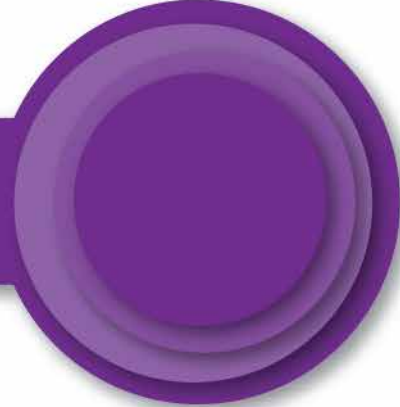


# Accidental drug-induced deaths due to opioids in Australia 2012



**Prepared by** Amanda Roxburgh and Courtney Breen, National Drug and Alcohol Research Centre, UNSW  
**Funded by** the Australian Government Department of Health  
**Product of** the National Illicit Drug Indicators Project  
**Recommended citation** Recommended citation: Roxburgh, A., and Breen, C. (2016). Accidental drug-induced deaths due to opioids in Australia, 2012. Sydney: National Drug and Alcohol Research Centre, UNSW

## Background

- This bulletin provides interpretation of final data on accidental opioid induced deaths in Australia in 2012, and estimated data for 2013 and 2014.
- The majority of opioid overdose deaths in Australia are accidental. To provide context, we also present data on the total number of opioid deaths (including deaths that were not accidental). The focus of this bulletin, however, remains on deaths that are due to accidental opioid overdose.
- The data for 2013 and 2014 are not final and are likely to change. We have estimated figures for 2013 and 2014 based on changes that occurred in the 2011 and 2012 revisions. We have not interpreted these figures in any detail. This will be the subject of later bulletins.
- Opioid overdose deaths include deaths due to heroin and pharmaceutical opioids such as morphine and oxycodone.
- In this bulletin deaths refer to accidental deaths in which opioids were determined to be the underlying cause of death – that is, that they were the *primary* factor responsible for the person's death. They are coded according to the World Health Organization's (WHO) International Statistical Classification of Diseases and Related Problems, 10th revision (ICD-10)<sup>1</sup>.

## Key findings for 2012

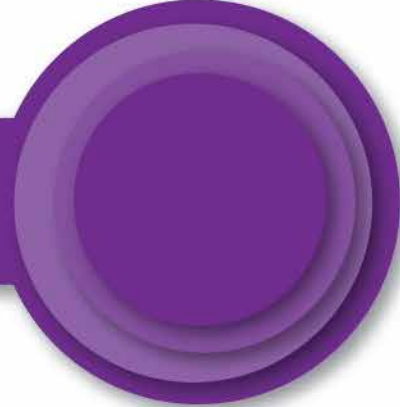
### RATES

- There were a total of 564 accidental overdose deaths attributed to opioids in 2012 (617 in 2011) among those aged 15 to 54 years, and 639 deaths across all ages (683 in 2011).
- In 2012, the rate of accidental overdose deaths due to opioids in Australia was 44.7 per million persons aged 15 to 54 years, representing a decline from 49.5 per million persons in 2011. Among all ages the rate of accidental opioid deaths in 2012 was 28.1 per million persons (30.5 in 2011).
- In 2012, 170 (30%) of the 564 accidental opioid deaths among Australians aged 15 to 54 were due to heroin (Table 1). Among all ages, 182 (28%) of the 639 deaths were due to heroin (data not shown). These proportions have remained relatively stable from last year.
- In 2012, 394 (70%) of the 564 accidental opioid deaths among Australians aged 15 to 54 were due to pharmaceutical opioids (Table 1). Among all ages, 457 (72%) of the 639 deaths were due to pharmaceutical opioids (data not shown).
- In 2012 among Australians aged 15 to 54, just over one-quarter (28%) of the accidental opioid deaths occurred in New South Wales (NSW) (n=157), 23% in Queensland (QLD) (n=128), and 22% in Victoria (VIC) (n=126). All three jurisdictions recorded a decline in accidental opioid deaths in 2012 (Table 2). Figures have fluctuated over the past two years in South Australia (SA). They have remained relatively stable in Tasmania (TAS) and Western Australia (WA)<sup>2</sup>.

