He Kaupare. He Manaaki. He Whakaora.
prevention. care. recovery.

02 September 2022

[redacted]

Kia ora [redacted]

Your Official Information Act request, reference: GOV-019891
Thank you for your email of 11 August 2022, asking for the information related to the economic justification for ACC's investment in the 2019 firearms buyback scheme, and firearm and hunting related data. Due to the nature of your request, it is being responded to under the Official Information Act 1982 (the Act).

ACC's investment in the Gun buy-back scheme
As per section 263 of the Accident Compensation Act 2001 (the AC Act), a primary function of ACC is to promote measures to reduce the incidence and severity of personal injury. As such, ACC invested in the gun buy-back scheme under section 263 of the AC Act.

After the unprecedented event of 15 March 2019, the need to make changes to New Zealand's gun laws was identified early on as part of the Government's response. The changes included measures to reduce legal access to, and the number of, semi-automatic firearms capable of causing significant harm. Given the pace at which the decisions had to be made, ACC needed to consider the issue urgently and this largely fell outside of the usual cycle of Board meetings and papers typical of its decision-making processes.

At one of its usual pre-scheduled meetings, on 21 March 2019, the ACC Board discussed and decided in principle to contribute funding from ACC's injury prevention budget to support the gun buy-back programme that the Government was considering.

ACC management was tasked with assessing the extent to which the buy-back programme was likely to contribute to a reduction in the severity and incidence of injuries from the prohibited firearms. According to our assessment, the gun buy-back will prevent a considerable number of injuries and reduce ACC Scheme costs by approximately $70.5 million (referred to as the return on investment, or ROI).

On 3 April 2019, the ACC Board decided to approve $40 million funding for the gun buy-back programme.

Attached is the information we are providing
Note that as we considered staff names to be outside the scope of your request, these are marked accordingly in the attachments.

The two notes (Appendix A and C) are included in the scope of your request because they are key resources used by ACC staff in their discussions with members of the Executive and therefore formed part of the decision-making process.

There is one further document in scope of your request. A large spreadsheet containing claim information from victims of firearms related over the ten years used for the return over investment (ROI) modelling. We are withholding this document in full pursuant to section 9(2)(a) of the OIA where it is necessary to protect the privacy of individuals. We have considered the public interest in this matter and are of the view that it does not outweigh the need to protect the personal information of the individuals named in the spreadsheet.

The information being released are as follows:

1. Talking points regarding ROI for discussion with Chief Risk and Actuarial Officer (Appendix A)
2. ROI modelling (Appendix B)
3. Claim number theory reference note (Appendix C)
4. Memorandum to ACC Injury Prevention Design and Delivery Committee providing an update to the return on investment and accompanying minute (Appendix D)
5. Memorandum to ACC Injury Prevention Design and Delivery Committee regarding the international experience and expected return on investment (Appendix E)
6. Aide memoire from ACC to the Minister for ACC (Appendix F).

In the table below we have provided you with the number of accepted new and active hunting and firearm claims from 2015 to 2022, by calendar year

The data ACC collects about accidents is largely reliant on the information provided on the ACC45 injury claim form which is completed when someone seeks treatment for an injury. Some parts of this form are mandatory to complete, and others are not.

There is also a free text field on the claim form where clients are able to provide a brief description of how their accident happened. It is not mandatory to complete this field and not every client does so. Some clients provide more detail than others and the accuracy of these descriptions vary significantly. Firearm related claims are identified by a keyword search of the accident description or the presence of a shooting related injury description.

Due to the limitations above, while largely representative of the claims received by ACC, the data should not be considered a complete, definitive measure of the claims related to firearm related accidents that ACC received during the period covered by this response.

All claims in column 'New Firearm Claims with Keywords' meet the definition for firearm claim but have been further identified by the presence of keywords: recoil, muzzle blast, discharge or firing.

As Hunting is categorised as a sport, hunting related claims are identified where the sport indicator is 'Hunting'.

Table 1: New and active claims and active costs for hunting and firearms related injuries between 1 January 2015 and 20 August 2022, by calendar year

Calendar Year	New Hunting Claims	Active Hunting Claims	Active Hunting Costs	New Firearm Claims	New Firearm Claims with Keywords	Active Firearm Claims	Active Firearm Costs
2015	1,572	1,767	$3,506,656	502	50	573	$1,051,272
2016	1,605	1,882	$3,654,550	500	56	588	$1,127,100
2017	1,412	1,708	$3,958,302	474	37	567	$1,507,720
2018	1,362	1,688	$3,496,559	480	50	604	$1,493,489
2019	1,624	1,968	$3,678,766	519	37	626	$3,523,824
2020	1,524	1,874	$3,971,622	480	38	653	$3,455,290
2021	1,621	1,943	$4,423,274	474	39	614	$3,088,237
2022	1,101	1,435	$2,849,283	303	25	446	$1,737,665

Notes about the data

- All included claims are accepted for cover.
- New claims are claims lodged with ACC between 1 January 2015 and 20 August 2022. A claim may be lodged immediately following an accident or at any later stage.
- Active claims are counted where the claim received at least one payment from ACC between 1 January 2015 and 20 August 2022. A claim is not necessarily lodged or had the accident occur within the same time period. A claim may be active in more than one calendar year and will be counted once in each calendar year in which at least one payment was made.
- Claims managed by an accredited employer are not included.
- A claim may be counted under the hunting definition and the firearm definition or just one of the two.
- Costs are provided based on payment date which is not necessarily the date of service.
- Costs do not include Public Health Acute Services (PHAS) payments. These costs are for treatment in a public hospital during the acute phase of an injury and are covered by bulk payments made by ACC to the Crown. As such, these payments cannot be attributed to individual claims.
- Costs are exclusive of GST.
- Data was extracted 24 August 2022 and may differ if re-run later.

If you have any questions about this response, please get in touch
You can email me at GovernmentServices@acc.co.nz.

If you are not happy with this response, you can also contact the Ombudsman via info@ombudsman.parliament.nz or by phoning 0800 802 602. Information about how to make a complaint is available at www.ombudsman.parliament.nz.

Ngā mihi

Sara Freitag
Acting Manager Official Information Act Services
Government Engagement

Cirb notes for Herwig discussion on Friday 29th March

Methodology

Nearly 300,000[1] licensed firearm owners own (some estimates are 250,000 owners) and use New Zealand's estimated 1.5 million[1] firearms.[I have no idea of what the breakdown between the different calbres are but is seems once a bullet enters someone it does reasonable amount of damage whether there was the intent or not. As scoping out a "prevention" programme we would look at both intentional and unintentional claims. A prevention intervention would not discriminate between the two groups.

Free text was read to determine if the person injured was the result of being shot or not. It is clear whether this occurred or not.

- I also excluded noise induced hearing loss claims.
- Handing of the firearm what resulted in the injury such as cleaning or loading the firearm were excluded as this typically are low cost claims (e.g., requiring stiches) and the discharge of the firearm into another person has not occur.
- Excluded things like recoil, or hit in eye with scope as these falls outside what I am trying to look for
- Excluded Shot gun, BB gun, or pellet related
- Excluded things like falling down bank, or walked into branch, things where there firearm was present but not related directly to the ACC claim

Firearms where the free text has indicated a crime has been committed but not proven in court of law were also included to improve the cost data.

I was also looking for a bullet (not pellet)

This gave me 480 claims to get a distribution of the costs from my original code up to 2009.

