NSW Suicide Monitoring System (SuMS): Expert review of analysis, reporting and engagement processes

FINAL REPORT

Dr Maria Ftanou, Ms Tess Cutler, Dr Angela Clapperton, Dr Vikas Arya, Ms Georgia Dempster, Professor Matthew Spittal, Professor Jane Pirkis

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Table of Contents

Acknowledgements **3**
Executive summary **4**
Background 4
Our approach 4
Summary of findings 5
Recommendations 8
Conclusion 8
1. Background **9**
Purpose of the evaluation 11
2. Our approach **13**
Evaluation questions 13
Evaluation framework 13
Evaluation data sources 14
Relationship between evaluation questions, SuMS attributes and data sources 15
3. Review of key documents **17**
Program activities and outputs 17
Data linkage and analysis 17
Report design 19
Communication and engagement 21
SuMS and other monitoring systems 22
4. Key informant interviews **23**
SuMS team members 23
Contributors to SuMS 25
Users of SuMS 26
5. Observation of SuMS sessions **29**
Screening Review Session 29
Executive briefing session 29
6. Case studies **30**
Case study 1: Individual health service contact reports 30
Case study 2: Screening reports 32
7. Discussion **35**
Achievements against the objectives listed in the SuMS draft program logic 35
Achievements against the evaluation questions 36
Achievements against the CDC attributes 39
Recommendations 41
Conclusion 41
8. References **42**
Appendix A: Review of key documents **43**
Appendix B: Key informant interviews **47**

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Executive summary

Background

Suicide continues to be a significant public health problem in Australia, with over 3,000 people ending their life by suicide each year. This equates to about 8.6 deaths daily, with an age-standardised rate of 12.0 per 100,000 people. In New South Wales (NSW), the most populous state, there were approximately 964 suspected deaths by suicide in 2022, surpassing the number of deaths reported for 2021 (912), 2020 (899) and 2019 (946). To combat suicide and better understand the population and community-level risk and protective factors, the World Health Organisation has identified the importance of monitoring suicide and self-harm as a core component of national suicide prevention strategies.

Within NSW, the state-specific monitoring system known as the NSW Suicide Monitoring System (SuMS) was established in October 2020 to support the suicide prevention and response commitments of the NSW Government. SuMS is a collaboration between three NSW Government agencies: the NSW Department of Communities and Justice (including the Coroners Court of NSW); NSW Police; and NSW Health. It focuses on systematically collecting information on suicides and estimating the number of recent suspected and confirmed suicides in NSW. The aim of SuMS is to contribute to reducing suicides in NSW, by providing timely and accessible data to relevant stakeholders. By working in conjunction with the National Suicide and Self-harm Monitoring System (NSSHMS), SuMS can contribute to the overall understanding of suicide trends, risk factors, and affected populations in NSW and more broadly, thereby informing suicide prevention and response strategies.

The Centre for Mental Health at the University of Melbourne was commissioned by NSW Health to undertake an independent evaluation of SuMS to ensure that as SuMS moves from its initial establishment phase, its analysis, reporting, and engagement processes are of a high standard and meet the needs of its stakeholders.

Our approach

The evaluation was guided by four focus areas outlined by NSW Health. Each of these focus areas had one or more evaluation questions sitting beneath it:

1. Data linkage and analysis:
   a) Are data linkage and analysis approaches appropriate and consistent with good practice for suicide data analysis?

2. Report design:
   a) Are current reports and outputs appropriate and consistent with good practice for suicide data reporting?
   b) Are there possible improvements or changes to report design that would better meet SuMS objectives and the needs of SuMS stakeholders?

3. Communication and engagement:
   a) Are current communication and engagement processes effective and consistent with good practice in suicide reporting?
   b) Are there possible improvements or changes to communication and engagement processes that would better meet SuMS objectives and the needs of SuMS stakeholders?

4. Overall:
    a) What are the important priority areas for refinement or improvement in the next stage of SuMS development?

The evaluation questions focused on the analysis, reporting and engagement processes associated with the system, rather than the data contained within it and its structure.

Our approach to answering the evaluation questions was guided by the Centers for Disease Control and Prevention (CDC) Guidelines for Evaluating Public Health Surveillance Systems framework (8). In particular the evaluation considered the following system attributes: simplicity, acceptability, accessibility, and usefulness.

The evaluation gathered information from four data sources: (a) a review of key documents; (b) semi-structured group interviews with key informants including the SuMS team, data contributors and SuMS users (c) observational data from a SuMS Screening Review Session and an Executive Briefing Session; and (d) two case studies (one on the use of the individual health service contact reports and the other on the use of the screening reports). Information from these data sources was triangulated to answer the evaluation questions.

Summary of findings

Overall, the findings from the evaluation indicate that SuMS has achieved a lot in a relatively short space of time. We have summarised these findings in three ways below: (1) against the objectives listed in the SuMS draft program logic; (2) against the evaluation questions; and (3) against the CDC attributes.

Achievements against the objectives listed in the SuMS draft program logic

The evaluation has indicated that SuMS has achieved many of its objectives in relation to the program logic. ***Inputs*** such as funding, formal partnerships between the NSW Department of Communities and Justice, NSW Police and NSW Health, and relevant infrastructure are in place. ***Activities and outputs*** including data sharing arrangements between NSW Health and NSW Department of Communities and Justice have been developed and implemented but continue to evolve. Relevant analyses including those identifying at-risk sub-groups and regions are being conducted. In terms of ***short-term impacts***, stakeholders have indicated improved access to timely suicide data and reporting and many of these stakeholders feel knowledgeable and confident enough to use these data and reports. Additionally, in terms of ***intermediate impacts,*** key stakeholders have improved understanding of suicide in their districts, and some are beginning to use the data and reports for planning and decision-making (e.g., targeting specific regions for suicide prevention activities). It is too early for SuMS to be achieving its **longer-term impacts.**

Achievements against the evaluation questions

Considering the achievements of SuMS in the context of the evaluation questions also presents a positive picture.

Data linkage and analysis

a) Are data linkage and analysis approaches appropriate and consistent with good practice for suicide data analysis?

The analysis methods used by SuMS are largely appropriate and consistent with good practice for suicide data analysis. Informative comparisons are made between regions, sub-groups of the population, and time periods. Some analysis and reporting may be unnecessary (e.g., graphs of cumulative deaths over

months). The granularity of many analyses included in the documents also raises some issues; on the one hand, small cell sizes may have implications for confidentiality and the certainty with which findings can be interpreted, but on the other hand, stakeholders are pleased to be able to consider data at a regional level.

The probabilistic data linkage strategies that are being used are also appropriate. The SuMS team did, however, highlight some challenges associated with data linkage. These are related to data completeness, delays in data entry, use of aliases, and errors in data entry and matching information.

Report design

a) Are current reports and outputs appropriate and consistent with good practice for suicide data reporting?
b) Are there possible improvements or changes to report design that would better meet SuMS objectives and the needs of SuMS stakeholders?

The review of the key documents and feedback from SuMS users highlighted that the reports are overall of a good standard, particularly the public reports. The public, screening and focused analyses reports are generally clearly laid out and easy to follow. They use appropriate language and clearly list the confidentiality status if required. Other positive features in some but not all reports are contents lists, information about data sources, caveats and cautions about interpreting specific results, warnings about potentially distressing content and provision of helpline contacts, detailed information about data analysis methods, definitions of terms used, text summaries of graphs and tables, and descriptive titles and labels for graphs and tables.

Some of the main suggestions to improve reports include:

- Adding the responsible author/organisation and relevant contact information.
- Adding a caution when reporting small numbers that individuals could be potentially re-identifiable.
- Adding analyses with rates in the public reports to allow for comparisons within the data and to other datasets.
- Standardising of all reports and presentations with clear sub-headings, statements of purpose, limitations, key findings, contents lists, information about data sources, caveats and cautions about interpreting specific results, warnings about potentially distressing content, and helpline contacts.
- Increasing the use of text summaries of figures and tables to help with interpretation.
- Ensuring all figures and tables have descriptive titles and clear labels.
- Defining terms such as “higher”, “slightly higher”, “lower”, and “slightly lower” with numbers, rates, or percentages to provide clarity.
- Making each report standalone by including relevant data analysis methods and definitions of terms.
- Adding a section to the reports that summarises and interprets the data.

Communication and engagement

a) Are current communication and engagement processes effective and consistent with good practice in suicide reporting?
b) Are there possible improvements or changes to communication and engagement processes that would better meet SuMS objectives and the needs of SuMS stakeholders?

The suite of briefings, webinars and videos that are used to communicate and engage with stakeholders is extensive and well received. SuMS users value communication and engagement with the SuMS team and with other data users. Bringing people together provides an opportunity to learn from each other and helps to highlight that suicide prevention involves multiple stakeholders.

Some of the main suggestions to improve communication and engagement processes include:

- Offering training for users about reports and how to interpret the data.
- Ensuring that LHDs and partner organisations have up-to-date information on the suite of reports and data available.
- Providing practical guidance on how to use the information.
- Continuing to engage with stakeholders in a range of ways (e.g., reports, guides, summary videos, and annual and quarterly briefings) to support data interpretation and use.
- Offering multiple opportunities for data users and contributors to provide feedback to the SuMS team and for data users to discuss the ways they use the SuMS data.

Overall

a) What are the important priority areas for refinement or improvement in the next stage of SuMS development?

The evaluation highlights that in general key stakeholders are extremely satisfied with SuMS and value it as an essential part of the suicide prevention landscape in NSW. The evaluation suggests that it is important to ensure that key stakeholders have access to the reports and know what data are available. Creating additional reports and collating more data and improving data quality and utility is important, but ensuring that the current data are meaningful and readily interpretable should also be prioritised. Consideration might also be given to creating functionality that allows users to generate their own reports, notwithstanding that this would raise issues relating to data confidentiality and interpretation.

Achievements against the CDC attributes

SuMS performs well against the CDC attributes of simplicity, accessibility, acceptability and usefulness.

Stakeholders praised SuMS for its ***simplicity.*** In particular, the SuMS team commented on its ease of use, making mention of its automated and efficient processes for data loading, data cleaning, and report generation. Overall users also found the SuMS reports and products clear and easy to understand. However, users who were less familiar with data found the volume of information challenging and were unsure of when they needed to respond to changes in the data. The communication and engagement sessions provide a platform for stakeholders to address concerns, clarify information, and gain a better understanding of the data related to their district.

In terms of ***accessibility,*** SuMS users generally agreed that SuMS has significantly increased access to suicide data and information in NSW. However, concerns were raised about limited access for certain users, uncertainty regarding the type of available reports, and difficulties interpreting the data (especially in relation to small populations, or small changes in numbers of suicides).

According to SuMS users, the ***acceptability*** of the SuMS reports and products is enhanced by the SuMS team and data contributors' dedication and commitment in collecting, cleaning, interpreting, and disseminating accurate data. SuMS users valued and appreciated the availability and accuracy of data and indicated that they are actively engaging with the reports and attending briefing and screening meetings. Some LHDs and partner organisations are more engaged than others and there is also variability in how stakeholders approach and utilise reports. This highlights the need for ongoing efforts to enhance engagement efforts.

SuMS was perceived as very ***useful*.** SuMS plays a helpful role in identifying suicides prior to the Coroner's investigation and determination of intent, improves awareness, identifies high-risk groups and locations, and enhances understanding of service contacts prior to suicide, thereby improving the overall understanding of suicide in NSW. The engagement and communication strategies employed by SuMS also facilitate discussions at both the local and state levels regarding suicide prevention planning.

Recommendations

It is recommended that the SuMS team:

- Engage in a priority-setting exercise to review report findings and determine and prioritise activities based on their own operational capacity, availability of resources, and timelines.

- Capitalise on their excellent achievements to date and further strengthen the quality and comprehensiveness of SuMS data.

- Continue to communicate the findings and engage with stakeholders in a manner that maximises the simplicity, accessibility, acceptability, and usefulness of the data for a range of key stakeholders.

- Explore opportunities for further data linkage activities to support national data linkage and sharing of linked data, for use in policy, planning, system management, evaluation, and performance reporting.

- Continue to embed stakeholder consultation in the ongoing development of reports with a focus on LHD and partner organisations that are not engaging with system. This will help to ensure that relevant stakeholders are aware of the SuMS reports and products and make the best use of them.

- Draw on the expertise of people with lived experience of suicide. Their expertise is likely to be helpful at all points in the process of deciding what data to present, analysing and interpreting data, reporting results, and disseminating findings.

- Explore methods of improving data collection for high-risk groups and publish more information about these groups.