<sup>1</sup> See Appendix for details of codes used.

<sup>2</sup> Numbers were not provided for the NT and the ACT in order to protect confidentiality of the decedents.

# Accidental drug-induced deaths due to opioids in Australia 2012



## Key findings for 2012 continued...

- Projected estimates for 2013 (n=589) and 2014 (n=673) suggest that accidental opioid deaths are trending upwards. These figures should be interpreted with caution as they are estimates and may change.

### GENDER

- Males comprised just over two-thirds (69%) of the accidental opioid deaths among the 15 to 54 year age group and 66% among all age groups in 2012. This represents a slight change in demographic characteristics from 2011, with males comprising three-quarters (75%) of the accidental opioid deaths among 15 to 54 year olds.

### AGE

#### **Current**

- Age analysis of accidental opioid deaths among Australians aged 15-54 (n=564) shows the largest proportion of deaths occurring among the 35-44 year age group (37% n=211), followed by the 25-34 year age group (29% n=161), 45-54 (27% n=155) and 15-24 year age groups (7% n=37).
- When deaths for all ages are included in the analysis (n=639), Australians aged 55 years and over account for 11% of all accidental opioid deaths in 2012.

#### **Trends**

- In 2001, accidental opioid deaths across most age groups (with the exception of the 45-54 year olds) decreased significantly following relatively high mortality rates between 1997 and 2000 (Figure 1, Table 5).
- Trends in accidental opioid deaths among Australians aged 15-54 show the mortality rate among the youngest age group (15-24 years) remained low and relatively stable between 2004 and 2012.
- Although increases have been recorded in opioid mortality rates among the 25-34 year age group since 2007, they remain at lower levels than rates recorded prior to 2001.
- There were steady increases in accidental opioid mortality rates among the 35-44 year age group between 2007 and 2010, however these have stabilised in 2011 and 2012 (Figure 1).
- Mortality rates among the oldest age group (45-54 years) have continued to increase since 2001, and rates are higher than those recorded prior to the 2001 reduction in heroin availability in Australia.

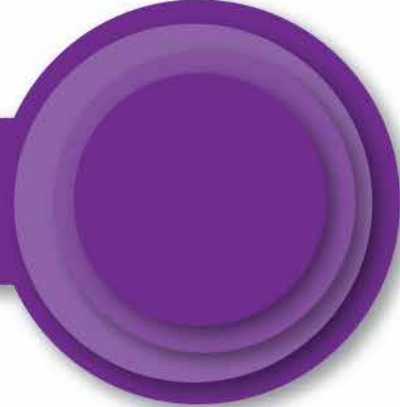
#### **Intentional deaths and deaths of undetermined intent**

- Although this bulletin focuses on opioid deaths that were accidental, additional data provided by the Australian Bureau of Statistics shows that in 2012, among Australians aged 15 to 54, there were 155 deaths that were recorded as being intentional overdoses, and 131 deaths where the intent was undetermined (Table 1).
- Among Australians aged 15 to 54, the 45 to 54 year age group accounted for the largest proportion (42%) of intentional opioid overdose deaths, followed by the 35 to 44 year age group (35%). Australians aged 55 years and over accounted for 26% of intentional overdose deaths among all ages (data not shown).

## Notes on findings

- The Australian Bureau of Statistics (ABS) collates and manages the national causes of death database, utilising information from the National Coronial Information System (NCIS). Prior to 2003, ABS staff visited coronial offices to manually update information about the cause of death for records that had not yet been loaded onto the NCIS. Since 2003 the ABS has progressively ceased visiting jurisdictional coronial offices, therefore ceasing manual updates of deaths that were not already included on the NCIS.
- For the first time in 2006, the ABS relied solely on the data contained on the NCIS, and ceased manually processing the deaths data.

