



Cyberbullying in New Zealand

Estimating societal costs

8 October 2018



SENSE PARTNERS
DATA LOGIC ACTION



Key points

The online world exposes some people to harm from cyberbullying. The cost to individuals, communities and interventions are substantial. We estimate the societal cost of cyberbullying is \$444m a year.

We used local surveys, international studies, and approaches from other fields to develop a framework and identify the costs. We have not counted the potential long-term costs from health or productivity effects, which we hope to pick up in a future iteration of this work.

Additional interventions against cyberbullying could focus on:

- Destigmatising seeking help. 31% of those experiencing or witnessing cyberbullying did not seek help.
- Investing in curriculum for schools. Young people are disproportionately affected by cyberbullying.
- Raising awareness of cyberbullying and where to seek help. Victims of cyberbullying are most likely to turn to their family and friends for help. Awareness of where to go for help would be valuable.
- International coordination of legislation and enforcement of cyberbullying. Currently these are uncoordinated.

QUANTIFYING THE COST OF CYBER-BULLYING

	2018, \$m	Notes
Personal cost	78	
At willingness to pay for victims of cyberbullying	75	Willingness to pay for each victim
Loss of life	3	Statistical value of life, Australian data on loss of life related to bullying
Cost of interventions	366	
Friends & family	347	At average earning rate
Teachers, counsellors, etc	11	At marginal cost of expert time
Hotlines, online, etc	2	At marginal cost of service
Police	2	Estimate based on Australian bullying study
Education, justice, etc	4	Funding for Netsafe, etc
Long term health & productivity impact	n/a	Unquantified due to insufficient information
Total costs	444	Total annual cost of cyberbullying

Source: Sense Partners



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1. Introduction

Netsafe commissioned Sense Partners to estimate the societal cost of cyberbullying in New Zealand. There is no commonly accepted approach to tallying up the cost of cyberbullying internationally. However, there is a broad consensus that bullying and cyberbullying are harmful.

We have brought together a methodological approach, new survey data, and identified gaps. We conservatively estimate that cyberbullying costs New Zealand society \$444m a year in harms to individuals, community and interventions.

2. The harm framework

Harm reduction or damage limitation had a long history as a framework used to reduce negative impacts of drug use. Interventions to reduce harm typically operate from a set of desired goals that show options to reduce harm¹.

This typically looks at three specific areas. Costs to individuals, or personal harm. The cost to community or societal harm (here the focus is on friends and family in particular). The cost of interventions, typically by government.

The Ministry of Health publishes a Drug Harm Index using this framework to count all the harm and costs associated with drug use. We use a similar framework here to look at the cost of cyberbullying.

This approach allows us to observe the costs borne by different parts of society. It can identify under-resourcing of interventions relative to harms experienced by individuals and the community. It can also be used to assess the effectiveness of new policies or interventions.

3. Cyberbullying harm

3.1 Context

The online world has become fast integrated in our lives. New technologies have become ubiquitous, but our understanding and resourcing to manage risks have not kept pace.

Communication is a key part of economic activity. Our ability to communicate facilitates trade, transfer knowledge and deepen social connections.

Successive new technologies have allowed communication to happen faster and they have become widespread more quickly. For example, the telephone took nearly 50 years to become mainstream in the US (over half of households). The home computer took nearly 20 years, the internet 13 years and smartphone 7 years. In New Zealand, nearly 90% of the population have access to the internet.

The widespread adoption of the internet and its applications allow much wider reach and greater intensity of interactions, both positive and negative.

¹¹ see Newcombe (1992)



Like the real world, the online world also has a small population of bullies. The anonymity available online can mean cyberbullying is more intense than in person. Some surveys show greater negative impact on happiness and wellbeing from cyberbullying than social bullying.

In a survey we commissioned, conducted by UMR, only 10% of respondents had personally experienced online harm, although the impact was higher among women, young people and ethnic minorities (we did not collect more detailed information on disability, gender, etc.).

While most of the population appear unaffected by cyberbullying, some have intensely negative experiences. This motivates the rest of the paper.

3.2 Costs

Netsafe describe online-bullying as:

“Online bullying (also known as cyberbullying) is when a person uses digital technology to send, post or publish content with the intention to harm another person or a group.”

They note cyber-bullying is typically aggressive, often involves a power imbalance and as others have suggested, is usually repeated.²

Typically, we think of harm from cyber-bullying as affecting individual victims. But there can be societal and even economic impacts. Moreover, while victims are harmed, perpetrators and bystanders can also experience harmful impacts.³

Harm to individuals

Harm to individuals is dependent on both exposure to internet and mobile where cyber-bullying can occur and harm deriving from experiences of cyber-bullying experiences. Figure 1 shows this two-tiered process.