- Continue to work with police and the Department of Communities and Justice to automate and streamline processes of data transfer and data analysis and reporting.

Conclusion

SuMS is a major initiative that is only in its infancy but is already beginning to yield significant benefits. It provides timely data on suspected suicides, and the fact that it has a clear, well-articulated communication and engagement strategy means that these data are reaching stakeholders who can use them to influence the way suicide prevention efforts are delivered. Key stakeholders from the police, Department of Communities and Justice, NSW Health, LHDs and partner organisations actively engage with the SuMS team and its reports and products, indicating strong acceptance and engagement by the suicide prevention sector. SuMS is gaining a reputation as a trustworthy, reliable source of data and becoming part of the suicide prevention landscape in NSW.

1. Background

Suicide continues to be a significant public health problem in Australia, with over 3,000 people ending their life by suicide each year (1). This equates to about 8.6 deaths daily, with an age-standardised rate of 12.0 per 100,000 people (1). In New South Wales (NSW), the most populous state, there were approximately 964 suspected deaths by suicide in 2022, surpassing the number of deaths reported for 2021 (912), 2020 (899) and 2019 (946) (2). Among these 964 suspected suicides, 748 were male (78%), and most occurred among those aged between 25 and 54 years, regardless of gender. Additionally, about half of the suicides in NSW were among residents of Greater Sydney. For every suicide, there are approximately ten times as many hospitalisations for intentional self-harm in Australia (3, 4).

Suicide is generally thought to result from a complex interaction between various risk factors, including past or current mental health problems, a family history of mental health problems, prior suicide attempts, past traumatic life events, access to means, difficulties in relationships, and a lack of or perceived lack of support (5). To combat suicide and better understand the population and community-level risk and protective factors, the World Health Organisation has identified the importance of monitoring suicide and self-harm as a core component of national suicide prevention strategies.

The Australian National Mental Health Commission's Mental Health and Suicide Prevention Monitoring and Reporting Framework (2018) (6) and the Australian Productivity Commission's Mental Health Inquiry (2020) (7) also emphasised the need for robust suicide surveillance systems. Although Australia has had some form of national suicide monitoring for many decades, in 2018, the Australian Government committed $15 million to develop the National Suicide and Self-harm Monitoring System (NSSHMS). The primary objective of the NSSHMS is to enhance the quality, accessibility, and timeliness of data on suicide, self-harm, and suicidal behaviour. Additionally, the NSSHMS aims to improve understanding of the nature and extent of suicide and self-harm, including risk factors and affected populations. The NSSHMS has supported the development and maintenance of state/territory-based suicide surveillance systems.

Within NSW, the state-specific monitoring system known as the NSW Suicide Monitoring System (SuMS) was established in October 2020 to support the suicide prevention and response commitments of the NSW Government. SuMS is a collaboration between three NSW Government agencies: the NSW Department of Communities and Justice (including the Coroners Court of NSW); NSW Police; and NSW Health. It focuses on systematically collecting information on suicides and estimating the number of recent suspected and confirmed suicides in NSW. The aim of SuMS is to contribute to reducing suicides in NSW, by providing timely accessible data to relevant stakeholders. Table 1 describes SuMS draft program logic highlighting overall inputs, outputs, impacts, and outcomes. By working in conjunction with the NSSHMS, SuMS can contribute to the overall understanding of suicide trends, risk factors, and affected populations in NSW and more broadly, thereby informing suicide prevention and response strategies.

Operationally, SuMS functions through a structured process. The NSW Police notify the Coroners Court of NSW of all suspected suicides via a structured data collection form (P79A). This information, along with other supporting documentation (e.g., post-mortem forensic medical or police reports), is uploaded into NSW Department of Communities and Justice's Justicelink database, which contains structured and free-text fields. Cases of possible or suspected suicides are identified by NSW Department of Communities and Justice; cases that are still under coronial investigation are updated and revised when the Coroner's investigation is complete. Information on new and updated cases is extracted from the Justicelink database monthly and sent to NSW Health via secure transfer. NSW Health then validates and augments the data (e.g., checking for missing or inconsistent data, geocoding addresses), iterating with NSW Department of Communities and Justice as necessary. NSW Health links the data on suspected and confirmed suicides with NSW health service data, matching on names, dates of birth, gender and address.

NSW Ministry of Health (NSW Health) is also responsible for providing a monthly SuMS public report and a suite of internal reports to Ministry and Local Health District (LHD) users. These reports include:

- Public reports: These reports are produced monthly and provide a breakdown of the monthly numbers of suspected suicides, as well as the number of suspected suicides by age, gender, and region. The target audiences for these reports include the Ministry of Health, LHDs, partner organisations and the public.

- Screening reports: These monthly reports provide information on recent trends in regions and sub-groups in the population. The screening reports are disseminated every quarter to LHDs. However, LHDs receive monthly reports if any region within the LHD is flagged as "possibly elevated" between the standard quarters. Reports can also be shared with partner organisations, subject to a confidentiality agreement. The screening reports are also provided to the Ministry of Health.

- Individual health service contact reports: An individual report is produced for each person who died by suicide and who had contact with a health service before ending their life. These reports are distributed monthly. The target audiences for these reports include the Ministry of Health and LHDs. These reports could be used for service planning and improvement.

- Focused analysis includes a range of specific reports to understand high-risk specific issues such the high-risk public locations of suicide reports. This annual report highlights high-risk locations in NSW. It has been produced only twice so far. It is disseminated to the Ministry of Health and LHDs and can be shared with partner organisations, subject to a confidentiality agreement. Another such report is the health service contact before suicide death: This report focuses on health services contacts. The reports are disseminated to the Ministry of Health and LHDs and can be shared with partner organisations, subject to a confidentiality agreement.

- Technical papers: The technical papers decipher technical terms and explain data linkage and inpatient suicide estimation. They thoroughly describe the limitations of inpatient suicide data. The target audiences for these reports are primarily Ministry of Health.

- Ad hoc reports: These reports are produced to address specific requests from the Minister's Office or policy areas of NSW Health.

The reports are generally produced in PDF format, but there are also system engagement PowerPoint-type briefings, webinars and videos. Additionally, a dashboard has been developed exclusively for the internal SuMS team. It contains all of the reports and is accessible online to the team (and not accessible to anyone outside the team). It does not contain the linked data set. Although currently for internal use this may change as the system matures.

The reports are supported by briefing and information sessions. These include monthly Screening Review Sessions for senior NSW Health policy and clinical leadership staff, quarterly Executive Briefing Sessions, and ad hoc Information/Support Sessions for LHD Managers and partner organisations that have signed confidentiality agreements (e.g., Primary Health Networks [PHNs], non-government organisations [NGOs] and other suicide collaborative members). Another stakeholder engagement activities is regular Towards Zero Suicide updates provided to Department of Premier and Cabinet.

Purpose of the evaluation

The Centre for Mental Health at the University of Melbourne was commissioned by NSW Health to undertake the independent evaluation of SuMS to ensure that as SuMS moves from its initial establishment phase, its analysis, reporting, and engagement processes are of a high standard and meet the needs of its stakeholders.

Table 1: SuMS draft program logic highlighting overall inputs, outputs, impacts, and outcomes

Program aim: To reduce the rate of suicide in NSW					
Inputs	**Activities**	**Outputs**	**Short-term Impacts**	**Intermediate impacts**	**Outcomes**
• Funding • Staff Partnerships between NSW Health, DCJ[a], NSW Police • Infrastructure (e.g., datasets, linkages, platforms)	• Develop and implement data-sharing arrangements between NSW Health and DCJ • Conduct data analyses, including identifying at-risk sub-groups or regions • Develop and implement routine public and internal reporting • Develop and implement system engagement activities to support data interpretation and use of reports (e.g., routine briefings and support sessions for key stakeholders[b])	• Monthly public reports are disseminated on the NSW Health website. • Monthly and quarterly internal reports are disseminated via email • Key stakeholders participate in system engagement activities to support data interpretation and use of reports (e.g., routine briefings and support sessions for key stakeholders)	• Accurate, timely suicide data and reporting are used and understood by key stakeholders • Key stakeholders have increased awareness of suicide data and reporting available • Key stakeholders have increased knowledge and confidence to use and interpret suicide data and reports	• Key stakeholders have improved understanding of factors that contribute to suicide • Key stakeholders use suicide data and reports for planning and making decisions • Key stakeholders are engaged and work collaboratively to use and respond to suicide data and reporting • Local service planning and improvement are informed by suicide data and reporting • More informed policy and funding decisions • Suicide care pathways are followed	• Improved, targeted suicide prevention policies (e.g., reduced access to frequently used means) • Improved mental health service availability and use at the right time by people who need it

[a] Department of Communities and Justice

[b]Key stakeholders include Mental Health Branch, LHDs, local partner organisations in suicide prevention, (inter)national partner organisations in suicide prevention.

2. Our approach

Evaluation questions

The evaluation was guided by four focus areas outlined by NSW Health in the original Request for Professional Services (RFPS). Each of these focus areas had one or more evaluation question sitting beneath it:

1. Data linkage and analysis:
   a) Are data linkage and analysis approaches appropriate and consistent with good practice for suicide data analysis?

2. Report design:
   a) Are current reports and outputs appropriate and consistent with good practice for suicide data reporting?
   b) Are there possible improvements or changes to report design that would better meet SuMS objectives and the needs of SuMS stakeholders?

3. Communication and engagement:
   a) Are current communication and engagement processes effective and consistent with good practice in suicide reporting?
   b) Are there possible improvements or changes to communication and engagement processes that would better meet SuMS objectives and the needs of SuMS stakeholders?

4. Overall:
   a) What are the important priority areas for refinement or improvement in the next stage of SuMS development?

The evaluation questions focused more on the analysis, reporting and engagement processes associated with the system than the data contained within it and its structure.

Evaluation framework

Our approach to answering the evaluation questions was guided by the Centers for Disease Control and Prevention (CDC) Guidelines for Evaluating Public Health Surveillance framework (8).The CDC framework considers certain attributes of any surveillance system, namely usefulness, timeliness, sensitivity, data quality, acceptability, accessibility, and utility. For this evaluation, the four attributes outlined in Table 2 were considered most relevant.

Table 2: Attributes of SuMS considered in the current evaluation

Attribute	Definition
Simplicity	The system's structure and ease of operation.
Accessibility	The extent to which the information generated and availability of information help with understanding suicide and informs its prevention.
Acceptability	The extent to which the information serves the purpose for which it is collected.
Usefulness	The system's ability to contribute to the detection and prevention of suicide.

Evaluation data sources

Four main data sources were used to answer the evaluation questions and assess the attributes of SuMS. Each of these approaches is outlined below, and the evaluation questions and CDC criteria addressed by each are described in Table 3.

Review of key documents

We reviewed documents and files that were provided and approved by NSW Health that were relevant to the evaluation. These included examples of public and internal reports including screening reports, individual contact history reports, focused analyses reports, technical papers, videos and presentation slides from system engagement events, and examples of ad hoc advice documents. These files were included as they provided evidence of a range of system outputs and activities. In some cases, both recent and older formats of reports were provided to allow comparisons. Files were reviewed in a systematic way, cataloguing the information that is available in each, considering issues like uniformity, comprehensiveness, and continuity. See Appendix A table 1 for further details of the documents reviewed as part of the evaluation.

We compiled the documents that were relevant to the evaluation and then developed a data collection template in Excel to summarise information as it related to specific program objectives noted in the draft program logic (Table 1) and evaluation questions detailed in Section 2 and where relevant the CDC framework. Data were extracted from each document from at least one member of our evaluation team with more than ten percent of documents being evaluated and discussed by multiple team members.

Semi-structured interviews with key informants

We conducted four key informant semi-structured group interviews, one with SuMS team members, one with stakeholders who contributed to the development of SuMS products, and two with users of SuMS. Each group interview lasted for 90 minutes, and each was facilitated by two members of our team. Participants were asked open-ended questions that aimed to elicit information about their experience with SuMS reports and products (see Appendix B for details of the interview questions). Interviews were recorded and transcribed. Qualitative information pertaining to each evaluation question was read and re-read with the CDC attributes in mind and coded. More detail about our approach to the interviews for each stakeholder group is provided below.

SuMS team members

We conducted a semi-structured group interview with SuMS team members, seeking to understand how reports were produced. We were interested in gauging their views about the extent to which the current reports can inform suicide prevention efforts in NSW, what is missing, what would desirably be included, and what barriers and facilitators exist in relation to any modifications.