# Accidental drug-induced deaths due to opioids in Australia 2012



## Notes on findings continued...

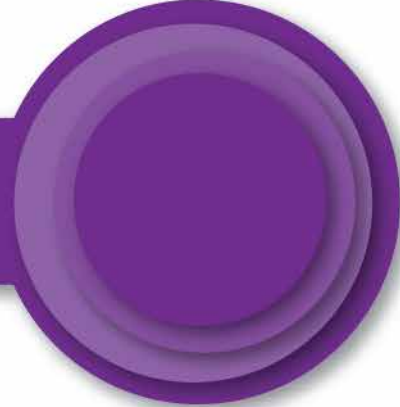
- Since 2007, the causes of death data have been subject to a revisions process. The preliminary data is released by the ABS, then two successive revisions are released 12 months apart from the date of the release of preliminary data.
- The 2006 data presented in this bulletin are based on data released prior to the revisions process being applied to 2006 cause of death data. These data are therefore likely to be incomplete. This is likely to result in an underestimate of the number of accidental opioid deaths recorded in 2006. We have attempted to offset this underestimate by analyzing the changes between preliminary and final findings for both 2007 and 2008. We have averaged the changes across both years, and applied it to the 2006 figures. This data should be interpreted with caution.
- Data for the years 2007 through 2012 in this bulletin represent the 2nd and final revision of each dataset, and are therefore methodologically comparable.
- Data for 2013 and 2014 are projected estimates, based on the changes that occurred in 2011 and 2012 data. These data should be interpreted with caution as figures are likely to change.
- The revisions process results in a longer time from the reporting of a death to finalization by the coroner. These revisions will lead to an increase in the number of deaths. This is particularly true for deaths that are drug-related, as coronial investigations can be complex and lengthy in nature.
- In addition to the revisions process, the ABS undertook two further processing improvements from 2008 onwards; 1) For both open (where a coroner has not yet handed down a finding on cause of death) and closed (where a coroner's decision has been made) cases on the NCIS, the ABS now spend more time investigating the Medical Certificate of Cause of Death to more consistently apply the appropriate ICD10 code for cause of death; 2) For both open and closed cases, the ABS also increasingly use additional information on the NCIS (e.g. autopsy, police and toxicology reports), where available, to apply more specific cause of death codes.
- These processing improvements are likely to have an impact on the number of accidental opioid deaths reported from 2008 onwards.
- It should also be noted that availability of additional information on the NCIS varies by jurisdiction and means that improvements are likely to be applied differentially across jurisdictions.
- These findings should be interpreted in conjunction with the ABS Technical Note 2 Causes of Death Revisions 2014, available on the ABS website:

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3303.0Explanatory%20Notes32014?opendocument&tabname=Notes&prodno=3303.0&issue=2014&num=&view>

## Implications

- Both the number and the rate of accidental opioid overdose deaths in Australia in 2012 remain lower than figures recorded in the late 1990s, when heroin use and harms were increasing.
- The number of accidental opioid overdose deaths showed a slight decline in 2012.
- Consistent with previous years' (2010 and 2011) findings, the majority (70%) of accidental opioid overdose deaths in 2012 were due to opioids other than heroin.
- There were different trends across different age groups, with declines recorded among Australians aged 15 to 24, and 25 to 34 years from 2011 figures, an increase among the 35 to 44 year olds and a stabilising trend among Australians aged 45 to 54 years. Deaths among 45 to 54 year olds remain higher than those recorded prior to 2001.

# Accidental drug-induced deaths due to opioids in Australia 2012



## Implications continued...

- Projected estimates for 2013 and 2014 suggest an upward trend in accidental opioid overdose deaths in Australia. These figures should be interpreted with caution as they are likely to change.
- Age trends are consistent with the direction of other indicators such as hospital presentations for opioid related conditions. Opioid-related hospital presentations among Australians aged 30 to 59 years have steadily increased over the past five years (Roxburgh and Breen, 2016).
- Intentional opioid overdose deaths in 2012 accounted for a minority (18%) of all opioid overdose deaths in Australia.
- Just over half (56%) of the intentional opioid overdose deaths occurred among Australians aged 45 years and over. Further research is required to better understand the longer term trends in intentional opioid overdose deaths, and opioid deaths where intent is undetermined. These figures need to be interpreted with caution as coding practices have changed over time.

