around illegal fireworks but it could also reflect the fact that the period fireworks are not for sale covers a much longer time (355 days from 2001-2006, 361 days from 2007-2018). The number of discharges occurring out-with the sales period increased for three consecutive years following the introduction of initial sales window in 2001.

The number of discharges happening whilst fireworks are for sale peaked at 11 in both 2005 and 2006, and subsequently declined sharply in 2007 following the reduction of the sales window to four days and raising the legal age for purchasing to 18. The number has been consistently lower since the enactment of these regulations. However, the fact that there is no clear trend in the total number of discharges would suggest that the change during the sales period could partly reflect the fact that since 2007 there are fewer days in which discharges can be recorded as occurring during the sales window, rather than the effectiveness of the regulations per se.

⁵⁹ Excludes day patients, readmissions for the same incident and where there was not a primary diagnosis of injury. In addition, it also doesn't count those injuries which were treated at home or out-with a public hospital.

Graph 9: Number of hospital discharges from firework injury, 1994-2018



* Excludes day patients, readmission for the same incident and where there was not a primary diagnosis of injury. Year concerns year of discharge.
[^] 2001 to 2006- Injury occurred between 27 October and 05 November inclusive. 2007 to 2018- Injury occurred between 02 and 05 November inclusive.
 Source: Injury Prevention Research Unit, University of Otago

Impact of regulations: crime

The only available fireworks-related crime data concerns the offence of ‘set fireworks off in public place’⁶⁰. The data for police recorded and resolved offences from 1994 to 2014 is presented in Table 11. A recorded offence concerns those that are reported to the police, whilst a resolved offence is a recorded offence where an offender is identified and dealt with (e.g. prosecuted, warned, cautioned etc.). The data shows that since the baseline year of 1994, there has been no clear pattern in the number of recorded and resolved offences, making it difficult to decipher if there is any relationship between offences and the regulations.

⁶⁰ Summary Offences Act 1981, S.35. Sets off or throws any firework or explosive material in such a manner as to be likely to cause injury to, or to alarm, any person.

Table 11: Police recorded and resolved offences: set off fireworks in public place, 1994-2014⁶¹

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Recorded	102	33	46	32	23	20	31	22	28	39	31	31	35	29	26	31	25	24	22	12	23
Resolved	65	19	29	22	18	12	23	15	21	24	25	22	20	18	18	24	17	14	18	8	12

Source: NZ.Stat Annual Recorded Offences for Calendar Years

Impact of regulations: ambulance service

St. John is the largest provider of ambulance services in New Zealand, covering 97% of the country geographically⁶². They were unable to provide information specifically on firework-related incidents and only hold data from 2010 onwards. Nonetheless, they did share data concerning the number of incidents involving an ambulance arrival related to Burns/Explosions, the category within which fireworks incidents sit. This data is presented in Table 12. In light of the above limitations, this data should be used for contextual purposes only.

Generally speaking, the number of incidents occurring over the four day Guy Fawkes period (total number and number per day) has remained somewhat stable with the exception of 2018 when only 9 incidents were recorded, a fall of 11 on the previous year. From 2012 to 2018 the total number of incidents occurring outside of Guy Fawkes fell year on year, before a small rise in 2019. Across the time series, the number of incidents per day tends to be higher during Guy Fawkes than for the rest of year.

⁶¹ If an offence is recorded or resolved 15 days after the end of a year it will not appear in the official statistics for that year.

⁶² <https://join.stjohn.org.nz/role?siid=RvIm9>

Table 12: Burns/explosions incidents involving ambulance attendance, 2010-2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Guy Fawkes (4 day period)	21	16	16	17	12	18	22	20	9	14
Rest of year (outside of Guy Fawkes)	1,216	1,238	1,135	1,030	1,028	1,011	982	883	814	833
No. incidents per day- Guy Fawkes	5	4	4	4	3	5	6	5	2	4
No. incidents per day- rest of year	3	3	3	3	3	3	3	2	2	2

Source: St. John Ambulance New Zealand

Impact of regulations: fire service

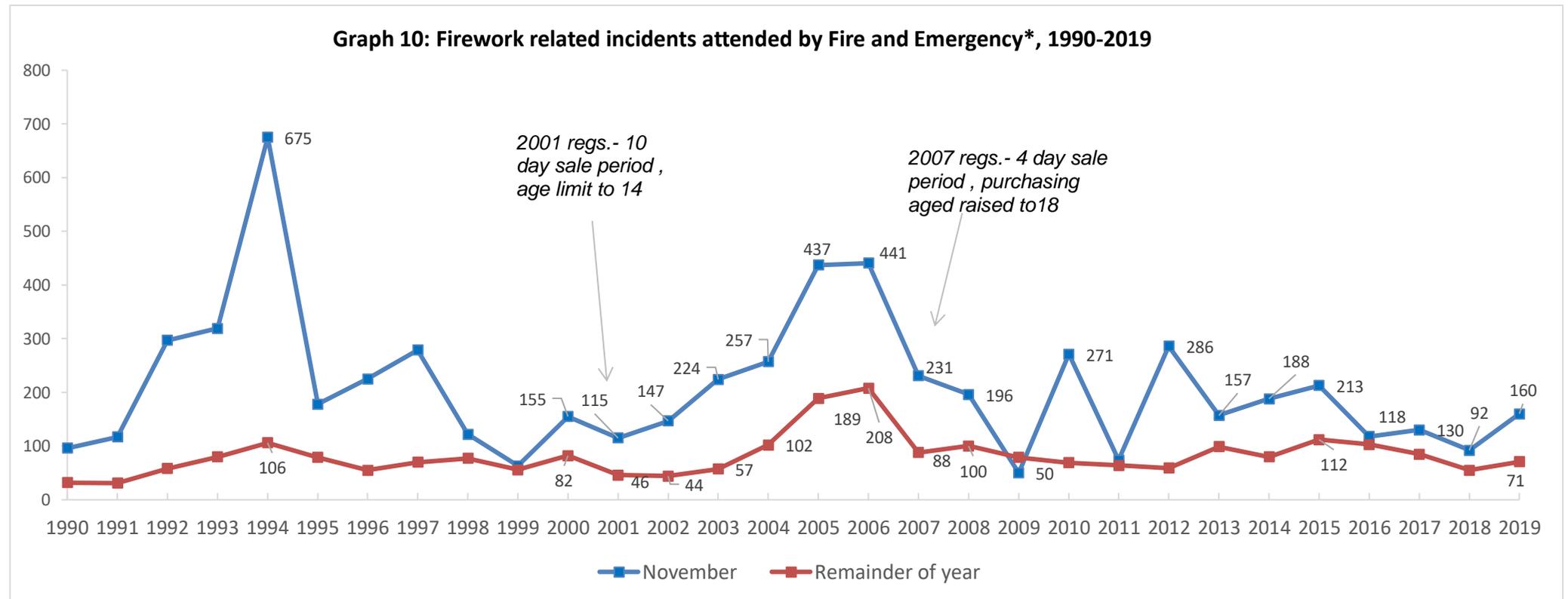
Following an information request, Fire and Emergency New Zealand provided time series data on the number of firework-related incidents attended by the Service in November and the remainder of the year. The figures concern incidents where the cause of fire, heat source or object ignited was fireworks and they are presented in Graph 10.