ACC's A&R have further refined my definition which give only a handful of claims a year. I think they have dumbed it down so I have unnumbed it to get more claims which I have then read the claims. I think this is a truer and fairer view So if the numbers don't' match with A&R it because I read each form, they did not.

I now have 12,000 claims from 2009 that I am reading to help sort this out. In here are no doubt are ones that we don't need such as BB gun and hearing loss. But there need to be cleaned up to get to the right data. I can move thought these pretty quickly.

Costs

It appears looking at different types of claims where people have been shot there is damage that take a long time to recover from. This means we can use all claims where someone has been clearly 'shot' to get a fairer cost profile.

To get an estimate of the costs, I pulled data around firearms using my previous definitions, but excluded injuries that were pellet related, so shot guns were excluded as well as BB Guns. These tend to be small costs injuries such as broken teeth from a shot gun pellet in a duck. Small calibre refile were also excluded as these are used for pest control and are unlikely to be used on persons in the main. Pistols typically have large calibre so were included to establish costs. I needed to get a fair average cost. Calibre is the measurement of the diameter of the inside of a gun barrel. A higher calibre firearm uses larger rounds that can do more tissue damage and are more lethal.

Costs in my original data set

Using my original code 480 claims to get a distribution of the costs from my original code up to 2009. The estimated cost is $22.8M with an average of $47,000 per claim. I'm not really sure what the inflation or discount rate that has been used. The median is $1900 and 1 SD $209,000. The average cost of a fatal claim in this dataset is $54,000 and all fatals cost $6M (125 fatal). The average SI is $886,000 per claim (4 SI).

Take out fatal and serious and average claim cost falls to $10,900 per claim.

I'm estimating a fatal claim is $ over the life of the claim.

For example the firearm in Christchurch would cost ACC about 50 fatals at
Plus another 10 serious at
Plus another 40 entitlement claims
Plus any other claim type that might occur that I'm unaware about.

As a comparison, I wanted to see what a fatal claim costs on average Not firearm related, at the moment I have the following for the average fatal claim across all account and I was surprised by a few. They feel too high. I used 2013 as my dataset as fatal costs will be stable by then

- Ave per fatal claim across all accounts is $85,000
- Work average fatal $160,000 average per fatal claim
- MV average fatal $101,000 average per fatal claim
- TI $188,000 average per fatal claim
- NE $16,000 average per fatal claim, but 0-14 $23,000 so I went through the costs and it seems the costs relate to not being killed instantly. Still feels too high
- Earners $197,000 average per fatal claim
-

Looking at any type of dataset I have ascertained that there are 52,000 guns imported a year. This is up on the previous years but average over the last five years. This includes thousands of air rifles and pistols, half were actual guns (26,384). "It is not mandatory to enter the number or volume when completing an entry for the tariff items specified which means that some entries do not have a quantity entered"

However this figure excludes about $2m worth of hand guns or other military style weapons imported last year. So I'm assuming that each of these is about $1200 per year from a internet search (if ACC security call me and ask why I was searching for these then you need to back me that it was work purposes), or about 1600 per year are out there.

Sydney University gun policy expert Philip Alpers estimated that there could be 500,000 semi-automatic rifles and shotguns in NZ. But, he added, "only a small proportion of those would be capable of taking a large- capacity magazine. So that's the number that everyone is trying to guess." A political consultant who has advised the gun lobby, Simon Lusk, says there are an estimated 19,000 military style semi-automatic weapons in New Zealand; and at least 15,000 are registered in NZ according to Police figures This make it difficult to estimate the ACC claim rate for firearms. It also appears the AR15 is a semi-automatic sporting rifle, and among the most popular firearms currently sold in NZ.

Best guess is 19,000 and they are creating X amount of ACC claims (as I can best ascertain), costing us per year.

Other facts

Aramoana and the 1992 amendments to the Act[edit]

After the Aramoana massacre in November 1990, John Banks, the Minister for Police, announced that the government would ban what he and others described as "Rambo-style" weapons and substantially tighten gun laws generally. The law was eventually passed in 1992 and required written permits to order guns or ammunition by mail order, restricted ammunition sales to firearms licence holders, added photographs to firearms licences, required licence holders to have secure storage for firearms at their homes (which would be inspected before a licence was issued), and, controversially, required all licence holders to be re-vetted for new licences, which would be valid for only 10 years.

The law also created the new category of "military-style semi-automatic", which like the Federal Assault Weapons Ban two years later in the United States, mainly covered the appearance rather than the functionality of the guns. These required a special endorsement, security and registration in the same manner as pistols, but could be used wherever A-category guns could.

Guns have been restricted immediately after the Aramoana massacre in 1990, the Scottish Dunblane and Australian Port Arthur massacres in 1996. In March 2010, the New Zealand police bid to reclassify certain types of civilian semi-automatic firearms as military-style semi-automatics was overturned by the High Court as a result of a legal challenge mounted by the New Zealand National Shooters Association (NSA) president Richard Lincoln.[5]

A year-long Parliamentary inquiry into the illegal possession of firearms put forward 20 recommendations in 2017, however, only seven were accepted. Along with those rejected were calls for tighter restrictions on ammunition sales and possession, a firearms register, and new categorisation for semi-automatic weapons.

Catch all
https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12210546
https://www.tvnz.co.nz/one-news/new-zealand/firearm-buyback-scheme-could-cost-500m-twice-governments-estimate-lobbyist-group-says?variant=tb_v_4
https://www.stuff.co.nz/national/christchurch-shooting/111399626/the-ban-of-militarystyle-semiautomatics-will-cost-millions--here-is-how-the-australians-did-it
https://www.newsroom.co.nz/2019/03/21/499756/military-style-semi-automatic-weapons-banned

Programme Valuation Inputs

Programme Details

Name
- Programme Name: Firrearms buy back
- Analysis Code:
- Scenar o: Investment Case
- Scenar o Date:
- Portfol o (new): Community

Ownership
- Team Accountable: Publ c
- Programme Owner:

Intervention
- Intervention Type: Enforcement
- Impact Type: Passive
- Setting:
- Demographic Segment:

Return
- Goal Type: New Claims Reduction

Timeframe
- Start Year: 2019/20
- Duration to Date: 0
- Expected Durat on (years): 20
- Lifecycle: Delivery

Key Assumptions

	Lifetime_Costs
Audience Profile (Total Addressable Population)	
Non- Earners	
Earners	62
Treatment	
Work	
Road	
	62

Use?	**Yes**	
% Change	**75.0%**	

Claims Cost Profile

Weekly Compensation	0%
Medical Treatment	0%
General Practioners	0%
Physiotherapy	0%
Radiology	0%
Other Medical	0%

Financials

Expenditure Variation Factor: 1.0

(000's)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Total
Direct Programme Costs ($000's)											
Personnel	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Buy Back	$10,000	$30,000									$40,000
											$0
											$0
											$0
											$0
											$0
											$0
											$0
											$0
											$0
Total	$10,000	$30,000	$0	$0	0	$0	$0	$0	$0	$0	$40,000
Indirect Costs											
Management Overhead											$0
Deliver & Distribution											$0
Other											$0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Programme Cost	$10,000	$30,000	$0	$0	$0	$0	$0	$0	$0	$0	**$40,000**
Personnel Cost Calulation											
FTE's											
Cost per FTE $	$145,000	$145 000	$145,000	$145,000	$145,000	$145,000	$145,000	$145,000	$145,000	$145,000	
Distribution Range											
Lower	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Upper	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Awareness											
Effective Awareness	%	0%	0%	0%	0%	0%	0%	0%	0%	0%	