## Tables and Figures

Table 1: Number of opioid overdose deaths by intent and opioid type among 15 to 54 year olds, 2010 to 2012

Year	Accidental			Intentional			Undetermined Intent			TOTAL		
	Heroin	PO*	Total	Heroin	PO*	Total	Heroin	PO*	Total	Heroin	PO*	Total
2010	203	410	<b>613<sup>^</sup></b>	24	79	103	32	51	83	259	540	799
2011	201	416	<b>617<sup>^</sup></b>	46	73	119	40	63	103	287	552	839
2012	170	394	<b>564<sup>^</sup></b>	47	108	155	46	75	131	273	577	850

\* PO – Pharmaceutical opioid

<sup>^</sup> These deaths are the focus of this bulletin

# Accidental drug-induced deaths due to opioids in Australia 2012

Tables and Figures continued...

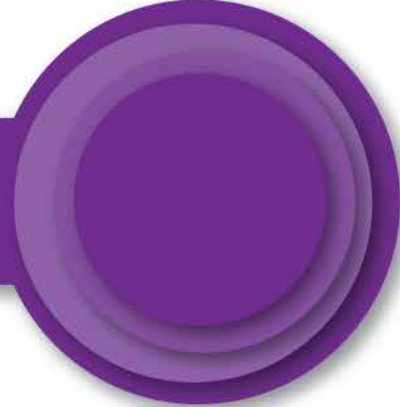
Table 2: Number of accidental deaths due to opioids among those aged 15-54 years by jurisdiction, 1988-2012

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
<b>1988</b>	204	99	16	12	18	0	0	2	<b>351</b>
<b>1989</b>	158	99	19	8	18	1	2	2	<b>307</b>
<b>1990</b>	196	79	8	19	14	5	0	0	<b>321</b>
<b>1991</b>	146	64	9	13	13	3	0	2	<b>250</b>
<b>1992</b>	182	79	18	30	22	0	1	4	<b>336</b>
<b>1993</b>	188	86	23	41	24	5	2	5	<b>374</b>
<b>1994</b>	209	97	37	32	38	4	5	3	<b>425</b>
<b>1995</b>	273	140	42	38	70	6	0	13	<b>582</b>
<b>1996</b>	260	145	32	32	64	5	2	17	<b>557</b>
<b>1997</b>	333	203	36	52	76	2	2	9	<b>713</b>
<b>1998</b>	452	243	64	53	78	10	13	14	<b>927</b>
<b>1999</b>	481	376	79	64	92	5	8	11	<b>1116</b>
<b>2000</b>	349	323	124	50	72	8	2	10	<b>938</b>
<b>2001</b>	177	73	58	18	35	8	5	12	<b>386</b>
<b>2002</b>	158	93	40	21	28	9	6	8	<b>364#</b>
<b>2003</b>	143	129	32	14	16	4	2	17	<b>357</b>
<b>2004</b>	144	126	34	25	19	6	1	2	<b>357</b>
<b>2005</b>	133	104	42	37	36	14	np*	np*	<b>374</b>
<b>2006</b>	138	118	42	20	38	15	np*	np*	<b>381</b>
<b>2007</b>	115	103	52	34	27	15	np*	np*	<b>360</b>
<b>2008</b>	137	170	62	43	64	11	np*	np*	<b>500</b>
<b>2009</b>	174	143	103	47	71	10	np*	np*	<b>563</b>
<b>2010</b>	150	169	142	41	87	9	np*	np*	<b>613</b>
<b>2011</b>	176	175	134	24	88	7	np*	np*	<b>617</b>
<b>2012</b>	<b>157</b>	<b>126</b>	<b>128</b>	<b>42</b>	<b>90</b>	<b>13</b>	<b>np*</b>	<b>np*</b>	<b>564</b>

# One death did not have a jurisdiction noted

\* np means that the data in these jurisdictions were not published in order to protect confidentiality

# Accidental drug-induced deaths due to opioids in Australia 2012



Tables and Figures continued...