The number of incidents occurring in November peaked in 1994 when Fire and Emergency attended 675 incidents. The figures suggest that there was a relationship between the 2001 regulations (which included limiting the sale period of consumer fireworks to the 10 days up to and including 05 November, and raising the legal age) and the number of incidents as there was a sizeable decrease in the number occurring in November (2000: 155 incidents, 2001: 115 incidents) and those happening during the rest of the year (2000: 82 incidents, 2001: 46 incidents). However between 2001 and 2006 the number of incidents generally increased year-on-year, suggesting that any 'effect' was not necessarily sustained.

In 2007 there was a sharp decline in the number of firework incidents attended by Fire and Emergency in November and in the remainder of the year, coinciding with the introduction of further regulations⁶³. The number of incidents in November almost halved from 441 in 2006 to

⁶³ Sales period reduced to four days, legal age limit raised to 18.

231 in 2007, whilst the number occurring during the rest of year declined by 58% from 208 in 2006 to 88 in 2007. Incidents in November continued to decline, reaching a low of 50 in 2009. Since 2010 however there been no increasing or decreasing trend, with the numbers fluctuating. Graph 10 also shows that since the introduction of the 2007 regulations, there does not appear to be a relationship between the two measures (November incidents and rest of year incidents) in terms of direction of change e.g. there are several years where one rises and the other falls.



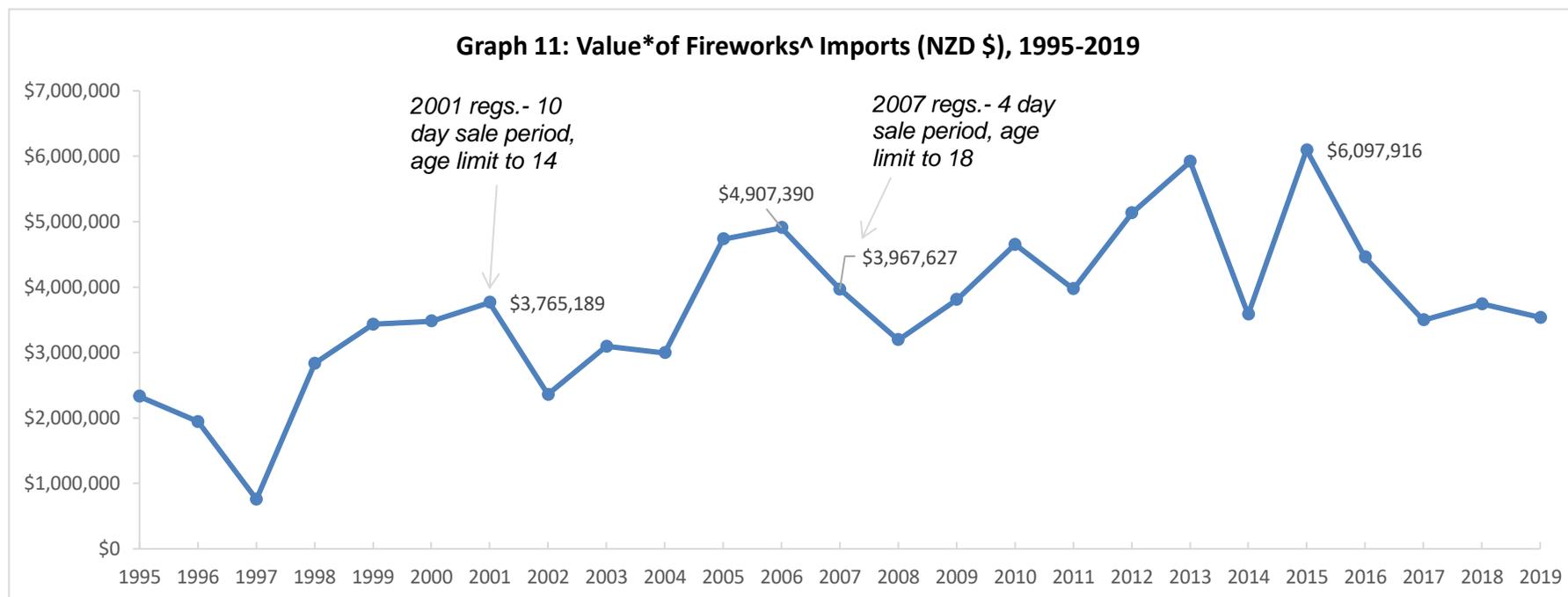
* Number of fires where the cause, heat source or object ignited was fireworks

Source: Fire and Emergency New Zealand. Information released under the Official Information Act 1982

Impact of regulations: imports

Statistics New Zealand publishes data on the value (NZD \$) of firework imports and the data from 1995 to 2019 is presented in Graph 11. The corresponding figures for the volume of firework imports was not available. It is important to note that this incorporates all firework imports, not just those for public use.

The graph shows the value of imports decreased markedly in 2007 and 2008, coinciding with the introduction of the tighter regulations. From then on the figure generally increased, peaking in 2015 at a little over \$6 million. Following annual variations, there are signs that the value of fireworks imports are stabilising, remaining at a similar level for the last three years.



Source: Statistics New Zealand

* Figures shown represent Value for Duty (VFD) - the value on which customs duty is based.

^ Harmonised system code 360410. The International Harmonised System is a hierarchical classification for imported and exported commodities. Goods are assigned a numeric HS code according to their end use.