Calculation Parameters — These need to be set based on OCL or Levy Assumptions and should be confirmed by Actuarial every 1 July

Discount Rate (NPV)	4.1%	4.2%	4.3%	4.4%	4.5%	4.7%	4.8%	4.9%	5.0%	5.3%	Use investment returns calcuated in sheet I:\Act_Serv\Busir
Inflat on Rate	1.9%	Use LCI from latest June valuat on - average over first 10 years /sasdata-prod/act_serv/DRMv5/Test/20YY06/Proc/drm_eco_central.sas7bdat									
1 + Discount Rate	1.041073	1.04216	1.04325	1.04434	1.04542	1.04651	1.0476	1.04869	1.05027	1.0526	
1 + Net discount rate	1.021661	1.0227282	1.0238	1.02486	1.02593	1.027	1.02807	1.02913	1.03069	1.03297	
Discount to Current ear	98.0%	94.1%	90.2%	86.5%	82.7%	79.1%	75.5%	72.1%	68.7%	65.3%	

Portfolio Parameters

Investment Criter	Portfolio Rating 1	2
Value		
Value - Impact (000's)		
Value - ROI		
Investment (000's)		
Time to Benefits		
CAGR (Year 3)		
Programme Durat on		
Effectiveness		
Effectiveness		
Strategic Fit		
Strategic Fit		

Programme Value Calculation

THIS IS ONLY ONE ITERATION, DO NOT USE! OUTPUTS IS THE (

Core Calculations - incidence

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Lifetime_Costs								
Audience Profile (Total Addressable Population)								
Non- Earners	0	0	0	0	0	0	0	0
Earners	62	62	62	62	62	62	62	62
Treatment	0	0	0	0	0	0	0	0
Work	0	0	0	0	0	0	0	0
Road	0	0	0	0	0	0	0	0
Total	**62**	**62**	**62**	**62**	**62**	**62**	**62**	**62**
Awareness								
Population Size	62	62	62	62	62	62	62	62
% Reach (Cumulative)		0%	0%	0%	0%	0%	0%	0%
% Rate of Awareness Change			0%	0%	0%	0%	0%	0%
Total Aware		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Knowledge								
% Know (Cumulative)		0%	0%	0%	0%	0%	0%	0%
% Rate of Knowledge Change			0%	0%	0%	0%	0%	0%
Total Know		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Behaviour impact on claims								
% Change		75.0%	75.0%	75 0%	75.0%	75.0%	75.0%	75.0%
% Rate of Change			0%	0%	0%	0%	0%	0%
Total Behaviour		**47**	**47**	**47**	**47**	**47**	**47**	**47**
% Audience		*75.0%*	*75.0%*	*75.0%*	*75.0%*	*75.0%*	*75.0%*	*75.0%*
Claims								
Claim Rate %		100.00%	100.00%	100.00%	100 00%	100.00%	100.00%	100.00%
% Rate of Change (to Claim Rate)			0%	0%	0%	0%	0%	0%
Claims #		**46.0**	**46.0**	**46.0**	**46.0**	**46.0**	**46.0**	**46.0**
Claims Costs								
Addressable Claim Volumes		62	62	62	62	62	62	62
Mean claim cost	$77,350	$77,350	$77,350	$77,350	$77,350	$77,350	$77,350	$77,350
Total Addressable Claim Costs ($000's)		$4,796	$4,796	$4,796	$4,796	$4,796	$4,796	$4,796
Cost of Claim		$78,887	$78,887	$78,887	$78,887	$78,887	$78,887	$78,887
% Rate of Change			0%	0%	0%	0%	0%	0%
Severity change		0%	0%	0%	0%	0%	0%	0%
Claims distribution	78,887	3 629	3 629	3 629	3 629	3 629	3 629	3 629
Total Claims Costs ($000's)		**3628.8**	**3628.8**	**3628.8**	**3628.8**	**3628.8**	**3628.8**	**3628.8**
Cumulative Cost Impact		**$3,629**	**$7,258**	**$10,886**	**$14,515**	**$18,144**	**$21,773**	**$25,402**

'AB FOR USE

Year 9	Year 10
0	0
62	62
0	0
0	0
0	0
62	**62**
62	62
0%	0%
0%	0%
0	**0**
0%	0%
0%	0%

Results

(000's)

		Year 1
ROI - Annual		
	Benefits	$3,629
	Programme Costs (Direct & Ove	$10 000
	Net	-$6,371
	Annual ROI	**$0.36**
	Benefit outputs	3628.793285
	Total deaths avoided	-
	Total cost of deaths avoided	$0
	NPV (Benefits)	$32,206.07
	NPV (Costs)	$38,028.28
	NPV (Net)	-$5,822.22
	ROI (NPV)	**$0.85**
	NPV (Lifetime_Costs)	$29,871.36

Analysis Results

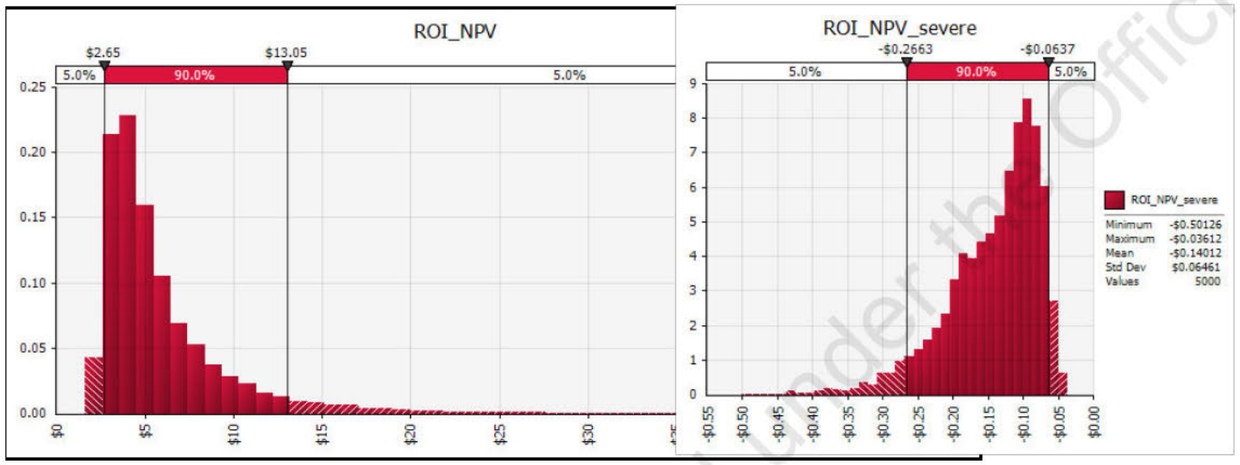
ROI

	ROI	ROI (incl Severity)	x
% Sim Results ROI >$x	100%	0%	-
Mean	0.83 -	0.13	

% Results ROI >$1	23%
% Results ROI >$2	0%

Percentile

5.00%	0.47	(0.27)
10.00%	0.54	(0.23)
15.00%	0.59	(0.21)
20.00%	0.62	(0.19)
25.00%	0.65	(0.17)
30.00%	0.69	(0.16)
35.00%	0.72	(0.14)
40.00%	0.75	(0.13)
45.00%	0.78	(0.12)
50.00%	0.81	(0.11)
55.00%	0.84	(0.10)
60.00%	0.88	(0.10)
65.00%	0.91	(0.09)
70.00%	0.95	(0.08)
75.00%	0.98	(0.08)
80.00%	1.03	(0.07)
85.00%	1.09	(0.07)
90.00%	1.16	(0.06)
95.00%	1.27	(0.05)