Table 3: Number of accidental deaths due to opioids among those aged 15-54 years by gender and jurisdiction, 2012

Jurisdiction	Males	Females
NSW	109	48
VIC	91	35
QLD	83	45
SA	28	14
WA	63	27
TAS	8	5
NT	np	np
ACT	np	np
Missing	np	np
<b>Australia</b>	<b>387</b>	<b>177</b>

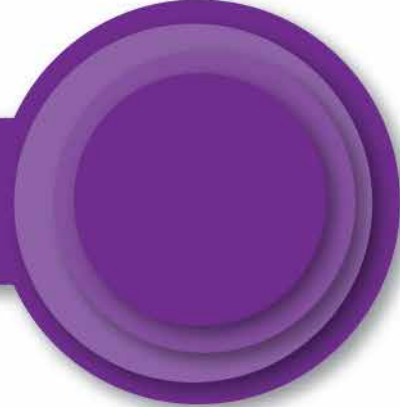
\* np means that the data in these jurisdictions were not published in order to protect confidentiality  
 Note: Figures may not match those reported in Table 1 as a result of the ABS confidentialisation process

Table 4: Rate of accidental opioid deaths per million persons among 15-54 year olds by jurisdiction, 1988-2012

	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	AUST
<b>1988</b>	62.5	39.9	10.1	14.9	19.7	0	0	11.4	<b>36.6</b>
<b>1989</b>	47.5	39.3	11.6	9.8	19.2	6.4	19.2	11.4	<b>31.4</b>
<b>1990</b>	58.2	30.8	4.7	23.1	14.6	19.1	0	0	<b>32.3</b>
<b>1991</b>	42.8	24.7	5.2	15.7	13.4	11.4	0	10.8	<b>24.8</b>
<b>1992</b>	52.9	30.3	10.1	35.9	22.4	0	9.2	21.1	<b>32.9</b>
<b>1993</b>	54.3	33.0	12.6	48.9	24.1	18.8	18.3	25.9	<b>36.3</b>
<b>1994</b>	59.9	37.1	19.7	38.1	37.7	15.0	45.5	15.4	<b>40.9</b>
<b>1995</b>	76.9	53.4	21.8	45.1	68.1	22.5	0	66.2	<b>55.3</b>
<b>1996</b>	72.7	54.8	16.2	37.9	61.2	18.7	17.7	85.6	<b>52.2</b>
<b>1997</b>	92.2	76.1	18.1	61.8	71.3	7.5	16.5	45.8	<b>66.3</b>
<b>1998</b>	124.1	90.4	31.7	62.7	72.1	37.8	106.1	71.3	<b>85.4</b>
<b>1999</b>	130.9	138.8	38.7	75.5	84.1	19.0	64.4	55.9	<b>101.9</b>
<b>2000</b>	94.1	118.1	60.1	58.9	65.2	30.6	15.9	50.5	<b>84.9</b>
<b>2001</b>	47.2	26.4	27.8	21.2	31.3	30.8	39.6	60.2	<b>34.6</b>
<b>2002</b>	41.9	33.2	18.8	24.7	24.8	34.9	47.8	40.1	<b>32.3</b>
<b>2003</b>	37.8	45.9	14.7	16.5	14.1	15.4	15.9	85.3	<b>31.5</b>
<b>2004</b>	38.0	44.6	15.4	29.5	16.6	23.0	8.0	10.1	<b>31.3</b>
<b>2005</b>	35.0	36.5	18.7	43.7	31.0	53.7	np*	np*	<b>32.5</b>
<b>2006</b>	36.1	41.0	18.3	23.5	32.2	57.4	np*	np*	<b>32.8</b>
<b>2007</b>	29.8	34.8	22.1	39.2	22.4	57.2	np*	np*	<b>30.4</b>
<b>2008</b>	35.1	56.5	25.7	49.2	51.5	42.0	np*	np*	<b>41.5</b>
<b>2009</b>	44.2	49.7	42.0	53.4	54.8	37.7	np*	np*	<b>45.9</b>
<b>2010</b>	37.8	54.5	57.2	46.3	65.9	33.8	np*	np*	<b>49.5</b>
<b>2011</b>	44.3	56.0	53.6	27.1	65.1	26.3	np*	np*	<b>49.5</b>
<b>2012</b>	<b>39.29</b>	<b>39.86</b>	<b>50.46</b>	<b>47.26</b>	<b>64.38</b>	<b>49.44</b>	<b>np*</b>	<b>np*</b>	<b>44.7</b>