NORTHERN IRELAND

Main points

- Following the introduction of a licensing system in 2002, there was an immediate marked reduction in the number of people sustaining injuries caused by fireworks⁶⁴, down from 136 in 2001 to 38 in 2002, a 72% decrease.
- Rigorous evidence shows that since the introduction of a licensing system, the number of persons injured by fireworks has tended to be lower compared to before the regulations were enacted.
- The number of recorded offences for buying/possessing/using fireworks without a valid licence increased consecutively from 2006 to 2011. Since then there has been no clear trend, although the figures have remained below the 2011 peak.
- Data from 2001 to 2019 shows that there is no increasing or decreasing trend in the number of police officers struck by fireworks. This suggests that there is no clear indication that the licensing system has impacted on the number of officers being struck by fireworks.
- The number of anti-social behaviour (ASB) incidents with an accompanying fireworks code has been fairly consistent in recent years, with no increasing or decreasing trend.
- The lack of time series data means it is not possible to assess the effect of the licensing system on the number and nature of firework-related incidents attended by the Northern Ireland Fire and Rescue Service. The data available shows that the majority of such incidents occur in October and November.

Current fireworks regulations⁶⁵

- A valid fireworks licence (issued by the Department of Justice for NI) is required for the public to buy, possess and use most F2 (garden) and F3 (display) fireworks. It is an offence to do so without a licence.
- A fee must be paid to obtain a licence, with the amount dependent on the number of people attending the display:
 - less than 100 attendees, £30 fee

⁶⁴ Around the Halloween period, 17 October to 14 November each year.

⁶⁵ <https://www.nidirect.gov.uk/articles/fireworks#toc-4>

- more than 100 but less than 1,000 attendees, £80 fee
- more than 1,000 attendees, £160 fee
- A licence is only valid for the time stated
- Persons must be aged 18 and over to buy F2 and F3 fireworks
- Persons must show their licence to a retailer when purchasing fireworks
- It is illegal for fireworks to be sold from premises not licensed/registered by the Department of Justice (retailers are required to display their certificates of registration at the point of sale)
- Aligned legislative option: B, J

Policy background

Firework regulations in Northern Ireland have historically been amongst the strictest in the world and have been heavily influenced by the country's unique security situation. During the Troubles there was a total ban on fireworks with the exception of public displays. This ban was lifted in 1996, coinciding with the paramilitary ceasefire. However following a number of cases of fireworks being misused as weapons (especially against the police), the Security Minister announced a review of firework's policy in October 2001 and in May 2002 regulations requiring persons to obtain a licence to use garden (F2) and display (F3) fireworks came into effect through the [Explosives \(Fireworks\) Regulations \(NI\) 2002](#). The tightening of regulations was generally welcomed by the public and politicians alike. Fireworks offences carry a maximum fine of £5,000 and/or a three month prison sentence.

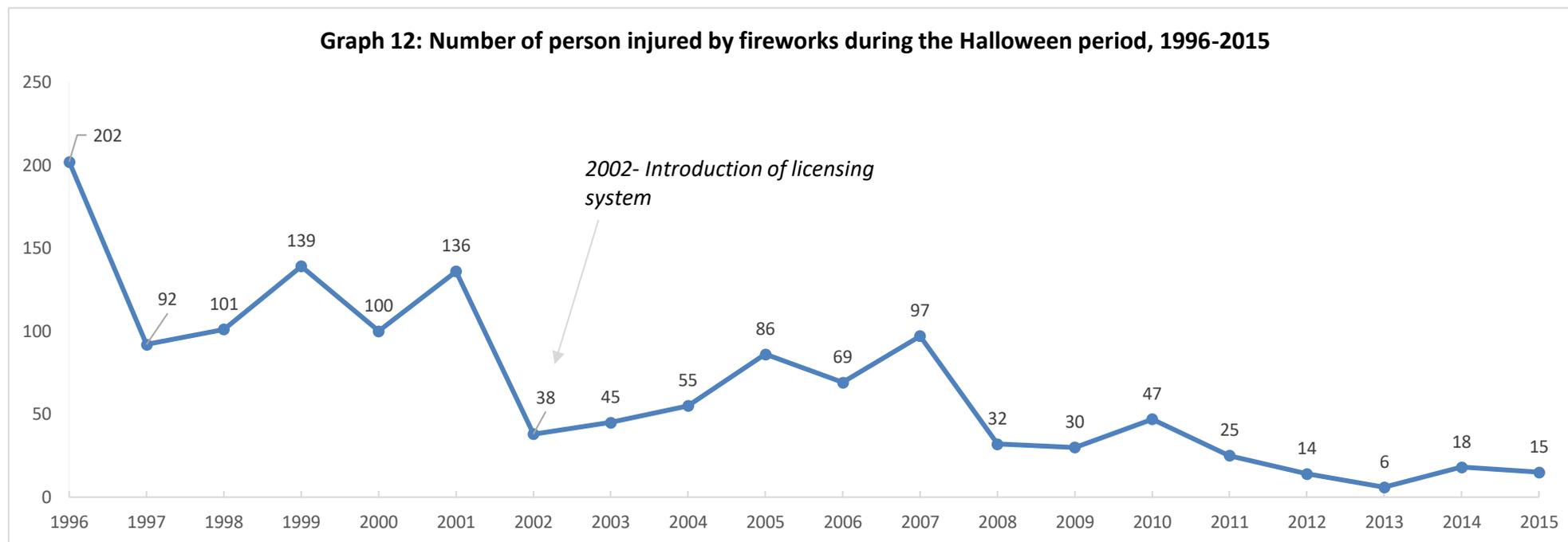
Impact of regulations: injuries

To help assess the effectiveness of legislative changes, an annual survey of fireworks injuries (persons injured directly by fireworks and treated at emergency care departments during the four week Halloween period⁶⁶) was carried out by the Department of Health, Social Services and Public Safety (in conjunction with partners) from 1996 to 2015. The statistical release was discontinued in 2016 following a National Statistical Review. Time series data is presented in Graph 12.

Following the introduction of the new legislation in 2002, there was a significant reduction in the number of persons injured by fireworks, from 136 in 2001 to 38 in 2002, a fall of 72%. With the exception of a spike in 2007, the number of persons injured by fireworks has been

⁶⁶ 17 October-14 November each year

much lower since 2002 compared to when no licence was required. Between 1996 and 2015, the number of persons injured from fireworks and presenting at emergency departments decreased from 202 to 15, a fall of 93%.