Mean yearly results (000's)

NOTE THIS A PASSIVE INTERVENTION SO WILL BE MODELLED OVER 20 YEARS. THIS IS INDICATIVE UNTILL MOVED INTO THE SHEET FOR THE INFLATION AND DISCOUNTING OVER TWENTY YEARS

	1	2	3	4	5	6	7	8	9	10	
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Sum
Benefits	3,602	3,646	3,544	3,542	3,522	3,637	3,550	3,535	3,498	3,592	
Costs	10,000	30,000	-	-	-	-	-	-	-	-	
Net	(6,398)	(26,354)	3,544	3,542	3,522	3 637	3,550	3,535	3,498	3,592	
Discounted Benefits	3,564	3,528	3,352	3,270	3,172	3,191	3,031	2,934	2,820	2,806	31,667
Discounted Costs	9,801	28,228	-	-	-	-	-	-	-	-	38,028
Net	(6,237)	(24,699)	3,352	3,270	3,172	3,191	3,031	2,934	2,820	2,806	
Cumulative Net	(6,237)	(30,936)	(27,584)	(24,314)	(21,142)	(17,952)	(14,921)	(11,986)	(9,167)	(6,361)	

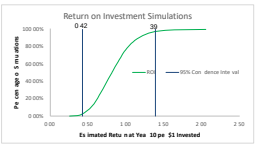
Discounted payback 100,000

Performance Summary

	1 yr (5 yr) [10 yr]	1 yr	5 yr	10 yr	1 yr	5 yr	10 yr
Target Population	62 (310) [620]		62	310	620		
Claim Rates	62 (310) [620]		62	310	620		
Cost per Claim	$77,350		77 350				
Addressable Costs	$4,745k ($22,680k) [$42,073k]		4,745	22,680	42,073		
Aware	0 (0) [0]		0	0	0	0	0	0
Knowledgeable	0 (0) [0]		0	0	0	0	0	0
Behaviour Change	46 (230) [460]		46	230	460	46	230	460
Claim Cost Avoided	$3,564k ($16,886k) [$31,667k]		3,564	16,886	31,667	$3,590,118.07	$17,153,194.91	32206066
Deaths avoided	0 (0) [0]		0	0	0	0	0	0