Cyberbullying is less prevalent than bullying in general. A meta-analysis⁴ of various studies found a prevalence rate of 15% for cyberbullying – lower than a 35% prevalence for bullying in general. Assessing the prevalence of cyberbullying is difficult with different numbers reported in a variety of contexts⁵. It is hard to quantify harm when prevalence is not known precisely.⁶

But risk and harm are linked to internet opportunities. A third of New Zealand teens now spend 4 or more hours online in an average day.⁷ Being “bullied online is the risk that upsets children the most, even though it is among the least common”.⁸

The New Zealand Attitudes and Values Study (NZAVS) asks participants aged 18 years and over (from a random sample of 15,822 New Zealanders) if they have experienced cyberbullying. 11.5% of the

² Patchin and Hinduja (2006) describe cyber-bullying as the “wilful and repeated harm inflicted through the medium of electronic text”.

³ See the meta-analysis in Slavtcheva-Petkova 2015 and Rice et al. 2015 who note the mental health consequences include lower self-esteem, and depressive symptoms for both victims and perpetrators, and Sinclair et al. 2012 who discuss impacts on bystanders. Janson et al. (2009) point out the complex role of the bystander.

⁴ Modecki et al. (2014)

⁵ see Menesini and Salmivalli 2017

⁶ The Slavtcheva-Petkova 2015 meta-study suggests 17 of 63 articles about online risks related to cyber-bullying focus on prevalence.

⁷ Netsafe (2018b)

⁸ Livingstone (2014)

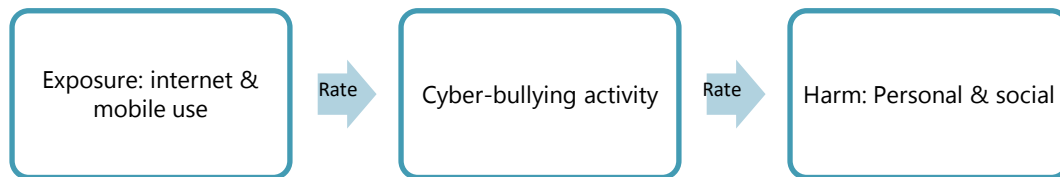


respondents to the 2014/15 NVAS had experienced cyber-bullying.⁹ A whopping 46% of 18-19 year-olds had experience cyber-bullying.

Young people experience more cyberbullying. 19% of New Zealand teens experienced: “an unwanted digital communication that had a negative impact on their daily activities”, based on a 2017 survey completed by 1,001 teens.¹⁰ Internet use also differs between teenage boys and girls, so differences in exposure by gender will translate to different degrees of aggregate harm. And children that use social-networking sites are more likely to come across online risks.¹¹

FIGURE 1: NOT ALL CYBERBULLYING RESULTS IN PERSONAL OR SOCIAL HARM

Responses for Turkish adolescents to cyber-bullying cases in two Turkish schools



How does cyber-bullying harm? To be clear, some victims of cyberbullying are not upset or disturbed.¹² But cyberbullying is often associated with many emotional and psychological conditions¹³, including stress, lower self-esteem¹⁴ and life satisfaction.

For example, Moore et al. (2012) look at cyber-bullying in a middle school in the US and report:

“modest, but pervasive relationships between experiences of electronic bullying and victimisation and adolescents’ life satisfaction reports across a variety of life domains.”

⁹ see Steiner-Fox et al. (2016)

¹⁰ Netsafe (2018a)

¹¹ see Staksrud et al. (2013)

¹² see Smith et al. (2013) and Ortega et al. (2000)

¹³ see Harris 2009 and Hango 2016

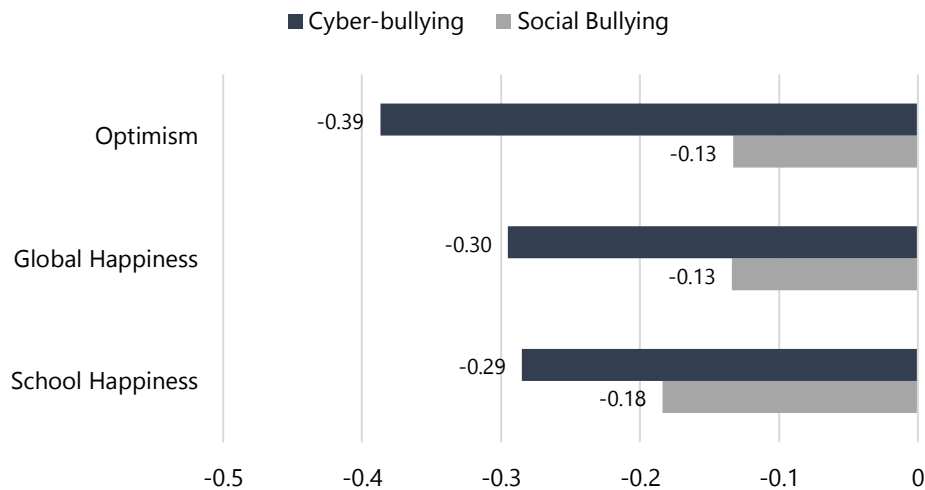
¹⁴ see Waisglass 2017



Controlling for gender and grades confirm the correlations but note their cross-sectional data cannot confirm causal effects.¹⁵ Similarly, a Spanish study¹⁶ show statistically significant negative relationships between cyber-bullying and three measures of happiness and well-being (see Figure 2). Their findings are based on a large survey of Spanish 10-12 year-olds.