Source: [Firework Injury Statistics, 2015](#)

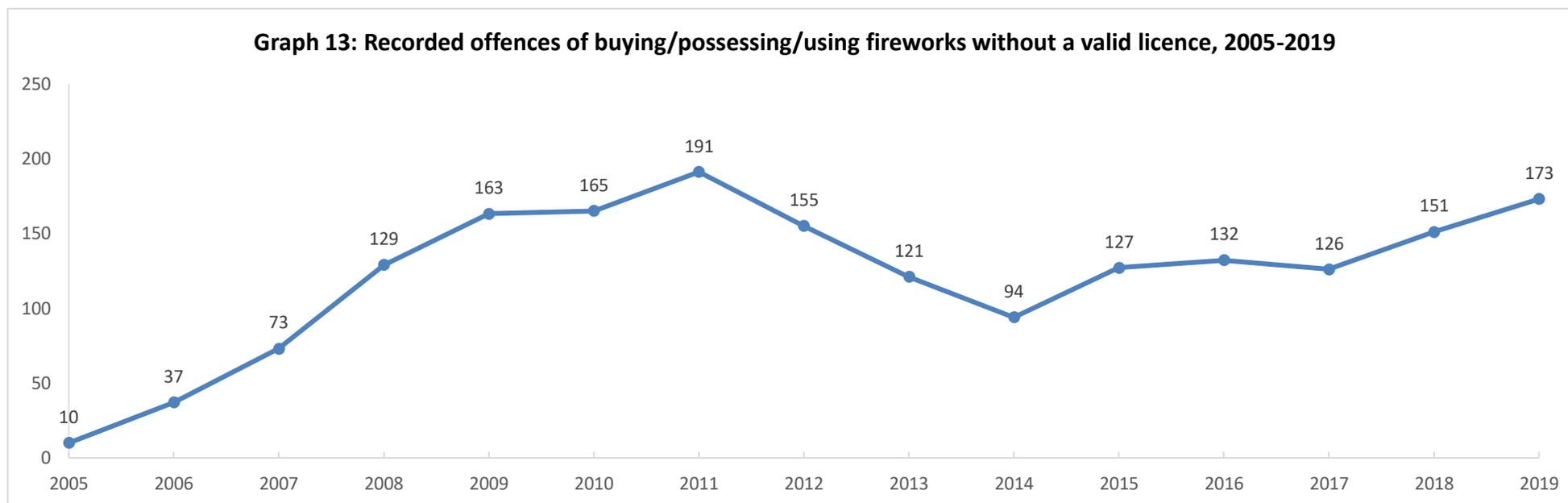
Impact of regulations: crime

Following an FOI request, the Police of Service Northern Ireland (PSNI) shared data concerning the number of recorded offences for buying/possessing/using fireworks⁶⁷ without a valid licence⁶⁸ from 2005 to 2019 and this is shown in Graph 13. The graph shows that the

⁶⁷ Includes SB4904092 'possessing fireworks without a licence'; S4904098 'purchasing fireworks without a licence'; SB4904044 'purchasing fireworks without a licence'; SB4904093 'using fireworks without a licence'; AA4904044 'aiding and abetting purchasing fireworks without a licence'; SB4904064 'possession of fireworks without a licence'; SB4904067 'purchasing fireworks without a licence'; SB4904075 'using fireworks without a licence'.

⁶⁸ Database does not specify the grade of fireworks involved.

number of recorded offences increased year-on-year from 2006 to 2011, peaking at 191, before declining until 2014. The number of offences stabilised from 2015 to 2017 before increasing in 2018 and 2019, but it is too soon to say whether these increases are the beginnings of a trend.



Source: PSNI

As part of the FOI response PSNI also provided the number of recorded offences of people selling fireworks without a valid licence⁶⁹ from 2007 to 2019. As detailed in Table 13, there is no identifiable trend and there has been 10 or fewer offences each year since 2013.

⁶⁹ Includes SB4904045 'selling fireworks without a licence'; SB4904097 'selling fireworks without a licence'; SB4904054 'selling fireworks when licence not produced'; SB4904067 'selling fireworks without production of a licence'.

Table 13: Number of recorded offences of selling fireworks without a valid licence, 2007-2019

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Offences- selling fireworks without a valid licence	3	6	15	22	10	11	6	1	6	8	3	2	10

Source: PSNI

Impact of regulations: police safety

Separate from the FOI response PSNI shared data concerning the number of accident/incident/near miss reports submitted by police officers as a result of being struck by fireworks from 2001 to 2019. As we can see from Table 14, 35 reports were submitted in 2002, the year in which the current regulations were introduced, an increase of 33 on 2001. Looking at the time series, there is no increasing or decreasing trend, instead the numbers tend to vary annually, although they have shown signs of stabilising in recent years. The table also shows that there has been a couple of spikes across the time series, with 58 officers struck by fireworks in 2012.

From the data there is no clear indication that the licensing system has had an impact on the number of officers being struck by fireworks. PSNI noted that such occurrences normally take place during times of public disorder. It is important to consider that the data only includes police officers who submitted a report and therefore the true number of officers struck by fireworks may be higher.

Table 14: Number of police officers struck by fireworks*, 2001-2019

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Police officers struck by fireworks	2	35	7	2	21	2	1	1	7	3	22	58	29	0	3	0	1	1	2

Source: PSNI

* Measured by number of reports submitted by police officers as a result of being struck by fireworks.

Impact of regulations: anti-social behaviour

PSNI also provided figures on the number of anti-social behaviour (ASB) incidents which also include a fireworks code, from 2011/12 (earliest data available) to 2019/20. Fireworks codes include inappropriate use of fireworks, unlawful sale or possession of fireworks and

noise created by fireworks⁷⁰. Table 15 shows that there is no increasing or decreasing trend in the total number of ASB incidents with a fireworks code, however that's not to say that there might be a pattern if the data were disaggregated into the specific firework codes mentioned above. Whilst there has been small annual changes, the number of ASB incidents with a fireworks code has been somewhat consistent in recent years.

Table 15: Number of ASB incidents including a fireworks code, 2011/12-2019/20

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Number of ASB incidents including a fireworks code	1,387	1,191	674	815	1,012	997	1,328	1,175	1,423

Source: PSNI

Impact of regulations: fire service

Following a FOI request the Northern Ireland Fire and Rescue Service (NIFRS) provided data concerning firework-related incidents from 2015 to 2019. Whilst the lack of time series data means it is not possible to assess the effect of the licensing system on the number and nature of such incidents, the information is included for context. As we can see from Table 16, between 2015 and 2019 the NIFRS dealt with 40 firework-related incidents. The number of such incidents has been fairly consistent (varying from 6-8) with the exception of 2018, when there 12. Unsurprisingly the majority of these incidents occurred in October and November, coinciding with Halloween and Guy Fawkes. The table also details the type of firework-related incidents dealt with by the NIFRS during this time. As we can see, a little over half (53%) were categorised as false alarms whilst a further 16 (40%) were major fires.