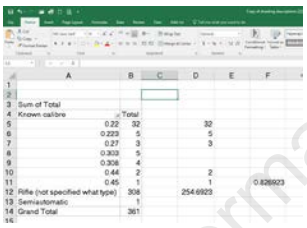
Start Cell/Year 1 End	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 5	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 10	620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Cell/Year 1 End	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 5	310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 10	620	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Cell/Year 1 End	4795.705956	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 5	23978.52978	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 10	47957.05956	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Cell/Year 1 End	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 5	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
End Cell Year 10	460	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Pe cent e	ROI	ROI = 1	95% CI	95% CI	Prob > 1	100%	No e th s is just or the first ten years, no 20 as t's a passive intervention	ROI (Incl sever ty)	ROI = 1	95% CI	95% CI	Prob > 1	0%
0 00%	0 26	1	0. 2	1.39	Prob <= 1	0%		(0.67)	1	(0.31)	(0.05)	Prob <= 1	100%
0 50%	0 36	1	0. 2	1.39	Mean	0 83		(0.39)	1	(0.31)	(0.05)	Mean	(0.13)
1 00%	0 39	1	0. 2	1.39				(0.36)	1	(0.31)	(0.05)		
1 50%	0. 0	1	0. 2	1.39				(0.33)	1	(0.31)	(0.05)		
2 00%	0. 1	1	0. 2	1.39				(0.32)	1	(0.31)	(0.05)		
2 50%	0. 2	1	0. 2	1.39				(0.31)	1	(0.31)	(0.05)		
3 00%	0. 3	1	0. 2	1.39				(0.30)	1	(0.31)	(0.05)		
3 50%	0. 5	1	0. 2	1.39				(0.29)	1	(0.31)	(0.05)		
00%	0. 5	1	0. 2	1.39				(0.28)	1	(0.31)	(0.05)		
50%	0. 6	1	0. 2	1.39				(0.28)	1	(0.31)	(0.05)		
5 00%	0. 7	1	0. 2	1.39				(0.27)	1	(0.31)	(0.05)		
5 50%	0. 8	1	0. 2	1.39				(0.27)	1	(0.31)	(0.05)		
6 00%	0. 8	1	0. 2	1.39				(0.26)	1	(0.31)	(0.05)		
6 50%	0. 9	1	0. 2	1.39				(0.26)	1	(0.31)	(0.05)		
7 00%	0 50	1	0. 2	1.39				(0.25)	1	(0.31)	(0.05)		
7 50%	0 51	1	0. 2	1.39				(0.25)	1	(0.31)	(0.05)		
8 00%	0 51	1	0. 2	1.39				(0.2)	1	(0.31)	(0.05)		
8 50%	0 52	1	0. 2	1.39				(0.2)	1	(0.31)	(0.05)		
9 00%	0 53	1	0. 2	1.39				(0.2)	1	(0.31)	(0.05)		
9 50%	0 53	1	0. 2	1.39				(0.2)	1	(0.31)	(0.05)		
10 00%	0 5	1	0. 2	1.39				(0.23)	1	(0.31)	(0.05)		
10 50%	0 5	1	0. 2	1.39				(0.23)	1	(0.31)	(0.05)		
11 00%	0 55	1	0. 2	1.39				(0.23)	1	(0.31)	(0.05)		
11 50%	0 55	1	0. 2	1.39				(0.22)	1	(0.31)	(0.05)		
12 00%	0 56	1	0. 2	1.39				(0.22)	1	(0.31)	(0.05)		
12 50%	0 56	1	0. 2	1.39				(0.22)	1	(0.31)	(0.05)		
13 00%	0 57	1	0. 2	1.39				(0.22)	1	(0.31)	(0.05)		
13 50%	0 57	1	0. 2	1.39				(0.21)	1	(0.31)	(0.05)		
1 00%	0 58	1	0. 2	1.39				(0.21)	1	(0.31)	(0.05)		
1 50%	0 58	1	0. 2	1.39				(0.21)	1	(0.31)	(0.05)		
15 00%	0 59	1	0. 2	1.39				(0.21)	1	(0.31)	(0.05)		
15 50%	0 59	1	0. 2	1.39				(0.20)	1	(0.31)	(0.05)		
16 00%	0 59	1	0. 2	1.39				(0.20)	1	(0.31)	(0.05)		
16 50%	0 60	1	0. 2	1.39				(0.20)	1	(0.31)	(0.05)		
17 00%	0 60	1	0. 2	1.39				(0.20)	1	(0.31)	(0.05)		
17 50%	0 60	1	0. 2	1.39				(0.20)	1	(0.31)	(0.05)		
18 00%	0 61	1	0. 2	1.39				(0.20)	1	(0.31)	(0.05)		
18 50%	0 61	1	0. 2	1.39				(0.19)	1	(0.31)	(0.05)		
19 00%	0 61	1	0. 2	1.39				(0.19)	1	(0.31)	(0.05)		
19 50%	0 62	1	0. 2	1.39				(0.19)	1	(0.31)	(0.05)		
20 00%	0 62	1	0. 2	1.39				(0.19)	1	(0.31)	(0.05)		
20 50%	0 62	1	0. 2	1.39				(0.19)	1	(0.31)	(0.05)		
21 00%	0 63	1	0. 2	1.39				(0.19)	1	(0.31)	(0.05)		
21 50%	0 63	1	0. 2	1.39				(0.18)	1	(0.31)	(0.05)		
22 00%	0 63	1	0. 2	1.39				(0.18)	1	(0.31)	(0.05)		
22 50%	0 6	1	0. 2	1.39				(0.18)	1	(0.31)	(0.05)		
23 00%	0 6	1	0. 2	1.39				(0.18)	1	(0.31)	(0.05)		
23 50%	0 6	1	0. 2	1.39				(0.18)	1	(0.31)	(0.05)		
2 00%	0 65	1	0. 2	1.39				(0.18)	1	(0.31)	(0.05)		
2 50%	0 65	1	0. 2	1.39				(0.18)	1	(0.31)	(0.05)		
25 00%	0 65	1	0. 2	1.39				(0.17)	1	(0.31)	(0.05)		
25 50%	0 66	1	0. 2	1.39				(0.17)	1	(0.31)	(0.05)		
26 00%	0 66	1	0. 2	1.39				(0.17)	1	(0.31)	(0.05)		
26 50%	0 66	1	0. 2	1.39				(0.17)	1	(0.31)	(0.05)		
27 00%	0 66	1	0. 2	1.39				(0.17)	1	(0.31)	(0.05)		
27 50%	0 67	1	0. 2	1.39				(0.16)	1	(0.31)	(0.05)		
28 00%	0 67	1	0. 2	1.39				(0.16)	1	(0.31)	(0.05)		
28 50%	0 68	1	0. 2	1.39				(0.16)	1	(0.31)	(0.05)		
29 00%	0 68	1	0. 2	1.39				(0.16)	1	(0.31)	(0.05)		
29 50%	0 68	1	0. 2	1.39				(0.16)	1	(0.31)	(0.05)		
30 00%	0 69	1	0. 2	1.39				(0.16)	1	(0.31)	(0.05)		
30 50%	0 69	1	0. 2	1.39				(0.15)	1	(0.31)	(0.05)		
31 00%	0 69	1	0. 2	1.39				(0.15)	1	(0.31)	(0.05)		
31 50%	0 70	1	0. 2	1.39				(0.15)	1	(0.31)	(0.05)		
32 00%	0 70	1	0. 2	1.39				(0.15)	1	(0.31)	(0.05)		
32 50%	0 70	1	0. 2	1.39				(0.15)	1	(0.31)	(0.05)		
33 00%	0 71	1	0. 2	1.39				(0.15)	1	(0.31)	(0.05)		
33 50%	0 71	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
3 00%	0 71	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
3 50%	0 72	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
35 00%	0 72	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
35 50%	0 72	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
36 00%	0 72	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
36 50%	0 73	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
37 00%	0 73	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
37 50%	0 73	1	0. 2	1.39				(0.1)	1	(0.31)	(0.05)		
38 00%	0 7	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
38 50%	0 7	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
39 00%	0 7	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
39 50%	0 75	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
0 00%	0 75	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
0 50%	0 75	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
1 00%	0 75	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
1 50%	0 76	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
2 00%	0 76	1	0. 2	1.39				(0.13)	1	(0.31)	(0.05)		
2 50%	0 76	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
3 00%	0 77	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
3 50%	0 77	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
00%	0 77	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
50%	0 78	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
5 00%	0 78	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
5 50%	0 78	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
6 00%	0 79	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
6 50%	0 79	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
7 00%	0 79	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
7 50%	0 80	1	0. 2	1.39				(0.12)	1	(0.31)	(0.05)		
8 00%	0 80	1	0. 2	1.39				(0.11)	1	(0.31)	(0.05)		
8 50%	0 80	1	0. 2	1.39				(0.11)	1	(0.31)	(0.05)		
9 00%	0 81	1	0. 2	1.39				(0.11)	1	(0.31)	(0.05)		
9 50%	0 81	1	0. 2	1.39				(0.11)	1	(0.31)	(0.05)		
50 00%	0 81	1	0. 2	1.39				(0.11)	1	(0.31)	(.05)		
50 50%	0 82	1	0. 2	1.39				(0.11)	1	(0.31)	(0.05)		
51 00%	0 82	1	0. 2	1.39				(0.11)	1	(0.31)	(0.05		
51 50%	0 82	1	0. 2	1.39				(0.11)	1	(0)	.05)		
52 00%	0 82	1	0. 2	1.39				(0.11)	1	(0)	(0)		
52 50%	0 83	1	0. 2	1.39				(0.11)	1	0.3	(0.05		
53 00%	0 83	1	0. 2	1.39				(0.11)	1	(0.31)	(0.05)		
53 50%	0 83	1	0. 2	1.39				(0.11)	1	(0)	(5)		
5 00%	0 8	1	0. 2	1.39				(0.10)	1	0.3	(0.05)		
5 50%	0 8	1	0. 2	1.39				(0.10)	1	(0.31)	(0.05)		
55 00%	0 8	1	0. 2	1.39				(0.10)	1	0.31	(0.05)		
55 50%	0 85	1	0. 2	1.39				(0.10)	1	0.3	(0.05)		
56 00%	0 85	1	0. 2	1.39				(0.10)	1	(0.31)	(0.05)		
56 50%	0 85	1	0. 2	1.39				(0.10)	1	(0.31)	(0.05)		
57 00%	0 86	1	0. 2	1.39				(0.10	1	(0.31)	(0.05)		
57 50%	0 86	1	0. 2	1.39				(0)	1	(0.31)	(0.05)		
58 00%	0 86	1	0. 2	1.39				10)	1	(0.31)	(0.05)		
58 50%	0 87	1	0. 2	1.39				0	1	(0.31)	(0.05)		
59 00%	0 87	1	0. 2	1.39				(0.10)	1	(0.31)	(0.05)		
59 50%	0 87	1	0. 2	1.39				0.10)	1	(0.31)	(0.05)		
60 00%	0 88	1	0. 2	1.39				(0.10)	1	(0.31)	(0.05)		
60 50%	0 88	1	0. 2	1.39				(0.10)	1	(0.31)	(0.05)		
61 00%	0 88	1	0. 2	1.39				(0.10)	1	(0.31)	(0.05)		
61 50%	0 89	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
62 00%	0 89	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
62 50%	0 89	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
63 00%	0 90	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
63 50%	0 90	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
6 00%	0 90	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
6 50%	0 91	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
65 00%	0 91	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
65 50%	0 91	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
66 00%	0 92	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
66 50%	0 92	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
67 00%	0 92	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
67 50%	0 93	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
68 00%	0 93	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
68 50%	0 93	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
69 00%	0 9	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
69 50%	0 9	1	0. 2	1.39				(0.09)	1	(0.31)	(0.05)		
70 00%	0 95	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
70 50%	0 95	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
71 00%	0 95	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
71 50%	0 95	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
72 00%	0 96	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
72 50%	0 96	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
73 00%	0 97	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
73 50%	0 97	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
7 00%	0 97	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
7 50%	0 98	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
75 00%	0 98	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
75 50%	0 99	1	0. 2	1.39				(0.08)	1	(0.31)	(0.05)		
76 00%	0 99	1	0. 2	9				(0.08)	1	(0.31)	(0.05)		
76 50%	1 00	1	0. 2	1. 9				(0.08)	1	(0.31)	(0.05)		
77 00%	1 00	1	0. 2	39				(0.08)	1	(0.31)	(0.05)		
77 50%	1 00	1	2	1.39				(0.08)	1	(0.31)	(0.05)		
78 00%	1 01	1	0.					(0.08)	1	(0.31)	(0.05)		
78 50%	1 01	1	2	1.39				(0.07)	1	(0.31)	(0.05)		
79 00%	1 02	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
79 50%	1 02			1.39				(0.07)	1	(0.31)	(0.05)		
80 00%	1 03		0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
80 50%	1 3	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
81 00%			0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
8 50%	1		0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
82 00%	1 0		0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
82 50%	1 05	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
83 0		1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
8 0%	1 06	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
8 0	1 07	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
8 50%	1 08	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
85 00%	1 09	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
85 50%	1 09	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
86 00%	1.10	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
86 50%	1.11	1	0. 2	1.39				(0.07)	1	(0.31)	(0.05)		
87 00%	1.11	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
87 50%	1.12	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
88 00%	1.13	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
88 50%	1.1	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
89 00%	1.1	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
89 50%	1.15	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
90 00%	1.16	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
90 50%	1.17	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
91 00%	1.18	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
91 50%	1.19	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
92 00%	1 20	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
92 50%	1 22	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
93 00%	1 23	1	0. 2	1.39				(0.06)	1	(0.31)	(0.05)		
93 50%	1 2	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
9 00%	1 25	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
9 50%	1 26	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
95 00%	1 28	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
95 50%	1 29	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
96 00%	1 31	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
96 50%	1 33	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
97 00%	1 36	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
97 50%	1 39	1	0. 2	1.39				(0.05)	1	(0.31)	(0.05)		
98 00%	1. 2	1	0. 2	1.39				(0.0)	1	(0.31)	(0.05)		
98 50%	1. 7	1	0. 2	1.39				(0.0)	1	(0.31)	(0.05)		
99 00%	1 52	1	0. 2	1.39				(0.0)	1	(0.31)	(0.05)		
99 50%	1 6	1	0. 2	1.39				(0.0)	1	(0.31)	(0.05)		
100 00%	2 05	1	0. 2	1.39				(0.03)	1	(0.31)	(0.05)		