Contributors to SuMS

We conducted one semi-structured group interview with those contributing to the SuMS processes. These stakeholders included representatives from NSW Health, NSW Department of Communities and Justice (including stakeholders from the Coroners Court of NSW), and NSW Police. The interviews were designed to capture information on processes and responsiveness of SuMS.

Users of SuMS

We conducted two semi-structured group interviews with key stakeholders who used the SuMS reports. These stakeholders included representatives from LHDs and/or partner organisations. The interviews were designed to capture information on the relevance and usefulness of the reports and their dissemination.

Observations of SuMS sessions

We sat in as observers on one SuMS Screening Review Sessions and one Executive Briefing Session, both of which occurred during the review period. The aim of our observations was to establish how information from the SuMS reports was communicated to key stakeholders and to identify any gaps in information sharing.

Case studies

We conducted two case studies. The first described the use of health service contact reports and the second focused on the use of the screening reports.

Relationship between evaluation questions, SuMS attributes and data sources

Table 3 shows the relationship between the evaluation questions, SuMS attributes and data sources.

Table 3: Addressing the evaluation questions and assessing SuMS analysis/reporting/engagement against Centers for Disease Control (CDC)and Prevention criteria

		1. Review of SuMS reports and products	2. Key informant interviews	3. Observation of SuMS Screening Review Sessions, Executive Briefing Sessions	4 Brief "case study" descriptions and stakeholder interviews
Evaluation questions	Data linkage and analysis: Are data linkage and analysis approach appropriate and consistent with good practice for suicide data analysis?	☑			
	Report design: Are current reports and outputs appropriate and consistent with good practice for suicide data reporting?	☑			
	Report design: Are there possible improvements or changes to report design that would better meet SuMS objectives and the needs of SuMS stakeholders?	☑	☑	☑	☑
	Communication and engagement: Are current communication and engagement processes effective and consistent with good practice in suicide reporting?	☑			
	Communication and engagement: Are there possible improvements or changes to communication and engagement processes that would better meet SuMS objectives and the needs of SuMS stakeholders?	☑	☑	☑	☑
	Overall: What are the important priority areas for refinement or improvement in the next stage of SuMS development?	☑	☑	☑	☑
CDC criteria	Simplicity (structure and ease of operation)	☑			
	Acceptability (extent to which the information serves the purpose for which it is collected)	☑	☑	☑	☑
	Accessibility (availability for understanding suicide and informing its prevention)	☑	☑	☑	☑
	Usefulness (contribution to the detection and prevention of suicide)	☑	☑	☑	☑

3. Review of key documents

We reviewed information from more than 30 documents and files. Information from these has been summarised into four themes: program activities and outputs; data linkage and analysis; report design; and communication and engagement.

Program activities and outputs

Findings from the key documents summarised here relate to each of the activities and outputs of the SuMS draft program logic (see Table 1).

There were multiple examples of relevant data analyses, including analyses identifying at-risk sub-groups and regions, throughout the public and internal reports. The public reports present high-level information about suspected and confirmed suicides for NSW while also providing some more detailed information at the year, month, region, gender, and age-group levels. The range of screening reports provide more in-depth information for regions and sub-groups of the population including information down to the LHD, Statistical Area 3 (SA3) and even suburb level, and by sub-groups (e.g., age groups and gender). These reports identify regions (and sub-groups within regions) with "possibly elevated" numbers of suicide for the most recent periods. Focused analyses reports provide additional in-depth analyses for specific topics of interest (e.g., high-risk public locations of suicide), and sub-groups of the population (e.g., females aged 24 and under). Other analyses beyond the regular public and internal reporting have been conducted and reported as needed for the Coroner or Minister's Office. Examples of these additional ad hoc analyses and reports which were provided to our team included a report for the Coroner on the number of suicides by Aboriginality, and reports for the Minister's Office on suicides by sex, age-group, and selected regions of residence for a specific time, and suicides for the year-to-date for people aged 24 and under in a specific LHD.

The development and implementation of regular public and internal reporting was clearly shown. Our team was provided with examples of monthly public reports, a range of monthly and quarterly screening reports, and a range of both monthly and annual focused analyses reports. Downloadable copies of the monthly public reports from September 2020 through to the most recently published report with data to February 2023 are also available through the NSW SuMS webpage (https://www.health.nsw.gov.au/towardszerosuicides/Pages/suicide-monitoring-system.aspx)

Evidence of system engagement activities to support data interpretation and use of reports was provided through slides from executive and screening briefing sessions, and videos of report summaries. Efforts to support understanding of data and use or reports were also clear in specialist documents such as the screening report guide, and in notes and cautions included in many of the reports.

Data linkage and analysis

The primary source of information about data linkage conducted by SuMS was the "Methods for linking SuMS data with NSW Health Records" document which thoroughly described the methods used for linking data from the NSW SuMS with NSW Health service data. Through previous work conducted by members of our evaluation team in Victoria, we are aware that the Centre for Victorian Data Linkage used patient-specific identifiers and deterministic data linkage. NSW SuMS appears to also use patient-specific identifiers but uses probabilistic linkage. This is an appropriate and common method of data linkage used in analysis of this kind and although probabilistic record linkage is generally more computationally demanding and more difficult to program it reduces the number of overlooked matches so is consistent with good practice in this area. Plans to validate and refine the linkage method, improve data, and conduct further analysis/reporting based on feedback and needs are noted in several documents, including the data linkage focused analyses report.

Insightful analyses of the linked NSW Health Records and SuMS data are presented throughout the reports and focused analyses to describe health service use in the 28 days, 1 year and 5 years prior to suicides for a range of regions and sub-groups of the population. The technical paper describing the estimation of inpatient suicides also describes that the linkage of SuMS data with hospital records is used as a tool to identify inpatient suicides. While this linkage is providing valuable information, it is noted that health records relating to contacts with GPs, private practitioners or services provided by PHNs are not yet included.

The evaluated documents largely presented appropriate analysis approaches which were consistent with good practice for suicide data analyses. Many reports presented age-standardised rates with confidence intervals to allow for more certain interpretation of the data. Appropriate comparison data were provided for similar time periods (e.g., 10 monthly averages and January to October data for year-to-date screening reports containing data on the current year to October only), and comparison data were available for other Australian states and internationally for analyses (e.g., data linkage focused analyses report, slides for SuMS overview of suicides webinar). Cumulative data were presented in many reports (e.g., most screening reports and focused analyses) however, when a full year of data is presented, cumulative counts appear to be of limited use.

Many of the documents provided simple, clear, and appropriate descriptions of the data analysis methods used. Some examples of this include the public reports describing the method used to identify suspected suicides and details of inclusion/exclusion criteria, and the focused analysis of young females describing data sources and linkage used for the health services data. Some documents contained limited information about the linkage and analysis methods used (e.g., screening report for the Western Sydney LHD) and some documents had limited descriptions and labelling of figures and tables which meant that it was not possible to evaluate the methods used for all analyses.

Many of the internal documents included analyses and publication of granular data with very small numbers (i.e., counts from zero to four). These analyses may not be appropriate due to the potential for high margins of error, as well as the potential for this sensitive data to become re-identifiable. To counter the first of these issues, several of the documents contained warnings about the interpretation and comparisons of data with small numbers (e.g., focused analyses geographical summary report) and confidence intervals were often included. In the focused analyses for females aged 24 and under there was a note urging caution when comparing groups with small numbers of suicides, however the addition of an explanation for why caution is needed may also be beneficial for those without experience interpreting these and similar data.

In the focused analyses geographical summary for 2021 there was a note that data sourced from the Australian Bureau Statistics (ABS) for some LHDs were not published due to low numbers. In both the focused analyses of high-risk public locations and of females aged 24 and under, highly sensitive data are presented in a very granular and detailed manner. These include counts as low as one for suicides at specific public sites for each year, for each method by location type (e.g., motor vehicle at cliff/lookout locations), de-identified summaries of individual suicides (including year, month, gender, age group, SA3 and suicide method) for individuals at each site, personal characteristics (including residential LHD and SA3) and care received in 28 days prior to death. These small numbers are likely to be potentially re-identifiable; however, they were only included in documents clearly marked for internal use only and the screening report guide details how access to these documents is restricted and provided to partner organisations (e.g., assessment of need for access, assessment of governance framework relating to information and privacy laws, requirement for confidentiality deed to be signed, monitoring and notification of any unauthorised use or data/report disclosure).

Additional analyses could be included in the public reports to facilitate comparisons. For example, on page 1 of the public reports, the overall numbers for each year could be presented with a rate per 100,000 people or an age-standardised rate. This would allow more accurate comparisons across the

years and comparisons with other states and territories. All other tables of the public reports could include percentages for ease of comparison across months, age groups, etc., and the aggregate monthly frequency could be added to table 1 within the public reports.

An ad hoc advice document requested by the Coroner contained analyses of suicides of Aboriginal people and had several key points relating to the high proportion of people with unknown or missing Aboriginal status. This was detailed for the SuMS data as well as for ABS data and for each of the recent years. Despite the increased completeness of these data in recent years, comment was made about the need to improve the data completeness and data quality, and work was underway to improve identification of Aboriginal people in SuMS using linked datasets. The desire to improve data, analyses, and reporting to best assist in the understanding of suicide and preventative efforts was a clear trend throughout the documents our team evaluated.

Report design

The reports provided to our evaluation team were mostly well presented and appropriate, including the use of appropriate language throughout. The purpose of each report and its confidential status (if relevant) were clearly and prominently stated. The consistency of formatting and structure of the reports helped the reader to orient themselves with each new report. Most reports contained a list of key points on page 1 which often included any relevant data limitations, a reminder of confidentiality requirements (if relevant), sources of any data that were not from SuMS, and a brief list of key results. Throughout the documents, important cautions were given about interpretation of the reported analyses. These cautions related to issues such as monthly data in the absence of longer-term data, and small numbers due to granularity of data.

Public reports

The public reports were very clear and easy to understand, with all information presented being appropriate and consistent with good practice for suicide data reporting. The public reports summarised in lay terms what the NSW SuMS is, where the data are collected from and what is included, and the accuracy of the data including comparisons to the ABS and other data sources. The public reports contained a warning about potentially distressing content with two helpline contacts and presented findings very clearly and in an easy-to-understand format. They contained detailed information about methods of coding and identifying suspected suicides, classification of residential region, details of the deaths that may have been corrected (e.g., date of recording of death used if date of death is unknown), and the number and type of records that were excluded.

Screening and focused analyses reports

The screening and focused analyses reports followed a similar format to the public reports while containing significantly more in-depth information. In general, page 1 of each of these reports was very clear with defined purpose and limitations and key points, and some of the larger reports included tables of contents (e.g., screening report for the Western Sydney LHD). Important limitations were very clearly and prominently stated on page 1 of the reports, including for example, the fact that data in the screening reports do not reflect the performance of LHD services or identify clusters, that health services data in the focused analyses reports do not refer to specific health services, and that appropriate caution should be used in interpreting data from regions marked as “possibly elevated” or regions not marked as such. These and other cautions and disclaimers were repeated throughout the reports next to relevant results to aid in appropriate interpretation. For example, the focused analyses geographical summary report included a disclaimer about the significant margin of error for the single year estimates present for LHDs, and highlighted points to explain the tables, including what the confidence intervals were.

The most recent focused analyses geographical summary report also provided a good example of helpful summary information for each category of results. These clear and succinctly summarised results were likely to have aided the reader's appropriate interpretation of the large amount of very detailed information provided. This report also included well labelled figures and tables and detailed information about the methods of coding and of identifying suspected suicides, classification of residential region, details of the deaths that may have been corrected (e.g., date of recording of death used if date of death is unknown), and the number and type of records excluded. The focused analyses of high-risk public locations provided another good example, with clearly defined terms, and helpful background information on the importance of examining the topic and types of interventions that can be implemented.

More generally, the analysis methods described in the screening and focused analyses reports were limited, which may lead to misinterpretation of the data if the reader does not have other documents such as the Screening Report Guide on hand, or is not sufficiently familiar with the data. Similarly, definitions were not always provided (e.g., "deaths" refers to "suspected or confirmed suicide deaths"). Throughout the screening and focused analyses reports, many of the figures and tables were not clearly titled or labelled which could inhibit the usefulness and appropriate interpretations of the data.

Other details which could aid the ease and appropriateness of data interpretations include providing more in-text descriptions of the findings, being clear about definitions of terms such as "higher" and "slightly higher", using symbols instead of colours to show data differences, and using consistent age categories within and across reports.