\* np means that the data in these jurisdictions were not published in order to protect confidentiality

# Accidental drug-induced deaths due to opioids in Australia 2012

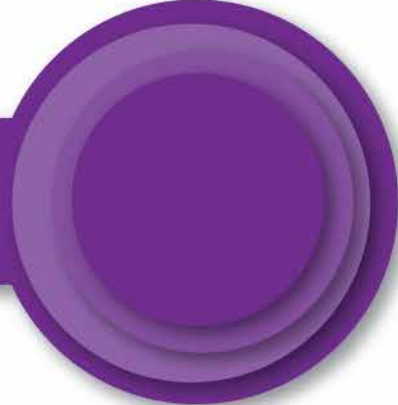


Tables and Figures continued...

Table 5: Rate of accidental deaths due to opioids per million persons by age group, 1988-2012

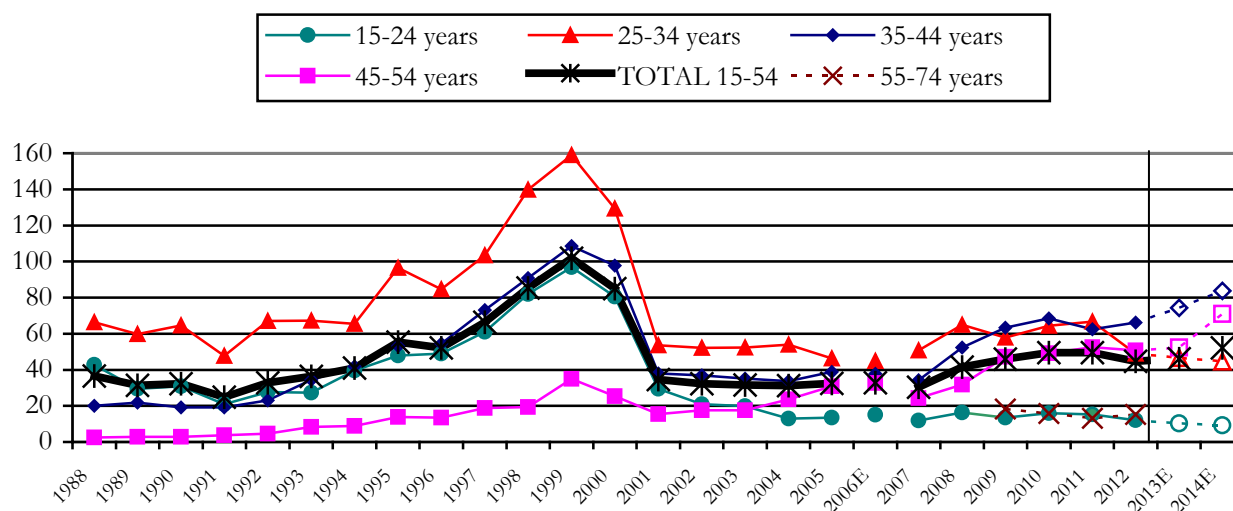
	15-24 years	25-34 years	35-44 years	45-54 years
1988	42.8	66.3	20.0	2.4
1989	29.5	59.7	21.9	2.9
1990	30.8	64.6	19.1	2.8
1991	21.0	47.8	19.1	3.7
1992	27.6	67.1	23	4.6
1993	27.3	67.3	34.5	8.3
1994	39.5	65.5	41.9	8.9
1995	47.9	96.5	53.3	13.9
1996	49.0	84.6	54.4	13.4
1997	61.1	103.5	73.1	18.8
1998	82.0	139.7	90.8	19.4
1999	96.8	158.9	108.6	35.0
2000	80.6	129.3	97.8	25.4
2001	29.4	53.6	38.0	15.4
2002	20.9	52.1	36.9	17.6
2003	19.8	52.4	35.2	17.5
2004	13.0	53.9	33.6	23.6
2005	13.5	46.4	39.9	30.8
2006	15.0	44.9	37.8	32.7
2007	12.0	50.7	34.3	24.4
2008	16.3	65.0	52.3	31.8
2009	13.5	57.9	63.3	47.2
2010	15.9	64.3	68.4	48.5
2011	15.3	66.7	62.4	52.5
2012	<b>12.0</b>	<b>49.0</b>	<b>66.1</b>	<b>50.7</b>