In addition, Table 16 includes figures on the total number of support vehicles and crew in attendance at the 40 firework-related incidents recorded from 2015-2019. During this time 30 support vehicles and 378 crew attended these incidents, with an average (median) of 9 crew attending each fireworks-related incident. The number of crew on site ranged from 5 to 23. Only total figures were provided for these breakdowns.

⁷⁰ Noise covers both public and private firework displays.

Table 16: Firework-related incidents attended by NIFRS, 2015-2019

	2015	2016	2017	2018	2019	Total
Firework-related incidents	6	8	8	12	6	40
Firework-related incidents occurring in October & November	4 (67%)	7 (88%)	4 (50%)	8 (67%)	3 (50%)	26 (65%)
False alarm	3	2	4	9	3	21
Major fire (dwelling and other)	2	6	2	3	3	16
Secondary fire	1	0	1	0	0	2
Specialist service call	0	0	1	0	0	1
Support vehicles in attendance	-	-	-	-	-	30
Crew in attendance	-	-	-	-	-	378

Source: Northern Ireland Fire and Rescue Service, FOI Request

- denotes that annual data was not available

REPUBLIC OF IRELAND

Main points

- From 2009 to 2012 the number of fireworks-related hospital discharges declined year-on-year. Since then there has been no pattern but the figure has been lower than that recorded in the early part of the time series.
- Between 2007 and 2010 there was a marked increase in the number of Gardaí recorded firework offences, possibly reflecting the infancy of the offences enacted in 2006 and the accompanying increased Gardaí investigative powers.
- Between 2006 and 2019 the vast majority of Gardaí recorded firework offences were recorded during the fourth quarter of the year.

Current fireworks regulations

- The general public (aged 12 and over) can buy, possess and use F1 category fireworks
- F2-F4 category fireworks can only be used by pyrotechnicians for public displays, who hold a licence from the Department of Justice (DoJ)
- All F2-F4 category fireworks (apart from those imported under a DoJ issued licence) are illegal- includes selling/buying, possessing and/or igniting of fireworks
- Legislative options: A

Policy background

The Republic of Ireland has a long-standing tradition of fireworks being banned for public sale and use. The only fireworks 'legally held' are those imported under DoJ licences for public displays, all other fireworks imported, sold or used are illegal and offending persons are liable for prosecution.

In 2005 the DoJ launched a consultation to review existing law and policy around the control of fireworks, with consumer fireworks their main focus⁷¹. The consultation was initiated on the back of growing concerns around illegal fireworks. An Garda Síochána seized an

⁷¹ <http://www.inis.gov.ie/en/JELR/FireworksPolicy.pdf/Files/FireworksPolicy.pdf>

increasing number of fireworks between 2000 and 2004⁷², with such seizures only accounting for a portion of the fireworks which were illegally sold to the public. The Black Market trade of fireworks from Northern Ireland was a particular problem. In addition there were also concerns around the misuse of fireworks, both as a public nuisance and as a weapon, especially against the emergency services. Consequently, the consultation proposed a number of options for change including strengthening enforcement, liberalisation, time restrictions and controlling retail outlets.

Following the consultation, the Government opted for an enforcement approach. A number of fireworks related amendments were made to the Explosives Act 1875 under part 6 of the [Criminal Justice Act 2006](#). These included new fireworks offences⁷³, Gardaí investigative powers and increased penalties for the misuse of fireworks.

Impact of regulations: injuries

Following a request for information, the Healthcare Pricing Office (HPO) shared data concerning the number of hospital discharges with any diagnosis of the external cause code 'discharge of firework'^{74;75} from 2009 to 2019 and this is presented in Table 17. The number of such reported discharges declined annually from 2009 to 2012, and since then there has been no increasing or decreasing trend. In spite of annual fluctuations, the figures have remained lower than they were in 2009 and 2010. With no data available for before the introduction of the enforcement measures in 2006, it is difficult to ascertain the effect of these regulations. However the declining trend from 2009 to 2012 and the figures being lower since the early part of the time series could point to the regulations having an effect over this time.

⁷² 2000: 5,759 items. 2001: 15,000 items. 2002: 16,690 items. 2003: 25,771 items. 2004: 36,223 items

⁷³ 2006 offences: 'igniting a firework or causing it to be ignited', 'throws, directs or propels an ignited firework at or towards a person or property', 'possessing a firework with intent to sell or otherwise to supply it to another and not holding a licence'.

⁷⁴ Number of discharges from acute public hospitals reported to the Hospital In-Patient Enquiry (HIPE) scheme. HIPE is a health information system designed to collect medical and administrative data regarding discharges from, and deaths in, acute public hospitals. Excludes information on Emergency Department activity and out-patient activity. Each HIPE discharge record represents one episode of care.

⁷⁵Data concerns discharges with any diagnosis of code W39 'discharge of firework'. Code W39 Discharge of Firework is an external cause code. External cause codes are intended for use as additional codes to identify the external cause of conditions. HIPE discharges are coded using the International Statistical Classification of Diseases and related health problems, 10th revision - Australian Modification/Australian Classification of Health Interventions/Australian Coding standards (ICD10-AM/ACHI/ACS). From 2009 to 2014 the 6th edition of this classification was used, from 2015 to 2019 inclusive the 8th edition of this classification was in use.

Table 17: Number of hospital discharges with any diagnosis of the external cause of ‘discharge of firework’, 2009-2019

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of hospital discharges	31	22	20	10	12	~	10	11	8	20	15

Source: HIPE, Healthcare Pricing Office

~ denotes where the number of discharges is 5 or less

Impact of regulations: crime

The Central Statistics Office (CSO) publishes recorded crime data on fireworks offences⁷⁶. A criminal offence is recorded by An Garda Síochána when there is a probability that a criminal offence took place and there is no credible evidence to the contrary. Data on the number of recorded firework offences from 2006 to 2019⁷⁷ is presented in Table 18. A further disaggregation of the fireworks offence grouping was requested but the CSO were not able to provide this.

From 2007 to 2010 the number of recorded firework offences increased, where the number peaked at 461 offences. This could be a reflection of the increased Gardaí investigative powers and the infancy of the offences enacted in 2006, with the changes gradually having an effect. The number of offences decreased for five consecutive years from 2011 before increasing in 2016. Since 2016 the number has fluctuated but remained below earlier levels (2011-2015).