Other documents

Three examples of ad hoc advice reports were evaluated by our team. We understand these reports were created as needed at the request of stakeholders so are likely to have been tailored to meet the needs of those stakeholders. These reports contained important information and were appropriately presented. Assumptions appeared to have been made that the reader knew Statistical Area abbreviations as these terms were not defined, but these assumptions were likely correct given the intended audience of the reports. As with the screening and analyses reports, descriptive titles and labels were not always provided for each figure and table which increased the difficulty of interpreting the data presented. The granularity of data presented in these reports (e.g., sub-group analyses of year-to-date data for 24-year-olds and under in a specific LHD) was likely to have led to difficulties in interpreting trends, however, caution was advised in the reports against over-interpretations. As found in many of the previously discussed reports, the analyses method described in these documents seemed somewhat limited.

The technical paper on linkage methods clearly and thoroughly described the data linkage process used by SuMS. Some technical terms may have been difficult to decipher for a lay person without the help of further reading materials however, this was unlikely to have been an issue with the intended audience – the Technical Expert Reference Group. The technical paper estimating inpatient suicides thoroughly describes the limitations of current inpatient suicide data in NSW and articulates how SuMS data can potentially be used to overcome some of these limitations to identify inpatient suicides more accurately. Both documents are likely to be extremely valuable to anyone accessing and interpreting any SuMS data beyond what is presented in the public reports.

The individual contact history reports were clear and concise and easy to understand. One report is produced for each person who died by suicide who had any contact with NSW Health public sector services since 2015. These reports are sent to the Mental Health Director and Clinical Director of LHD of the person's address of residence, and any additional LHD(s) the person may have contacted the year prior to their death (if it falls outside their LHD of residence).

Communication and engagement

The screening report guide was undoubtedly an important tool used to communicate with multiple different stakeholders and readers of the LHD screening reports. It defined a clear purpose and audience for the reports, described the data sharing rules in place for the reports (e.g., sources of data, how data can and can't be used, who data can be shared with), the responsibilities of each LHD with regards to sharing data with partner organisations, and the responsibilities of each partner organisation. The guide briefly described some data sources and defined terms used in the reports (e.g., deaths, LHD, service contact, and "possibly elevated" suicides). Caution was advised about the provisional data possibly not aligning with the delayed public reports and being revised with each update, and about monthly and quarterly data varying substantially and therefore only being used to supplement long term data. The guide also contained a note that SuMS is in early stages of development and reports will be updated based on additional data and LHD feedback and provided a contact email for information and feedback.

Other tools used to communicate and engage with stakeholders that were provided to our team included the executive briefings, summary videos, overview of suicide webinars, and screening data meetings.

The executive briefings are presentations for relevant Ministry of Health staff, LHD Mental Health Directors, and invitation is also open to partner organisations in suicide prevention (outside of NSW Health). These meetings are run quarterly and there are two of them each quarter to work around people's availability. The number of attendees can range from four to approximately 20. Data from the most recent NSW screening report are presented at these meetings with focus on possibly elevated regions and sub-groups. The most recent executive briefing included discussion of the appropriate new format of public and LHD screening reports, the evaluation, and other priorities for the quarter. The briefing from the first quarter of 2022 included information about data sharing between LHD and partner organisations and use and interpretation of LHD screening reports.

As with the executive briefings, the annual overview of suicide webinar example provided was for relevant Ministry of Health, LHD, and partner organisation staff. A warning about distressing themes was issued and the number for Lifeline Australia was included at the beginning of the webinar, as well as an Acknowledgement of Country and of people with lived experience of suicide. Attendees were encouraged to engage through slido.com by indicating which Aboriginal lands they were participating from, asking questions, and providing comments. Background information was presented about the importance of suicide data and monitoring systems and the timeliness of different systems. An update on the work of SuMS was provided, as well as a description of reports and their purposes (e.g., reports "not intended to evaluate the performance of LHD services"). Information important to the interpretation of the data was also offered (e.g., what an age-standardised rate is, how to interpret confidence intervals). Key findings from the year were presented after a clear caution about the sensitivity and confidentiality of the data.

As with some of the other reports mentioned above, many of the figures and tables on the presentation slides did not have descriptive titles and labels. This could increase the risk of misinterpretation of the data. While some information may have been explained verbally during the presentations, from the slides alone there was ambiguity about date ranges, abbreviations, and terms (e.g., data presented as "possibly elevated" without numbers or comparisons shown). These presentations included large amounts of data which may have caused confusion and may not all have been relevant to each of the stakeholders present. Between and within presentations there were some inconsistencies in the formatting of slides and some of the slides contained very large amounts of content which could also be distracting and reduce clarity.

Meetings on the screening data were held monthly for relevant Ministry of Health staff. A recent example of the slides presented in these meetings included presentation of findings presented in the most recent NSW and LHD screening reports, and notification of any possible incidents during admission. Discussion was also held about data sharing arrangements and the evaluation. Again, some of the slides could have been improved for clarity.

Full year summary videos were available to relevant Ministry of Health, LHD, and partner organisation staff and were produced annually. The videos were simple and engaging. They provided an important reminder to the audience that behind the data were people and included helpline information. The simplicity of the videos was appealing but the flip side of this simplicity was that they lacked the level of detail provided in other documents and presentations (e.g., indicated increases in numbers and/or rates but did not quantify the increase). In addition, it may be helpful to consult with people with lived experience and others in the sector to gauge the appropriateness of the music and large amounts of red used in the videos.

Further findings relating to the communication and engagement of the SuMS are described in the sections below where they are drawn from interviews and case studies with stakeholders, and observations of SuMS sessions.

SuMS and other monitoring systems

Many countries have implemented suicide surveillance systems to monitor and analyse suicide data. In a recent review conducted by Benson et al., (2022), five suicide monitoring systems were compared[9]. These systems included:

1. Coronial Suspected Suicide Data Sharing Service - New Zealand
2. The Interim Queensland Suicide Register - Queensland, Australia
3. Victorian Suicide Register - Victoria, Australia
4. Thames Valley Police Real-Time Suicide Surveillance System - Thames Valley, United Kingdom
5. Suicide and Self-Harm Observatory - Southwest Ireland

The SuMS evaluation was focused on reporting from SuMS than the actual data that are in SuMS, the Benson et al., review did not specifically look into reporting, but comparison can be made in terms of objectives, system characteristics and methods of operations. All of these systems in the review shared similar features with SuMS. These systems aimed to gather and collate data that could potentially be used for trend analysis, risk profiling, and gaining an understanding of the circumstances surrounding each suicide. Similar to SuMS, these systems employed an electronic database. However, there were variations in the terminology and definitions of suicide across these systems. Like SuMS, all of these systems collected information on suspected/probable suicides.

The systems collected a wide range of data items, many of which were also collected by SuMS. These data items included: unique file numbers, number assigned by police, the name of the deceased, date of death, sex/gender, date of birth/age, religion, residential address, geocoding of residential address, ethnicity, education level, marital status, method of death, cause of death, location of death/fatal incident, geocoding of the location of death/fatal incident, employment status, occupation, country of birth, medical history (including mental and physical health), substance abuse history, domestic abuse history, general practitioner details, medications, prior suicide attempts, suicidal intent, suicide note, motives/triggers for suicide, mental health service usage prior to death (inpatient/outpatient), next of kin details, and an incident summary.

Similar to SuMS, these surveillance systems prioritised data security and ensured limited access to key stakeholders in order to protect confidentiality. Additionally, like SuMS communication strategies, these systems conducted additional analyses and provided ad hoc reports and briefings as needed to key stakeholders.

Overall, these five suicide surveillance systems demonstrated similarities to SuMS in terms of their objectives, system characteristics and method of operations.

4. Key informant interviews

SuMS team members

Nine SuMS team members attended the semi-structured group interview, which was held on 17 April 2023. The team members performed various roles and functions, including but not limited to data management and cleaning, data linkage, data analysis, report development, dissemination of reports, relationship management, engagement, and communication with key stakeholders, as well as building the SuMS systems, software management, tracking and establishing processes.

During the interviews, the SuMS team members described the development, production and dissemination of several different reports including public reports, screening reports, individual contact history reports, high-risk public locations of suicide reports, health service contact before suicide death reports, and ad hoc reports. They then provided a range of information that we have summarised into four themes that align with the CDC attributes of simplicity, acceptability, accessibility, and usefulness.

Development, production and dissemination of SuMS reports

The SuMS team provided insights into the various steps involved in designing the above reports. They emphasised that the reports were developed with the aim of addressing gaps in data. Prior to producing any report, extensive research, exploration, and benchmarking took place. This included consultations with representatives from other states with well-established suicide registers (e.g., Victoria and Queensland) to determine what should be included. Key stakeholders (e.g., policy leads, representatives from the Mental Health Branch, colleagues at Department of Communities and Justice and experts responsible for other registers) provided valuable feedback on the reports' appearance, readability, and ease of use. Moreover, there was a technical expert reference group and an external reference group consisting of academics, individuals with lived experience, colleagues from NSW Department of Communities and Justice, and experts from Victoria and Queensland, who contributed to the report development process. In the initial stages of report development, the Minister's Office directly received an information brief just before each monthly public release. The reports are now largely automated.

The SuMS team indicated that the reports are primarily disseminated via email but there are also several meetings, such as the monthly briefings and executive briefings, where the SuMS team provide additional information to the mental health directors, clinical directors and Towards Zero Suicide leads within the LHDs, as well as to several partner organisations. These meetings serve as an opportunity for key stakeholders to ask questions about the data, and request further tailored analysis for their specific region. In addition to meeting the SuMS team also created a webinar targeting a broader audience, particularly partner organisations.

The SuMS team identified several areas in their existing reports that require further development. They would like to create further reports regarding health service contacts, specifically exploring patterns of health service use prior to suicide; suicide at high-risk public locations, including railway tracks and shopping centres; and method of suicide (including the types of agents used for poisoning) to identify emerging trends in usage. They would also like to gather further comprehensive data about Indigenous status and LGBTQI+ status, and explore linkage to other datasets (e.g., Medicare Benefits Schedule, and datasets relating to out-of-home care). The SuMS team work continuously with both the NSW Department of Communities and Justice and police to improve the system and reporting.

Simplicity

The SuMS team was asked about the simplicity of the reports and other products they created. In particular, they were asked to consider ease of operation for both the team and their stakeholders.

The team unanimously agreed that the SuMS was extremely user-friendly. They reported that tasks such as data loading, data cleaning, and report generation were an incredibly streamlined semi-automated process. According to the team members, the SuMS web app provided impressive functionality allowing quick access to reports.

On the other hand, some team members highlighted the challenges associated with data linkage. Difficulties with data linkage were associated with data completeness, delays in data entry, use of aliases, errors in data entry and matching information (such as spelling mistakes and typos and month day birthdays being transposed).

When talking about simplicity of SuMS the Team members were also asked about unexpected advantages and disadvantages of SuMS more broadly. One team member reported that a key advantage of SuMS was the visibility of suicide data across NSW and it potential to be used to provide ministerial advice on suicide trends, policy, suicide rates or at-risk groups and dispelling myths.

Another advantage highlighted by the team was that SuMS facilitated the development of relationships and engagement with various stakeholders across NSW, leading to increased collaboration in trying to understand suicide trends and develop suicide prevention strategies and policies, and make resource allocation decisions.

The team also identified the SuMS reporting framework, its granular nature, and the design of reports as advantageous. They emphasised the thoroughness of the reports, covering different categories and at risk groups, and mapping suicides across the state.

Team members also acknowledged a positive work culture within their team.

The only disadvantage that was mentioned was that the data only extended back to 2015. Although the team can conduct time series analyses, they cannot use their data to report long-term trends within certain sub-groups. On review of the draft report a SuMS team member also identified that another potential disadvantage which included a lack of complete understanding/ transparency of differences between the other public sources.

Accessibility

Accessibility refers to the availability and ease of use of data and information within SuMS.
The team unanimously agreed that SuMS had significantly increased access to suicide data and information. They also stressed their own efforts to help engage key stakeholders with the data.

Acceptability

Participants were asked questions regarding the acceptability of SuMS, including its reports and products. The team observed that the key stakeholders appear to be actively engaging with the SuMS reports. This was evidenced by the LHDs and other partner organisations requesting further briefing meetings, enquiring about available data, and making additional requests for region-specific data or tailored reports.

One SuMS team member acknowledged that not all LHDs were equally engaged and that the team goal was to enhance engagement across all LHDs and reduce variability in how they approach and utilise reports. The SuMS team indicated that they were uncertain about the extent to which the reports were

being used to inform preventative efforts within LHDs or within partner organisations more broadly.