Details																																
Portfolio	Account	Programme		State	Payment	ROI	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	Totals Total	Retrospective	Prospective
Community	Earner's and	Gun Violence v3		Delivery	**Investment**	**NA**	39493067.48																			$ 39,493,067.48	$ -	$ 39,493,067.48
Community	Earner's and	Gun Violence v3		Delivery	**Benefit - Mid**	**1.72882847**	18366405.26	3507083.564	3318481.63	3225541.272	3116292.466	3123593.576	2956861.639	2852102.056	2729387.637	2707122.703	2614825.064	2525654.686	2439469.654	2355497.115	2271585.077	2188380.026	2107994.207	203 526.95	1955906.559	1884028.413	$ 68,276,739.56	$ -	$ 68,276,739.56

- Took all claims were a combination of words were used to identify guns over 10 years, n = 12000
- Further reduced by excluding where is wasn't of interest such as shot gun, or slipping down a bank, or mishandling while holding a gun, or hearing loss
- That has left us with the person was clearly shot with a projectile but we don't know what calibre n = 753.
- Then we were left with two situations. We knew it was semi or we didn't know if it was.
- We took out the ones we identified as semi which leaves us with 733 claims.
- We then used the pre 2009 dataset that where it had identified the calibre and 82% of those were the calibre we were looking for (semi automatic). We got rid of typical bolt action such as 303 and 308 calibre.



	A	B	C	D	E	F
1						
2						
3	Sum of Total					
4	Known calibre	Total				
5		0.22	32		32	
6		0.223	5		5	
7		0.27	3		3	
8		0.303	5			
9		0.308	4			
10		0.44	2		2	
11		0.45	1		1	0.826923
12	Rifle (not specified what type)	308			254.6923	
13	Semiautomatic		1			
14	Grand Total		361			

- Taking 82% means that we think there are 733 claims which is our max (733*.82) plus 20 we knew so that is 621 claims over 10 years or 62 per year.

Memorandum

TO	IPDDC
FROM	Out of scope
FILE REFERENCE	IPDDC Minutes 25 March 2019
DATE	29 April 2019
SUBJECT	ROI update

Purpose

This memo updates the IPDDC on programmes that are scheduled to move from the design phase and into delivery in FY 19 that will impact the aggregate ROI.

As some of the decisions have been made by the Board it is important for external audit purposes that these be included in the IPDDC minutes.

Injury prevention programmes moving into delivery – impact on ROI

Firearms

As request by the Board, Injury Prevention will be investing $40M ($10M FY20 and $20M FY30) into the Government's firearms buy-back scheme.

To meet the requirements of section 263 of the Accident Compensation Act, an ROI has been calculated to demonstrate whether a ROI can be achieved from the investment.

The methodology was based on extracting the number of firearms claims lodged with ACC using the free-text field in the ACC 45 Claim Lodgement form to target firearm claims. Similar work was completed in 2009 and updated in 2017 to support the Police's review of Firearms legislation.

Through this process, the number of claims received by ACC and the cost of those claims were modelled using the standard ROI methodology. As this is a passive intervention, twenty years' time period was used for returns rather than 10 years as typical for active interventions. Other passive interventions have been road engineering.

The potential benefits from investing in a firearms buy-back scheme have been based on the benefits identified from the experience in Australia when they implemented buy-back scheme. Studies demonstrated a reduction in homicides and suicides through the removal of firearms in the community.

Based on ACC's $40M investment, we estimate potential claim savings of $70.5M million (discounted) over a 20-year period. This delivers an ROI of $1.76. The Chief Actuary has agreed to this number and calculations.

Motorcycle technology

Under the ACC Motorcycle Strategy, technology (specifically anti-lock braking system (ABS)) is one of the five themes. In 2013, ACC commissioned research on the impact ABS would have if mandated into the motorcycle fleet. It was then included in the current joint achieve (MoT, NZTA, Police) Road Safety Action Plan 2016-2020.

Based on the evidence gathered from this research, The Ministry of Technology (MoT) is publicly consulting on legislation change to make ABS compulsory on \motorcycles, with an expected implementation of November 2019.

Public consultation has not revealed any major issues that will halt the change in legislation.

Investment for the programme to date is $250,000 and this already is included in the ROI. There will be a minimal investment going forward (costs will be monitor the claims impact and included under existing overhead).

Based on the ACC research and the overseas experience of countries who have adopted ABS, MoT has calculated the impact the technology will have based on two scenarios on the likely impact this will have options. ACC Actuaries converted this impact into claims using the lesser of the two scenarios and the potential claims savings over the 27 years to match MoT.