# Accidental drug-induced deaths due to opioids in Australia 2012



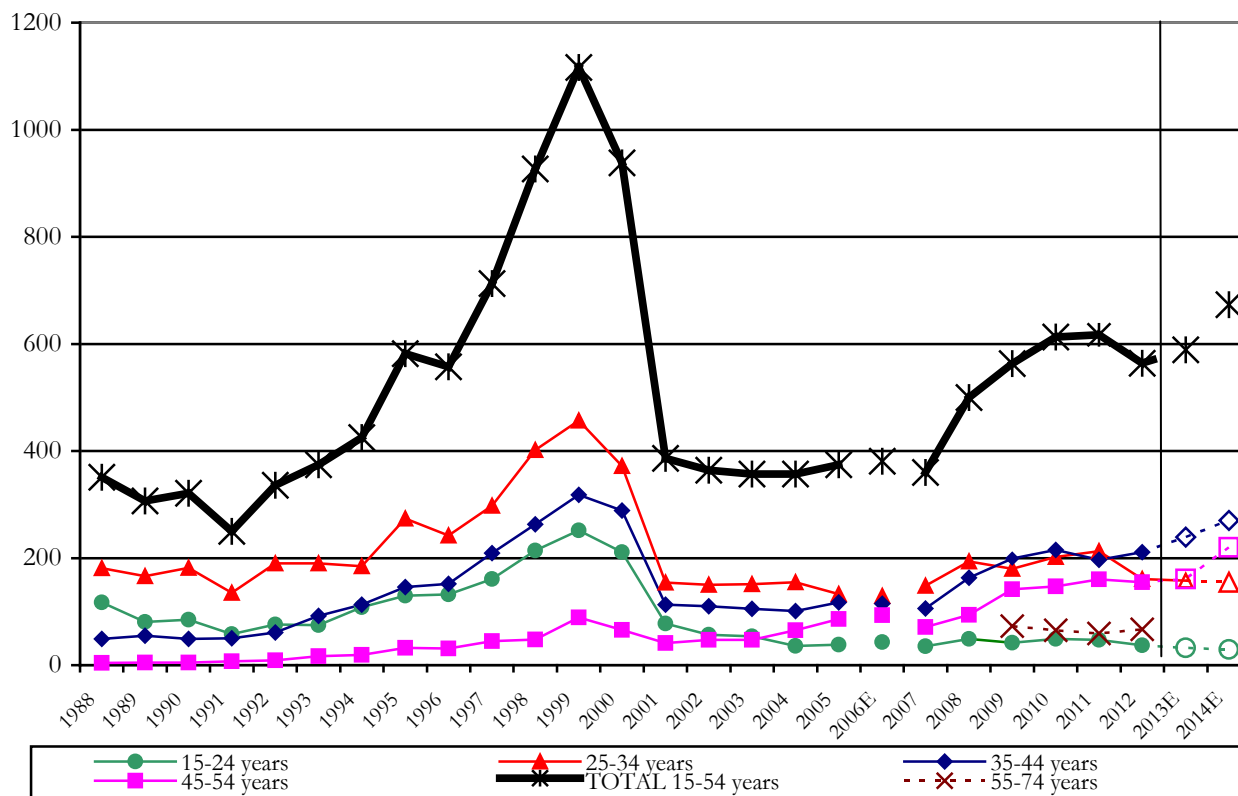
Tables and Figures continued...

Figure 1: Rate of accidental deaths due to opioids per million persons by 10 year age group, Australia 1988-2012



N.B. There is a break in the series in 2006. These data were not revised and are therefore likely to be an underestimate. We have estimated these data points using original data, then using an average of change across the 2007 and 2008 revisions. The 2013 and 2014 figures are estimated using changes that occurred across revisions in 2011 and 2012. These figures are not yet final. 2006E, 2013E and 2014E=Estimated.