Regarding data sensitivity, the team expressed confidence in the security of the SuMS database, ensuring only people with appropriate authority could access identifiable data. Within SuMS, team members also stated they had different levels of access based on what was required for them to perform their specific roles. Regarding the reports produced, the team made considerable efforts to account for data sensitivity. They categorised data into public, local, and internal data. However, the team acknowledged that certain reports, such as those containing individual contact history, carried additional risks and the potential for identifiability. To ensure the safety and security of these reports, they were exclusively sent to senior managers of the LHDs as password-protected files through an email secure file transfer marked as confidential.

Usefulness

Team members were asked about the usefulness of SuMS and identified both enablers and barriers to its future development. The team expressed confidence that SuMS effectively fulfilled its intended purpose of identifying suspected suicides, using information from the police notification of a reportable death prior to the Coroner's investigation and determination of intent, which was a foundational assumption of SuMS. However, the team highlighted that the timeliness of reporting could be improved by streamlining and digitising the police notification process to the Coroners Court of NSW and SuMS team. The team emphasised that SuMS played a role in suicide prevention but acknowledged that prevention required a comprehensive multi-level systems approach. The team suggested that the SuMS reports facilitated improved local discussions about suicide and could inform local planning for suicide prevention by providing information on high-risk groups, locations, services contacts, and responses but some environmental factors would require a broader population and systems approach.

Two recommendations were identified by the SuMS team that could potentially enhance the role of SuMS in preventing suicide. The first recommendation related to addressing gaps in integrating health data across NSW and nationally. This would improve efficiencies with data linkages and provide further information on risk and protective factors.

The second recommendation was to establish a clearer framework around information sharing, use of information, ownership, and governance and allow for data to be used for research prevention efforts. This framework would improve the timeliness and value of research.

In addition to barriers related to data linkage and reporting sensitivity, one team member identified a potential political impediment that could hinder the usability of SuMS.

Contributors to SuMS

Six people attended the semi-structured group interview for stakeholders who contributed data to SuMS. The interview was held on the 18 April 2023. Participants were from NSW Department of Communities and Justice and NSW Police. The SuMS team have monthly meetings with NSW Department of Communities and Justice and NSW Police and bimonthly data huddles with Department of Communities and Justice only. The interview aimed to elicit information about the simplicity, acceptability, accessibility, and usefulness of the system. Given the role of these data contributors in collecting and contributing information to SuMS processes, these participants were not in a position to answer questions about end-user experiences. End-user experiences are captured in the following section of the report.

Simplicity

During the interview, participants were asked about the simplicity of the structure and ease of operation of SuMS. They were specifically asked whether SuMS and its reports and products had been designed in a way that facilitates ease of operation.

The data contributors mentioned various roles they had in contributing data to SuMS. Police personnel were responsible for completing the P79A form which summarises the details of the death for the Coroner. Other participants were involved in data analytics, including running the code to extract relevant data. Some performed validation checks, curated data, forwarded it to NSW Health and addressed any questions from NSW Health.

Some of the data contributors described the extensive effort involved in setting up the initial datasets for SuMS. This process included scoping the system, aligning data categories and gaining an understanding of the specific data required to meet the needs of stakeholders. They also acknowledged that it was an iterative process, where continuous learning and adjustments to the data were necessary to ensure clarity, consistency and alignment with stakeholders' requirements.

The data contributors indicated that they were cognisant of small inconsistencies in the data and worked hard to manage these. They also acknowledged that there is still the potential for some human error associated with these inconsistencies.

Accessibility

Participants were asked about the accessibility of SuMS reports. The data contributors emphasised the extensive efforts they made to ensure consistent data collection with the aim of enhancing the accessibility of data.

Another participant emphasised that the accessibility of SuMS could be enhanced by providing reports and information back to the Coroners Court of NSW, specifically regarding a person's hospital contacts prior to their death.

Acceptability

Participants were asked questions about the acceptability of SuMS, including its reports and products. They were very positive about the overall value of data in identifying trends.

Participating data contributors also engaged in discussions regarding the consistency of the SuMS data which is collected on the basis of "suspected" suicides in comparison to data that is based on the Coroner's confirmed cases of suicide. They highlighted that despite minor data differences, the real-time benefits of the data outweighed any inconsistencies.

Usefulness

Participants were asked about whether they thought SuMS was useful in the detection of suicide to support localised planning and responses, and whether it contributed to better understanding of suicide. While data contributors were not able to comment on broad suicide prevention efforts, they indicated that SuMS data were very useful in identifying local trends, enhancing awareness, policing high risk locations, provision of education and research opportunities.

Participants recommended that the usefulness of SuMS could be improved by reporting on the specific suspected motivations and circumstances surrounding given suicides, and by improved data linkage with other registries and services.

Users of SuMS

Our approach

Thirty-eight people attended the semi-structured group interviews for users of SuMS. The interviews

were held on the 11 and 17 April 2023. Participants were from LHDs and partner organisations. The interviews elicited information about the simplicity, acceptability, accessibility and usefulness of SuMS.

Simplicity

During the interview, participants were asked about the simplicity of the structure and ease of operation of SuMS. They were specifically asked whether SuMS and its products had been designed in a way that facilitates ease of operation, and any advantages and disadvantages associated with SuMS and its products.

Participant responses varied regarding the ease of using and understanding the SuMS reports. Some mentioned that SuMS is very new and evolving and that they are getting used to the information. Other participants reported that they were already finding it easy to understand the data contained in the SuMS reports, although some of these indicated that they were experienced data users.

A few participants mentioned that they were not aware of exactly what reports or data were available in SuMS, and that they found the reports too complex to understand.

In terms of advantages, some participants mentioned that SuMS reports and products led to improved understanding and greater conversation about suicide and high-risk sub-groups.

Participants also raised several disadvantages associated with SuMS including the lack of accuracy of some data and the automation of resources.

Some participants had suggestions for ways of making the SuMS and its associated reports and products simpler. Some of these related to alerting relevant people to the reports as they came in, and others related to help with interpreting the data.

Accessibility

Participants were asked about their firsthand experience in accessing SuMS reports, utilising the data, the level of integration between the data and other systems, as well as data processing.

Participants gave mixed responses regarding having access to SuMS reports and products. Some noted that they had no trouble accessing reports and information that they need.

Other participants raised issues around limited access and/or whether the reports were being accessed by relevant people in given organisations.

Several participants recognised the need for a balance to be struck between increasing accessibility of SuMS and dealing appropriately with the sensitivity of suicide data.

Many participants mentioned that a barrier to accessibility was the not access to reports, but complexity related to interpretation. In particular they noted issues relating to small populations, small numbers of suicide and not knowing what constitutes an increase or decrease in suicide. Others also indicated that they did not know what to do with the data that is presented in the reports.

Multiple participants expressed their appreciation for the contact and communication they had with the SuMS team through forums and briefings and indicated that this had improved the overall accessibility of the reports.

Participants had a range of ideas for improving the accessibility of SuMS. Most of these related to broadening the access to more individual users in a systematic way.

Acceptability

Participants were asked questions regarding the acceptability of SuMS, including its reports and products. Many participants raised issues about the tension between the need for data to inform suicide prevention efforts versus the rights of individuals to confidentiality. This was particularly relevant in regional areas with small population sizes where there was potential for people to be identified.

In relation to acceptability, the suggestion was made that two-way communication might be helpful.

Usefulness

Participants were asked about whether they thought the SuMS was useful for supporting localised planning and responses, whether it contributed to their awareness and understanding of suicide, what key questions SuMS would be able to address, and whether any improvements that could be made to the SuMS to make it more useful.

Overall, participants were positive about the usefulness of SuMS. Many gave specific examples of how they are using the data contained in the SuMS reports to inform their work. Many also talked about the data providing the opportunity to target and develop specific interventions for communities/populations or locations.

Many participants highlighted that the data provided by SuMS represented a significant improvement compared to what had been available in the past. This improvement in data, in turn, played a crucial role in informing their suicide prevention efforts.

Other participants said the data helped start the conversation about suicide prevention being not just a mental health issue.

One participant pointed out that data linkage is especially important for this aspect of suicide prevention (i.e., suicide being not just about those who access mental health services).

Multiple users made mention of the data being useful to respond to community concerns about increased rates of suicide and in directing resources to communities that are most in need.

One participant also mentioned that the SuMS data and reports help them with practical aspects of their job.

Several participants made suggestions about content changes or augmentations that might improve the usefulness of SuMS.

Some participants also made suggestions for further data that might be useful for guiding suicide prevention within their organisations including health statistics, and population-level data.

5. Observation of SuMS sessions

Members of our evaluation team observed a SuMS Screening Review Session on 2 May 2023 and an Executive Briefing Session on 9 May 2023.

Screening Review Session

Four people attended the SuMS Screening Review Session. Participants who usually get invited to the screening sessions are internal staff from the Ministry, Mental Health Branch, including representatives from the Chief Psychiatrist, Priority Programs, Child and Youth Mental Health, and Older People's Mental Health.

During the Screening Review Session information was presented on:

- NSW screening report
- LHD screening reports
- improving identification of Aboriginal people in SuMS
- an update on evaluation, and
- an update on Ministry of Health partner organisations.

Information was presented by SuMS team members, then key messages were summarised, and questions were answered. The session provided a useful update for attendees and participants welcomed information regarding improving SuMS to capture suicide among Aboriginal people. A lot of information was presented which was positive in terms of comprehensiveness but may have made it difficult for people to absorb everything that was presented. In addition, some of the figures and tables were small and difficult to read on screen (e.g., provisional data to March 2023 from the NSW screening report). In some cases, there was a considerable amount of missing data (e.g., "Possible motives/triggers for males aged 45-64 in regional and rural NSW"), although this is likely inevitable for fields where the information is difficult to glean.

Executive briefing session

Fourteen people attended the Executive Briefing Session. Invitations for these sessions go to LHD mental health directors, clinical directors and partner organisations in suicide prevention (outside of NSW Health).

During the session, information was presented on:

- suicides in the latest quarter (January to March 2023)
- suicides in specific sub-groups (people aged ≤ 24; people aged ≥ 65), and
- a NSW geographical summary.

Information on these topics was presented by SuMS team members, who also took the opportunity to update participants on the evaluation processes. Participants were very engaged, asking questions, primarily to seek clarification. There was discussion about improving and expanding data linkage, particularly with criminal justice and child protection databases. Some inconsistent terms where used. Information described above also applies to executive briefing about slide as many were similar. Some of the slides contained a lot of information and some of this appeared to be irrelevant (e.g., the slide about suicides in males aged 45-64 in regional and rural NSW slide featured both genders across age groups and years but only one of the figures was relevant).

6. Case studies

Case study 1: Individual health service contact reports

Case study 1 primarily focuses on one LHD's experience with individual health service contact reports. As described in Chapter 1, these reports offer a comprehensive overview of an individual's interactions with the NSW Health public healthcare system up until the time of their death. The reports provide a summary of the individual's contact with services dating back to 2015 as well as detailed information about contact with services within the 28 days preceding their death. In addition to demographic data, the reports include a brief description of the presenting concerns. To describe the individual's health service contact, data from NSW SuMS is linked to NSW Health data. It is important to note that these reports only include public sector contacts, comprising inpatient and community mental health contacts, emergency department contacts, and other hospital contacts. Contacts with other providers and services, such as general practitioners, private psychiatrists and other private providers, private hospitals, and services offered through PHNs, are not included in these reports.

Two representatives from the LHD attended a semi-structured interview with the evaluation team on 30 May 2023. These representatives were primarily asked about their experience with the individual health service contact reports and their engagement with the SuMS. The themes from the interview were categorised based on the CDC framework, specifically focusing on the simplicity, acceptability, accessibility, and usefulness of individual health service contact reports.

Simplicity

The LHD, within its existing capabilities, made significant efforts to understand and commence integrating the reports into its workflow and to ensure the accuracy of the data. The Mental Health Drug and Alcohol Director and Clinical Director in the LHD receive the reports, and then an initial review of the person's electronic medical record is completed. For those people that have been in contact with the acute health services within the District/s in the last 28 days or those who have been in contact with the Mental Health Drug and Alcohol Services in the last three months a death review screening tool is utilised to help analyse the circumstances, contacts, and potential contributing factors relating to the suicide of someone who has been in their service. A stakeholder huddle is then stood up with the respective service and recommendations or further considerations are collaboratively agreed to. In developing this system the LHD initiated a highly collaborative build and decision making working group that included representatives from another LHD (who share the electronic Medical Record platform), acute hospital representatives, primary and community health representatives, Towards Zero Suicide leads, peak District clinical governance team members, a member of the NSW Health Mental Health Branch, experts from the health information service of each LHD to develop the tool for conducting the review and a documented framework to guide all. The working group ensured that the system and supporting documentation maps into the NSW Health Patient Safety and Clinical Quality Program framework, associated systems and processes.