Effects on victims of bullying can be long-lasting.¹⁷ Bullying also reduces educational achievement.¹⁸ Cyber-bullying has been linked to poorer health outcomes using Canadian data.¹⁹

FIGURE 2: CYBER-BULLYING CORRELATES WITH LOW SELF-REPORTED WELL-BEING
Correlation between bullying and indicators of subjective well-being, Spanish 10-12 year-olds



Source: Navarro, Raúl, Roberto Ruiz-Oliva, Elisa Larrañaga and Santiago Yubero (2015)

What precisely drives these types of behaviour? Slonje et al. (2013) discuss different classifications of cyber-bullying behaviour and note cyber-bullying has been classified by:

- (i) type of media,
- (ii) action, and
- (iii) the content of messages.

It is the aggregate impact of these types of factors that drives the negative impact.

¹⁵ Waisglass (2017) reports similar impacts on well-being from bullying among a survey of female university students.

¹⁶ Navarro et al. (2015)

¹⁷ see Heydenberk and Heydenberk (2017)

¹⁸ see Ponzo (2013)

¹⁹ See Soyeon et al. (2017)



TABLE 1: CLASSIFYING CYBER-BULLYING

Types	Media type	Action type	Content of messages
Factors	• mobile phone calls	• flaming	• threat of physical violence
	• text messages	• online harassment	• abusive or hate-related
	• picture/video clip bullying	• cyberstalking	• name calling
	• emails	• denigration	• death threats
	• chatroom	• masquerade	• ending of platonic relationship(s)
	• instant messaging	• outing	• sexual acts
	• websites	• exclusion	• demands/instructions
			• threats to damage existing relationships
			• threats to home/family
			• menacing chain messages.

NB. Media-type is Smith et al. (2008), action-type Willard (2006) and content-type Rivers and Noret (2010).

Source: Slonje et al. (2013)

Societal/community

But harm from cyberbullying can be more pervasive than individuals. It can affect friends and family, fray community cohesion, and place additional demands on services like health.

People subject to bullying are likely to change their behaviour, typically to riskier behaviours associated with depression and other risk factors.²⁰ Cyberbullying is also associated with mistrust of people.²¹ Bullying can derail the subjective well-being of school communities.²² These costs are often difficult to observe, measure and establish causal links to the root causes.

The drug harm literature suggests public agencies find it difficult to assess social costs²³ and this is likely to be also true of cyber-bullying. Sir Peter Gluckman notes:

“the cyber world is less amenable to third-party prevention or interruption; thus, large ripple effects are possible across on-line communities. - Office of the Prime Minister’s Chief Science Advisor (2017).

To get a better understanding New Zealander’s experiences and attitudes, we asked UMR to survey New Zealanders on cyber-bullying using a representative panel of 1,000 respondents. The survey found that New Zealanders are worried about the impact of cyberbullying and its effects on society at large (64%), and in diminishing order on a family member, a friend, and the respondent her- or him-self (see Figure 3). Within this, we saw much higher levels of concern among women, younger people, people with children and people from minority ethnic groups. Our survey was not large enough to collect information on disability, LGBTI and other related variables.

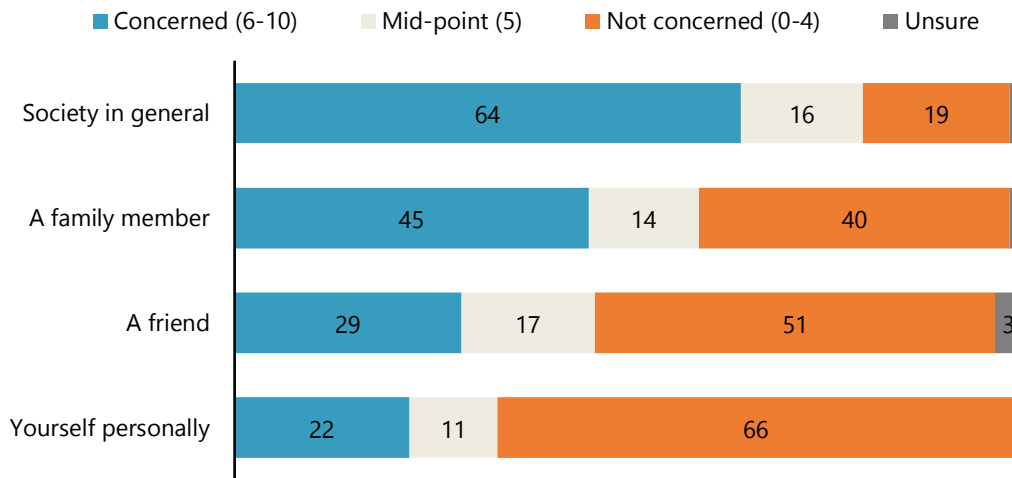
FIGURE 3: HOW CONCERNED ARE YOU ABOUT THE IMPACT OF ONLINE BULLYING?
UMR survey, 1000 New Zealanders, August 2018