Table 18: Number of recorded firework offences, 2006-2019

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of firework offences	38	250	333	429	461	344	268	146	114	95	134	184	168	205

Source: Central Statistics Office- Recorded Crime

⁷⁶ Code 114 ‘firework offences’ in Irish Crime Classification System. The primary offence is that offence to which the greater penalty may apply. The Recorded Crime Statistics series is categorised as being ‘under reservation’ by the CSO. This reflects the fact that there are data quality issues in the underlying sources used to compile statistics for some incidents and they may be subject to revision.

⁷⁷ The year corresponds to the year in which they were recorded by An Garda Síochána.

In addition to annual figures, the CSO publishes quarterly firework offences numbers. As shown in Table 19, across the time series the vast majority of offences were recorded in Quarter 4, which incorporates Halloween, Guy Fawkes and New Year.

Table 19: Number of recorded firework offences in Q4, 2006-2019

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of firework offences	38	250	333	429	461	344	268	146	114	95	134	184	168	205
Number of fireworks offences in Q4	37	244	283	380	379	276	209	115	96	73	123	144	137	150
Percentage of firework offences in Q4	97%	90%	85%	89%	82%	80%	78%	79%	84%	77%	92%	78%	82%	73%

Source: Central Statistics Office- Recorded Crime

ANNEX A- ADDITIONAL TABLES AND GRAPHS

As mentioned in the main body, with the exception of the Northern Territory and Tasmania, consumer fireworks are prohibited in all states and territories in Australia.

State/Territory	When public use of fireworks banned	Aligned legislative option
Australian Capital Territory	2009	A
New South Wales	1987	
Queensland	1972	
South Australia	2001	
Victoria	1985	
Western Australia	1967	

New South Wales

No relevant evidence from New South Wales could be sourced for this paper.

South Australia

The fireworks industry in South Australia is relatively small, with around 50 current licensed pyrotechnicians. According to SafeWork South Australia (the regulator), the introduction of firework regulations significantly reduced the number of fireworks complaints⁷⁸.

⁷⁸ Information provided by WorkSafe South Australia via email on 05 June 2020.

Data provided by the South Australia Police shows that since 2014 the number of offences for fireworks possession has been negligible.

Table A: Offences under Explosives Regulations Act 2016 South Australia, 2014 to 2020

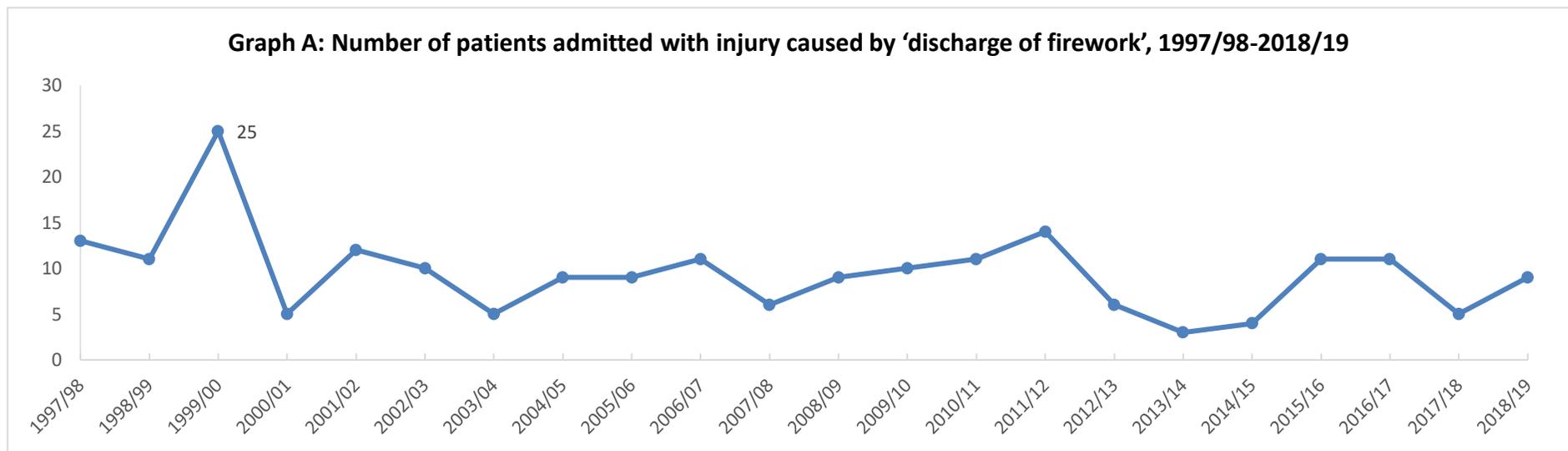
	2014	2015	2016	2017	2018	2019	2020
Possess firework other than general use*	5	4	5	2	6	5	3

Source: South Australia Police

*General use firework means- toy pistol caps; starting pistol caps; sparklers; party poppers; bonbon crackers or snaps for bonbon crackers; blaster balls; aluminium torches, amerces, indoor table bombs or magnesium torches.

Queensland

Graph A shows the number of patients admitted to public and private acute hospitals in Queensland due to an injury caused the by discharge of a firework. Since a high of 25 in 1999/00, the number of admitted patients has been small each year (< 15). Across the time series, a total of 209 people were admitted to hospital. Corresponding data for those presenting at emergency departments could not be provided by the Department of Health.



Source: Department of Health, Queensland.

In Queensland there is a two-tier licensing system: contractors and operators, with the former holding the most responsibility. The licensing system was altered following the death of an 11 year old girl at a public fireworks display in 2000. The subsequent coroner's investigation of the state of fireworks regulation and usage resulted in 17 recommendations for change, the most significant of which concerned the licensing system.

At the time of writing, there are 25⁷⁹ active fireworks contractors in the state. The fireworks contractor licence authorises the holder to:

1. organise a fireworks display (must notify the Explosives Inspectorate)
2. possess fireworks
3. purchase fireworks
4. supply fireworks to a fireworks operator for use in an organised fireworks display
5. store and transport fireworks

Contractors employ fireworks operators to conduct displays, and they may also be operators themselves. At the time of writing, there are 164 licenced firework operators in Queensland. The fireworks operator's licence authorises the holder to:

1. use fireworks for the purpose of a fireworks display
2. possess fireworks for the purpose of using them in a fireworks display
3. store and transport fireworks for the purpose of using them in a fireworks display

In the lead up to the millennium celebrations there was a significant increase in the number of licenced people. The original 600 operators across the state doubled and approximately 2,600 displays were conducted in 2000. By restricting the number of licenced persons the number of displays fell⁸⁰. The number of firework display notifications received by the Queensland Inspectorate from 2007 to 2019 is shown in Graph B. From the data we can see an increasing trend in the number of displays from 2012 to 2018. The number of notifications dipped in 2019 to 1,471, similar to the figures for 2013. This decrease has been attributed to the bushfires experienced in Queensland in 2019.