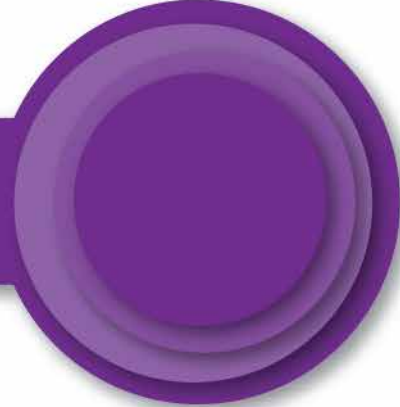
Figure 2: Number of accidental deaths due to opioids among those aged 15-54 years, Australia 1988-2012



N.B. There is a break in the series in 2006, as these data were not revised, and are therefore likely to be an underestimate. We have estimated these data points using original data, then using an average of change across the 2007 and 2008 revisions. We estimated what the 2013 and 2014 final figures might be given the changes that occurred across revisions in 2011 and 2012. These figures are not yet final. 2006E, 2013E and 2014E=Estimated



# Accidental drug-induced deaths due to opioids in Australia 2012



## Appendix: ABS data on accidental deaths due to opioids in Australia

The Australian Bureau of Statistics (ABS) is responsible for collecting data every year on persons who have died across Australia. Data on accidental deaths are collected from the Medical Certificates of Cause of Death submitted to each State or Territory's Registrar of Births, Deaths and Marriages and from the National Coroners Information System.

Death certificates typically state the sequence of events that led to a person's death. The ABS then uses its coding rules to establish the *underlying* cause of death, that is, "the disease or injury that initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury". The ABS also lists the diseases, injuries and health-related factors that *contributed* to the death but which were not the main cause of death.

The ABS uses an international classification system for classifying deaths, developed by the World Health Organization (WHO). This is called the International Statistical Classification of Diseases and Related Problems (ICD). The ICD edition currently used is the 10th edition (ICD-10). This edition of the classification system has been used since 1997 and provides more detailed information on accidental drug-induced deaths than previous versions. It is important to note that the introduction of ICD-10 has resulted in a break in time series. Prior to 1997, the COD data were coded according to ICD-9, and opioid deaths were based on the following codes: 3040 (opioid dependence), 3070 (opioid dependence in combination with another drug), E8500 (accidental poisoning by heroin) and E8501 (accidental poisoning by methadone).

All data on accidental opioid deaths used in this report refer to deaths in which opioids were considered to be the *underlying* cause of death. This means that the deaths recorded here only include those in which it was considered that opioids such as heroin, morphine, pethidine, methadone and codeine were *primarily responsible* for the person's death. There are more deaths each year in which opioids are considered to have *contributed* to a person's death (e.g. general medical conditions, suicides, other accidental deaths), however these deaths are not presented.

In this report, the following ICD-10 codes have been used:

- F11 — Accidental deaths due to opioid use disorder (including opioid dependence);
- F19 with F11 — Accidental deaths due to multiple drug use disorder which included an opioid use disorder;
- X42 with T40.0-T40.4, T40.6 — Accidental deaths due to poisoning which included opioid poisoning;
- X44 with T40.0-T40.4, T40.6 — Accidental deaths due to multiple drug poisoning which included opioid poisoning; and
- F19 with T40.0-T40.4, T40.6 — Accidental deaths due to multiple drug use disorder which included opioid poisoning.

### RELATED LINKS:

For more information on NDARC research, go to <http://ndarc.med.unsw.edu.au/>

For more information about the ABS, go to [www.abs.gov.au](http://www.abs.gov.au)

For more information on ICD-10, go to [www.who.int/whosis/icd10/](http://www.who.int/whosis/icd10/)

## Acknowledgements

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## References

Roxburgh, A and Breen, C. (2016). Drug-related hospital stays in Australia 1993-2014. Sydney: National Drug and Alcohol Research Centre, UNSW.

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