²⁰ Juvonen and Galvan 2009

²¹ Hango 2016

²² See the three-year study conducted by Heydenberk and Heydenberk (2017)

²³ McFadden 2009

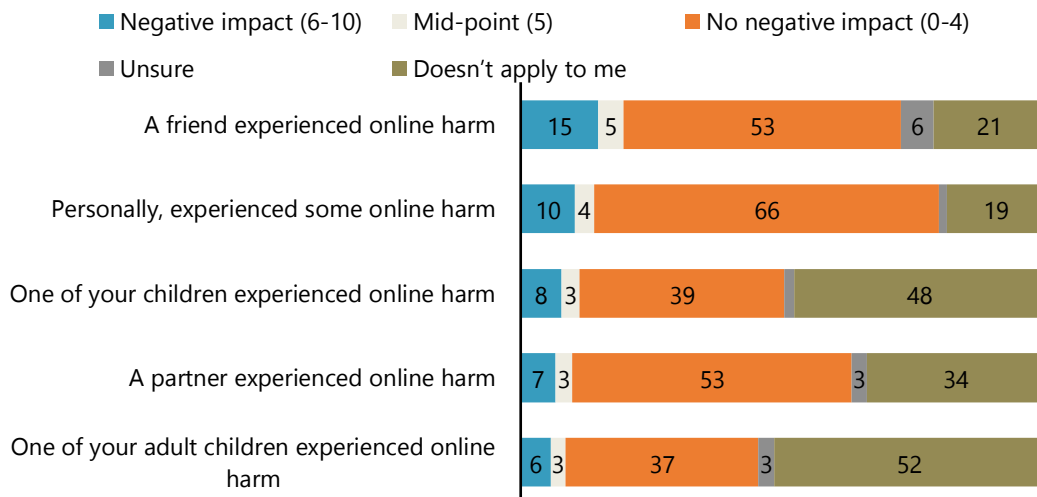


Source: UMR (2018)

These results are perhaps not so unsurprising. Figure 4 shows that within the last year, more people report knowing a friend that experienced some online harm than report experiencing online harm themselves. Unsurprisingly, women, younger people and people from ethnic minorities reported higher levels of harm experienced.

FIGURE 4: WITHIN THE LAST YEAR, TO WHAT EXTENT HAVE EACH OF THE FOLLOWING HAD A NEGATIVE IMPACT ON YOU?

UMR survey, 1000 New Zealanders, August 2018



Source: UMR (2018)

3.3 Interventions

Who do victims turn to?

Any interventions to prevent harm from cyber-bullying needs to be calibrated to effectiveness and cost. One of the key features of cyberbullying is the reluctance of victims to seek help.

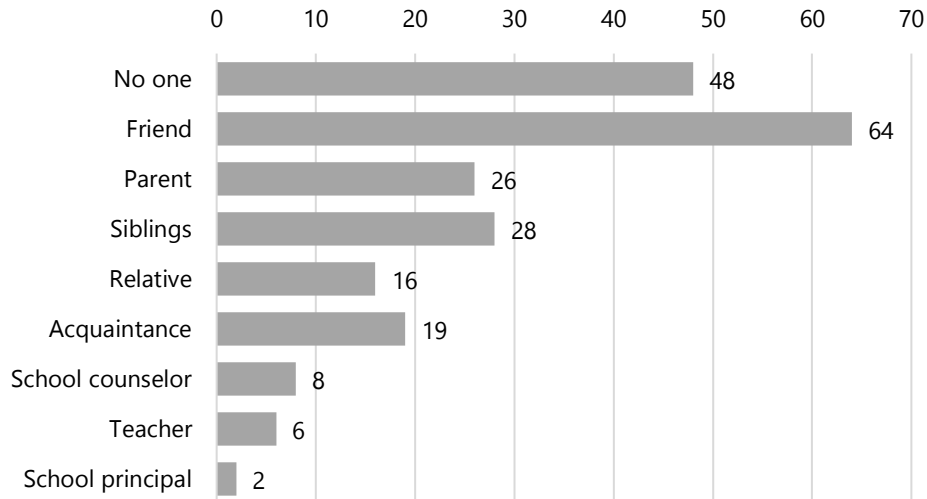


Technology can mean children think adults won't understand. Amichai-Hamburger (2013) makes it plain:

"...paradoxically in this field, the older generation, which is meant to lead, has less knowledge and less exposure than the more expert and technologically experienced youth."