The LHD indicated that caution needs to be exercised when interpreting the individual health service contact reports, as the interpretation is not always as simple as it appears. For example, an individual health service contact report stating a person was admitted to the hospital one day and was deceased the following day could indicate the person died for the reason they were admitted the previous day, or that they died by suicide after being discharged and does not necessarily take into account that they may

have been deceased on arrival. Some instances are reported of data inaccuracies, such as a date not matching between the report and the health service records, or of the LHD receiving the individual health service contact reports of another service with a similar name.

Accessibility

The LHD indicated that the reports are improving access to suicide data and information within regions. Prior to receiving the reports, the LHD had a fragmented and informal process for learning about suicides, often relying on sources such as information from family members and others attending the emergency department, or notification by the Coroner a considerable time after the death. In contrast to the previous informal process, the individual health service contact reports offer timely data that allows the LHD to respond quickly, identify trends, and recognise gaps. Access to and understanding of these data is further enhanced by engagements between the SuMS team and data recipients. The opportunity to ask the SuMS team questions and have discussions with experts provides insights and helps with the interpretation of these data.

Although there are advocacy efforts to broaden access to individual health service contact reports and some of the other SuMS reports, the reports are received by the right people within the focus LHD of this case study (the Mental Health Director and Clinical Director) and shared with relevant others (the Patient Safety Manager and Clinical Program Manager Towards Zero Suicides). These individuals are considered appropriate recipients of the reports due to their capacity to respond, and their expertise in suicide prevention. The people in these roles also appreciate the sensitive nature of these data, understand the importance of treating sensitive information responsibly, and are mindful of the potential damage that might arise by sharing the reports too broadly.

The fact that the individual health contact reports map the patient's journey across various public sector services (inpatient and community mental health service contacts, emergency department presentations, and other hospital admissions) is viewed positively. This is perceived to allow the reports to indirectly enhance accessibility, communication, accountability, and knowledge about suicide within the broader health sector and could lead to increased accountability of general health services.

Acceptability

The reports are valued by the LHD. In addition to tracing the patient's journey, the reports are seen as improving awareness about suicide within the district and playing a crucial role in dispelling misconceptions.

Concerns exist regarding the potential link between data and funding. Specifically, whether LHDs with lower rates of suicide (potentially due to their extensive suicide prevention efforts) might be overlooked or miss out on funding opportunities to enhance their programs.

Recommendations to further improve the acceptability of these reports and broader SuMS products include making efforts to further engage LHD Mental Health Directors and Clinical Directors through targeting existing events that bring the Directors together. The SuMS team could attend the Mental Health Program Council and present district data, and the SuMS reports could become a standard agenda item at those meetings.

Usefulness

Overall, the individual health service contact reports appear to be helpful in mapping the circumstances surrounding each individual's suicide and the service contacts they made in the lead-up to their death.

The reports also assisted with the identification of families, staff, and other individuals impacted by the suicide, enabling the LHD to provide timely and appropriate support to those affected.

The reports also have a role in situations where there are legal proceedings following a suicide. The real-time nature of the reports may help overcome challenges related to recalling events in preparation for a coronial inquest. The timely prompt the reports provide allows for additional notes from service staff to be made while memories are fresher, and for faster engagement with legal representatives where necessary.

Suggestions to increase the usefulness of the individual health service contact reports included that additional information be included (e.g., the mechanism of suicide, prior suicide attempts, LGBTQI+ status, Aboriginal and Torres Strait Islander status, and information on social factors such as family violence). Access to additional risk and psychosocial information could help with developing appropriate suicide prevention responses, and, conversely, the absence of this sort of information could limit the effectiveness of such interventions. For example, data on the mechanism of suicide could improve the ability to identify clusters and having contextual data about other factors such as the deceased having recently informed family and others about their LGBTQI+ status could aid community-based responses.

While the reports are highly valued, it is likely too premature to make significant service planning decisions based on the available data and longer-term aggregated data are needed as there might be opportunities to identify and respond to trends more effectively as data accumulate. This in turn could lead to the implementation of suicide prevention initiatives, such as universal screening. With collection of data from these reports over time, they might be utilised to identify knowledge gaps in the healthcare workforce and inform the development of resources and educational materials to address these gaps.

While longer-term data is most helpful for identifying trends, it was recommended that the data already reported by SuMS could inform significant learnings and opportunities. Further research to determine some of the factors associated with individual suicides could enhance the usefulness of the reports.

Summary

Case study 1 highlights that the reports are valuable in facilitating an understanding of the unique circumstances surrounding each individual's suicide. Furthermore, these reports play a crucial role in facilitating the implementation of support for those impacted by suicide within the LHD. Reports could potentially be improved by including further data about additional risk factors.

Case study 2: Screening reports

Case study 2 primarily focuses on the use of screening reports in an LHD and a PHN. As noted in Chapter 1, the screening reports provide information on recent trends within particular regions and/or for particular sub-groups of the population. The screening reports are disseminated every quarter to LHDs. However, individual LHDs receive monthly reports if any region within their district is flagged as “possibly elevated” between standard quarters. Once fulfilling the requirements of the data sharing arrangements, including the confidentiality agreement, can circulate to their partner organisations such as PHNs.

These reports aim to build an accurate understanding of suicide occurrences and to inform decision-making processes within the district and broader NSW. The screening reports are also complemented by a briefing session conducted by the SuMS team to clarify information.

Two people were interviewed on 17 April 2023. One was a representative from an LHD, and the other was from a PHN. They were both members of the Suicide Prevention Collaborative.

The LHD and PHN representatives were asked primarily about their experience with the screening reports and more broadly, about their engagement with the NSW SuMS. As with the previously described case study, the themes from this interview were categorised based on the CDC framework and focussed on the simplicity, acceptability, accessibility, and usefulness of screening reports.

Simplicity

The screening reports and associated briefing sessions are broadly found to be impressive and exceed expectations while still being in their early stages of development and undergoing further refinements.

The simplicity of the reports could be improved through the presentation of rates ras well as the numbers, as that would allow for a better understanding of trends taking into account population growth.

Additionally, the reports could be used more easily if they included interactive features or were available in different formats, such as Excel instead of PDF. These features would facilitate comparisons and service planning by allowing different data interrogations and for additional datasets to be overlayed with the SuMS data. Issues of data sensitivity and appropriate interpretation of data would need to be considered to ensure these features are appropriate.

Accessibility

The screening reports significantly improve access to timely information. Historically, information and decisions were predominantly based on ABS data with a three-to-four-year time lag (as well as provisional data from ABS, available publicly with approximately 9-10 months lag,with limited view of NSW data), with some access to suicide data through the Black Dog Institute and the NSW Lifespan trial.

Great importance is placed on maintaining the confidentiality of screening reports, and reports are only shared within the bounds of confidentiality agreements. Processes around protecting the data receive significant consideration, as small numbers have the potential to allow the identification of individuals, and widespread sharing of these data could lead to suicide being sensationalised. However, sharing these data can enhance intervention efforts if access is provided to the right people. Understanding which of these new data can be shared with which people and organisations under the confidentiality agreements is complex and the Suicide Prevention Collaborative are holding discussions to help people understand these issues. The Suicide Prevention Collaborative is also working on a data insights framework to unpack and draw meaning from data. To further protect the confidentiality, participants indicated that when the Suicide Prevention Collaborative is discussing suicide with local Members of Parliament, broader community services or the media, they avoid focusing on the data itself and instead emphasise available support services.

Acceptability

Overall, the screening reports are valuable and acceptable, and both the reports and the broader work by SuMS are appreciated. The reports are considered to be of high quality and a reliable source of information which are contributing to filling the large gap of quality data for suicide prevention.

The reports appear to be acceptable for guiding decision-making about planning and commissioning services. They provide insights into areas that require further interventions, resourcing, or mobilisation of services.

Usefulness

Information from the screening reports are already being incorporated into suicide prevention efforts despite users still exploring their usefulness and learning how best to use the reports. The reports are being used to inform conversations about suicide and its prevention across the district and engage the broader health system and community through education initiatives. Additional ways in which the reports could be further utilised include to combat misunderstandings and misconceptions about suicide and to observe local trends. As the data accumulates, the reports could be used to better identify priority groups and areas in need of intervention.

The screening reports are also being used in conjunction with suicide data from other SuMS reports (e.g., the individual health service contact reports), the National Suicide and Self-harm Monitoring System, and lived experience feedback to not only set priorities and identify trends but to also corroborate and verify awareness of deaths in the district.

The utilisation of the screening reports is likely to increase over time as more data are collected, however, there is a desire for additional data to be collected and included in the reports, particularly regarding demographic and psychosocial factors (e.g., relationship status, Aboriginal and Torres Strait Islander status, refugee status, financial/employment status, location of residence, LGBTQI+ status). The reports could also be accompanied by a conversation with experts about what suicide prevention initiatives should be initiated, and how this should be done. This could be an annual local conversation with data experts. The existing briefing sessions with the SuMS team are already helping to inform decision-making with the data presented in the reports.

Summary

Case study 2 highlights that the screening reports are valued and useful. The reports are starting to be incorporated into decision-making about service planning. The screening reports could be improved by including further data about other demographic and psychosocial risks factors.

7. Discussion

Overall, the findings from the evaluation indicate that SuMS has achieved a lot in a relatively short space of time. We have summarised these findings in three ways below: (1) against the objectives listed in the SuMS draft program logic; (2) against the evaluation questions; and (3) against the CDC attributes.

Achievements against the objectives listed in the SuMS draft program logic

Moving through the various objectives on the draft program logic, it is clear that many have been achieved.

Inputs

Funding has been made available, there are formal partnerships in place between the NSW Department of Communities and Justice, NSW Police and NSW Health, and relevant infrastructure has been established.

Activities and outputs

Data sharing arrangements between NSW Health and NSW Department of Communities and Justice have been developed and implemented, and relevant analyses (including those identifying at-risk sub-groups and regions) are being conducted. These data arrangements continue to evolve as the system matures. Regular public and internal reporting is occurring through various channels, including publication of monthly public reports to the NSW Health website, publication and distribution (e.g., via secure file transfer) of monthly and quarterly internal reports, and publication and/or presentation of technical papers, guides, videos and webinars. System engagement activities have also been bedded down, with regular meetings being held to engage and communicate with stakeholders to support data interpretation. Key stakeholders are participating in these system engagement activities.

Short term impacts

SuMS is undoubtedly yielding short term impacts. The stakeholders we interviewed indicated that timely suicide data and reporting are available and that they are aware of and using these. Many of these stakeholders feel knowledgeable and confident enough to use these data and reports. There is a caveat here, however; there were suggestions that the data and reports could be systematically made available to more users, and that sometimes the data are complex and/or require a background level of understanding that not all users will have.

Intermediate impacts

It appears that SuMS is also making headway with achieving its desired intermediate impacts as well. There is some evidence that key stakeholders have improved understanding of the factors that contribute to suicide, and that the data and reports are being used for planning and decision-making (e.g., in terms of targeting particular regions for suicide prevention activities). Stakeholders are positive about using the data for these purposes, and about working collaboratively with the SuMS team to do so. There are suggestions that the data and reports are starting to be used to guide population level policy choices as well as service planning and clinical decisions, although there are clearly opportunities to scale this up. There are some specific examples of how the data and reports might influence practice (e.g., there are opportunities for the health service contact before suicide death reports to guide suicide care pathways).

Outcomes

It is too early for SuMS to be achieving the longer-term outcomes articulated in the draft program logic, but the fact that many of the lower-level objectives have been wholly or partially achieved augurs well for improved, targeted suicide prevention policies and approved mental health service availability.

Achievements against the evaluation questions

Considering the achievements of SuMS in the context of the evaluation questions also presents a positive picture.

Data linkage and analysis

Are data linkage and analysis approaches appropriate and consistent with good practice for suicide data analysis?

The analyses methods described in the documents that were made available to us were largely appropriate and consistent with good practice for suicide data analysis. Informative comparisons are made between regions, sub-groups of the population and time periods. Some data analyses conducted and reported may be unnecessary such as the graphs of cumulative deaths over months. The granularity of many analyses included in the documents also raises some issues; on the one hand, small cell sizes may have implications for confidentiality and the certainty with which findings can be interpreted, but on the other hand, stakeholders were pleased to be able to consider data at a regional level. The descriptions of methodological approaches included in many of the reports were limited which could increase confusion and the risk of misinterpretation of data. Several of the reports noted limitations, and highlighted plans to improve data quality and analysis methods.