While this is a passive intervention, to be consistent with other passive interventions, only 20-years will be included into the ROI, using the lesser of the two options that MoT is consulting on. The claims savings will be based on the lesser option over 20 years. This is $23.3M (discounted)

Recommendations

a) It is recommended that the Injury Prevention, Design and Delivery Committee **agree** to include in the aggregate ROI (up to April 2019) claims savings from injury prevention investment into:

   i. the Government's Firearms buy-back scheme

   ii. compulsory ABS on motorcycles.

b) **Note** that including the initiatives in 'Recommendation a' will increase the aggregate ROI from $1.76 to $1.82

Re-calculating ROIs for programmes already in delivery

There are three additional ROIs that will be calculated before the end of the financial year.

Mates & Dates.

As reported in the April Board update, we will be calculating the potential claim savings from our investment in Mates and Dates (in 11 to 20 years' time instead of 1- 10 years' time as is the normal process for active interventions). Modelling will be based on the number of students likely to go through the programme over the next few years.

However, IPDDC agreed that as the Mates & Dates programme benefits couldn't be calculated the costs of the programme would be included into the ROI as they are incurred. Normally the entire cost is

included, accompanied by investment benefits. Since investment benefits will now be calculated, the entire expected cost of the programme will be included as well. Some of this investment is already included in the ROI so only the remining 18 months of investment will need to be carried through when the benefits are calculated (e.g. 10 years).

Road engineering

In May 2019, the Road team will present a business case for consideration. This is for further road engineering treatments to reduce motorcycle claims. In October 2017, the IPDDC approved 25 roads for treatment to reduce motorcycle claims. These have met timelines for completion. Another 24 roads have been identified under the original modelling, but the business case was split in two to make the work more manageable within the Road team. These will be updated. Original modelling set a target of ROI of 3:1 for this programme.

Out of context curves

In April 2016, the IPDDC approved a tool to help engineers determine if a curve is not suitable for the speed of traffic. This is known as an 'Out of Context Curve' (OCC). Based on uptake of the model the original target has been achieved so the benefits need to be revisited to reflect the new uptake. Currently, no benefits have been included into the ROI as this was an outstanding IPDDC action point.

Both road projects mentioned are passive and have a 20-year benefit realisation. However, when measuring these projects, there needs time for crashes to have not occurred so the claims benefits are not fully realised at this stage.

Note: the IPDDC will receive update ROI calculations for these programmes in May 2019 as well as a business case for the road engineering initiative.

Extract from Minutes of Injury Prevention Design and Delivery Committee 29 April 2019.

Firearms buy back. The claim savings of $70.5M (discounted) over a 20-year period from a $40M investment. The paper was amended to record the $40M investment will be $10 in FY19 and $30M in FY20.
NOTED by IPDDC of the ROI and that the investment had been approved by the Board.

Please note the remainder of the document is out of scope.

Memorandum

TO	ACC Injury Prevention Design and Delivery Committee
VIA	Isaac Carlson, Head of Injury Prevention
FROM	Out of scope Manager, Investment Intelligence and Performance
DATE	June 2019
SUBJECT	ACC investment in firearm buyback scheme: international experience and expected return on investment

Purpose

ACC has agreed to contribute $40 million over two years ($10 million in FY19 and $20 million in FY20) to the Government's recently announced firearms buyback scheme ('the buyback scheme'). ACC's investment recognises that the cost of firearm injuries falls on the Scheme and the ACC levy payer, specifically through the Earners' and Non-Earners' Accounts.

International evidence shows that a firearm buyback scheme has the potential to reduce firearm related injuries and fatalities. Therefore, based on this evidence, ACC's contribution to the buyback scheme represents an injury prevention investment in reducing the likelihood and severity of firearm injures in New Zealand.

The purpose of this advice is to:

- present a summary of the international literature on the effectiveness of firearm buyback schemes in reducing firearm injuries and fatalities
- calculate the expected return on investment to the Scheme from ACC's $40 million contribution towards the buyback scheme.

The intent of this advice is to present a summary of the international experience of firearm buyback schemes, which has been used as a basis to provide a degree of confidence that ACC's investment will deliver a return (claims benefit) to levy payers, as is required under section 263 of the Accident Compensation Act.

Context

Summary of the number and cost of firearm claims to ACC

Over the last 10 years (starting 1 January 2009), ACC estimates that it has received approximately 990 firearm-related claims, at a total claim cost of $78 million.

ACC does not specifically classify firearm-related injuries in its claims data. Therefore, the number of claims is based on a manual review of the free-text submitted by clients when they lodge claims with ACC. Excluded from the claims are hunting injuries or injuries where the firearm was present, such as "slipped down bank while holding gun". It also excludes injuries caused by the mishandling of firearms.

Appendix 1 summarises the search criteria used to determine the number of firearm-related claims.

Summary of firearm ownership in New Zealand

It is difficult to determine the scale of firearm ownership in New Zealand. For these purposes, it is estimated that there are 300,000 licensed firearm owners (some estimates indicate 250,000 owners) with an estimated 1.5 million firearms.

Approximately 52,000 guns are imported into New Zealand each year This figure includes air rifles and pistols. Half of imported guns are estimated to be firearms (26,384)

Sydney University gun policy expert Philip Alpers estimates that there could be 500,000 semi-automatic rifles and shotguns in New Zealand. However, he estimates that "only a small proportion of those would be capable of taking a large capacity magazine."

A political consultant who has advised the gun lobby, Simon Lusk, says there are an estimated 19,000 military style semi-automatic weapons in New Zealand, and at least 15,000 are registered according to Police figures.

Summary of the literature on the efficacy of firearm buyback schemes

The Australian experience

In 1996 Australia introduced major gun law reforms that included a ban on semiautomatic rifles and pump-action shotguns and rifles and initiated a program for the buyback of firearms. The Australian experience is perhaps the most relevant case study for exploring the efficacy of the buyback scheme and what the impact might be in the New Zealand context.

In 2011, Hemenway and Vriniotis[1] reviewed the research on Australia's suicide and homicide rate after the introduction of Australia's firearms buyback scheme. Their research showed a decline in both suicide and homicide rates after the introduction. The average firearm suicide rate in Australia in the seven years after the introduction of the scheme declined by 57 per cent compared with the seven years prior. The average firearm homicide rate went down by 42 per cent.

However, as the researchers pointed out, Australia's homicide rate was already declining before the scheme was implemented (and critics point to this), so one cannot attribute all the drop to the scheme laws. However, the research considered that there was good reason to believe that the buyback

[1] https://cdn1.sph.harvard.edu/wp-content/uploads/sites/1264/2012/10/bulletins_australia_spring_2011.pdf

provisions mattered a great deal in contributing to the decline in firearm related injuries and fatalities in Australia.

Research also showed that the drop in firearm deaths was the largest among the type of firearms most affected by the buyback. Firearm deaths in Australian states with higher buyback rates per capita fell proportionately more than in states with lower buyback rates.

In an article published in 2016, *Association Between Gun Law Reforms and Intentional Firearm Deaths in Australia 1979-2013*, Chapman, Alpers and Jones[2] found that from 1979-1996 (before Australia's gun law reforms), 13 fatal mass shootings occurred in Australia, whereas from 1997 to May 2016 (after gun law reforms), no fatal mass shootings occurred. This is an important point given that the Christchurch shootings were the catalyst for the firearms buyback in New Zealand.