Victims of cyber-bullying do turn to friends but are reluctant to tell others – a point documented in a study of Turkish teenagers (see Figure 5).²⁴ Victims tends to tell friends first and teachers last.²⁵

FIGURE 5: VICTIMS OF CYBER-BULLYING RARELY TURN TO TEACHERS FOR HELP
Responses for Turkish adolescents to cyber-bullying cases in two Turkish schools



Source: Topçu et al. (2015)

We also asked UMR to test who New Zealanders reach out to when experiencing online harm. The results are similar with friends and family members the first port of call over teachers and counsellors (see

²⁴ Topçu et al. (2015)

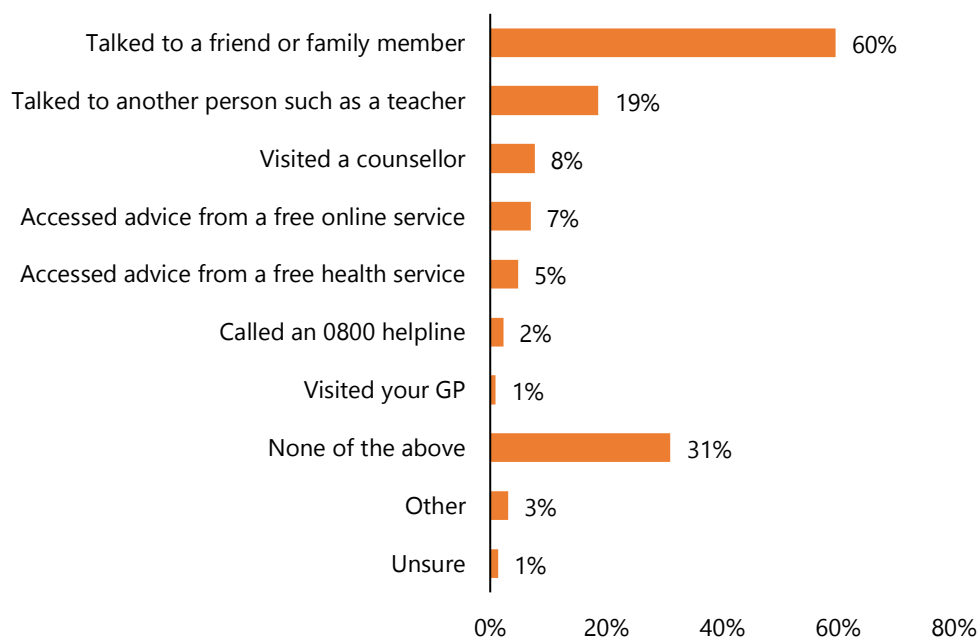
²⁵ also see Smith et al. (2008)



Figure 6).



FIGURE 6: AS A RESULT OF EXPERIENCING EITHER DIRECTLY OR INDIRECTLY AT LEAST SOME NEGATIVE IMPACT FROM ONLINE HARM, HAVE YOU DONE ANY OF THE FOLLOWING?
UMR survey, 1000 New Zealanders, August 2018



Source: UMR (2018)

What types of interventions work?

But there is a long history of successful intervention programmes for bullying.²⁶ Intervention programmes that address general bullying can sometimes be adapted to deal with cyberbullying.²⁷

Children typically report technical ways of responding to cyber-bullying, for example:

- blocking certain people from contacting you online,
- changing passwords, user names or e-mail addresses
- deleting anonymous text messages without reading them.

Different types bullying generates different coping mechanisms.²⁸

²⁶ Olweus and Limber (2010)

²⁷ Slonje et al. (2013)