⁷⁹ Queensland Explosives Inspectorate

⁸⁰ Information provided by the Queensland Explosives Inspectorate via email on 24 June.

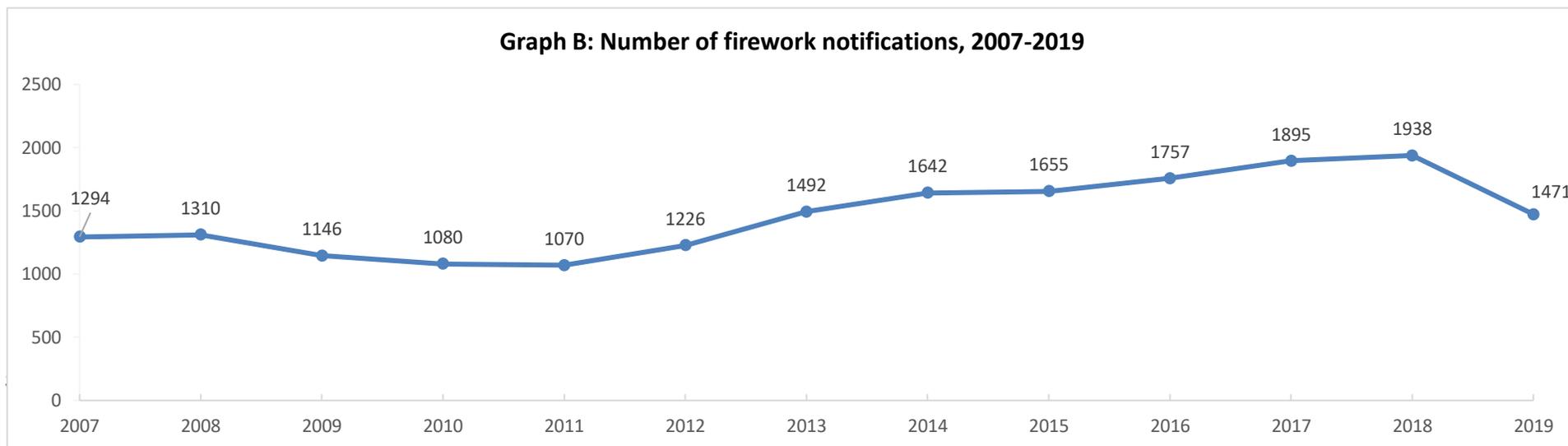


Table B details fireworks complaints⁸¹ received by the Inspectorate from 2014 to 2019. It shows the number of complaints concerning displays that were not notified to the Inspectorate- illegal in Queensland. It also details the total number⁸² of complaints received. There has been an increase in the total number of complaints and the number of complaints concerning displays without notification. However, anecdotal information indicates that this constitutes a small fraction of the amount of illegal fireworks use in Queensland⁸³. The Inspectorate attributes some of the increase in complaints to the rise of social media as well as the introduction of a dedicated fireworks complaints form on the Department's website.

⁸¹ Does not include complaints made to the Queensland Police Service or to local government authorities, as these are not generally communicated to the Inspectorate.

⁸² Other categories of complaints included display noise and safety. In some cases one complaint may contain multiple reasons, e.g. noise and no notification. All are captured individually.

⁸³ Included in response received from the Explosives Inspectorate, 24 June 2020

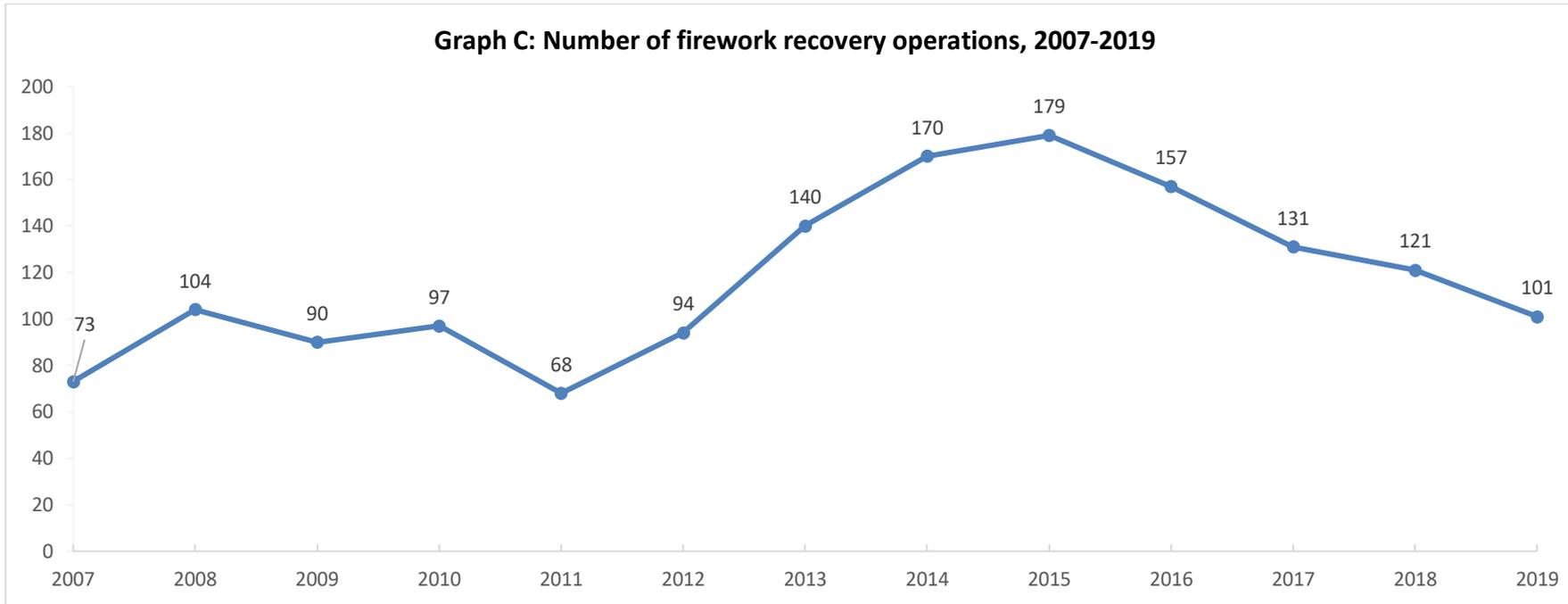
Table B: Fireworks complaints received by the Queensland Explosives Inspectorate, 2014-2019