Critics of the Australian firearms buyback scheme point to the fact that the results were not statistically significant because Australia had a relatively low number of firearm-related fatalities to begin with (which applies to the New Zealand context) with one study claiming that "the policy has made no difference…and there was a trend of declining deaths which has continued "

Suicide is another area that has been reviewed in relation to a firearms buyback scheme. As Matthews[3] explains, suicide is often an impulsive choice, one often not repeated after a first attempt. Guns are specifically designed to be fatal, which makes suicide attempts with guns likelier to succeed than other methods. Limiting access to guns makes each attempt more likely to fail, thus making it more likely that people will survive and not attempt to harm themselves again

The experience in other jurisdictions

There are cases of small-scale buybacks in the United States that had no material impact on firearm injuries and fatalities. Critics point to these examples as to why a buyback scheme will not be effective in New Zealand. A scheme introduced in the United Kingdom[4] also showed no material changes in gun crimes, firearm homicides and robberies involving firearms following a buyback scheme being introduced.

There is literature from other countries where a buyback scheme has worked, for example in Brazil. In 2004, for the first time in more than a decade, firearm-related mortality declined by 8 per cent from the previous year. Firearm-related hospitalisations also reversed an historical trend that year by decreasing 4.6 per cent from 2003 levels. These changes corresponded with anti-gun legislation passed in late 2003 and disarmament campaigns undertaken throughout the country since mid-2004[5].

In Argentina, empirical evidence suggests that a buyback program has been successful in reducing the number of deaths from firearm accidents, but had not achieved a reduction in suicides, homicides and car theft[6]

[2] https://jamanetwork.com/journals/jama/article-abstract/2530362. Its was unclear why the 2014 Sydney hostage crisis where three people were killed was not included in this.
[3] https://www.vox.com/2015/8/27/9212725/australia-buyback
[4] http://faculty.publicpolicy.umd.edu/sites/default/files/reuter/files/gun%20chapter.pdf
[5] https://www.healthaffairs.org/doi/full/10.1377/hlthaff.26.2.575
[6] https://mikethegunguy.com/wp-content/uploads/2016/07/pevaf_september_27_2010.pdf

Expected return on investment

Claims benefit to ACC

Based on ACC's $40 million investment in the Government's buyback scheme, we estimate potential claim savings of $70.5 million (discounted) over a 20-year period. This delivers a return on investment of $1.76 for every $1 that ACC invests (this estimate has been reviewed by ACC's actuaries and approved by the Chief Risk and Actuarial Officer).

The estimated return on investment is based on the following key assumptions:

a. the claim benefits of the buyback scheme will not decay over time as the firearms will be taken out of circulation and no more will be imported or available for sale (there may be a small black market)
b. not all firearms will be handed in and we have adjusted for this in the modelling
c. other types of firearms will be removed from circulation that are not the focus of the buyback scheme
d. we've used a 20-year modelling impact (rather than 10 years) to allow time for the benefits of the buyback scheme to be realised.

Boarder financial benefits are also likely from the Government's investment in the buyback scheme (ie beyond a claims benefits to ACC). Using the Value of Statistical Life, we estimate that for every $50 million invested into the buyback scheme, 11 fatalities would need to be prevented (excluding serious injuries) to breakeven in 10 years.

Risks to realising the return on investment

Like any estimate of a likely return on investment, there is the risk that we have miscalculated the expected claims return, or we have not properly considered any unintended consequences. For example, while we estimate firearm related injuries and suicides reduce due to the buyback scheme, we have not considered that other acts of violence (eg knife attacks and assaults) increase and we receive more of these types of claims. As part of ACC's investment, we will monitor the number of firearm-related claims we receive to check whether the claims experience matches our modelling.

Conclusion

The Australian experience highlights that a comprehensive firearms buyback scheme can be effective in reducing firearm injuries and fatalities where it is backed by strong legislative gun reform. The Australian experience does give New Zealand a degree of confidence that a firearms buyback scheme is more likely to have a positive effect on reducing the severity and incidence of firearm related injuries and fatalities and, therefore, more likely to deliver a positive claims return from the $40 million invested.

Out of scope

Manager, Investment Intelligence and Performance

Appendix 1 – search criteria for firearms-related claims

ACC claims data was extracted using free text data searches on injury claims that had ‘guns’, ‘firearms’ and ‘rifles’ in the claim description. The following claims were then removed from the data set:

- anything that was not firearm-related but that involved a gun, such as paint guns and glue guns
- anything connected to firearm-related noise, such as noise-induced hearing loss
- hunting claims or any claims involving sport shooting
- firearms not considered in the proposed buyback, such as shot guns, air rifles, and plastic bullets
- claims related to the discharge of the firearm but not bullet penetration, such as where someone had looked down the scope and on discharge it struck their eye, recoil injuries, and instances of carrying a firearm and slipping over
- where a bullet was involved but was not related to discharge such as eating a game bird and biting on a bullet
- anything outside of the last ten years of data (to the end of 2018
- where it was clear the bullet had penetrated the body in a minor way and the claim cost was negligible.

Aide Memoire

Supporting information for ACC's Contribution for the firearms buy back

To	Minister for ACC	**Priority**	N/A
From	Emma Powell	**Reference**	PS19/030
Date	16 June 2019	**Security rating**	In confidence

Purpose

1. This briefing provides you with information on ACC's injury prevention investment in the firearms buy back

Key messages

2. The firearms buy-back scheme presents a great opportunity for ACC to invest in partnership to reduce the incidence and severity of injury for New Zealanders.

3. Injury Prevention will be investing $40m ($10m FY19 and $30m FY20) into the Government's firearms buy-back scheme.

4. To meet the requirements of section 263 of the Accident Compensation Act, a return on investment (ROI) has been calculated to demonstrate the level of claims savings from the investment.

5. Based on ACC's $40m investment, we estimate potential claims savings of $70.5m (discounted) over a 20-year period. This delivers an ROI of $1.76 for every dollar invested. The ACC Chief Actuary has agreed to this number and calculations.

6. The methodology was based on extracting the number of firearms claims lodged with ACC using the free-text field in the ACC 45 Claim Lodgement form. Similar work was completed in 2009 and updated in 2017 to support the Police's review of Firearms legislation.

7. The potential benefits from investing in a firearms buy-back scheme have been based on the benefits identified from the experience in Australia. Studies also demonstrated a reduction in homicides and suicides through the removal of firearms in the community.

Specific questions and answers

What is the cost to ACC of gun injuries (including deaths)?

8. The estimated lifetime cost of firearm injuries to ACC is $92m over ten years.

9. The estimated lifetime cost of firearm injuries to ACC for those claims caused by the guns now prohibited under the Arms (Prohibited Firearms, Magazines, and Parts) Amendment Bill) is $48m over ten years.

10. These figures exclude hunting injuries or injuries where the firearm was present such as 'slipped down bank while holding gun'.

What is ACC's role in prevention?

11. ACC works in partnership with a range of agencies and groups to reduce the incidence and impact of injury across New Zealand with a focus on Falls, Sports, Roads, Community, Work, Violence and

Self-Harm, and Treatment Safety. We work to use a variety of interventions such as education, skill building, enforcement and engineering to effectively target and reduce injury.

Why ACC has contributed investment to buyback?

12. The firearms buy-back scheme presents a great opportunity for ACC to invest in partnership to reduce the incidence and severity of injury for New Zealanders.

Any other supporting information

13. Australia and Brazil have introduced gun buy-back schemes and have seen a marked reduction in serious injuries and deaths.

14. The strong evidence from Australia that their gun buy-back scheme, introduced after the Port Arthur massacre in 1996, demonstrated an accelerated reduction in firearm homicide rates (42%); and suicide rates (57%) in the seven years after the scheme was introduced.