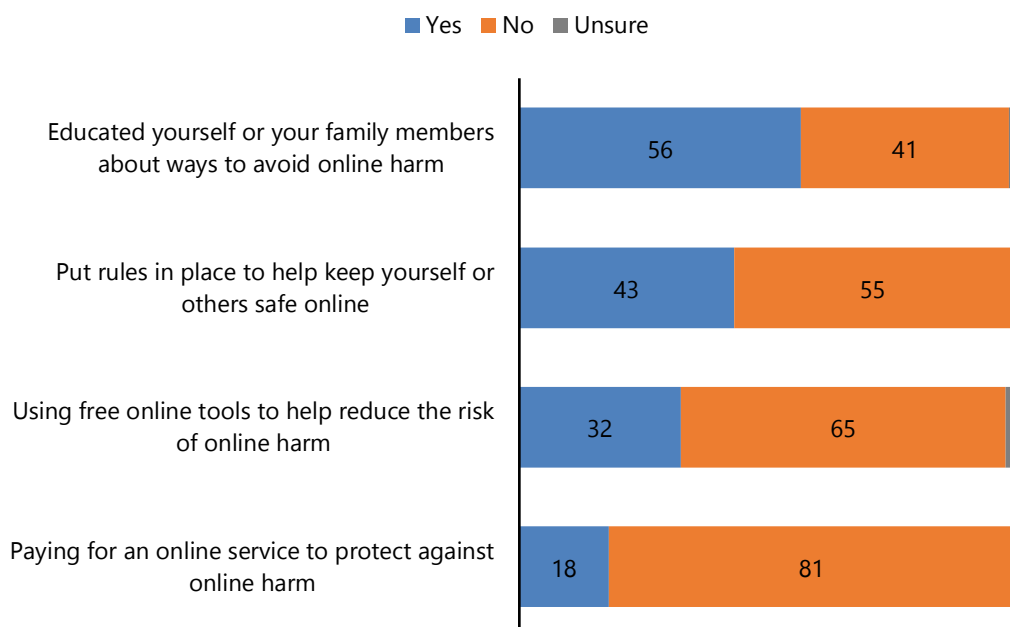
²⁸ Pieschl et al. (2013)



New Zealanders are using education and rules rather than using online tools and services to protect against the impacts of online harm (see Figure 7).

FIGURE 7: OVER THE LAST YEAR, HAVE YOU UNDERTAKEN ANY OF THE FOLLOWING TO HELP REDUCE THE POTENTIAL IMPACT OF ONLINE HARM, TO YOU OR FAMILY?

UMR survey, 1000 New Zealanders, August 2018



Source: UMR (2018)

Curriculum materials are at an early stage – but there is encouraging evidence from traditional bullying. Effective curriculum material can reduce social bullying by around 20 percent.²⁹ While the digital world can be a challenge when it comes to identifying cyberbullying, it also offers potential solutions to better deliver resources. These can be used to provide new techniques (including for example, cybermentoring, film clips and websites),³⁰ for dealing with cyber-bullying.³¹

Legislative responses

Many jurisdictions have also introduced new laws to fight cyberbullying including Australia, Europe, New Zealand, the UK and the US but there is no common legislative response across countries.³²

²⁹ Smith et al. (2012)

³⁰ Slonje et al. (2013) note the success of the computer-based KiVa program in Finland.

³¹ Slonje et al. (2013)

³² Spears et al. (2014)



Australian research³³ to advise their Government on the desirability to create new cyberbullying offences found:

- most Australians were unclear about the circumstances that make cyberbullying criminal
- suggest there is a strong role for schools to provide information on the relationships between cyberbullying and the law
- most young people wanted a new civil enforcement regime but not adults
- laws that criminalise impulsive acts from young people who cannot work through the impact of their actions would be unhelpful
- stakeholder groups recognised that social media sites should conform with new laws but noted the difficulties in terms of enforcement³⁴
- there is a strong role for schools to play in disseminating information on cyberbullying and the law.³⁵

3.4 Towards assessment

Non-market impacts

There is no market for mitigating cyber-bullying so unlike consumer markets with regular information on prices of goods and services, valuing the costs and benefits associated with cyber-bullying is more difficult.

There are at least three methods of non-market valuation that are relevant:

- (i) Stated preference methods that use specially designed surveys to extract people's willingness to pay for a programme or outcome;
- (ii) Revealed preference methods that build up values of non-market goods or services based on the choices people make. Hedonic price methods, such as using house prices information to reveal preferences over school quality, are the standard technique.
- (iii) A well-being or life satisfaction method, that tries to directly estimate the benefit of non-market goods or services based by modelling impacts of often self-reported measures of well-being.

The cyber-bullying literature that tries to quantify the cost of cyber-bullying, tends to connect cyber-bullying to indicators of well-being including self-reporting well-being.

To our knowledge there are no New Zealand studies that tightly link cyber-bullying to self-reported well-being. So, we pursue survey-based methods to uncover willingness to pay.

Fujiwara and Campbell (2011) provide a substantive overview of these methods including the difficulties with each approach. Stated preference methods suffer since answers often dependent on the framing of questions, often related to how respondents process risk and probability. On the other hand, econometric methods can be prone to difficulties such as teasing out causality, functional form specification,

³³ Spears et al. (2014)

³⁴ Ultimately a Senate Inquiry found existing legislation to be "adequate", but made nine recommendations to address cyber-bullying

³⁵ Campbell et al. (2008) note the requirement for Australian and New Zealand schools to have anti-bullying policies that may or may not include reference to cyber-bullying.



measurement error and isolating and attributing value to the policy issue using hedonic methods. As Fujiwara and Campbell note:

“...it is clear that both the revealed preference (for hedonic market studies) and the life satisfaction approaches will work best for policies with significant impacts on market prices (eg, the housing market) or life satisfaction. When this is not the case, stated preference may be the only viable method for valuation of the policy impact.