	2014	2015	2016	2017	2018	2019
Number of displays without Inspectorate notification	9	14	19	33	36	41
Total fireworks complaints	44	44	54	70	76	111

Source: Queensland Explosives Inspectorate

The Explosives Inspectorate provides a 'recovery' service for fireworks. This includes when members of the public request the removal of fireworks, fireworks are handed in and when fireworks are seized by police. Graph C shows the number recovery operations (when an Inspector has been deployed to recover fireworks) from 2015 to 2019. Recovery operations increased from 2012 to 2015 before decreasing in the past four years, with the number in 2019 (101) similar to that in 2008 (104). Recent emphasis on reducing the traffic of illegal fireworks into Queensland from other states and territories may at least in part account for some of the decrease in the number of fireworks recoveries in the recent years. During operations the quantities of fireworks recovered varied from a single 'cracker' to approximately 500 kg⁸⁴.

⁸⁴ Included in response received from the Explosives Inspectorate, 24 June 2020



Source: Queensland Explosives Inspectorate

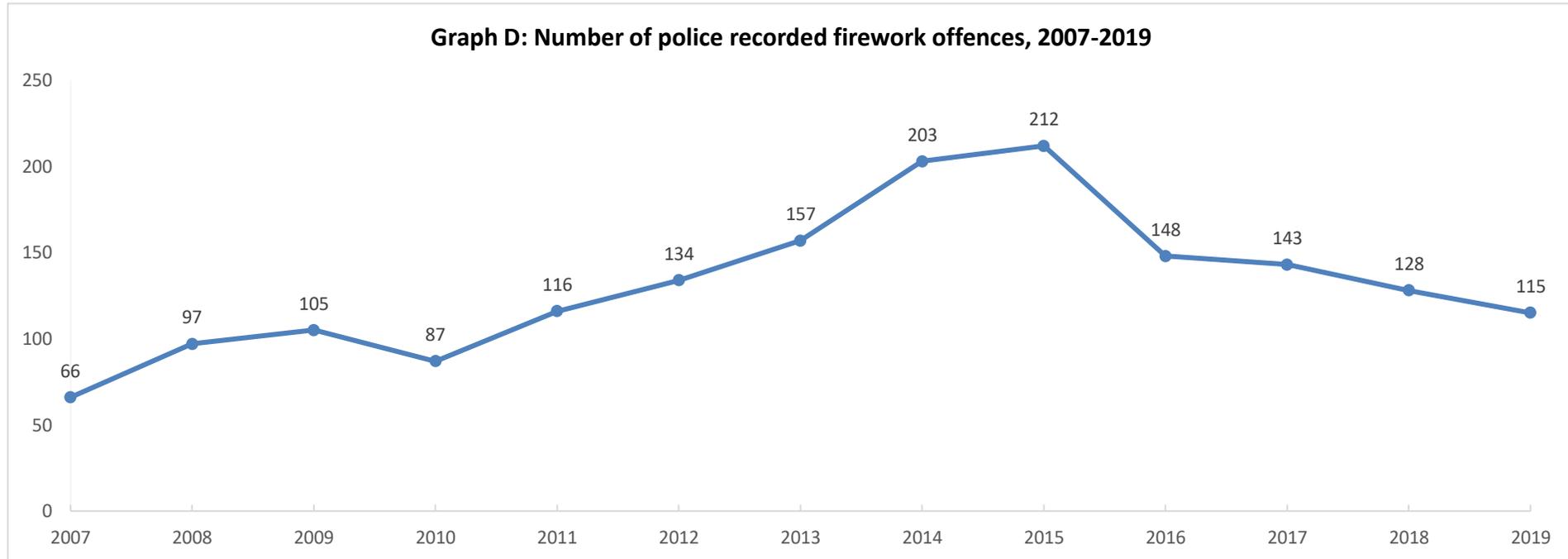
Queensland Police provided figures on the number of calls for service received in relation to firework incidents from 2014 to 2019. Table C shows that following a sizeable decline in 2015 the number has increased every year since, although the changes have been small.

Table C: Police calls for service for firework incidents, 2014-2019

	2014	2015	2016	2017	2018	2019
Calls for service	1,448	1,149	1,338	1,410	1,481	1,487

Source: Queensland Police Service

Queensland Police also shared information regarding the number of recorded firework offences from 2007 to 2019. From 2011 to 2015, the number of firework offences increased year-on-year, peaking at 212. There was a sharp fall in 2016 and since then the number has followed a declining trend. Notwithstanding this recent decrease, the number of firework offences in 2019 was 74% higher than in 2007.



Source: Queensland Police Service

Victoria

No relevant evidence from Victoria could be sourced for this paper.

Western Australia

The Western Australia Department of Mines, Industry Regulation and Safety believes that the licensing system works well- with the two tier system (separate licenses for contractors and operators) providing numerous layers of accountability⁸⁵. The system has been in place for over 10 years and in spite of initial concerns from the industry, it is not a source of contention. The licensing system is not onerous or costly to run. About 200 fireworks displays are held each year in Western Australia.

Data provided by the Department of Fire and Emergency Services shows the number of fires started by fireworks each year from 2000 to 2019. From Table D we can see that there is no increasing or decreasing trend in the number of fires started by fireworks. Rather, the number has been largely constant, punctuated by a few spikes. Across the time series, most fires started by fireworks have been accidental.

Table D: Fires identified as being started by fireworks (including sparklers)⁸⁶, 2000-2019

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of fires	28	25	24	9	30	14	24	19	27	23	25	17	19	23	27	26	24	23	19	31
Accidental	16	8	9	3	14	6	18	9	10	15	13	12	7	11	14	15	11	14	12	17
Deliberate	7	6	6	2	3	2	1	3	6	3	7	2	5	7	6	6	4	2	3	5
Suspicious	5	8	8	3	10	4	5	5	9	5	5	3	5	4	7	5	8	6	4	9

Source: Operational Information Systems, Department of Fire and Emergency Services, Western Australia

⁸⁵ Information provided by the Department of Mines, Industry Regulation and Safety via email on 03 July 2020.

⁸⁶ Accidental- fire started without the intent to cause damage (i.e. an accident), Deliberate- fire started with the intent to cause damage, Suspicious- fire suspected to have been started with the intent to cause damage.

How to access background or source data

The data collected for this social research publication:

May be made available on request, subject to consideration of legal and ethical factors. Please contact Hannah.Davidson@gov.scot for further information.



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