The probabilistic data linkage strategies that are being used are also appropriate. The SuMS team did, however, highlight some challenges associated with data linkage. These are related to data completeness, delays in data entry, use of aliases, and errors in data entry and matching information.

Report design

Are current reports and outputs appropriate and consistent with good practice for suicide data reporting?

The review of the key documents and feedback from SuMS users highlighted that the reports produced are overall of a good standard, particularly the public reports. This is impressive when the volume of data being published is considered. The public, screening and focused analyses reports are generally clearly laid out and easy to follow (e.g., with clear sub-headings to orient the reader, simply stated purpose, limitations, and key findings prominently displayed). They use appropriate language and clearly list the confidentiality status if required. Other positive features in some but not all reports are contents lists, information about data sources, caveats, and cautions about interpreting specific results, warning about potentially distressing content with helpline contacts, detailed information about data analysis methods, definition of terms used, text summaries of graphs and tables, and descriptive titles and labels for graphs and tables.

Having said the above, not all users are finding the reports easy to understand. Some of the SuMS users we interviewed commented that the volume of information presented makes the reports difficult to comprehend. Some participants mentioned privacy concerns because of the potential for specific individuals to be identified, and others commented that they could not always work out what was relevant for them and their area.

Are there possible improvements or changes to report design that would better meet SuMS objectives and the needs of SuMS stakeholders?

Despite being generally positive about the reports, the stakeholders we interviewed had some suggestions for improvements to the report design. Many of these suggestions were consistent with our own observations in the document review. These include:

- Consider removing figures and tables of cumulative suicide counts where they add limited or no information beyond what total counts provide (e.g., cumulative counts of suicide by month for a year where the full year of data is available).

- Care should be taken regarding presentation, publication and sharing of data where the numbers are small and individuals are potentially re-identifiable data. A caution in each report that includes these data should be included to remind people of confidentiality and sensitivity issue.

- Increase the ability for each report to be read as a standalone document by including all relevant data analysis methods information and definitions of terms in each report. Part of this work could involve embedding the screening report guide into each screening report or providing links to the screening report guide and other documents (e.g., technical papers) from each report.

- Consider renaming the "Information about methods" section that occurs in some reports to "Information about data analysis methods" or similar to avoid confusion with the topic of methods of suicide.

- Consider including additional analyses with rates in the public reports to support appropriate comparisons within the data and to other datasets.

- Consider increasing the use of positive characterises found in some reports and presentations to all reports and presentations, including use of clear sub-headings, statement of purpose, limitations, key findings, contents lists, information about data sources, caveats, and cautions about interpreting specific results, warnings about potentially distressing content, and helpline contacts.

- Consider increasing the use of text summaries of figures and tables to help the reader interpret the data presented.

- Ensure all figures and tables in reports and presentations have descriptive titles and clear labels.

- Consider defining "higher", "slightly higher", "lower", and "slightly lower" for text summaries of the data, or complementing the language with numbers, rates, or percentages to provide clarity (e.g., the rate of suicides for males (X/100,000) was higher than females (Y/100,000)).

- Consider improving the consistency of age-group categories used for analyses within and between reports and presentations where appropriate and possible.

- Consider providing shorter, more tailored presentations of sub-sets of the data (e.g., focus on a given LHD area for staff in that LHD, focus on data relating to people aged 65 and older for aged-care staff) at quarterly executive briefings to increase engagement.

- Consider consulting with people in the sector and with lived experience to assess the appropriateness of the music and colours used in the full year summary videos.

- Consider adding a section to the reports that summarises and interprets the data.

Communication and engagement

Are current communication and engagement processes effective and consistent with good practice in suicide reporting?

The suite of briefings, webinars and videos that were used to communicate and engage with stakeholders was extensive and appeared to be well received. There were also additional documents that are likely to have boosted effective communication and engagement. For example, the guide for LHDs to assist in interpreting data and understanding its limitations was a helpful adjunct to the LHD screening data and reports. It was brief which would have increased the chance of it being read in full, but it still managed to contain a lot of pertinent information.

A recurring theme in the SuMS user interviews was how much they valued communication and engagement with the SuMS team and with other data users. They stressed that bringing people together provided them with an opportunity to learn from each other but also helped to highlight that suicide prevention involves multiple stakeholders. They also appreciated the general collegial nature of the meetings and the opportunity to seek clarity on the information presented.

The interviews with SuMS users highlighted discrepancies between data users with regard to communication and access to information. Although as noted above many users were extremely positive, some were less sanguine. Some were not aware of the range of reports or data available or were unclear about how to interpret data, its relevance and what to do with it. Some users who were based in LHDs were concerned that the people within the LHD that needed access did not have access, as the information may not have gotten beyond their directors. Some were also concerned with the amount of information being communicated and felt overwhelmed with the data.

SuMS contributors emphasised that although they were contributing information/data to SuMS, they had very little knowledge about the how the data was used to prevent suicide more broadly through NSW Health (although they were aware that the police were using it to patrol risk areas).

Are there possible improvements or changes to communication and engagement processes that would better meet SuMS objectives and the needs of SuMS stakeholders?

The findings from various components of the evaluation also highlight several additional improvements that could be to the communication and engagement processes. These include:

- Offering training for users about reports and how to interpret the data. This could take the form of online videos that are just produced once as it would be impractical to expect the SuMS team to train every new person.

- Ensuring that LHDs and partner organisations have up to date information on the suite of reports and data available.

- Ensure that LHDs and partner organisation have access to reports. Consider broadening access in LHD and partner organisation to include several people from each area.

- Providing practical guidance on how to use the information.

- Continue to engage with stakeholders in a range of ways (i.e., reports, guides, summary videos, and annual and quarterly briefings) to support data interpretation and use.

- Consider increasing the inclusion of responsible author/organisation and relevant contact information on reports and communications to better enable readers to provide feedback or seek additional understanding.

- Offer multiple opportunities for data users and contributors to provide feedback to the SuMS team.

- Consider forums for all data users to attend and discuss the ways they use the SuMS data. This could have learning benefits as well as collegial benefits.

- Consider providing any information that is available on potential triggers or stressors related to suicide that is available in data provided to the SuMS team, noting that these fields are unlikely to be well completed and absence of evidence not the same as evidence of absence.

Overall

What are the important priority areas for refinement or improvement in the next stage of SuMS development?

The evaluation highlights that in general key stakeholders are extremely satisfied with SuMS and value it as an essential part of the suicide prevention landscape in NSW. In addition to the improvements suggested above, the evaluation suggests that it is important to ensure that key stakeholders have access to the reports and know what data are available. Creating additional reports and collating more data and improving its quality and utility is important but ensuring that the current data are meaningful and readily interpretable should also be prioritised. Consideration might also be given to creating functionality that allows users to generate their own reports, notwithstanding that this would raise issues relating to data confidentiality and interpretation.

The SuMS team suggested establishing a clear framework around information sharing, use of information, ownership, and governance. They also suggested that it would be worthwhile to enable the data to be used for suicide prevention research.

Achievements against the CDC attributes

SuMS performs well against the CDC attributes of simplicity, accessibility, acceptability and usefulness.

Simplicity

Simplicity refers to the structure and ease of operation of SuMS. The team unanimously agreed that SuMS was easy to use. They highlighted that the system was designed with automated and efficient processes for data loading, data cleaning, and report generation. However, the SuMS team also identified areas where improvements could be made. They suggested simplifying processes by digitising the police notification process to the Coroners Court of NSW, to enhance the timeliness of reporting and data transfer to the SuMS team.

Despite being relatively new, the interviews from the data users and case study participants indicated that for the most part, they found the SuMS reports and products to be clear, easy to follow, and

understandable. The inclusion of figures and tables in the reports helped aid understanding. However, users who were less familiar with data found the volume of information challenging and were unsure of whether they needed to respond to small changes. The communication and engagement sessions have been highly valued by users. These sessions provided a platform for stakeholders to address concerns, clarify information, and gain a better understanding of the data related to their district.

Accessibility

Accessibility refers to the availability and ease of use of data and information within SuMS. Interviews with key informants' groups and the case studies indicated agreed that SuMS had significantly increased access to suicide data and information in NSW. However, some users raised concerns about limited access, uncertainty regarding the type of available reports and difficulties interpreting the data. They specifically noted challenges related to small populations, a small number of suicides, and the lack of clarity regarding what constitutes an increase or decrease in suicide rates.

To improve access, users provided several suggestions. They recommended broadening access to more individuals within LHDs and partner organisations. Additionally, users suggested implementing individual control features (while protecting sensitive) for LHDs to navigate SuMS independently and access their own information, empowering them to explore and analyse the data relevant to their area specific needs.

Acceptability

The acceptability of the SuMS refers to the willingness of persons and organisations to use the SuMS. The SuMS team and data contributors were very committed to collecting, cleaning, interpreting, and disseminating data. SuMS users were actively engaging with the reports, attending briefing and screening meetings (where appropriate), enquiring about available data, and making additional requests for region-specific data or tailored reports. The overall sentiment from stakeholders was positive with an overall appreciation for the value and accuracy of data in identifying trends related to suicide. However, it is essential to note that engagement varied among LHDs and partner organisations. Some were more engaged than others and there was also variability in how stakeholders approached and utilise reports highlighting the need for ongoing efforts to enhance engagement. Some stakeholders also indicated they would appreciate further comprehensive data about Indigenous status and LGBTQI+ status and explore linkage to other datasets health datasets. Given that SuMS is relatively new, there was some uncertainty among stakeholders about how to use the data for prevention purposes effectively. However, an exception was observed with the police, who increased patrols in high-risk areas.

Usefulness

The usefulness of SuMS, referring to its ability to contribute to the prevention and management of suicide, is evident through the review of key documents, interviews with key informants, case studies and observations of SuMS sessions. The SuMS, its reports and products, have proven to be incredibly valuable from multiple perspectives. Strong evidence indicates that SuMS plays a helpful role in identifying suicides prior to the Coroner's investigation and determination of intent. Consistently across all our data sources, the evidence demonstrates that SuMS improves awareness, identifies high-risk groups and locations, and enhances understanding of service contacts prior to suicide, thereby improving the overall understanding of suicide in NSW.

Furthermore, the engagement and communication strategies employed by SuMS have facilitated discussions at both the local and state levels regarding suicide prevention planning. Key informants have emphasised that the usefulness of SuMS could be enhanced through better data linkage with health data across NSW and nationally.

Recommendations

It is recommended that the SuMS team:

- Engage in a priority-setting exercise to review report findings and determine and prioritise activities based on their own operational capacity, availability of resources, and timelines.

- Capitalise on their excellent achievements to date and further strengthen the quality and comprehensiveness of SuMS data.

- Continue to communicate the findings and engage with stakeholders in a manner that maximises the simplicity, accessibility, acceptability and usefulness of the data for a range of key stakeholders.

- Explore opportunities for further data linkage activities to support national data linkage and sharing of linked data, for use in policy, planning, system management, evaluation, and performance reporting.

- Continue to embed stakeholder consultation in the ongoing development of reports with a focus on LHD and partner organisations that are not engaging with system. This will help to ensure that relevant stakeholders are aware of the SuMS reports and products and make the best use of them.

- Draw on the expertise of people with lived experience of suicide. Their expertise is likely to be helpful at all points in the process of deciding what data to present, analysing and interpreting it, reporting on it, and disseminating it.

- Explore methods of improving data collection for high-risk groups and publish more information on these groups.

- Continue to work with police, Department of Communities and Justice to automate and streamline processes of data transfer and data analysis and reporting.

Conclusion

SuMS is a major initiative that is only in its infancy but is already beginning to yield significant benefits. It provides timely data on suspected suicides, and the fact that it has a clear, well-articulated communication and engagement strategy means that these data are reaching stakeholders who can use them to influence the way suicide prevention efforts are delivered. Key stakeholders from the police, Department of Communities and Justice, NSW Health, LHDs and partner organisations actively engage with the SuMS team and its reports and products, indicating strong acceptance and engagement by the suicide prevention sector. SuMS is gaining a reputation as a trustworthy, reliable source of data and becoming part of the suicide prevention landscape in NSW.

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Appendix A: Review of key documents

Table 1: Documents reviewed as part of the evaluation.