Willingness to pay

One approach to assessing the benefits of a programme to mitigate or arrest cyber-bullying is to first survey willingness-to-pay for attributes of the programme and then sum over of the population to show societal preference for the programme.³⁶ The approach centres by probing for choices that reveal societal willingness-to-pay for a given programme. The approach rests heavily on survey design and researchers have made clear some of the difficulties that include respondents' understanding of risk³⁷ and bias over choices over hypothetical outcomes.³⁸

Nevertheless, the methods are common where other price-based methods to value benefits are unavailable. Moreover, the method has precedence in the bullying literature. Persson and Svensson (2013) use a survey of residents in Örebro, Sweden who were introduced to bullying and the likelihood of bullying at schools in Örebro before being asked to make a series of discrete choices (see

³⁶ A stated preference technique in the characterisation by Fujiwara and Campbell (2011).

³⁷ see Hammitt and Graham, 1999

³⁸ Willingness-to-pay has also been estimated using hedonic regressions (see Griffith and Nesheim 2008 and Mandell and Wilhelmsson 2010) and a variety of other methods. see Murphy et al. 2005 for further critique.



Figure 8) over hypothetical programmes. These programmes had varying degrees of effectiveness in reducing bullying (see Table 2).



FIGURE 8: DISCRETE CHOICES CAN BE USED TO UNCOVER WILLINGNESS-TO-PAY

Question 1. Currently about 4,800 pupils attend grade 7 to grade 9 in the municipality of Örebro. You have the opportunity to vote on a program that would reduce the number of pupils being bullied according to the information given below.

Pupils being bullied without the program	480 pupils
Pupils being bullied if the program is implemented	100 pupils
Cost per tax payer	500 Swedish kronor

Are you in favour of the municipality implementing this program at the given cost?

Yes No

Source: Persson and Svensson (2013)

TABLE 2: ATTRIBUTES AND ATTRIBUTE LEVELS IN WILLINGNESS-TO-PAY FOR BULLYING PREVENTION IN PERSSON AND SVENSSON (2013) STUDY

Attribute	Attribute levels
Risk reduction	(1) 100 less bullied (per school/academic year)
	(2) 240 less bullied (per school/academic year)
	(3) 380 less bullied pupils (per school/academic year)
Cost	(1) 200 Swedish kronor
	(2) 500 Swedish kronor
	(3) 1,000 Swedish kronor
	(4) 2,000 Swedish kronor
	(5) 5,000 Swedish kronor

Source: Persson and Svensson (2013)

Then a variety of socio-economic and demographics features of the respondents were gathered.

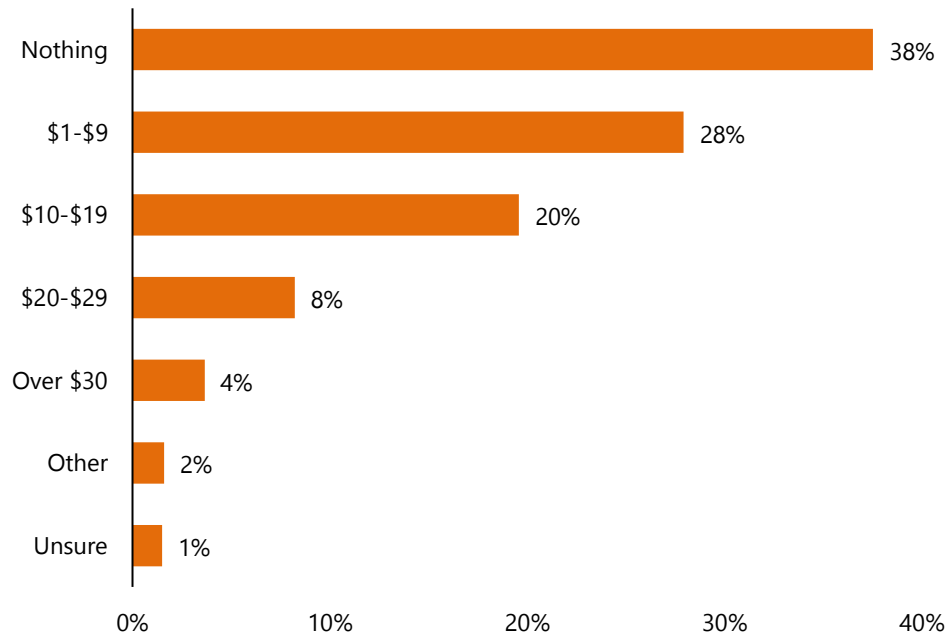
Summing up across the population's willingness-to-pay for the intervention programme, Persson and Svensson (2013) estimate the aggregate willingness to pay per statistical bullying victim is 585,090–835,280 Swedish kroner or \$97,900 to \$139,800 New Zealand dollars in today's terms.