File ID	Frequency	Target audience	Document Type	Document title
Internal review ID		*MoH = Ministry of Health; LHDs = Local Health Districts; PO = Partner organisations; POc = Partner organisations with confidentiality undertaking; P = Public; MO = Minister's Office; C = NSW Coroner*	*PR = Public reports; SR = Screening reports; ICHR = Individual contact history reports; FA = Focused analyses; TP = Technical papers; SE = System engagement; AHA = Ad hoc advice*	
01	Monthly	MoH, LHDs, PO, P	PR	NSW Suicide Monitoring System, Report 28. Data to December 2022.
02	Monthly	MoH	PR	NSW Suicide Monitoring System, Report 29. Data to December 2023.
03	Monthly	MoH, LHDs, PO, P	PR	NSW Suicide Monitoring System, Report 27. Data to November 2022.
04	Monthly	MoH	SR	NSW Screening Report - December 2022
05	Monthly/Quarterly	MoH, LHDs, POc	SR	Western Sydney LHD Screening Report - December 2022
06	Monthly/Quarterly	MoH, LHDs, POc	SR	Local Health District Screening Reports: Overview and guide for use. V2.0, December 2021
07	Monthly	MoH	SR	LHD and SA3 screening report, August to October 2022
08	Monthly/Quarterly	MoH, LHDs, POc	SR	Quarterly summary and trends, August to October 2022
09	Monthly	MoH	SR	LHD and SA3 year-to-date summary report, January to October 2022
10	Monthly	MoH	SR	Youth suicides (People aged 0-24). Year-to-date summary, January to October 2022

File ID	Frequency	Target audience	Document Type	Document title
Internal review ID		*MoH = Ministry of Health; LHDs = Local Health Districts; PO = Partner organisations; POc = Partner organisations with confidentiality undertaking; P = Public; MO = Minister's Office; C = NSW Coroner*	*PR = Public reports; SR = Screening reports; ICHR = Individual contact history reports; FA = Focused analyses; TP = Technical papers; SE = System engagement; AHA = Ad hoc advice*	
11	Monthly	MoH	SR	Suicides in people aged 65 and over. Year-to-date summary, January to October 2022
12	NA	MoH, LHDs	ICHR	NSW Suicide Monitoring System, Individual contact history
13	NA	MoH, LHDs	ICHR	NSW Suicide Monitoring System, Individual contact history
14	NA	MoH, LHDs	ICHR	NSW Suicide Monitoring System, Individual contact history
15	Annual	MoH, LHDs, POc	FA	Regional summary, numbers and age-standardised rates, 2015 to 2022.
16	Annual	MoH, LHDs, POc	FA	High-risk public locations of suicide deaths in NSW, 2015 to 2022.
17	Annual	MoH, LHDs	FA	Health service contact prior to suicide death, 2019-2021. (Updated May 2022).
18	Annual	MoH, LHDs, POc	FA	Regional summary, numbers and age-standardised rates of suicides, by Local Health Districts, Statistical Areas (SA3, SA4). Data for 2019 to 2021 and five-year trends. Updated February 2022
19	Annual	MoH, LHDs, POc	FA	High-risk public locations of suicide deaths in NSW, 2015 to 2021.

File ID	Frequency	Target audience	Document Type	Document title
Internal review ID		*MoH = Ministry of Health; LHDs = Local Health Districts; PO = Partner organisations; POc = Partner organisations with confidentiality undertaking; P = Public; MO = Minister's Office; C = NSW Coroner*	*PR = Public reports; SR = Screening reports; ICHR = Individual contact history reports; FA = Focused analyses; TP = Technical papers; SE = System engagement; AHA = Ad hoc advice*	
20	Monthly	MoH	FA	Suicides in females aged 24 and under. Full year summary, January to December 2021.
21	Monthly	MoH	FA	Suicides in males aged 75 and over. Full year summary, January to December 2021.
22	As required	MoH, LHDs	TP	Methods for linking SuMS data with NSW Health Records. V1 Nov 2021
23	As required	MoH	TP	Can we accurately identify suicide deaths in NSW hospital inpatients?
24	Quarterly	MoH, LHDs, POc	SE	NSW Suicide Monitoring System Executive briefing February 2023
25	Monthly	MoH	SE	NSW Suicide Monitoring System Screening data to Dec 2022
26	Annual	MoH, LHDs, POc	SE	NSW Suicide Monitoring System Full year summary Feb 2023
27	Annual	MoH, LHDs, POc	SE	NSW Suicide Monitoring System Overview of suicides
28	Quarterly	MoH, LHDs, POc	SE	NSW Suicide Monitoring System Exec briefing
29	Monthly	MoH	SE	NSW Suicide Monitoring System Screening data to February 2022
30	Annual	MoH, LHDs, POc	SE	NSW Suicide Monitoring System Full year summary2021

File ID	Frequency	Target audience	Document Type	Document title
Internal review ID		*MoH = Ministry of Health; LHDs = Local Health Districts; PO = Partner organisations; POc = Partner organisations with confidentiality undertaking; P = Public; MO = Minister's Office; C = NSW Coroner*	*PR = Public reports; SR = Screening reports; ICHR = Individual contact history reports; FA = Focused analyses; TP = Technical papers; SE = System engagement; AHA = Ad hoc advice*	
31	As required	C	AHA	Number of suicides by Aboriginal status. Provisional data to April 2022.
32	As required	MO	AHA	Suicide deaths by sex, age group, and selected regions of residence, 2017 to 2022. (Data as at Jan 2023).
33	As required	MO	AHA	Not stated

Appendix B: Key informant interviews

Key Informants - Teams

Preamble
Hi (NAME) My name is (NAME)

Thank-you for making the time to participate in this interview today.
Before we formally begin the interview, with your permission, we would like to record the interview. With zoom, when I press 'record' it will capture both audio and visual however, I will only save the audio file. Are you happy for me to begin recording? [commence recording on zoom].

As you will have read in the Plain Language Statement that we sent via email, I am a researcher from the Centre for Mental Health at the University of Melbourne and, myself and the six other named researchers on the Plain Language Statement are working with NSW Health to conduct an evaluation of the NSW Suicide Monitoring System

As you would know, the NSW Suicide Monitoring System has been established to assist NSW governments and communities to respond rapidly to emerging crises by bringing together accurate and timely information on suicide. Over time, the system will ideally contribute to a reduction in the number of people who die by suicide.

During this interview we would like to ask you some questions about the extent to which you think the NSW Suicide Monitoring System is being developed and used to monitor suicide, how it can be improved to aid prevention

We have divided these questions into themes, the first questions are introductory followed by some questions about the simplicity of the system, the accessibility of the system, the acceptability of the system and the usefulness of the system.

Before the interview begins I want to acknowledge that discussion of suicide data and discussion of the monitoring system could potentially be distressing for some people. If you feel distressed at any point in the interview, please let me know we can stop the interview. Additionally, if you wish to stop the recording of the interview for any reason, that is ok too.

Theme	Question
Introductory questions	• Can you briefly describe your experience with the NSW SuMS? • Can you describe your role in the development and/or implementation of the SuMS? • Can you describe the suite of reports and products produced by NSW SuMS • Can you describe the processes by which the SuMS reports/products are designed, produced and disseminated? • Is there anything missing from current suite of reports and products?
Simplicity	These next questions relate to the simplicity of the system which refers to both the structure and ease of operation of the system. • In your experience, has the system been structured in a way that allows for ease of operation? • Thinking about your interaction with the system, can you identify elements of the system that are simple and easy to operate as well as those that seem more difficult or complex? • In your experience, can you talk about the advantages and disadvantages of the design of the system

Accessibility	This next question relate to the accessibility of the system which refers to ease of use of data and information within the system to support understanding of suicide and its prevention. • In your experience, do you think the system increases the accessibility of suicide data?
Acceptability	These next questions relate to the acceptability of the system which relates to the willingness of people and organisations to participate in and/ or use the system. • In your experience, do you think the information that is available through the system will mean that external organisations will be willing to interact with the system to inform their preventive efforts? • Is there anything missing from current suite of reports and products • Do you think the system adequately caters for the sensitivity of the data? • In your experience, has the system been set up in a way that enables your participation as a data custodian? •] In your experience as a data custodian, are there things that could make your participation in the system easier?
Usefulness	These next questions relate to the usefulness of the system which refers to how the system contributes to the prevention and management of suicide, including an improved understanding of the public health implications of suicide. • Based on your involvement do you think the system will be capable of identifying suicides in real-time - that is prior to a coronial investigation and determination of intent? Do you think the system will ultimately lead to the prevention of suicide? • What could be done to improve the system for this use? • what barriers and facilitators exist in relation to making any modifications • In your experience, do you think that the system serves the purpose for which it is intended? Do you have any other final comments about the system to offer?

Key informants Users/Contributors

Interview guide for key informants that include the three NSW Government collaborating agencies (representatives from NSW Ministry of Health, NSW Department of Communities and Justice, including Coronial stakeholders, and NSW Police) as well as representatives from Local Health Districts and partner organisations.

Preamble
Hi [NAME]. My name is
Thank you for making the time to participate in this interview today.

Before we formally begin the interview, with your permission, we would like to record the interview. With zoom, when I press 'record' it will capture both audio and visual, however, I will only save the audio file. Are you happy for me to begin recording? [commence recording on zoom].

As you will have read in the Plain Language Statement that we sent via email, I am a researcher from the Centre for Mental Health at the University of Melbourne, myself and the six other named researchers on the Plain Language Statement are working with NSW Health to conduct an evaluation of the NSW Suicide Monitoring System

As you would know, the NSW Suicide Monitoring System has been established to assist the NSW government and community to respond rapidly to emerging crises by bringing together accurate and timely information on suicide. The purpose of the evaluation is to assess elements of the design and development of the system and the relevance, accessibility, acceptability and utility of the system. Evaluation findings will inform future quality improvements for the system.

During the interview, you will be asked about your views and experience with the NSW Suicide Monitoring System, and how it is used or how it could further aid suicide prevention efforts We have divided these questions into themes, the first questions are introductory followed by some questions about the simplicity of the system, the accessibility of the system, the acceptability of the system and the usefulness of the system.

Before the interview, the formal part of the interview begins I want to acknowledge that discussion about suicide and the monitoring system could potentially be distressing for some people. If you feel distressed at any point in the interview, please let me know we can stop the interview. Additionally, if you wish to stop the recording of the interview for any reason, that is ok too.

Theme	Question
Introductory questions	• Can you briefly describe your experience with the NSW SuMS? • Can you briefly describe the purpose and objective of NSW SuMS? • Do you contribute to the SuMS processes? • Do you make use of SuMS data and reports?
Simplicity	These next questions relate to the simplicity of the NSW SuMS which refers to both the structure and ease of operation of the system. • In your experience, how has the NSW SuMS been structured in a way that allows for ease of operation? • Thinking about your experience with NSW SuMS can you identify elements of the system that are simple and easy to use as well as those that seem more difficult or complex? • In your experience, in terms of ease of use, can you talk about the advantages and disadvantages you see with the NSW SuMS?
Accessibility	These next questions are about the accessibility of SuMS which refers to the availability and ease of use of the data and information within the system to support the understanding of suicide and its prevention. • What has been your experience in accessing the NSW SuMS and the data housed within it? • What has been your experience of understanding the data and /or

	information presented? • How have you used the data from the NSW SuMS ? • In your experience, have you been able to access the data that you were looking for? • Has there been anything that you have not been able to access or understand? • Describe the level of integration with other systems? • What data are collected and how are they collected? • What are the reporting sources of data for the system? • How are the system's data managed (e.g., the transfer, entry, editing, storage, and backup of data)?
Acceptability	These next questions relate to the acceptability of the system which relates to the willingness of people and organisations to participate in and/ or use the system. • In your experience, do you think the information that is available through the NSW SuMS will/ will not help external organisations inform preventive efforts? And can you explain why or why not? • Do you think people in similar roles to yourself and more broadly in the suicide prevention sector, in general, will engage with and use the NSW SuMS? Can you explain why/ why not? • In your experience, can you explain how the NSW SuMS meets your expectations in terms of the presentation and availability of sensitive information such as suicide data?
5. Usefulness	These next questions relate to the usefulness of the system which refers to how the system contributes to the prevention and management of suicide, including an improved understanding of the public health implications of suicide. • How useful has the NSW SuMS been for the detection of suicide to support localised planning and responses? • How has the NSW SuMS contributed to your awareness and understanding of suicide? • Is there anything about the 'NSW SuMS' that you think would make the system more useful? • Do you have any other final comments about the system to offer?

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