New Zealand evidence

The New Zealand evidence suggests some willingness to pay. UMR report the monthly willingness to pay to help reduce the chance of online harm occurring in Figure 9 below. We deliberately kept the question open to interpretation, as we wanted to establish an unprompted benchmark. In a future iteration of this work, we would like to replicate the work by Persson and Svensson (2013) for New Zealand.

FIGURE 9: HOW MUCH WOULD YOU BE WILLING TO PAY PER MONTH FOR AN ONLINE SERVICE THAT WOULD HELP REDUCE THE CHANCE OF ONLINE HARM HAPPENING TO THOSE IN LIVING IN YOUR HOUSEHOLD?



Source: UMR (2018)



Bringing it all together

The literature does not present a consensus approach to identifying and collating the total cost of cyberbullying. We have made several judgements to present a broad-brush picture of likely social costs of cyberbullying.

We estimate the social cost of cyberbullying in New Zealand was \$444m in 2018. We looked at the costs in three parts.

- First, the cost to individuals at the willingness to pay rate we observed in our survey and loss of life. We estimate the cost to be \$78m a year (with a wide range of estimates from \$61m to \$93m). We believe this is a conservative estimate. Survey respondents may expect additional public expenditure to reduce cyberbullying. As an example, public health spending is 6x private health spending.
- Second, we count up the cost of time and resources spent on the victims of bullying (including by family and friends, counsellors and so on). We estimate this to total \$366m, a huge portion of this is the time of friends and family in prevention and mitigation of cyberbullying.
- Third, we looked at the long-term cost of cyberbullying on mental health, physical health and productivity. But the research is still nascent, and we could not make confident estimates. We left this aside for now, to pick up in future iterations of this work.

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	2018, \$m	Notes
Personal cost	78	
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Loss of life	3	Statistical value of life, Australian data on loss of life related to bullying
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Police	2	Estimate based on Australian bullying study
Education, justice, etc	4	Funding for Netsafe, etc
Long term health & productivity impact	n/a	Unquantified due to insufficient information
Total costs	444	Total annual cost of cyberbullying

Source: Sense Partners

Future work

Our analysis was limited in scope, with an intention to expand in a future iteration. We have identified a range of gaps and limitations and have identified a range of areas to focus on.

In a future iteration of this work, we would like to better estimate personal harm and people's willingness to pay by replicating the work by Persson and Svensson (2013) for New Zealand. We would like to collect much



finer grained data over a larger sample to better tease out intensity of harm and identify potential mitigation tools.

We would like to better understand and quantify cost of interventions by various agencies and what harms they specifically relate to, for example across GPs, Ministry of Justice, police, teachers, etc.

We would like to explore the lifetime effect of cyberbullying on personal health, education and employment outcomes.

We would also like to explore the costs associated with bullies as well, rather than the victims as we have done in this paper. In some literature, bullies have been linked to higher probability of future criminal risks.

4. Conclusion

The online world exposes some people to harm from cyberbullying. The cost to individuals, communities and interventions are substantial. We estimate the cost of cyberbullying was \$444m in 2018.

We used local surveys, international studies, and approaches from other fields to develop a framework and identify the costs. We have not counted the potential long term costs from health or productivity effects, which we hope to pick up in a future iteration of this work.

Additional interventions against cyberbullying could focus on:

- Destigmatising asking for help. 31% of those experiencing or witnessing cyberbullying did not seek help.
- Investing in curriculum for schools. Young people are disproportionately affected by cyberbullying.
- Raising awareness of cyberbullying and where to seek help. Victims of cyberbullying are most likely to turn to their family and friends for help. Awareness of where to go for help would be valuable.
- International coordination of legislation and enforcement of cyberbullying.



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Appendix: Survey Methodology

We reference several statistics that use the UMR national survey. UMR report the methodology of their survey as the following:

- Results in this report are based upon questions asked in the UMR Research nation-wide omnibus survey. This is an online survey of a nationally representative sample of 1,000 New Zealanders 18 years of age and over.
- Fieldwork was conducted from the 27th of July to the 13th of August.
- The margin of error for sample size of 1,000 for a 50% figure at the 95% confidence level is $\pm 3.2\%$.
- Weighting was used to ensure an accurate reflection of the general population. The data was weighted by region, gender, age and ethnicity.
- In this study negative impact from online harm is defined on a scale where 0 = 'no impact at all' and 10 = 'a lot of impact'.



- 6-10 defines negative impact, 5 is the mid-point and 0-4 is defined as no impact.